

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SHARKNINJA, INC.,
SHARKNINJA OPERATING LLC,
SHARKNINJA MANAGEMENT LLC, AND
SHARKNINJA SALES COMPANY,
Petitioners,

v.

DYSON TECHNOLOGY LIMITED,
Patent Owner.

Case No. IPR2024-00993

U.S. Patent No. 11,044,979

Petition for *Inter Partes* Review of U.S. Patent No. 11,044,979

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PETITIONERS' EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 11,044,979
1002	File History for U.S. Patent No. 11,044,979
1003	Declaration of Dr. Daniel M. Nosenchuck
1004	Japanese Unexamined Patent Application Pub. No. JP H11-178631 and Certified Translation Thereof
1005	U.S. Patent No. 5,868,148
1006	U.S. Patent No. 6,038,782
1007	U.S. Patent No. 8,092,166
1008	Caroline Lubert, <i>On Some Recent Applications of the Coanda Effect</i> , 16 Int'l J. Acoustics and Vibration 144 (2011)
1009	UK Patent Application Pub. No. GB 2,093,526
1010	U.S. Patent No. 2,052,869
1011	U.S. Patent No. 3,261,162
1012	Answer and Counterclaim to Complaint for Declaratory Judgment, D.I. 6, <i>SharkNinja Operating LLC v. Dyson, Inc.</i> , No. 1:23-cv-11277 (D. Mass. June 9, 2023)
1013	SharkNinja's Opening Claim Construction Brief, D.I. 87, <i>SharkNinja Operating LLC v. Dyson, Inc.</i> , No. 1:23-cv-11277 (D. Mass. Oct. 17, 2023)
1014	eBay Listing, <i>Vintage Clairol Pretty Power High Power Hair Brush Styling Dryer Curling Iron</i> , https://www.ebay.com/itm/192884562006 (last accessed May 22, 2024)
1015	eBay Listing, <i>Conair Hot Air Styler 2-in-1 Brand New Never Open Model BM20sbc(a)-320 ~</i> , https://www.ebay.com/itm/186171531603 (last accessed May 22, 2024)
1016	PCT Int'l Appl. Pub. No. WO 2014/006365
1017	PCT Int'l Appl. Pub. No. WO 2011/131965

PETITIONERS' EXHIBIT LIST

(continued)

Exhibit No.	Description
1018	Churchill, Randolph Allen, Ph.D., <i>Coanda effect jet around a cylinder with an interacting adjacent surface</i> , West Virginia University (1992)
1019	Robert J. Englar, <i>Circulation Control for High Lift and Drag Generation on STOL Aircraft</i> , 12 J. Aircraft 457 (1975)
1020	R. Neuendorf and I. Wygnanski, <i>On a turbulent wall jet flowing over a circular cylinder</i> , 381 J. Fluid Mech. 1 (1999)
1021	J. Dunham, <i>A theory of circulation control by slot-blowing, applied to a circular cylinder</i> , 33 J. Fluid Mech. 495 (1968)
1022	Video of Saito/Lindsey Model Attachment (I)
1023	Video of Saito/Lindsey Model Attachment (II)
1024	Video of Saito/Lindsey Model Attachment (III)
1025	G.I. Fekete, <i>Coanda Flow of a Two-Dimensional Wall Jet on the Outside of a Circular Cylinder</i> , McGill University (1963)
1026	U.S. Patent Appl. Pub. No. 2013/0111777
1027	<i>Sotera Stipulation</i> (June 7, 2024)
1028	U.S. Patent Appl. Pub. No. 2011/0010958

TABLE OF ABBREVIATIONS

Abbreviation	Term
'979 patent	U.S. Patent No. 11,044,979 (EX1001)
AIA	America Invents Act
Challenged Claims	Claims 1–32 of U.S. Patent No. 11,044,979
Fig.	Figure
IPR	<i>inter partes</i> review
Lindsey	U.S. Patent No. 5,868,148 (EX1005)
Litigation Petitioners	SharkNinja Operating LLC and SharkNinja Sales Company
Nicolas	U.S. Patent No. 8,092,166 (EX1007)
Nosenchuck Declaration	Declaration of Dr. Daniel M. Nosenchuck (EX1003)
Patent Owner	Dyson Technology Limited
Petitioners	SharkNinja, Inc., SharkNinja Operating LLC, SharkNinja Management LLC, and SharkNinja Sales Company
POSITA	Person[s] of ordinary skill in the art
Saito	Japanese Unexamined Patent Application Pub. No. JP H11-178631 and Certified Translation Thereof (EX1004)
Schepisi	U.S. Patent No. 6,038,782 (EX1006)
Shoemaker	UK Patent Application Pub. No. GB 2,093,526 (EX1009)

MANDATORY NOTICES

A. Real Parties-in-Interest [37 C.F.R. § 42.8(b)(1)]

The real parties-in-interest are Petitioners SharkNinja, Inc., SharkNinja Operating LLC, SharkNinja Management LLC, and SharkNinja Sales Company (collectively, “Petitioners” or “SharkNinja”). Petitioners further identify SharkNinja Midco LLC, SharkNinja Appliance LLC, SharkNinja Appliance UK Holdco Limited, and SharkNinja Global SPV, Ltd. as real-parties-in-interest out of an abundance of caution. No entity not named above is funding, controlling, or directing this Petition, or otherwise has had an opportunity to control or direct this Petition or Petitioners’ participation in any resulting inter partes review (IPR).

