PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of **CERTAIN WET DRY SURFACE CLEANING DEVICES**	**INV. NO. 337-TA-1304**

INITIAL DETERMINATION ON VIOLATION OF SECTION 337

Chief Administrative Law Judge Clark S. Cheney

(March 24, 2023)

Appearances:

For Complainants BISSELL Inc. and BISSELL Homecare, Inc.:

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For Respondents Tineco Intelligent Technology Co., Ltd., TEK (Hong Kong) Science & Technology Ltd., and Tineco Intelligent, Inc.:

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Matthew J. Hertko and Marc S. Blackman of Jones Day, of Chicago, IL.

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Table of Abbreviations

CDX	Complainants' demonstrative exhibit
CIB	Complainants' initial post-hearing brief, available at EDIS Doc. ID 787240
COCCB	Complainants' opening claim construction brief, available at EDIS Doc. ID 776091
CPB	Complainants' corrected pre-hearing brief, available at EDIS Doc. ID 784975
CRB	Complainants' responsive post-hearing brief, available at EDIS Doc. ID 787578
CRCCB	Complainants' responsive claim construction brief, available at EDIS Doc. ID 777863
CX	Complainants' exhibit
JX	Joint Exhibit
RDX	Respondents' demonstrative exhibit
RIB	Respondents' initial post-hearing brief, available at EDIS Doc. ID 787084
ROCCB	Respondents' opening claim construction brief, available at EDIS Doc. ID 776098
RPB	Respondents' pre-hearing brief, available at EDIS Doc. ID 784957
RRB	Respondents' responsive post-hearing brief, available at EDIS Doc. ID 787563
RRCCB	Respondents' responsive claim construction brief, available at EDIS Doc. ID 777838
RX	Respondents' exhibit
Tr.	Transcript

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(March 24, 2023)

Pursuant to the Notice of Investigation, 87 Fed. Reg. 13311 (March 9, 2022) ("Notice of Investigation"), and 19 C.F.R. §§ 210.10(b), 210.42(a)(1)(i), this is the final initial determination in the matter of *Certain Wet Dry Surface Cleaning Devices*, Investigation No. 337-TA-1304.

For the reasons stated herein, I have determined that no violation of section 337 of the Tariff Act of 1930, as amended, has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain wet dry surface cleaning devices alleged to infringe certain claims of U.S. Patent No. 11,122,949 ("the '949 patent"); U.S. Patent No. 10,820,769 ("the '769 patent"); and U.S. Patent No. 11,096,541 ("the '541 patent"). I have determined that a violation of section 337 of the Tariff Act of 1930, as amended, has occurred in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain wet dry surface cleaning devices alleged to infringe certain claims of U.S. Patent No. 11,076,735 ("the '735 patent") and U.S. Patent No. 11,071,428 ("the '428 patent").

I. INTRODUCTION

A. Procedural History

On February 2, 2022, BISSELL Inc. and BISSELL Homecare, Inc. (collectively, "Complainants" or "BISSELL") filed a complaint alleging violations of section 337 based on the importation into the United States, the sale for importation, and the sale within the United States after importation of certain wet dry surface cleaning devices by reason of infringement of certain claims of the '949 patent, the '769 patent, the '541 patent, the '735 patent, and the '428 patent. Notice of Investigation at 13311. Letters supplementing the complaint were filed on February 4, 2022, and February 22, 2022. *Id.*

On March 9, 2022, the Commission instituted Investigation No. 337-TA-1304 to determine:

> [W]hether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain products identified in paragraph (2) by reason of infringement of one or more of claims 1-3, 5, 6, 11, and 13-18 of the '735 patent; claims 1, 2, 5, 10-13, and 15 of the '428 patent; claims 1, 2, 5-7, 11, 14, 15, and 17-20 of the '949 patent; claims 1, 2, 4, 5, 9, 12, 13, 15, 16, and 20 of the '541 patent; and claims 1, 4-7, 10, and 13-16 of the '769 patent, and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

Notice of Investigation at 13312.

The plain language description of the accused products or category of accused products, which defines the scope of the investigation, is "Tineco's wet dry surface cleaning devices." *Id.*; *see also* 19 C.F.R. § 210.10(b)(1) ("The notice will define the scope of the investigation in such plain language as to make explicit what accused products or category of accused products provided in accordance with § 210.12(a)(12) will be the subject of the investigation[.]").

The Notice of Investigation named the following parties as respondents: Tineco Intelligent Technology Co., Ltd.; TEK (Hong Kong) Science & Technology Ltd.; and Tineco Intelligent, Inc. (collectively, "Respondents" or "Tineco"). Notice of Investigation at 13312.

The Office of Unfair Import Investigations is not a party to this investigation. *Id.*

On March 23, 2022, I set a 16-month target date of July 3, 2023, for this investigation. Order No. 5 (Mar. 23, 2022). On March 1, 2023, I determined to extend the target date for this investigation by three weeks to July 24, 2023, which makes this final initial determination due no later than March 24, 2023. Order No. 18 (Mar. 1, 2023).

In accordance with the procedural schedule issued as Order No. 6 and amended by Order No. 7, the parties submitted a joint chart of proposed claim constructions on July 8, 2022. *See* EDIS Doc. ID 774956. The parties submitted opening claim construction briefs on July 22, 2022, and responsive claim construction briefs on August 12, 2022. *See* Order No. 6 at 2. A claim construction hearing was convened on August 26, 2022.[1]

On August 31, 2022, the parties filed a joint stipulation regarding importation and inventory. *See* EDIS Doc. ID 779197. The parties supplemented the importation and inventory stipulation on December 4, 2022. *See* CX-1035.

On November 10, 2022, the parties filed a joint stipulation regarding representative accused products and alleged domestic industry products. *See* EDIS Doc. ID 784297. The parties supplemented the representative products stipulation on December 4, 2022. *See* CX-1036C.

[1] The transcript of the *Markman* claim construction hearing is available at EDIS Doc. ID 778992 [hereinafter "*Markman* Tr."].

I held a final prehearing conference and convened the evidentiary hearing on December 5, 2022.[2] The evidentiary hearing concluded on December 9, 2022.[3]

B. The Parties

1. Complainant BISSELL

BISSELL is a family-owned vacuum cleaner and home care product manufacturing company that was founded in Michigan in 1876. Tr. (Bissell) 28:19-29:12; *see* EDIS Doc. ID 762170 (Cekander Decl.) at ¶ 3. BISSELL Inc. and BISSELL Homecare, Inc.—the two complainants in this investigation—both have a principal place of business in Grand Rapids, Michigan, close to where BISSELL was originally founded. *See* EDIS Doc. ID 762229 (Complaint) at ¶¶ 15-16; Tr. (Bissell) at 29:20-22. BISSELL has about ten other facilities located throughout the United States. Tr. (Bissell) at 30:8-16. In total, there are nearly a thousand people that work for BISSELL in the United States. *Id.* at 30:15-18; EDIS Doc. ID 762170 (Cekander Decl.) ¶ 4. Together, that team helped to make BISSELL the number one supplier of floor care products in North America in terms of sales volume. EDIS Doc. ID 762170 (Cekander Decl.) ¶¶ 3-4.

2. Respondent Tineco

Tineco is a brand or business unit that is owned by Ecovacs Robotics, a Chinese public company whose primary business is to design, manufacture, and sell home service robotics, and

[2] The public transcript of the final prehearing conference is available at EDIS Doc. ID 785761. The confidential transcript of the final prehearing conference is available at EDIS Doc. ID 785760. These transcripts are hereinafter collectively referred to as the "Prehearing Conf. Tr."

[3] The confidential transcript of the evidentiary hearing is available at EDIS Doc. IDs 785762 (Day 1), 785848 (Day 2), 785934 (Day 3), 786016 (Day 4), 786242 (Day 5). The public transcript of the evidentiary hearing is available at EDIS Doc. IDs 785764 (Day 1), 785851 (Day 2), 785935 (Day 3), 786017 (Day 4), 786244 (Day 5). These transcripts are hereinafter collectively referred to as "Tr."

smart home appliances globally. Tr. (Ma) at 467:23-468:2, 471:9-13. When Ecovacs was founded in 1998, its primary business was to design and manufacture floor care products for other companies. *Id.* at 468:3-18. Around the end of the 2000s, however, Ecovacs began selling its own products to consumers under a brand called TEK. *Id.* at 472:10-14. The TEK brand is a predecessor to the Tineco brand, which was introduced around 2018. *Id.* At the beginning, Tineco focused on floor care products, but the scope of its product offerings has expanded since then. *Id.* at 472:2-6, 472:15-18.

Respondent Tineco Intelligent Technology Co., Ltd., is a legal entity in China that is "100 percent owned by Ecovacs Robotics." *Id.* at 471:14-20. Tineco Intelligent Technology Co., Ltd., holds TEK (Hong Kong) Science & Technology Ltd., which in turn holds Tineco Intelligent, Inc. *Id.* 476:24-477:6; 471:21-25. Tineco Intelligent, Inc., which is Tineco's U.S. operation, is located in Seattle, Washington. *Id.* at 471:21-25.

C. The Asserted Patents

BISSELL asserts the following five patents in this investigation:

U.S. Patent No.	Asserted Claims	Issued	Exhibit No.	Parties' Nomenclature
11,122,949	7, 19	Sep. 21, 2021	JX-0008	"Foot Architecture Patents" or "Xia Patents"
11,096,541	1, 13	Aug. 24, 2021	JX-0009	
10,820,769	1, 4	Nov. 3, 2020	JX-0010	
11,076,735	1, 13, 15	Aug. 3, 2021	JX-0006	"Self-Clean Patents" or "Resch Patents"
11,071,428	1	Jul. 27, 2021	JX-0007	

CIB at 3, 40; CDX-0005C[4] at 6; CDX-0007 at 19.

All five asserted patents are titled "Surface Cleaning Apparatus"; however, in their presentation of evidence and argument, the parties divided the patents into two different groups. As indicated in the above table, the parties refer to the first group—the '949 patent, the '541 patent, and the '769 patent—as the "foot architecture patents" or the "Xia patents." *See, e.g.*, CIB at 3; RRB at 4, 30, 35. The parties refer to the second group—the '735 patent and the '428 patent—as the "self-clean patents" or the "Resch patents." *See, e.g.*, CIB at 40; RRB at 37, 72. The "Xia" and "Resch" nomenclature used by Tineco appears to be derived from the first named inventor of each respective group of patents. *See* JX-0006 ('735 patent) at cover; JX-0007 ('428 patent) at cover; JX-0008 ('949 patent) at cover; JX-0009 ('541 patent) at cover; JX-0010 ('769 patent) at cover; Tr. at 14:24-15-5. The "foot architecture" and "self-clean" nomenclature used by BISSELL appears to be derived from features recited in the patent claims. *See, e.g.*, Tr. at 6:2-5, 74:10-15, 230:24-231:5. The "foot" of a vacuum is the bottom part of the machine that rests on the floor. Tr. (Singhose) at 74:10-15. According to BISSELL's expert, "the focus of a lot" of the limitations in the Xia patents "are on aspects of the foot, what's going -- what's going on on the bottom part" of the machine. *Id.* Another BISSELL expert testified that the Resch patents teach four key aspects about surface cleaning devices; all four aspects appear to have at least some relation to the device's ability to clean itself. Tr. (Sorenson) at 228:14-231:5.

In this initial determination, I use the term "Xia patents" to refer to the '949, '541, and '769 patents and the term "Resch patents" to refer to the '735 and '428 patents.

[4] In its initial post-hearing brief, BISSELL refers to the "CDX-0005C" demonstrative as "CDX-0005." *See, e.g.*, CIB at 4. Because the parties' joint list of final exhibits (EDIS Doc. ID 786916) includes the "C" at the end of the exhibit number, this initial determination refers to the demonstrative as "CDX-0005C."

1. The ’949 Patent Asserted Claims

BISSELL asserts dependent claims 7 and 19 of the ’949 patent. CIB at 3. Claim 7 depends from claim 1. Claim 19 depends from claim 18. The elements of the ’949 patent asserted claims are reproduced below:

’949 Patent Claim Element[5]	Claim Language
1[preamble]	A surface cleaning apparatus, comprising:
1[a]	a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;
1[b]	an agitator provided with the base;
1[c]	a suction source;
1[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source, the suction nozzle assembly include a nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator; and
1[e]	a fluid delivery system provided on the housing, the fluid delivery system, comprising:
1[f]	a fluid supply chamber adapted to hold a supply of liquid;
1[g]	a fluid dispenser provided with the suction nozzle assembly, the fluid dispenser in fluid communication with the fluid supply chamber, the fluid dispenser including at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly, the at least one outlet adapted to dispense fluid onto at least one of the agitator or a surface to be cleaned;
1[h]	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and

[5] This initial determination utilizes the same claim limitation labels that BISSELL used in its initial post-hearing brief for each of the asserted patents. *See* CIB at xi-xviii.

1[i]	at least one fluid delivery channel located within the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.
7	The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator.
18[preamble]	A surface cleaning apparatus, comprising:
18[a]	a housing including an upright handle assembly and a base mounted to the upright handle assembly;
18[b]	an agitator provided with the base;
18[c]	a suction source;
18[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source; and
18[e]	a fluid delivery system provided with the housing, the fluid delivery system comprising:
18[f]	a fluid supply chamber provided on the upright handle assembly and adapted to hold a supply of liquid;
18[g]	a fluid dispenser provided on the base, the fluid dispenser in fluid communication with the fluid supply chamber, wherein the fluid dispenser includes at least one outlet oriented to dispense fluid directly onto the agitator, which transfers fluid to a surface to be cleaned;
18[h]	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and
18[i]	at least one fluid delivery channel provided with the base or the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.
19	The surface cleaning apparatus of claim 18 wherein the suction nozzle assembly comprises a brush chamber at least partially housing the agitator and the agitator includes at least one brushroll rotatably mounted therein.

2. The ’541 Patent Asserted Claims

BISSELL asserts claims 1 and 13 of the ’541 patent. CIB at 3. Claim 1 is an independent claim. Claim 13 depends from claim 12, which in turn depends from claim 11, and claim 11 in turn depends from claim 1. The elements of the ’541 patent asserted claims are reproduced below:

’541 Patent Claim Element	Claim Language
1[preamble]	A surface cleaning apparatus, comprising:
1[a]	a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;
1[b]	an agitator mounted within the base;
1[c]	a suction source;
1[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source;
1[e]	a fluid delivery system provided on the housing and comprising:
1[f]	a fluid supply chamber adapted to hold a supply of liquid;
1[g]	a fluid dispenser provided on the base in fluid communication with the fluid supply chamber; and
1[h]	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and
1[i]	a dual wiper configuration provided with the base and comprising a first wiper adapted to contact the agitator and a second wiper at least selectively adapted to contact a surface to be cleaned.
11	The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator.
12	The surface cleaning apparatus of claim 11, further comprising at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel provided on the suction nozzle assembly.

13	The surface cleaning apparatus of claim 12 wherein the at least a portion of the at least one fluid delivery channel is an integrated fluid delivery channel forming a portion of the fluid delivery pathway.

3. The ’769 Patent Asserted Claims

BISSELL asserts claims 1 and 4 of the ’769 patent. CIB at 3. Claim 1 is an independent claim. Claim 4 depends from claim 1. The elements of the ’769 patent asserted claims are reproduced below:

’769 Patent Claim Element[6]	**Claim Language**
1[preamble]	A surface cleaning apparatus, comprising:
1[a]	a housing including an upright handle assembly and a base mounted to the upright handle assembly and adapted for movement across a surface to be cleaned,
1[b]	wherein the base comprises a brush chamber and at least one brushroll mounted therein;
1[c]	a suction source;
1[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source;
1[e]	a fluid delivery system comprising:
1[f]	a fluid supply chamber provided on the upright handle assembly and adapted to hold a supply of liquid;
1[g]	a fluid dispenser provided on the base in fluid communication with the fluid supply chamber, wherein the fluid dispenser is configured to dispense fluid onto the at least one brushroll;
1[h]	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and

[6] BISSELL and Tineco used different labels for the ’769 patent claim limitations. *Compare* CIB at xviii n.6 *with* RRB at 35 n.12. As noted above, this initial determination utilizes the claim limitation labels that BISSELL used in its opening post-hearing brief.

1[i]	at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel extending adjacent to a portion of the suction nozzle assembly; and
1[j]	an interference wiper provided on the base and adapted to interface with a portion of the at least one brushroll to remove excess liquid from the at least one brushroll.
4	The surface cleaning apparatus of claim 1, wherein the fluid dispenser is mounted to the suction nozzle assembly and oriented to deliver fluid substantially horizontally.

4. The ’735 Patent Asserted Claims

BISSELL asserts claims 1, 13, and 15 of the ’735 patent. CIB at 40. Claims 1 and 13 are independent claims. Claim 15 depends from claim 14. The elements of the asserted claims are reproduced below:

’735 Patent Claim Element	**Claim Language**
1[preamble]	A floor cleaning system, comprising:
1[a]	a surface cleaning apparatus comprising:
1[b]	an upright body comprising a handle and a frame;
1[c]	a base coupled with the upright body and adapted for movement across a surface to be cleaned;
1[d]	a moveable joint assembly mounting the base to the upright body, wherein the upright body is pivotable via the joint assembly between an upright storage position and a reclined use position;
1[e]	a fluid delivery system comprising a supply tank removable from the frame, a pump, and a fluid distributor;
1[f]	a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor;
1[g]	a brushroll within the recovery pathway of the recovery system;

1[h]	a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;
1[i]	a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;
1[j]	a user interface disposed on the handle, the user interface comprising a power button and a cleaning mode button;
1[k]	a self-cleaning mode input control disposed on the upright body and configured to initiate an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the power button and the cleaning mode button; and
1[l]	a controller controlling the operation of the fluid delivery and recovery systems, and operably coupled with the self-cleaning mode input control;
1[m]	a storage tray configured to dock the surface cleaning apparatus in the upright storage position for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus, the storage tray comprising at least one charging contact, a power cord, and a wall charger configured to be plugged into a household outlet;
1[n]	the surface cleaning apparatus comprises at least one corresponding charging contact configured to couple with the at least one charging contact of the storage tray when the surface cleaning apparatus is docked with the storage tray;
1[o]	wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the self-cleaning mode is operable only when the surface cleaning apparatus is docked on the storage tray; and
1[p]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.
13[preamble]	A floor cleaning system, comprising:
13[a]	a surface cleaning apparatus comprising:

13[b]	a fluid delivery system comprising a supply tank, a pump, and a fluid distributor;
13[c]	a recovery system comprising a recovery pathway, a recovery tank and a vacuum motor;
13[d]	an upright body comprising a handle, the supply tank and the recovery tank;
13[e]	a base coupled with the upright body and adapted for movement across a surface to be cleaned, the base comprising the fluid distributor, a brushroll, a brushroll motor operably coupled to the brushroll for rotating the brushroll, and a suction nozzle configured to extract fluid and debris from the brushroll;
13[f]	a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;
13[g]	a user interface disposed on the handle, the user interface comprising a power button disposed on a forward side of the handle and a cleaning mode button disposed on a forward side of the handle adjacent to the power button;
13[h]	a self-cleaning mode input control on the upright body which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the user interface; and
13[i]	a controller controlling the operation of the fluid delivery and recovery systems;
13[j]	a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;
13[k]	wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the controller is configured to lock-out the automatic cleanout cycle when the surface cleaning apparatus is not docked with the storage tray and prevent initiation of the automatic cleanout cycle; and
13[l]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.

14	The floor cleaning system of claim 13, wherein the controller is configured to activate the pump and the brushroll motor during the unattended automatic cleanout cycle, whereby the pump draws cleaning fluid from the supply tank, the fluid distributor sprays cleaning fluid, and the brushroll motor rotates the brushroll.
15	The floor cleaning system of claim 14, wherein the controller is configured to activate the vacuum motor after the pump and the brushroll motor during the unattended automatic cleanout cycle, and the vacuum motor extracts cleaning fluid from the storage tray for collection in the recovery tank.

5. The ’428 Patent Asserted Claims

BISSELL asserts claim 1 of the ’428 patent. CIB at 40. Claim 1 recites the following elements:

’428 Patent Claim Element	**Claim Language**
1[preamble]	A floor cleaning system, comprising:
1[a]	a surface cleaning apparatus comprising:
1[b]	a fluid delivery system comprising a supply tank, a pump, and a fluid distributor;
1[c]	a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor;
1[d]	a brushroll within the recovery pathway of the recovery system;
1[e]	a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;
1[f]	a rechargeable battery selectively powering the pump, the brushroll motor, and the vacuum motor;
1[g]	a battery charging circuit controlling the recharging of the rechargeable battery;

1[h]	a self-cleaning mode input control which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized; and
1[i]	a controller controlling the operation of the fluid delivery and recovery systems and configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control; and
1[j]	a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;
1[k]	wherein, to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation, the controller is configured to:
1[l]	power the brushroll motor and the pump by the battery, whereby cleaning liquid is sprayed on the brushroll while the brushroll rotates, without the vacuum motor being powered; and
1[m]	power the vacuum motor by the battery after the brushroll motor and the pump are powered, whereby cleaning liquid is extracted and deposited into the recovery tank and a portion of the recovery pathway is flushed out; and
1[n]	wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.

6. Abandoned Claims

In its initial post-hearing brief, BISSELL did not present any contentions regarding several claims that were within the scope of the investigation set by the Notice of Investigation, 87 Fed. Reg. 13311. By failing to include any contention regarding those claims in its initial post-hearing brief, BISSELL abandoned any contentions based on those claims. *See* Order No. 2 (Ground Rules) at 26 ("Any contentions for which a party has the burden of proof that are not set forth in detail in the post-hearing initial brief shall be deemed abandoned or withdrawn."). The table below summarizes the claims that BISSELL abandoned:

Patent No.	Claims in the Notice of Investigation	Claims Argued in BISSELL's Initial Post-Hearing Brief	Abandoned Claims
'949 patent	1, 2, 5-7, 11, 14, 15, and 17-20	7 and 19	1, 2, 5, 6, 11, 14, 15, 17, 18, 20
'541 patent	1, 2, 4, 5, 9, 12, 13, 15, 16, and 20	1 and 13	2, 4, 5, 9, 12, 15, 16, 20
'769 patent	1, 4-7, 10, and 13-16	1 and 4	5-7, 10, 13-16
'735 patent	1-3, 5, 6, 11, and 13-18	1, 13, and 15	2, 3, 5, 6, 11, 14, 16-18
'428 patent	1, 2, 5, 10-13, and 15	1	2, 5, 10-13, 15

D. The Accused Products

The accused products are "Tineco's wet dry surface cleaning devices." Notice of Investigation at 13312. BISSELL asserts that the following Tineco products infringe the Xia patents:

	Tineco's Products		
	Tineco iFloor	**Tineco Floor One S3**	**Tineco Floor One S5 Pro**
Representative Product	• Tineco iFloor (Model Nos. CL1762B-01; CL1762U-04; CL1762U-01; CL1762U-09)	• Tineco Floor One S3 (Model No. CL1879B-01)	• Tineco Floor One S5 Pro (Model No. CL2019A-01)
Additional Accused Products (represented by the Representative Product above)	• Tineco iFloor Complete (Model No. CL1762U-06)	• Tineco iFloor Breeze (Model No. CL2011A-01) • Tineco iFloor 3 (Model No. CL1879D-01)	• Tineco Floor One S5 (Model No. CL2019E-01) • Tineco Floor One S5 Extreme (Model No. CL2019E-03)

		• Tineco iFloor 3 Complete (Model No. CL1879D-03) • Tineco iFloor 3 Ultra (Model No. CL1879D-05) • Tineco iFloor 3 Plus (Model No. CL1879D-06) • Tineco iFloor 3 Breeze (Model No. CL2011A-01) • Tineco iFloor 3 Breeze Complete (Model No. CL2011A-02) • Tineco Floor One S3 Extreme (Model No. CL1879B-06) • Tineco Floor One S3 + Pure One Mini S4 (Model No. CL1879B-05) • Tineco iFloor 2 (Model No. CL2041-01) • Tineco iFloor 2 Complete (Model No. CL2041-06) • Tineco iFloor 2 Plus (Model No. CL2041-05) • Tineco Floor One S3 Breeze (Model No. CL2011F-01) • Tineco Floor One S2 (Model No. CL2011E-01)	• Tineco Floor One S5 Blue (Model No. CL2019E-04) • Tineco Floor One S5 Combo (Model No. CL2020F-01) • Tineco Floor One S5 Steam (Model No. CL2029E-01) • Tineco Floor One S5 Pro 2 (Model No. CL2019A-03) • Tineco Floor One S5 Combo Power Kit (Model No. 2020F-04) • Tineco Floor One S7 Pro (Model No. CL2123B-01)

CX-1036C; CIB at 3, 40 n.4; RRB at 1 n.1. As indicated in the above table, the parties stipulated with respect to the Xia patents that certain accused products are representative of other accused products. CX-1036C at 2-4. This initial determination refers to the products in the above table as the "Xia accused products."

BISSELL asserts that the following Tineco products infringe the Resch patents:

	Tineco's Products	
	Tineco Floor One S3	**Tineco Floor One S5 Pro**
Representative Product	• Tineco Floor One S3 (Model No. CL1879B-01)	• Tineco Floor One S5 Pro (Model No. CL2019A-01)
Additional Accused Products (represented by the Representative Product above)	• Tineco iFloor 3 (Model No. CL1879D-01) • Tineco iFloor 3 Complete (Model No. CL1879D-03) • Tineco iFloor 3 Ultra (Model No. CL1879D-05) • Tineco iFloor 3 Plus (Model No. CL1879D-06) • Tineco Floor One S3 Extreme (Model No. CL1879B-06) • Tineco Floor One S3 + Pure One Mini S4 (Model No. CL1879B-05) • Tineco Floor One S5 (Model No. CL2019E-01) • Tineco Floor One S5 Extreme (Model No. CL2019E-03) • Tineco Floor One S5 Blue (Model No. CL2019E-04) • Tineco Floor One S5 Combo (Model No. CL2020F-01)	• Tineco Floor One S5 Pro 2 (Model No. CL2019A-03)

	• Tineco Floor One S5 Combo Power Kit (Model No. CL2020F-04) • Tineco Floor One S7 Pro (Model No. CL2123B-01)	

CX-1036C; CIB at 3, 40 n.4; RRB at 1 n.1. As indicated in the above table, the parties stipulated with respect to the Resch patents that certain accused products are representative of other accused products. CX-1036C at 4-5. This initial determination refers to the products in the above table as the "Resch accused products."

Shortly after the institution of this investigation, Tineco redesigned the Resch accused products. RPB at 2, 21.[7] The redesign altered the products' source code so that the battery would charge at two separate times during what Tineco refers to as the "self-clean cycle" for those products. *Id.*; *see also* CPB at 44-45. This initial determination refers to the version of the products from before the redesign as the "original" version and refers to the subsequent version as the "redesigned" version.

This initial determination refers to the Xia and Resch accused products collectively as the accused products.

E. The Domestic Industry Products

With respect to the Xia patents, BISSELL asserts that the following BISSELL products satisfy the technical prong of the domestic industry requirement:

[7] The parties' stipulated that the "pre-redesigned versions of the Representative Products are representative of pre-redesigned versions of the represented products, and the redesigned versions of the Representative Products are representative of the redesigned versions of the represented products." CX-1036C at 4 n.1.

	BISSELL's Products	
Representative Domestic Industry Product	• BISSELL CrossWave Cordless Max (CrossWave 3.0)	• BISSELL CrossWave X7 Cordless Pet Pro (CrossWave 4.0)
Additional Domestic Industry Products (represented by the Representative Domestic Industry Product above)	• BISSELL CrossWave Pet Pro (CrossWave 2.0) • BISSELL CrossWave Cordless (CrossWave 2.5) • BISSELL CrossWave Commercial/Sanitaire HydroClean (Sanitaire HydroClean)	• [redacted]

CX-1036C at 3-4. As indicated in the above table, the parties stipulated with respect to the Xia patents that certain domestic industry products are representative of other domestic industry products. This initial determination refers to the products in the above table as the "Xia domestic industry products."

With respect to the Resch patents, BISSELL asserts that the following BISSELL products satisfy the technical prong of the domestic industry requirement:

	BISSELL's Products
Domestic Industry Products	• BISSELL CrossWave X7 Cordless Pet Pro (CrossWave 4.0) • BISSELL CrossWave Cordless Max (CrossWave 3.0)

CX-1036C at 4 n.2. This initial determination refers to the products in the above table as the "Resch domestic industry products."

This initial determination refers to the Xia and Resch domestic industry products collectively as the domestic industry products.

II. JURISDICTION & IMPORTATION

A. Personal Jurisdiction

No party has contested personal jurisdiction. *See generally* CIB; RRB. By filing a complaint and participating in this investigation, BISSELL has consented to personal jurisdiction at the Commission. *See, e.g., Certain Pocket Lighters*, 337-TA-1142, Initial Determination at 12 (Feb. 12, 2020) (EDIS Doc. ID 706458) (Public Version), *unreviewed in relevant part*, Comm'n Notice, 85 Fed. Reg. 23528 (Apr. 28, 2020) (EDIS Doc. ID 709087). Likewise, Tineco has consented to personal jurisdiction by participating in this investigation. *See id.* I therefore find that the Commission has personal jurisdiction over all parties.

B. Importation

To prove a violation of section 337, the complainant must show that a respondent engaged in "[t]he importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or consignee" of products accused of infringement. 19 U.S.C. §§ 1337(a)(1)(A)-(B). BISSELL and Tineco stipulated that the accused products are manufactured outside the United States and that Tineco "has imported, sold for importation, and/or sold after importation into the United States within the meaning of 19 U.S.C. § 1337(a)(1)(B) at least one unit of each" accused product. CX-1035 ¶ 4; *see also* CIB at 3. BISSELL and Tineco also stipulated that "Tineco does not and will not dispute that the importation requirement, as set forth in 19 U.S.C. § 1337(a)(1)(B), is satisfied for this Investigation with respect to" the accused products. CX-1035 ¶ 4; *see also* CIB at 3.

In view of these stipulations, I find that the importation requirement of section 337 is satisfied for the accused products.

C. *In Rem* Jurisdiction

As noted, the parties have stipulated that Tineco "has imported, sold for importation, and/or sold after importation into the United States . . . at least one unit of each" accused product. CX-1035 ¶ 4. The parties also stipulated that "Tineco maintains inventory of the Imported Products in the United States." *Id.* ¶ 6. Neither party disputes the Commission's *in rem* jurisdiction over the imported accused products. I find that the Commission has *in rem* jurisdiction over the accused products in this investigation that have been imported into the United States. *See Sealed Air Corp. v. Int'l Trade Comm'n*, 645 F.2d 976, 985-86 (C.C.P.A. 1981) (noting the Commission has jurisdiction over imported goods).

D. Standing

The unrebutted evidence of record demonstrates that BISSELL Inc. owns all the asserted patents. *See, e.g.*, JX-0006 ('735 patent) at cover; JX-0007 ('428 patent) at cover; JX-0008 ('949 patent) at cover; JX-0009 ('541 patent) at cover; JX-0010 ('769 patent) at cover.

III. LEGAL PRINCIPLES

A. Claim Construction

"An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*) (cleaned up), *aff'd*, 517 U.S. 370 (1996). Claim construction resolves legal disputes between the parties regarding claim scope. *See Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016).

Evidence intrinsic to the application, prosecution, and issuance of a patent is the most significant source of the legally operative meaning of disputed claim language. *See Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The

intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *See Phillips v. AWH Corp*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (*en banc*); *see also Markman*, 52 F.3d at 979. As the Federal Circuit explained in *Phillips*, courts analyze each of these components to determine the "ordinary and customary meaning of a claim term" as understood by a person of ordinary skill in the art at the time of the invention. 415 F.3d at 1313.

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). "[T]he claims themselves provide substantial guidance as to the meaning of particular claim terms." *Id.* at 1314; *see Interactive Gift Express, Inc. v. CompuServe Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001) ("In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to particularly point out and distinctly claim the subject matter which the patentee regards as his invention." (cleaned up)). The context in which a term is used in an asserted claim can be "highly instructive." *Phillips*, 415 F.3d at 1314. Additionally, other claims in the same patent, asserted or unasserted, may also provide guidance as to the meaning of a claim term. *Id.*

The specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Id.* at 1316. "In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor." *Id*. As a general rule, however, the particular examples or embodiments

discussed in the specification are not to be read into the claims as limitations. *Id.* at 1323. In the end, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be . . . the correct construction." *Id.* at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

B. Infringement

In a section 337 investigation, the complainant bears the burden of proving infringement of the asserted patent claims by a preponderance of the evidence. *See Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1349 (Fed. Cir. 2010). This standard "requires proving that infringement was more likely than not to have occurred." *Warner-Lambert Co. v. Teva Pharm. USA, Inc*., 418 F.3d 1326, 1341 n.15 (Fed. Cir. 2005).

"[W]hoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent." 35 U.S.C. § 271(a). "Literal infringement requires the patentee to prove that the accused device contains each limitation of the asserted claim(s). If any claim limitation is absent from the accused device, there is no literal infringement as a matter of law." *Bayer AG v. Elan Pharm. Research Corp*., 212 F.3d 1241, 1247 (Fed. Cir. 2000) (cleaned up). Literal infringement is a question of fact. *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008).

In certain limited circumstances, infringement may be found under the "doctrine of equivalents," even though there is no literal infringement. "[A] patentee may invoke this doctrine to proceed against the producer of a device if it performs substantially the same function in substantially the same way to obtain the same result." *Graver Tank & Mfg. Co. v. Linde Air Prod. Co.*, 339 U.S. 605, 608 (1950) (cleaned up). The theory behind the doctrine of equivalents "is that

if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form or shape." *Id.* (cleaned up).

C. Validity

A patent is presumed valid. *See* 35 U.S.C. § 282; *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 95 (2011). A respondent who has raised patent invalidity as an affirmative defense has the burden of overcoming this presumption by clear and convincing evidence. *See Microsoft*, 564 U.S. at 95.

Under 35 U.S.C. § 102, a claim is anticipated, and therefore invalid, when "the four corners of a single, prior art document describe every element of the claimed invention, either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation." *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000).

Under 35 U.S.C. § 103, a patent may be found invalid as obvious if "the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains." 35 U.S.C. § 103. Because obviousness is determined at the time of invention, rather than the date of litigation, "[t]he great challenge of the obviousness judgment is proceeding without any hint of hindsight." *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co*., 655 F.3d 1364, 1375 (Fed. Cir. 2011).

When a patent is challenged as obvious, the critical inquiry in determining the differences between the claimed invention and the prior art is whether there is an apparent reason to combine the known elements in the fashion claimed by the patent at issue. *See KSR Int'l Co. v. Teleflex, Inc*., 550 U.S. 398, 417-18 (2007). Thus, based on a combination of several prior art references,

"the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007) (cleaned up).

Obviousness is a determination of law based on underlying determinations of fact. *Star Scientific*, 655 F.3d at 1374. The factual determinations behind a finding of obviousness include: (1) the scope and content of the prior art, (2) the level of ordinary skill in the prior art, (3) the differences between the claimed invention and the prior art, and (4) secondary considerations of non-obviousness. *KSR*, 550 U.S. at 399 (citing *Graham v. John Deere Co*., 383 U.S. 1, 17-18 (1966)). These factual determinations are referred to collectively as the "*Graham* factors." Secondary considerations of non-obviousness include commercial success, long felt but unresolved need, and the failure of others. *Id.* When present, secondary considerations "give light to the circumstances surrounding the origin of the subject matter sought to be patented," but they are not dispositive on the issue of obviousness. *Geo. M. Martin Co. v. Alliance Mach. Sys. Int'l*, 618 F.3d 1294, 1304-06 (Fed. Cir. 2010). For evidence of secondary considerations to be given substantial weight in the obviousness determination, its proponent must establish a nexus between the evidence and the merits of the claimed invention. *See W. Union Co. v. MoneyGram Payment Sys. Inc.*, 626 F.3d 1361, 1372–73 (Fed. Cir. 2010) (citing *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995)).

D. Domestic Industry

For a patent-based complaint, a violation of section 337 can be found "only if an industry in the United States, relating to the articles protected by the patent . . . concerned, exists or is in

the process of being established." 19 U.S.C. § 1337(a)(2). The complainant bears the burden of showing by a preponderance of the evidence that the domestic industry requirement is satisfied. *Certain Multimedia Display & Navigation Devices & Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-694, Comm'n Op. at 5 (August 8, 2011). That domestic industry requirement of section 337 is often described as having an economic prong and a technical prong. *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 707 F.3d 1295, 1298 (Fed. Cir. 2013).

Section 337(a)(3) sets forth the following economic criteria for determining whether the economic prong of the domestic industry requirement is satisfied in such investigations:

> [A]n industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned --
>
> (A) significant investment in plant and equipment;
>
> (B) significant employment of labor or capital; or
>
> (C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3). Because these criteria are listed in the disjunctive, satisfaction of any one of them will be sufficient to meet the economic prong of the domestic industry requirement. *See Certain Printing & Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 26, USITC Pub. No. 4289 (Nov. 2011).

The technical prong of the domestic industry requirement is satisfied when the complainant in a patent-based section 337 investigation establishes that it is practicing or exploiting the patents at issue. *See* 19 U.S.C. § 1337(a)(2)-(3); *Certain Microsphere Adhesives, Process for Making Same & Prods. Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. at 8 (Jan. 16, 1996). "The test for satisfying the 'technical prong' of the industry requirement is essentially [the] same as that for infringement, i.e., a comparison of

domestic products to the asserted claims." *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). To prevail, the patentee must establish by a preponderance of the evidence that the domestic product practices one or more claims of the patent. *See Certain Male Prophylactic Devices*, Inv. No. 337-TA-546, Comm'n Op. at 38 (Aug. 1, 2007).

IV. CLAIM CONSTRUCTION

The parties identified the following disputes about the meaning of six claim terms:

Term	Complainants' Proposed Constructions	Respondents' Proposed Constructions
"agitator" '949 Patent (claims 1 & 18), '541 Patent (claim 1)	"a device for agitating cleaning fluid on a surface"	"a brushroll with bristles that agitates the surface to be cleaned"
"fluid delivery channel" '949 Patent (claims 1 & 18), '541Patent (claims 12 & 13), '769 Patent (claims 1)	No construction required.	"a structure, formed by mating the nozzle cover and nozzle housing, through which cleaning fluid flows"
"at least selectively adapted to contact" '541 Patent (claim 1)	No construction required.	"adapted for choosing between contacting and not contacting"
"recovery pathway" '735 Patent (claims 1 & 13), '428 Patent (claim 1)	No construction required.	"the path downstream of the suction nozzle through which fluid and debris are recovered"
"configured to extract fluid and debris from the brushroll" '735 Patent (claims 1 & 13), '428 Patent (claim 1)	No construction required.	"designed to extract fluid and debris from the brushroll"
"upright storage position" '735 Patent (claim 1)	No construction required.	"stored in a vertical position, perpendicular to the floor" In the alternative: Indefinite

EDIS Doc. ID 774956 at 1-2.

The meaning of four of those claim terms is no longer in dispute. In their opening claim construction briefs, the parties stated that they had resolved their disputes regarding the "agitator" and "recovery pathway" terms and that no construction of those terms is necessary. *See* COCCB at 1 n.1 ("[T]he parties have conferred and resolved disputes regarding the 'agitator' and 'recovery pathway' terms, so those terms are not addressed here."); ROCCB at 1 n.1 ("The parties have since agreed that no construction is necessary for the 'agitator' and 'recovery pathway' terms, leaving four terms in dispute.").

At the *Markman* hearing, both parties agreed that the term "configured to extract fluid and debris from the brushroll" means "the components are arranged to extract fluid and debris from the brushroll." *Markman* Tr. at 78:14-80:3.

At the final prehearing conference, both sides agreed that for purposes of this investigation, the term "selectively adapted to contact"[8] means "configured to contact in response to a selection." *See* Prehearing Conf. Tr. at 27:10-23; *see also* Order No. 17 at 7.

At the *Markman* hearing, I tentatively rejected Respondents' proposed constructions for the remaining two disputed claim terms—i.e., the "fluid delivery channel" and "upright storage position" terms—and ruled that no additional construction of those terms was required. *Markman* Tr. at 106:4-6, 16-18. I now reaffirm those rulings for the reasons discussed below.

A. Level of Ordinary Skill in the Art

A person of ordinary skill in the art is a hypothetical person who is presumed to be aware of all pertinent prior art. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1992). Determining the appropriate level of skill for this hypothetical person can involve

[8] Although the "parties' joint disclosure of proposed claim constructions (EDIS No. 774956) listed this claim term as '*at least* selectively adapted to contact'" the parties subsequently "agreed to remove 'at least' from the disputed term." COCCB at 7 n.2.

consideration of the types of problems encountered in the art, prior art solutions to those problems, rapidity with which innovations are made, sophistication of the technology at issue, the educational level of active workers in the field, and the level of education of the inventors themselves. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007).

Tineco contends that a person of ordinary skill in the art for both the Xia and Resch Patents "would have possessed at least a bachelor's degree in engineering or a similar discipline with at least three years of industry experience in the research, development and/or manufacture of mechanical products, and that a person could have also qualified as a [person of ordinary skill in the art] if s/he had some combination of (1) more formal education (*i.e.*, an advanced degree in engineering or a similar discipline) and less industry experience, or (2) less formal education and more industry experience." RIB at 2 (citing Tr. (Conley) at 707:10-20; Tr. (Smith) 847:8:8-15).

In its post-hearing briefs, BISSELL does not dispute Tineco's definition of a person of ordinary skill in the art. *See generally* CIB; CRB.[9] Neither party has argued that the level of ordinary skill in the art is material to claim construction or any other dispute raised in this investigation. *See, e.g.*, *Markman* Tr. at 18:14-19:8.

To the extent a finding is necessary, I find that the record supports Tineco's contention regarding the level of skill that a person of ordinary skill in the art would have. *See* Tr. (Conley) at 707:10-20; Tr. (Smith) 847:8:8-15.

B. "fluid delivery channel"

Tineco contends that the term "fluid delivery channel," as used in the claims, requires a channel that is constructed in a particular way—namely, by the mating of a nozzle cover and nozzle

[9] During the claim construction proceedings, BISSELL proposed a slightly different definition of the person of ordinary skill in the art than Tineco's definition. COCCB at 2. But BISSELL did not maintain that contention in its post-hearing briefs.

housing. *See, e.g.*, ROCCB at 4-11; RRCCB at 2-6. Complainants disagree. COCCB at 3-6; CRCCB at 1-6.

The intrinsic record does not support Tineco's position. First, nothing about the word "channel"[10] requires that the "channel" be formed by mating two components together.

The rest of the intrinsic record confirms that importing such a requirement would be improper. Although the specification discloses that it is possible to form a fluid delivery channel by mating a nozzle housing and nozzle cover, it also explains that this is just "one example" of a fluid delivery channel. JX-0008 ('949 patent) at 8:37-49. Elsewhere, when discussing the benefits of "integrated fluid delivery channels," the specification suggests that non-integrated fluid delivery channels are not necessarily formed by mating a nozzle housing and nozzle cover. JX-0010 ('769 patent) at 3:4-9. Instead, non-integrated fluid delivery channels can be formed with "tubing, fittings, and clamps." *Id.*[11]

The prosecution history of a related patent, U.S. Patent No. 10,092,155 ("the '155 patent"), likewise confirms that it would be improper to limit the phrase "fluid delivery channel" to fluid delivery channels formed by the mating of a nozzle housing and nozzle cover. During the

[10] Respondents conceded at the *Markman* hearing that there is no dispute about the meaning of the words "fluid" or "delivery." *Markman* Tr. at 28:9-29:11. Instead, the parties' dispute stems from the word "channel." *Id.*

[11] Respondents argued for the first time at the *Markman* hearing that because the specification of one of the Xia patents refers to "integrated fluid delivery channels" as an "aspect of the present invention," other types of fluid delivery channels cannot be covered by the claims. *Markman* Tr. at 23:5-12, 25:10-15. This argument is not supported. The specification uses the terms "aspect" and "embodiment" interchangeably. *See* JX-0010 ('769 patent) at 2:55-65 ("According to one embodiment of the invention . . . . According to another aspect of the invention . . . ."). While a patentee may describe different embodiments of an invention, they are not required to include each embodiment in every claim. Even if mating a nozzle housing and nozzle cover is one way of forming a fluid delivery channel, the parties have not cited anything in any of the Xia patents that indicates that a fluid delivery channel, integrated or not, must be formed in such a way.

prosecution of the application leading to the '155 patent, BISSELL indicated to the U.S. Patent and Trademark Office (Patent Office) that a fluid delivery channel could be formed by tubing as opposed to being formed by the mating of nozzle housing and nozzle cover. ROCCB, Ex. 7 ('155 Prosecution History, Applicant remarks USPTO mailroom date January 18, 2018) at 8 ("The *fluid delivery channel* 251 cited in the Office Action *is formed by tubing*." (emphasis added)). Further, the rejected claim that BISSELL was arguing about at that point in the prosecution specifically recited "at least one fluid delivery channel forming a portion of the fluid delivery pathway, *the at least one fluid delivery channel being formed between the nozzle housing and the cover*." *Id.* at 2, 7-8 (emphasis added). The fact that BISSELL specifically included the requirement that the fluid delivery channel be formed between the nozzle housing and cover in that rejected claim but failed to include that requirement in the claims asserted in this investigation further suggests that the asserted claims have no such requirement.[12]

For the reasons discussed above, I determine that the term "fluid delivery channel" does not require "a structure, formed by mating the nozzle cover and nozzle housing, through which cleaning fluid flows" as Tineco proposes. Because the parties have not articulated any other dispute regarding the term, I determine that no additional construction is required and that the term will be accorded its plain and ordinary meaning. *See ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1326 (Fed. Cir. 2012) ("The district court did not err in concluding

[12] Respondents argue that the prosecution history of another related patent, U.S. Patent No. 11,096,539 ("the '539 patent") is also instructive. *See* ROCCB at 10-11. I disagree. In the portion of the prosecution history that Respondents reference, BISSELL was distinguishing between its proposed claims for the '539 patent, which included a requirement that the fluid delivery channel be "integrated," and a prior art reference that allegedly did not have an "integrated" channel. ROCCB, Ex. 8 ('539 Prosecution History, Applicant remarks USPTO mailroom date April 27, 2021) at 9. BISSELL's statements about whether the prior art met the claim term "integrated" are immaterial to the present dispute about the claim term "channel" in the Xia patents.

that these terms have plain meanings that do not require additional construction. ActiveVideo's proposed construction erroneously reads limitations into the claims and the district court properly rejected that construction and resolved the dispute between the parties.").

C. "upright storage position"

Tineco contends that the term "upright storage position," as used in the asserted claims, means "stored in a vertical position, perpendicular to the floor." ROCCB at 19. From its presentation of the issue, it is clear that Tineco is using the words "vertical" and "perpendicular" to mean a device that is stored at a perfect ninety-degree angle with the floor. *See, e.g.*, *id.* at 20 ("The specification's description that pivoting the surface cleaning apparatus from the storage position to a reclined position having an angle of less than 90 degrees, means that the storage position itself cannot be less than 90 degrees. Rather, it must be perpendicular to the floor (*i.e.*, 90 degrees)."). In the alternative, Tineco contends that if the term does not require a perfect right angle, then the term is indefinite because the term "upright storage position" would then overlap with another claim term, the "reclined use position," rendering it impossible to tell which is which. *Id.* at 21-23 ("If, as Complainants appear to contend, the 'upright storage position' includes an 'acute angle with the surface to be cleaned,' then the patents would provide no criteria to determine with reasonable certainty what surface cleaning apparatuses are in an 'upright storage position' as opposed to a 'reclined use position.'").

Tineco's proposed construction is unduly limiting, and Tineco's indefiniteness contention is not supported by clear and convincing evidence. First, Tineco's contention that "upright" requires a perfect right angle to the floor is contrary to the intrinsic record. In the specification, the patentee uses the words "upright" and "substantially upright" interchangeably. *See* JX-0006 ('735 Patent) at 6:53-59 ("The upright body 12 can pivot, via the joint assembly 42, to an upright

or storage position, an example of which is shown in FIG. 1**,** in which the upright body 12 is oriented substantially upright relative to the surface to be cleaned . . .”). That strongly suggests that the claim term “upright storage position” includes devices that are “substantially upright” (i.e., there is some permissible deviation from perfectly perpendicular). *See, e.g.*, *Aventis Pharms. Inc. v. Amino Chemicals Ltd.*, 715 F.3d 1363, 1377 (Fed. Cir. 2013) (“this court has interpreted ‘substantially’ as a non-specific term of approximation that avoids a numerical boundary”); *Liquid Dynamics Corp. v. Vaughan Co.*, 355 F.3d 1361, 1368 (Fed. Cir. 2004) (“The term ‘substantial’ is a meaningful modifier implying ‘approximate,’ rather than ‘perfect.’”).

The specification also describes a device with the handle at a slightly acute angle, pictured below, as being in the “upright or storage position,” further confirming that a perfect right angle is not required by the term “upright storage position”:

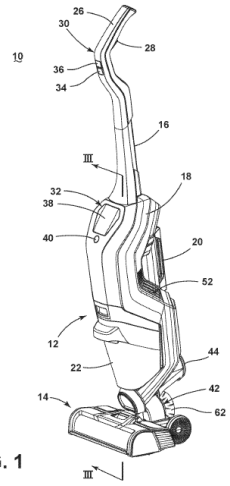


FIG. 1

JX-0006 (’735 patent) at Fig 1, 6:53-55 (“The upright body **12** can pivot, via the joint assembly **42**, to an upright or storage position, an example of which is shown in FIG. 1[.]”). Tineco’s proposed construction improperly contradicts and excludes that disclosed embodiment. *See Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1333 (Fed. Cir. 2013) (“This court has clarified

that an interpretation which excludes a disclosed embodiment from the scope of the claim is rarely, if ever, correct." (cleaned up)).

Other courts, when confronted with similar records, have also concluded that claim terms such as "upright," "vertical," and "orthogonal" allow for some deviation from ninety-degrees. *See Malibu Boats, LLC v. Nautique Boat Co.*, 122 F. Supp. 3d 722, 736-37 (E.D. Tenn. 2015); *Regalo Int'l, LLC v. Munchkin, Inc.*, No. CV 15-1103-LPS, 2016 WL 7107229, at *2-3 (D. Del. Dec. 6, 2016); *Denneroll Holdings Pty Ltd. v. Chirodesign Grp., LLC*, No. 4:15-CV-740, 2016 WL 705207, at *3-4 (S.D. Tex. Feb. 23, 2016).

In sum, the record does not support Respondents' contention that the term "upright storage position" means "stored in a vertical position, perpendicular to the floor."

Respondents' alternative contention that the term renders the claims indefinite is not persuasive. The Federal Circuit has repeatedly confirmed that patent claims are not required to recite terms with absolute numerical precision as long as the terms inform a person of ordinary skill in the art of the scope of the invention with reasonable certainty. *One-E-Way, Inc. v. Int'l Trade Comm'n*, 859 F.3d 1059, 1063 (Fed. Cir. 2017) ("The Supreme Court articulated the test for indefiniteness as requiring that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. This test mandates clarity, while recognizing that absolute precision is unattainable." (cleaned up)); *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1359 (Fed. Cir. 2012) ("This court has repeatedly confirmed that relative terms such as 'substantially' do not render patent claims so unclear as to prevent a person of skill in the art from ascertaining the scope of the claim."); *Mentor Graphics Corp. v. EVE-USA, Inc.*, 851 F.3d 1275, 1290 (Fed. Cir. 2017) ("Definiteness requires clarity, though absolute precision is unattainable." (cleaned up)).

Even Tineco does not appear to contend that the term "upright storage position" would be indefinite due solely to the fact that it incorporates some degree of approximation. *See* ROCCB a 21-23. Instead, the thrust of Tineco's argument is that absent a requirement that upright means ninety degrees, there would be a zone of uncertainty where it would not be clear to a skilled artisan whether the device was in the "upright" or "reclined" positions recited in the claims. *See id.*

Tineco's argument does not convincingly persuade a conclusion that the term is indefinite. First, Tineco's indefiniteness argument appears to be based on an incorrect assumption that the "reclined use position" covers use at any angle under ninety degrees. *See, e.g.*, ROCCB at 20, 22. Tineco's assumption is based on a passage from the specification that states "that the surface cleaning apparatus pivots from the storage position to the 'reclined or use position,' which forms 'an acute angle with the surface to be cleaned.'" ROCCB at 20 (quoting JX-0006 ('735 patent) at 6:63-67). If the "upright storage position" could also be less than ninety degrees, according to Tineco, a single position might be both "upright" and "reclined," which would not make sense. *Id.*

But Tineco conceded at the *Markman* hearing that the claim term "upright storage position" does not "mean that the storage position can have no degree of recline. It just means that the storage position can be transition to another position that is reclined." *Markman* Tr. at 90:10-15. Consequently, an "upright storage position" could be slightly acute (e.g., at 89.99 degrees) and a "reclined use position" could be one at an even smaller acute angle than that of the upright storage position (e.g., 70 degrees).

Tineco also appears to contend that the patents provide no objective boundary for determining what is an "upright storage position" if that term is not limited to ninety degrees. ROCCB, Ex. 22 (Hirleman Decl.) ¶ 35. That contention is not persuasive. The word "upright" is

a commonly understood word, and there is no evidence that its meaning would be confusing to a person of ordinary skill in the art. To the contrary, "the relevant vacuum and surface cleaning device industry has an entire class of cleaning devices known as 'upright' vacuums/devices that are hallmarked by their ability to recline when in use and maintain an upright/freestanding position when not in use." CRCCB, Ex. 7 (Sorensen Decl.) ¶ 62.

Having reviewed Tineco's arguments and the records intrinsic to the relevant patents, I determine that Tineco has not met its burden to demonstrate that a person of ordinary skill in the art would fail to understand the scope of the term "upright storage position" with reasonable certainty. *See Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014) ("[W]e hold that a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."). The term will be accorded its plain and ordinary meaning.

V. INFRINGEMENT

A. The Xia Patents

1. The '949 Patent

BISSELL asserts that the Xia accused products infringe claims 7 and 19 of the '949 patent. CIB at 3-26. Tineco contends that BISSELL failed to prove by a preponderance of the evidence that the Xia accused products infringe several limitations in the asserted claims. RRB at 4-29. As explained in more detail below, I find that the Xia accused products do not infringe claim 7 or 19 of the '949 patent because BISSELL did not prove by a preponderance of the evidence that the products practice limitations 1[d] and 18[d] of the asserted claims.

a) Claim 7

i) 1[Preamble]—"A surface cleaning apparatus, comprising:"

Claim 1 is not asserted. However, claim 7, which is asserted, depends from claim 1.

No party has argued that the preamble of claim 1 is limiting. BISSELL nonetheless contends that the Xia accused products are surface cleaning apparatuses. *See, e.g.*, CIB at 5 (collecting evidence); Tr. (Singhose) at 91:7-18. Tineco does not dispute that the accused products satisfy limitation 1[preamble]. *See* RRB at 4-29. I find that each of the accused products practice the preamble of claim 1, regardless of whether the preamble is limiting.

ii) 1[a]—"a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;"

BISSELL contends that the Xia accused products include a housing including an upright handle assembly and a base operably coupled to the upright handle assembly. *See* CIB at 6 (collecting evidence); Tr. (Singhose) at 91:19-92:17; CDX-0005C at 27. Tineco does not dispute that the Xia accused products satisfy limitation 1[a]. *See* RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice limitation 1[a].

iii) 1[b]—"an agitator provided with the base;"

BISSELL contends that the Xia accused products contain an agitator provided with the base. *See* CIB at 6 (collecting evidence); Tr. (Singhose) at 94:2-9; CDX-0005C at 30. Tineco does not dispute that the Xia accused products satisfy limitation 1[b]. *See* RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice limitation 1[b].

iv) 1[c]—"a suction source;"

BISSELL contends that the Xia accused products contain a suction source. *See* CIB at 6 (collecting evidence); Tr. (Singhose) at 94:10-15; CDX-0005C at 31. Tineco does not dispute that

the Xia accused products satisfy limitation 1[c]. *See* RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice limitation 1[c].

v) 1[d]—"a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source, the suction nozzle assembly include a nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator; and"

BISSELL contends that the Xia accused products contain a suctional nozzle assembly "provided on the base, defining a suction nozzle that is in fluid communication with the suction source." CIB at 6-24. Tineco does not specifically address whether the iFloor device satisfies limitation 1[d]. *See, e.g.*, RRB at 4 (referring to the "S3 and S5 Pro" but not that iFloor). But Tineco contends that the S3 and S5 Pro do not meet limitation 1[d]. RRB at 4-28. I find that BISSELL failed to prove by a preponderance of the evidence that the Xia accused products practice limitation 1[d].

Tineco contends that there are two independent reasons why limitation 1[d] is not met. First, Tineco contends that BISSELL has not shown a suction nozzle assembly that is "provided on the base" of the device. RRB at 4. Second, Tineco contends that BISSELL has not shown a suction nozzle that is in fluid communication with the suction source. *Id.*

The record supports at least Tineco's first contention that BISSELL failed to show a suction nozzle assembly that is "provided on the base." BISSELL contends that the claimed "suctional nozzle assembly" includes several different components in the accused devices. *See, e.g.*, CIB at 10, 12-15. The parties agree that one of those components, a "V-shaped" piece, is a part of the

"base" of the S3 and S5 Pro devices. *See* RRB at 14; CIB at 12-14.[13] Tineco contends that because the alleged "suction nozzle assembly" includes the base, the assembly is not "provided on the base." *See, e.g.*, RRB at 11-14. Tineco, in other words, contends that the suction nozzle assembly must be "separate and distinct" from the base. RRB at 10.

BISSELL, on the other hand, presented expert testimony that "the plain and ordinary meaning of [suction nozzle assembly] and base does not require that two claimed elements comprise physically-separate components in a product." CIB at 14 (citing Tr. (Singhose) at 154:11-20).[14] In BISSELL's view, the "patents' specification contemplates just such an embodiment." *Id.* at 14; *see also id.* at 6-9. BISSELL thus maintains that the alleged suction nozzle assembly can simultaneously be a part of the base and be provided on the base.

BISSELL's contentions are not persuasive in view of the present record. A patentee may separately list two elements in a claim because they are "separate and distinct" components. *See, e.g.*, *Kyocera Senco Indus. Tools Inc. v. Int'l Trade Comm'n*, 22 F.4th 1369, 1382 (Fed. Cir. 2022) ("The 'safety contact element' and 'exit end of the mechanism' are distinct components. The asserted claims list those elements separately . . . . There is, therefore, a presumption that those components are distinct."); *Wi-LAN Inc. v. Sharp Elecs. Corp.*, 992 F.3d 1366, 1378 (Fed. Cir. 2021) (affirming district court's construction of the term "a multimedia processor, coupled to the

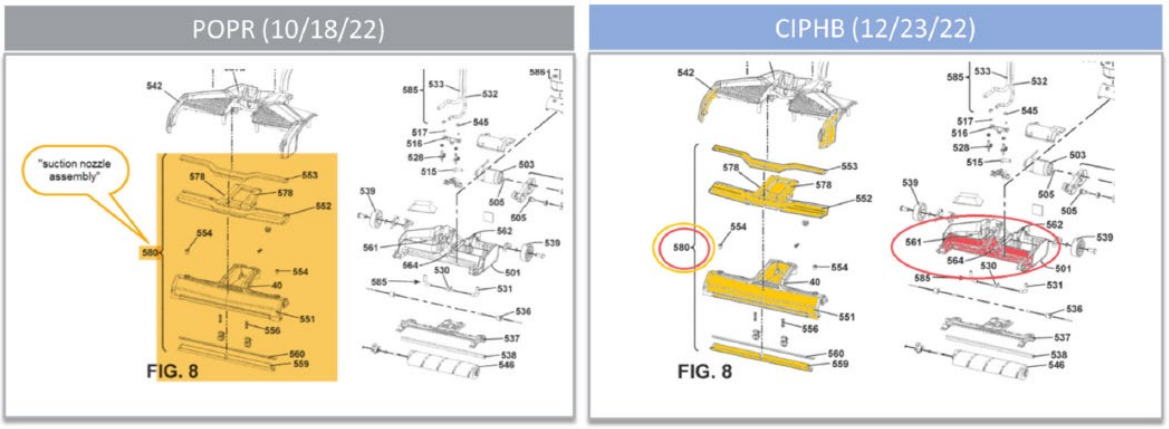
[13] Although the parties agree that the v-shaped part of the S3 and S5 Pro is part of the base, they provide little guidance regarding whether the similar v-shaped part of the iFloor is part of that device's base. I visually inspected all three devices and cannot discern a material difference regarding the v-shaped portions. *Compare* CPX-0004 (Tineco S3) *and* CPX-0005 (Tineco S5 Pro) *with* CPX-0003 (Tineco iFloor). I therefore conclude that the v-shaped portion of the iFloor is also part of the base.

[14] Neither party contends that their dispute regarding the suction nozzle assembly term in limitation 1[d] should be resolved as a matter of claim construction. *See* EDIS Doc. ID 774956 (Joint Disclosure of Proposed Claim Constructions).

data rate analyzer" to mean "a multimedia processor connected to the data rate analyzer, where the multimedia processor is separate from, and not a sub-component of, the data rate analyzer"); *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) ("Where a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention." (cleaned up)); *HTC Corp. v. Cellular Commc'ns Equip., LLC*, 701 F. App'x 978, 982 (Fed. Cir. 2017) ("The separate naming of two structures in the claim strongly implies that the named entities are not one and the same structure.").

The present record indicates that BISSELL, the patentee in this investigation, did just that when it wrote limitation 1[d]. Contrary to the representations that BISSELL has made to the Commission in this investigation, BISSELL previously told the United States Patent and Trademark Office during an *inter partes* review proceeding that the claimed suction nozzle assembly is separate and distinct from the base. *See* RX-0149 (BISSELL's Patent Owner Preliminary Response) at 0149.0008 ("Consistent with the language of the challenged claims, the novel 'suction nozzle assembly' is a distinct component, separate from the 'base,' 'agitator,' and other parts of the cleaning apparatus.").

Comparing BISSELL's initial post-hearing brief to the brief that BISSELL filed at the Patent Office shows the important difference between positions that BISSELL has taken in each forum:



RRB at 8 (reproducing RX-0149 at 0149.0009 and CIB at 7). BISSELL told the Patent Office that the components highlighted in the left picture are a suction nozzle assembly. RX-0149 at 0149.0008-09. But BISSELL now argues to the Commission that the components highlighted in both yellow *and* red in the right picture are a suction nozzle assembly. CIB at 7. As evident from the comparison, BISSELL's characterization of the suction nozzle assembly now includes the portion highlighted in red, which is part of the base.

BISSELL argues that the red portion is part of the suction assembly based on the following description from the specification:

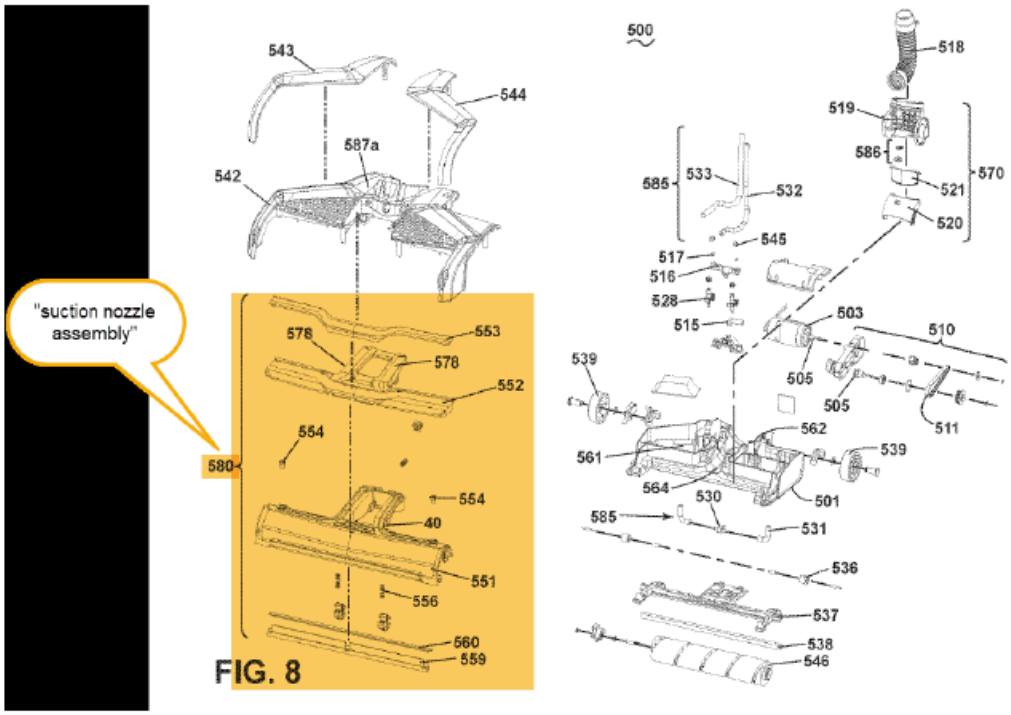
> A central lower portion of the partially enclosed cavity **561** and a rearward lower portion of suction nozzle assembly **580** can be molded to form a foot conduit **564** of the fluid recovery pathway that is fluidly connected to the flexible conduit **518**. Flexible conduit **518** fluidly connects dirty tank assembly **400** (FIG. **2**) to suction nozzle assembly **580**.

JX-0008 ('949 Patent) at 9:23-28

CIB at 7 (reproducing CDX-0005C at 33) ("The exemplary 'suction nozzle assembly' described in the Foot Architecture Patents includes both the nozzle housing/cover (shown in gold) and *the rearward lower portion adjacent the suction conduit* (shown in red)." (emphasis added)). Contrary to BISSELL's assertion, the cited portion of the specification does not refer to the base as part of

the suction nozzle assembly. Instead, it simply states that the suction nozzle assembly 580 can be molded such that when the suction nozzle assembly is attached to the base, a conduit is formed.

BISSELL's representations to the Patent Office are more consistent with the specification than are BISSELL's representations to the Commission. As the Patent Office explained in its institution decision in the *inter partes* review proceeding, the specification describes the suction nozzle, which is labeled 580, as the following highlighted components:



SharkNinja Operating LLC, v. BISSELL Inc., IPR2022-01176, Paper No. 12 at 3-4 (P.T.A.B. Jan. 13, 2023), *available* at EDIS Doc. 788388, Ex. A. The suction nozzle assembly 580 can be attached to the base via a latch 587 such that the suction nozzle assembly is "provided on" the base. *See, e.g.*, JX-0009 ('541 patent) at Fig. 14. BISSELL illustrated that to the Patent Office with the following annotated figure:

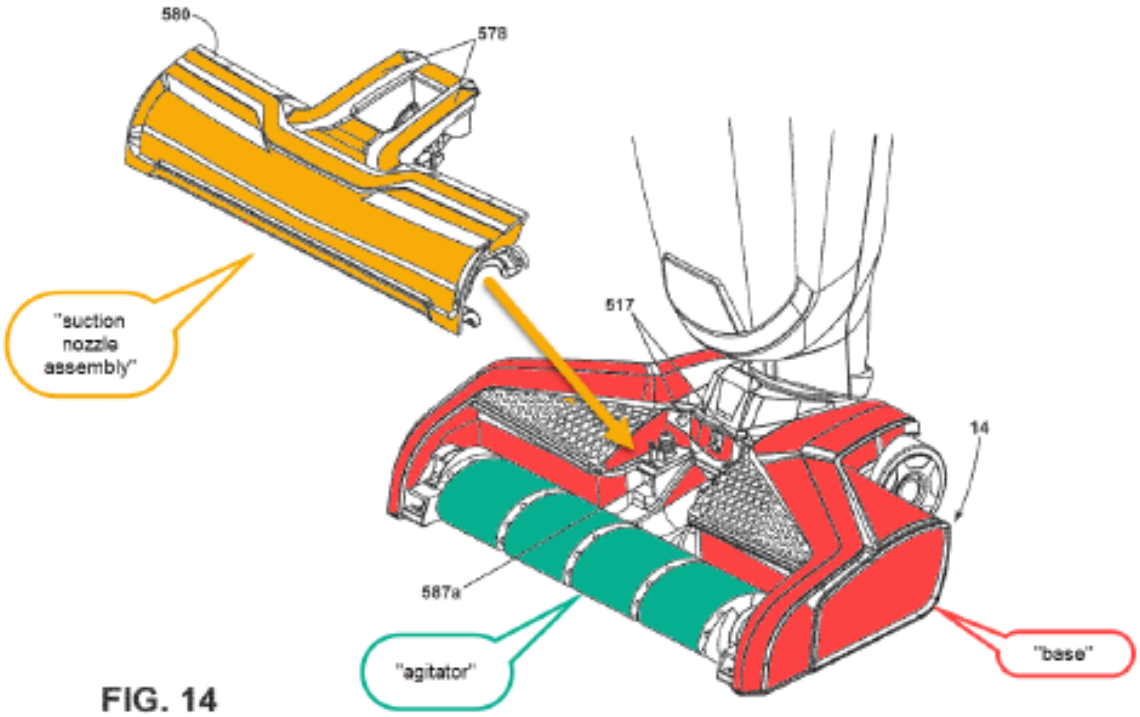


FIG. 14

RX-0149 at 0149.0015 (annotating Figure 14 of the '541 patent); *see also* CIB at 8; JX-0009 ('541 patent) at Fig. 16B (indicating where suction nozzle assembly 580 can be inserted). None of the specification citations that the parties provided to the Commission (CIB at 6-9; RRB at 4-10) describe the suction nozzle assembly and the base as overlapping or the same.

In view of the foregoing record and my observations at the evidentiary hearing, I do not find the testimony of BISSELL's expert that the Xia accused products satisfy the "provided on" aspect of limitation 1[d] credible or persuasive. *See, e.g.*, Tr. (Singhose) 154:11-20. Considering the foregoing evidence and the record as a whole, I find that BISSELL has not demonstrated that the Xia accused products practice limitation 1[d] because BISSELL has not shown a "suction nozzle assembly" that is "provided on the base."

The parties devoted significant attention at trial and in their briefs to the question of whether the S3 and S5 Pro accused products have a "suction nozzle in fluid communication with

the suction source" as required by limitation 1[d]. But because BISSELL has not shown that the suction assembly nozzle assembly is "provided on the base," as also required by limitation 1[d], BISSELL has not demonstrated satisfaction of that limitation, regardless of whether Tineco is correct about a lack of "fluid communication with the suction source." JX-0008 ('949 patent) at cl. 1; *see also* RRB at 4, 14-29.[15] In the interest of completeness, I address the fluid communication issue.

I find that BISSELL has not shown by a preponderance of the evidence that the alleged suction nozzle in the S3 and S5 Pro is in fluid communication with the suction source as required by limitation 1[d]. BISSELL contends that there is suction above the entire length of the metal blade in the S3 and S5 Pro and that the suction nozzle is therefore in fluid communication with the suction source. *See* CIB at 15-24. But none of the testing evidence presented by the parties showed suction above the middle part of the metal blade in the S3 and S5 Pro. *See* CIB at 15-20; RRB at 19-28. The only test that BISSELL's expert, Dr. Singhose, performed in that region was done on the iFloor product. *See* CDX-0005 at 39; Tr. (Singhose) 107:25-109:15. There is no record evidence to suggest that the same test was performed the S3 and S5 Pro. Moreover, a visual inspection of the physical devices shows that the iFloor's structure is significantly different than the structures of the S3 and S5 Pro in the pertinent area. In view of this record, I find that BISSELL has not shown that there is suction above the middle part of the metal blade in the S3 and S5. BISSELL also failed to explain how the alleged suction nozzle in the S3 and S5 pro could be in fluid communication with the suction source if there was not suction above a portion of the metal

[15] The parties agree that the suction nozzle in the iFloor is in fluid communication with the suction source. *See, e.g.*, RRB at 17; CIB at 20-21.

blade in those devices. I therefore find for this additional reason that BISSELL failed to carry its burden of demonstrating that the S3 and S5 Pro infringe limitation 1[d].

vi) 1[e]—"a fluid delivery system provided on the housing, the fluid delivery system, comprising:"

BISSELL contends that the Xia accused products contain fluid delivery system in accordance with limitation 1[e]. CIB at 24 (collecting evidence); Tr. (Singhose) at 111:24-112:9; CDX-0005C at 41. Tineco does not dispute that the Xia accused products satisfy limitation 1[e]. *See* RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice limitation 1[e].

vii) 1[f]—"a fluid supply chamber adapted to hold a supply of liquid;"

BISSELL contends that the Xia accused products contain a fluid supply chamber in accordance with limitation 1[f]. CIB at 24-25 (collecting evidence); Tr. (Singhose) at 112:10-18; CDX-0005C at 42. Tineco does not dispute that the Xia accused products satisfy limitation 1[f]. *See* RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice limitation 1[f].

viii) 1[g]—"a fluid dispenser provided with the suction nozzle assembly, the fluid dispenser in fluid communication with the fluid supply chamber, the fluid dispenser including at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly, the at least one outlet adapted to dispense fluid onto at least one of the agitator or a surface to be cleaned;"

BISSELL contends that the Xia accused products "contain a fluid dispenser in fluid communication with the supply chamber, the dispenser including an outlet that dispenses fluid onto the brushroll, as required by" limitation 1[g]. CIB at 25 (collecting evidence); Tr. (Singhose) at 114:1-115:3. Tineco does not dispute that the Xia accused products satisfy limitation 1[g]. *See*

RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice limitation 1[g].

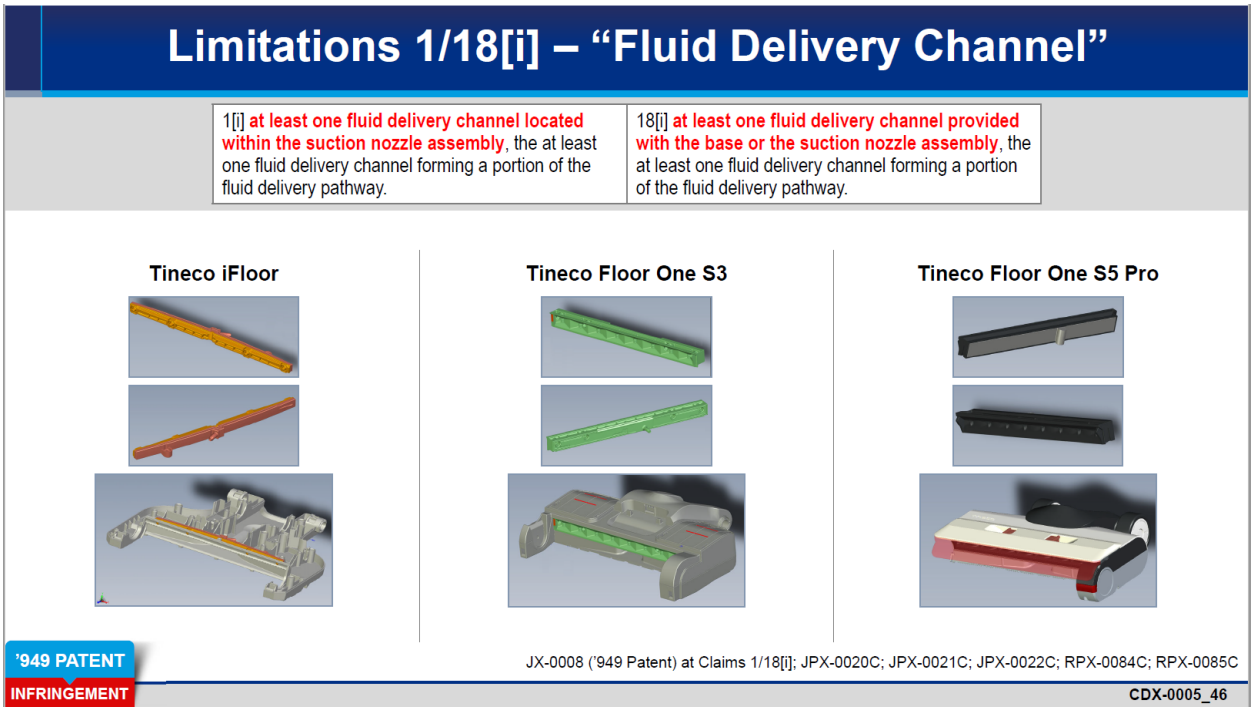
ix) 1[h]—"a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and"

BISSELL contends that the Xia accused products contain a fluid delivery pathway in accordance with limitation 1[h]. CIB at 25 (collecting evidence); Tr. (Singhose) at 115:4-12. Tineco does not dispute that the Xia accused products satisfy limitation 1[h]. *See* RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice limitation 1[h].

x) 1[i]—" at least one fluid delivery channel located within the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway."

BISSELL contends that the Xia accused products contain a fluid delivery channel in accordance with limitation 1[i]. CIB at 25-26 (collecting evidence); Tr. (Singhose) at 115:13-117:12; CDX-0005C at 46-47. Tineco contends that "Complainants have not met their burden of proving that the Xia Accused Products have a '"fluid delivery channel."' RRB at 28-29. According to Tineco, BISSELL "did not point to any particular structure as the alleged claimed [fluid delivery channel]." *Id.* at 28. Tineco also states that BISSELL "provided no evidence showing that the Xia Accused Products have a [fluid delivery channel] 'located within' the [suction nozzle assembly] as required by claim 1." *Id.* at 29.

Considering the record as a whole, I find that the Xia accused products practice limitation 1[i]. At the evidentiary hearing, BISSELL's expert, Dr. Singhose, testified that the Xia accused products had a channel at the end of the fluid delivery pathway of the iFloor, S3, and S5 Pro that diverted fluid laterally so that the fluid could be sprayed evenly across the entire length of the brushroll:



CDX-0005C at 46; *see also* Tr. (Singhose) 115:13-117:12. I find those channels are within the portion of the devices that BISSELL alleges is the suction nozzle assembly.[16]

In view of the foregoing evidence and considering the record as a whole, I find that that the Xia accused products practice limitation 1[i].

xi) 7—"The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator."

BISSELL contends that the Xia accused products practice the additional limitation of claim 7 of the '949 patent. CIB at 5 (collecting evidence); Tr. (Singhose) at 117:13-118:21. Tineco does

[16] Tineco appears to acknowledge that the alleged channels are within the portion of the devices that BISSELL claims is the suction nozzle assembly. RRB at 28-29 ("Complainants highlighted the fluid distributor . . . which they also claim to be part of the [suction nozzle assembly]"). I therefore interpret Tineco's argument that the fluid delivery channel is not "located within the suction nozzle assembly" as a reiteration of Tineco's argument that there is not a suction nozzle assembly that meets all the requirements of limitation 1[d]. While the record supports Tineco's contention regarding limitation 1[d], *see* Section V.A.1.a.v., I do not see any independent problems with respect to limitation 1[i]'s requirement that the fluid delivery channel be "located within the suction nozzle assembly."

not dispute that the Xia accused products satisfy the additional limitation of claim 7. *See* RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice the additional limitation of claim 7.

xii) Conclusion Regarding Claim 7 of the '949 Patent

Because BISSELL has not shown the presence of limitation 1[d] in the Xia accused products, and because claim 7 depends from claim 1, I find that the Xia accused products do not infringe claim 7 of the '949 patent. *See Dunbar v. Myers*, 94 U.S. 187, 202 (1876) ("[I]t is settled law, that, where the respondent in constructing his machine omits one of the ingredients of the complainant's combination, he does not infringe the complainant's patent.").

b) Claim 19

In their briefs, the parties argued that many of the limitations of the asserted patents were met or not met for the same reasons that they argued that parallel limitations in other claims were met are not met. I have included tables below that compare the different limitations that were argued together.

i) 18[Preamble]—"A surface cleaning apparatus, comprising:"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[preamble]	A surface cleaning apparatus, comprising:	**18[preamble]**	A surface cleaning apparatus, comprising:

Claim 18 is not asserted. But claim 19, which is asserted, depends from claim 18.

No party has argued that the preamble of claim 18 is limiting. BISSELL nonetheless contends that the Xia accused products practice limitation 18[preamble] for the same reasons it argues that they practice limitation 1[preamble] of claim 1. CIB at 5; Tr. (Singhose) at 91:7-18.

Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 29. As indicated by the above table, limitation 1[preamble] is the same as limitation 18[preamble]. Considering the record as a whole, I find that the Xia accused products practice the preamble of claim 18, regardless of whether the preamble is limiting.

ii) 18[a]—"a housing including an upright handle assembly and a base mounted to the upright handle assembly;"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[a]	a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;	**18[a]**	a housing including an upright handle assembly and a base mounted to the upright handle assembly;

BISSELL contends that the Xia accused products practice limitation 18[a] for the same reasons that BISSELL argues that the products practice limitation 1[a]. CIB at 6; Tr. (Singhose) at 91:19-92:17. Tineco does not dispute that the Xia accused products satisfy limitation 18[a]. *See* RRB at 29. The above table indicates the overlap between limitation 1[a] and 18[a]. Considering the record as a whole, I find that the Xia accused products practice limitation 18[a].

iii) 18[b]—"an agitator provided with the base;"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[b]	an agitator provided with the base;	**18[b]**	an agitator provided with the base;

BISSELL contends that the Xia accused products practice limitation 18[b] for the same reasons that BISSELL argues that the products practice limitation 1[b]. CIB at 6; Tr. (Singhose) at 94:2-9. Tineco does not dispute that the Xia accused products satisfy limitation 18[b]. *See* RRB

at 29. As indicated by the above table, limitation 18[b] is the same as limitation 1[b]. Considering the record as a whole, I find that the Xia accused products practice limitation 18[b].

iv) 18[c]—"a suction source;"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[c]	a suction source;	**18[c]**	a suction source;

BISSELL contends that the Xia accused products practice limitation 18[c] for the same reasons that BISSELL argues that the products practice limitation 1[c]. CIB at 6; Tr. (Singhose) at 94:10-15. Tineco does not dispute that the Xia accused products satisfy limitation 18[c]. *See* RRB at 29. As indicated by the above table, limitation 18[c] is the same as limitation 1[c]. Considering the record as a whole, I find that the Xia accused products practice limitation 18[c].

v) 18[d]—"a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source; and"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source, the suction nozzle assembly include a nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator; and	**18[d]**	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source; and

BISSELL contends that the Xia accused products practice limitation 18[d] for the same reasons it argues that the products practice limitation 1[d]. CIB at 6-24. Tineco contends that "[f]or the reasons explained in limitation 1[d], Complainants have not met their burden" of showing limitation 18[d]. RRB at 29.

For the reasons explained with respect to limitation 1[d], *see* Section V.A.1.a.v., *supra*, I find that BISSELL has not demonstrated that the Xia accused products practice limitation 18[d].

vi) 18[e]—"a fluid delivery system provided with the housing, the fluid delivery system comprising:"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[e]	a fluid delivery system provided on the housing, the fluid delivery system, comprising:	**18[e]**	a fluid delivery system provided with the housing, the fluid delivery system comprising:

BISSELL contends that the Xia accused products practice limitation 18[e] for the same reasons it argues that they practice limitation 1[e]. CIB at 24; Tr. (Singhose) at 111:24-112:9. Tineco does not dispute that the Xia accused products satisfy limitation 18[e]. *See* RRB at 29. The above table indicates the overlap between limitation 18[e] and limitation 1[e]. Considering the record as a whole, I find that the Xia accused products practice limitation 18[e].

vii) 18[f]—"a fluid supply chamber provided on the upright handle assembly and adapted to hold a supply of liquid;"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[f]	a fluid supply chamber adapted to hold a supply of liquid;	**18[f]**	a fluid supply chamber provided on the upright handle assembly and adapted to hold a supply of liquid;

BISSELL contends that the Xia accused products practice limitation 18[f] for the same reasons it argues that they practice limitation 1[f]. CIB at 24-25; Tr. (Singhose) at 112:10-18. Tineco does not dispute that the Xia accused products satisfy limitation 1[f]. *See* RRB at 29. The above table indicates the overlap between limitation 18[f] and limitation 1[e]. Considering the record as a whole, I find that the Xia accused products practice limitation 18[f].

viii) 18[g]—"a fluid dispenser provided on the base, the fluid dispenser in fluid communication with the fluid supply chamber, wherein the fluid dispenser includes at least one outlet oriented to dispense fluid directly onto the agitator, which transfers fluid to a surface to be cleaned;"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[g]	a fluid dispenser provided with the suction nozzle assembly, the fluid dispenser in fluid communication with the fluid supply chamber, the fluid dispenser including at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly, the at least one outlet adapted to dispense fluid onto at least one of the agitator or a surface to be cleaned;	**18[g]**	a fluid dispenser provided on the base, the fluid dispenser in fluid communication with the fluid supply chamber, wherein the fluid dispenser includes at least one outlet oriented to dispense fluid directly onto the agitator, which transfers fluid to a surface to be cleaned;

BISSELL contends that the Xia accused products practice limitation 18[g] for the same reasons that BISSELL argues that the products practice limitation 1[g]. CIB at 25; Tr. (Singhose) at 114:1-115:3. Tineco does not dispute that the Xia accused products satisfy limitation 18[g]. *See* RRB at 29. The above table indicates the overlap between limitation 18[g] and limitation 1[g]. Considering the record as a whole, I find that the Xia accused products practice limitation 18[g].

ix) 18[h]—"a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and"

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[h]	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and	**18[h]**	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and

BISSELL contends that the Xia accused products practice limitation 18[h] for the same reasons that BISSELL argues that the products practice limitation 1[h]. CIB at 25; Tr. (Singhose) at 115:4-12. Tineco does not dispute that the Xia accused products satisfy limitation 18[h]. *See* RRB at 29. As indicated by the above table, limitation 18[h] is the same as limitation 1[h]. Considering the record as a whole, I find that the Xia accused products practice limitation 18[h].

x) 18[i]—"at least one fluid delivery channel provided with the base or the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway."

'949 Patent Claim 1 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
1[i]	at least one fluid delivery channel located within the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.	**18[i]**	at least one fluid delivery channel provided with the base or the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.

BISSELL contends that the Xia accused products practice limitation 18[i] for the same reasons it argues that the products practice limitation 1[i]. CIB at 25-26; Tr. (Singhose) at 115:13-117:12. Tineco contends that "[f]or the reasons explained in limitation 1[i], Complainants have not met their burden of proving that the Xia Accused Products meet limitation 18[i]." RRB at 29.

For the reasons explained above with respect to limitation 1[i], I find that the Xia accused products practice limitation 18[i].[17]

xi) 19—"The surface cleaning apparatus of claim 18 wherein the suction nozzle assembly comprises a brush chamber at least partially housing the agitator and the agitator includes at least one brushroll rotatably mounted therein."

'949 Patent Claim 7 Element	Claim Language	'949 Patent Claim 19 Element	Claim Language
7	The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator.	**19**	The surface cleaning apparatus of claim 18 wherein the suction nozzle assembly comprises a brush chamber at least partially housing the agitator and the agitator includes at least one brushroll rotatably mounted therein.

BISSELL argues that the Xia accused products practice the additional limitation of claim 19 for the same reasons that BISSELL argues that the products practice the additional limitation of claim 7. CIB at 4-5; Tr. (Singhose) at 117:13-118:21. Tineco does not dispute that the Xia accused products satisfy the additional limitation of claim 19. *See* RRB at 4-29. Considering the record as a whole, I find that the Xia accused products practice the additional limitation of claim 19.

[17] Although limitation 18[i] uses the phrase "provided with" instead of limitation 1[i]'s "located within" language, that does not materially alter the analysis. I find that the term "provided with" is broad enough to include something that is "located within."

xii) Conclusion Regarding Claim 19 of the ’949 Patent

Because BISSELL has not shown the presence of limitation 18[d] in the Xia accused products, and because claim 19 depends from claim 18, I find that the Xia accused products do not infringe claim 19 of the ’949 patent. *See Dunbar v. Myers*, 94 U.S. at 202.

c) Conclusion Regarding Alleged Infringement of the ’949 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has not demonstrated that the Xia accused products infringe any asserted claim of the ’949 patent.

2. The ’541 Patent

BISSELL asserts that the Xia accused products infringe claims 1 and 13 of the ’541 patent. CIB at 27-33. Tineco contends that BISSELL failed to prove by a preponderance of the evidence that the Xia accused products infringe several limitations in those asserted claims. RRB at 30-34. As explained in more detail below, I find that the Xia accused products do not infringe claim 1 or 13 of the ’541 patent because BISSELL did not prove by a preponderance of the evidence that the products practice limitations 1[d] and 1[i].

a) Claim 1

i) 1[Preamble]—“A surface cleaning apparatus, comprising:”

’541 Patent Claim 1 Element	Claim Language	’949 Patent Claim Element	Claim Language
1[preamble]	A surface cleaning apparatus, comprising:	**1[preamble]**	A surface cleaning apparatus, comprising:

No party has argued that the preamble of claim 1 of the '541 patent is limiting.[18] BISSELL nonetheless contends that the Xia accused products practice limitation 1[preamble] of the '541 patent for the same reasons it argues that they practice limitation 1[preamble] of the '949 patent. CIB at 27-28; Tr. (Singhose) at 119:18-121:2. Tineco does not dispute that the Xia accused products satisfy limitation 1[preamble] of the '541 patent. *See* RRB at 30-34. As indicated by the above table, limitation 1[preamble] of the '541 patent is the same as limitation 1[preamble] of the '949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[preamble] of the '541 patent, regardless of whether the preamble is limiting.

ii) 1[a]—"a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;"

'541 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[a]	a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;	**1[a]**	a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;

BISSELL contends that the Xia accused products practice limitation 1[a] of the '541 patent for the same reasons it argues that they practice limitation 1[a] of the '949 patent. CIB at 27-28;

[18] In its argument regarding limitation 1[i] of the '541 patent, Tineco appears to argue that certain testimony by BISSELL's expert cannot be correct because if it were, the Xia accused products would no longer satisfy the preamble of claim 1. RRB at 31-32. This argument only has relevance if the preamble is limiting. However, Tineco did not argue during the claim construction proceedings or in other pre-trial disclosures that the preamble of claim 1 was limiting. To the extent that Tineco's argument with respect to limitation 1[i] includes a contention that the preamble is limiting, I find that Tineco forfeited that contention. *See* Order No. 2 (Ground Rules) at 17 ("Any contentions not set forth in detail in the pre-hearing brief shall be deemed abandoned or withdrawn, except for contentions of which a party is not aware and could not be aware in the exercise of reasonable diligence at the time of filing the pre-hearing brief.").

Tr. (Singhose) at 119:18-121:2. Tineco does not dispute that the Xia accused products satisfy limitation 1[a] of the ’541 patent. *See* RRB at 30-34. As indicated by the above table, limitation 1[a] of the ’541 patent is the same as limitation 1[a] of the ’949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[a] of the ’541 patent.

iii) 1[b]—“an agitator mounted within the base;”

’541 Patent Claim 1 Element	**Claim Language**	**’949 Patent Claim Element**	**Claim Language**
1[b]	an agitator mounted within the base;	**1[b]**	an agitator provided with the base;

BISSELL contends that the Xia accused products practice limitation 1[b] of the ’541 patent for the same reasons it argues that they practice limitation 1[b] of the ’949 patent. CIB at 27-28; Tr. (Singhose) at 119:18-121:2. Tineco does not dispute that the Xia accused products satisfy limitation 1[b] of the ’541 patent. *See* RRB at 30-34. The above table indicates the overlap between limitation 1[b] of the ’541 patent and limitation 1[b] of the ’949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[b] of the ’541 patent.

iv) 1[c]—“a suction source;”

’541 Patent Claim 1 Element	**Claim Language**	**’949 Patent Claim Element**	**Claim Language**
1[c]	a suction source;	**1[c]**	a suction source;

BISSELL contends that the Xia accused products practice limitation 1[c] of the ’541 patent for the same reasons it argues that they practice limitation 1[c] of the ’949 patent. CIB at 27-28; Tr. (Singhose) at 119:18-121:2. Tineco does not dispute that the Xia accused products satisfy

limitation 1[c] of the ’541 patent. *See* RRB at 30-34. As indicated by the above table, limitation 1[c] of the ’541 patent is the same as limitation 1[c] of the ’949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[c] of the ’541 patent.

v) 1[d]—“a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source;”

’541 Patent Claim 1 Element	Claim Language	’949 Patent Claim Element	Claim Language
1[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source;	**18[d]**	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source; and

BISSELL contends that the Xia accused products practice limitation 1[d] of the ’541 patent for the same reasons it argues that they practice limitation 18[d] of the ’949 patent. CIB at 27-28; Tr. (Singhose) at 119:18-121:2. Tineco contends that “[f]or the reasons explained in limitation 1[d] of the ’949 Patent, Complainants have not met their burden” with respect to limitation 1[d] of the ’541 patent. RRB at 30. For the reasons explained with respect to limitation 18[d] of the ’949 patent, *see* Sections V.A.1.a.v. and V.A.1.b.v., *supra*, I find that BISSELL has not demonstrated that the Xia accused products practice limitation 1[d] of the ’541 patent.

vi) 1[e]—"a fluid delivery system provided on the housing and comprising:"

'541 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[e]	a fluid delivery system provided on the housing and comprising:	**1[e]**	a fluid delivery system provided on the housing, the fluid delivery system, comprising:

BISSELL contends that the Xia accused products practice limitation 1[e] of the '541 patent for the same reasons it argues that they practice limitation 1[e] of the '949 patent. CIB at 27-28; Tr. (Singhose) at 119:18-121:2. Tineco does not dispute that the Xia accused products satisfy limitation 1[e] of the '541 patent. *See* RRB at 30-34. The above table indicates the overlap between limitation 1[e] of the '541 patent and limitation 1[e] of the '949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[e] of the '541 patent.

vii) 1[f]—"a fluid supply chamber adapted to hold a supply of liquid;"

'541 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[f]	a fluid supply chamber adapted to hold a supply of liquid;	**1[f]**	a fluid supply chamber adapted to hold a supply of liquid;

BISSELL contends that the Xia accused products practice limitation 1[f] of the '541 patent for the same reasons it argues that they practice limitation 1[f] of the '949 patent. CIB at 27-28; Tr. (Singhose) at 119:18-121:2. Tineco does not dispute that the Xia accused products satisfy limitation 1[f] of the '541 patent. *See* RRB at 30-34. As indicated by the above table, limitation

1[f] of the ’541 patent is the same as limitation 1[f] of the ’949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[f] of the ’541 patent.

viii) 1[g]—“a fluid dispenser provided on the base in fluid communication with the fluid supply chamber; and”

’541 Patent Claim 1 Element	Claim Language	’949 Patent Claim Element	Claim Language
1[g]	a fluid dispenser provided on the base in fluid communication with the fluid supply chamber; and	**18[g]**	a fluid dispenser provided on the base, the fluid dispenser in fluid communication with the fluid supply chamber, wherein the fluid dispenser includes at least one outlet oriented to dispense fluid directly onto the agitator, which transfers fluid to a surface to be cleaned;

BISSELL contends that the Xia accused products practice limitation 1[g] of the ’541 patent for the same reasons it argues that they practice limitation 18[g] of the ’949 patent. CIB at 27-28; Tr. (Singhose) at 119:18-121:2. Tineco does not dispute that the Xia accused products satisfy limitation 1[g] of the ’541 patent. *See* RRB at 30-34. The above table indicates the overlap between limitation 1[g] of the ’541 patent and limitation 18[g] of the ’949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[g] of the ’541 patent.

ix) 1[h]—“a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and”

’541 Patent Claim 1 Element	Claim Language	’949 Patent Claim Element	Claim Language
1[h]	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and	**1[h]**	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and

BISSELL contends that the Xia accused products practice limitation 1[h] of the '541 patent for the same reasons it argues that they practice limitation 1[h] of the '949 patent. CIB at 27-28; Tr. (Singhose) at 119:18-121:2. Tineco does not dispute that the Xia accused products satisfy limitation 1[h] of the '541 patent. *See* RRB at 30-34. As indicated by the above table, limitation 1[h] of the '541 patent is the same as limitation 1[h] of the '949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[h] of the '541 patent.

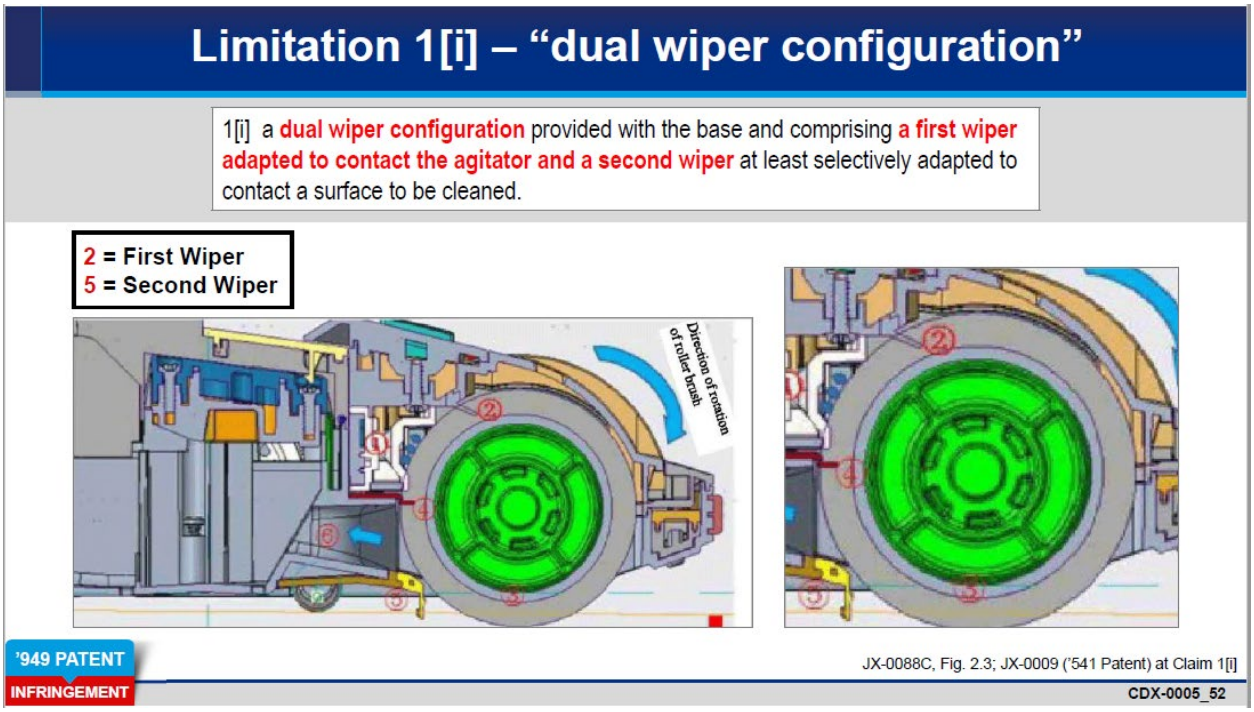
x) 1[i]—"a dual wiper configuration provided with the base and comprising a first wiper adapted to contact the agitator and a second wiper at least selectively adapted to contact a surface to be cleaned."

BISSELL contends that the Xia accused products "each contain a dual wiper configuration having first and second wipers in accordance with limitation 1[i]." CIB at 28-31. Tineco contends that "Complainants have not met their burden of proving that the Xia Accused Products have a second wiper at least selectively adapted to contact a surface to be cleaned, as recited in limitation 1[i]." RRB at 30-33.

As discussed above in the claim construction section, the parties agree for purposes of this investigation that the term "selectively adapted to contact" means "configured to contact in response to a selection." *See* Prehearing Conf. Tr. at 27:10-23; *see also* Order No. 17 at 7.

For the reasons explained below, I find that BISSELL failed to prove by a preponderance of the evidence that the Xia accused products practice limitation 1[i].

It is uncontested that the Xia accused products contain a dual wiper configuration. *Compare* CIB at 28 *with* RRB at 30-33; *see also* CPX-0003; CPX-0004; CPX-0005. At the evidentiary hearing, BISSELL's expert illustrated the dual wiper configuration with the following diagram:



CDX-0005C at 52. Tineco's documentation describes the first wiper, which is labeled "2" in the diagram, as a "[s]queegee covering the roller brush" that "flattens the water at the surface of the roller brush." JX-0088 at 0088.0014. The second wiper, which is labeled "5," is described as a "squeegee" that "collects water on the floor." *Id.* at 0088.0014. The parties' dispute focuses on whether the second wiper is "selectively adapted" to contact a surface to be cleaned. *See, e.g.*, CIB at 29; RRB at 30-33.

BISSELL contends that the second wiper "is configured, as claimed, to contact the surface of the floor in response to selections by the user during operation." CIB at 29. In support of its contention, BISSELL relies on the testimony of its expert, Dr. Singhose. *See* CIB at 29-31. Dr. Singhose testified that "during normal operation" a user may select to "push their hand" down far enough while holding the device's handle that they "lift the front of the machine up." Tr. (Singhose) at 123:16-18. Dr. Singhose demonstrated at the evidentiary hearing the act that he believes constitutes "selection" and provided videos of himself performing the maneuver with the

Tineco's S3 and S5 Pro devices. CDX-0005C at 53, Media9.mov (S3); CDX-0005C at 53, Media10.mov (S5Pro). According to Dr. Singhose, "when you lift up and bring the front off the squeegee comes off, so, therefore, it's selectively adapted to contact a surface that's to be cleaned." Tr. (Singhose) at 123:6-124:8.

I did not find Dr. Singhose's testimony regarding limitation 1[i] to be particularly persuasive or credible. What Dr. Singhose considered to be "normal operation" appeared to me to be quite abnormal. As can be seen in the videos that Dr. Singhose played at trial, in order to lift the second squeegee off the floor, Dr. Singhose lowered the handle down so far that the plastic housing of the upright portion of the vacuum dragged along the floor, as shown by the white corner touching the floor in the highlighted area:

I inspected the physical exhibits and confirmed that the upright housing of the iFloor, S3, and S5 Pro all started scraping the floor in the same manner before the second squeegee lifted off the floor. *See* CPX-0003; CPX-0004; CPX-0005.

Contrary to Dr. Singhose's testimony, I find "normal operation" of the Xia accused devices does not include dragging the plastic housing of the upright portion of the devices across the floor. In view of the unusual position that Dr. Singhose took with respect to limitation 1[i], I do not credit his testimony regarding limitation 1[i] of the '541 patent.[19] Moreover, I find no evidence that the devices are adapted or designed for the type of "selection" that Dr. Singhose and BISSELL identified.

In view of the foregoing evidence and considering the record as a whole, I find that BISSELL failed to show by a preponderance of the evidence that the Xia accused products practice limitation 1[i].

xi) Conclusion Regarding Claim 1 of the '541 Patent

Because BISSELL has not shown the presence of limitations 1[d] and 1[i] in the Xia accused products, I find that the Xia accused products do not infringe claim 1 of the '541 patent. *See Dunbar v. Myers*, 94 U.S. at 202.

[19] BISSELL also cites the cross-examination of Tineco's expert, Dr. James Conley, for the proposition that the "squeegee at times during normal operation of the device also does not contact the floor." CIB at 31 (citing Tr. (Conley) at 811:14-812:12.). That testimony is insufficient to satisfy BISSELL's burden of proof. For one thing, BISSELL has not explained what the "selection" would be under Dr. Conley's testimony. Also, Dr. Conley maintained that the Xia accused products were not "configured to contact in response to a selection," because their squeegees are "always in contact with the surface to be cleaned during surface cleaning operations." Tr. (Conley) at 731:20-733:11.

b) Claim 13

i) 11—"The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator."

'541 Patent Claim 13 Element	Claim Language	'949 Patent Claim Element	Claim Language
11	The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator.	**7**	The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator.

Claim 11 is not asserted. But claim 13, which is asserted, depends from claims 12 and 11. BISSELL contends that the S3 and S5 Pro[20] practice the limitation in claim 11 of the '541 patent for the same reasons it argues that they practice the limitation in claim 7 of the '949 patent. CIB at 28; Tr. (Singhose) at 119:18-121:2; 125:20-126:19. Tineco does not dispute that the S3 and S5 Pro practice the limitation in claim 11 of the '541 patent. *See* RRB at 33-34. As indicated by the above table, the limitation in claim 11 of the '541 patent is the same as the limitation in claim 7 of the '949 patent. Considering the record as a whole, I find that the S3 and S5 Pro practice limitation in claim 11 of the '541 patent.

[20] BISSELL does not assert that the iFloor infringes claim 13. *See* CIB at 28; RRB at 33 n.11.

ii) 12—"The surface cleaning apparatus of claim 11, further comprising at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel provided on the suction nozzle assembly."

'541 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
12	The surface cleaning apparatus of claim 11, further comprising at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel provided on the suction nozzle assembly.	**1[i]**	at least one fluid delivery channel located within the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.

Claim 12 is not asserted. But claim 13, which is asserted, depends from claim 12. BISSELL contends that the S3 and S5 Pro practice the limitation in claim 12 of the '541 patent for the same reasons it argues that they practice limitation 1[i] of the '949 patent. CIB at 28; Tr. (Singhose) at 119:18-121:2; 125:20-126:19. Tineco contends that "[a]s discussed above with respect to limitation 1[i] of the '949 Patent, Complainants have not met their burden regarding the [fluid delivery channel]." RRB at 33. In particular, Tineco contends that "Complainants have

failed to present evidence to show how any alleged [fluid delivery channel]" is "present in the location required by" the claim. *Id.*[21]

For the reasons discussed above with respect to limitation 1[i] of the '949 patent, I find that the Xia accused products practice the limitation in claim 12 of the '541 patent. *See* Section V.A.1.a.x., *supra*.

iii) 13—"The surface cleaning apparatus of claim 12 wherein the at least a portion of the at least one fluid delivery channel is an integrated fluid delivery channel forming a portion of the fluid delivery pathway."

BISSELL contends that the "evidence shows that the S3 and S5 Pro devices each contain an integrated [fluid delivery channel], in accordance with claim 13." CIB at 32-33; Tr. (Singhose) at 126:20-128:7; 125:20-126:19. Tineco contends that "[f]or all of the reasons the Xia Accused Products do not infringe Claims 1 or 12, they do not infringe dependent claim 13." RRB at 33-34. Tineco also states that "Complainants and Dr. Singhose . . . did not explain . . . how [the fluid delivery channel] is allegedly integrated." *Id.*[22]

[21] Limitation 1[i] requires the fluid delivery channel be "located within the suction nozzle assembly," whereas the limitation in claim 12 requires the fluid delivery channel be "provided on the suction nozzle assembly." Tineco does not develop an argument that this difference in claim language materially alters the analysis. *See* RRB at 33. Instead, Tineco simply states that BISSELL "failed to present evidence as to how the location of the [fluid delivery channel] in limitation 1[i] of the '949 Patent—or claim 12 of the '541 Patent— is allegedly met." *Id.* The treatment of the term "provided on" as encompassing something "located within" is consistent with the Patent Office's interpretation of those terms as they are used in the Xia patents. *See SharkNinja Operating LLC v. BISSELL Inc.*, IPR2022-01176, Paper No. 12 at 10-11 (P.T.A.B. Jan. 13, 2023). I also note that neither party neither party contends that their dispute regarding the location of the fluid delivery channel should be resolved as a matter of claim construction. *See* EDIS Doc. ID 774956.

[22] Tineco also repeats its argument from limitation 1[i] of the '949 patent that BISSELL did not specifically identify a structure as the fluid delivery channel. CIB at 33. I rejected that argument above in Section V.A.1.a.x.

BISSELL's expert, Dr. Singhose, analyzed the physical devices as well as CAD files for the devices. *See, e.g.*, CDX-0005C at 55; Tr. (Singhose) at 126:20-127:123. Based on his review, Dr. Singhose testified that the fluid delivery channels he identified were integrated with the devices. Tr. (Singhose) 126:20-127:123. He demonstrated visually how the fluid delivery channels were integrated with an animated demonstrative. CDX-0005C at 55, Media5.mov (S3 animation); CDX-0005C at 55, Media6.mov (S5Pro animation); *see also* CIB at 32-33 (reproducing screenshots from the animations).

In view of the foregoing evidence and considering the record as a whole, I find that BISSELL has shown by a preponderance that the S3 and S5 Pro devices practice the additional limitation of claim 13.

iv) Conclusion Regarding Claim 13 of the '541 Patent

Because I find that the S3 and S5 Pro devices do not infringe limitations 1[d] or 1[i] of the '541 patent, *see* Sections V.A.2.a.v. and V.A.2.a.x., *supra*, I similarly find that the S3 and S5 Pro devices do not infringe claim 13, which ultimately depends from claim 1. *See Dunbar v. Myers*, 94 U.S. at 202.

c) Conclusion Regarding Alleged Infringement of the '541 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has not demonstrated that the Xia accused products infringe any asserted claim of the '541 patent.

3. The '769 Patent

BISSELL asserts that the Xia accused products infringe claims 1 and 4 of the '769 patent. CIB at 33-34. Tineco contends that BISSELL failed to prove by a preponderance of the evidence that the Xia accused products infringe several limitations in those asserted claims. RRB at 35-36. As explained in more detail below, I find that the Xia accused products do not infringe claims 1 or

4 of the ’769 patent because BISSELL did not prove by a preponderance of the evidence that the products practice limitation 1[d] of claim 1, nor did it prove the products embody the additional limitation of dependent claim 4.

a) Claim 1

i) 1[Preamble]—“A surface cleaning apparatus, comprising:”

’769 Patent Claim 1 Element	Claim Language	’949 Patent Claim Element	Claim Language
1[preamble]	A surface cleaning apparatus, comprising:	**1[preamble]**	A surface cleaning apparatus, comprising:

No party has argued that the preamble of claim 1 of the ’769 patent is limiting. BISSELL nonetheless contends that the Xia accused products practice limitation 1[preamble] of the ’769 patent for the same reasons it argues they practice limitation 1[preamble] of the ’949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10. Tineco does not dispute that the Xia accused products satisfy limitation 1[preamble] of the ’769 patent. *See* RRB at 35-36. As indicated by the above table, limitation 1[preamble] of the ’769 patent is the same as limitation 1[preamble] of the ’949 patent. Considering the record as a whole, I find that the Xia accused products practice the preamble of claim 1 of the ’769 patent, regardless of whether the preamble is limiting.

ii) 1[a]—"a housing including an upright handle assembly and a base mounted to the upright handle assembly and adapted for movement across a surface to be cleaned,"

'769 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[a]	a housing including an upright handle assembly and a base mounted to the upright handle assembly and adapted for movement across a surface to be cleaned,	**18[a]**	a housing including an upright handle assembly and a base mounted to the upright handle assembly;

BISSELL contends that the Xia accused products practice limitation 1[a] of the '769 patent for the same reasons it argues that they practice limitation 18[a] of the '949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10; *see also* CPX-0003; CPX-0004; CPX-0005. Tineco does not dispute that the Xia accused products satisfy limitation 1[a] of the '769 patent. *See* RRB at 35-36. The above table indicates the overlap between limitation 1[a] of the '769 patent and limitation 18[a] of the '949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[a] of the '769 patent.

iii) 1[b]—"wherein the base comprises a brush chamber and at least one brushroll mounted therein;"

'769 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[b]	wherein the base comprises a brush chamber and at least one brushroll mounted therein;	**1[b], 7**	an agitator provided with the base; . . . The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator.

BISSELL contends that the Xia accused products practice limitation 1[b] of the '769 patent for the same reasons it argues that they practice limitations 1[b] and 7 of the '949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10. Tineco does not dispute that the Xia accused products satisfy limitation 1[b] of the '769 patent. *See* RRB at 35-36. The above table indicates the overlap between limitation 1[b] of the '769 patent and limitations 1[b] and 7 of the '949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[b] of the '769 patent.

iv) 1[c]—"a suction source;"

'769 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[c]	a suction source;	**1[c]**	a suction source;

BISSELL contends that the Xia accused products practice limitation 1[c] of the '769 patent for the same reasons it argues that they practice limitation 1[c] of the '949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10. Tineco does not dispute that the Xia accused products satisfy

limitation 1[c] of the ’769 patent. *See* RRB at 35-36. As indicated by the above table, limitation 1[c] of the ’769 patent is the same as limitation 1[c] of the ’949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[c] of the ’769 patent.

v) 1[d]—“a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source;”

’769 Patent Claim 1 Element	Claim Language	’949 Patent Claim Element	Claim Language
1[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source;	**18[d]**	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source; and

BISSELL contends that the Xia accused products practice limitation 1[d] of the ’769 patent for the same reasons it argues that they practice limitation 18[d] of the ’949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10. Tineco contends that “[f]or the reasons explained in limitation 1[d] of the ’949 Patent, Complainants have not met their burden of proving that” the Xia accused patents practice limitation 1[d] of the ’769 patent. RRB at 35. As indicated by the above table, limitation 1[d] of the ’769 patent is the same as limitation 18[d] of the ’949 patent.

I find that the Xia accused products do not practice limitation 1[d] of the ’769 patent for the same reasons that they do not practice limitations 18[d] and 1[d] of the ’949 patent. *See* Sections V.A.1.a.v. and V.A.1.b.v., *supra*.

vi) 1[e]—"fluid delivery system comprising:"

'769 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[e]	fluid delivery system comprising:	**1[e]**	a fluid delivery system provided on the housing, the fluid delivery system, comprising:

BISSELL contends that the Xia accused products practice limitation 1[e] of the '769 for the same reasons it argues that they practice limitation 1[e] of the '949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10. Tineco does not dispute that the Xia accused products satisfy limitation 1[e] of the '769 patent. *See* RRB at 35-36. As indicated by the above table, limitation 1[e] of the '949 patent includes all the elements in limitation 1[e] of the '769 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[e] of the '769 patent.

vii) 1[f]—"a fluid supply chamber provided on the upright handle assembly and adapted to hold a supply of liquid;"

'769 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[f]	a fluid supply chamber provided on the upright handle assembly and adapted to hold a supply of liquid;	**1[f]**	a fluid supply chamber adapted to hold a supply of liquid;

BISSELL contends that the Xia accused products practice limitation 1[f] of the '769 patent for the same reasons it argues they practice limitation 1[f] of the '949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10; *see also* CPX-0003; CPX-0004; CPX-0005. Tineco does not dispute that the Xia accused products satisfy limitation 1[f] of the '769 patent. *See* RRB at 35-36. The

above table indicates the overlap between limitation 1[f] of the '769 patent and limitation 1[f] of the '949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[f] of the '769 patent.

viii) 1[g]—"a fluid dispenser provided on the base in fluid communication with the fluid supply chamber, wherein the fluid dispenser is configured to dispense fluid onto the at least one brushroll;"

'769 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[g]	a fluid dispenser provided on the base in fluid communication with the fluid supply chamber, wherein the fluid dispenser is configured to dispense fluid onto the at least one brushroll;	**18[g]**	a fluid dispenser provided on the base, the fluid dispenser in fluid communication with the fluid supply chamber, wherein the fluid dispenser includes at least one outlet oriented to dispense fluid directly onto the agitator, which transfers fluid to a surface to be cleaned;

BISSELL contends that the Xia accused products practice limitation 1[g] of the '769 patent for the same reasons it argues they practice limitation 18[g] of the '949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10; *see also* CPX-0003; CPX-0004; CPX-0005. Tineco does not dispute that the Xia accused products satisfy limitation 1[g] of the '769 patent. *See* RRB at 35-36. The above table indicates the overlap between limitation 1[g] of the '769 patent and limitation 18[g] of the '949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[g] of the '769 patent.

ix) 1[h]—"a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and"

'769 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[h]	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and	**1[h]**	a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and

BISSELL contends that the Xia accused products practice limitation 1[h] of the '769 patent for the same reasons it argues they practice limitation 1[h] of the '949 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10. Tineco does not dispute that the Xia accused products satisfy limitation 1[h] of the '769 patent. *See* RRB at 35-36. As indicated by the above table, limitation 1[h] of the '769 patent is the same as limitation 1[h] of the '949 patent. Considering the record as a whole, I find that the Xia accused products practice limitation 1[g] of the '769 patent.

x) 1[i]—"at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel extending adjacent to a portion of the suction nozzle assembly; and"

'769 Patent Claim 1 Element	Claim Language	'949 Patent Claim Element	Claim Language
1[i]	at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel extending adjacent to a portion of the suction nozzle assembly; and	**1[i]**	at least one fluid delivery channel located within the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.

BISSELL contends that the Xia accused products practice limitation 1[i] of the '769 patent for the same reasons it argues that they practice limitation 1[i] of the '949 patent. CIB at 33-34;

Tr. (Singhose) at 128:8-129:10. Tineco contends that "[f]or the reasons explained in limitation 1[i] of the '949 Patent, Complainants have not met their burden of proving that the Xia Accused Products meet limitation" 1[i] of the '769 patent. RRB at 35. Above, I rejected Tineco's arguments regarding limitation 1[i] of the '949 patent. *See* Section V.A.1.a.x., *supra*. Considering the record as a whole, I find that the Xia accused products practice limitation 1[i] of the '769 patent.

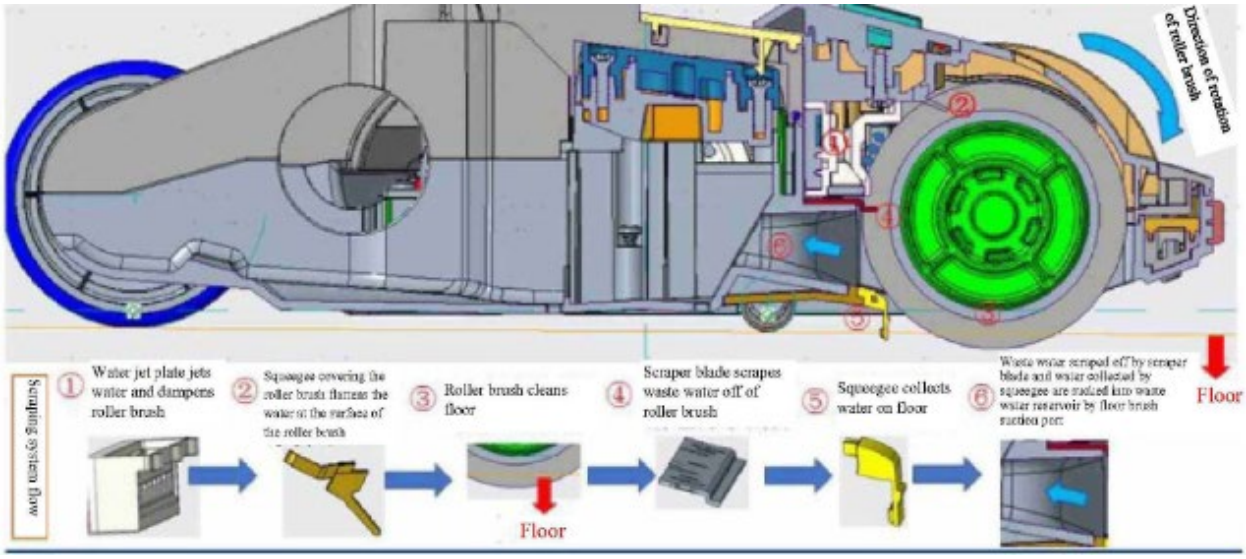
xi) 1[j]—"an interference wiper provided on the base and adapted to interface with a portion of the at least one brushroll to remove excess liquid from the at least one brushroll."

'769 Patent Claim 1 Element	Claim Language	'541 Patent Claim Element	Claim Language
1[j]	an interference wiper provided on the base and adapted to interface with a portion of the at least one brushroll to remove excess liquid from the at least one brushroll.	**1[i]**	a dual wiper configuration provided with the base and comprising a first wiper adapted to contact the agitator and a second wiper at least selectively adapted to contact a surface to be cleaned.

BISSELL contends that the Xia accused products practice limitation 1[j] of the '769 patent for the same reasons it argues that they practice limitation 1[i] of the '541 patent. CIB at 33-34; Tr. (Singhose) at 128:8-129:10. Tineco contends that "Complainants offered no evidence, and Dr. Singhose provided no testimony, showing that the alleged interference wiper in the Xia Accused Products removes excess liquid." RRB at 35.

BISSELL's argument that the Xia accused products comprise "a first wiper adapted to contact the agitator and remove and distribute excess fluid across the brushroll," CIB at 28, is consistent with witness testimony and the way the products are structured. *See* JX-0092 (Y. Liu

Dep. Tr.) at 79:2-16, 106:3-10; JX-0088 at 0088.0014. Indeed, it is difficult to see how the interference wiper, which is labeled 2 in the following diagram, would not remove excess liquid given the way it is positioned:



JX-0088 at 0088.0014; *see also* CPX-0003; CPX-0004; CPX-0005.

In view of the foregoing evidence and considering the record as a whole, I find that BISSELL has shown by a preponderance of the evidence that there is an interference wiper the removes excess liquid in accordance with limitation 1[j] of the ’769 patent.

xii) Conclusion Regarding Claim 1 of the ’769 Patent

Because BISSELL has not shown the presence of limitation 1[d] in the Xia accused products, I find that the Xia accused products do not infringe claim 1 of the ’769 patent. *See Dunbar v. Myers*, 94 U.S. at 202.

b) Claim 4

i) 4—"The surface cleaning apparatus of claim 1, wherein the fluid dispenser is mounted to the suction nozzle assembly and oriented to deliver fluid substantially horizontally."

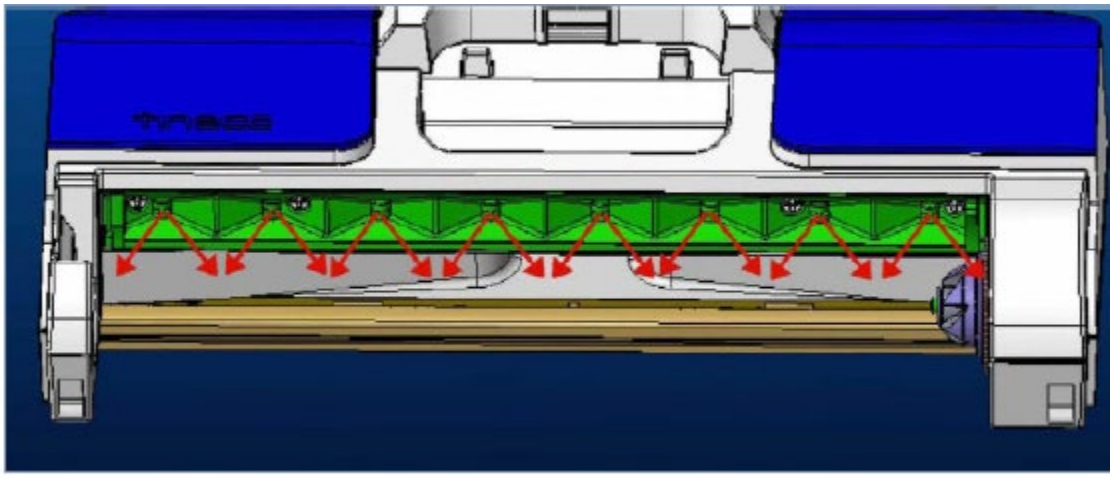
BISSELL contends that "the Foot Architecture Accused Products each contain a fluid dispenser oriented to delivery fluid substantially horizontally in accordance with claim 4." CIB at 34 (collecting evidence); Tr. (Singhose) at 129:11-22. Tineco contends that BISSELL has provided "no evidence or explanation as to how or why the fluid dispenser of the S3 is allegedly oriented to deliver fluid substantially horizontally, as required by claim 4." RRB at 36. Tineco also states that BISSELL "offered no evidence regarding how or why the S5 Pro or iFloor allegedly meet this limitation." *Id*. Finally, Tineco argues that "the Xia Accused Products do not infringe dependent claim 4 for the reasons explained for claim 1." *Id*.

I find that BISSELL failed to prove by a preponderance of the evidence that the Xia accused products practice claim 4. BISSELL's expert, Dr. Singhose, testified simply that "it's my understanding at this point in time there's -- I think this is an uncontested limitation, because in fact that's exactly what -- it's exactly how the fluid is delivered here, horizontally." Tr. (Singhose) 129:11-22. I find that testimony unpersuasive, however, because it appears to contradict the two pieces of evidence that Dr. Singhose displayed in a demonstrative while discussing claim 4.

In particular, Dr. Singhose's demonstrative indicated that the specification described what it meant to be "substantially horizontal." CDX-0005C at 59 (citing JX-0010 ('769 Patent) at 11:43-57). The cited portion of the specification indicates that the rotational axis of the brushroll is the relevant reference point for determining whether fluid is distributed "horizontally" or "substantially horizontally." JX-0010 ('769 Patent) at 11:48-57 ("The spray tips 554 can be oriented to spray along *a horizontal axis which may be parallel to the rotational axis of the*

brushroll 546 or *at a substantially horizontal angle relative to the rotational axis X* in order to wet the entire length of the brushroll 546 during fluid dispensing. *By 'substantially horizontal' the angle of spray of the orifice 595 can be 0 to 30 degrees*, depending on the length of the brushroll and spacing of the spray tips 554 in order to cover the entire brushroll 546 with fluid." (emphasis added)).

Dr. Singhose's demonstrative indicated that the following diagram illustrated that fluid dispenser in the accused S3 model[23] delivered fluid substantially horizontal in accordance with the above description from the specification:



RX-0185 at 0185.0016; CDX-0005C at 59.

I do not find Dr. Singhose's interpretation of the specification and the spray diagram to be persuasive. In my observation of the physical and diagram evidence, I find the fluid is *not* dispensed "substantially horizontally" (i.e., less than 30 degrees) with respect to the rotational axis of the brushroll. Instead, I find that the fluid distribution is more perpendicular than horizontal with respect to the rotational axis of the brushroll.

[23] BISSELL and Dr. Singhose did not identify any similar documentation relating to the S5 Pro or the iFloor.

In view of the foregoing evidence and considering the record as a whole, I find that BISSELL failed to prove by a preponderance of the evidence that the Xia accused products practice limitation 4 of the ’769 patent.

ii) Conclusion Regarding Claim 4 of the ’769 Patent

Because BISSELL has shown in the Xia accused products neither the presence of limitation 1[d] nor the presence of the additional limitation of claim 4, I find that the Xia accused products do not infringe claim 4 of the ’796 patent. *See Dunbar v. Myers*, 94 U.S. at 202.

c) Conclusion Regarding Alleged Infringe of the ’769 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has not demonstrated that the Xia accused products infringe any asserted claim of the ’769 patent.

B. The Resch Patents

1. The ’735 Patent

BISSELL asserts that the original and redesigned[24] Resch accused products infringe claims 1, 13, and 15 of the ’735 patent. CIB at 40-62. Tineco contends that the original and redesigned Resch accused products do not infringe because they do not practice several limitations of the ’735 patent. *See* RRB at 37-72. As explained in more detail below, I find that the original Resch accused products infringe claims 1, 13, and 15 of the ’735 patent. I find, however, that the redesigned Resch accused products do not infringe any asserted claim of the ’735 patent because they do not practice limitation 1[p] and 13[l] of the ’735 patent.

[24] The difference between the original and redesigned Resch accused products is only material with respect to limitations 1[p] and 13[l] of the ’735 patent and limitation 1[n] of the ’428 patent. Aside from those limitations, the parties treat the original and redesigned Resch accused products identically.

a) Claim 1

i) 1[Preamble]—"A floor cleaning system, comprising:"

No party has argued that the preamble of claim 1 is limiting. BISSELL nonetheless contends that the Resch accused products comprise surface cleaning systems. CIB at 41 (collecting evidence); Tr. (Sorenson) at 237:15-21. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice the preamble of claim 1, regardless of whether the preamble is limiting.

ii) 1[a]—"a surface cleaning apparatus comprising:"

BISSELL contends that the Resch accused products comprise surface cleaning apparatuses. CIB at 41 (collecting evidence); Tr. (Sorenson) at 238:1-8. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[a] of claim 1.

iii) 1[b]—"an upright body comprising a handle and a frame;"

BISSELL contends that the Resch accused products include an upright body comprising a handle and a frame. CIB at 41 (collecting evidence); Tr. (Sorenson) at 238:10-240:5. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[b] of claim 1.

iv) 1[c]—"a base coupled with the upright body and adapted for movement across a surface to be cleaned;"

BISSELL contends that the Resch accused products include a base coupled with the upright body and adapted for movement across a surface to be cleaned. CIB at 41-42 (collecting evidence); Tr. (Sorenson) at 240:7-23. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[c] of claim 1.

v) 1[d]—"a moveable joint assembly mounting the base to the upright body, wherein the upright body is pivotable via the joint assembly between an upright storage position and a reclined use position;"

BISSELL contends that the Resch accused products include a moveable joint assembly mounting the base to the upright body, wherein the upright body is pivotable via the joint assembly between an upright storage position and a reclined use position. CIB at 42 (collecting evidence); Tr. (Sorenson) at 241:17-244:22. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[d] of claim 1.

vi) 1[e]—"a fluid delivery system comprising a supply tank removable from the frame, a pump, and a fluid distributor;"

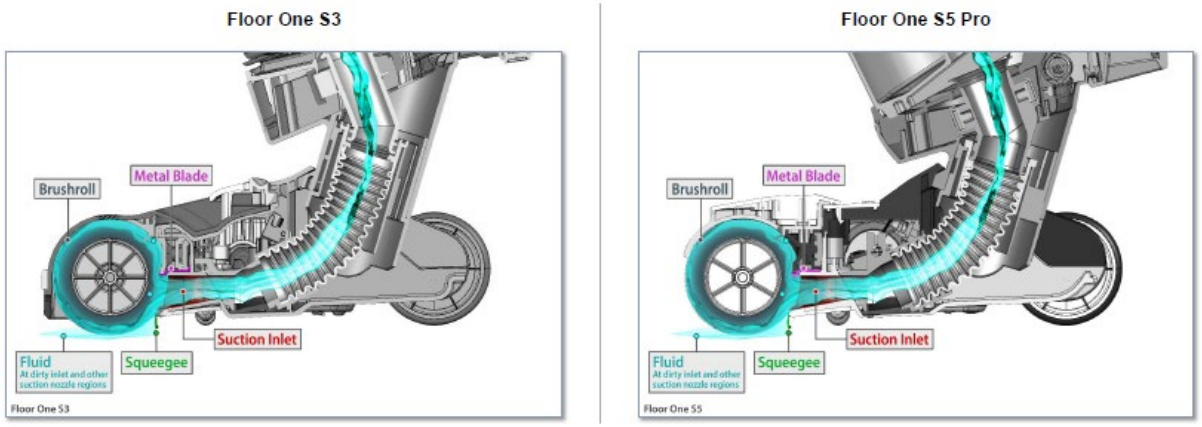
BISSELL contends that the Resch accused products include a fluid delivery system comprising a supply tank removable from the frame, a pump, and a fluid distributor. CIB at 42 (collecting evidence); Tr. (Sorenson) at 247:12-249:17. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[e] of claim 1.

vii) 1[f]—"a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor;"

BISSELL contends that the Resch accused products include a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor. CIB at 42 (collecting evidence); Tr. (Sorenson) at 249:18-251:4, 251:16-252:7. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[f] of claim 1.

viii) 1[g]—"a brushroll within the recovery pathway of the recovery system;"

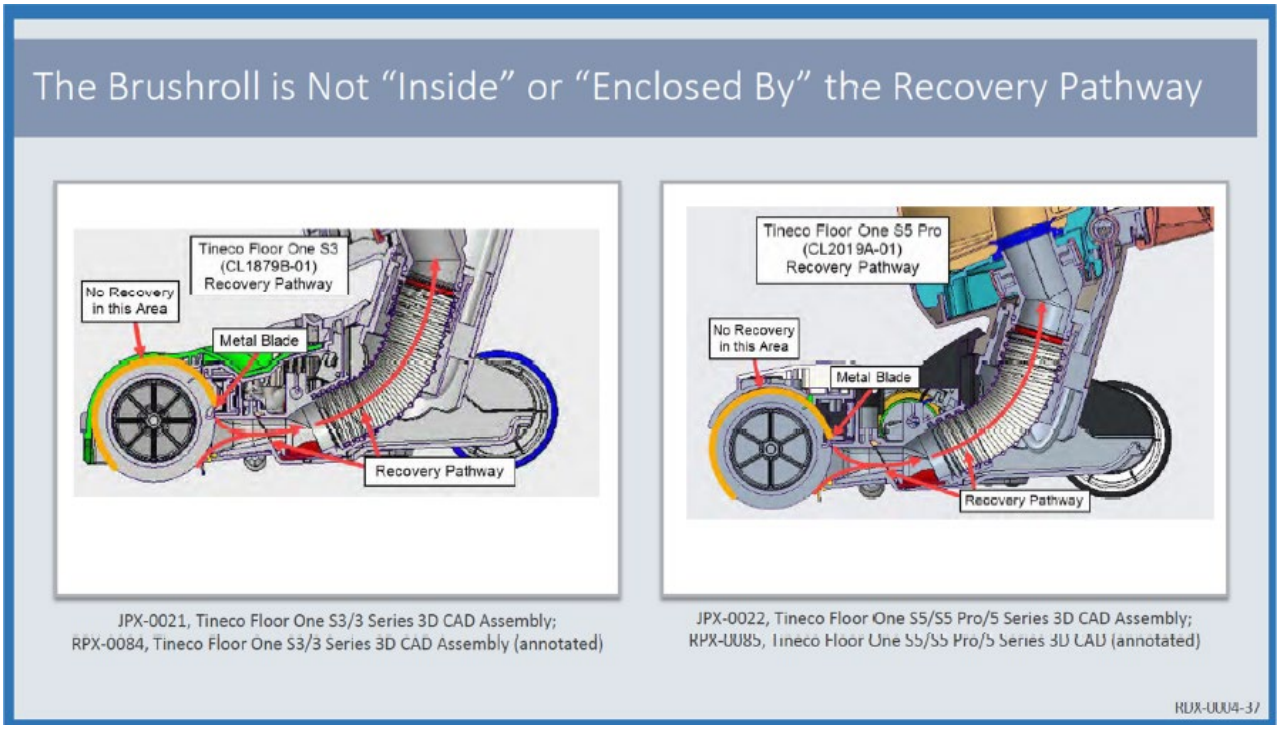
The parties dispute whether the Resch accused products contain a brushroll "within" the recovery pathway of the recovery system. According to BISSELL, the recovery pathway is the blue region in the pictures below:



CIB at 43. Neither party disputes that if the blue region represents the recovery pathway, the Resch accused products contain a brushroll within the recovery pathway as required by the claims.

BISSELL contends that blue portion is the recovery pathway because it represents "essentially all these places that the fluid flows in the course of being recovered." CIB at 43 (quoting Tr. (Sorensen) 260:12-16).

Tineco, on the other hand, contends that the recovery pathway in the Resch accused products is more limited. In particular, Tineco contends that only a portion of the brushroll of the S3 and S5 Pro "is adjacent to the recovery pathway." RRB at 44 (citation omitted). Tineco's expert, Mr. David Smith, provided the following demonstrative that highlighted the portions of the brushroll where he contended there was recovery and where there was no recovery:



RRB at 44 (citing RDX-0004 at 37); *see also* Tr. (Smith) at 874:11-24. The region labeled "no recovery in this area" covers a little over 50% of the circumference of the brushroll. The remaining portion where there is recovery, according to Tineco and Mr. Smith, begins approximately where the brushroll contacts the floor and ends where a metal blade contacts the brushroll to scrape or squeegee off debris and liquid. RRB at 41-44. According to Tineco, the brushroll is "behind" or "adjacent" to that alleged recovery pathway, not "inside of" or "enclosed by" it. RRB at 41-44.

BISSELL replies that even assuming that Mr. Smith is correct about what constitutes the recovery pathway, the brushroll is still within the recovery pathway for at least two reasons. BISSELL first points to the fact that Mr. Smith conceded that a significant percentage of the brushroll was in contact with his proposed recovery pathway. CIB at 44. Second, BISSELL points to the fact that "Mr. Smith also admitted that, when the brushroll motor is energized, the brushroll passes through Mr. Smith's 'recovery pathway' approximately 8 times a second." *Id.*

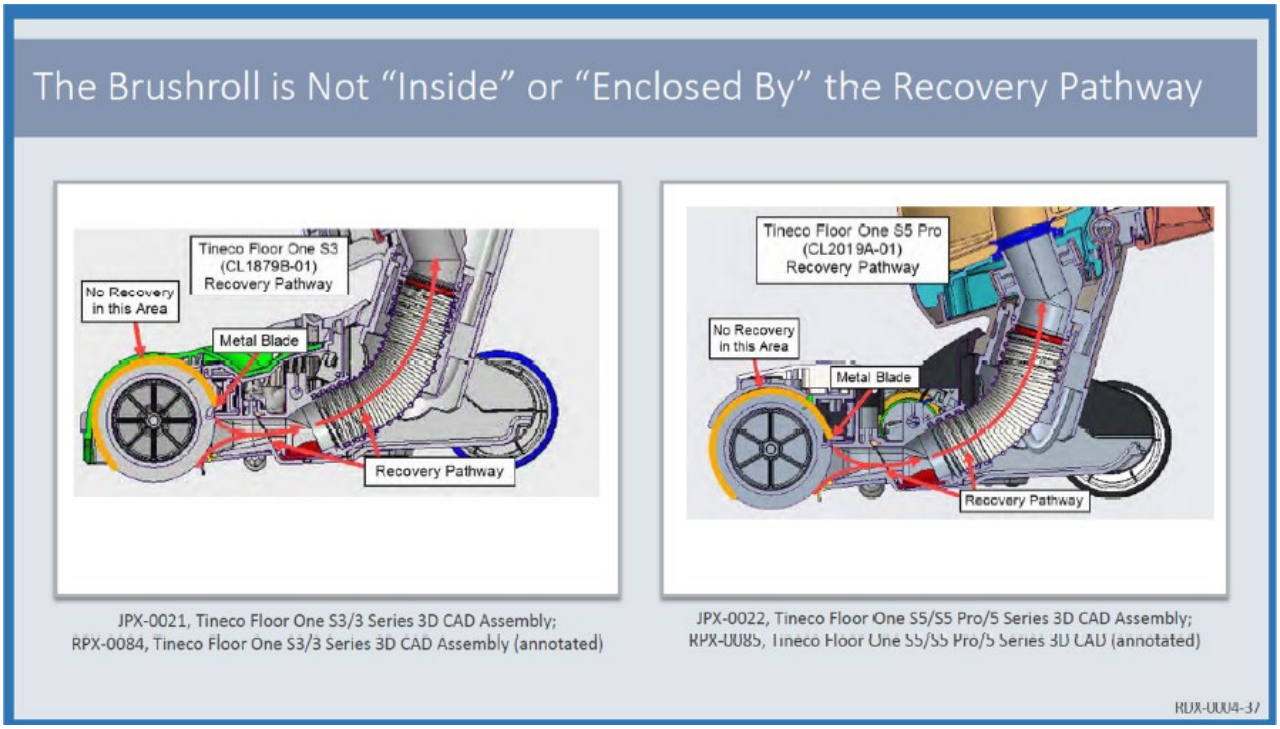
Both parties agree that the brushroll does not need to be completely surrounded by the recovery pathway to satisfy the "brushroll within the recovery pathway" language. For example, Tineco agrees that the claim limitation would be satisfied by an embodiment disclosed in the Resch patents "in which the recovery pathway surrounds 80% of the brushroll." RRB at 44. Further, Tineco's expert testified that he understood the word "within" to mean at least a majority of the brushroll is "enclosed by" or "inside of" the recovery pathway. Tr. (Smith) at 963:12-17 ("Q. Okay. So the way you read this claim, then, just so it's clear, you read the term 'within' to mean completely enclosed or entirely enclosed within the recovery pathway, right? A. I'd say that at least a majority of it is enclosed by or inside of.").[25]

Considering the foregoing evidence and the record as a whole, I find that the Resch accused products practice limitation 1[g] of claim 1. The evidence more persuasively supports BISSELL's contention that the recovery pathway in the accused products includes "essentially all these places that the fluid flows in the course of being recovered." CIB at 43 (quoting Tr. (Sorensen) at 260:12-16 (cleaned up)). The evidence indicates that fluid and debris cover the entire brushroll during operation of the accused products and then the fluid and debris are subsequently recovered from those areas. *See, e.g.*, Tr. (Smith) at 961:7-15, 962:13-24; Tr. (Sorensen) at 250:20-251:4, 251:16-252:7, 260:8-18, 262:4-25. The recovery pathway, in other words, entirely surrounds the brushroll in the accused products. And Tineco does not dispute that a brushroll that is entirely surrounded by a recovery pathway is "within" the recovery pathway.

But even under Tineco's more limited view of what constitutes the "recovery pathway" in the accused products, I would still find limitation 1[g] satisfied. Tineco's expert admitted that a

[25] Neither party raised limitation 1[g]'s "within the recovery pathway" phrase as a term that needed to be construed by the court as a matter of claim construction. *See* EDIS Doc. ID 774956.

brushroll that is at least 50% "enclosed by" or "inside of" the recovery pathway is "within" the recovery pathway as required by limitation 1[g]. There is no material difference, in my view, between a brushroll that is 50% "inside of" the recovery pathway and the brushrolls of the accused products that are illustrated in Mr. Smith's demonstrative:



RDX-0004 at 37.[26]

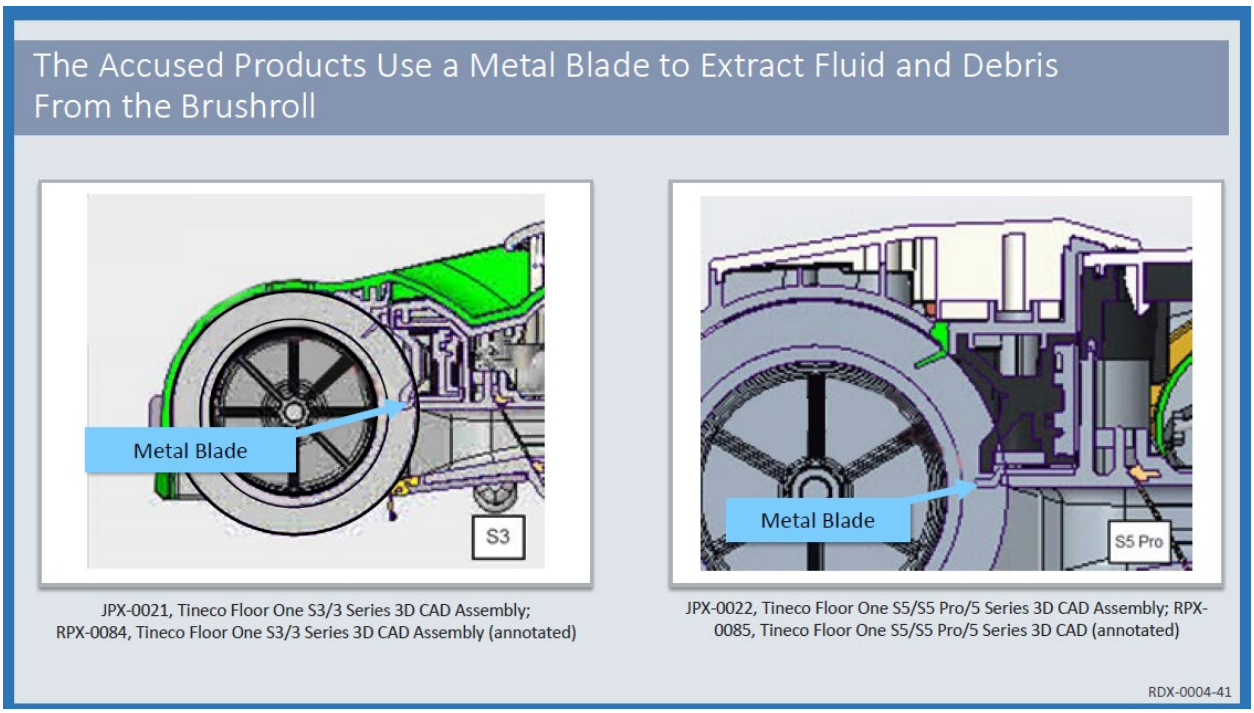
In view of the foregoing evidence and considering the record as a whole, I find that the Resch accused products practice limitation 1[g] of the '735 patent.

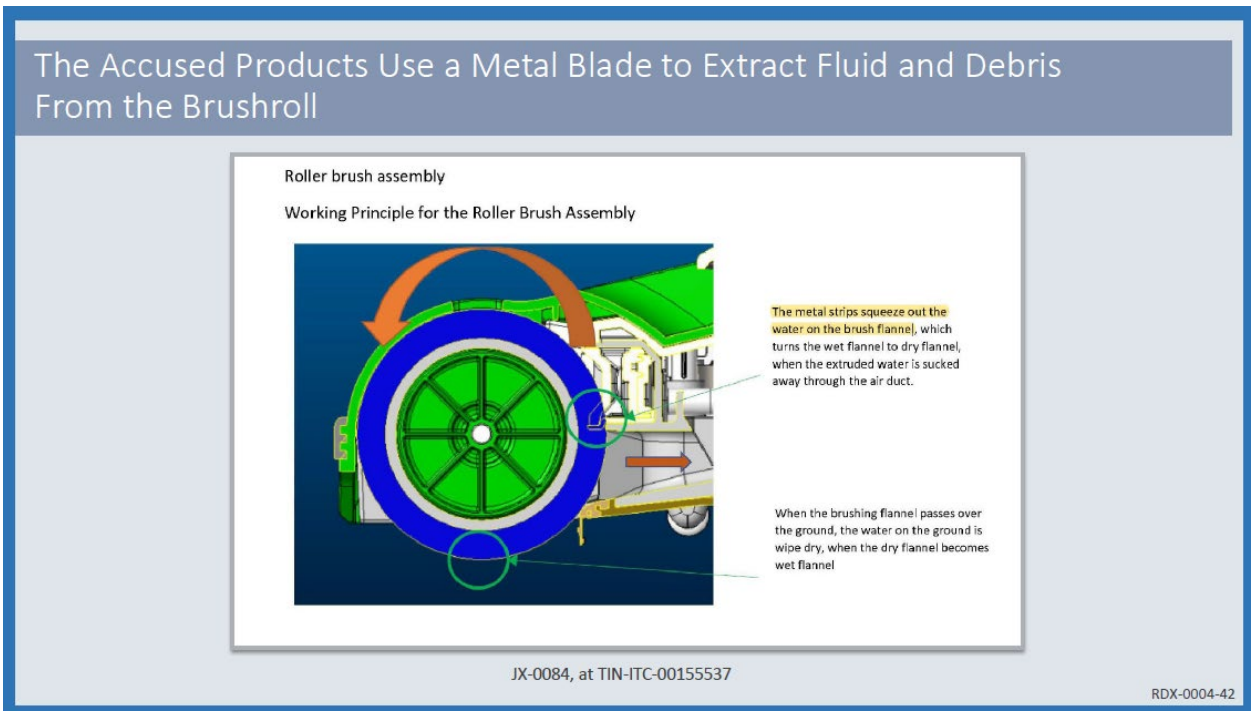
[26] At the evidentiary hearing, Mr. Smith appeared to testify that the recovery pathway was bounded on the left where the brushroll meets the floor. *See, e.g.*, Tr. (Smith) at 955:7-19. His demonstrative, however, highlighted only about fifty percent of the brushroll circumference as the area where there allegedly is "no recovery." RDX-0004 at 37. The demonstrative therefore suggests that there is some recovery from the area immediately to the left of the brushroll. I find that there would be recovery from the area immediately to the left of the brushroll as a device is moved during operation.

ix) 1[h]—"a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;"

The parties do not dispute that the Resch accused products contain a "a brushroll motor operably coupled to the brushroll for rotating the brushroll" as required by limitation 1[h]. CIB at 45; RRB at 45-52. However, the parties dispute whether the Resch accused products contain a suctional nozzle that "is configured to extract fluid and debris from the brushroll."

According to Tineco, the Resch accused products are only configured to suction fluid and debris in the following two ways: "(1) [fluid and debris] are suctioned off of the floor, or (2) [fluid and debris] are absorbed by the brushroll and a metal blade squeezes the fluid and debris out of the brushroll after which they are suctioned off of the metal blade." RRB at 45-46. Tineco thus contends that the suction nozzle does not suction off any fluid and debris directly from the brushroll. Instead, Tineco contends that "it is the metal blade," which allegedly is not part of the suction nozzle, that exclusively extracts fluid and debris from the brushroll. *Id.* at 47. The following pictures show the metal blade that Tineco contends scrapes and squeegees all the fluid and debris off the brushroll as the brushroll rotates counterclockwise:





RDX-0004 at 41-42.

BISSELL contends, on the other hand that the metal blade is part of the suction nozzle. CIB at 46-47. BISSELL also notes that "even assuming that the blade is not part of the suction

nozzle, under Tineco's 'exclusive blade extraction' argument, it ***must be true that not a single fluid or debris particle*** is extracted from the brushroll by either the rotational or suction force applied to the brushroll." CIB at 47. According to BISSELL, the metal blade is not the exclusive means of extracting fluid and debris from the brushroll. In addition to the metal blade, "fluid and debris [are] extracted both by the rotational and suction force applied at the suction inlet." CIB at 45.

Both parties agree that the term "configured to extract fluid and debris from the brushroll" means "the components are arranged to extract fluid and debris from the brushroll." *See Markman* Tr. at 78:14-80:3.

I find that the Resch accused products literally practice limitation 1[h] of claim 1.[27]

Even if the metal blade is the primary means of removing fluid and debris from the brushroll of the accused products, the evidence demonstrates that it is not the exclusive means of doing so. Tineco's expert, Mr. Smith, testified the suctional nozzle in the accused products had enough power to suction fluid and debris "directly off the floor." Tr. (Smith) at 881:18-24. If the suction novel is powerful enough to suction off the floor, I find it more likely than not that the suction nozzle is powerful enough to suction at least some fluid and debris directly from the brushroll, which is located closer to the suction inlet. The suction nozzle is thus "configured to extract fluid and debris from the brushroll" even if the metal blade is not considered part of the suction nozzle as Tineco contends.

[27] Because the Resch accused products literally practice limitation 1[h], I do not separately address BISSELL's doctrine of equivalents arguments. *See* CIB at 48; *see also Schumer v. Lab'y Computer Sys., Inc.*, 308 F.3d 1304, 1314 n.7 (Fed. Cir. 2002) (noting that the doctrine of equivalents is utilized where there is a "[f]ailure of literal infringement").

Additional evidence further confirms that the metal blade is not the exclusive means of extracting fluid and debris from the brushroll. For example, one of the documents that Tineco relies on to support its argument states that the metal blade is only used to "help" remove fluid and debris. RX-0011C at BISSELLITC0000507. Also, BISSELL's expert removed the metal blade from the devices and observed that the devices still extracted fluid and debris from the brushroll. Tr. (Sorensen) at 265:19-266:15. This additional evidence further confirms that the suction nozzle in the Resch accused products is "configured to extract fluid and debris from the brushroll" even if the metal blade is not considered part of the suction nozzle as Tineco contends.

Considering the foregoing evidence and the record as a whole, I find that the Resch accused products practice limitation 1[h].

x) 1[i]—"a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;"

BISSELL contends that the Resch accused products include a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor. CIB at 49 (collecting evidence); Tr. (Sorenson) at 268:17-269:12. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[i] of claim 1.

xi) 1[j]—"a user interface disposed on the handle, the user interface comprising a power button and a cleaning mode button;"

BISSELL contends that the Resch accused products include a user interface disposed on the handle, the user interface comprising a power button, and a cleaning mode button. CIB at 49 (collecting evidence); Tr. (Sorenson) at 269:13-270:9. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[j] of claim 1.

xii) 1[k]—"a self-cleaning mode input control disposed on the upright body and configured to initiate an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the power button and the cleaning mode button; and

BISSELL contends that the accused products have an "unattended automatic cleanout cycle" as well as the other elements recited in limitation 1[k]. CIB at 49-50. Tineco contends that because the product manuals for the accused products instruct users how to manually clean the devices, the devices cannot also have an "unattended automatic cleanout cycle." RRB at 52-53. Considering the record as a whole, I find that the Resch accused products practice limitation 1[k] of claim 1, as discussed below.

The record evidence demonstrates that the Resch accused products have an unattended automatic cleanout cycle in accordance with the requirements of limitation 1[k]. For example, the product manuals for the Resch accused products disclose that the devices have a "self-cleaning" mode that corresponds to the claimed "unattended automatic cleanout" cycle. *See, e.g.,* JX-0069 at 0069.0020; JX-0076 at 0079.0018. BISSELL's expert, Dr. Sorensen, also presented testimony confirming that the Resch accused products have an unattended automatic cleanout cycle as well as the other attendant elements of limitation 1[k]. Tr. (Sorensen) 270:10-272:11; *see also* CPX-0003; CPX-0004; CPX-0005. Further, Tineco's expert, Mr. Smith, performed a live demonstration at the evidentiary hearing during which an accused device did an unattended self-cleaning cycle. Tr. (Smith) 864:8-867:9, 945:18-20 ("Q. So that device did a self-cleaning operation while you were not attending it, correct? A. Yes, it did.").

It is true, as Tineco notes, that the product literature also describes how certain parts of the accused devices can also be cleaned manually if so desired. *See* JX-0069 at 0069.0020-0021; 0076

at 0076.0018-0019. But there is no force to Tineco's contention that manual cleaning and automatic cleaning are mutually exclusive. Things that can be manually cleaned, such as dinnerware and cars, are also automatically cleaned all the time.

Tineco nonetheless argues that manual and automatic cleaning are mutually exclusive because BISSELL allegedly made that argument earlier in the investigation in reference to certain invalidity issues. *See* RRB at 52 (citing JX-0028C at 0028C.0419-0425). There are two problems with Tineco's contention. First, it is not clear to me, from the limited materials provided, that BISSELL was arguing earlier that manual and automatic cleaning are mutually exclusive in the technology at issue in this investigation. *See* JX-0028C at 0028C.0419-0425. Second, even if BISSELL did argue that manual and automatic cleaning are mutually exclusive, I would still find the position unpersuasive in view of the present record. There simply is no persuasive support for the proposition that manual cleaning and automatic cleaning are mutually exclusive.

Considering the foregoing evidence and the record as a whole, I find that the Resch accused products practice limitation 1[k] of claim 1. More evidence relating to this limitation is discussed in connection with the related limitation 1[p] below.

xiii) 1[l]—"a controller controlling the operation of the fluid delivery and recovery systems, and operably coupled with the self-cleaning mode input control;"

BISSELL contends that the Resch accused products "include a controller controlling the fluid delivery and recovery systems operation and is operably coupled with the self-cleaning mode input control." CIB at 50 (collecting evidence); Tr. (Sorenson) at 272:12-273:15. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[l] of claim 1.

xiv) 1[m]—"a storage tray configured to dock the surface cleaning apparatus in the upright storage position for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus, the storage tray comprising at least one charging contact, a power cord, and a wall charger configured to be plugged into a household outlet;"

BISSELL contends that the Resch accused products include a storage tray configured to dock the surface cleaning apparatus in the upright storage position for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus, the storage tray comprising at least one charging contact, a power cord, and a wall charger configured to be plugged into a household outlet. CIB at 50-51 (collecting evidence); Tr. (Sorenson) at 273:16-274:4, 275:3-11, 275:18-277:5. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[m] of claim 1.

xv) 1[n]—"the surface cleaning apparatus comprises at least one corresponding charging contact configured to couple with the at least one charging contact of the storage tray when the surface cleaning apparatus is docked with the storage tray;"

BISSELL contends that the Resch accused products include at least one corresponding charging contact configured to couple with at least one charging contact of the storage tray when the surface cleaning apparatus is docked with the storage tray. CIB at 51 (collecting evidence); Tr. (Sorenson) at 277:8-24. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[n] of claim 1.

xvi) 1[o]—"wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the self-cleaning mode is operable only when the surface cleaning apparatus is docked on the storage tray; and"

BISSELL contends that the Resch accused products practice limitation 1[o] of claim 1. CIB at 51 (collecting evidence); Tr. (Sorenson) at 273:1-15; JX-0090C (Xu Dep. Tr.) 53:23-54:16. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice limitation 1[o].

xvii) 1[p]—"wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle."

(a) Literal Infringement

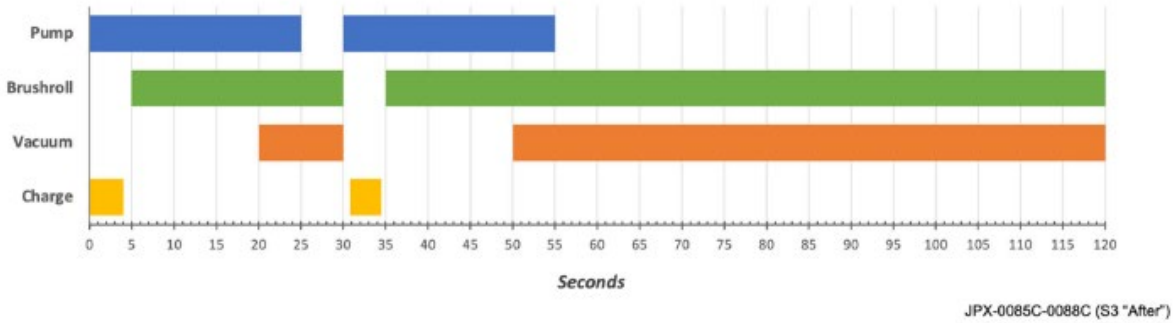
BISSELL contends that the Resch accused products—both original and redesigned[28]—satisfy the limitation "a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle." CIB at 51-56; Tr. (Sorensen) at 278:1-292:12. Tineco does not dispute that the original Resch accused products satisfy limitation 1[p]. *See* RRB at 53-69. But Tineco does dispute that the redesigned Resch accused products satisfy limitation 1[p]. *Id.*

[28] As noted above, the redesigned Resch accused products have source code that was altered to cause the battery to charge at two separate times during what Tineco refers to as the "self-clean cycle" for those products. *See, e.g.*, RPB at 2, 21; CPB at 44-45; CIB at 53; RRB at 55; Tr. at 1171:20-1172:10. The original version of the products did not charge the battery during that period. *See* CDX-0007 at 73; Tr. at 1171:20-1172:10.

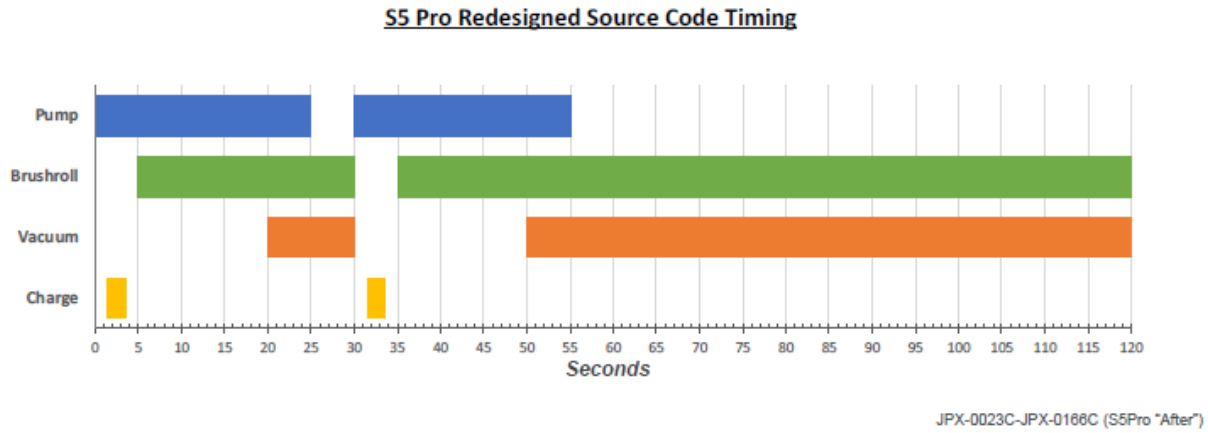
The record supports BISSELL's contention that the original Resch accused products practice limitation 1[p]. *See, e.g.*, Tr. (Sorensen) at 278:1-292:12; CPX-0003; CPX-0004; CPX-0005; JX-0069; JX-0076; CDX-0007 at 73; JPX-0089C-0092C; JPX-0097C-0100C. However, for the reasons discussed below, I find that BISSELL failed to prove by a preponderance of the evidence that the redesigned Resch accused products practice limitation 1[p].

There is no dispute about the following underlying facts that relate to limitation 1[p]. The redesigned Resch accused products have a self-cleaning button on the handle. *See, e.g.*, Tr. (Sorensen) 319:2-5. When a user presses that button, the devices audibly announce "start self-cleaning." *See, e.g.*, Tr. (Smith) at 867:21-23. After that announcement, the devices perform what Tineco's product manuals refers to as a "self-cleaning cycle" for a period of 120 seconds. Tr. (Sorensen) 317:1-4, 319:2-5; JX-0071 at 0071.0017, 0020; JX-0076 at 0076.0015, 0018. During that so-called "self-cleaning cycle" three different components in the device—the pump, brushroll motor, and vacuum motor—turn on and off in different combinations at different times. A battery charging circuit is also enabled and disabled. The parties agree that the following timing diagrams accurately represent what happens when during the 120 second period:

S3 Redesigned Source Code Timing



JPX-0085C-0088C (S3 "After")



CIB at 53; *see also* RRB at 55 (presenting the same information in tabular form); Tr. at 1171:20-1172:10. As indicated by the undisputed timing diagrams above, the redesigned products charge twice during the 120 second period. In total, the S3 charges for approximately 8 seconds and the S5 Pro charges for 4 seconds. RRB at 55. At the end of the 120 second period, the products audibly announce "self-cleaning cycle complete." Tr. (Sorensen) at 320:22-321:7.

Although there is no dispute that the redesigned Resch accused products charge twice during what Tineco's own materials and products call a "self-cleaning cycle," BISSELL contends that the products have a "battery charging circuit" that "remains disabled during the unattended automatic cleanout cycle." CIB at 51-56. In support of its contention, BISSELL relies on the testimony of its expert, Dr. Sorensen. Dr. Sorensen noted that the claims recite that during an unattended automatic cleaning cycle, "the pump, the brushroll motor, and the vacuum motor are energized." *See, e.g.*, JX-0006 ('735 patent) at 27:54-55, 29:55-57. In view of that claim language, Dr. Sorensen testified that the "unattended cleanout cycle" first introduced in limitation 1[k] is "a period of time in which the pump, the brushroll motor, and the vacuum motor are energized, but it doesn't say they have to be energized all together or in any particular order, it's just that at some point during that duration all three elements are energized." Tr. (Sorensen) at 280:10-281:2. Dr.

Sorensen testified that the period from 4 seconds to approximately 20 seconds constituted one such cleanout cycle because those three components had been energized during that period. Tr. (Sorensen) at 326:12-327:3.

But Dr. Sorensen indicated that the numerous other periods—besides the period from 4 seconds to approximately 20 seconds—also constituted "unattended cleanout cycles" because all that was required is that "a given period of time will have to see all three elements be energized." Tr. (Sorensen) at 324:14-22, 327:4-13, 324:17-22; *see also id.* at 287:23-288:10 (indicating the period from 10 to 25 seconds constituted another example of "a self-cleaning cycle under the definition of claim 1"). Under Dr. Sorensen's view of the term "unattended automatic cleanout cycle,"[29] all the following periods would constitute an unattended cleanout cycle in the redesigned S3 device:

Period (in seconds)
1 – 20
2 – 20
3 – 20
4 – 20
5 – 20

Indeed, taking Dr. Sorensen's contention to its logical conclusion, the 120 second period that occurs after a user pushes the self-clean button on the accused devices could be sliced up into limitless, overlapping "unattended automatic cleanout cycles."

[29] Neither party contends that their dispute regarding limitation 1[p] should be resolved as a matter of claim construction. *See* EDIS Doc. ID 774956.

In order to determine whether any of those periods meet limitation 1[p], Dr. Sorensen stated that one has to look at a "fourth criteria": "[I]s the battery [in an] enabling or disabling state[?]" Tr. (Sorensen) at 327:4-13. BISSELL and Dr. Sorensen appear to contend that as long as a device has one such period that does not include charging, the device practices limitation 1[p].

I did not find Dr. Sorensen's testimony regarding limitation 1[p] credible or persuasive. It is true that the claims recite that the pump, the brushroll motor, and the vacuum motor are energized during the cleanout cycle, as Dr. Sorensen contends. But turning those components on in the Resch accused products does not mean that the "cleanout" and "self-cleaning" required by the claims has occurred. The Resch patents teach that the "unattended automatic *cleanout cycle*" is a cycle that is used to clean a dirty apparatus. *See, e.g.*, JX-0007 ('428 patent) at 23:62-24:3, 26:5-42. One of the two inventors of the Resch patents, Jacob Resch, likewise testified that the goal of a cleanout cycle is to clean a dirty device. JX-0098C (Resch Dep. Tr.) at 116:16-17, 116:20-117:5 ("I think the overall goal would be to return to a like new state after cleaning it out."), 117:15-19, 117:23-118:10.

Dr. Sorensen's testimony ignores the fact that a cleanout cycle cleans the device. Under Dr. Sorensen's view, even a one second period that did little to clean a device could qualify as an unattended automatic cleanout cycle. Tr. (Sorensen) 329:5-8. That cannot be correct. To demonstrate that a cycle constituted an "unattended automatic cleanout cycle," BISSELL needed to show that certain components were energized *and* that the cycle cleans out the device. BISSELL failed to do that.

The evidence presented at the hearing indicates that the redesigned S3 and S5 Pro have not completed a cleaning cycle at time t=20 seconds (i.e., the end of the time period that Dr. Sorensen contends is the infringing cleanout cycle). At that point, the vacuum motor would have just turned

on, so the vacuum motor would not have had time to suction away all the debris and fluid. Moreover, Dr. Sorensen admitted that he did not analyze whether the brushroll of the redesigned S3 and S5 Pro products could be cleaned at all by the time he opined that the allegedly infringing "cleanout cycle" was complete (i.e., t=20 seconds). Tr. (Sorensen) at 333:23-334:2.

The evidence indicates that the products do not finish cleaning themselves until the end of the 120 second period. *See, e.g.*, Tr. (Nielson) at 192:15-193:15; Tr. (Sorenson) at 317:1-4, 319:18-23, 320:2-322:21; Tr. (Xu) at 579:12-25, 580:25-581:24; Tr. (Jones) at 826:25-827:24, 828:11-16; Tr. (Smith) at 858:14-24, 861:12-16, 863:17-25; RPX-0253; RPX-0254. The final 65 seconds of the 120 second period is used to clean the devices' brush and internal piping. Tr. (Xu) at 579:12-25; Tr. (Smith) at 858:25-859:5, 866:3-867:4. Consequently, the full 120 second period that the products refer to as a "self-cleaning cycle" corresponds to the "unattended cleanout cycle" recited in the claims. It is undisputed that both the redesigned S3 and S5 Pro charge twice during that period.

In addition to ignoring the "cleanout" requirement of the claim, Dr. Sorensen's position also ignores the word "cycle" in the claim, a word based on the same Latin root as the word circle. It connotes a return to the beginning. Neither Dr. Sorensen nor BISSELL provide any explanation as to how actions in an arbitrarily selected period constitute any sort of cycle.

In view of the foregoing evidence and the record as a whole, I find that the redesigned Resch accused products do not satisfy the requirement in limitation 1[p] that the battery charging circuit "remains disabled during the unattended automatic cleanout cycle."[30]

[30] I also find that the redesigned S3 does not satisfy limitation 1[p]'s requirement that "the battery charging circuit is disabled by the actuation of the self-cleaning mode input control." After the user presses the self-cleaning button of the redesigned S3, the battery continues charging for four seconds. *See* CIB at 53; RRB at 55; Tr. at 1171:20-1172:10.

(b) Doctrine of Equivalents

BISSELL also contends that "[e]ven assuming that the battery charging circuit must remain disabled for an arbitrarily defined self-clean cycle by each manufacturer, the 'redesigned' products also infringe under the doctrine of equivalents because the differences are insubstantial." CIB at 55. Tineco responds that "Complainants are barred from asserting infringement under the doctrine of equivalents due to prosecution history estoppel." RRB at 66. Tineco also argues that there is no infringement under the doctrine of equivalents because the differences between the redesigned products and the claim are substantial. I find that BISSELL did not prove by a preponderance of the evidence that the redesigned Resch accused products infringe claim 1 under the doctrine of equivalents.

"The doctrine of equivalents is not a license to ignore claim limitations." *Dolly, Inc. v. Spalding & Evenflo Companies, Inc.*, 16 F.3d 394, 398 (Fed. Cir. 1994); *see also Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40 (1997) (urging a "special vigilance against allowing the concept of equivalence to eliminate completely any" claim elements). Limitation 1[p] requires a "battery charging circuit" that "remains disabled during the unattended automatic cleanout cycle." I did not find persuasive Dr. Sorensen's testimony that a battery circuit that does the opposite (i.e., a battery circuit that charges during an automatic cleanout cycle) is insubstantially different from the claim. *See* Tr. (Sorensen) 289:24-291:25. Dr. Sorensen's opinion renders meaningless the "remains disabled" requirement of limitation 1[p], in violation of precedent. *Cf. Warner-Jenkinson*, 520 U.S. at 29 (the doctrine of equivalents cannot "effectively eliminate [a claim] element in its entirety). That is particularly true in the context of the Resch patent specification.

The specification explains that keeping the battery charging circuit disabled is "beneficial because if the battery charging circuit 430 is not disabled and power not supplied by the battery 472 during the self-cleaning mode, the capacity of the wall charger 432 can be exceeded." JX-0007 ('428 patent) at 25:38-42. To overcome that problem, according to the specification, the wall charger could be designed to have higher operating power, but "[w]all chargers with higher capacity are much more expensive." *Id.* at 25:42-45.

By designing devices that can charge during an automatic unattended cleaning cycle, Tineco did something that the patents suggested was not possible at a reasonable cost. In my view, that is a significant difference from the invention defined by claim 1.

Considering the foregoing evidence and the record as a whole, I find that BISSELL failed to demonstrate that the redesigned Resch accused products infringe claim 1 under the doctrine of equivalents.

xviii) Claim 1 of the '735 Patent Conclusion

For the reasons explained above, I find that the original Resch accused products infringe claim 1 of the '735 patent. However, because BISSELL has not shown the presence of limitation 1[p] in the redesigned Resch accused products, either literally or under the doctrine of equivalents, I find that the redesigned Resch accused products do not infringe claim 1 of the '735 patent. *See Dunbar v. Myers*, 94 U.S. at 202; *Warner-Jenkinson*, 520 U.S. at 29.

b) Claim 13

i) 13[Preamble]—"A floor cleaning system, comprising:"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[preamble]	A floor cleaning system, comprising:	**13[preamble]**	A floor cleaning system, comprising:

No party has argued that the preamble of claim 13 of the ’735 patent is limiting. BISSELL nonetheless contends that the Resch accused products practice limitation 13[preamble] of claim 13 for the same reasons it argues that the Resch accused products practice limitation 1[preamble] of claim 1 of the ’735 patent. CIB at 41; Tr. (Sorenson) at 237:15-21. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 69-70. As indicated by the above table, limitation 13[preamble] is the same as limitation 1[preamble]. Considering the record as a whole, I find that the Resch accused products practice the preamble of claim 13, regardless of whether the preamble is limiting.

ii) 13[a]—“a surface cleaning apparatus comprising:”

’735 Patent Claim 1 Element	**Claim Language**	**’735 Patent Claim 13 Element**	**Claim Language**
1[a]	a surface cleaning apparatus comprising:	**13[a]**	a surface cleaning apparatus comprising:

BISSELL contends that the Resch accused products practice limitation 13[a] for the same reasons it argues that the Resch accused products practice limitation 1[a] of the ’735 patent. CIB at 41; Tr. (Sorenson) at 238:1-8. Tineco does not dispute that the Resch accused products satisfy limitation 13[a] of the ’735 patent. *See* RRB at 69-70. As indicated by the above table, limitation 13[a] is the same as limitation 1[a]. Considering the record as a whole, I find that the Resch accused products practice limitation 13[a] of claim 13.

iii) 13[b]—"a fluid delivery system comprising a supply tank, a pump, and a fluid distributor;"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[e]	a fluid delivery system comprising a supply tank removable from the frame, a pump, and a fluid distributor;	**13[b]**	a fluid delivery system comprising a supply tank, a pump, and a fluid distributor;

BISSELL contends that the Resch accused products practice limitation 13[b] for the same reasons it argues that the products practice limitation 1[e] of the '735 patent. CIB at 42; Tr. (Sorenson) at 247:12-249:17. Tineco does not dispute that the Resch accused products satisfy limitation 13[b]. *See* RRB at 69-70. As indicated by the above table, limitation 1[e] includes all the elements in limitation 13[b]. Considering the record as a whole, I find that the Resch accused products practice limitation 13[b].

iv) 13[c]—"a recovery system comprising a recovery pathway, a recovery tank and a vacuum motor;"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[f]	a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor;	**13[c]**	a recovery system comprising a recovery pathway, a recovery tank and a vacuum motor;

BISSELL contends that the Resch accused products practice limitation 13[c] for the same reasons it argues they practice limitation 1[f] of the '735 patent. CIB at 42; Tr. (Sorenson) at 249:18-251:4, 251:16-252:7. Tineco does not dispute that the Resch accused products satisfy limitation 13[c]. *See* RRB at 69-70. As indicated by the above table, limitation 1[f] includes all

the elements in limitation 13[c]. Considering the record as a whole, I find that the Resch accused products practice limitation 13[c].

v) 13[d]—"an upright body comprising a handle, the supply tank and the recovery tank;"

BISSELL contends that the Resch accused products practice limitation 13[d]. CIB at 41; Tr. (Sorenson) at 238:10-240:5; CDX-0007 at 26. Tineco does not dispute that the Resch accused products satisfy this limitation. *See* RRB at 69-70. Considering the record as a whole, I find that the Resch accused products practice limitation 13[d].

vi) 13[e]—"a base coupled with the upright body and adapted for movement across a surface to be cleaned, the base comprising the fluid distributor, a brushroll, a brushroll motor operably coupled to the brushroll for rotating the brushroll, and a suction nozzle configured to extract fluid and debris from the brushroll;"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[c]	a base coupled with the upright body and adapted for movement across a surface to be cleaned;	**13[e]**	a base coupled with the upright body and adapted for movement across a surface to be cleaned, the base comprising the fluid distributor, a brushroll, a brushroll motor operably coupled to the brushroll for rotating the brushroll, and a suction nozzle configured to extract fluid and debris from the brushroll;
1[h]	a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;		

BISSELL contends that the Resch accused products practice limitation 13[e] for the same reasons it argues that they practice limitations 1[c] and 1[h]. CIB at 41-42, 45-48; Tr. (Sorenson) at 240:7-23, 240:25-241:15, 262:4-25, 265:6-266:19. Tineco argues that BISSELL has not met its

"burden of proving that the Resch Accused Products meet limitation 13[e]" for the "reasons explained in limitation 1[h]" with respect to the requirement for a "suction nozzle" that is "configured to extract fluid and debris" RRB at 69; *see also id.* at 45-52. The above table indicates the overlap limitation 13[e] has with limitations 1[c] and 1[h]. I rejected Tineco's contentions regarding limitation 1[h] above. *See* Section V.B.1.a.ix., *supra*. Considering the record as a whole, I find that the Resch accused products practice limitation 13[e].

vii) 13[f]—"a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[i]	a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;	**13[f]**	a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;

BISSELL contends that the Resch accused products practice limitation 13[f] for the same reasons it argues that they practice limitation 1[i]. CIB at 49; Tr. (Sorenson) at 268:17-269:12. Tineco does not dispute that the Resch accused products satisfy limitation 13[f]. *See* RRB at 69-70. As indicated by the above table, limitation 1[i] includes all the elements in limitation 13[f]. Considering the record as a whole, I find that the Resch accused products practice limitation 13[f].

viii) 13[g]—"a user interface disposed on the handle, the user interface comprising a power button disposed on a forward side of the handle and a cleaning mode button disposed on a forward side of the handle adjacent to the power button;"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[j]	a user interface disposed on the handle, the user interface comprising a power button and a cleaning mode button;	**13[g]**	a user interface disposed on the handle, the user interface comprising a power button disposed on a forward side of the handle and a cleaning mode button disposed on a forward side of the handle adjacent to the power button;

BISSELL contends that the Resch accused products practice limitation 13[g] for the same reasons it argues that they practiced limitation 1[j]. CIB at 49; Tr. (Sorenson) at 269:13-270:9; *see also* CDX-0007 at 48. Tineco does not dispute that the Resch accused products satisfy limitation 13[g]. *See* RRB at 69-70. The above table indicates the overlap limitation 1[j] has with limitation 13[g]. Considering the record as a whole, I find that the Resch accused products practice limitation 13[g].

ix) 13[h]—"a self-cleaning mode input control on the upright body which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the user interface; and"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[k]	a self-cleaning mode input control disposed on the upright body and configured to initiate an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the power button and the cleaning mode button; and	**13[h]**	a self-cleaning mode input control on the upright body which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the user interface; and

BISSELL contends that the Resch accused products practice limitation 13[h] for the same reasons it argues that they practice limitation 1[k]. CIB at 49-50; Tr. (Sorenson) at 270:10-272:11. Tineco contends that the Resch accused products do not satisfy limitation 13[h] for the same reasons that they do not satisfy limitation 1[k]. RRB at 69. The above table shows the overlap between limitation 13[h] and limitation 1[k]. Above, I rejected Tineco's contentions regarding limitation 1[k]. *See* Section V.B.1.a.xii., *supra*. Considering the record as a whole, I find that the Resch accused products practice limitation 13[h].

x) 13[i]—"a controller controlling the operation of the fluid delivery and recovery systems;"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[l]	a controller controlling the operation of the fluid delivery and recovery systems, and operably coupled with the self-cleaning mode input control;	**13[i]**	a controller controlling the operation of the fluid delivery and recovery systems;

BISSELL contends that the Resch accused products practice limitation 13[i] for the same reasons it argues that they practice limitation 1[l]. CIB at 50; Tr. (Sorenson) at 272:12-273:15. Tineco does not dispute that the Resch accused products satisfy limitation 13[i]. *See* RRB at 69-70. As indicated by the above table, limitation 1[l] includes all the elements in limitation 13[i]. Considering the record as a whole, I find that the Resch accused products practice limitation 13[i].

xi) 13[j]—"a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[m]	a storage tray configured to dock the surface cleaning apparatus in the upright storage position for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus, the storage tray comprising at least one charging contact, a power cord, and a wall charger configured to be plugged into a household outlet;	**13[j]**	a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;

BISSELL contends that the Resch accused products practice limitation 13[j] for the same reasons it argues that they practice limitation 1[m]. CIB at 50-51; Tr. (Sorenson) at 273:16-274:4, 275:3-11, 275:18-277:5. Tineco does not dispute that the Resch accused products satisfy limitation 13[j]. *See* RRB at 69-70. As indicated by the above table, limitation 1[m] includes all the elements in limitation 13[j]. Considering the record as a whole, I find that the Resch accused products practice limitation 13[j].

xii) 13[k]—"wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the controller is configured to lock-out the automatic cleanout cycle when the surface cleaning apparatus is not docked with the storage tray and prevent initiation of the automatic cleanout cycle; and"

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[o]	wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the self-cleaning mode is operable only when the surface cleaning apparatus is docked on the storage tray; and	**13[k]**	wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the controller is configured to lock-out the automatic cleanout cycle when the surface cleaning apparatus is not docked with the storage tray and prevent initiation of the automatic cleanout cycle; and

BISSELL contends that the Resch accused products practice limitation 13[k] for the same reasons it argues that they practice limitation 1[o]. CIB at 51; Tr. (Sorenson) at 273:1-15; JX-0090C (Xu Dep. Tr.) 53:23-54:16. Tineco does not dispute that the Resch accused products

satisfy limitation 13[k]. *See* RRB at 69-70. The above table indicates the overlap that limitation 1[o] has with limitation 13[k]. Considering the record as a whole, I find that the Resch accused products practice limitation 13[k].

xiii) 13[l]—"wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle."

'735 Patent Claim 1 Element	Claim Language	'735 Patent Claim 13 Element	Claim Language
1[p]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.	**13[l]**	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.

BISSELL contends that the Resch accused products practice limitation 13[l] for the same reasons it argues that they practice limitation 1[p]. CIB at 51-56. Tineco contends that the Resch accused products do not satisfy limitation 13[l] for the same reasons that they do not satisfy limitation 1[p]. RRB at 70. As indicated by the above table, limitation 1[p] includes all the elements in limitation 13[l]. Considering the record as a whole, I find that the original Resch accused products practice limitation 13[l]. But I find that the redesigned Resch accused products do not practice limitation 13[l] for the same reasons that they do not practice limitation 1[p], either literally or under the doctrine of equivalents. *See* Section V.B.1.a.xvii., *supra*.

xiv) Claim 13 of the ’735 Patent Conclusion

For the reasons explained above, I find that the original Resch accused products infringe claim 13 of the ’735 patent. However, because BISSELL has not shown the presence of limitation 13[l] in the redesigned Resch accused products, either literally or under the doctrine of equivalents, I find that the redesigned Resch accused products do not infringe claim 13 of the ’735 patent. *See Dunbar v. Myers*, 94 U.S. at 202; *Warner-Jenkinson*, 520 U.S. at 29.

c) Claim 15

i) 14—“The floor cleaning system of claim 13, wherein the controller is configured to activate the pump and the brushroll motor during the unattended automatic cleanout cycle, whereby the pump draws cleaning fluid from the supply tank, the fluid distributor sprays cleaning fluid, and the brushroll motor rotates the brushroll.”

Claim 14 is not asserted. However, claim 15, which is asserted, depends from claim 14. BISSELL contends that the Resch accused products practice limitation 14 of claim 15. CIB at 56-57 (collecting evidence); *see also* Tr. (Sorensen) at 292:15-294:5. Tineco does not dispute that the Resch accused products satisfy the additional limitation 14. *See* RRB at 37-70. Considering the record as a whole, I find that the Resch accused products practice the additional limitation of claim 14.

ii) 15—“The floor cleaning system of claim 14, wherein the controller is configured to activate the vacuum motor after the pump and the brushroll motor during the unattended automatic cleanout cycle, and the vacuum motor extracts cleaning fluid from the storage tray for collection in the recovery tank.”

BISSELL contends that the Resch accused products practice the additional limitation of claim 15. CIB at 57; *see also* Tr. (Sorensen) at 294:6-18. Tineco does not dispute that the Resch accused products satisfy the additional limitation of claim 15, but Tineco reiterates that claim 15

ultimately depends from claim 13, which Tineco argues is not infringed. *See* RRB at 70. Considering the record as a whole, I find that the Resch accused products practice the additional limitation of claim 15.

iii) Claim 15 of the '735 Patent Conclusion

For the reasons explained above, I find that the original Resch accused products infringe claim 15 of the '735 patent. However, because BISSELL has not shown the presence of limitation 13[l] in the redesigned Resch accused products, either literally or under the doctrine of equivalents, and because claim 15 depends from claim 13 and requires all elements of claim 13, I find that the redesigned Resch accused products do not infringe claim 15 of the '735 patent. *See Dunbar v. Myers*, 94 U.S. at 202; *Warner-Jenkinson*, 520 U.S. at 29.

d) Conclusion Regarding Alleged Infringement of the '735 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has demonstrated that the original Resch accused products infringe claims 1, 13, and 15 of the '735 patent. However, I find that BISSELL has not demonstrated that the redesigned Resch accused products infringe any asserted claim of the '735 patent.

2. The '428 Patent

BISSELL asserts that the original and redesigned Resch accused products infringe claim 1 of the '428 patent. CIB at 57-62. Tineco contends that the original and redesigned Resch accused products do not infringe because they do not practice several limitations of the '428 patent. RRB at 72-73. As explained in more detail below, I find that the original Resch accused products infringe claim 1 of the '428 patent. I find, however, that the redesigned Resch accused products do not infringe claim 1 the '428 patent because they do not practice limitation 1[n] of the '428 patent.

a) 1[Preamble]—"A floor cleaning system, comprising:"

'735 Patent Claim 1 Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[preamble]	A floor cleaning system, comprising:	**1[preamble]**	A floor cleaning system, comprising:

No party has argued that the preamble of claim 1 of the '428 patent is limiting. BISSELL nonetheless contends that the Resch accused products practice limitation 1[preamble] of the '428 patent for the same reasons it argues that they practice limitation 1[preamble] of the '735 patent. CIB at 57. Tineco does not dispute that the Resch accused products satisfy limitation 1[preamble] of the '428 patent. *See* RRB at 72-73. As indicated by the above table, limitation 1[preamble] of the '735 patent is the same as limitation 1[preamble] of the '428 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[preamble] of the '428 patent, regardless of whether the preamble is limiting.

b) 1[a]—"a surface cleaning apparatus comprising:"

'735 Patent Claim 1 Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[a]	a surface cleaning apparatus comprising:	**1[a]**	a surface cleaning apparatus comprising:

BISSELL contends that the Resch accused products practice limitation 1[a] of the '428 patent for the same reasons it argues that they practice limitation 1[a] of the '735 patent. CIB at 57. Tineco does not dispute that the Resch accused products satisfy limitation 1[a] of the '428 patent. *See* RRB at 72-73. As indicated by the above table, limitation 1[a] of the '428 patent is

the same as limitation 1[a] of the ’735 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[a] of the ’428 patent.

c) 1[b]—“a fluid delivery system comprising a supply tank, a pump, and a fluid distributor;”

’735 Patent Claim 1 Element	Claim Language	’428 Patent Claim 1 Element	Claim Language
1[e]	a fluid delivery system comprising a supply tank removable from the frame, a pump, and a fluid distributor;	**1[b]**	a fluid delivery system comprising a supply tank, a pump, and a fluid distributor;

BISSELL contends that the Resch accused products practice limitation 1[b] of the ’428 patent for the same reasons it argues that they practice limitation 1[e] of the ’735 patent. CIB at 58. Tineco does not dispute that the Resch accused products satisfy limitation 1[b] of the ’428 patent. As indicated by the above table, limitation 1[e] of the ’735 patent includes all the elements in limitation 1[b] above the ’428 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[b] of the ’428 patent.

d) 1[c]—“a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle,”

’735 Patent Claim 1 Element	Claim Language	’428 Patent Claim 1 Element	Claim Language
1[f]	a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor;	**1[c]**	a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle,

BISSELL contends that the Resch accused products practice limitation 1[c] of the ’428 patent for the same reasons it argues that they practice limitation 1[f] of the ’735 patent. CIB at

58. Tineco does not dispute that the Resch accused products satisfy limitation 1[c] of the ’428 patent. *See* RRB at 72-73. As indicated by the above table, limitation 1[f] of the ’735 patent includes all the elements in limitation 1[c] of the ’428 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[c] of the ’428 patent.

e) 1[d]—“a brushroll within the recovery pathway of the recovery system;”

’735 Patent Claim 1 Element	Claim Language	’428 Patent Claim 1 Element	Claim Language
1[g]	a brushroll within the recovery pathway of the recovery system;	**1[d]**	a brushroll within the recovery pathway of the recovery system;

BISSELL contends that the Resch accused products practice limitation 1[d] of the ’428 patent for the same reasons it argues they practice limitation 1[g] of the ’735 patent. CIB at 58. Tineco contends that the Resch accused products do not satisfy limitation 1[d] of the ’428 patent for the same reasons that they do not satisfy limitation 1[g] of the ’735 patent. RRB at 72. As the above table indicates, limitation 1[d] of the ’428 patent is the same as limitation 1[g] of the ’735 patent. I find that the Resch accused products practice limitation 1[d] of the ’428 patent for the same reason that they practice limitation 1[g] of the ’735 patent. *See* Section V.B.A.1.a.viii., *supra*.

f) 1[e]—"a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;"

'735 Patent Claim 1 Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[h]	a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;	**1[e]**	a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;

BISSELL contends that the Resch accused products practice limitation 1[e] of the '428 patent for the same reasons it argues they practice limitation 1[h] of the '735 patent. *See, e.g.*, CIB at 58; CDX-0007 at 91. Tineco contends that the Resch accused products do not satisfy limitation 1[e] of the '428 patent for the same reasons that they do not satisfy limitation 1[h] of the '735 patent. RRB at 72. As indicated by the above table, limitation 1[e] of the '428 patent is the same as limitation 1[h] of the '735 patent. I find that the Resch accused products practice limitation 1[e] of the '428 patent for the same reasons that they practice limitation 1[h] of the '735 patent. *See* Section V.B.1.a.ix., *supra*.

g) 1[f]—"a rechargeable battery selectively powering the pump, the brushroll motor, and the vacuum motor;"

'735 Patent Claim 1 Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[i]	a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;	**1[f]**	a rechargeable battery selectively powering the pump, the brushroll motor, and the vacuum motor;

BISSELL contends that the Resch accused products practice limitation 1[f] of the '428 patent for the same reasons it argues that they practice limitation 1[i] of the '735 patent. *See, e.g.*, CIB at 58; CDX-0007 at 92. Tineco does not dispute that the Resch accused products satisfy limitation 1[f] of the '428 patent. *See* RRB at 72-73. As indicated by the table above, limitation 1[i] of the '735 patent includes all the elements in 1[f] of the '428 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[f] of the '428 patent.

h) 1[g]—"a battery charging circuit controlling the recharging of the rechargeable battery;"

'735 Patent Claim 1 Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[p]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.	**1[g]**	a battery charging circuit controlling the recharging of the rechargeable battery;

BISSELL contends that the Resch accused products practice limitation 1[g] for the same reasons it argues that they practice limitation 1[p] of the '735 patent. CIB at 58; *see also* Tr. (Sorensen) at 277:25-278:22. Tineco does not dispute that the Resch accused products satisfy limitation 1[g] of the '428 patent. *See* RRB at 72-73. As indicated by the table above, limitation 1[p] of the '735 patent includes all the elements in limitation 1[g] of the '428 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[g] of the '428 patent.

i) 1[h]—"a self-cleaning mode input control which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized; and"

'735 Patent Claim 1 Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[k]	a self-cleaning mode input control disposed on the upright body and configured to initiate an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the power button and the cleaning mode button; and	**1[h]**	a self-cleaning mode input control which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized; and

BISSELL contends that the Resch accused products practice limitation 1[h] of the '428 patent for the same reasons it argues they practice limitation 1[k] of the '735 patent. CIB at 58-59. Tineco contends that the Resch accused products do not satisfy limitation 1[h] of the '428 patent for the same reasons that they do not satisfy limitation 1[k] of the '735 patent. *See* RRB at 72. As indicated by the above table, limitation 1[k] of the '735 patent includes all the elements in limitation 1[h] of the '428 patent. I find that the Resch accused products practice limitation 1[h] of the '428 patent for the same reasons that they practice limitation 1[k] of the '735 patent. *See* Section V.B.1.a.xii., *supra*.

j) 1[i]—"a controller controlling the operation of the fluid delivery and recovery systems and configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control; and"

'735 Patent Claim 1 Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[l]	controller controlling the operation of the fluid delivery and recovery systems, and operably coupled with the self-cleaning mode input control;	**1[i]**	a controller controlling the operation of the fluid delivery and recovery systems and configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control; and

BISSELL contends that the Resch accused products practice limitation 1[i] of the '428 patent for the same reasons it argues they practice limitation 1[l] of the '735 patent. *See, e.g.*, CIB at 60; CDX-0007 at 52; *see also* Tr. (Sorensen) at 272:13-273:15. Tineco does not dispute that the Resch accused products satisfy limitation 1[i] of the '428 patent. *See* RRB at 72-73. The above table indicates the overlap between limitation 1[l] of the '735 patent and limitation 1[i] of the '428 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[i] of the '428 patent.

k) 1[j]—"a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;"

'735 Patent Claim 1 Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[m]	a storage tray configured to dock the surface cleaning apparatus in the upright storage position for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus, the storage tray comprising at least one charging contact, a power cord, and a wall charger configured to be plugged into a household outlet;	**1[j]**	a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;

BISSELL contends that the Resch accused products practice limitation 1[j] of the '428 patent for the same reasons it argues they practice limitation 1[m] of the '735 patent. *See, e.g.*, CIB at 60; CDX-0007 at 53. Tineco does not dispute that the Resch accused products satisfy limitation 1[j] of the '428 patent. *See* RRB at 72-73. As indicated by the above table, limitation 1[m] of the '735 patent includes all the elements in limitation 1[j] of the '428 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[j] of the '428 patent.

l) 1[k]—"wherein, to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation, the controller is configured to:"

'735 Patent Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
14	The floor cleaning system of claim 13, wherein the controller is configured to activate the pump and the brushroll motor during the unattended automatic cleanout cycle, whereby the pump draws cleaning fluid from the supply tank, the fluid distributor sprays cleaning fluid, and the brushroll motor rotates the brushroll.	**1[k]**	wherein, to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation, the controller is configured to:

BISSELL contends that the Resch accused products practice limitation 1[k] of the '428 patent for the same reasons it argues they practice limitation 14 of the '735 patent. CIB at 60. Tineco does not dispute that the Resch accused products satisfy limitation 1[k] of the '428 patent. *See* RRB at 72-73. The above table indicates the overlap between limitation 14 of the '735 patent and limitation 1[k] of the '428 patent. Considering the record as a whole, I find that the Resch accused products practice limitation 1[k] of the '428 patent.

m) 1[l]—"power the brushroll motor and the pump by the battery, whereby cleaning liquid is sprayed on the brushroll while the brushroll rotates, without the vacuum motor being powered; and"

BISSELL contends that the Resch accused products practice limitation 1[l] of the '428 patent. *See, e.g.*, CIB at 60; CDX-0007 at 102; Tr. (Sorensen) at 292:24-293:21. Tineco does not dispute that the Resch accused products satisfy limitation 1[l] of the '428 patent. *See* RRB at 72-73. Considering the record as a whole, I find that the Resch accused products practice limitation 1[l] of the '428 patent.

n) 1[m]—"power the vacuum motor by the battery after the brushroll motor and the pump are powered, whereby cleaning liquid is extracted and deposited into the recovery tank and a portion of the recovery pathway is flushed out; and"

BISSELL contends that the Resch accused products practice limitation 1[m] of the '428 patent. *See, e.g.*, CDX-0007 at 102; Tr. (Sorensen) at 294:6-295:7. Tineco does not dispute that the Resch accused products satisfy limitation 1[m]. *See* RRB at 72-73. Considering the record as a whole, I find that the Resch accused products practice limitation 1[m] of the '428 patent.

o) 1[n]—"wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle."

'735 Patent Claim Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[p]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.	**1[n]**	wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.

BISSELL's contentions regarding limitation 1[n] of the '428 patent are not entirely clear.[31] BISSELL first appears to argue that the original and redesigned Resch accused products practice limitation 1[n] for the same reasons it argues they practice limitation 1[p] of the '735 patent. *See*

[31] BISSELL labeled the limitation "wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle" 1[n] at the beginning of its brief but used the label 1[m] at a later point in the brief. *Compare* CIB at xiv *with* CIB at 60-62. This initial determination uses the label 1[n].

CIB at 60 (stating "*[s]ee* supra IV.B.17.," the section that addresses limitation 1[p] and 13[l] of the '735 patent). But BISSELL next appears to argue that the '428 patent defines the unattended cleanout cycle differently than does the '735 patent. *See, e.g.*, CIB at 60 ("Unlike the '735 patent, the '428 patent specifies an order the components are energized. . . . [T]he claimed [unattended automatic cleanout cycle] requires either the brushroll or the vacuum at all times").[32]

Tineco responds that the redesigned Resch accused products do not practice limitation 1[n] of the '428 patent for the same reasons that they do not practice limitation 1[p] of the '735 patent. RRB at 72-73. Tineco also contends that the record does not support BISSELL's second argument requiring "the brushroll or vacuum motor to 'always' be energized" during the unattended automatic cleanout cycle, and in any event, BISSELL waived the argument. *Id.*

Considering the record as a whole, I find that the original Resch accused products practice limitation 1[n] of the '428 patent for the same reasons that they practice limitation 1[p] of the '735 patent. But I find that the redesigned Resch accused products do not practice limitation 1[n] of the '428 patent literally or under the doctrine of equivalents for the same reasons that they do not practice limitation 1[p] of the '735 patent. *See* Section V.B.1.a.xvii., *supra*.

Finally, I find that BISSELL waived the argument that limitation 1[n] of the '428 patent "requires either the brushroll or the vacuum at all times," CIB at 60, because BISSELL did not include that argument in claim construction or in its prehearing brief. *See* CPB at 445; *see also* Order No. 2 (Ground Rules) at 17 ("Any contentions not set forth in detail in the pre-hearing brief shall be deemed abandoned or withdrawn, except for contentions of which a party is not aware and

[32] To the extent BISSELL is attempting to preserve an argument that limitation 1[n] of the '428 patent requires something different than limitation 1[p] of the '735 patent, that argument has not been sufficiently developed and is therefore forfeited. *See* Order No. 2 (Ground Rules) at 26 ("Any contentions for which a party has the burden of proof that are not set forth in detail in the post-hearing initial brief shall be deemed abandoned or withdrawn.").

could not be aware in the exercise of reasonable diligence at the time of filing the pre-hearing brief."). In any event, I do not see any support in claim 1 of the '428 patent for the proposition that "the claimed [unattended automatic cleanout cycle] requires either the brushroll or the vacuum at all times." CIB at 60.

p) Claim 1 of the '428 patent Conclusion

For the reasons explained above, I find that the original Resch accused products infringe claim 1 of the '428 patent. However, because BISSELL has not shown the presence of limitation 1[n] in the redesigned Resch accused products, either literally or under the doctrine of equivalents, I find that the redesigned Resch accused products do not infringe claim 1 of the '428 patent. *See Dunbar v. Myers*, 94 U.S. at 202; *Warner-Jenkinson*, 520 U.S. at 29.

q) Conclusion Regarding Alleged Infringement of the '428 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has demonstrated that the original Resch accused products infringe claim 1 of the '428 patent. However, I find that BISSELL has not demonstrated that the redesigned Resch accused products infringe any asserted claim of the '428 patent.

VI. INVALIDITY

A. The Xia Patents

1. The '949 Patent

Tineco contends that claims 7 and 19 of the '949 patent are invalid under 35 U.S.C. § 102 because "[a] Japanese patent from 2004 ('Sato') and a U.S. Patent Application Publication from 2008 ('Beskow') each disclose every limitation of the asserted Xia Patents[.]" RIB at 1; *see also id.* at 3-43. Tineco also contends that "[t]o the extent that Sato does not disclose the fluid delivery channel recited in limitations 1[i] and 18[i]—which Respondents established it does—

Respondents proved that claims 7 and 19 are invalid as obvious over Sato in view of Beskow." *Id.* at 43-44. Finally, Tineco contends that "the evidence shows that claims 7 and 19 of the '949 Patent would have been obvious in view of Sato alone." *Id.* at 45-48.

BISSELL, on the other hand, contends that the Sato and Beskow references "do not anticipate the asserted claims because each lacks key claimed" features. CRB at 1; *see also id.* at 14-36. BISSELL also contends that Tineco failed to demonstrate that the inventions in claims 7 and 19 of the '949 patent would have been obvious under 35 U.S.C. § 103. CRB at 36-39.

For the reasons explained below, I find that Tineco did not prove by clear and convincing evidence that claims 7 and 19 of the '949 patent are invalid under § 102 or § 103.

a) Anticipation—Claims 7 and 19

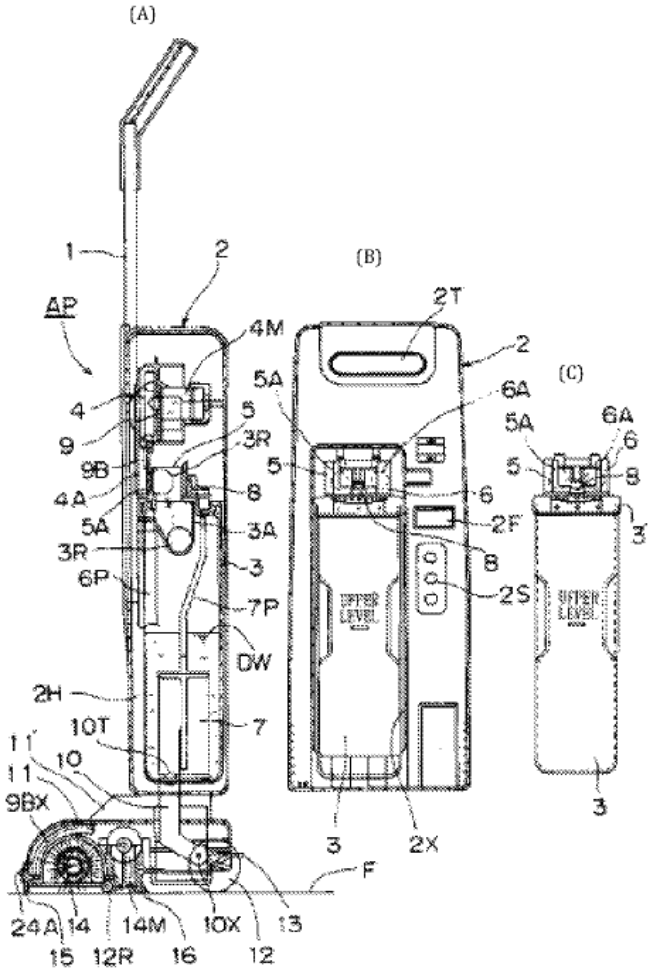
i) Sato

(a) Background

The first prior art reference that Tineco contends anticipates claims 7 and 19 of the '949 patent is Japanese Patent No. 3568837 ("Sato"). The Sato reference, which lists Tetsuya Satō as the first named inventor, issued on September 22, 2004. RX-0136 (Sato) at 0136.0017. Sato is therefore prior art to the '949 patent, which was filed at the Patent Office over 15 years later. JX-0008 ('949 patent) at cover.

Sato discloses a "floor washing and cleaning machine" with several alleged improvements over the then-existing prior art. RX-0136 (Sato) at 0136.0017, 0136.0020-21. Figure 3 of Sato, reproduced below, shows one illustration of the disclosed floor washing and cleaning machine:

[FIG. 3]



RX-0136 (Sato) at 0136.0034. Sato discloses that the floor washing and cleaning machine can be "configured to brush a floor by rotating a washing brush, provided inside a brush case, while traveling, this traveling being due to an operation handle being pushed, and by using a pump to feed washing water in a tank to a washing-brush side from a spray nozzle and is configured to collect wastewater generated due to the brushing using a squeegee whereon a suction action of a blower is exerted." *Id.* ¶ 0008. Sato discloses that the device can filter the wastewater that is suctioned up so that it may be recycled and used again. *See, e.g.*, RX-0136 (Sato) ¶ 0054 ("As

above, according to the floor washing and cleaning machine of the present invention, a floor can be washed by circulating washing wastewater while filtering such.").

(b) The Parties' Contentions

The primary focus of the parties' dispute regarding Sato relates to how the disclosed device suctions up wastewater. In particular, the parties disagree about where there is suction force in the Sato device. *See, e.g.*, RIB 12-13; CRB at 14-21. According to the parties, determining the location of suction force in the Sato device is important because the location of suction force provides information about what in Sato may constitute the "suction nozzle" and "suction nozzle assembly" claimed in the '949 patent. *See* RIB at 9 ("Dr. Conley testified that the plain and ordinary meaning of 'suction nozzle' is the volume where suction is applied . . . ."); CRB at 14 ("The claimed [suction nozzle assembly] is the assembly of components having responsibility for shaping and directing suction force within the cleaning device.").

And the identification of the "suction nozzle" and "suction nozzle assembly" is important because the claims of the '949 patent recite various requirements that relate to the suction nozzle and suction nozzle assembly. Specifically, the parties' dispute regarding the "suction nozzle" and "suction nozzle assembly" implicates the following claim limitations in the '949 patent:

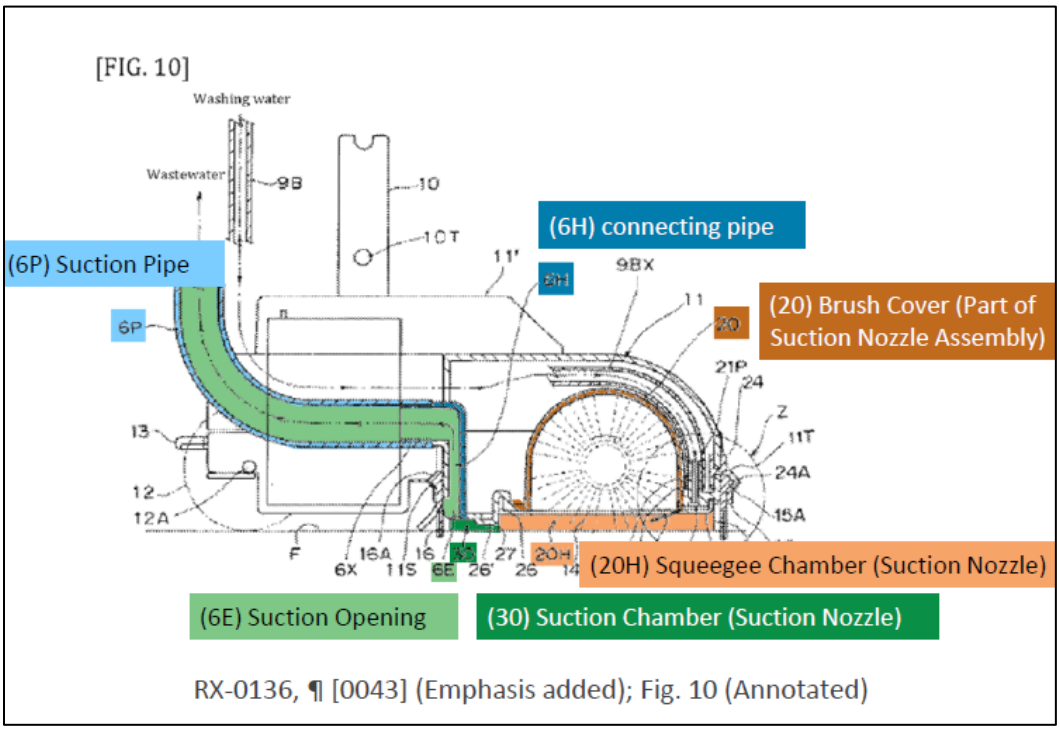
'949 Patent Claim Element	**Claim Language**
1[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source, the suction nozzle assembly include a nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator; and

1[g]	a fluid dispenser provided with the suction nozzle assembly, the fluid dispenser in fluid communication with the fluid supply chamber, the fluid dispenser including at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly, the at least one outlet adapted to dispense fluid onto at least one of the agitator or a surface to be cleaned;
1[i]	at least one fluid delivery channel located within the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.
7	The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator.
18[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source; and
18[g]	a fluid dispenser provided on the base, the fluid dispenser in fluid communication with the fluid supply chamber, wherein the fluid dispenser includes at least one outlet oriented to dispense fluid directly onto the agitator, which transfers fluid to a surface to be cleaned;
18[i]	at least one fluid delivery channel provided with the base or the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.
19	The surface cleaning apparatus of claim 18 wherein the suction nozzle assembly comprises a brush chamber at least partially housing the agitator and the agitator includes at least one brushroll rotatably mounted therein.

Tineco contends that the following components in Sato constitute a suction nozzle and suction nozzle assembly:

> The evidence shows that Sato discloses a suction nozzle assembly—brush cover 20; four squeegee blades (front-portion squeegee blade 15, rear-portion squeegee blade 15, and lateral squeegee blades 28 on each side of the device); and squeegee chamber 20H enclosed by brush cover 20 and the four squeegee blades—defining a suction nozzle, which is the squeegee chamber 20H including both the area around the brushroll and suction chamber 30 (which includes suction opening 6E).

RIB at 9 (citing evidence).[33] Tineco's expert, Dr. Conley, illustrated that alleged suction nozzle and suction nozzle assembly with the following annotated figure from Sato:



RX-0136, ¶ [0043] (Emphasis added); Fig. 10 (Annotated)

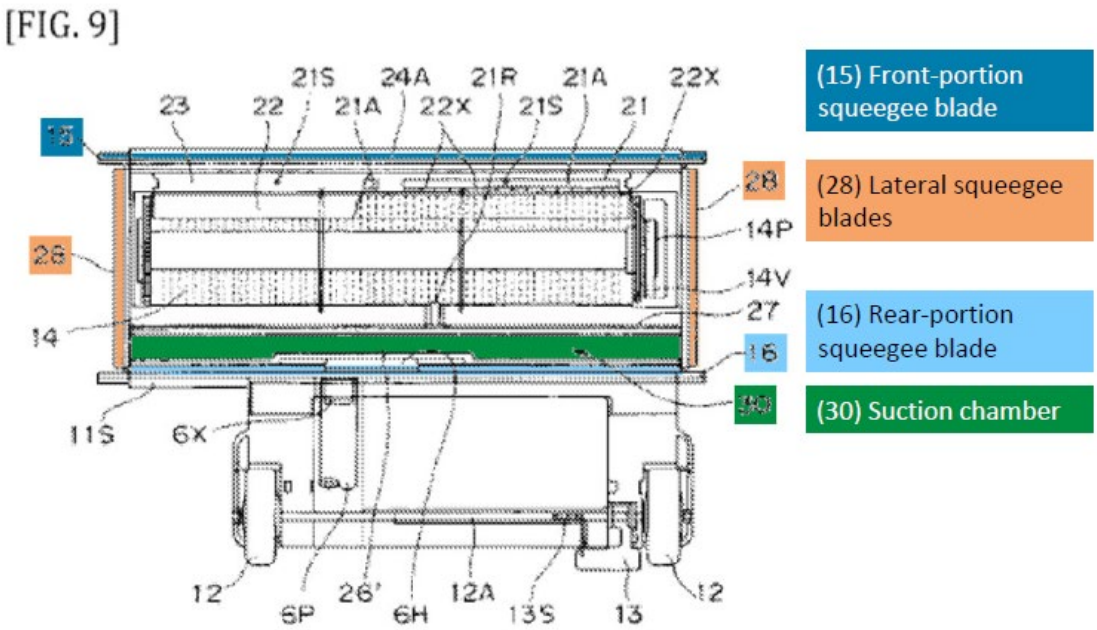
RDX-0001 at 64. The suction force in Sato is generated by a "blower," which is ultimately connected to the "suction pipe" labeled 6P. Tr. (Conley) at 749:7-14; RX-0136 (Sato) at ¶ 0043, Figs. 2, 4. Dr. Conley appeared to assert that the highlighted area in annotated Figure 10, including the brown region that surrounds the brushroll and extends to the front of the device, is a suction nozzle and suction nozzle assembly because the suction force generated by the blower extends throughout that area. Tr. (Conley) at 749:21-751:6; *see also* RIB at 10-13.

[33] Tineco contends in the alternative that "brush case 11 of Sato can be included as part of the suction nozzle assembly (in addition to the brush cover 20, the four squeegees 15, 16, 28, and 28, and the squeegee chamber 20H, in which the suction nozzle assembly would define the suction nozzle in the same way as described above." RIB at 11. In support of its alternative contention, Tineco relies on the testimony of its expert, Dr. Conley. *See* Tr. (Conley) 751:7-12. I did not find Dr. Conley's testimony regarding this "alternative read" persuasive because he did not adequately explain why that alternative read constituted a suction nozzle assembly. *See id.*

As explained below, I find that Tineco did not prove by clear and convincing evidence that the device in Sato includes a "suction nozzle," a "suction nozzle assembly," and several other limitations relating to those claimed features.

(c) 1[d] and 18[d]—"suction nozzle" and "suction nozzle assembly"

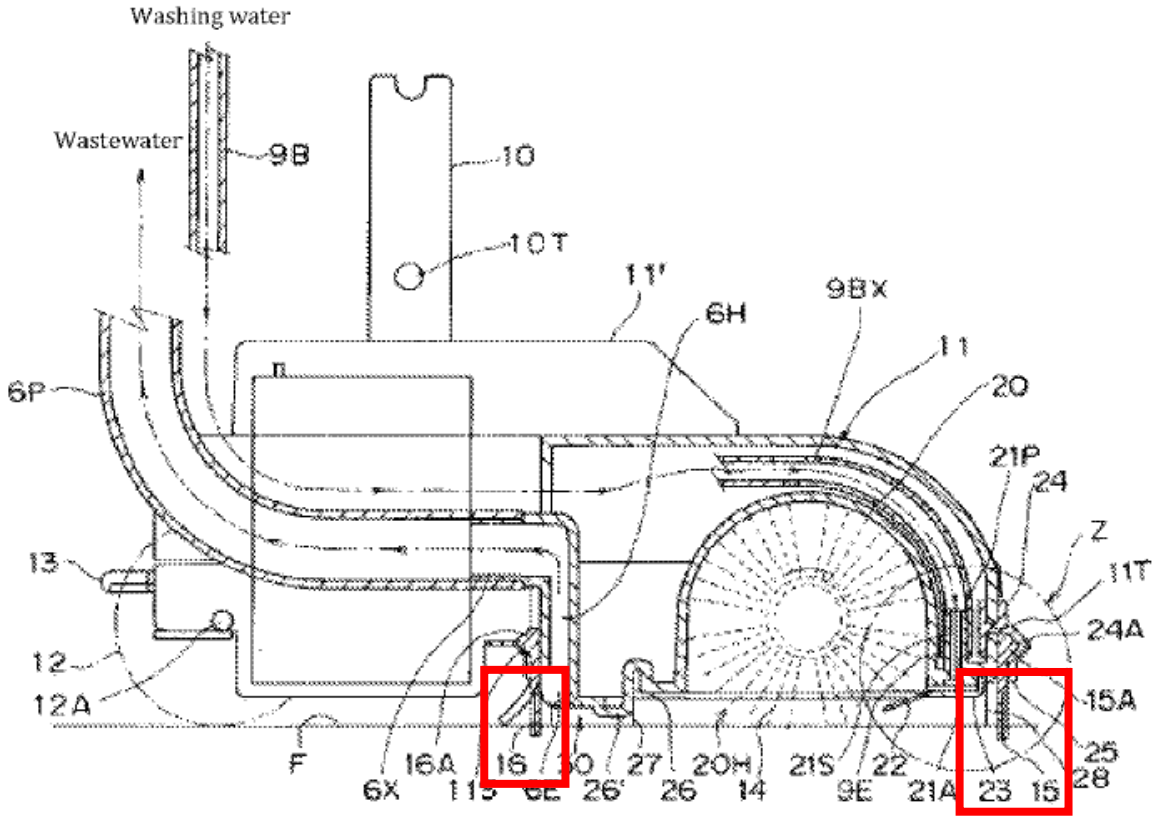
I do not find that Sato's disclosure and Dr. Conley's testimony provide clear and convincing evidence showing invalidity by anticipation. In order to understand the parties' dispute regarding Sato, it is helpful to begin with how Sato describes the bottom part of the cleaning device. Sato indicates that the bottom part of the cleaning device has squeegees that extend from the device to the ground on all four sides that form a chamber between the device and the floor. *See* RX-0136 (Sato) at Fig. 10, ¶¶ 0036, 0042. Figure 9 shows an underside view of the boundaries of that chamber:



RX-0136, ¶ [0043] (Emphasis added); Fig. 9 (Annotated)

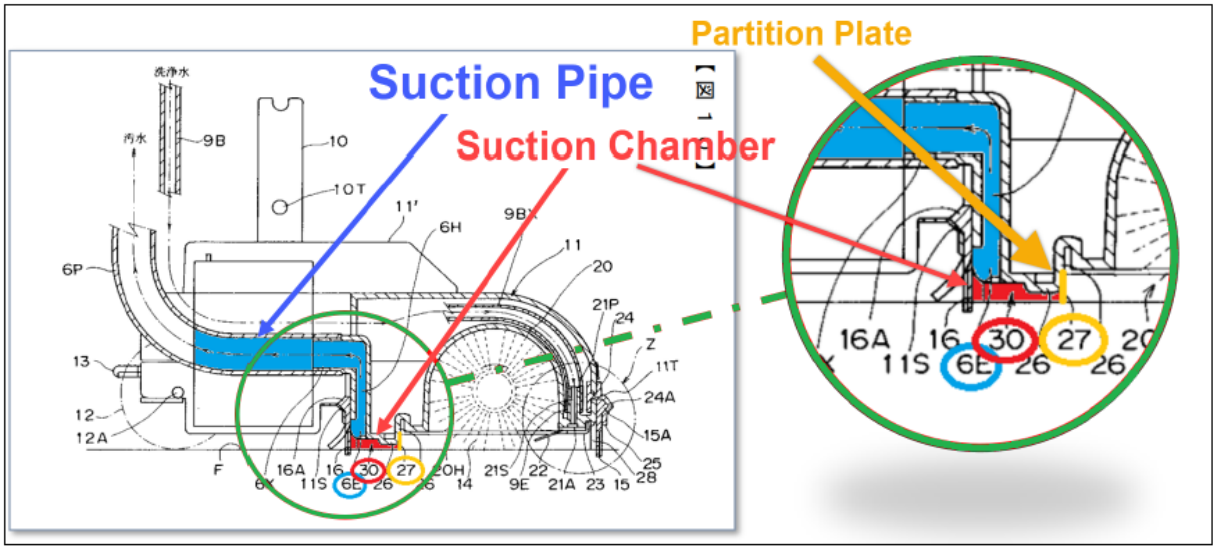
RDX-0001 at 64 (annotating Figure 9 of Sato). Figure 10 shows a cross sectional view of the Sato device where the front squeegee 15 and rear squeegee 16 of the chamber are visible:

[FIG. 10]



RX-0136 (Sato) at Fig. 10 (annotations added). Sato refers to the chamber formed by the squeegees in at least one instance as "squeegee chamber 20H." *See, e.g.*, RX-0136 (Sato) ¶ 0036 ("These four total squeegee blades 15, 16, 28, 28 in the front, the rear, and both sides, whose lower end portions each touch the floor F, configure, on the bottom surface of the brush case 11, a squeegee chamber 20H that surrounds the washing brush 14 on four sides—front, rear, and both sides."). The squeegee chamber is partitioned by a "flexible partition plate 27" into two smaller areas. Sato refers to the area behind partition plate (i.e., the partitioned area closest to the suction

pipe 6P) as "suction chamber 30." *See, e.g.*, RX-0136 (Sato) at Figs. 9-10, ¶¶ 0036, 0042. The following annotation of Figure 10 highlights suction chamber 30 and the partition plate 27:



CRB at 8 (annotating Figure 10 of Sato). The parties dispute whether suction force from Sato's blower extends from suction chamber 30 through the partition plate 27 to the brushroll chamber. *See, e.g.*, RIB 12-13; CRB at 14-21. And the parties indicate that location of suction force, in turn, informs what may constitute a suction nozzle and suction nozzle assembly. *See* RIB at 9; CRB at 14.

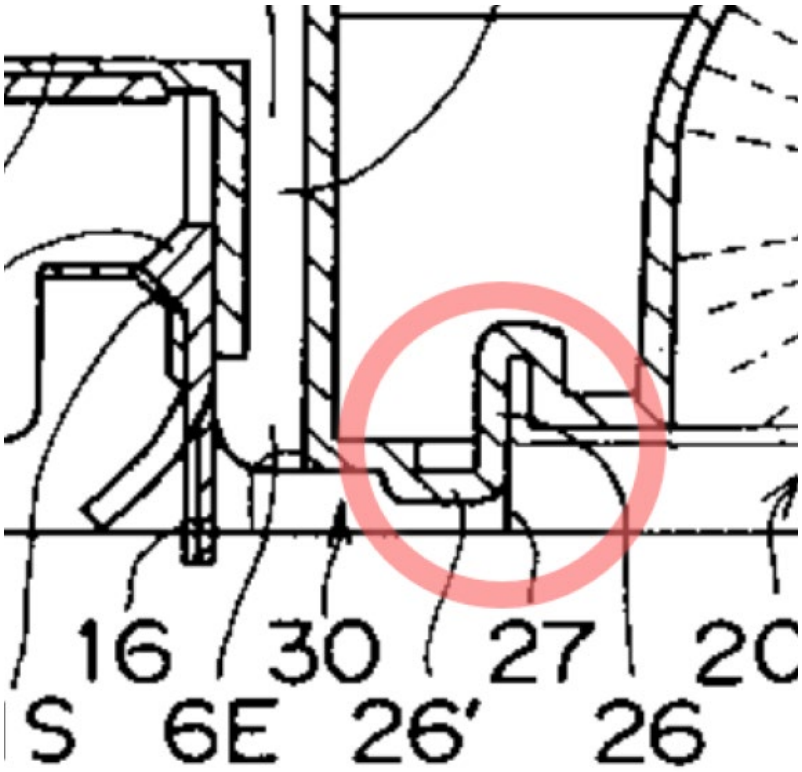
Tineco's expert, Dr. Conley, testified that paragraph 43 of Sato "explicit[ly]" identifies the suction nozzle assembly and suction nozzle. Tr. (Conley) at 749:15-750:10. During his testimony, Dr. Conley highlighted the following portion of paragraph 43:

> [0043]
> Furthermore, 6H is a connecting pipe that connects a lower-end opening of the above suction pipe 6P, which is inserted into the above brush case 11, to an upper-end opening 6X. Opening a suction opening 6E provided at a lower end portion of this connecting pipe 6H to the above suction chamber 30 causes a suction force of the above blower 4 to reach this suction chamber 30 and the squeegee chamber 20H. A configuration is such that wastewater suctioned from the squeegee chamber 20H to the suction chamber 30 is suctioned and collected into the above suction chamber 6 and washing-water tank 3 through the suction pipe 6P.

RDX-0001 at 64. Dr. Conley and Tineco appear to interpret the highlighted portion of paragraph 43 as indicating that the suction force extends throughout the region around the brushroll in Sato and that the boundary of that entire area should thus be included as part of the suction nozzle. *See, e.g.*, *id.* at 64-68; Tr. (Conley) at 749:15-751:19; RIB at 9.

It is not clear from the present record, however, that there is suction throughout the region surrounding the brushroll in Sato. Nor is it clear that Tineco's expansive view of what constitutes the suction nozzle and suction nozzle assembly is correct, particularly in view of the limited explanations that Dr. Conley and Tineco provided.

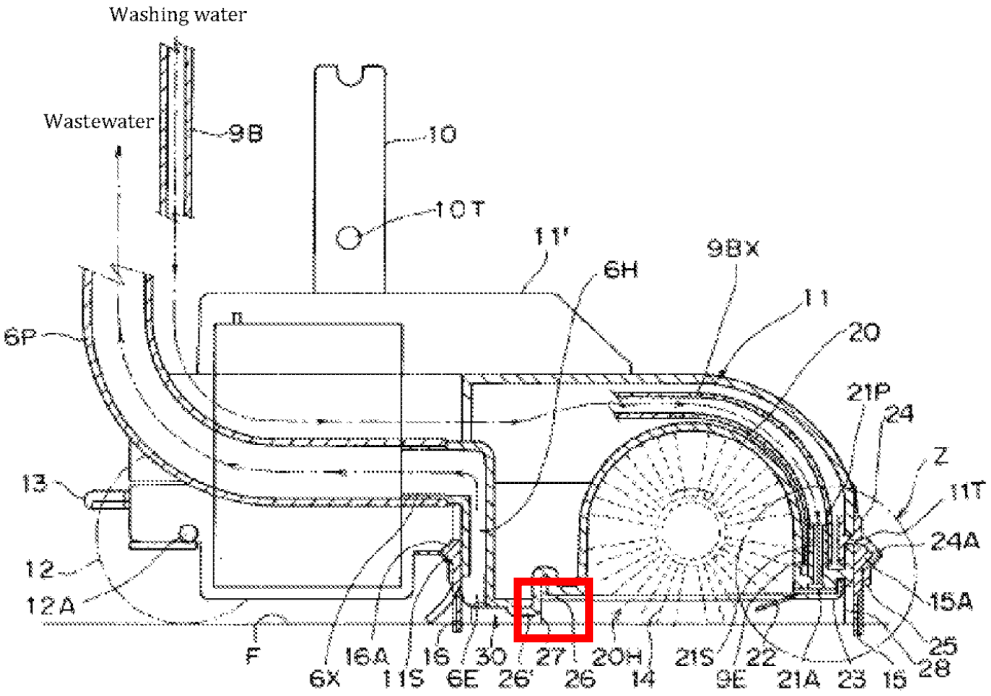
The record indicates that protrusion 26' and partition plate 27 of Sato, pictured below, act as a choke point between suction chamber 30 and the remainder of the squeegee chamber 20H:



CRB at 9 (annotating Figure 10 of Sato); *see also* RX-0136 (Sato) ¶¶ 0042, 0044, 0052. Although there is a choke point in that location, the record suggests that a small amount of suction force

extends from the suction chamber 30 through slits in the partition plate 27. *See, e.g.*, RX-0136 (Sato) ¶¶ 0042, 0044, 0052. In other words, the record suggests there is at least a small amount of suction force that extends to the region of the Sato device highlighted below:

[FIG. 10]



RX-0136 (Sato) at Fig. 10 (annotation added). However, Tineco did not present convincing evidence explaining how that small amount of suction in the highlighted area could extend past the brushroll to the front of the device.

As noted above, the only evidence regarding the location of suction force in the Sato device identified by Dr. Conley was paragraph 43 and associated figures. But that paragraph simply states that the "suction force of the above blower" reaches "suction chamber 30 and the squeegee chamber 20H." RX-0136 (Sato) ¶ 0043. Even assuming that the reference to "the squeegee chamber 20H" was referring to the portion of the squeegee chamber that begins to the right of partition plate 27, I do not find paragraph 43 clearly supports Tineco's position. The suction force

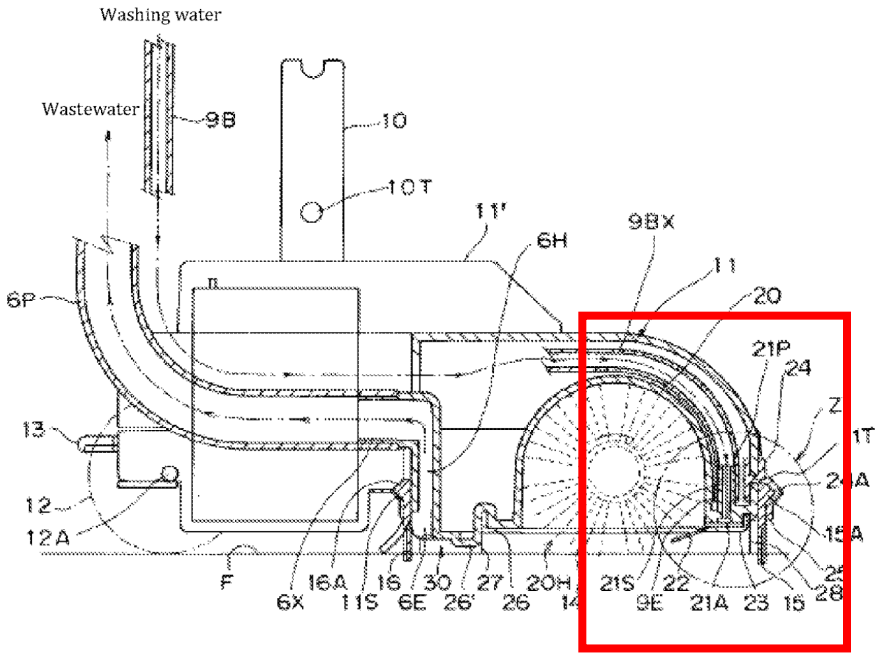
could "reach" the portion of the chamber to the right of the partition plate 27 without also extending past the brushroll.

I find that a person of skill in the art reviewing Sato would conclude that the little amount of suction force that extends from the suction chamber 30 past the suction plate 27 does not get past the brushroll in Sato. The brushroll is illustrated as extending all the way to the brush cover 20 and the floor F. As such, there does not appear to be any gap that would allow the suction force to reach all the way to the front of the Sato device. Tineco and Dr. Conley did not address how the small amount of suction force that passed through the partition plate 27 could extend past the barrier created by the brushroll.[34]

As noted above, Dr. Conley testified that components in the highlighted below area should be considered to be part of a suction nozzle assembly:

[34] Tineco, in fact, argued that certain accused products do not infringe because the brushroll in those products confines suction force because a barrier is created where the brushroll contacts another surface. *See* RRB at 14-15 ("But both the S3 and S5 Pro have a metal blade above the suction nozzle and below the plastic brushroll cover that contacts the agitator and confines suction to the volume below the metal blade, above the surface to be cleaned, behind the brushroll, and in front of the rear scraper blade . . . .").

[FIG. 10]



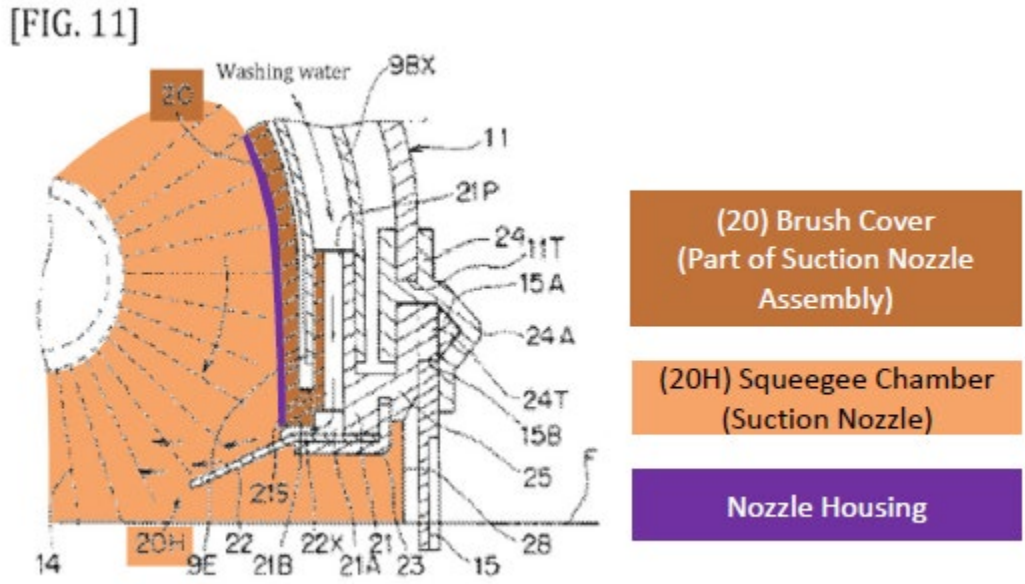
RX-0136 (Sato) at Fig. 10 (annotation added). But the only discernable basis for Dr. Conley's opinion was the unpersuasive assertion that suction force completely surrounded the brushroll. I have not determined from my review of Sato any other reason why an ordinary artisan would consider any of the highlighted portion of the front of the device to be part of a suction nozzle or suction nozzle assembly.

In view of the foregoing evidence and the record as a whole, I find that Tineco has not shown that Sato discloses a suction nozzle assembly and suction nozzle that satisfies the requirements of limitation 1[d] and 18[d].

(d) 1[d]—". . . . the suction nozzle assembly include a nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator"

Tineco's failure to identify a proper suction nozzle and suction nozzle assembly in Sato triggers problems in Tineco's arguments regarding other elements in the asserted claims. For example, Dr. Conley testified that the purple portion of the below picture constituted a "nozzle

housing defining an underside of the suction nozzle assembly" as recited in limitation 1[d] of the '949 patent:



RDX-0001 at 68; Tr. (Conley) at 751:13-19. But as explained above, Tineco did not show that any of this front portion of the device helped comprise a suction nozzle or suction nozzle assembly.

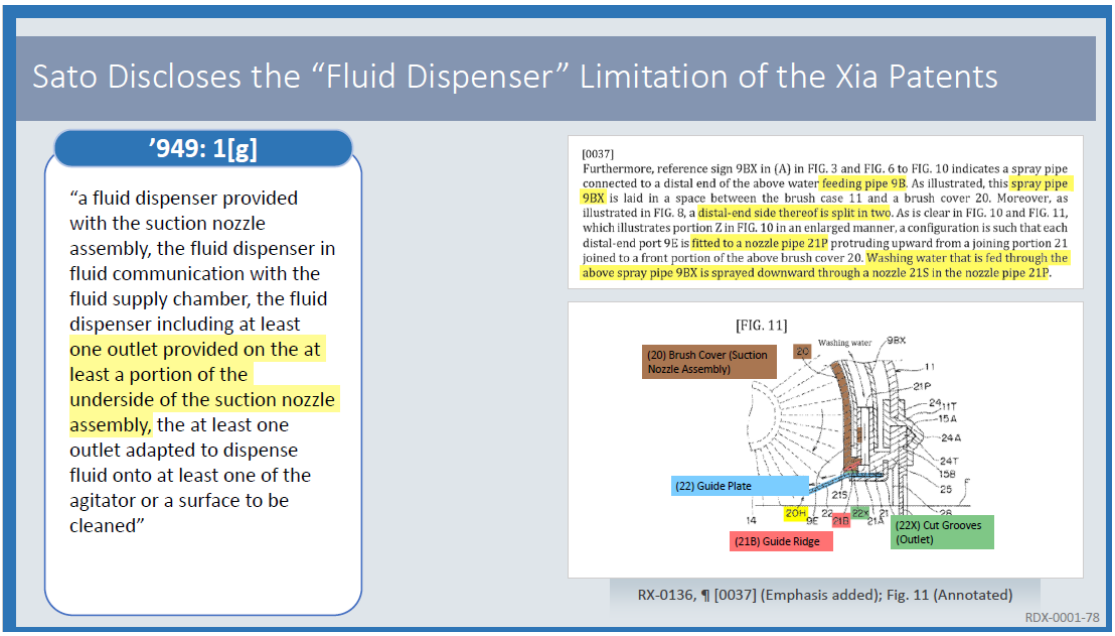
As a result, Tineco failed to show that Sato contains a "suction nozzle assembly" that includes "a nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator" as required by limitation 1[d].

(e) 1[g]—". . . . the fluid dispenser including at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly . . . "

Tineco also failed to show that Sato contains a fluid dispenser with an outlet on the underside of a suction nozzle assembly as required by limitation 1[g].

Tineco's expert, Dr. Conley, testified that Sato disclosed "a fluid dispenser provided with the suction nozzle assembly . . . the fluid dispenser including at least one outlet provided on the at

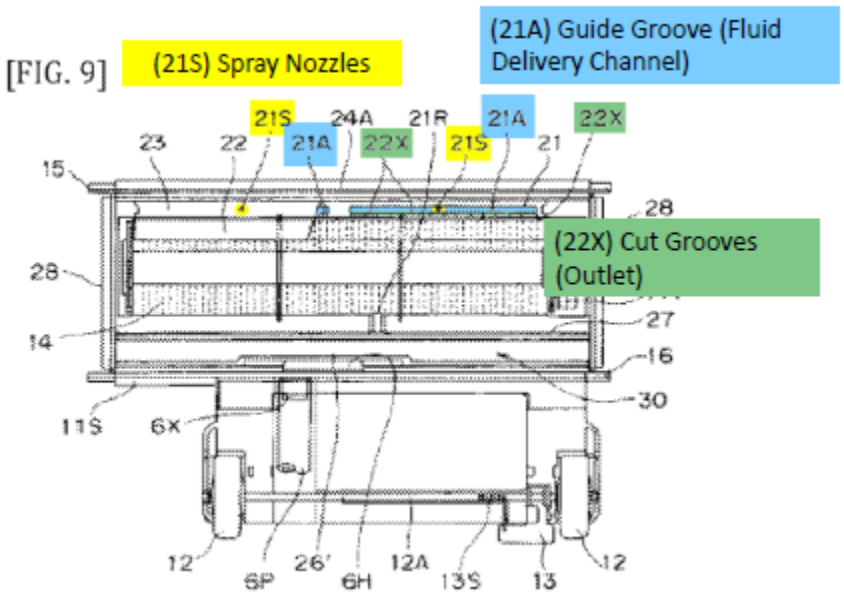
least a portion of the underside of the suction nozzle assembly" by again pointing to the front of the Sato device:



RDX-0001 at 78; *see also* Tr. (Conley) at 754:7-755:5. As explained above, Tineco did not show that the front portion of the device in Sato is not part of a suction nozzle assembly. Consequently, even if the identified components constitute a fluid dispenser, Tineco has not shown that the components are on the underside of a suction nozzle assembly as required by limitation 1[g].

(f) 1[i]—"at least one fluid delivery channel located within the suction nozzle assembly . . . ."

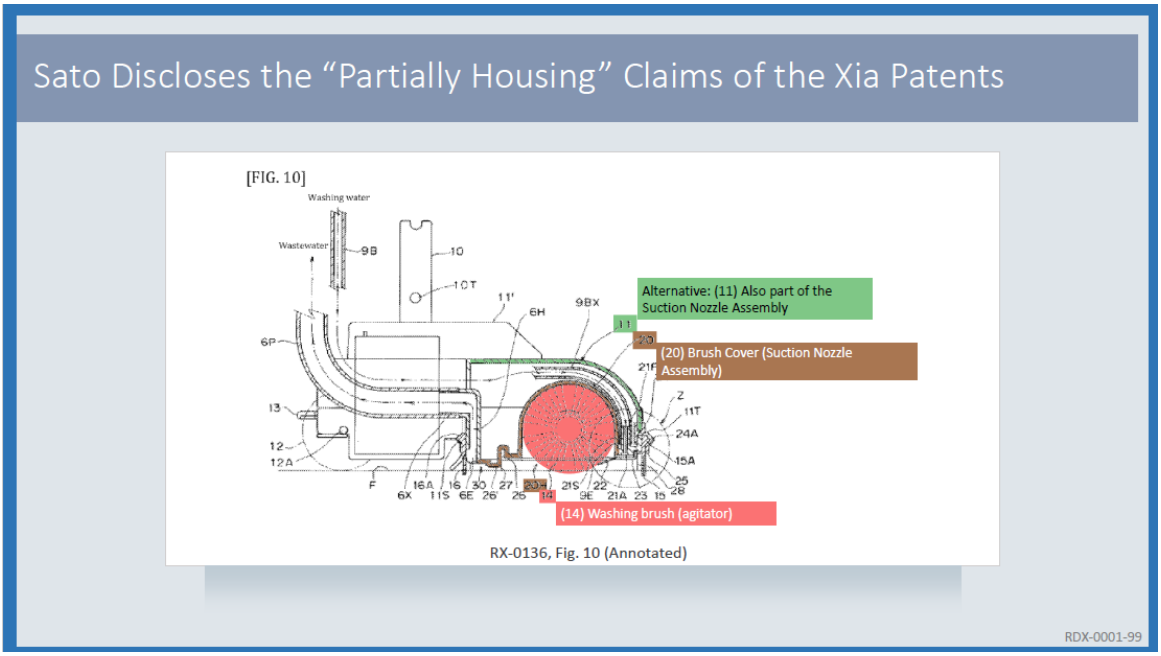
Tineco also failed to show that the Sato device has a "fluid delivery channel located within the suction nozzle assembly" in accordance with limitation 1[i]. The alleged fluid delivery channel that Tineco identified is again in the front of the device, which is not part of a suction nozzle assembly:



RDX-0001 at 85; Tr. (Conley) at 758:18-759:10. Consequently, Tineco has not shown that Sato contains a fluid delivery channel within a suction nozzle assembly as required by limitation 1[i] of the '949 patent.

(g) 7 and 19—". . . . the suction nozzle assembly defines a chamber at least partially housing the agitator" and ". . . . the suction nozzle assembly comprises a brush chamber at least partially housing the agitator"

Tineco also failed to show that Sato discloses a suction nozzle assembly that "defines a chamber at least partially housing the agitator" or that "comprises chamber at least partially housing the agitator" in accordance with limitations 7 and 19 of the '949 patent. In arguing that these limitations are met, Tineco again points to portions of the Sato device that do not constitute a suction nozzle assembly:



RDX-0001 at 99; RIB at 19-20, 24; Tr. (Conley) at 765:13-766:5. Consequently, Tineco has not shown that Sato contains a suction nozzle assembly that defines or comprises a chamber that partially houses an agitator.

(h) Conclusion Regarding Sato

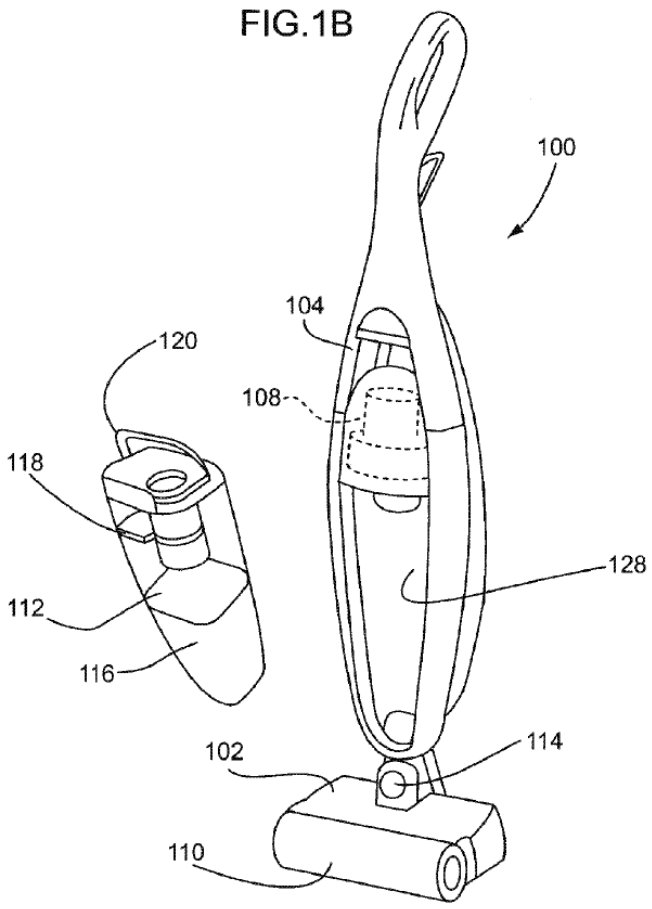
In view of the foregoing evidence and the record as a whole, I find that Tineco failed to prove by clear and convincing evidence that Sato anticipates claims 7 and 19 of the '949 patent.

ii) Beskow

(a) Background

Tineco also contends that U.S. Patent Application Publication No. 2008/0148512, which the parties refer to as the "Beskow" reference, anticipates claims 7 and 19 of the '949 patent. The Beskow reference, which lists Jonas Beskow as the first named inventor, was published on June 26, 2008. RX-0129 (Beskow) at Cover.

Beskow discloses a "cleaning device with an elongated housing having a grip at one end and a cleaning head at the other end, a dirt collection device and a vacuum source." *Id.* at Abstract. Figure 1B of Beskow, reproduced below, shows an illustration of the cleaning device:



Id. at Fig. 1B. The Patent Office considered Beskow during prosecution of all the asserted Xia patents. *See* JX-0005 at 0005.0192-198; JX-0004 at 0004.0100-106; JX-0003 at 0003.0104-109. Tineco and BISSELL have not identified in the prosecution history any instances of the examiner rejecting any proposed claims in the Xia patent applications based on the Beskow reference.

(b) The Parties' Contentions

As noted, Tineco contends that Beskow anticipates every claim limitation in claims 7 and 19 of the '949 patent. RIB at 24-43. BISSELL contends that Tineco failed to prove by clear and convincing evidence that Beskow anticipates the following claim limitations:

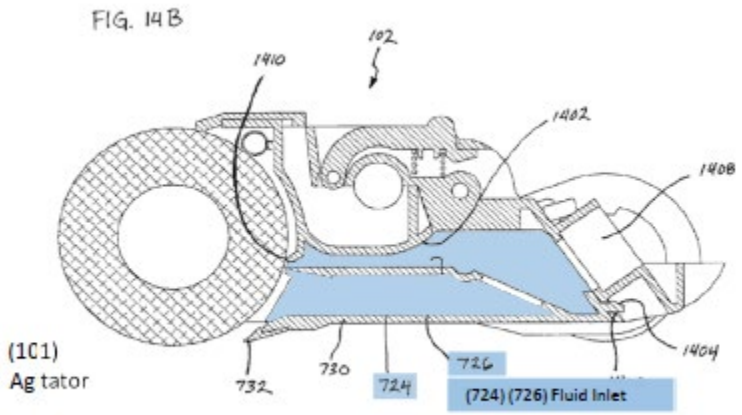
'949 Patent Claim Element	Claim Language
1[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source, the suction nozzle assembly include a nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator; and
1[g]	a fluid dispenser provided with the suction nozzle assembly, the fluid dispenser in fluid communication with the fluid supply chamber, the fluid dispenser including at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly, the at least one outlet adapted to dispense fluid onto at least one of the agitator or a surface to be cleaned;
1[i]	at least one fluid delivery channel located within the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway.
7	The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator.
18[d]	a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source; and
19	The surface cleaning apparatus of claim 18 wherein the suction nozzle assembly comprises a brush chamber at least partially housing the agitator and the agitator includes at least one brushroll rotatably mounted therein.

CRB at 24-36.

One aspect of the parties' dispute relates to what components in Beskow may constitute a "suction nozzle assembly" and "suction nozzle" as those terms are used in limitations 1[d] and 18[d]. With respect to the suction nozzle assembly and suction nozzle, Tineco states:

> The evidence shows that Beskow discloses a suction nozzle assembly—including inlet tray 730 (and its fluid inlets or suction paths 724 and 726), which is inserted into cleaning head 102, along with the walls 1402 of the cleaning head 102—provided on the base and defining a suction nozzle, which is the space in fluid inlets 724 and 726, bounded by trailing edge 1410, where the suction is confined in Beskow's device.

RIB at 27. Tineco's expert, Dr. Conley, illustrated the alleged suction nozzle assembly and suction nozzle by annotating Figure 14B of Beskow:



RX-0129, Fig. 14B

RDX-0001 at 117; *see also id.* at 116, 118.

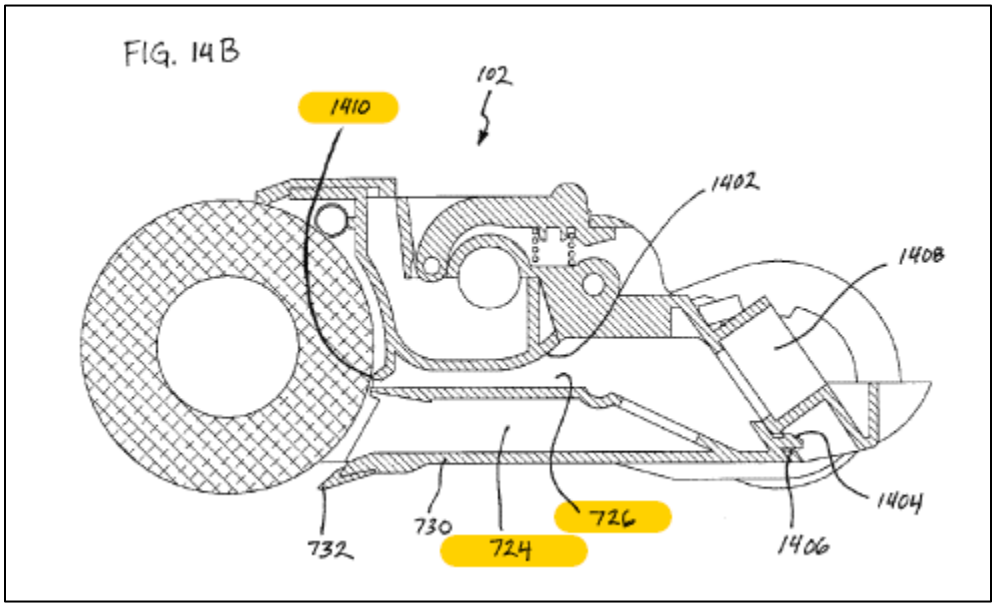
Another aspect of the parties' dispute relates to two alternative embodiments described in paragraph 113 of Beskow, which states:

> To improve fluid removal from the agitator 110, the fluid inlet 726 may be located close to the agitator surface, and one or both edges of the fluid inlet 726 may lightly touch the agitator 110 For example, in the embodiment of FIG 14B, the trailing edge 1410 of the fluid inlet 726 lightly touches the agitator 110 It has been discovered that providing light contact between the fluid inlets trailing edge 1410 and the agitator 110 can result in significantly higher fluid removal from an agitator 110 formed as foam cylinder 702 It is believed that this improved fluid removal is result of the trailing edge 1410 forming an air seal against the agitator surface that

> concentrates the airflow into the fluid inlet 726. *In an alternative embodiment, the trailing edge 1410 of the fluid inlet 726 may be moved significant distance around the circumference of the agitator 110 rather than being close to the fluid inlets opening into the cleaning head 102*. In another alternative embodiment, the debris inlet 724 and/or fluid inlet 726 may be spaced from the agitator, and include moveable device such flap formed near the fluid inlets trailing edge 1410 that periodically contacts the agitator 110 when it is desired to enhance fluid removal from the agitator 110 Such movable device may be operated manually or automatically, and may operate in conjunction with the valve mechanisms described subsequently herein.

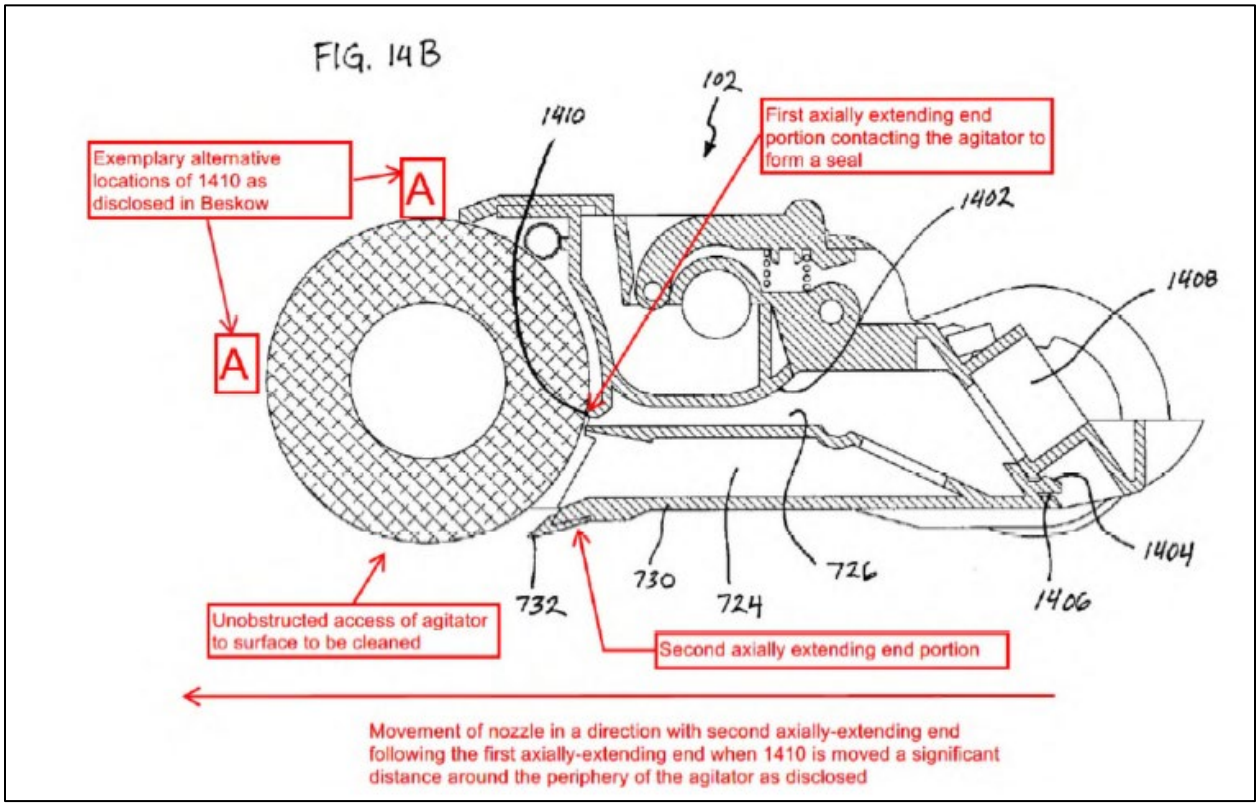
RX-0129 (Beskow) ¶ 0113 (emphasis added). The parties appear to largely agree about what the first embodiment in paragraph 113 discloses, but they disagree about the import of the "alternative embodiment" described in the emphasized language above.

Figure 14B of Beskow illustrates the first embodiment described in paragraph 113:



Id. at Fig. 14B (highlighting added). As paragraph 113 explains, there is an inlet for fluid recovery (726) and an inlet for debris recovery (724). *Id.* ¶ 0113. To increase the amount of fluid removed from the brushroll, paragraph 113 indicates that "one or both edges of the fluid inlet" may "lightly touch the" brushroll, creating an air seal that concentrates the airflow into the fluid inlet. *Id.* The trailing edge is labeled 1410 in Figure 14B. *Id.*

Paragraph 113 of Beskow states that, in an alternative embodiment, trailing edge 1410 "may be moved a significant distance around the circumference of the agitator 110, rather than being close to the fluid inlet's opening into the cleaning head 102." *Id.* According to Tineco, in an unrelated *inter partes* review proceeding BISSELL presented to the Patent Office possible alternative locations for trailing edge 1410 in the following annotated Figure 14B:



RIB at 31 (reproducing RX-0287 at 0287.0024). Tineco contends that by moving the trailing edge to one of those alternative locations, the alternative embodiment satisfies several of the limitations in claims 7 and 19 of the '949 patent. For example, Tineco indicates that the alternative embodiment in paragraph 113 satisfies the requirement in limitation 1[d] for a "nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator (washing brush 14)." RIB at 30.

BISSELL does not dispute that it provided the above-annotated Figure 14B to the Patent Office as an illustration of Beskow's alternative embodiment. *See* CRB at 27-33. But BISSELL now contends, among other things, that "the diagram relied upon does not come from Beskow, nor is it an accurate pictorial representation of what is actually disclosed within Beskow's single sentence about the 'alternative' embodiment." *Id.* at 28. BISSELL also contends that even if one moves the trailing edge in Beskow, the reference still fails to show several claim limitations in the asserted claims. *See, e.g.*, CRB at 29-36.

With that background, I analyze particular disputed limitations in the asserted claims.

(c) 1[d] and 18[d]—"a suction nozzle assembly provided on the base . . . ."

The parties dispute whether the "suction nozzle assembly" that Tineco identified in Beskow is "provided on" the base as required by limitations 1[d] and 18[d] of the '949 patent. For the reasons explained below, I find that Tineco has not shown that Beskow anticipates limitations 1[d] and 18[d] of the '949 patent because Tineco has not identified a suction nozzle assembly that is "provided on" the base.

When addressing its alleged infringement of limitations 1[d] and 18[d], Tineco argued that the claimed "suction nozzle assembly" must be separate and distinct from the "base." *See, e.g.*, RRB at 10-14. Tineco reasons that the suction nozzle could not be "provided on" the base as required by the claims if the suction nozzle assembly was a part of the base. *Id.* Above, I found that the record supports Tineco's contention that the claimed "suction nozzle assembly" must be separate and distinct from the "base." *See,* Section V.A.1.a.v., *supra*.

Tineco's contention that Beskow discloses a suction nozzle assembly "provided on" the base is not persuasive because it appears to contradict the position that Tineco took with respect to its alleged infringement of the '949 patent. In particular, Tineco relies on the testimony of its

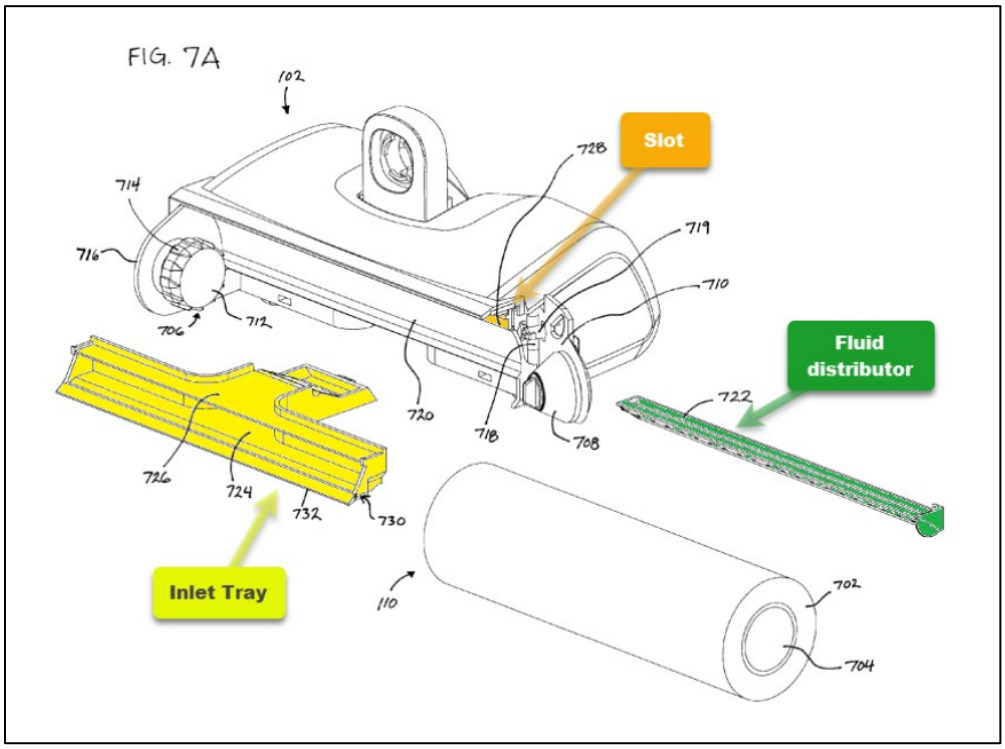
expert, Dr. Conley, who testified that the alleged suction nozzle assembly in Beskow included, among other things, the "walls 1402 of the cleaning head 102." RIB at 27 (citing Tr. (Conley) 771:11-773:22). But Tineco also contends that the cleaning head 102 is the claimed base. RIB at 25-26 ("The evidence shows that Beskow discloses . . . a base (cleaning head 102) . . . ."). In other words, Dr. Conley appears to be stating that the suction nozzle assembly includes part of the base. Given that Tineco said elsewhere that the base must be separate and distinct from the suction nozzle assembly, I do not find Dr. Conley's testimony persuasive. Neither Dr. Conley nor Tineco has provided a satisfactory explanation to resolve this inconsistency. *See* RIB at 32 (citing Tr. (Conley) at 771:11-773:22).

In view of the foregoing evidence and the record as a whole, I find that Tineco has not shown that Beskow discloses a "suction nozzle assembly" that is "provided on the base" of the cleaning device as required by limitations 1[d] and 18[d].

(d) 1[g]—" a fluid dispenser provided with the suction nozzle assembly . . . the fluid dispenser including at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly . . . ."

Tineco contends that the evidence shows that Beskow discloses a fluid dispenser that meets all the requirements of limitation 1[g] of the '949 patent. RIB at 34-36. BISSELL responds that Beskow does not disclose a fluid dispenser that is "provided with the suction nozzle assembly" and that has at least "one outlet provided on the at least a portion of the underside of the suction nozzle assembly" as required by limitation 1[g]. CRB at 31-32. For the reasons explained below, I find that Tineco has not shown that Beskow discloses limitation 1[g] of the '949 patent.

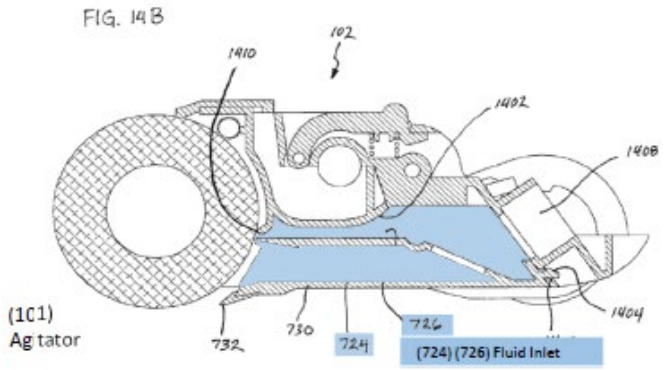
Beskow discloses a fluid distributor 722 that is installed into lot 728. *See, e.g.*, RX-0129 at Fig. 7A, ¶¶ 0102-03. The fluid distributor, once installed in slot 728, is located above the debris inlet 724 and fluid inlet 726. This can be seen, for example, in Figure 7A:



CDX-0016C[35] at 33 (annotating Fig. 7A of Beskow).

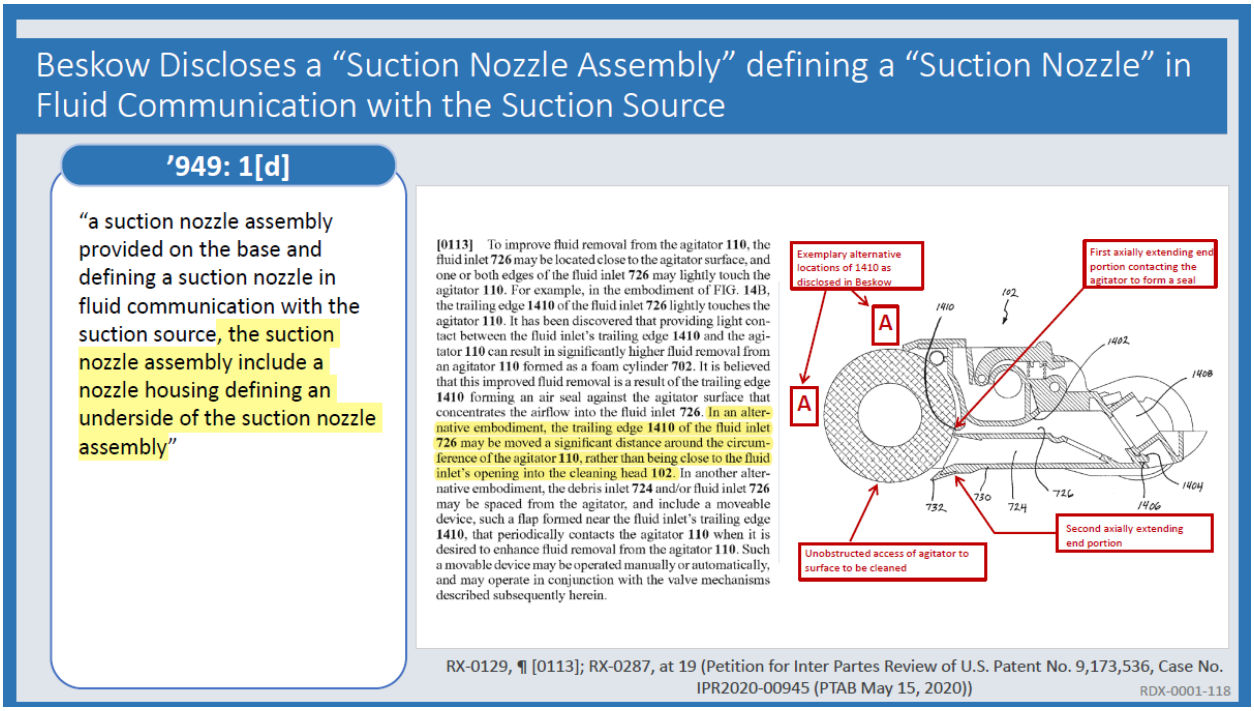
Because fluid distributor 722 is above the fluid inlet, it is separated from the alleged suction nozzle assembly by the air seal created by the contact between trailing edge 1410 and the brushroll:

[35] In its responsive post-hearing brief, BISSELL refers to the "CDX-0016C" demonstrative as "CDX-0016." *See, e.g.*, CRB at 4. Because the parties' joint list of final exhibits (EDIS Doc. ID 786916) includes a "C" at the end of the exhibit number, this initial determination refers to the demonstrative as "CDX-0016C."



RDX-0001 at 117 (annotating Fig. 14B of Beskow). Because Beskow's fluid distributor is not "provided with the suction nozzle assembly," limitation 1[g] is not met. Nor does Beskow's fluid distributor include "at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly" as required by limitation 1[g].

Tineco suggests that the alternative embodiment disclosed in paragraph 113 of Beskow does not suffer the same problems. RIB at 35-36. Specifically, Tineco appears to assume that once the trailing edge 1410 is moved to the one of the other locations disclosed in the alternative embodiment, the fluid distributor and its outlets would then be on the underside of the suction nozzle assembly. *See id.*; RDX-0001 at 126; Tr. (Conley) at 777:18-778:17. Slide 126 of Dr. Conley's demonstrative, which was used to illustrate Tineco's theory, is reproduced below:



RDX-0001 at 126. One problem with Tineco's theory is that it rests on an unsupported assumption: that moving the trailing edge would not necessitate other structural changes like moving the location of the fluid distributor. But Tineco does not explain why that should be the case.

From the disclosures that the parties have identified, I find that a person of ordinary skill would understand from Beskow that moving the trailing edge 1410 would also require relocation of the fluid distributor. Beskow discloses the trailing edge is designed to help remove water from the brush. *See, e.g.*, RX-0129 (Beskow) ¶ 0113. If the trailing edge was moved to a position located after the fluid distributor, the trailing edge would be removing water from the brush before the freshly wetted portion of the brush ever reached the ground. A person of skill in the art would not interpret Beskow to disclose or enable such an arrangement. At a minimum, Tineco and Dr. Conley's failure to directly address this issue undercuts the credibility of their position. That is particularly true given that BISSELL's expert, Dr. Singhose, testified that moving the trailing edge

would necessitate relocating the fluid distributor. Tr. (Singhose) at 1071:23-1072:3; *see also id.* at 1070:20-1072:21.

In any event, Tineco's thought experiment about what might be possible if the trailing edge 1410 were moved does not satisfy Tineco's burden to show anticipation. A prior art reference—in order to anticipate under 35 U.S.C. § 102—"must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements 'arranged as in the claim.'" *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)). Tineco has provided no evidence that following Beskow's suggestion to move the training edge 1410 a "significant distance around the circumference of the agitator" would necessarily result in a device having all of the elements of claim 1 arranged as in claim 1.

In view of the foregoing evidence and the record as a whole, I find that Tineco has failed to demonstrate that Beskow discloses a fluid dispenser that is "provided with the suction nozzle assembly" and has at least "one outlet provided on the at least a portion of the underside of the suction nozzle assembly" as required by limitation 1[g].

(e) 1[i]—"at least one fluid delivery channel located within the suction nozzle assembly . . . ."

Tineco contends that Beskow discloses a fluid delivery channel located within the suction nozzle assembly in accordance with limitation 1[i] of the '949 patent. RIB at 37-39. In particular, Tineco contends that Beskow's internal channel 1202, which is in the fluid distributor 722, constitutes the claimed fluid delivery channel. *Id.* Tineco's contentions, however, suffer from the same problems described above with respect to limitation 1[g]'s fluid dispenser. *See* Section VI.A.1.a.ii.d., *supra*.

In view of the foregoing evidence and the record as a whole, I find that Tineco has failed to demonstrate that Beskow anticipates limitation 1[i] of the '949 patent.

(f) Conclusion Regarding Beskow

In view of the foregoing evidence and the record as a whole, I find that Tineco failed to prove by clear and convincing evidence that Beskow anticipates claims 7 and 19 of the '949 patent.

b) Conclusion Regarding Alleged Anticipation of Claims 7 and 19 of the '949 Patent

In view of the foregoing evidence and the record as a whole, I find that Tineco has not demonstrated by clear and convincing evidence that claims 7 and 19 of the '949 patent are invalid under 35 U.S.C. § 102.

c) Obviousness—Claims 7 and 19

Tineco contends that to the extent that Sato "does not disclose the fluid delivery channel recited in limitations 1[i] and 18[i]," an invention having those features would have been obvious under 35 U.S.C. § 103. RIB at 43-48. Given that Tineco's obviousness argument is limited to limitations 1[i] and 18[i], it fails to show how the prior art would lead a person of ordinary skill to an invention having every limitation of claim 1. As noted above, I found limitations 1[d], 18[d], and 1[g] lacking in Sato and Beskow. *See* Sections VI.A.1.a.i. and VI.A.1.a.ii., *supra*. Consequently, Tineco failed to prove by clear and convincing evidence that claims 7 and 19 are invalid as obvious under 35 U.S.C. § 103. *See In re Duva*, 387 F.2d 402, 407 (C.C.P.A. 1967) ("every portion of the appealed claims" and "the invention as a whole" must be considered in an obviousness analysis).

2. The ’541 Patent

Tineco contends that claims 1 and 13 of the ’541 patent are invalid under 35 U.S.C. § 102 because “both Sato and Beskow anticipate” those claims. RIB at 48-61. Tineco also contends that “to the extent Sato or Beskow” do not disclose certain limitations in claims 1 and 13, the invention in those claims would have been obvious under 35 U.S.C. § 103. RIB at 48.

BISSELL, on the other hand, contends that “Sato and Beskow references do not anticipate the asserted claims because each lacks key claimed” features. CRB at 1, 39-42. BISSELL also contends that Tineco failed to demonstrate that the invention in claims 1 and 13 of the ’541 patent would have been obvious under 35 U.S.C. § 103. CRB at 42-46.

For the reasons explained below, I find that Tineco did not prove by clear and convincing evidence that claims 1 and 13 of the ’541 patent are invalid under § 102 or § 103.

a) Anticipation—Claims 1 and 13

i) Sato

Tineco contends that Sato anticipates claims 1 and 13 of the ’541 patent for largely the same reasons that it argued that Sato anticipates claims 7 and 19 of the ’949 patent. *See* RIB at 48 n.3 (“As noted above in the context of the ’949 Patent, Dr. Conley grouped and addressed similar limitations across the three Xia Patents collectively.”); RDX-0001 at 50; RIB at 48-55. BISSELL contends that Tineco failed to show that Sato discloses limitations 1[d], 11, 12, and 13 of the ’541 patent. CRB at 39-41. For the reasons explained below, I find that Tineco failed to prove by clear and convincing evidence that Sato anticipates claims 1 and 13 of the ’541 patent.

First, like limitations 1[d] and 18[d] of the ’949 patent, limitation 1[d] of the ’541 patent requires a suction nozzle assembly and a suction nozzle. *See* JX-0009 (’541 patent) at cl. 1 (“a suction nozzle assembly provided on the base and defining a suction nozzle in fluid

communication with the suction source"). For the reasons explained above with respect to limitations 1[d] and 18[d] of the '949 patent, Tineco failed to show that Sato discloses a suction nozzle and suction nozzle assembly. *See* Section VI.A.1.a.i.c., *supra*. Because claim 13 ultimately depends from claim 1, Tineco also failed to prove that Sato anticipates claim 13 of the '541 patent.

Second, like the limitation in claim 7 of the '949 patent, the limitation in claim 11 of the '541 patent (and therefore also required by dependent claim 13 of the same patent) requires a suction nozzle assembly that defines a chamber at least partially housing the agitator. *See* JX-0009 ('541 patent) at cl. 11 ("wherein the suction nozzle assembly defines a chamber at least partially housing the agitator"). For the reasons explained above with respect to the limitation in claim 7 of the '949 patent, Tineco failed to show that Sato discloses a suction nozzle assembly that defines a chamber at least partially housing the agitator. *See* Section VI.A.1.a.i.g., *supra*. Consequently, Tineco failed to prove by clear and convincing evidence that Sato anticipates claim 13 of the '541 patent for this additional reason.

Third, like limitation 1[i] of the '949 patent, the limitation in claim 12 of the '541 patent (upon which claim 13 depends) requires a fluid delivery channel in a specific location. *See* JX-0009 ('541 patent) at cl. 12 ("at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel provided on the suction nozzle assembly"). For the reasons explained above with respect to limitation 1[i] of the '949 patent, Tineco did not prove that Sato discloses a fluid delivery channel in the location required by claim 12 of the '541 patent (upon which claim 13 depends). *See* Section VI.A.1.a.i.f., *supra*.

For all of the reasons above, Tineco has not shown that Sato anticipates claim 1 or claim 13 of the '541 patent.

ii) Beskow

Tineco contends that Beskow anticipates claims 1 and 13 of the ’541 patent for largely the same reasons that it argued that Beskow anticipates claim 7 and 19 of the ’949 patent. *See* RIB at 48 n.3, 55-61; RDX-0001 at 50, 105-149. BISSELL contends that Tineco failed to prove that Beskow discloses limitations 1[d], 11, and 12 of the ’541 patent. CRB at 39-42. For the reasons explained below, I find that Tineco failed to prove by clear and convincing evidence that Beskow anticipates claims 1 and 13 of the ’541 patent.

First, like limitations 1[d] and 18[d] of the ’949 patent, limitation 1[d] of the ’541 patent requires a suction nozzle assembly provided on the base. *See* JX-0009 (’541 patent) at cl. 1 (“a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source”). For the reasons explained above with respect to limitations 1[d] and 18[d] of the ’949 patent, I find that Tineco failed to show that Beskow discloses a suction nozzle assembly provided on the base. *See* Section VI.A.1.a.ii.c., *supra*. Consequently, Tineco failed to prove by clear and convincing evidence that Beskow anticipates claim 1 of the ’541 patent. Because claim 13 ultimately depends from claim 1, Tineco also failed to prove that Beskow anticipates claim 13 of the ’541 patent.

Second, similar to limitation 1[i] of the ’949 patent, claim 12 of the ’541 patent requires a fluid delivery channel in a specific location. For the reasons explained above with respect to limitation 1[i] of the ’949 patent, I find that Tineco did not show that Beskow discloses a fluid delivery channel that meets the location requirement of claim 12 of the ’541 patent. *See* Section VI.A.1.a.ii.e., *supra*. Because claim 13 depends from claim 12, Tineco has not shown anticipation of claim 13 of the ’541 patent for this additional reason.

iii) Conclusion Regarding Alleged Anticipation of Claims 1 and 13 of the '541 Patent

In view of the foregoing evidence and the record as a whole, I find that Tineco has not demonstrated by clear and convincing evidence that claims 1 and 13 of the '541 patent are invalid under 35 U.S.C. § 102.

b) Obviousness—Claims 1 and 13

Tineco contends that to the extent that Sato and Beskow do not disclose limitation 1[i], the limitation in claim 12, and the limitation in claim 13, an invention with those features would have been obvious, so claims 1 and 13 are invalid under 35 U.S.C. § 103. RIB at 61-63. Given that Tineco's obviousness argument is limited to limitation 1[i] and the limitations in claims 12 and 13, it fails to account for limitations 1[d] and 18[d] that I found Sato and Beskow lacked. *See* Section VI.A.2.a., *supra*. Consequently, Tineco failed to prove by clear and convincing evidence that claims 1 and 13 of the '541 patent are invalid as obvious under 35 U.S.C. § 103. *See In re Duva*, 387 F.2d at 407 ("every portion of the appealed claims" and "the invention as a whole" must be considered in an obviousness analysis).

3. The '769 Patent

Tineco contends that claims 1 and 4 of the '769 patent are invalid under 35 U.S.C. § 102 as anticipated by Sato and Beskow. RIB at 63-78. Tineco also contends that to the extent neither Sato nor Beskow disclose certain limitations in claims 1 and 4, the invention in those claims would have been obvious under 35 U.S.C. § 103. RIB at 63.

BISSELL, on the other hand, contends that "Sato and Beskow references do not anticipate the asserted claims because each lacks key claimed" features. CRB at 1, 46-49. BISSELL also contends that Tineco failed to demonstrate that claims 1 and 4 of the '769 patent would have been obvious under 35 U.S.C. § 103. CRB at 50-51.

For the reasons explained below, I find that Tineco did not prove by clear and convincing evidence that claims 1 and 4 of the ’769 patent are invalid under § 102 or § 103.

a) Anticipation—Claims 1 and 4

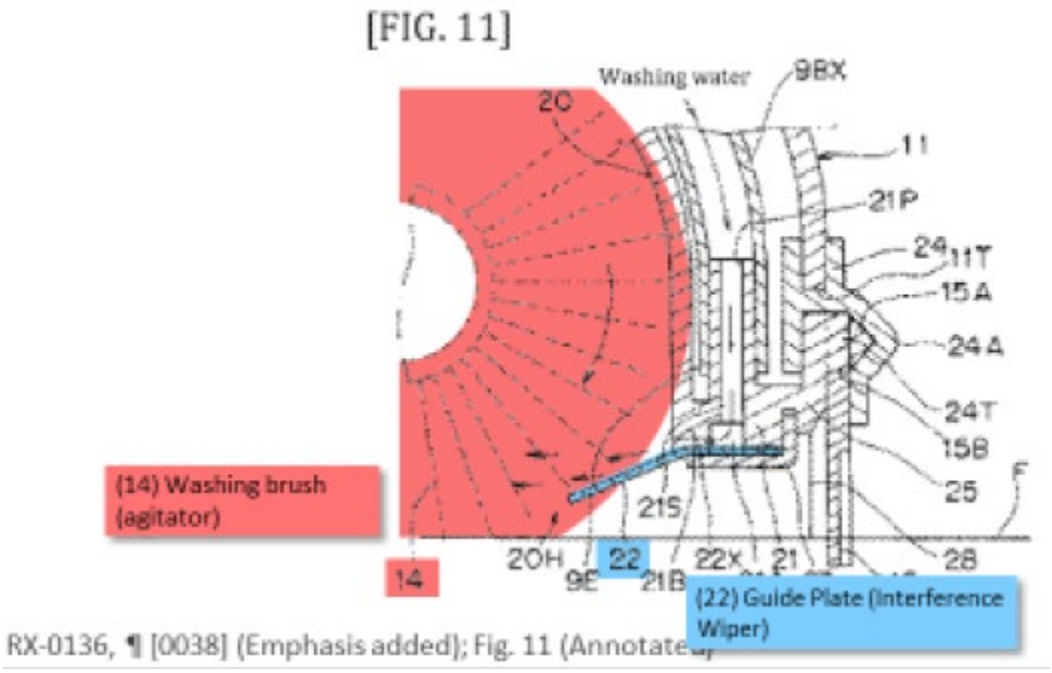
i) Sato

Tineco contends that Sato anticipates claims 1 and 4 of the ’769 patent for largely the same reasons that it argued that Sato anticipates claims 7 and 19 of the ’949 patent. *See* RIB at 64 n.5 (“As noted above in the context of the ’949 Patent, Dr. Conley grouped and addressed similar limitations across the three Xia Patents collectively.”); RDX-0001 at 50; RIB at 64-72. BISSELL contends that Tineco failed to prove by clear and convincing evidence that Sato discloses limitations 1[d], 1[i], and 1[j] of claim 1 of the ’769 patent. CRB at 46-49. For the reasons explained below, I find that Tineco failed to prove by clear and convincing evidence that Sato anticipates claims 1 and 4 of the ’769 patent.

First, like limitations 1[d] and 18[d] of the ’949 patent, limitation 1[d] of claim 1 of the ’769 patent requires a suction nozzle assembly “provided on the base” and defining a suction nozzle in fluid communication with the suction source. JX-0010 (’769 patent) at cl. 1 (“a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source”). For the reasons explained above with respect to limitations 1[d] and 18[d] of the ’949 patent, I find that Tineco has not shown that Sato discloses the claimed suction nozzle assembly and suction nozzle. *See* Section VI.A.1.a.i.c., *supra*. Consequently, Tineco failed to prove by clear and convincing evidence that Sato anticipates claim 1 of the ’769 patent. Because claim 4 of the ’769 patent depends from claim 1, Tineco also failed to prove that Sato anticipates claim 4 of the ’769 patent.

Second, similar to limitation 1[i] of the ’949 patent, limitation 1[i] of the ’769 patent requires a fluid delivery channel in a specific location. JX-0010 (’769 patent) at cl. 1 (“the at least one fluid delivery channel extending adjacent to a portion of the suction nozzle assembly”). For the reasons explained above with respect to limitation 1[i] of the ’949 patent, I find that Tineco did not prove by clear and convincing evidence that Sato discloses a fluid delivery channel that meets the location requirement of limitation 1[i] of the ’769 patent. *See* Section VI.A.1.a.i.f., *supra*.

Third, Tineco failed to demonstrate by clear and convincing evidence that Sato discloses “an interference wiper . . . adapted to . . . remove excess liquid from the at least one brushroll” as required by limitation 1[j] of the ’769 patent. According to Tineco, guide plate 22 in Sato corresponds to the claimed interference wiper:



RX-0136, ¶ [0038] (Emphasis added); Fig. 11 (Annotated)

RIB at 70 (reproducing RDX-0001 at 96).

The problem with that contention is that Sato discloses that guide plate 22 is not designed to remove excess fluid *from* the brushroll. To the contrary, guide plate 22 is designed to deliver

fluid *to* the brushroll. *See* RX-0136 (Sato) ¶¶ 0021, 0037-39; Tr. (Singhose) at 1064:18-1065:20 ("But what Dr. Conley points to is not a structure that removes excess fluid, it's actually the opposite, it's the structure that delivers the fluid."). I did not find Dr. Conley's conclusory testimony to the contrary persuasive. *See* Tr. (Conley) at 764:21-765:12.

Because Tineco failed to show that Sato discloses limitations 1[d], 1[i], and 1[j] of the '769 patent, Tineco also failed to prove by clear and convincing evidence that Sato anticipates claim 4, which depends from claim 1.

ii) Beskow

Tineco contends that Beskow anticipates claims 1 and 4 of the '769 patent for largely the same reasons that it argued that Beskow anticipates claims 7 and 19 of the '949 patent. *See* RIB at 64 n.5, 72-78; RDX-0001 at 50, 105-149. BISSELL contends that Tineco has not shown that Beskow anticipates limitations 1[d] and 1[i] of the '769 patent. CRB at 49. For the reasons explained below, I find that Tineco failed to prove by clear and convincing evidence that Beskow anticipates claims 1 and 4 of the '769 patent.

First, like limitations 1[d] and 18[d] of the '949 patent, limitation 1[d] of the '769 patent requires a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source. *See* JX-0010 ('769 patent) at cl. 1 ("a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source"). For the reasons explained above with respect to limitations 1[d] and 18[d] of the '949 patent, I find that Tineco has not shown that Beskow discloses a suction nozzle assembly provided on the base. *See* Section VI.A.1.a.ii.c., *supra*. Consequently, Tineco failed to prove by clear and convincing evidence that Beskow anticipates claim 1 of the '769 patent.

Second, similar to limitation 1[i] of the '949 patent, limitation 1[i] of the '769 patent requires a fluid delivery channel in a specific location. *See* JX-0010 ('769 patent) at cl. 1 ("the at least one fluid delivery channel extending adjacent to a portion of the suction nozzle assembly"). For the reasons explained above with respect to limitation 1[i] of the '949 patent, I find that Tineco has not shown that Beskow discloses a fluid delivery channel that meets the location requirement of limitation 1[i] of the '769 patent. *See* Section VI.A.1.a.ii.e., *supra*.

Because Tineco failed to show that Beskow discloses limitations 1[d] and 1[i] of the '769 patent, Tineco also failed to prove by clear and convincing evidence that Beskow anticipates claim 4, which depends from claim 1.

iii) Conclusion Regarding Alleged Anticipation of Claims 1 and 4 of the '769 Patent

In view of the foregoing evidence and the record as a whole, I find that Tineco has not demonstrated by clear and convincing evidence that claims 1 and 4 of the '769 patent are invalid under 35 U.S.C. § 102.

b) Obviousness—Claims 1 and 4

Tineco contends that to the extent that Sato and Beskow do not disclose limitations 1[i] and 1[j], an invention having those limitations would have been obvious, so claims 1 and 13 are invalid under 35 U.S.C. § 103. RIB at 78-79. Given that Tineco's obviousness argument is limited to limitations 1[i] and 1[j], the argument fails to address limitation 1[d] of the '769 patent that I found Sato and Beskow lacked. *See* Section VI.A.3.a., *supra*. Consequently, Tineco failed to prove by clear and convincing evidence that claims 1 and 4 of the '769 patent are invalid as obvious under 35 U.S.C. § 103. *See In re Duva*, 387 F.2d at 407 ("every portion of the appealed claims" and "the invention as a whole" must be considered in an obviousness analysis).

B. The Resch Patents

1. The ’735 Patent

Tineco contends that claims 1, 13, and 15 of the ’735 patent are invalid as obvious under 35 U.S.C. § 103. RIB at 81-123. According to Tineco, there are six alternative prior art combinations that render the asserted claim 1 of the ’735 patent obvious:

Ground	Primary Reference	Secondary References
1	TEK iFloor CL1762A (“iFloor”)	• U.S. Patent Application Publication No. 2019/0254495A1 (“Zhang”)
2	iFloor	• Zhang • Japanese Patent Application 2004-105273A (“Seno”)
3	iFloor	• Zhang • International Patent Application WO 2018/012912A1 (“Jang”)
4	iFloor	• Zhang • U.S. Patent No. 8,925,142 (“Orubor 142”)
5	iFloor	• Zhang • Seno • Jang
6	iFloor	• Zhang • Seno • Orubor 142

RIB at 81; RDX-0004 at 68. Tineco contends that the same six combinations render asserted claim 13 of the ’735 patent obvious. RIB at 114; RDX-0004 at 108. Tineco raises six additional prior art combinations in support of its contention that claim 15 of the ’735 patent obvious:

Ground	Primary Reference	Secondary References
1	iFloor	• Zhang • U.S. Patent No. 8,776,304 ("Orubor 304")
2	iFloor	• Zhang • Seno • Orubor 304
3	iFloor	• Zhang • Jang • Orubor 304
4	iFloor	• Zhang • Orubor 142 • Orubor 304
5	iFloor	• Zhang • Seno • Jang • Orubor 304
6	iFloor	• Zhang • Seno • Orubor 142 • Orubor 304

RIB at 120-121; *see also* RDX-0004 at 120.

BISSELL responds that that a person of ordinary skill in the art would not have been motivated to combine the iFloor primary reference "with Tineco's patchwork of prior art references[.]" *See, e.g.*, CRB at 51. BISSELL also contends that "even when combined, the combinations fail to disclose numerous claim limitations." *Id*. Specifically, BISSELL contends that the combinations do not disclose the following limitations:

’735 Patent Claim Element	Claim Language
1[i]	a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;
1[k]	a self-cleaning mode input control disposed on the upright body and configured to initiate an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the power button and the cleaning mode button; and
1[l]	controller controlling the operation of the fluid delivery and recovery systems, and operably coupled with the self-cleaning mode input control;
1[m]	a storage tray configured to dock the surface cleaning apparatus in the upright storage position for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus, the storage tray comprising at least one charging contact, a power cord, and a wall charger configured to be plugged into a household outlet;
1[n]	the surface cleaning apparatus comprises at least one corresponding charging contact configured to couple with the at least one charging contact of the storage tray when the surface cleaning apparatus is docked with the storage tray;
1[o]	wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the self-cleaning mode is operable only when the surface cleaning apparatus is docked on the storage tray; and
1[p]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.
13[f]	a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;
13[h]	a self-cleaning mode input control on the upright body which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are

	energized, wherein the self-cleaning mode input control is separate from the user interface; and
13[i]	a controller controlling the operation of the fluid delivery and recovery systems;
13[j]	a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;
13[k]	wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the controller is configured to lock-out the automatic cleanout cycle when the surface cleaning apparatus is not docked with the storage tray and prevent initiation of the automatic cleanout cycle; and
13[l]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.
15	The floor cleaning system of claim 14, wherein the controller is configured to activate the vacuum motor after the pump and the brushroll motor during the unattended automatic cleanout cycle, and the vacuum motor extracts cleaning fluid from the storage tray for collection in the recovery tank.

CRB at 51; CDX-0017 at 17, 40.

For the reasons explained below, I find that Tineco did not prove by clear and convincing evidence that claims 1, 13, and 15 of the ’735 patent are invalid under 35 U.S.C. § 103.

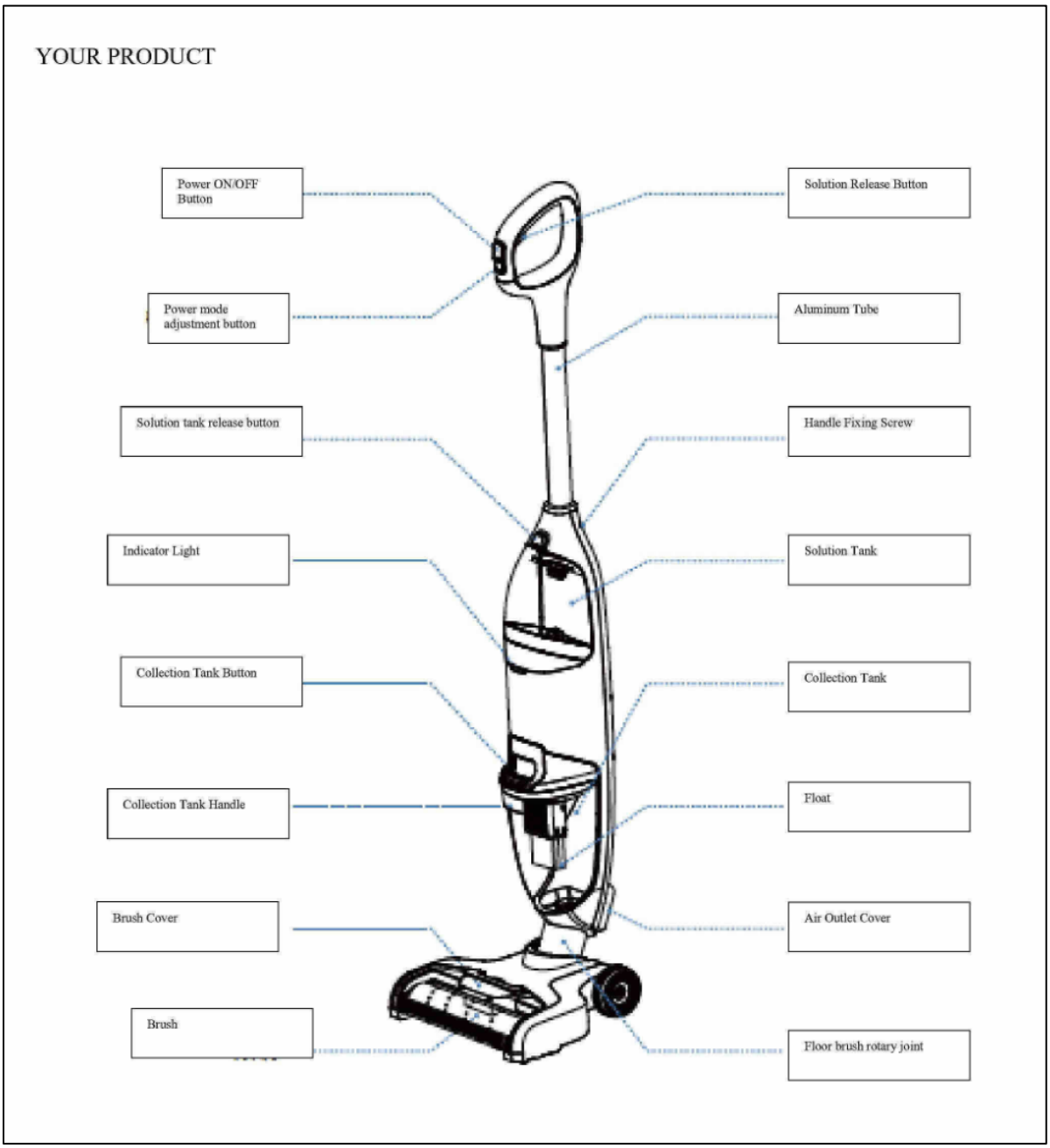
a) Prior Art

The six different prior art references that Tineco relies on in support of its invalidity arguments regarding the Resch patents are briefly described below.

i) The iFloor

The iFloor is a wet/dry surface cleaning apparatus that TEK, a predecessor to the Tineco brand, started selling in 2018. Tr. (Ma) at 472:10-14; Tr. (Zhou) at 552:11-15; Tr. (Xu) at 574:14-

575:14; Tr. (Xia) at 591:24-594:6; Tr. (Sorenson) at 1107:19-1109:19. Below is an illustration of the iFloor from the product's user manual:



RX-0094 (iFloor User Manual) at 0094.0029.

ii) Zhang

The Zhang reference was initially filed as a PCT application on April 18, 2018. RX-0125 (Zhang) at cover. The Patent Office published Zhang on August 22, 2019. *Id*. Zhang discloses a "roller mop":

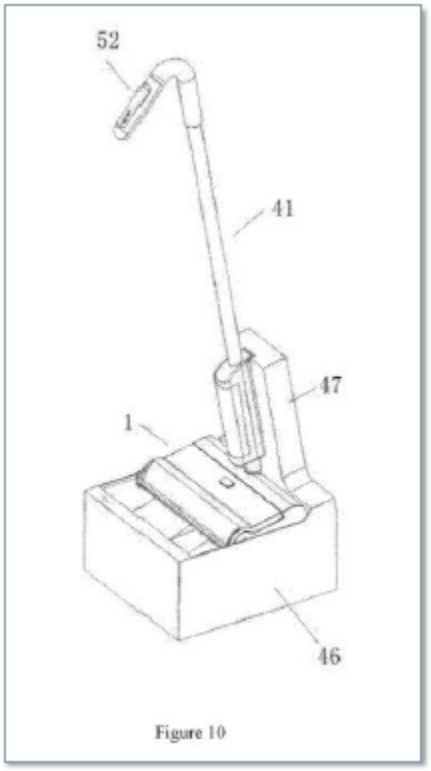


Figure 10

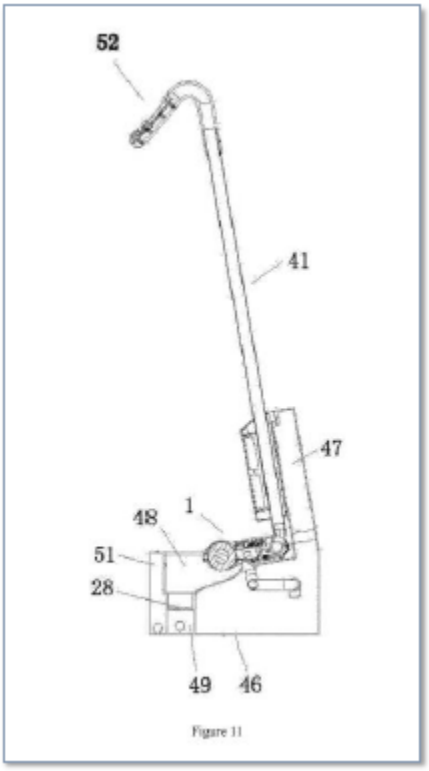


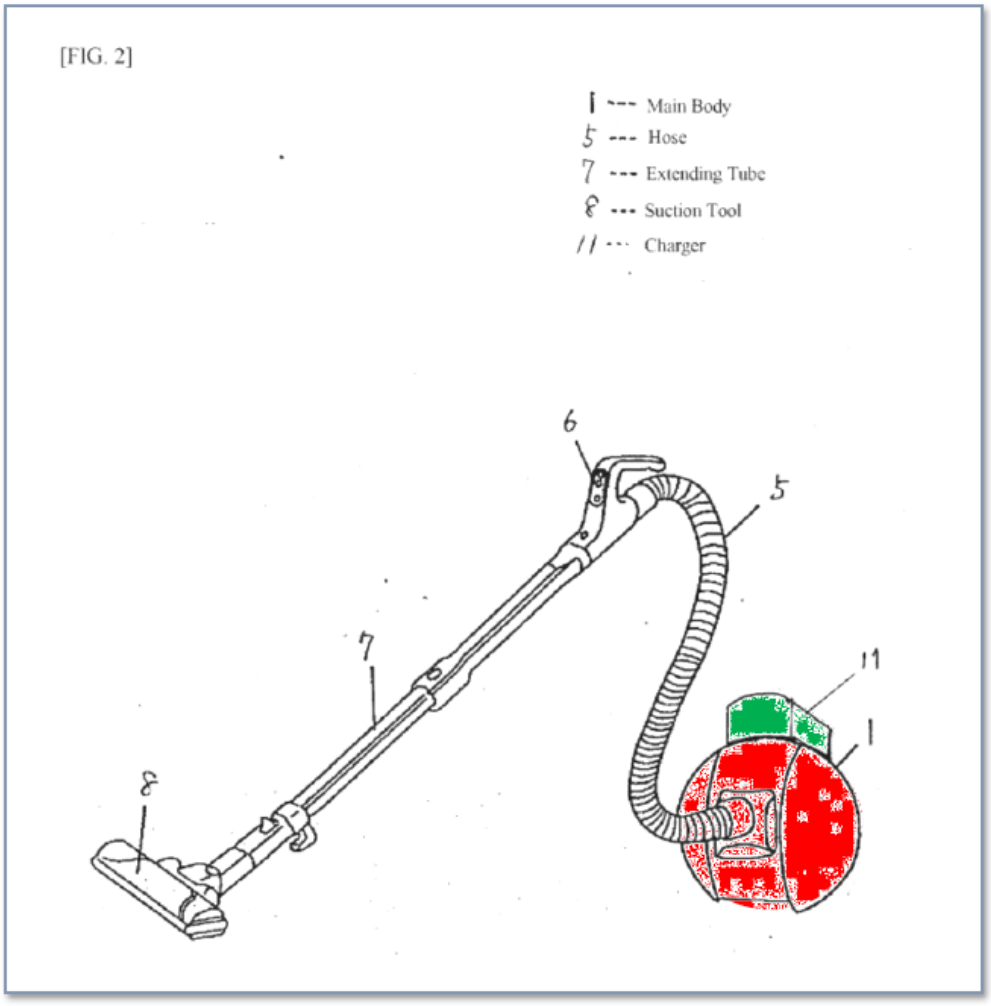
Figure 11

Id. at Abstract, Figs. 10, 11. Zhang does not use a vacuum motor or fluids to clean the floor. Tr. (Sorensen) at 1109:22-1110:24. Instead, Zhang uses its roller to sweep debris off the floor. *Id.*; *see also* RX-0125 (Zhang) ¶ 29 (indicating that the roller "is rotated counterclockwise under the drive of the motor to clean the ground by rolling friction"). The "trashes caught by the roller" are swept backwards into a trash bin. *Id.* ¶¶ 29, 32.

Zhang discloses that the device can be placed in a cleaning basin that is connected to an external water source. *Id.* ¶ 30. Zhang uses this water in a "self-cleaning process" that is designed to clean the trash bin and the roller. *Id.* ¶¶ 30, 39.

iii) Seno

The Seno reference is a Japanese patent application that was published on April 8, 2004. RX-0138 (Seno) at 0138.0011. Seno discloses a rechargeable vacuum cleaner, pictured below, that can operate portably:

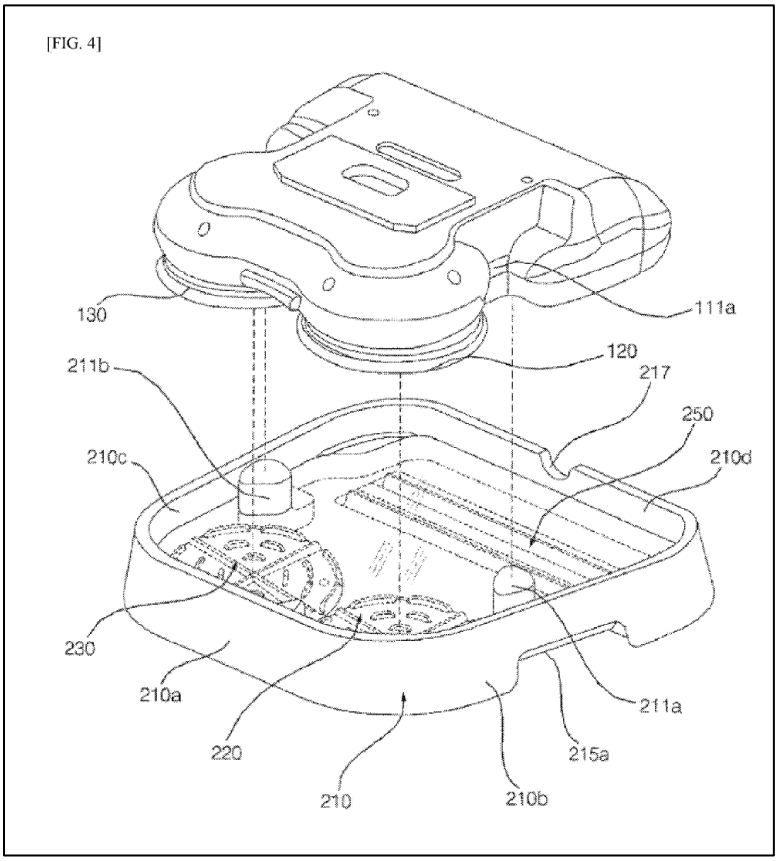


Id. at Fig. 2 (highlighting added); *see also id.* ¶ 0007; Tr. (Sorensen) at 1110:25-1112:21. In the above picture, the main body of the vacuum is highlighted red, and the charger is highlighted

green. *Id.* at Fig. 2. According to Seno, conventional rechargeable vacuum cleaners at the time were inconvenient because they required a user to remove the charger prior to running the vacuum. *Id.* ¶ 0005. The user would then need to remount the charger after use. *Id.* Seno suggests that the charger could be left in place during operation, but Seno indicates that running the vacuum while charging created another set of problems. *Id.* In order to address those issues, Seno discloses that the device may include a means for determining whether the vacuum is running. *Id.* ¶¶ 0007-8. That way, according to Seno, "the rechargeable vacuum cleaner does not necessarily require the main body to be removed from the charger when it is used can transition to charging operation as is without the effort of mounting after use and can avoid shortcomings such as erroneous determination of the charging amount of the battery due to the discharging operation or degradation of the battery due to simultaneous charging and discharging over long period." *Id.* (non-idiomatic language in the original).

iv) Jang

Jang is an international patent application that was published on January 18, 2018. RX-0137 (Jang). Jang discloses a robot washing device pictured below:



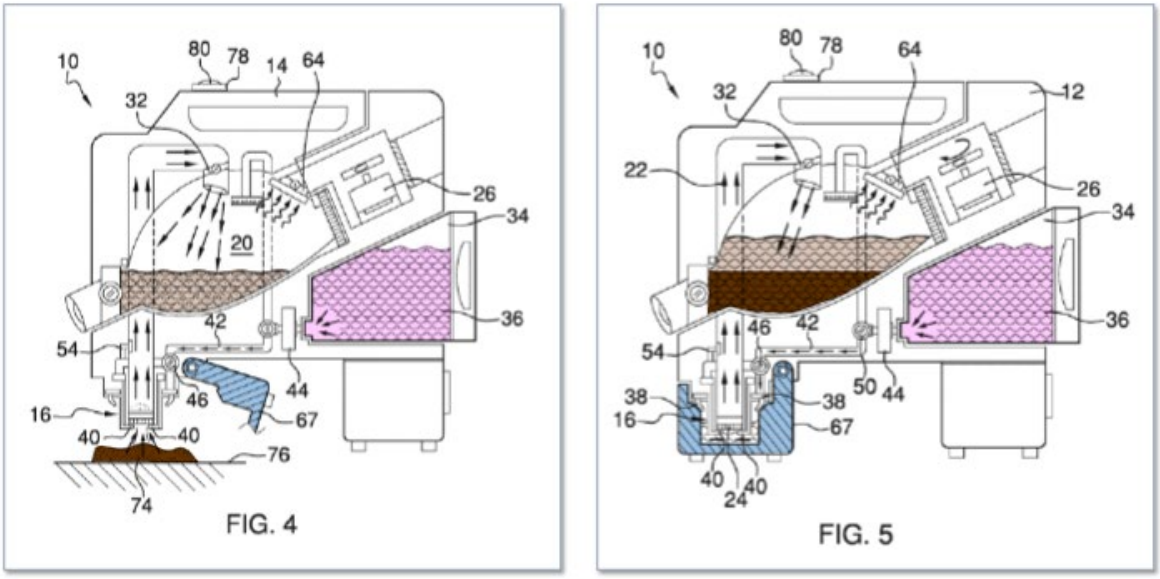
Id. at Fig. 4. The objectives of Jang include the effective and efficient cleaning of such robot washing devices. *Id.* ¶¶ 5, 7.

v) Orubor 142

Orubor 142 is a United States patent that issued on January 6, 2015, to Lawrence Orubor. RX-0127 (Orubor 142) at cover. According to Orubor 142, "[a]nimal waste, particularly raw fecal material from dogs and other household pets are smelly and consist largely of numerous disease causing pathogens that pose potential health risks to pets and humans exposed to them." *Id.* at 1:13-16. Orubor 142 states that the "presence of animal waste is considered an eyesore and nuisance that must be eliminated." *Id.* at 1:24-26.

In order to address that need, Orubor 142 discloses a "compact hand held apparatus for clearing waste from a surface that includes treating the waste material with treatment solution and

vacuuming the waste from the surface into storage receptacle for later disposal at suitable location." *Id.* at 1:31-35. The disclosed handheld vacuum is pictured below:

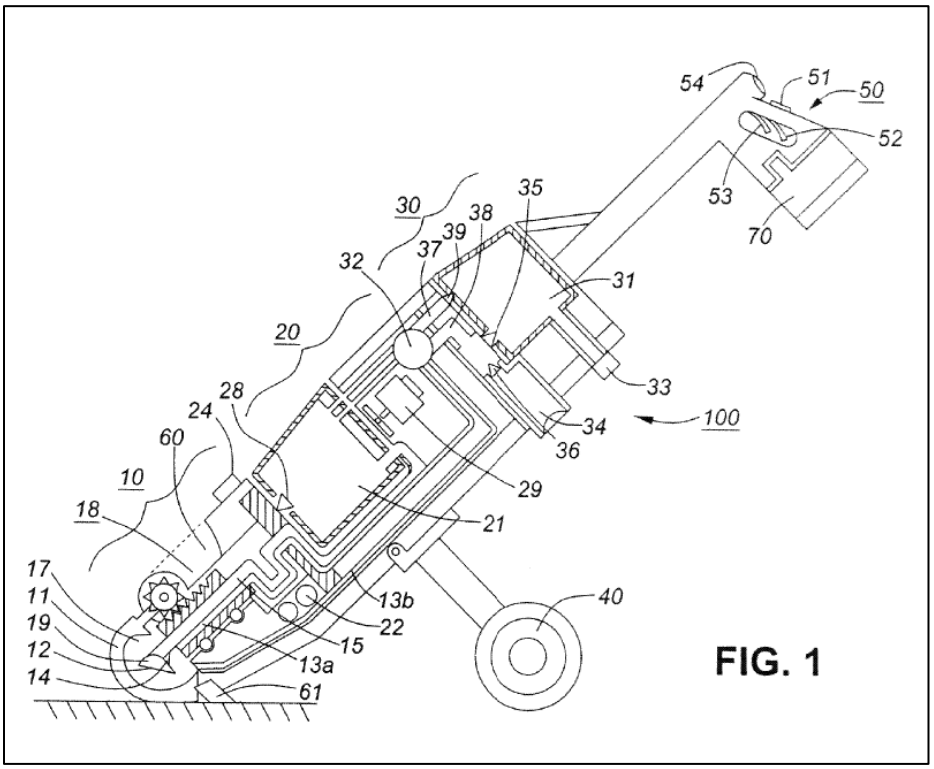


CRB at 56 (annotating Figures 4 and 5 of Orubor 142). According to BISSELL's expert, Dr. Sorensen, "Orubor 142 contemplates that, after you're finished using this device, you probably want to clean it . . . ." Tr. (Sorensen) at 1114:17-19. Figure 5 is an illustration of the device operated in a "self-clean" mode. RX-0127 (Orubor 142) at 6:16-18. During the "self-clean" mode of operation, "the suction head 16 is covered by the suction head cover/wash basin 67 and locked in place." *Id.* at 6:18-20. Dr. Sorensen testified that after the suction head cover 67 is closed and locked in place, "cleaning operations could commence, like some cleaning fluid gets kind of injected in that region there, and then that fluid could be suctioned up into the chamber." Tr. (Sorensen) at 1114:22-1115:2.

vi) Orubor 304

Orubor 304, which issued on July 15, 2014, is another United States patent that that names Lawrence Orubor as the inventor. RX-0132 (Orubor 304) at cover. Similar to Orubor 142, Orubor

304 discloses a "device for collecting waste and for disintegrating and self-cleaning and evacuating waste, the device including a waste system for collecting the waste." *Id.* at abstract. Figure 1, pictured below, illustrates one such device:



Id. at Fig. 1. Orubor 304 states that the device may include "spray jets 14" in the "collection hose 15," and that this arrangement is used "to begin breaking down waste to clean the interior of the collection hose 15 or both." *Id.* at 3:14-17.

b) Obviousness—Claims 1, 13, and 15

For the reasons explained below, I find that Tineco has not shown that any identified prior art combination discloses limitations 1[o], 1[p], 13[k], and 13[l] of the '735 patent. Consequently,

I find that Tineco did not prove by clear and convincing evidence that independent claims 1, 13, and 15[36] are invalid as obvious under 35 U.S.C. § 103.

i) 1[o] and 13[k]—iFloor in view of Zhang, Orubor 142, or Jang

Limitations 1[o] and 13[k] of the '735 patent require the following elements:

'735 Patent Claim Element	Claim Language
1[o]	wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the self-cleaning mode is operable only when the surface cleaning apparatus is docked on the storage tray; and
13[k]	wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the controller is configured to lock-out the automatic cleanout cycle when the surface cleaning apparatus is not docked with the storage tray and prevent initiation of the automatic cleanout cycle; and

The parties refer to the disputed portion those limitations as a "self-clean lockout" feature. *See, e.g.*, RIB at 108; CRB at 69.

Tineco contends that "the combination of iFloor with any of Zhang, Orubor 142, or Jang" discloses limitations 1[o] and 13[k]. RIB at 103-10, 117-18. According to Tineco, a person of ordinary skill in the art would have been motivated to incorporate the teachings of any of those secondary references into the iFloor. RIB at 105-10.

[36] Claim 15 depends from claim 13 and thus incorporates the requirements of limitations 13[k] and 13[l].

BISSELL responds that Tineco did not provide clear and convincing evidence that a person of ordinary skill in the art would have been motivated to combine Zhang, Orubor 142, or Jang with the iFloor. CRB at 69-75. BISSELL also contends that the "TEK-iFloor, in combination with Zhang and either Orubor-142 or Jang, fails to disclose the self-clean lockout requirement of limitations" 1[o] and 13[k]. *Id.*

I find that Tineco failed to prove by clear and convincing evidence that an invention having limitations 1[o] and 13[k] would have been obvious in view of the identified combinations.

iFloor: The record demonstrates that the iFloor device can perform a self-cleaning operation when a user presses and holds the On/Off button for three seconds. Tr. (Smith) at 895:13-23, RX-0094 at 0094.0043. The iFloor's self-cleaning operation may be performed when the device is on a storage tray or when it is not on the tray. RIB at 105; Tr. (Smith) at 919:1-13. Consequently, the iFloor does not satisfy the requirement in limitation 1[o] that "the self-cleaning mode is operable only when the surface cleaning apparatus is docked on the storage tray" or the requirement in limitation 13[k] that "the controller is configured to lock-out the automatic cleanout cycle when the surface cleaning apparatus is not docked with the storage tray and prevent initiation of the automatic cleanout cycle." *See, e.g.*, RIB at 105; Tr. (Smith) at 919:1-13.

Neither Zhang, Orubor 142, or Jang provide those missing elements.

iFloor in View of Zhang: Tineco did not adequately explain how or why a person of ordinary skill in the art would modify the iFloor using the teachings of Zhang to reach the claimed limitations. Both parties appear to agree that Zhang utilizes a significant amount of componentry that is external to the cleaning device to perform a self-cleaning operation. *See, e.g.*, RIB at 105; CRB at 70; Tr. (Smith) at 919:16-21. That is the reason why Zhang's self-cleaning operation is only operable when the device is in the tray. Tr. (Smith) at 919:16-21; Tr. (Sorensen) at 1128:25-

1130:13. The primary self-cleaning componentry of the iFloor, by contrast, is located within the cleaning device itself. *See, e.g.*, Tr. (Smith) at 919:1-13. In other words, the structural means by which Zhang achieves a self-clean lockout are simply not available in the iFloor.

Incorporating Zhang's teachings regarding the so-called self-clean lockout into the iFloor would therefore require a significant overhaul of the iFloor's structure. For example, self-cleaning components located in the iFloor would need to be moved to the tray in order to achieve a self-clean lockout in the way taught by Zhang. But Tineco provides no clear evidence of how that restructuring would be accomplished nor of the likelihood of success in arriving at the claimed invention.

I do not find the limited evidence presented by Tineco persuasively addressed why a person of ordinary skill in the art would make the significant changes to iFloor that would be required to arrive at the claimed invention. *See* Tr. (Smith) at 920:16-921:12; *see also generally* RIB at 105-07.

iFloor in View of Orubor 142: Orubor 142 also fails to supply the claimed elements that are missing from the iFloor for at least two reasons.

First, Tineco has not demonstrated that Orubor 142 has a storage tray configured to dock with the surface cleaning apparatus as required by limitations 1[o] and 13[k]. Tineco appears to contend that the "head cover/washbasin 67" of Orubor 142 corresponds to the claimed storage tray. *See, e.g.*, RIB at 107. But the "head cover/washbasin 67," pictured below, does not look like a storage tray, and the Orubor 142 reference does not describe it as a tray:

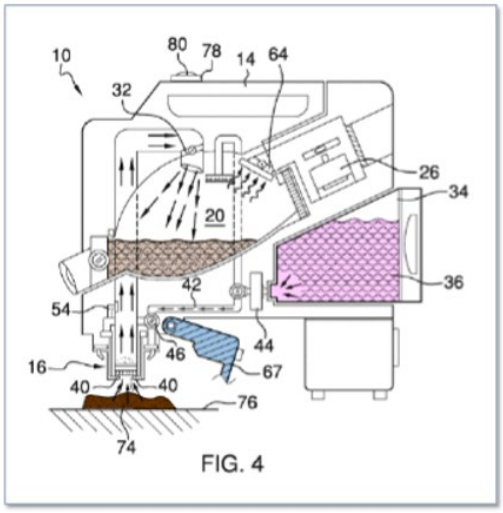


FIG. 4

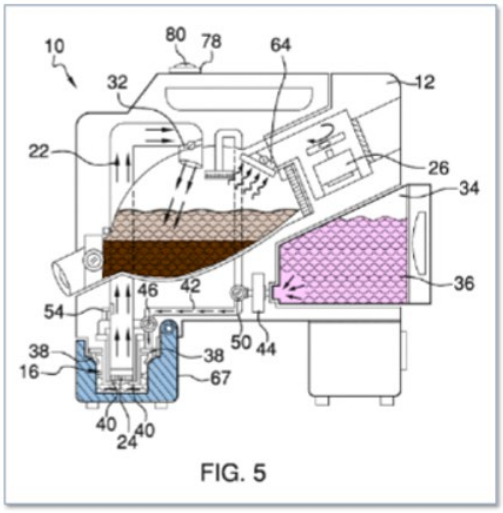


FIG. 5

CRB at 56 (annotating Figures 4 and 5 of Orubor 142); *see also, e.g.*, RX-0127 (Orubor 142) at 4:63-67, 6:16-24, 6:45-50. Instead, head cover/washbasin 67 looks like cap that is a part of the cleaning device.

In view of the evidence, I find that Tineco failed to show that Orubor 142 has a storage tray. Consequently, Tineco also failed to show that Orubor 142's self-cleaning operation occurs only when docked in a storage tray as required by limitations 1[o] and 13[k].

Second, even if Orubor 142 disclosed a tray and met the requirements of limitations 1[o] and 13[k], Tineco has not demonstrated that a person of ordinary skill in the art would have been motivated to combine the teachings of Orubor 142 with the iFloor reference. The structure and operation of the alleged storage tray in Orubor 142, a handheld device, is significantly different than componentry of the iFloor device. Tineco did not adequately explain how or why a person of ordinary skill in the art would make significant modifications to the iFloor device to incorporate the means by which Orubor 142 performs the alleged self-clean lockout. *See* RIB at 108-09 (citing Tr. (Smith) 920:16-921:15)).

iFloor in View of Jang: Finally, the Jang reference also fails to supply the claimed elements that are missing from the iFloor. The evidence that Tineco cites indicates that a washing tray can be configured to automatically activate when the robot vacuum is placed in the tray. *See* Tr. (Smith) at 920:8-15; RX-0137 (Jang) at ¶¶ 9, 132-34. That evidence, however, does not clearly speak to the issue of whether Jang prevents the washing operation from initiating when a robot vacuum is not in the tray.

Moreover, I find that the limited evidence that Tineco identified (RIB at 108-10) does not adequately explain how or why a person of ordinary skill in the art would modify the iFloor to incorporate the teachings of Jang. *See* Tr. (Smith) at 920:8-921:12.

Conclusion Regarding Limitations 1[o] and 13[k]: In view of the foregoing evidence and the record as a whole, I find that Tineco did not demonstrate by clear and convincing evidence that the iFloor reference, in combination with Zhang, Orubor 142, or Jang, discloses an invention with the features of claim limitations 1[o] and 13[k].

ii) 1[p] and 13[l]—iFloor in View of Zhang or Seno

Limitations 1[p] and 13[l] of the ’735 patent require the following elements:

’735 Patent Claim Element	Claim Language
1[p]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.
13[l]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.

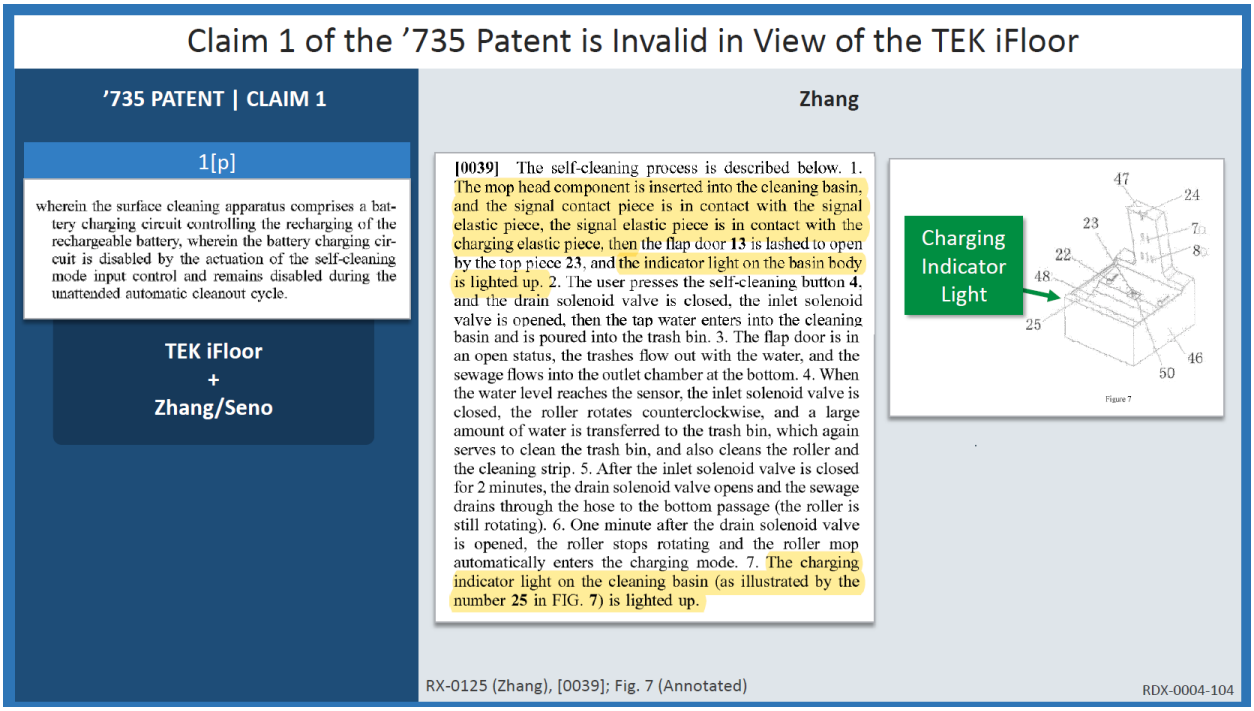
Tineco contends that a person of ordinary skill in the art would have been motivated to combine the iFloor reference with either Zhang or Seno and that "the combination of iFloor with either of Zhang or Seno discloses" limitations 1[p] and 13[l]. RIB at 110-13; *see also id.* at 118.

BISSELL responds that the "TEK-iFloor, in combination with Zhang or Seno, fails to disclose limitations 1[p]/13[l] because neither Zhang nor Seno cures TEK-iFloor's no disabling charging deficiency." CRB at 75-78. BISSELL also contends that a person of ordinary skill in the art would not be motivated to combine the teachings of Zhang or Seno with the iFloor reference. *Id.*

I find that Tineco failed to prove by clear and convincing evidence that an invention having limitations1[p] and 13[l] would have been obvious in view of the identified combinations of prior art.

iFloor: The record demonstrates that the battery charging circuit in the iFloor device is not disabled by the actuation of the self-cleaning mode input control. *See* Tr. (Smith) at 922:5-13. Further, the battery charging circuit in the iFloor device does not remain disabled during the unattended automatic cleanout cycle. *See id.* The iFloor thus fails to disclose limitations 1[p] and 13[l] of the '735 patent.

iFloor in View of Zhang: Zhang fails to supply the claimed elements that are missing from the iFloor. Tineco's expert, Mr. Smith, contended that paragraph 39 of Zhang discloses a battery charging circuit that is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle:



RDX-0004 at 104; Tr. (Smith) at 922:17-923:11; *see also* RIB at 111-13.

I find that Zhang's disclosure does not disclose that the battery charging circuit in Zhang is disabled by the actuation of the self-cleaning mode input control nor that it remains disabled during an unattended automatic cleanout cycle. Zhang, at most, discloses that the cleaning device charges when placed in the cleaning basin and also charges about a minute after "the drain solenoid valve is opened, the roller stops rotating and the roller mop automatically enters the charging mode." RX-0125 (Zhang) ¶ 0039. Zhang does not disclose what happens to the battery charging circuit at other points in time.

As a result, Zhang does not disclose whether charging is disabled when the user presses the self-cleaning button. And Zhang does not disclose whether charging remains disabled during the entire unattended automatic cleanout cycle. BISSELL's expert, Dr. Sorensen, explained that the battery charging circuit could, for example, alternate between "a charging state and a discharging state," which would not satisfy the claim limitations. Tr. (Sorensen) at 1141:19-

1142:19; *see also* CDX-0017 at 34. In view of the record, I find that Tineco did not prove that Zhang discloses the requirement of limitation 1[p] and 13[l] that "the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle." Consequently, combining the Zhang reference with the iFloor does not render claim 1 obvious.

Moreover, as explained above, I find that Tineco failed to adequately support its contention that a person of ordinary skill in the art would have been motivated to combine Zhang's self-cleaning operation with the iFloor. *See* Section VI.B.b.i., *supra*.

iFloor in View of Seno: Seno also fails to disclose the claimed elements that are missing from the iFloor. To begin with, I am not persuaded that a person of ordinary skill in the art looking to improve or modify the iFloor's unattended automatic cleanout cycle would even consider the teachings of Seno because I find Seno does not have an unattended automatic cleanout. *See, e.g.*, Tr. (Sorensen) at 1142:24-1143:4. Moreover, it is not clear from the record that Seno's battery charging circuit is disabled by pressing a button. *See* Tr. (Smith) at 923:12-24; RX-0138 (Seno) at ¶¶ 0021-22; *see also* Tr. (Sorensen) at 1143:13- 1144:6. Seno thus fails to disclose the requirement in limitation 1[p] and 13[l] that "the battery charging circuit is disabled by the actuation of the self-cleaning mode input control." In view of the foregoing evidence and the record as a whole I find that Tineco failed to demonstrate that the combination of the iFloor and Seno discloses limitations 1[p] and 13[l] of the '735 patent.

Conclusion Regarding Limitations1[p] and 13[l]: In view of the foregoing evidence and the record as a whole, I find that Tineco did not demonstrate that the iFloor reference, in combination with Zhang or Seno, discloses limitations 1[p] and 13[l].

c) Conclusion Regarding Alleged Obviousness of Claims 1, 13, and 15 of the '735 Patent

In view of the foregoing evidence and the record as a whole, I find that Tineco has not demonstrated by clear and convincing evidence that claims 1, 13, and 15 of the '735 patent are invalid under 35 U.S.C. § 103.

2. The '428 patent

Tineco contends that two alternative grounds invalidate claim 1 under 35 U.S.C. § 103:

Ground	Primary Reference	Secondary References
1	iFloor	• Zhang • Orubor 304
2	iFloor	• Zhang • Seno • Orubor 304

See, e.g., RIB at 123; RDX-0004 at 127.

BISSELL responds that Tineco failed to meet its burden of demonstrating that claim 1 would have been obvious in view of the identified prior art. CRB at 79. In particular, BISSELL contends that the Tineco did not prove that the identified prior art combinations disclose the following limitations:

'428 Patent Claim Element	Claim Language
1[f]	a rechargeable battery selectively powering the pump, the brushroll motor, and the vacuum motor;
1[h]	a self-cleaning mode input control which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized; and

1[i]	a controller controlling the operation of the fluid delivery and recovery systems and configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control; and
1[j]	a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;
1[k]	wherein, to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation, the controller is configured to:
1[n]	wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.

Id.

For the reasons explained below, I find that Tineco did not demonstrate that any identified prior art combination discloses limitation 1[n] of the '428. Tineco therefore failed to prove by clear and convincing evidence that claim 1 of the '428 patent is invalid under 35 U.S.C. § 103.

a) 1[n]—iFloor in View of Zhang or Seno

Tineco contends that "the combination of iFloor with either of Zhang or Seno discloses" limitation 1[n] for "for the reasons explained regarding limitation 1[p] of the '735 Patent." RIB at 129.

As indicated by the below table, limitation 1[p] of the '735 patent includes all the elements in limitation 1[n] of the '428 patent:

'735 Patent Claim Element	Claim Language	'428 Patent Claim 1 Element	Claim Language
1[p]	wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.	**1[n]**	wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle.

BISSELL contends that Tineco "fails to meet its burden that the TEK-iFloor, combined with either Zhang or Seno renders obvious limitation 1[n]" for the same reasons that BISSELL argued that the prior art did not render obvious limitation 1[p] of the '735 patent. CRB at 79.

For the reasons explained above with respect to limitation 1[p] of the '735 patent, I find that Tineco failed to demonstrate by clear and convincing evidence that an invention having the feature in limitation 1[n] of the '428 patent would have been obvious in view of the prior art. *See* Section VI.B.1.b.ii., *supra*.

b) Conclusion Regarding Alleged Obviousness of Claim 1 of the '428 Patent

In view of the foregoing evidence and the record as a whole, I find that Tineco has not demonstrated by clear and convincing evidence that claim 1 of the '428 patent is invalid as obvious under 35 U.S.C. § 103.

C. Secondary Considerations

BISSELL contends that there are secondary considerations "of long-felt need, commercial success, awards/praise, teaching away, copying and a nexus to the Asserted Patents" that indicate

that the asserted patents are not obvious. *See* RRB at 80-88. I have considered BISSELL's arguments about secondary considerations in formulating my determinations on obviousness above. As noted above, every asserted claim has a feature not found in the prior art combinations cited by Tineco. Crediting BISSELL's secondary considerations evidence only serves to bolster the ample additional evidence that those claims are not obvious. Alternatively, even if BISSELL had submitted *no* evidence of secondary considerations, I would be of the same view that the asserted patent claims would not have been obvious because several of the features of the patented inventions are missing entirely from the cited prior art.

VII. DOMESTIC INDUSTRY

For a patent-based complaint, a violation of section 337 can be found "only if an industry in the United States, relating to the articles protected by the patent . . . exists or is in the process of being established." 19 U.S.C. § 1337(a)(2). The complainant bears the burden of establishing that the domestic industry requirement is satisfied. *John Mezzalingua Assocs., Inc. v. Int'l Trade Comm'n*, 660 F.3d 1322, 1331 (Fed. Cir. 2011). The domestic industry requirement of section 337 is often described as having an economic prong and a technical prong. *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 707 F.3d 1295, 1298 (Fed. Cir. 2013); *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 12–14, USITC Pub. No. 4120 (Dec. 2009). "The technical prong concerns whether complainant practices at least one claim of the asserted patents. The economic prong concerns domestic activities with respect to the patent or patented article." *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 25, USITC Pub. No. 4289 (Nov. 2011) ("*Certain Printing and Imaging Devices*").

A. Technical Prong of the Domestic Industry Requirement

1. The Xia Patents

a) '949 Patent

BISSELL contends that the Xia domestic industry products satisfy the technical prong of the domestic industry requirement for the '949 patent because those products practice claims 7 and 19 of the '949 patent. CIB at 34-38.[37] Tineco responds that BISSELL has not shown that the Xia domestic industry products practice all the limitations of the asserted claims. RRB at 30. As explained in more detail below, I find that the Xia domestic industry practice claims 7 and 19 of the'949 patent and that BISSELL has thus satisfied the technical prong of the domestic industry requirement for the '949 patent.

i) Claim 7

(a) 1[Preamble]—"A surface cleaning apparatus, comprising:"

No party has argued that the preamble of claim 1 is limiting. BISSELL nonetheless contends that the Xia domestic industry products comprise surface cleaning apparatuses. CIB at 35 (collecting evidence); Tr. (Singhose) at 130:15-131:2. Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice the preamble of claim 1, regardless of whether the preamble is limiting.

[37] As with its infringement analysis, BISSELL's arguments for the technical prong of the domestic industry requirement often cross-reference arguments for other limitations with the same or similar elements. Tables comparing the different claim limitations that BISSELL argues together are available above in Section V.

(b) 1[a]—"a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;"

BISSELL contends that the Xia domestic industry products comprise a housing including an upright handle assembly and base in accordance with limitation 1[a]. CIB at 35 (collecting evidence); Tr. (Singhose) 131:3-11. Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[a].

(c) 1[b]—"an agitator provided with the base;"

BISSELL contends that the Xia domestic industry products contain an agitator provided with the base in accordance with limitation 1[b]. CIB at 35 (collecting evidence); Tr. (Singhose) 131:12-17. Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[b].

(d) 1[c]—"a suction source;"

BISSELL contends that the Xia domestic industry products contain a suction source in accordance with limitation 1[c]. CIB at 35 (collecting evidence); Tr. (Singhose) 131:18-22. Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[c].

(e) 1[d]—"a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source, the suction nozzle assembly include a nozzle housing defining an underside of the suction nozzle assembly, and wherein at least a portion of the underside is adjacent the agitator; and"

BISSELL contends that the Xia domestic industry products "contain a [suction nozzle assembly] provided on the base, defining a suction nozzle in fluid communication with the suction source" in accordance with limitation 1[d]. CIB at 35-36 (collecting evidence); Tr. (Singhose) 131:23-133:9. Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[d].

(f) 1[e]—"a fluid delivery system provided on the housing, the fluid delivery system, comprising:"

BISSELL contends that the Xia domestic industry products contain a fluid delivery system in accordance with limitation 1[e]. CIB at 37 (collecting evidence). Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30; Tr. (Singhose) 133:10-16. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[e].

(g) 1[f]—"a fluid supply chamber adapted to hold a supply of liquid;"

BISSELL contends that the Xia domestic industry products contain a fluid supply chamber in accordance with limitation 1[f]. CIB at 37 (collecting evidence); Tr. (Singhose) 133:17-134:2. Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[f].

(h) 1[g]—"a fluid dispenser provided with the suction nozzle assembly, the fluid dispenser in fluid communication with the fluid supply chamber, the fluid dispenser including at least one outlet provided on the at least a portion of the underside of the suction nozzle assembly, the at least one outlet adapted to dispense fluid onto at least one of the agitator or a surface to be cleaned;"

BISSELL contends that the Xia domestic industry products "contain a fluid dispenser in fluid communication with the supply chamber, the dispenser including an outlet that dispenses fluid onto the brushroll, as required by" limitation 1[g]. CIB at 37 (collecting evidence); Tr. (Singhose) 134:3-135:4. BISSELL further contends that "the outlet of the fluid dispenser is provided on a portion of the underside of the suction nozzle assembly." CIB at 37. Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[g].

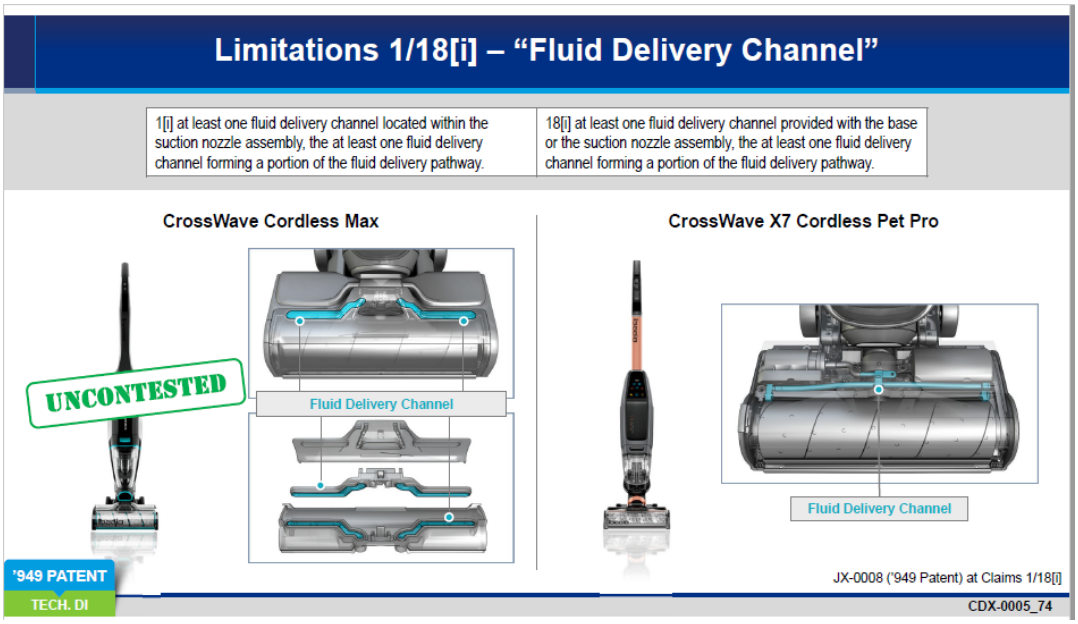
(i) 1[h]—"a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and"

BISSELL contends that the Xia domestic industry products contain a fluid delivery pathway in accordance with limitation 1[h]. CIB at 37 (collecting evidence); Tr. (Singhose) 136:3-9. Tineco does not dispute that the Xia domestic industry products satisfy this limitation. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[h].

(j) 1[i]—" at least one fluid delivery channel located within the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway."

BISSELL contends that the Xia domestic industry products contain a fluid delivery channel as required by limitation 1[i]. CIB at 37-38 (collecting evidence). Tineco contends that BISSELL "included a conclusory statement that 'the [fluid delivery channel] is located within the [suction nozzle assembly] of each product' but provided no evidence and merely cited to their discussion of alleged infringement by Respondents' products." RRB at 30 (quoting CIB at 37-38). I find that BISSELL demonstrated by a preponderance of the evidence that the Xia domestic industry products practice limitation 1[i].

BISSELL's expert, Dr. Singhose, testified that "when I inspected these I found such a channel. It was located within the suction nozzle assembly and it was a portion of the fluid delivery pathway." Tr. (Singhose) at 136:16-137:10. Dr. Singhose illustrated the fluid delivery channels that he found with the following demonstrative:



CDX-0005C at 74. In view of that testimony, there is no force to Tineco's contention that BISSELL "provided no evidence." RRB at 30.

In view of the foregoing evidence and considering the record as a whole, I find that BISSELL demonstrated that the Xia domestic industry products practice limitation 1[i].

(k) 7—"The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator."

BISSELL contends that "each of the [Domestic Industry] Products comprises a chamber, defined by the suction nozzle assembly, that partially houses the agitator/brushroll, in satisfaction" of the limitation in claim 7. CIB at 34-35 (collecting evidence); Tr. (Singhose) at 137:11-23. Tineco does not dispute that the Xia domestic industry products satisfy the limitation in claim 7. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice the limitation in claim 7.

(l) Conclusion Regarding Claim 7 of the '949 Patent

For the reasons explained above, I find that the Xia domestic industry products practice claim 7 of the '949 patent.

ii) Claim 19

(a) 18[Preamble]—"A surface cleaning apparatus, comprising:"

No party has argued that the preamble of claim 18 of the '949 patent is limiting. BISSELL nonetheless contends that the Xia domestic industry products practice limitation 18[preamble] for the same reasons it argues that the Xia domestic industry products practice limitation 1[preamble] of claim 1. CIB at 35; Tr. (Singhose) at 130:15-131:2. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[preamble]. *See* RRB at 30. Considering the

record as a whole, I find that the Xia domestic industry products practice the preamble of claim 18, regardless of whether the preamble is limiting.

(b) 18[a]—"a housing including an upright handle assembly and a base mounted to the upright handle assembly;"

BISSELL contends that the Xia domestic industry products practice limitation 18[a] for the same reasons it argues that they practice limitation 1[a]. CIB at 35; Tr. (Singhose) at 131:3-11. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[a]. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 18[a].

(c) 18[b]—"an agitator provided with the base;"

BISSELL contends that the Xia domestic industry products practice limitation 18[b] for the same reasons it argues that they practice limitation 1[b]. CIB at 35; Tr. (Singhose) at 131:12-17. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[b]. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 18[b].

(d) 18[c]—"a suction source;"

BISSELL contends that the Xia domestic industry products practice limitation 18[c] for the same reasons it argues that they practice limitation 1[c]. CIB at 35; Tr. (Singhose) at 131:18-22. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[c]. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 18[c].

(e) 18[d]—"a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source; and"

BISSELL contends that the Xia domestic industry products practice limitation 18[d] for the same reasons it argues that they practice limitation 1[d]. CIB at 35-36; Tr. (Singhose) at 131:23-133:9. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[d]. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 18[d].

(f) 18[e]—"a fluid delivery system provided with the housing, the fluid delivery system comprising:"

BISSELL contends that the Xia domestic industry products practice limitation 18[e] for the same reasons it argues that they practice limitation 1[e]. CIB at 37; Tr. (Singhose) at 133:10-16. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[e]. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 18[e].

(g) 18[f]—"a fluid supply chamber provided on the upright handle assembly and adapted to hold a supply of liquid;"

BISSELL contends that the Xia domestic industry products practice limitation 18[f] for the same reasons it argues that they practice limitation 1[f]. CIB at 37; Tr. (Singhose) at 133:17-134:2. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[f]. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 18[f].

(h) 18[g]—"a fluid dispenser provided on the base, the fluid dispenser in fluid communication with the fluid supply chamber, wherein the fluid dispenser includes at least one outlet oriented to dispense fluid directly onto the agitator, which transfers fluid to a surface to be cleaned;"

BISSELL contends that the Xia domestic industry products practice limitation 18[g] for the same reasons it argues that they practice limitation 1[g]. CIB at 37; Tr. (Singhose) at 134:3-135:4. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[g]. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 18[g].

(i) 18[h]—"a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and"

BISSELL contends that the Xia domestic industry products practice limitation 18[g] for the same reasons it argues that they practice limitation 1[h]. CIB at 37; Tr. (Singhose) at 136:3-9. Tineco does not dispute that the Xia domestic industry products satisfy limitation 18[h]. *See* RRB at 30. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 18[h].

(j) 18[i]—"at least one fluid delivery channel provided with the base or the suction nozzle assembly, the at least one fluid delivery channel forming a portion of the fluid delivery pathway."

BISSELL contends that the Xia domestic industry products practice limitation 18[i] for the same reasons it argues that they practice limitation 1[i]. CIB at 37-38. Tineco contends that "[f]or the reasons explained in limitation 1[i], Complainants have not met their burden of proving that the [domestic industry] Products meet limitation 18[i], as they provided no evidence showing how the [domestic industry] Products have a [fluid delivery channel] provided with the base or the

[suction nozzle assembly]." RRB at 30. For the reasons discussed above with respect to limitation 1[i], I that the Xia domestic industry products practice limitation 18[i]. *See* Section VII.A.1.a.i.j., *supra*.

(k) 19—"The surface cleaning apparatus of claim 18 wherein the suction nozzle assembly comprises a brush chamber at least partially housing the agitator and the agitator includes at least one brushroll rotatably mounted therein."

BISSELL contends that the Xia domestic industry products practice limitation 19 for the same reasons it argues that they practice limitation 7. CIB at 34-35; Tr. (Singhose) at 137:11-23. Tineco does not dispute that the Xia domestic industry products satisfy limitation 19. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 19.

(l) Conclusion Regarding Claim 19 of the '949 Patent

For the reasons explained above, I find that the Xia domestic industry products practice claim 19 of the '949 patent.

iii) Conclusion Regarding the Technical Prong for the '949 patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has satisfied the technical prong of the domestic industry requirement for the '949 patent because the Xia domestic industry products practice every element of claims 7 and 19 of the '949 patent.

b) '541 Patent

BISSELL contends that the Xia domestic industry products satisfy the technical prong of the domestic industry requirement for the '541 patent because they practice claims 1 and 13[38] of

[38] BISSELL only asserts that the representative CrossWave Max domestic industry product practices claim 13. *See* CIB at 40; CDX-0005C at 62. BISSELL does not contend that the CrossWave X7 domestic industry product practices claim 13.

the ’541 patent. CIB at 38-40. Tineco responds that BISSELL has not shown that the Xia domestic industry products practice all the limitations of claims 1 and 13. RRB at 34. As explained in more detail below, I find that the Xia domestic industry products do not practice claim 1 or 13 of the ’541 patent. Consequently, BISSELL failed to satisfy the technical prong of the domestic industry requirement for the ’541 patent.

i) Claim 1

(a) 1[Preamble]—“A surface cleaning apparatus, comprising:”

No party has argued that the preamble of claim 1 of the ’541 patent is limiting. BISSELL nonetheless contends that the Xia domestic industry products practice limitation 1[preamble] for the same reasons it argues that the Xia domestic industry products practice limitation 1[preamble] of the ’949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[preamble] of the ’541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice the preamble of claim 1 of the ’541 patent, regardless of whether the preamble is limiting.

(b) 1[a]—“a housing including an upright handle assembly and a base operably coupled to the upright handle assembly;”

BISSELL contends that the Xia domestic industry products practice limitation 1[a] of the ’541 patent for the same reasons it argues that they practice limitation 1[a] of the ’949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[a] of the ’541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[a] of the ’541 patent.

(c) 1[b]—"an agitator mounted within the base;"

BISSELL contends that the Xia domestic industry products practice limitation 1[b] of the '541 patent for the same reasons it argues that they practice limitation 1[b] of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[b] of the '541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[b] of the '541 patent.

(d) 1[c]—"a suction source;"

BISSELL contends that the Xia domestic industry products practice limitation 1[c] of the '541 patent for the same reasons it argues that they practice limitation 1[c] of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[c] of the '541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[c] of the '541 patent.

(e) 1[d]—"a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source;"

BISSELL contends that the Xia domestic industry products practice limitation 1[d] of the '541 patent for the same reasons it argues that they practice limitation 18[d] of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[d] of the '541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[d] of the '541 patent.

(f) 1[e]—"a fluid delivery system provided on the housing and comprising:"

BISSELL contends that the Xia domestic industry products practice limitation 1[e] of the '541 patent for the same reasons it argues that they practice limitation 1[e] of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[e] of the '541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[e] of the '541 patent.

(g) 1[f]—"a fluid supply chamber adapted to hold a supply of liquid;"

BISSELL contends that the Xia domestic industry products practice limitation 1[f] of the '541 patent for the same reasons it argues that they practice limitation 1[f] of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[f] of the '541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[f] of the '541 patent.

(h) 1[g]—"a fluid dispenser provided on the base in fluid communication with the fluid supply chamber; and"

BISSELL contends that the Xia domestic industry products practice limitation 1[g] of the '541 patent for the same reasons it argues that they practice limitation 18[g] of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[g] of the '541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[g] of the '541 patent.

(i) 1[h]—"a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and"

BISSELL contends that the Xia domestic industry products practice limitation 1[h] of the '541 patent for the same reasons it argues that they practice limitation 1[h] of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81). Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[g] of the '541 patent. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[h] of the '541 patent.

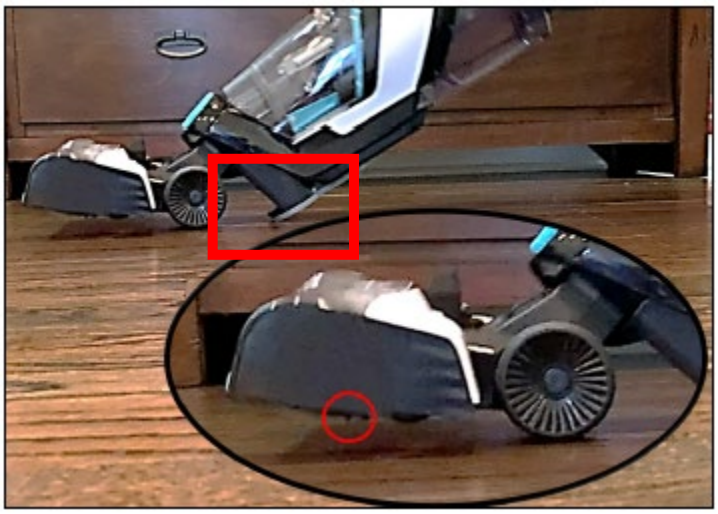
(j) 1[i]—"a dual wiper configuration provided with the base and comprising a first wiper adapted to contact the agitator and a second wiper at least selectively adapted to contact a surface to be cleaned."

BISSELL contends that the Xia domestic industry products each contain a dual wiper configuration in accordance with the requirements of limitation 1[i]. CIB at 38-39 (collecting evidence). Tineco contends that "Complainants' analysis of the [domestic industry] products and the 'selectively adapted to contact' limitation is the same—and fails for the same reasons—as their analysis of the Xia Accused Products." RRB at 34. I find that BISSELL did not prove by a preponderance of the evidence that the Xia domestic industry products practice limitation 1[i] of the '541 patent.

BISSELL cites the testimony of its expert, Dr. Singhose, in support of its contention that the Xia domestic industry products practice limitation 1[i]. *See* CIB at 38-39 (citing Tr. (Singhose) at 136:10-141:3). Dr. Singhose testified that he did the same analysis and testing of the Xia domestic industry products that he did for the Xia accused products. Tr. (Singhose) at 139:3-15 ("So I, basically, did the same sort of testing and inspection and operation on these BISSELL

products, the Max and the X7, and I found a corresponding dual wiper configuration that practices these claim limitations."); *id.* at 139:16-141:3. As explained above, I did not find Dr. Singhose's testimony regarding the Xia accused products' alleged infringement of limitation 1[i] credible or persuasive. *See* Section V.A.2.a.x., *supra*.

I likewise do not find Dr. Singhose's testimony regarding Xia domestic industry products persuasive. Just as he did with respect to infringement, Dr. Singhose testified that the Xia domestic industry products were "selectively adapted to contact" because a user could select to lower the handle so far down that the front of the device, including the floor squeegee, would lift off the ground. Dr. Singhose demonstrated this "selection" in a video demonstrative. *See* CDX-0005 at 80, Media8.mov (Max); CDX-0005C at 80, Media7.mov (X7); *see also* CIB at 38-39. In the video, one can see that he lowers the handle down so far that the plastic housing of the upright portion of the devices drag along the floor:



CIB at 39 (red box added). As with the Xia accused products, I do not find that BISSELL has presented credible and persuasive evidence that the Xia domestic industry products are adapted for that alleged selection.

In view of the foregoing evidence and considering the record as a whole, I find that BISSELL failed to show by a preponderance of the evidence that the Xia domestic industry products practice limitation 1[i].

(k) Conclusion Regarding Claim 1 of the '541 Patent

For the reasons explained above, I find that BISSELL failed to prove by a preponderance of the evidence that the Xia domestic industry products practice claim 1 of the '541 patent.

ii) Claim 13

(a) 11—"The surface cleaning apparatus of claim 1 wherein the suction nozzle assembly defines a chamber at least partially housing the agitator."

Claim 11 is not asserted. But asserted claim 13, which is asserted, depends from claims 12, 11, and 1. BISSELL contends that the Xia domestic industry products practice the limitation in claim 11 of the '541 patent for the same reasons it argues that they practice the limitation in claim 7 of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81), 40. Tineco does not dispute that the Xia domestic industry products satisfy the limitation in claim 11. *See* RRB at 34. Considering the record as a whole, I find that the Xia domestic industry products practice the limitation in claim 11.

(b) 12—"The surface cleaning apparatus of claim 11, further comprising at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel provided on the suction nozzle assembly."

Claim 12 is not asserted. But claim 13, which is asserted, depends from claims 12, 11, and 1. BISSELL contends that the Xia domestic industry products practice the additional limitation of claim 12 of the '541 patent for the same reasons it argues that they practice limitation 1[i] of the '949 patent. CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81), 40. Tineco contends that BISSELL failed to satisfy its burden of

proof because "[c]omplainants merely referred back to their insufficient analysis of limitation 1[i] of the '949 Patent." RRB at 34 (citing CIB at 38, 54, 78).

For the reasons discussed above with respect to limitation 1[i] of the '949 patent, I find that the Xia domestic industry products practice the additional limitation of claim 12 of the '541 patent.[39] *See* Section VII.A.1.a.i.j., *supra*.

(c) 13—"The surface cleaning apparatus of claim 12 wherein the at least a portion of the at least one fluid delivery channel is an integrated fluid delivery channel forming a portion of the fluid delivery pathway."

BISSELL contends that its representative Max product "comprises an integrated [fluid delivery channel] in accordance with claim 13, which is built directly into the clear brush cover." CIB at 38 (citing Tr. (Singhose) at 119:18-121:11, 125:20-126:19; 138:12-139:2; CDX-0005C at 78, 81), 40. Tineco contends that BISSELL "offered no evidence regarding the additional requirement recited in claim 13 that the [fluid delivery channel] is integrated." RRB at 34.

I find that the Max domestic industry product practices limitation 13. Examination of the physical Max exhibit reveals a fluid delivery channel that appears to be integrated into what BISSELL has identified as part of the suction nozzle assembly. *See* CPX-0001.

In view of the foregoing evidence and considering the record as a whole, I find that the representative Max domestic industry product practices the additional limitation in claim 13 of the '541 patent.

[39] Limitation 1[i] requires the fluid delivery channel be "located within the suction nozzle assembly," whereas the limitation in claim 12 requires the fluid delivery channel be "provided on the suction nozzle assembly." Neither party has suggested that difference is material in view of the present record. Treating the term "provided on" as encompassing something "located within" is consistent with the Patent Office's treatment of those terms as they are used in the Xia patents. *See* Section V.A.2.b.ii., *supra*.

(d) Conclusion Regarding Claim 13 of the '541 Patent

Because the BISSELL failed to demonstrate that the Xia domestic industry products practice claim 1 of the '541 patent, I find that BISSELL failed to demonstrate that they practice claim 13, which ultimately depends from claim 1. However, for the reasons explained above, I find that BISSELL has demonstrated that the Xia domestic industry products practice the limitations in claims 11, 12, and 13 of the '541 patent.

iii) Conclusion Regarding the Technical Prong for the '541 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has not satisfied the technical prong of the domestic industry requirement for the '541 patent because BISSELL failed to prove that the Xia domestic industry products practice any claims of the '541 patent.

c) '769 Patent

BISSELL contends that the Xia domestic industry products satisfy the technical prong of the domestic industry requirement for the '769 patent because those products practice claims 1 and 4 of the '769 patent. CIB at 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco responds that BISSELL has not shown that the Xia domestic industry products practice all the limitations of claims 1 and 4. RRB at 36-37. As explained in more detail below, I find that the Xia domestic industry products practice claims 1 and 4 of the '769 patent.

i) Claim 1

(a) 1[Preamble]—"A surface cleaning apparatus, comprising:"

No party has argued that the preamble of claim 1 of the '769 patent is limiting. BISSELL nonetheless contends that the Xia domestic industry products practice limitation 1[preamble] of

the ’769 patent for the same reasons it argues that the Xia domestic industry products practice limitation 1[preamble] of the ’949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[preamble] of the ’769 patent. *See* RRB at 36-37. Considering the record as a whole, I find that the Xia domestic industry products practice the preamble of claim 1 of the ’769 patent, regardless of whether the preamble is limiting.

(b) 1[a]—“a housing including an upright handle assembly and a base mounted to the upright handle assembly and adapted for movement across a surface to be cleaned,”

BISSELL contends that the Xia domestic industry products practice limitation 1[a] of the ’769 patent for the same reasons it argues that they practice limitation 18[a] of the ’949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[a] of the ’769 patent. *See* RRB at 36-37. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[a] of the ’769 patent.

(c) 1[b]—“wherein the base comprises a brush chamber and at least one brushroll mounted therein;”

BISSELL contends that the Xia domestic industry products practice limitation 1[b] of the ’769 patent for the same reasons it argues that they practice limitations 1[b] and 7 of the ’949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[b] of the ’769 patent. *See* RRB at 36-37. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[b] of the ’769 patent.

(d) 1[c]—"a suction source;"

BISSELL contends that the Xia domestic industry products practice limitation 1[c] of the '769 patent for the same reasons it argues that they practice limitation 1[c] of the '949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[c] of the '769 patent. *See* RRB at 36-37. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[c] of the '769 patent.

(e) 1[d]—"a suction nozzle assembly provided on the base and defining a suction nozzle in fluid communication with the suction source;"

BISSELL contends that the Xia domestic industry products practice limitation 1[d] of the '769 patent for the same reasons it argues that they practice limitation 18[d] of the '949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[d] of the '769 patent. *See* RRB at 36-37. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[d] of the '769 patent.

(f) 1[e]—"fluid delivery system comprising:"

BISSELL contends that the Xia domestic industry products practice limitation 1[e] of the '769 patent for the same reasons it argues that they practice limitation 1[e] of the '949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[e] of the '769 patent. *See* RRB at 36-37. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[e] of the '769 patent.

(g) 1[f]—"a fluid supply chamber provided on the upright handle assembly and adapted to hold a supply of liquid;"

BISSELL contends that the Xia domestic industry products practice limitation 1[f] of the '769 patent for the same reasons it argues that they practice limitation 1[f] of the '949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[f] of the '769 patent. *See* RRB at 36-37. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[f] of the '769 patent.

(h) 1[g]—"a fluid dispenser provided on the base in fluid communication with the fluid supply chamber, wherein the fluid dispenser is configured to dispense fluid onto the at least one brushroll;"

BISSELL contends that the Xia domestic industry products practice limitation 1[g] of the '769 patent for the same reasons it argues that they practice limitation 18[g]. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[g] of the '769 patent. *See* RRB at 36-37. Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[g] of the '769 patent.

(i) 1[h]—"a fluid delivery pathway between the fluid supply chamber and the fluid dispenser; and"

BISSELL contends that the Xia domestic industry products practice limitation 1[h] of the '769 patent for the same reasons it argues that they practice limitation 1[h] of the '949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco does not dispute that the Xia domestic industry products satisfy limitation 1[h] of the '769 patent. *See* RRB at 36-37.

Considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[h] of the '769 patent.

(j) 1[i]—"at least one fluid delivery channel forming a portion of the fluid delivery pathway, the at least one fluid delivery channel extending adjacent to a portion of the suction nozzle assembly; and"

BISSELL contends that the Xia domestic industry products practice limitation 1[i] of the '769 patent for the same reasons it argues that they practice limitation 1[i] of the '949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco contends that "Complainants offered no evidence regarding the location of the FDC in their analysis of limitation 1[i] of the '949 Patent, and likewise failed to do so with respect to limitation" 1[i] of the '769 patent. *See* RRB at 36.

As explained above, BISSELL illustrated the location of the alleged suction nozzle assembly and fluid delivery channel in the Xia domestic industry products. *See* Sections VII.A.1.a.i.e. and VII.A.1.a.i.j., *supra*. It appears more likely than not to me that those components, as illustrated, satisfy the location requirement in limitation 1[i].

In view of the foregoing evidence and considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[i] of the '769 patent.

(k) 1[j]—"an interference wiper provided on the base and adapted to interface with a portion of the at least one brushroll to remove excess liquid from the at least one brushroll."

BISSELL contends that the Xia domestic industry products practice limitation 1[j] of the '769 patent for the same reasons it argues that they practice limitation 1[i] of the '949 patent. CIB at 38, 40; Tr. (Singhose) at 142:14-24; CDX-0005C at 85. Tineco contends that BISSELL failed to prove that the Xia domestic industry products practice limitation 1[j] because "[c]omplainants

offered no evidence, and Dr. Singhose provided no testimony, showing that the alleged interference wiper in the DI Products removes excess liquid." RRB at 37.

BISSELL's contention that the Xia domestic industry product contain a wiper that removes excess liquid from the brushroll is consistent with the way that those products are structured. CPX-0001; CPX-0002. BISSELL's contention is also consistent with the teachings of the Xia patents. *See, e.g.*, JX-0009 ('541 patent) at 10:23-26, Fig. 10.

In view of the foregoing evidence and considering the record as a whole, I find that the Xia domestic industry products practice limitation 1[j].

(l) Conclusion Regarding Claim 1 of the '769 Patent

For the reasons explained above, I find that the Xia domestic industry products practice claim 1 of the '769 patent.

ii) Claim 4

(a) 4—"The surface cleaning apparatus of claim 1, wherein the fluid dispenser is mounted to the suction nozzle assembly and oriented to deliver fluid substantially horizontally."

BISSELL contends that "[t]he evidence shows that the [domestic industry] Products each contain a fluid dispenser oriented to delivery fluid substantially horizontally in accordance with claim 4." CIB at 40; Tr. (Singhose) 142:25-143:9. Tineco contends that "Complainants provided no evidence or explanation as to how or why the fluid dispensers of the DI Products are allegedly oriented to deliver fluid substantially horizontally, as required by claim 4." RRB at 37.

Based on my inspection of the physical exhibits, I find the fluid dispensers in the Xia domestic industry products are mounted to a suction nozzle assembly and oriented to delivery fluid substantially horizontally. *See* CPX-0001; CPX-0002. BISSELL's expert, Dr. Singhose,

also testified that based on his review it was his opinion that "the Max and the X7 do deliver fluid substantially horizontally." Tr. (Singhose) at 142:25-143:9.

In view of the foregoing evidence and considering the record as a whole, I find that the Xia domestic industry products practice limitation 4.

(b) Conclusion Regarding Claim 4 of the '769 Patent

For the reasons explained above, I find that the Xia domestic industry products practice claim 4 of the '769 patent.

iii) Conclusion Regarding the Technical Prong for the '769 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has satisfied the technical prong of the domestic industry requirement for the '769 patent because BISSELL has demonstrated that the Xia domestic industry products practice claims 1 and 4 of the '769 patent.

2. The Resch Patents

a) '735 Patent

BISSELL contends that the Resch domestic industry products satisfy the technical prong of the domestic industry requirement for the '735 patent because those products embody claims 1, 13, and 15 of the '735 patent. CIB at 62-67. Tineco responds that BISSELL has not shown that the Resch domestic industry products practice all the limitations of the claims 1, 13, and 15. RRB at 70-72. As explained in more detail below, I find that the Resch domestic industry products practice claims 1, 13, and 15 of the '735 patent.

i) Claim 1

(a) 1[Preamble]—"A floor cleaning system, comprising:"

No party has argued that the preamble of claim 1 is limiting. BISSELL nonetheless contends that the Resch domestic industry products comprise surface cleaning systems. CIB at 62 (collecting evidence); Tr. (Sorensen) at 296:20-23. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice the preamble of claim 1, regardless of whether the preamble is limiting.

(b) 1[a]—"a surface cleaning apparatus comprising:"

BISSELL contends that the Resch domestic industry products comprise surface cleaning apparatuses. CIB at 62 (collecting evidence); Tr. (Sorensen) at 296:20-297:4. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[a].

(c) 1[b]—"an upright body comprising a handle and a frame;"

BISSELL contends that the Resch domestic industry products include an upright body comprising a handle and a frame. CIB at 62 (collecting evidence); Tr. (Sorensen) at 297:14-23. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[b].

(d) 1[c]—"a base coupled with the upright body and adapted for movement across a surface to be cleaned;"

BISSELL contends that the Resch domestic industry products "include a base coupled with the upright body and adapted for movement across a surface to be cleaned, and each Self-Clean [domestic industry] Product's base comprises a fluid distributor and a brushroll." CIB at 63 (collecting evidence); Tr. (Sorensen) at 297:24-298:7. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[c].

(e) 1[d]—"a moveable joint assembly mounting the base to the upright body, wherein the upright body is pivotable via the joint assembly between an upright storage position and a reclined use position;"

BISSELL contends that the Resch domestic industry products "include a moveable joint assembly mounting the base to the upright body, wherein the upright body is pivotable via the joint assembly between an upright storage position and a reclined use position." CIB at 63 (collecting evidence); Tr. (Sorensen) at 300:14-22. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[d].

(f) 1[e]—"a fluid delivery system comprising a supply tank removable from the frame, a pump, and a fluid distributor;"

BISSELL contends that the Resch domestic industry products "include a fluid delivery system comprising a supply tank removable from the frame, a pump, and a fluid distributor." CIB at 63 (collecting evidence); Tr. (Sorensen) at 300:23-301:17. Tineco does not dispute that the

Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[e].

(g) 1[f]—"a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor;"

BISSELL contends that the Resch domestic industry products "include a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor." CIB at 63 (collecting evidence); Tr. (Sorensen) at 302:3-24. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[f].

(h) 1[g]—"a brushroll within the recovery pathway of the recovery system;"

BISSELL contends that the Resch domestic industry products "include a brushroll within the recovery pathway." CIB at 63 (collecting evidence); Tr. (Sorensen) at 302:25-303:21. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[g].

(i) 1[h]—"a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;"

BISSELL contends that the Resch domestic industry products practice limitation 1[h]. CIB at 64 (collecting evidence); Tr. (Sorensen) at 303:22-304:5. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[h].

(j) 1[i]—"a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;"

BISSELL contends that the Resch domestic industry products "include a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor." CIB at 64 (collecting evidence); Tr. (Sorensen) at 304:12-21. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[i].

(k) 1[j]—"a user interface disposed on the handle, the user interface comprising a power button and a cleaning mode button;"

BISSELL contends that the Resch domestic industry products "include a user interface disposed on the handle, the user interface comprising a power button and a cleaning mode button." CIB at 64 (collecting evidence); Tr. (Sorensen) at 304:22-305:23. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[j].

(l) 1[k]—"a self-cleaning mode input control disposed on the upright body and configured to initiate an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the power button and the cleaning mode button; and

BISSELL contends that the Resch domestic industry products practice limitation 1[k] of the '735 patent. CIB at 65 (collecting evidence); Tr. (Sorensen) at 305:24-307:8. Tineco contends that "[f]or the same reasons why the Resch Accused Products do not meet this limitation, the [domestic industry] Products also do not meet this limitation." RRB at 70-71. Above, I rejected Tineco's arguments as to why the Resch accused products allegedly do not meet limitation 1[k].

See Section V.B.1.a.xii., *supra*. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[k].

(m) 1[l]—"controller controlling the operation of the fluid delivery and recovery systems, and operably coupled with the self-cleaning mode input control;"

BISSELL contends that the Resch domestic industry products include "a controller controlling the operation of the fluid delivery and recovery systems, and operably coupled with the self-cleaning mode input control." CIB at 65-66 (collecting evidence); Tr. (Sorensen) at 307:9-308:8. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[l].

(n) 1[m]—"a storage tray configured to dock the surface cleaning apparatus in the upright storage position for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus, the storage tray comprising at least one charging contact, a power cord, and a wall charger configured to be plugged into a household outlet;"

BISSELL contends that the Resch domestic industry products "include a storage tray configured to dock the surface cleaning apparatus in the upright storage position for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus, the storage tray comprising at least one charging contact, a power cord, and a wall charger configured to be plugged into a household outlet." CIB at 66 (collecting evidence); Tr. (Sorensen) at 308:9-309:14. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[m].

(o) 1[n]—"the surface cleaning apparatus comprises at least one corresponding charging contact configured to couple with the at least one charging contact of the storage tray when the surface cleaning apparatus is docked with the storage tray;"

BISSELL contends that the Resch domestic industry products "comprise at least one corresponding charging contact configured to couple with the at least one charging contact of the storage tray when the surface cleaning apparatus is docked with the storage tray." CIB at 66 (collecting evidence); Tr. (Sorensen) at 309:15-310:1. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[n].

(p) 1[o]—"wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the self-cleaning mode is operable only when the surface cleaning apparatus is docked on the storage tray; and"

BISSELL contends that the Resch domestic industry products' "are configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the self-cleaning mode is operable only when the surface cleaning apparatus is docked on the storage tray." CIB at 66-67 (collecting evidence); Tr. (Sorensen) at 307:24-308:16. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[o].

(q) 1[p]—"wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle."

BISSELL contends that the Resch domestic industry products practice limitation 1[p]. CIB at 67 (collecting evidence); CDX-0007 at 101; Tr. (Sorensen) at 310:2-24; JX-0041 at 10; CPX-0001; CPX-0002. Tineco contends that "Complainants have not met their burden of proving that the [domestic industry] Products practice this limitation." RRB at 71.

Dr. Sorensen testified that the Resch domestic industry products include a battery charging circuit that controlled the recharging of a rechargeable battery. Tr. (Sorensen) at 310:3-15. Given that the devices are powered by a rechargeable battery, *see* CPX-0001, CPX-0002, it is unsurprising that there does not appear to be any dispute about that aspect of Dr. Sorensen's testimony.

Dr. Sorensen also testified that that the source code for the Resch domestic industry products showed that the battery charging circuit was disabled by the actuation of the self-cleaning mode input control and remained disabled during the unattended cleanout cycle. Tr. (Sorensen) at 310:16-24. Although Tineco speculates that Dr. Sorensen may have interpreted the source code incorrectly, Tineco provides no support for that speculation. *See* RRB at 71. Nor did Tineco present any alternative explanation from its own expert. *Id.*

In view of the foregoing evidence, I am persuaded that BISSELL proved that it is more likely than not that the Resch domestic industry products practice limitation 1[p].

(r) Conclusion Regarding Claim 1 of the ’735 Patent

For the reasons explained above, I find that the Resch domestic industry products practice claim 1 of the ’735 patent.

ii) Claim 13

(a) 13[Preamble]—“A floor cleaning system, comprising:”

No party has argued that the preamble of claim 13 of the ’735 patent is limiting. BISSELL nonetheless contends that the Resch domestic industry products practice limitation 13[preamble] for the same reasons it argues that the Resch domestic industry products practice limitation 1[preamble] of claim 1 of the ’735 patent. CIB at 62; Tr. (Sorensen) at 296:20-23. Tineco does not dispute that the Resch domestic industry products satisfy this limitation. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice the preamble of claim 13, regardless of whether the preamble is limiting.

(b) 13[a]—“a surface cleaning apparatus comprising:”

BISSELL contends that the Resch domestic industry products practice limitation 13[a] for the same reasons it argues that they practice limitation 1[a]. CIB at 62; Tr. (Sorensen) at 296:20-297:4. Tineco does not dispute that the Resch domestic industry products satisfy limitation 13[a]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[a].

(c) 13[b]—“a fluid delivery system comprising a supply tank, a pump, and a fluid distributor;”

BISSELL contends that the Resch domestic industry products practice limitation 13[b] for the same reasons it argues that they practice limitation 1[e]. CIB at 63; Tr. (Sorensen) at 300:23-301:17. Tineco does not dispute that the Resch domestic industry products satisfy

limitation 13[b]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[b].

(d) 13[c]—"a recovery system comprising a recovery pathway, a recovery tank and a vacuum motor;"

BISSELL contends that the Resch domestic industry products practice limitation 13[c] for the same reasons it argues that they practice limitation 1[f]. CIB at 63; Tr. (Sorensen) at 302:3-302:24. Tineco does not dispute that the Resch domestic industry products satisfy limitation 13[c]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[c].

(e) 13[d]—"an upright body comprising a handle, the supply tank and the recovery tank;"

BISSELL contends that the Resch domestic industry products practice limitation 13[d] for the same reasons it argues that they practice limitation 1[b]. CIB at 62; Tr. (Sorensen) at 297:14-23. Tineco does not dispute that the Resch domestic industry products satisfy limitation 13[d]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[d].

(f) 13[e]—"a base coupled with the upright body and adapted for movement across a surface to be cleaned, the base comprising the fluid distributor, a brushroll, a brushroll motor operably coupled to the brushroll for rotating the brushroll, and a suction nozzle configured to extract fluid and debris from the brushroll;"

BISSELL contends that the Resch domestic industry products practice limitation 13[e] for the same reasons it argues that they practice limitations 1[c] and 1[h]. CIB at 63-64; Tr. (Sorensen) at 297:24-298:7, 303:22-304:5. Tineco does not dispute that the Resch domestic industry products

satisfy limitation 13[e]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[e].

(g) 13[f]—"a rechargeable battery selectively powering the pump, the vacuum motor, and the brushroll motor;"

BISSELL contends that the Resch domestic industry products practice limitation 13[f] for the same reasons it argues that they practice limitation 1[i]. CIB at 64; Tr. (Sorensen) at 304:12-21. Tineco does not dispute that the Resch domestic industry products satisfy limitation 13[f]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[f].

(h) 13[g]—"a user interface disposed on the handle, the user interface comprising a power button disposed on a forward side of the handle and a cleaning mode button disposed on a forward side of the handle adjacent to the power button;"

BISSELL contends that the Resch domestic industry products practice limitation 13[g] for the same reasons it argues that they practice limitation 13[j]. CIB at 64; Tr. (Sorensen) at 304:22-305:23. Tineco does not dispute that the Resch domestic industry products satisfy limitation 13[g]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[g].

(i) 13[h]—"a self-cleaning mode input control on the upright body which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized, wherein the self-cleaning mode input control is separate from the user interface; and"

BISSELL contends that the Resch domestic industry products practice limitation 13[h] for the same reasons it argues that they practice limitation 1[k]. CIB at 65; Tr. (Sorensen)

at 305:24-307:8. Tineco contends that "[f]or the reasons explained in limitation 1[k], Complainants have not met their burden of proving that the [domestic industry] Products meet limitation 13[h]." RRB at 71. Above, I rejected Tineco's arguments regarding limitation 1[k]. *See* Sections V.B.1.a.xii., VII.A.2.a.i.l., *supra*. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[h].

(j) 13[i]—"a controller controlling the operation of the fluid delivery and recovery systems;"

BISSELL contends that the Resch domestic industry products practice limitation 13[i] for the same reasons it argues that they practice limitation 1[l]. CIB at 65-66; Tr. (Sorensen) at 307:9-308:8. Tineco does not dispute that the Resch domestic industry products satisfy limitation 13[i]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[i].

(k) 13[j]—"a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;"

BISSELL contends that the Resch domestic industry products practice limitation 13[j] for the same reasons it argues that they practice limitation 1[m]. CIB at 66; Tr. (Sorensen) at 308:9-309:14. Tineco does not dispute that the Resch domestic industry products satisfy limitation 13[j]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[j].

(l) 13[k]—"wherein the controller is configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control, and wherein the controller is configured to lock-out the automatic cleanout cycle when the surface cleaning apparatus is not docked with the storage tray and prevent initiation of the automatic cleanout cycle; and"

BISSELL contends that the Resch domestic industry products practice limitation 13[k] for the same reasons it argues that they practice limitation 1[o]. CIB at 66-67; Tr. (Sorensen) at 307:24-308:16. Tineco does not dispute that the Resch domestic industry products satisfy limitation 13[k]. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 13[k].

(m) 13[l]—"wherein the surface cleaning apparatus comprises a battery charging circuit controlling the recharging of the rechargeable battery, wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle."

BISSELL contends that the Resch domestic industry products practice limitation 13[l] for the same reasons it argues that they practice limitation 1[p]. CIB at 67 (collecting evidence); CDX-0007 at 101; Tr. (Sorensen) 310:2-24; JX-0041 at 11; CPX-0001; CPX-0002. Tineco contends that "[f]or the reasons explained in limitation 1[p], Complainants have not met their burden of proving that the [domestic industry] Products meet limitation 13[l]." RRB at 71. Above, I rejected Tineco's contentions regarding limitation 1[p]. *See* Section VII.A.2.a.i.q., *supra*. In view of the foregoing evidence and considering the record as a whole, I am persuaded that BISSELL proved that it is more likely than not that the Resch domestic industry products practice limitation 13[l].

(n) Conclusion Regarding Claim 13 of the '735 Patent

For the reasons explained above, I find that the Resch domestic industry products practice claim 13 of the '735 patent.

iii) Claim 15

(a) 14—"The floor cleaning system of claim 13, wherein the controller is configured to activate the pump and the brushroll motor during the unattended automatic cleanout cycle, whereby the pump draws cleaning fluid from the supply tank, the fluid distributor sprays cleaning fluid, and the brushroll motor rotates the brushroll."

Claim 14 is not asserted. However, asserted claim 15 depends from claim 14. BISSELL contends that the Resch domestic industry products practice the limitation in claim 14. CIB at 67 (collecting evidence); Tr. (Sorensen) at 311:7-312:9. Tineco does not dispute that the Resch domestic industry products satisfy the limitation in claim 14. *See* RRB at 70-72. Considering the record as a whole, I find that the Resch domestic industry products practice the limitation in claim 14.

(b) 15—"The floor cleaning system of claim 14, wherein the controller is configured to activate the vacuum motor after the pump and the brushroll motor during the unattended automatic cleanout cycle, and the vacuum motor extracts cleaning fluid from the storage tray for collection in the recovery tank."

BISSELL contends that the Resch domestic industry products practice the additional limitation in claim 15. CIB at 67 (collecting evidence); Tr. (Sorensen) at 312:10-313:15. Tineco does not dispute that the Resch domestic industry products satisfy the additional limitation in claim 15. *See* RRB at 72. However, Tineco argues that "[b]ecause the [domestic industry] Products do not practice claim 13, they also do not practice dependent claim 15." *Id.* Above I found that the

Resch domestic industry products practice claim 13. With no other argument in opposition from Tineco, and considering the record as a whole, I find that the Resch domestic industry products practice the additional limitation in claim 15.

(c) Conclusion Regarding Claim 13 of the '735 Patent

For the reasons explained above, I find that the Resch domestic industry products practice claim 15 of the '735 patent.

iv) Conclusion Regarding the Technical Prong for the '735 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has satisfied the technical prong of the domestic industry requirement for the '735 patent because the Resch domestic industry products practices claims 1, 13, and 15 of the '735 patent.

b) '428 Patent

BISSELL contends that the Resch domestic industry products satisfy the technical prong of the domestic industry requirement for the '428 patent because those products embody claim 1 of the '428 patent. CIB at 68-69. Tineco responds that BISSELL has not shown that the Resch domestic industry products practice all the limitations of claim 1. RRB at 73. As explained in more detail below, I find that the Resch domestic industry products practice claim 1 of the '428 patent.

i) Claim 1

(a) 1[Preamble]—"A floor cleaning system, comprising:"

No party has argued that the preamble of claim 1 of the '428 patent is limiting. BISSELL nonetheless contends that the Resch domestic industry products practice limitation 1[preamble] of the '428 patent for the same reasons it argues that they practice limitation 1[preamble] of the '735

patent. *See* CIB at 68; Tr. (Sorensen) at 296:19-23.[40] Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[preamble] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice the preamble of claim 1 of the '428, regardless of whether the preamble is limiting.

(b) 1[a]—"a surface cleaning apparatus comprising:"

BISSELL contends that the Resch domestic industry products practice limitation 1[a] of the '428 patent for the same reasons it argues that they practice limitation 1[a] of the '735 patent. CIB at 68; Tr. (Sorensen) at 296:19-297:4. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[a] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[a] of the '428 patent.

(c) 1[b]—"a fluid delivery system comprising a supply tank, a pump, and a fluid distributor;"

BISSELL contends that the Resch domestic industry products practice limitation 1[b] of the '428 patent for the same reasons it argues that they practice limitation 1[e] of the '735 patent. *See, e.g.*, CDX-0007 at 88; Tr. (Sorensen) at 300:23-301:17. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[b] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[b] of the '428 patent.

[40] BISSELL's initial post-hearing brief contains a number of clerical errors. At pages 68 to 69 of that brief, BISSELL appears to have cited to section "IV.C." where it meant section "IV.D." Throughout this initial determination, I have endeavored to understand what BISSELL meant when it made obvious clerical errors in its post-hearing brief by interpreting BISSELL's brief as presenting arguments that were consistent with the case that BISSELL presented at the evidentiary hearing. Tineco did not indicate in its responsive post-hearing brief that any of the clerical errors hampered Tineco's ability to respond to BISSELL's arguments.

(d) 1[c]—"a recovery system comprising a recovery pathway, a recovery tank, a suction nozzle, and a vacuum motor"

BISSELL contends that the Resch domestic industry products practice limitation 1[c] of the '428 patent for the same reasons it argues that they practice limitation 1[f] of the '735 patent. *See, e.g.*, CDX-0007 at 89; Tr. (Sorensen) at 302:3-302:24. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[c] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[c] of the '428 patent.

(e) 1[d]—"a brushroll within the recovery pathway of the recovery system;"

BISSELL contends that the Resch domestic industry products practice limitation 1[d] of the '428 patent for the same reasons it argues that they practice limitation 1[g] of the '735 patent. CIB at 68; Tr. (Sorensen) at 302:25-303:21. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[d] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[d] of the '428 patent.

(f) 1[e]—"a brushroll motor operably coupled to the brushroll for rotating the brushroll, wherein the suction nozzle is configured to extract fluid and debris from the brushroll;"

BISSELL contends that the Resch domestic industry products practice limitation 1[e] of the '428 patent for the same reasons it argues that they practice limitation 1[h] of the '735 patent. *See, e.g.*, CDX-0007 at 91; Tr. (Sorensen) at 303:22-304:5. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[e] of the '428 patent. *See* RRB at 73. Considering

the record as a whole, I find that the Resch domestic industry products practice limitation 1[e] of the ’428 patent.

(g) 1[f]—“a rechargeable battery selectively powering the pump, the brushroll motor, and the vacuum motor;”

BISSELL contends that the Resch domestic industry products practice limitation 1[f] of the ’428 patent for the same reasons it argues that they practice limitation 1[i] of the ’735 patent. CDX-0007 at 92; Tr. (Sorensen) at 304:12-21. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[f] of the ’428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[f] of the ’428 patent.

(h) 1[g]—“a battery charging circuit controlling the recharging of the rechargeable battery;”

BISSELL contends that the Resch domestic industry products practice limitation 1[n] of the ’428 patent for the same reasons it argues that they practice limitation 1[p] of the ’735 patent. CDX-0007 at 78, 101; Tr. (Sorensen) at 310:2-24. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[g] of the ’428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[g] of the ’428 patent.

(i) 1[h]—“a self-cleaning mode input control which initiates an unattended automatic cleanout cycle for a self-cleaning mode of operation during which the pump, the brushroll motor, and the vacuum motor are energized; and”

BISSELL contends that the Resch domestic industry products practice limitation 1[h] of the ’428 patent for the same reasons it argues that they practice limitation 1[k] of the ’735 patent. *See, e.g.*, CDX-0007 at 95; Tr. (Sorensen) at 305:24-307:8. Tineco contends that “[f]or the reasons

explained in limitation 1[k] of the '735 Patent, Complainants have not met their burden of proving that the Resch Accused Products meet limitation 1[h]." RRB at 72. Above, I rejected Tineco's arguments regarding limitation 1[k]. *See* Sections V.B.1.a.xii., VII.A.2.a.i.l., *supra*. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[h] of the '428 patent.

(j) 1[i]—"a controller controlling the operation of the fluid delivery and recovery systems and configured to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation upon actuation of the self-cleaning mode input control; and"

BISSELL contends that the Resch domestic industry products practice limitation 1[i] of the '428 patent for the same reasons it argues that they practice limitation 1[l] of the '735 patent. *See, e.g.*, CDX-0007 at 78, 97; Tr. (Sorensen) at 307:9-308:8. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[i] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[i] of the '428 patent.

(k) 1[j]—"a storage tray configured to dock the surface cleaning apparatus for recharging the battery of the surface cleaning apparatus and for self-cleaning of the surface cleaning apparatus;"

BISSELL contends that the Resch domestic industry products practice limitation 1[j] of the '428 patent for the same reasons it argues that they practice limitation 1[m] of the '735 patent. *See, e.g.*, CDX-0007 at 98; Tr. (Sorensen) at 308:9-309:14. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[j] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[j] of the '428 patent.

(l) 1[k]—"wherein, to execute the unattended automatic cleanout cycle for the self-cleaning mode of operation, the controller is configured to:"

BISSELL contends that the Resch domestic industry products practice limitation 1[k] of the '428 patent for the same reasons it argues that they practice limitation 14 of the '735 patent. CIB at 69; CDX-0007 at 78; Tr. (Sorensen) at 311:7-312:9. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[k] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[k] of the '428 patent.

(m) 1[l]—"power the brushroll motor and the pump by the battery, whereby cleaning liquid is sprayed on the brushroll while the brushroll rotates, without the vacuum motor being powered; and"

BISSELL contends that the Resch domestic industry products practice limitation 1[l] of the '428 patent for the same reasons it argues that they practice limitation 14 of the '735 patent. CDX-0007 at 78; Tr. (Sorensen) at 311:7-312:9. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[l] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[l] of the '428 patent.

(n) 1[m]—"power the vacuum motor by the battery after the brushroll motor and the pump are powered, whereby cleaning liquid is extracted and deposited into the recovery tank and a portion of the recovery pathway is flushed out; and"

BISSELL contends that the Resch domestic industry products practice limitation 1[m] of the '428 patent for the same reasons it argues that they practice limitation 15 of the '735 patent.

CDX-0007 at 78; Tr. (Sorensen) at 312:10-313:15. Tineco does not dispute that the Resch domestic industry products satisfy limitation 1[m] of the '428 patent. *See* RRB at 73. Considering the record as a whole, I find that the Resch domestic industry products practice limitation 1[m] of the '428 patent.

(o) 1[n]—"wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle."

BISSELL contends that the Resch domestic industry products practice limitation 1[n][41] for the same reasons it argues that they practice limitation 1[p] of the '428 patent. CIB at 69; CDX-0007 at 78, 101; Tr. (Sorensen) 310:2-24; JX-0041 at 11; CPX-0001; CPX-0002. Tineco contends that "[f]or the reasons explained in limitation 1[p] of the '735 Patent, Complainants have not met their burden of proving that the DI Products meet limitation 1[n]." RRB at 73. Above, I rejected Tineco's contentions regarding limitation 1[p] of the '735 patent. *See* Section V.II.A.2.a.i.q., *supra*. In view of the foregoing evidence and considering the record as a whole, I am persuaded that BISSELL proved that it is more likely than not that the Resch domestic industry products practice limitation 1[n] of the '428 patent.

(p) Conclusion Regarding Claim 1 of the '428 Patent

For the reasons explained above, I find that the Resch domestic industry products practice claim 1 of the '428 patent.

[41] BISSELL labeled the limitation "wherein the battery charging circuit is disabled by the actuation of the self-cleaning mode input control and remains disabled during the unattended automatic cleanout cycle" 1[n] at the beginning of its brief but used the label 1[m] at a later point in the brief. *Compare* CIB at xiv *with* CIB at 69. This initial determination uses the label 1[n].

ii) Conclusion Regarding the Technical Prong for the '428 Patent

In light of the foregoing evidence and the record as a whole, I find that BISSELL has satisfied the technical prong of the domestic industry requirement for the '428 patent because the Resch domestic industry products practice claim 1 of the '428 patent.

B. Economic Prong of the Domestic Industry Requirement

Section 337(a)(3) sets forth the following economic criteria for determining the existence of a domestic industry in a complaint based on patent infringement:

> (3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned –
>
> (A) significant investment in plant and equipment;
>
> (B) significant employment of labor or capital; or
>
> (C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3). Because the statutory criteria are listed in the disjunctive, satisfaction of any one of them will be sufficient to meet the economic prong of the domestic industry requirement. *See InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 707 F.3d 1295, 1303 n.4 (Fed. Cir. 2013); *Certain Variable Speed Wind Turbines and Components Thereof*, Inv. No. 337-TA-376, Comm'n Op. at 15, USITC Pub. No. 3003 (Nov. 1996).

BISSELL asserts that it satisfies the economic prong of the domestic industry requirement under U.S.C. § 1337(a)(3) subsections (A), (B), and (C). CIB at 69. As I discuss in more detail below, I find that the evidence shows that BISSELL has satisfied the economic prong under subsections (B) and (C). Because I find that BISSELL has satisfied the economic prong under

subsections (B) and (C), I need not reach whether BISSELL has satisfied the economic prong under subsection (A).

1. Overview of BISSELL's Domestic Activities

BISSELL was founded in Michigan in 1876 and has been owned and operated by the Bissell family since then. Tr. (Bissell) at 28:19-29:12. BISSELL is headquartered in Walker, Michigan (near Grand Rapids), where it has product development, engineering, marketing, sales, financing and accounting, chemists, and manufacturing. *Id.* at 29:23-30:7. BISSELL also has offices in Chicago, Illinois; Bentonville, Arkansas; Charlotte, North Carolina; and operates seven distribution centers throughout the United States. *Id.* at 30:8-14. BISSELL has approximately one thousand employees throughout the United States. *Id.* at 30:15-18.

The evidence shows that BISSELL's Product Development and Engineering (PD&E) group performs research and development for the domestic industry products at BISSELL's headquarters in Walker, Michigan. Tr. (Hess) at 344:6-13.

The evidence also shows that BISSELL's Chemical Packaging (ChemPack) group produces in the United States cleaning liquids for use with the domestic industry products. *Id.* at 350:15-19, 351:7-8, 353:9-17. These cleaning liquids, referred to in the record as consumables, are produced and packaged in Walker, Michigan. *Id*. There are three steps to producing these consumable products: (1) blow molding to turn raw materials into plastic bottles; (2) filling the bottle with cleaning solution; and (3) capping and packaging bottles. *Id.* at 350:20-351:6.

The record further demonstrates that BISSELL performs service activities for the domestic industry products at its facility in Pharr, Texas.[42] Tr. (Hess) at 355:6-356:1. BISSELL's product

[42] These operations were relocated from McAllen, Texas, to Pharr, Texas, in 2019. Tr. (Hess) at 355:6-11.

refurbishment operation in Pharr has a triage center that inspects devices returned by retailers or customers and determines if they can be remanufactured and refurbished. *Id*. The triage center sends devices to a facility in Mexico for refurbishment, and the Pharr facility is used to warehouse devices after they return from Mexico. *Id.* The Pharr facility also fulfills e-commerce spare parts orders. *Id.*

2. BISSELL's Creditable Investments

To satisfy subsections (A) and (B) of the statute, BISSELL relies on investments related to (1) Product Development and Engineering activities in Walker, Michigan, (2) consumable production and packaging activities in Walker, Michigan, and (3) refurbishment and service activities in Pharr, Texas. CIB at 71. To meet subsection (C), BISSELL relies solely on the Product Development and Engineering investments in Walker, Michigan. *Id.* Each of those categories of investments are analyzed below.

a) Plant and Equipment

i) Product Development and Engineering Plant and Equipment

As explained in more detail below, the evidence shows that BISSELL has made investments in plant and equipment for its Product Development and Engineering activities in Walker, Michigan. An investment of [redacted] is appropriately apportioned to articles protected by the Resch patents and a [redacted] investment is appropriately apportioned to articles protected by the Xia patents.

(a) JPX-0001C Reliably Reflects Certain BISSELL Investments

BISSELL's expert, Dr. Michael P. Akemann, testified at trial about some of BISSELL's investments in Product Development and Engineering activities summarized in a spreadsheet identified as JPX-0001C. Tr. (Hess) at 345:6-16; Tr. (Akemann) at 391:15-392:4. As Mr. Andy

Hess, BISSELL's Vice President of Financial Planning and Analysis, explained, JPX-0001C is a document prepared by BISSELL's accounting firm Deloitte Touche Tohmatsu Limited ("Deloitte") to summarize BISSELL's "qualified research expenditures" for tax years 2016 through 2021. *Id.* at 345:9-16. Mr. Hess testified that qualified research expenses are a subset of BISSELL's overall research and development expenses that are eligible for a tax credit.[43] *Id.* at 345:17-24.

In JPX-0001C, projects are assigned a product number and name. Tr. (Akemann) at 346:5-23. To confirm the correct project numbers were used in his analysis, Dr. Akemann spoke to a BISSELL employee to confirm the correspondence between the project numbers and the domestic industry products. Tr. (Akemann) at 381:9-382:19. JPX-0001C includes three categories of expenses: labor, supplies, and contract research.[44] JPX-0001C; Tr. (Hess) at 345:25-346:4.

The primary disputes regarding Product Development and Engineering, and for the economic prong more generally, is whether the data in JPX-0001C are reliable. Tineco argues that the underlying data supporting the purported investments in labor in Product Development and Engineering are unreliable and overstated and thus cannot be used to show the existence of a domestic industry. RRB at 78-91 (raising numerous arguments). As explained in more detail below, these criticisms are unsupported by the weight of the record evidence. The evidence shows

[43] Though not relevant to any determination I must make, eligible expenses of this type apparently are defined under 26 U.S.C. § 41(d).

[44] JPX-0001C only reflects taxable wages, and not additional costs like benefits, and Dr. Akemann explained that it therefore understates labor expenses by roughly [redacted]. Tr. (Akemann) at 385:3-396:5.

that the data underlying JPX-0001C reliably describe BISSELL's investments in Product Development and Engineering.[45]

The expenses listed in JPX-0001C are calculated by Deloitte at the end of the year based on data provided to Deloitte by BISSELL. As Mr. Hess explained, BISSELL has two methodologies which it uses to track engineering labor costs: a weekly method and an annual method. Tr. (Hess) at 347:19-348:4; JX-0097C (Hess) at 147:2-16. Because not every engineer tracks their time by project, Deloitte manages a time capture process at the end of the year in which it surveys or interviews employees to identify the relevant time information by project. Tr. (Akemann) at 395:3-396:5. Contract labor costs are captured by Deloitte reviewing the general ledger from BISSELL and confirming the projects to which the expenses apply. *Id.* at 394:12-395:2. Expenses for supplies are captured by identifying relevant expenses from BISSELL's general ledger. *Id.* at 403:5-15. All the expenses in JPX-0001C are therefore calculated by Deloitte at year end based on records and other evidence from BISSELL to ensure that it accurately captures BISSELL's research expenses that may be eligible for certain tax credits.

The information in JPX-0001C was collected and validated by Deloitte, and the dollar amounts were provided to the IRS to claim a tax credit. Tr. (Hess) at 345:17-24. Mr. Hess testified that he has no reason to doubt the accuracy of the costs reflected in JPX-0001C, as BISSELL takes submission of this data to the IRS seriously. *Id.* at 348:20-349:6. And Mr. Hess also confirmed that it includes only expenditures incurred within the United States. Tr. (Hess) at 348:17-19.

Tineco argues that the data in JPX-0001C are inaccurate and unreliable for several reasons. None of these are persuasive or supported by the evidence. First, Tineco argues that JPX-0001C

[45] The question of whether BISSELL's Product Development and Engineering investments represent a domestic industry as that term is used in section 337 is separate from whether the data are accurate. The application of the data to section 337 is addressed later.

is unreliable because BISSELL created the spreadsheet for this investigation and did not support the data in it with other documentation. RRB at 80. Although this summary document was created for this investigation, Tr. (Hess) at 360:16-21, the underlying data was calculated by Deloitte for purposes of tax submissions to the IRS. *Id.* at 345:9-16. The data was extracted from a BISSELL database kept in the ordinary course of business. Tr. (Hess) at 360:22-361:1; Tr. (Akemann) at 439:14-21, 440:2-17.

BISSELL's witnesses provided credible testimony at trial explaining the source of the data in JPX-0001C. The witnesses, or others at their direction, collected and calculated the data using reliable methods. Complainants in section 337 investigations routinely do what BISSELL did here: gather data from a finance database to create a summary document illustrating the quantity of domestic investments by category. BISSELL's evidence supporting the underlying data is more than sufficient to show it is reliable.[46]

Tineco also argues that the data in JPX-0001C are inaccurate or overstated because JPX-0001C allegedly includes expenses not permitted under the Internal Revenue Code, such as expenses made after product release. RRB at 81-82.[47] But the record does not persuasively support that argument.[48] Further, the relevant question to be resolved in this investigation is whether BISSELL's investments demonstrate the existence of a domestic industry under section 337, not whether its expenses may be properly claimed under the Internal Revenue Code. If

[46] Tineco did not contest the authenticity of JPX-0001C or provide any particularized evidence that JPX-0001C was inauthentic. *See* Ground Rule 12.3.1.

[47] Tineco makes several arguments specific to the labor investments, RRB at 82-88, which are addressed below. *See* Section VII.B.2.b.i.a.

[48] Tineco's expert, Mr. McGavock, testified that he was not accusing Deloitte or BISSELL of tax fraud or falsifying documents. Tr. (McGavock) at 672:17-22, 673:5-10. He also testified that Deloitte is generally "a reputable company[.]" *Id.* at 671:14-16.

investments are "relat[ed] to the articles protected by the patent[s]" at issue in the investigation, they tend to show a domestic industry exists. *See* 19 U.S.C. § 1337(a)(2).

Finally, Tineco argues that the data in JPX-0001C are unreliable because the data were never actually audited for submission to the SEC, as BISSELL asserted throughout discovery, but were instead submitted to the IRS, as the testimony at trial established. RRB at 89-91. Tineco argues that BISSELL's change in position casts doubt on the reliability of JPX-0001C not only because of the inconsistent identification of government agencies but also because submission to the SEC requires a rigorous audit while submission to the IRS does not. *Id.* at 90.

Here is what the record evidence shows: Mr. Hess admitted at trial he misspoke during his deposition when he testified that the data were submitted to the SEC. RRB at 89-91; Tr. (Hess) at 363:7-19. The evidence also shows that Deloitte did review the data before submission to the IRS, even if it was not the kind of rigorous audit that might be required for submission to the SEC. Tr. (Hess) at 345:17-24. And Dr. Akemann testified that Deloitte's review of the data, rather than submission to the SEC, was what gave him confidence that the data were reliable. Tr. (Akemann) at 443:15-23. I therefore give little weight to Mr. Hess's deposition misstatement about submission to the SEC (rather than the IRS) because the evidence shows that Deloitte did review the data. Weighing the evidence as a whole, the testimony of Mr. Hess and Dr. Akemann persuade me that JPX-0001C contains reliable data.

(b) BISSELL's Supplies Have Not Been Shown to Constitute Plant or Equipment

Using JPX-0001C, Dr. Akemann calculated BISSELL's purported investments in Product Development and Engineering equipment. He started with expenses labeled as supplies in JPX-0001C. Tr. (Akemann) at 405:19-406:5. Dr. Akemann treated supplies as equipment based on his assumption that the supplies category would include materials consumed to make prototypes

as part of the research and development process. *Id.* at 406:6-18. Mr. Hess testified that supplies might include materials consumed in the process of research and development, such as materials used to make prototypes. Tr. (Hess) at 348:5-8, 361:6-362:1. Using the relevant project codes for the domestic industry products, Dr. Akemann calculated the supplies expenses attributable to Product Development and Engineering as [redacted] for the Resch patents, and [redacted] for the Xia patents.[49] Tr. (Akemann) at 405:19-406:5; CDX-0008C at 7.

Tineco argues that BISSELL has not provided sufficient evidence to show that Dr. Akemann's calculation of supplies expenses in JPX-0001C can be credited as plant or equipment under subsection (A). RRB at 99-100. The best evidence describing what BISSELL included in the category of supplies comes from BISSELL witnesses Dr. Akemann and Mr. Hess. They both suggested that supplies might include components or materials used in prototyping or chemicals used in research and development. Tr. (Hess) at 348:5-8, 361:6-362:1; Tr. (Akemann) at 406:6-18. I find this record insufficient to meet BISSELL's burden of proof that these expenses are creditable under subsection (A). In other investigations the Commission has credited machinery used in manufacturing articles under subsection (A), but no party has cited a Commission decision in which components, chemicals, or materials used to make prototypes qualified as equipment under the statute.[50] *See, e.g.*, *Certain Toner Supply Containers & Components Thereof (I)*, Inv. No. 337-TA-1259, Comm'n Op. at 8-10 (discussing investments in facilities and equipment used to manufacture products, and maintenance and repair of that equipment) (Aug. 19, 2022); *Certain*

[49] Most of these investments did not require any further allocation because the project codes correlated directly with the domestic industry products, but Dr. Akemann reduced investments for certain project codes by [redacted] *See* CDX-0008C at 5.

[50] Expenditures for components, materials, or chemicals might qualify as "capital" under subsection (B), but BISSELL has not made that argument here and I decline to speculate on that point without a developed record.

Toner Supply Cartridges & Components Thereof (II), Inv. No. 337-TA-1260, Comm'n Op. at 7-8 (Aug. 3, 2022) (same); *Certain Pocket Lighters*, Inv. No. 337-TA-1142, Comm'n Op. at 10-11 (July 13, 2020) (discussing investments in equipment used for manufacture and packaging, and spare parts and service for that equipment). On this evidentiary record, I find BISSELL has not shown that the supplies expenses in JPX-0001C qualify as equipment expenses under 19 U.S.C. § 1337(a)(3)(A).

(c) BISSELL Has Established Plant Expenses for Product Development and Engineering

Dr. Akemann also calculated plant expenses for BISSELL's Product Development and Engineering department. He began by identifying all expenses for the Walker facility using cost center identifiers in financial data produced by BISSELL. Tr. (Akemann) at 406:19-408:13; *see also* CDX-0008C at 10 (citing evidence). Using these cost centers, Dr. Akemann identified a total of [redacted] in investments associated with the Walker facility, and then he apportioned those facility investments to the domestic industry products in three steps, using a combination of headcount data and sales data. Tr. (Akemann) at 406:19-408:13.

First, Dr. Akemann did a headcount analysis to determine how many full-time employees at the Walker facility worked in the Product Development and Engineering group, which showed [redacted] of all employees at that facility work in that department. *Id.* At this step Dr. Akemann attributed [redacted] of the total plant expenses to the Product Development and Engineering group.

Second, to determine how many Product Development and Engineering employees work on the domestic industry products, Dr. Akemann looked at sales revenues for all products that the Product Development and Engineering group work on at the Walker facility. Dr. Akemann determined that [redacted] of the revenues for these products were for products in BISSELL's

CrossWave line. *Id*. Dr. Akemann correspondingly allocated [redacted] of the Product Development and Engineering expenses to the CrossWave line.

All of the domestic industry products are in the CrossWave line, but that line also includes other products that are not domestic industry products. That led Dr. Akemann to his third step: determining what proportion of the CrossWave expenses reflects plant expenses for the domestic industry products. By reviewing unit sales data, Dr. Akemann calculated that [redacted] of CrossWave products practice the Resch patents and [redacted] of CrossWave products practice the Xia patents. *Id.* So, of the CrossWave expenses, Dr. Akemann apportioned [redacted] to products that practice the Resch patents and [redacted] to products that practice the Xia patents.

Apportioning the [redacted] plant investment in these three steps resulted in a final calculation of Product Development and Engineering plant expenses of [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents. *Id.*; CDX-0008C at 8.

Tineco and its expert, Mr. Daniel McGavock, argued that the second and third steps in this allocation method were inappropriate to estimate investments relating to products practicing each set of patents. Instead of using sales data, Mr. McGavock looked to spreadsheets of Product Development and Engineering employee time entries to identify the percentage of Product Development and Engineering time which was related to the domestic industry products. Tr. (McGavock) at 630:17-632:15. Based on those spreadsheets, he apportioned [redacted] to products practicing the Resch patents and [redacted] to products practicing the Xia patents. *Id.*; RDX-0003C at 6.

Mr. McGavock's opinion, and Tineco's argument based upon it, are unpersuasive. Commission precedent only requires "the use of reasonable allocations for the purposes of

establishing the economic prong of the domestic industry requirement." *Certain Solid State Storage Drives, Stacked Elecs. Components, & Prods. Containing Same*, Inv. No. 337-TA-1097, Comm'n Op. at 21 (June 29, 2018). The evidence shows that BISSELL's allocation method is reasonable on the facts of this record. As part of his analysis, Dr. Akemann interviewed several BISSELL employees, including Mr. Hess, to understand how BISSELL tracked its financial data. Tr. (Akemann) at 381:9-382:19. As part of those interviews, he also confirmed that his allocation methods were consistent with BISSELL's accounting records. *Id.* at 387:15-389:13. Further, sales-based allocations like Dr. Akemann's have been routinely accepted as appropriate by the Commission. *See Certain Batteries & Prods. Containing Same*, Inv. No. 337-TA-1244, Comm'n Op. at 9 (Sept. 8, 2022) (citing cases).

The record shows that Tineco's allocation method, on the other hand, relied on incomplete and unreliable data. The evidence persuasively shows that the time entry spreadsheets used by Tineco's expert Mr. McGavock did not fully capture BISSELL's research and development time or engineering time. Tr. (Hess) at 347:15-348:4; Tr. (Akemann) at 401:10-402:10. This is not surprising because most employees do not record time according to the patented products they work on, just as most companies do not organize their accounting methods by patented products. *See Certain Stringed Musical Instruments & Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 26 (May 16, 2008) ("A precise accounting [of the complainant's domestic investments] is not necessary, as most people do not document their daily affairs in contemplation of possible litigation."); *Certain Wireless Commc'n Devices, Portable Music & Data Processing Devices, Computers & Components Thereof*, Inv. No. 337-TA-745, Initial Determination at 365 (May 16, 2012) ("[T]he Commission recognizes those who hold intellectual property rights do not usually account for expenses and profit on a per patent basis."), *adopted in part and modified in part*,

Comm'n Op. at 91-96 (Sept. 17, 2012). Relying solely on the incomplete time entry data to allocate these expenses, as Mr. McGavock did, resulted in an unreliable estimate of investments per patented product. Dr. Akemann's allocation method is therefore the more reliable and persuasive approach on these facts.

For all these reasons, the evidence shows BISSELL has made investments in its Walker, Michigan, plant related to the domestic industry products. An investment of [redacted] is appropriately apportioned to articles protected by the Resch patents, and a [redacted] investment is appropriately apportioned to articles protected by the Xia patents.

ii) Plant and Equipment to Produce and Package Consumables

As explained in more detail below, the evidence shows that BISSELL has made investments in plant and equipment at its Walker, Michigan, facility to produce consumables used by the patented domestic industry products. An investment of [redacted] is appropriately apportioned to articles protected by the Resch patents, and a [redacted] investment is appropriately apportioned to articles protected by the Xia patents.

(a) Whether Consumables Expenses May Be Considered for Domestic Industry Purposes

There is no dispute that BISSELL has made domestic plant and equipment investments to produce and package the cleaning liquids used by the domestic industry product vacuums. Instead, the primary dispute between the parties is whether BISSELL's investments in consumables may be properly considered as part of the domestic industry. Under the facts adduced and the realities of the marketplace relevant to this investigation, I determine that BISSELL's investments to produce and package consumables for use with the domestic industry products are part of the relevant domestic industry.

"The Commission has held that in certain circumstances, the realities of the marketplace required a modification of the principle that the domestic industry is defined by the patented article." *Certain Video Game Systems & Wireless Controllers & Components Thereof*, Inv. No. 337-TA-770, Comm'n Op. at 66 (Oct. 28, 2013).

> Factors to consider regarding the realities of the marketplace analysis include whether the patented technology is sold as a separate entity or article of commerce; whether it is an essential component of the downstream product; and whether the domestic industry activities "have a direct relationship to exploitation of the patented technology."

Certain Magnetic Tape Cartridges & Components Thereof, Inv. No. 337-TA-1058, Comm'n Op. at 48 (quoting *Video Game Systems* at 66-67). As the Commission explained, it "has credited domestic investments when they are made with respect to an 'essential,' 'necessary,' and/or 'integral' part of the article covered by the patent claims and/or is "central to enabling" exploitation of the article covered by the patent claims." *Id.* at 50.

Here, the title of the investigation is *Certain* **Wet** *Dry Surface Cleaning Devices*. Notice of Investigation (emphasis added). The liquid consumables produced and packaged in Walker are essential to the "wet" operation of the products at issue. Unlike a traditional dry vacuum, the domestic industry products vacuum, wash, and dry in a single pass of the floor. Tr. (Bissell) at 31:16-32:9. All of the patent claims protecting the domestic industry products require a fluid supply chamber, and the domestic industry products have such a chamber for a cleaning solution. *Id.* at 34:9-36:3. The specifications and claims of the Asserted Patents make clear that the inventions deliver and recover cleaning fluid. JX-0006 ('735 patent) at 4:24-28, claims 1, 13, 15; JX-0007 ('428 patent) at claim 1; JX-0008 ('949 patent) at claims 1, 7, 18-19; JX-0009 ('541 patent) at 3:39-43, claim 13; JX-0010 ('769 patent) at claim 10.

Although the domestic industry products could perform some operations without a cleaning solution, BISSELL's products are designed to use a cleaning solution to optimally clean and sanitize floors. Tr. (Bissell) at 43:7-13, 44:9-17, 44:22-45:2. Mr. Hess explained that the BISSELL cleaning solutions produced and packaged in Walker were designed with a focus on the patented CrossWave products, even if they may be used with other BISSELL products. Tr. (Hess) at 368:17-369:3, 376:11-377:2. BISSELL's robust sales of these consumables demonstrate their importance to the relevant market. *See* JPX-0003C (sheet labeled "BOTTLE PRODUCTION"); JX-0054C.

In other investigations, the Commission has included related products in the domestic industry if the relevant marketplace includes those products, and even if the related products are unpatented. For example, in *Magnetic Tape Cartridges*, the Commission credited investments in unpatented tape drives, explaining that the patented tape cartridges were designed with a proprietary storage format to work solely in conjunction with the tape drives. *Id.* at 50-51. And even though the tape cartridges and tape drives were separately marketed and sold, the Commission explained that this fact was not dispositive because the evidence showed that the investments in the drive were directly related to the exploitation of the patented technology. *Id.* at 51-54. Like in *Magnetic Tape Cartridges*, the evidence here shows that, despite being marketed and sold separately, BISSELL's cleaning liquids are designed for use with the domestic industry products and are designed to exploit the patented "wet" features of those devices. *See id.* at 51. The fact that they are sold separately is not dispositive.

While the facts of the *Magnetic Tape Cartridges* investigation showed that the unpatented drives were necessary to exploit the patented tapes, the Commission has not always required that the unpatented product to be strictly necessary to use the patented article before the unpatented

product will be included in the relevant industry. The Commission's determination in *Video Game Systems* illustrates that point. There the Commission considered which investments in an amusement park attraction should be included in the domestic industry when the patent at issue covered only a toy wand that used radio frequency signals to interact with features in the attraction. *Video Game Systems*, Comm'n Op. at 67-68. The Commission included in the industry investments for specialized software and hardware within various elements of the attraction that enabled exploitation of the technology of the toy wands. *Id.* But the Commission held that the entire physical space, design themes, physical props, peripherals, and sales and training staff could not be counted, as there was no evidence that those investments were used to exploit the patented interactive capabilities of the wand. *Id.*

BISSELL's consumables at issue here are like the software and hardware included in the domestic industry in *Video Game Systems*. That hardware and software was designed to work with and enable use of the patented toy wand, and the patented invention required interaction with that hardware and software. *Video Game Systems*, Comm'n Op. at 67-68. Here, the evidence shows that the consumables are specially designed to work optimally with the domestic industry products to clean floors. Tr. (Bissell) at 43:7-13, 44:9-17, 44:22-45:2; Tr. (Hess) at 368:17-369:3, 376:11-377:2. Even though the patented vacuums can perform some operations without liquid, that possibility does not preclude the cleaning liquids from being included in the domestic industry because they are "central to enabling [a complainant] to exploit the technology of the" asserted patents. *See Video Game Systems*, Comm'n Op. at 70. BISSELL's consumables are essential to the operation of the fluid aspects of the claimed inventions and allow the domestic industry products embodying those inventions to more optimally clean floors. *Id.*; Tr. (Bissell) at 43:7-13, 44:9-17, 44:22-45:2; Tr. (Hess) at 368:17-369:3, 376:11-377:2. Thus, the realities of the

marketplace here justify including domestic production and packaging of cleaning solutions in the relevant domestic industry.

(b) BISSELL Has Established Plant and Equipment Expenses for Consumables

To determine the portion of BISSELL's plant investments in consumables that should be included in the domestic industry, BISSELL's expert Dr. Akemann first identified cost centers for the Walker facility used to produce and package the consumables, resulting in a base domestic investment of [redacted]. Tr. (Akemann) at 413:7-414:22; CDX-0008C at 10. He then performed the same three-step analysis outlined above with respect to Product Development and Engineering plant expenses to determine what portion of the consumable plant investments relate to the domestic industry products. First, analyzing headcount, Dr. Akemann determined [redacted] of employees in the Walker facility were responsible for consumables, so he allocated [redacted] of the Walker plant expenses to consumable activities. Second, using a revenue-based allocation, Dr. Akemann determined [redacted] of all consumables production in the Walker plant should be apportioned to the CrossWave product line, so he attributed [redacted] of the plant space devoted to consumables to the CrossWave line of products. And third, Dr. Akemann applied the [redacted] and [redacted] unit sales-based allocations for each set of patents within the CrossWave line. *Id.* This resulted in an apportionment of [redacted] to products practicing the Resch patents and an apportionment of [redacted] to products practicing the Xia patents. *Id.*

To determine the portion of BISSELL's equipment investments for making and packaging consumables that should be included in the domestic industry, Dr. Akemann identified the BISSELL cost centers and departments relating to that equipment. Tr. (Akemann) at 414:23-415:19; CDX-0008C at 11. Because he was able to identify specific departments and cost centers for consumables equipment, he did not need to apply an allocation based on headcount for

equipment expenses. *Id.* He then applied the [redacted] revenue-based allocation for the percentage of CrossWave-related consumables, and then the [redacted] and [redacted] unit sales-based allocations for each set of patents. *Id.* This resulted in an apportionment of [redacted] to products practicing the Resch patents and an apportionment of [redacted] to products practicing the Xia patents. *Id.*

Tineco provided an alternative to the sales-based allocation step used by BISSELL. Mr. McGavock opined that an allocation based on the percentage of the total number of CrossWave products sold across all years (what he called an "installed-base" allocation) was more reliable than an allocation based on yearly sales proportions because demand for consumables would be driven by the total number of sold units over all time, not new units sold annually. Tr. (McGavock) at 649:9-650:3. Mr. McGavock's allocation based on total units sold resulted in a calculation of plant investments of [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents, and equipment investments of [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents.

As discussed above in Section VII.B.2.a.i.c concerning BISSELL's Product Development and Engineering investments, BISSELL's headcount and sales-based allocation is a reasonable apportionment method given the facts of this investigation. There is no evidence that Tineco's allocation is a more accurate method of allocating consumables investments under these circumstances. But even if it were, the differences between the two methods are relatively modest and not material to the ultimate question of whether the economic prong is satisfied. As will be seen below, BISSELL's domestic industry would be significant even using Tineco's allocation method.

In sum, the record evidence shows that BISSELL's investments in plant and equipment to manufacture and package consumables for use with the domestic industry products amount to [redacted] appropriately apportioned to products that practice the Resch patents and [redacted] appropriately apportioned to products that practice the Xia patents.

iii) Pharr, Texas Plant and Equipment

As explained in more detail below, the evidence shows that BISSELL has made domestic investments in plant and equipment at the Pharr facility. An investment of [redacted] is appropriately apportioned to articles protected by the Resch patents, and a [redacted] investment is appropriately apportioned to articles protected by the Xia patents.

(a) Whether Expenses in Pharr May Be Considered for Domestic Industry Purposes

There is no dispute that BISSELL has made domestic plant and equipment investments for a facility in Pharr, Texas, that processes returned vacuums and fulfills orders for replacement parts. The primary dispute between the parties is whether investments in BISSELL's activities in Pharr can be counted as part of the domestic industry. Tineco argues that they cannot be counted because the Pharr facility is used for warehousing and distribution, which are activities of a mere importer. RRB at 77-78.

I find BISSELL's activities in Pharr include inspecting returned devices and determining if they can be refurbished or repaired, sending them for refurbishment, processing devices after refurbishment, and fulfilling orders for replacement parts. Tr. (Hess) at 355:6-356:1. These types of activities are like the warranty and customer service activities that the Commission has included in the domestic industry in other investigations. *See, e.g.*, *Certain Foodservice Equip. & Components Thereof*, Inv. No. 337-TA-1166, Comm'n Op. at 10-11 (Oct. 29, 2021) (finding that "investments in warranty service activities that [Complainants] perform themselves in the United

States may be credited toward the existence of a domestic industry"); *Certain Elec. Nicotine Delivery Sys. & Components Thereof*, 337-TA-1139, Comm'n Op. at 9 (May 5, 2020) (observing that, with respect to Complainants' "warranty and customer support" activities, the "Commission in the past has recognized similar types of investments in the United States"); *Certain Bone Cements, Components Thereof & Prods. Containing the Same*, Inv. No. 337-TA-1153, Comm'n Op. at 25 (Jan. 25, 2021) (recognizing that, depending on the facts and circumstances of a particular investigation, the "installation of the domestic industry's product, education and training regarding that product, and corresponding warranty, service, repair, quality control, and packaging activities may be considered").

Although warehousing and distribution expenses have at times been excluded from the domestic industry where the sole activities of the complainant are those of a mere importer, that is not the case here. BISSELL's investments in the Pharr facility have been made in conjunction with other domestic investments that go well beyond a mere importer's activities; BISSELL has invested [redacted] and employed scores of employees to conduct domestic research and development, manufacture related consumables domestically, and provide customer service domestically. I determine that, in this context, warehousing and distribution of the domestic industry products at the Pharr facility is part of the domestic industry.

(b) BISSELL Has Established Plant and Equipment Expenses for Pharr

To determine the portion of BISSELL's investments in the Pharr plant that should be included in the domestic industry, BISSELL's expert Dr. Akemann identified departments and cost centers related to general facilities and also for three departments: (1) warehousing and distribution for refurbished parts, (2) e-commerce, and (3) triage for returned products. Tr. (Akemann) at 417:15-419:3.

He performed a two-step allocation for the three departments to allocate the costs to the domestic industry products. For each department, he first identified the percentage of total goods processed by each department in Pharr that were CrossWave products to calculate the percentage of costs that could be allocated to CrossWave products. *Id.*; *see also* CDX-0008C at 14-15; JPX-0018C. For the warehousing and distribution, he allocated [redacted] to CrossWave products, for e-commerce, he allocated [redacted] to CrossWave products, and for triage, he allocated [redacted] to CrossWave products. JPX-0018C. Dr. Akemann's second step was to allocate the costs within the CrossWave line of products based on the percentage of unit sales of CrossWave products that practice the asserted patents, the same allocation he used for other investments. Tr. (Akemann) at 417:15-419:3; CDX-0008C at 14.

For general facilities expenses, Dr. Akemann performed a two-step allocation to allocate the expenses for these activities and to the domestic industry products. First, using the percentage of costs for CrossWave products each of three departments, he allocated the square footage of each department which could be allocated to the CrossWave Products, and he used this to calculate the total percentage of square feet in Pharr that could be allocated to CrossWave activities in these departments, which was [redacted]. JPX-0018C; CDX-0008C at 14. After this, he applied the same unit sales-based allocation within the CrossWave line that he used for other investments. Tr. (Akemann) at 417:15-419:3; CDX-0008C at 14.

Using these allocation methods for both department-specific and general facilities expenses, Dr. Akemann apportioned plant investments of [redacted] to products protected by the Resch patents and [redacted] to products protected by the Xia patents. *Id.*

To determine the portion of BISSELL's equipment investments in the Pharr facility that should be included in the domestic industry, Dr. Akemann used essentially the same process as he

did for plant investments for the warehousing and distribution, e-commerce, and triage departments: identifying department-specific cost centers, allocating them based on the percentage of CrossWave products processed by that department, and then applying a unit sales-based allocation. Tr. (Akemann) at 419:4-22; CDX-0008C at 15. He apportioned equipment investments of [redacted] apportioned to products protected by the Resch patents and [redacted] to products protected by the Xia patents. *Id.*

Tineco's expert, Mr. McGavock, used an alternative second step for his allocation. Rather than using a percentage of annual sales, he used a percentage of the total number of CrossWave units sold (what he called an "installed-base" allocation, like he used with consumables investments), for both plant and equipment investments. Tr. (McGavock) at 651:23-653:7; *see also* section VII.B.2.a.ii.b. This resulted in lower calculations for each category of investments. Mr. McGavock apportioned plant expenses of [redacted] to products practicing the Resch patents and [redacted] to products practicing the Xia patents, while his equipment allocations amounted to [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents. *Id.*

As has already been discussed above in connection with Dr. Akemann's allocations of Product Development and Engineering investments, proportioning investments according to sales percentages is one acceptable method for estimating the size of the relevant domestic industry. As was the case for BISSELL's plant and equipment investments to produce consumables, there is no evidence that the allocation method Tineco applied to the Pharr facility is more appropriate than BISSELL's. But even if it were, the differences between the two methods are relatively modest and not material to the ultimate question of whether the economic prong is satisfied. As will be

seen below, BISSELL's domestic industry would be significant even using Tineco's allocation method.

For all these reasons, the evidence shows that BISSEL's investments in plant and equipment at the Pharr facility amount to [redacted] apportioned to articles protected by the Resch patents and [redacted] apportioned to articles protected by the Xia patents.

iv) Plant and Equipment Totals

In summary, the evidence shows that BISSELL has made the following investments in plant and equipment attributable to and appropriately apportioned to articles protected by the Resch and Xia patents:

Activity	Articles protected by the Resch patents	Articles protected by the Xia patents
Product Development & Engineering – Walker, Michigan	[redacted]	[redacted]
Manufacturing Consumables – Walker, Michigan	[redacted]	[redacted]
Service & Repair – Pharr, Texas	[redacted]	[redacted]
Total	[redacted]	[redacted]

b) Labor or Capital

i) Product Development and Engineering Labor and Capital

As explained in more detail below, the evidence shows that BISSELL's domestic investments in labor and capital for Product Development and Engineering appropriately apportioned to articles protected by the Resch patents amount to [redacted], and while its labor and capital investments appropriately apportioned to articles protected by the Xia patents amount to [redacted].

(a) JPX-0001C Reliably Reflects BISSELL's Product Development and Engineering Labor Investments

To determine the portion of BISSELL's investments in Product Development and Engineering that should be included in the domestic industry, BISSELL's expert Dr. Akemann started first by identifying the research labor expenditures for BISSELL employees in JPX-0001C that were attributable to the domestic industry products that practice each set of patents based on the project numbers. Tr. (Akemann) at 404:11-405:18. He then analyzed the contract labor expenditures found in JPX-0001C. The contract labor expenses as recorded in JPX-0001C had been reduced by [redacted] from BISSELL's actual contract expenses because the JPX-0001C data was originally prepared to support a tax credit requiring that reduction. *Id.* Dr. Akemman reversed that reduction in his calculations. *Id.* Most of these investments did not require any further allocation because the project codes correlated directly with the domestic industry products, but others required a [redacted] reduction. *See* CDX-0008C at 5. He determined that BISSELL's labor investments were [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents. *Id.*; CDX-0008C at 6.

In rebuttal, Tineco's expert Mr. McGavock opined that Dr. Akemann's calculation was inaccurate and overstated because the labor data contained in JPX-0001C are unreliable. RRB at 80-91. Several of these arguments are addressed in Section VII.B.2.a.i.a. Tineco also raises four arguments specific to the labor investments in JPX-0001C, which, as discussed below, are not persuasive.

First, Tineco argues that the Product Development and Engineering labor expenses are contradicted by other evidence of engineering hours, specifically the internal engineering timekeeping data. *E.g.*, Tr. (McGavock) at 638:13-640:2. But BISSELL's witnesses persuasively

explained that the internal engineering timekeeping data relied upon by Mr. McGavock do not fully capture BISSELL's engineering hours and that Deloitte's year-end calculations, reflected in JPX-0001C, are more accurate. Tr. (Hess) at 347:15-348:4; Tr. (Akemann) at 395:3-396:5. Tineco argues that documentation is necessary to support the data in JPX-0001C, but "there is no Commission requirement that sworn witness testimony directed to the domestic industry requirement cannot be credited without further corroboration by underlying documentation." *See Certain Solid State Storage Drives, Stacked Elecs. Components, & Prods. Containing Same*, Inv. No. 337-TA-1097, Comm'n Op. at 21 (June 29, 2018). I find the testimony of Dr. Akemann and Mr. Hess on this point is sufficiently reliable and persuasive to corroborate the data in JPX-0001C.

Second, Tineco argues that the engineering timekeeping data analyzed by its expert Mr. McGavock proves that the data in JPX-0001C contain an inflated labor rate. *See* Tr. (McGavock) at 640:22-643:20. Again, Mr. McGavock's analysis relies on calculations he performed using the engineering timekeeping data. *Id.* Because the record persuasively demonstrates that the engineering timekeeping data is incomplete, I find Mr. McGavock's opinions based on that data are less reliable and I give them little weight.

Third, Tineco argues that wages paid to non-U.S. employees are included in JPX-0001C, contrary to what is permitted under the Internal Revenue Code. RRB at 87; Tr. (McGavock) at 643:21-644:8. As has been noted, Mr. McGavock's opinion relies on his analysis of the incomplete timekeeping engineering data, and therefore I give this opinion little weight. Further, Mr. Hess testified that JPX-0001C includes only U.S. investments. Tr. (Hess) at 348:17-19. That testimony

was not impeached on cross-examination. I find Mr. Hess's testimony on this point is credible, and I therefore additionally find JPX-0001C does not include foreign labor investments.[51]

Fourth, Tineco argues that any contract labor expenses in JPX-0001C cannot be credited towards the domestic industry because there is no explanation of what kind of labor is included. RRB at 88-89. For example, Tineco argues that the data might include marketing research expenses which should be excluded from the domestic industry. But Tineco's argument is speculative and unsupported by any evidence.[52] The evidence shows BISSELL recorded as a qualified research expenditure in the ordinary course of business. Tr. (Hess) at 347:17-348:4. I find it is reliable and is appropriately included in the domestic industry analysis.

Mr. McGavock also performed his own calculation of BISSELL's Product Development and Engineering internal labor investments, using the engineering timekeeping documents that have been discussed above. Tr. (McGavock) at 638:14-640:2. Under Mr. McGavock's calculations, an internal labor investment of [redacted] was apportioned to products practicing the Resch patents and a labor investment of [redacted] was apportioned to products practicing the Xia patents. *Id.*; RDX-0003C-13. However, as I discussed in Section VII.B.2.a.i.a above, BISSELL provided unrebutted testimony that the internal engineering timekeeping documents understated BISSELL's investments and that JPX-0001C more accurately captured BISSELL's labor investments. The evidence therefore shows BISSELL's calculation of labor investments is reliable and more reliable than Mr. McGavock's calculation.

[51] I note that Mr. McGavock testified that he was not accusing Deloitte or BISSELL of tax fraud or falsifying documents and agreed that Deloitte is generally reputable. Tr. (McGavock) at 671:14-16, 672:17-22, 673:5-10.

[52] The definition of qualified research under the relevant provision of the Internal Revenue Code appears to exclude market research. 26 U.S.C. § 41(d)(4)(D)(iii).

(b) BISSELL Has Established Capital Expenses for Product Development and Engineering

To determine the portion of BISSELL's capital investments in is Product Development and Engineering group that should be included in the domestic industry, BISSELL's expert Dr. Akemann used the same allocation method that he used for plant expenses for the same group. First, he identified the general capital expenses for the Walker facility, allocating those expenses based on the proportion of total employees that work in the Product Development and Engineering group. Tr. (Akemann) at 408:14-409:6; CDX-0008C at 9 (citing evidence). Dr. Akemann then allocated the proportion of that group's work devoted to the CrossWave product line according to the ratio of CrossWave product sales compared to sales of all product lines developed by the Product Development and Engineering group. *Id*. Finally, Akemann proportioned the Product Development and Engineering labor using the percentage of CrossWave sales that reflect products practicing each set of patents. *Id*. Dr. Akemann apportioned capital investments of [redacted] to products that practice the Resch patents and [redacted] to products that practice the Xia patents. Tr. (Akemann) at 408:14-409:6; CDX-0008C at 9 (citing evidence).

Tineco criticizes Dr. Akemann's calculation of capital expenses for including several capital expenses like an "Executive Floor Remodel" that, in Tineco's view, are unrelated to the asserted patents.[53] RRB at 92-93; Tr. (McGavock) at 645:15-646:13. Tineco and Mr. McGavock provided an alternative calculation for capital that does not include the remodeling expense and that also allocated investments based on engineering timekeeping entries instead of based on sales ratios. RRB at 93-94; Tr. (McGavock) at 646:18-23. Mr. McGavock apportioned investments in

[53] Tineco and Mr. McGavock highlighted additional line-items in a demonstrative reproduced in their Responsive Post-Hearing Brief, *see* RRB 93; RDX-0003C-20, but there was no evidence or argument presented about these line items. And the only alternative calculation provided by Mr. McGavock excluded only this executive floor remodel.

capital of [redacted] to products practicing the Resch patents and [redacted] to products practicing the Xia patents. Tr. (McGavock) at 646:18-23; RDX-0003C.

I find that BISSELL's allocation method better reflects the scope of BISSELL's domestic capital investments. As has already been explained, the time entries used by Tineco's expert Mr. McGavock are not a complete record of engineering labor relating to the domestic industry products, and therefore Dr. Akemann's sales-based allocation is more reliable here. Additionally, Tineco argues for excluding certain items from those investments without citation to any evidence. *See* RRB 93; RDX-0003C-20. Moreover, there is no evidence that BISSELL's capital investment in remodeling and the other identified capital investments are unrelated to Product Development and Engineering activity for the domestic industry products. On the other hand, BISSELL's expert Dr. Akemann interviewed several BISSELL employees, including Mr. Hess, to understand how BISSELL tracked its financial data. Tr. (Akemann) at 381:9-382:19. In formulating his allocation methods, he spoke to Mr. Hess and others at BISSELL to confirm that his methods were consistent with BISSELL's accounting records. *Id.* at 387:15-389:13. Dr. Akemann's approach is more reliable.

For all these reasons, the evidence shows that BISSELL has made investments in labor and capital for its Product Development and Engineering group amounting to [redacted] for articles protected by the Resch patents and [redacted] for articles protected by the Xia patents.

ii) Consumables Labor and Capital

As explained in more detail below, the evidence shows that BISSELL has domestic made investments in labor and capital to produce and package consumables (*e.g.*, cleaning liquids used with the domestic industry products) at its facility in Walker, Michigan. An investment of

[redacted] is appropriately apportioned to products practicing the Resch patents and a [redacted] investment is appropriately apportioned to products practicing the Xia patents.

To calculate the labor and capital investments for producing consumables, Dr. Akemann used the same method he used for equipment for consumables. First, he identified the specific cost centers for the consumables department. Second, using a revenue-based allocation, Dr. Akemann determined [redacted] of all consumables produced in the Walker plant should be apportioned to the CrossWave product line, so he attributed to the CrossWave line of products [redacted] of the total labor and capital devoted to consumables. And third, Dr. Akemann applied the [redacted] and [redacted] unit sales-based allocations for each set of patents within the CrossWave line. Tr. (Akemann) at 415:20-416:10 (labor), 416:11-417:3 (capital); *see also* CDX-0008C at 12-13. Dr. Akemann's calculations resulted in labor investments of [redacted] apportioned to products practicing the Resch patents; labor investments of [redacted] apportioned to products practicing the Xia patents; capital investments of [redacted] apportioned to products practicing the Resch patents; and capital investments of [redacted] apportioned to products practicing the Xia patents. Tr. (Akemann) at 415:20-415:10, 416:11-417:3; CDX-0008C at 12-13.

As he did for plant and equipment devoted to consumables, Tineco's expert Mr. McGavock disagreed with BISSELL's labor and capital calculations for consumables. He provided an alternative calculation using the total number of units installed, as opposed to annual sales (what he called an "installed-base" allocation) for labor and capital investments. Tr. (McGavock) at 649:5-650:3, 650:21-651:6. Mr. McGavock apportioned labor investments of [redacted] to products practicing the Resch patents and [redacted] to products practicing the Xia patents, and he apportioned capital investments of [redacted] to products practicing the Resch patents and

[redacted] to products practicing the Xia patents. Tr. (McGavock) at 650:21-6; RDX-0003C at 27-28.

As explained in Section VII.B.2.a.ii.b, BISSELL's headcount and sales-based allocation is a reasonable apportionment method given the facts of this investigation. There is no evidence that Tineco's allocation is a more accurate method of allocating consumables investments under these circumstances. But even if it were, the differences between the two methods are relatively modest and not material to the ultimate question of whether the economic prong is satisfied. As will be seen below, BISSELL's domestic industry would be significant even using Tineco's allocation method.

In sum, the record evidence shows that BISSELL's investments in labor and capital to manufacture and package consumables for use with the domestic industry products amount to [redacted] appropriately apportioned to products that practice the Resch patents and [redacted] appropriately apportioned to products that practice the Xia patents.

iii) Pharr Labor and Capital

As explained in more detail below, the evidence shows that BISSELL has made investments in labor and capital relating to its facility in Pharr, Texas, amounting to [redacted] appropriately apportioned to products practicing the Resch patents and [redacted] appropriately apportioned to products practicing the Xia patents.

To calculate the labor and capital investments in Pharr, Dr. Akemann used the same methods he used for plant and equipment in Pharr. For labor, he first identified the cost centers and departments for warehousing and distribution, e-commerce, and triage, and then used the percentages of CrossWave products to allocate to CrossWave then second used the percentage of unit sales of the domestic industry products to allocate to the asserted patents. Tr. (Akemann) at

419:23-420:14; CDX-0008C at 16. For capital, he first identified overall facilities capital expenses for Pharr and allocated the expenses to CrossWave activities in these three departments based on his calculation of the percentage of square feet attributable to CrossWave then second used the percentage of unit sales of the domestic industry products to allocate to the asserted patents. Tr. (Akemann) at 420:14-421:5; CDX-0008C at 17. Dr. Akemann's calculations resulted in labor investments of [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents. *Id.* at 419:23-420:14; CDX-0008C at 16. Dr. Akemann's calculations resulted in capital investments of [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents. Tr. (Akemann) at 420:15-421:5; CDX-0008C at 17.

As he did for plant and equipment, Tineco's expert Mr. McGavock disagreed with the sales-based allocation and instead offered an opinion apportioning labor and capital investments based on the total number of CrossWave products sold across all time. Tr. (McGavock) at 651:10-652:3, 652:25-653:7. Mr. McGavock's calculations resulted in labor investments of [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents. *Id.* at 652:25-653:3; RDX-0003C-32. He similarly attributed capital investments of [redacted] apportioned to products practicing the Resch patents and [redacted] apportioned to products practicing the Xia patents. Tr. (McGavock) at 653:4-7; RDX-0003C-33.

As explained in Sections VII.B.2.a.ii.b. and iii.b., there is no evidence that the allocation method Tineco applied to the Pharr facility is more appropriate than BISSELL's. But even if it were, the differences between the two methods are relatively modest and not material to the ultimate question of whether the economic prong is satisfied. As will be seen below, BISSELL's domestic industry would be significant even using Tineco's allocation method.

For all these reasons, I find BISSELL's labor investments at the Pharr facility amount [redacted] appropriately apportioned to products practicing the Resch patents and [redacted] appropriately apportioned to products practicing the Xia patents. Tr. at 419:23-420:14; CDX-0008C at 16. I further find that BISSELL's capital investments at the Pharr facility amount to [redacted] appropriately apportioned to products practicing the Resch patents and [redacted] appropriately apportioned to products practicing the Xia patents. Tr. (Akemann) at 420:15-421:5; CDX-0008C at 17.

iv) Labor and Capital Totals

In summary, the evidence shows that BISSELL has made the following investments appropriately apportioned to products practicing the Resch and Xia patents in labor and capital:

Activity	Articles protected by the Resch patents	Articles protected by the Xia patents
Product Development & Engineering – Walker, Michigan	[redacted]	[redacted]
Consumables – Walker, Michigan	[redacted]	[redacted]
Service & Repair – Pharr, Texas	[redacted]	[redacted]
Total	[redacted]	[redacted]

c) Exploitation of the Asserted Patents

As explained in more detail below, the evidence shows that BISSELL has invested [redacted] appropriately apportioned to exploitation of the Resch patents and [redacted] appropriately apportioned to exploitation of the Xia patents.

i) BISSELL'S Research and Development Expenses

To show research and development investments under subsection (C) of the domestic industry statute, BISSELL and its expert Dr. Akemann summed all of the plant, equipment, labor, and capital investments for the Product Development and Engineering group discussed above in

connection with BISSELL's contentions under subsections (A) and (B). Tr. (Akemann) at 421:6-422:6. This came to a total of [redacted] apportioned to exploitation of the Resch patents and [redacted] apportioned to exploitation of the Xia patents. *Id.*

Tineco did the same for subsection (C), summing the figures from its arguments under subsections (A) and (B) because, in its view, those calculations are more reliable than BISSELL's. Tineco asserts that the subsection (C) research and development investments apportioned to exploitation of the Resch patents are at most [redacted] and investments apportioned to exploitation of Xia patents are at most [redacted]. RRB at 105.

Neither party raises an argument unique to subsection (C) that has not already been addressed in the analysis above of subsections (A) and (B). As previously explained, the evidence generally supports Dr. Akemann's allocation methods and shows that the underlying data he used is reliable. *See* Sections VII.B.2.a.i.a and b.i.a. There is one exception, however, which has already been noted in the plant and equipment analysis above: BISSELL advances under subsection (C) a total that includes expenditures by the Product Development and Engineering group on supplies. *See* Section VII.B.2.a.i.b. Because the record is unclear about what these expenses include, and because it is unclear whether expenditures for these supplies overlap with other capital expenses claimed by BISSELL under subsection (B), there is a risk that including the cost of supplies in the total BISSELL claims under subsection (C) will result in double counting. *See* Tr. (Akemann) at 403:5-15 (explaining that supplies expenses in JPX-0001C are identified by reviewing invoices on BISSELL's general ledger). Accordingly, I have determined not to include the cost of supplies in my consideration of BISSELL's investments under subsection (C). The effect of this exclusion is not material. Even excluding those amounts, I find BISSELL has made

research and development expenses amounting to [redacted] appropriately apportioned to the Resch patents and [redacted] appropriately apportioned to the Xia patents.

ii) Nexus of the Expenses to the Asserted Patents

To demonstrate a domestic industry under subsection (C), BISSELL must also show a nexus exists between the Product Development and Engineering investments and the asserted patents. *Certain Integrated Circuit Chips & Prods. Containing the Same*, Inv. No. 337-TA-859, Comm'n Op. at 38 (Aug. 22, 2014). Dr. Akemann testified that the nexus question was a "technical question." Tr. (Akemann) at 422:11-22. And BISSELL argued that because the domestic industry products are the surface cleaning inventions claimed in the asserted patents, a nexus can be inferred. CIB at 108; *see also* Tr. (Singhose) at 1084:13-1085:16 (testifying, for purposes of secondary considerations, that a nexus exists); Tr. (Sorenson) at 1146:9-20 (same). Tineco, on the other hand, argues that this evidence is insufficient because Dr. Akemann assumed a nexus that cannot be inferred from supposedly cursory testimony that the domestic industry products practice the asserted claims. RRB at 104-105.

As the Commission has explained, in some cases, "a nexus may be readily inferred based on evidence that the claimed investment is in the domestic industry article, which itself is the physical embodiment of the asserted patents." *Integrated Circuit Chips*, Comm'n Op. at 40. But "there may be circumstances in which the domestic investment is so unrelated to the asserted patent that no nexus can be imputed." *Id.* at 42-43. In such a case, "Respondents may properly challenge the evidence concerning [research and development] investments presented by a complainant . . . to show that complainant's evidence is insufficient to support an inference of a nexus between the claimed investments and the asserted patents." *Id.* at 43. For example, in *Integrated Circuit Chips*, the evidence showed that the claimed research and development investment was made in a feature

that was extensively used in products not containing the patented feature, and the Commission found no nexus existed. *Id.* at 45-47.

Tineco argues that the Commission's opinion in *Electronic Candle Products* imposed a new, "demanding standard[]" to establish a nexus between investments and the intellectual property at issue. RRB at 104-05 (citing *Certain Electronic Candle Prods. & Components Thereof*, Inv. No. 337-TA-1195, Comm'n Op. (Oct. 4, 2022)). Tineco's argument is not persuasive. In *Electronic Candle Products*, the Commission noted that the record raised serious questions about whether the investments were sufficiently related to the patented features of the domestic industry products. *Electronic Candle Prods.*, Comm'n Op. at 23. The Commission faulted the complainants, after being given an opportunity on remand, for failing to tie those investments to the specific claims of the asserted patents. *Id.* at 23-28. Thus, while the Commission opinion makes clear that an inferred nexus is not appropriate in every case, it nevertheless reiterated previous Commission determinations that a nexus inference may be appropriate when the evidence shows the investments are made in domestic industry products that embody and practice the asserted patents, absent any countervailing evidence. *Id.* at 23-29 (discussing cases); *see also Certain Gas Spring Nailer Prods. & Components Thereof*, Inv. No. 337-TA-1082, Comm'n Op. at 80-82 (Apr. 28, 2020) (crediting investments towards developing domestic industry products that embodied and practiced the asserted patents).

The evidence here is sufficient to infer a nexus between the claimed investments and the asserted patents. The primary source of evidence for labor expenses, JPX-0001C, lists costs using specific project numbers that relate to the domestic industry products. JPX-0001C; Tr. (Akemann) at 391:6-14. And Dr. Akemann confirmed that the qualified research expenditure project numbers corresponded with these products. Tr. (Akemann) at 381:9-382:19 (discussing conversation with

Mr. Cekander), 392:5-19, 393:9-394:11. Dr. Akemann used the specific investments identified with each project number (along with additional allocation factors) to calculate labor investments. *Id.* at 404:14-405:18. And for plant and capital expenses, Dr. Akemann used reasonable allocations to identify the proportions of these investments which could be attributed to Product Development and Engineering activities for the domestic industry products. *Id.* at 406:19-408:13 (plant), 408:14-409:6 (capital). Because practically the entire structure of the domestic industry products is required to practice the patented inventions, a nexus can be inferred between the investments made in the products and asserted patents. *See Gas Spring Nailer Prods.*, Comm'n Op. at 80-82. Moreover, Tineco cites no evidence that would suggest the claimed activities of BISSELL's Product Development and Engineering group are unrelated to patented features. Absent such evidence, an inference that the investments are being made in the patented technology is appropriate, and the evidence shows that a nexus exists between the investments and the asserted patents.

d) Total Domestic Industry Expenditures

In summary, the evidence shows that BISSELL has made the following investments appropriately apportioned to the asserted patents and articles protected by those patents under subsections (A), (B), and (C) of section 337(a)(3)[54]:

	Articles protected by the Resch patents	**Articles protected by the Xia patents**
(A) Plant and Equipment	[redacted]	[redacted]
(B) Labor and Capital	[redacted]	[redacted]
(C) Exploitation	[redacted]	[redacted]

[54] These totals exclude expenditures on supplies that BISSELL claimed as equipment under subsection (A) and as research and development investments under subsection (C).

3. Significance and Substantiality Analysis

As discussed below, the evidence shows the quantitative and qualitative significance of BISSELL's labor and capital investments in articles that practice each set of asserted patents under 19 U.S.C. § 1337(a)(3)(B). Further, the evidence shows that BISSELL's investments in research and development related to exploitation of the asserted patents is substantial, both qualitatively and quantitatively, under 19 U.S.C. § 1337(a)(3)(C). Because BISSELL's investments under 19 U.S.C. §§ 1337(a)(3)(B) and (C) are significant and substantial, I need not address whether BISSELL's investments under § 1337(a)(3)(A) are significant.

Determining whether an investment is "significant" under 19 U.S.C. § 1337(a)(3) depends on context. *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 31 (Nov. 2011). "Activities can be shown to be 'significant,' for example, by demonstrating their importance to the articles protected by the patent in the context of the company's operations, the marketplace, or the relevant industry." *Certain Batteries and Electrochemical Devices and Products Containing Same*, Inv. No. 337-TA-1087, Order No. 32, 2018 WL 4048056, at *3 (Aug. 8, 2018).

Similarly, whether an investment in domestic industry is "substantial" is a factual inquiry and the complainant bears the burden of proof. *Certain Stringed Musical Instruments & Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 14 (May 16, 2008). There is no need to define or quantify an industry in absolute mathematical terms. *Id.* at 26. Rather, "the requirement for showing the existence of a domestic industry will depend on the industry in question, and the complainant's relative size." *Id.* at 25-26.

The evidence shows, and BISSELL does not genuinely dispute, that the CrossWave line of products were initiated [redacted]. RX-0055C at

BISSELLITC0066361; Tr. (Akemann) at 436:20-437:6. Early in development, the majority of the CrossWave product team [redacted]. Tr. (McGavock) at 620:5-19; RX-0055C at BISSELLITC0066360. All six inventors on the Xia patents are in China. JX-0008 ('949 patent) at cover. And none of the vacuums embodying the patent claims are manufactured in the United States. Tr. (Akemann) at 432:15-17. But none of these facts end the inquiry, nor do they defeat the strong showing made by BISSELL that its domestic investments related to the patented technology are also significant and substantial.

First, the investments made by BISSELL in labor and capital and in exploitation of the asserted patents are quantitatively significant and substantial *per se*. These investments amount to [redacted] attributable to the asserted patents and represent scores of engineering and research personnel employed in the United States by BISSELL. For articles protected by the Resch patents (over three years from 2019 and 2021), this amounts to roughly [redacted] in labor and capital and [redacted] for exploitation of the patents. And for articles protected by the Xia patents (over four years from 2018 and 2021), this amounts to roughly [redacted] for labor and capital and [redacted] for exploitation of the patents. Even excluding investments of all kinds relating to producing consumables and relating to warehousing and other activities at the Pharr facility, these numbers remain quantitatively significant and substantial: roughly [redacted] in labor and capital for articles protected by the Resch patents and roughly [redacted] for exploitation of the Resch patents. And for articles protected by the Xia patents, excluding consumables and the Pharr facility still results in roughly [redacted] in labor and capital and [redacted] for exploitation of those patents. Even just considering the labor employed by BISSELL's Product Development and Engineering group would be a quantitatively significant industry *per se*: about [redacted] in labor for articles protected by the Resch patents and [redacted] in labor for articles

protected by the Xia patents. Moreover, even though labor expenses for the Product Development and Engineering group are the largest claimed investments, the evidence shows they may be understated by as much as [redacted] because the data in JPX-0001C from which those investments were totaled do not include benefits. Tr. (Akemann) at 395:3-396:5.

BISSELL's investments in Product Development and Engineering labor also represent employment of scores of engineering and research personnel in the United States over the relevant years. That fact can be adduced from data showing that engineering personnel responsible for Product Development and Engineering activities in Walker are paid salaries between roughly [redacted] (with [redacted]), and the sum of their salaries over the relevant time period is in the [redacted]. *E.g.*, JPX-0012C; JPX-0013C. Such an investment is a quantitatively significant employment of labor and capital, and a quantitatively substantial investment in the exploitation of the patents.

Comparing BISSELL's domestic and foreign labor investments also shows that the domestic investments are significant and substantial. As Dr. Akemann explained, two-thirds of BISSELL's employees, including [redacted] of its Product Development and Engineering employees and [redacted] of consumables employees, were based in the United States during the relevant timeframe. Tr. (Akemann) at 425:22-426:9.

BISSELL's investments in the domestic industry products are also significant when compared to BISSELL's total domestic activity. Dr. Akemann testified that the labor of the Product Development and Engineering group attributable to the Resch patents amounts roughly [redacted] of that group's total labor expenditure and the labor of that group attributable to the Xia patents

amounts to roughly [redacted] of the same total. Tr. (Akemann) at 427:11-428:12.[55] Although the percentages presented by Dr. Akemann included expenses for supplies that I have not credited above, the percentages without including those expenses are only about a half percentage point lower, and that immaterial difference does not change my significance determination. These quantitative metrics further show the significance of the investments.

The metrics presented by Tineco do not persuade a contrary conclusion. Tineco's expert, Mr. McGavock, compared the domestic labor and capital expenses attributable to the asserted patents to both the sales revenue and cost of goods sold for the domestic industry products. RDX-0003C at 38; Tr. (McGavock) at 658:20-660:2. Mr. McGavock calculated that the labor and capital expenses were [redacted] of cost of goods sold for the Resch patents and [redacted] of cost of goods sold for the Xia patents. *Id.* Although Tineco argues that these percentages are not enough to clear the statutory threshold, it cites no Commission determination in which domestic investments of [redacted] and scores of employees were found to fail the significance or substantiality standard.[56]

The evidence also shows that BISSELL's domestic activities relating to the asserted patents are qualitatively significant. The CrossWave line of products was a major product for BISSELL. Tr. (Bissell) at 31:16-32:4. BISSELL calls it a "hero product" and considers it a particularly notable innovation in cleaning up pet messes. *Id.* at 32:22-33:12. The Product Development and Engineering activities relating to the patented technology represent a significant investment in

[55] Although Dr. Akemann was not clear about whether these percentages were based on worldwide or domestic investments, the cited source documents appear to include only domestic investments. *See* JPX-0002C; JPX-0018C.

[56] As the Commission has explained, there is no minimum threshold percentage of expenditure that is necessary to satisfy the Domestic Industry requirement. *Certain Carburetors and Products Containing Such Carburetors*, Inv. No. 337-TA-1123, Comm'n Op. at 26-27 (Oct. 28, 2019).

research and development. Tr. (Hess) at 344:6-11. And the investments claimed by BISSELL in this investigation are only a subset of research and development expenses because they were derived from expenses selected for a tax credit, not from a complete analysis of all of BISSELL's expenditures. *Id.* at 345:17-345:24. BISSELL's domestic production of consumables in Walker, Michigan, is also qualitatively significant as those cleaning solutions are optimized for use with the patented features of BISSELL vacuums. *Id.* at 350:6-351:6, 353:9-354:2. Each of the claimed investments are therefore qualitatively significant and substantial to the domestic industry products and to BISSELL under subsections (B) and (C).

4. Economic Prong Conclusions

For the reasons explained above, BISSELL has satisfied the economic prong of the domestic industry requirement under subsections (B) and (C) of section 337(a)(3) based on investments related to products practicing the to the '949 patent, the '769 patent, the '735 patent, and the '428 patent.

Because I have found that BISSELL has not satisfied the technical prong of the domestic industry requirement with respect to the '541 patent, no domestic industry related to "articles protected by" that patent exists. *See* 19 U.S.C. § 1337(a)(2). This finding has no effect on the investments I credited in the totals above because the domestic industry products alleged to practice the '541 patent are protected by two other patents in the Xia patent group.

VIII. FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. The Commission has personal jurisdiction over all parties and *in rem* jurisdiction over the accused products in this investigation.

2. BISSELL has standing to assert the asserted patents.

3. The importation requirement of section 337 is satisfied for the accused products.

4. Claims 1, 2, 5-7, 11, 14, 15, and 17-20 of the ’949 patent have not been infringed by the Xia accused products.

5. Claims 1, 2, 4, 5, 9, 12, 13, 15, 16, and 20 of the ’541 patent have not been infringed by the Xia accused products.

6. Claims 1, 4-7, 10, and 13-16 of the ’769 patent have not been infringed by the Xia accused products.

7. Claims 1, 13, and 15 of the ’735 patent have been infringed by the original Resch accused products. Claims 2, 3, 5, 6, 11, 14, 16-18 have not been infringed by the original Resch accused products.

8. Claims 1-3, 5, 6, 11, and 13-18 of the ’735 patent have not been infringed by the redesigned Resch accused products.

9. Claim 1 of the ’428 patent has been infringed by the original Resch accused products. Claims 2, 5, 10-13, 15 have not been infringed by the original Resch accused products.

10. Claims 1, 2, 5, 10-13, and 15 have not been infringed by the redesigned Resch accused products.

11. No claim of the asserted patents has been shown invalid.

12. The record demonstrates that the technical prong of the domestic industry requirement has been satisfied with respect to the ’949 patent, the ’769 patent, the ’735 patent, and the ’428 patent.

13. The record demonstrates that the technical prong of the domestic industry requirement has not been satisfied with respect to the ’541 patent.

14. The record demonstrates that the economic prong of the domestic industry requirement has been satisfied with respect to all the asserted patents under subsections (B) and (C).

15. A violation of 19 U.S.C. § 1337 has not been shown by the importation and sale of articles that infringe claims 7 and 19 of the ’949 patent.

16. A violation of 19 U.S.C. § 1337 has not been shown by the importation and sale of articles that infringe claims 1 and 13 of the ’541 patent.

17. A violation of 19 U.S.C. § 1337 has not been shown by the importation and sale of articles that infringe claims 1 and 4 of the ’769 patent.

18. A violation of 19 U.S.C. § 1337 has been shown by the importation and sale of articles that infringe claims 1, 13, and 15 of the ’735 patent.

19. A violation of 19 U.S.C. § 1337 has been shown by the importation and sale of articles that infringe claim 1 of the ’428 patent.

IX. INITIAL DETERMINATION

For the reasons set forth above, it is my initial determination that no violation of section 337 of the Tariff Act of 1930, as amended, has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain wet dry surface cleaning devices alleged to infringe certain claims of U.S. Patent No. 11,122,949; U.S. Patent No. 11,096,541; U.S. Patent No. 10,820,769.

For the reasons set forth above, it is my initial determination that a violation of section 337 of the Tariff Act of 1930, as amended, has occurred in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain wet dry

surface cleaning devices alleged to infringe certain claims of U.S. Patent No. 11,076,735 and U.S. Patent No. 11,071,428.

I hereby certify to the Commission this Initial Determination and the Recommended Determination.

The Secretary shall serve the confidential version of this Initial Determination upon counsel who are signatories to the Protective Order (Order No. 1) issued in this investigation. A public version will be served at a later date upon all parties of record.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless the Commission has ordered review of the determination in response to a petition filed under 19 C.F.R. § 210.43(a) or the Commission reviews the determination on its own initiative pursuant to 19 C.F.R. § 210.44.

X. ORDER

Within seven days of the date of this document, the parties shall jointly submit a single proposed public version of this document with any proposed redactions indicated in red. If the parties submit excessive redactions, they may be required to provide declarations from individuals with personal knowledge, justifying each proposed redaction and specifically explaining why the information sought to be redacted meets the definition for confidential business information set forth in 19 C.F.R. § 201.6(a). To the extent possible, the proposed redactions should be made electronically, in a single PDF file using the "Redact Tool" within Adobe Acrobat. The proposed redactions should be submitted as "marked" but not yet "applied." The proposed redactions should be submitted via email to Cheney337@usitc.gov and not filed on EDIS.

SO ORDERED.

Clark S. Cheney
Chief Administrative Law Judge