B. Related Matters [37 C.F.R. § 42.8(b)(2)]

The ’979 patent is presently the subject of litigation in an action for declaratory judgment brought by the Litigation Petitioners, seeking a declaration of noninfringement of the ’979 patent. *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-11277 (D.Mass. filed June 6, 2023). Defendants and Counter-Plaintiffs Dyson, Inc. and Dyson Technology Limited filed a counterclaim in that case, alleging infringement of the ’979 patent by Petitioners SharkNinja Operating LLC and SharkNinja Sales Company. EX1012, 1, 23–38.

C. Lead and Back-Up Counsel [37 C.F.R. § 42.8(b)(3)]

Pursuant to 37 C.F.R. §§ 42.8(b)(3), 42.8(b)(4), and 42.10(a), Petitioners provide the following designation of counsel:

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A Power of Attorney accompanies this Petition in accordance with 37 C.F.R. § 42.10(b).

D. Service Information [37 C.F.R. § 42.8(b)(4)]

Service via hand delivery or postal mail may be made at the address of the lead and back-up counsel above. Petitioners hereby consent to electronic service, and service by electronic mail may be made at the following email address:

- GDC-SharkNinjaIPRD@gibsondunn.com

I. INTRODUCTION

Pursuant to 35 U.S.C. § 311, Petitioners hereby petition for *inter partes* review of U.S. Patent No. 11,044,979 (EX1001) and seek cancellation of claims 1–32 as unpatentable under 35 U.S.C. § 103.

The claims of the '979 Patent are each directed to a hair styling attachment that has longitudinal slots to create circumferential air flow around the attachment that encourages hair to automatically wrap around the attachment. These claims were rejected repeatedly over the Lindsay reference during the original protracted seven-rejection, eight-amendment prosecution history.¹ The applicant avoided Lindsay only by requiring that the claimed attachment is in part cylindrical. But this Petition demonstrates that making Lindsay cylindrical would be obvious, and is in fact suggested by the Saito reference. Saito—not cited during prosecution—explicitly teaches the benefits of taking a hair styling apparatus like Lindsay and making it flexible so it can operate in a bulging configuration (for bigger curls) or a

¹ The '979 patent includes two claim sets: claims 1-16 recite an attachment; claims 17-32 recite “a hand held appliance” that comprises an attachment. Grounds 1-3 are directed to the attachment claims. Grounds 4 and 5 are the same as Grounds 1 and 2, but in further view of Shoemaker for teaching the “appliance” limitations.

cylindrical configuration (for smaller curls). These teachings are consistent with common sense; it would have been routine and obvious to take a hair styling appliance like Lindsay and make it cylindrical, which is the most ubiquitous shape for hair styling appliances over the last 50 years. Since the cylindrical shape was the only successful basis the patentee had to distinguish over Lindsay, and it would have been obvious to change Lindsay to be cylindrical, there is simply nothing patentable in the Challenged Claims, and they should be cancelled.

Moreover, the concept of creating a circumferential fluid flow that encourages hair to automatically wrap is nothing more than the result of a well-known natural phenomenon, the Coanda effect, which is the tendency of a fluid jet (such as a stream of air) to stay attached to an adjacent surface. This effect is present in all hair dryers and stylers that use blown air that contacts a surface of the tool, and has no patentable weight where, as shown here, the claimed structure that is configured to cause the Coanda effect to occur was already known in the art, specifically in the Saito/Lindsey Modification. Indeed, this Petition demonstrates—through 3D-printed prototypes—that when the teachings of Lindsay and Saito are followed, the resulting hair styling attachment creates precisely the same Coanda effect that encourages hair to wrap around the attachment that is described in the '979 Patent.

As a result, each of the “attachment” Challenged Claims (1–16) of the '979 patent directed is obvious over the combinations of: Saito and Lindsey (Ground 1,

claims 1–9 and 12–14); Saito, Lindsey, and Schepisi (Ground 2, claims 10 and 11); or Saito, Lindsey, and Nicolas (Ground 3, claims 15 and 16). Likewise, the “hand held appliance” claims (17–32) are obvious over the same combinations in Grounds 1 and 2, in further view of the Shoemaker reference (Grounds 4 and 5). Accordingly, Petitioners respectfully request the cancellation of the Challenged Claims.

II. REQUIREMENTS OF *INTER PARTES* REVIEW

A. Standing

Pursuant to 37 C.F.R. § 42.104(a), Petitioners certify that the ’979 patent is available for IPR and that Petitioners are not barred or estopped from requesting an IPR on the grounds identified herein.

B. Identification of Challenge and Relief Requested

Pursuant to 37 C.F.R. § 42.104(b), Petitioners request that the Board institute IPR of claims 1–32 of the ’979 patent under AIA 35 U.S.C. § 103.

The ’979 patent issued from an application filed March 12, 2015, and claims foreign priority to a pair of Great Britain applications, both filed March 20, 2014. For purposes of this Petition only, Petitioners do not dispute that the Challenged Claims are entitled to an effective filing date of March 20, 2014.

The precise relief requested by Petitioners is that claims 1–32 be canceled based on the grounds below:

Ground	Claims	Basis for Rejection²
1	1–9 and 12–14	Obviousness over Saito in view of Lindsey
2	10 and 11	Obviousness over Saito in view of Lindsey and Schepisi
3	15 and 16	Obviousness over Saito in view of Lindsey and Nicolas
4	17–25, 27, and 29–32	Obviousness over Saito in view of Lindsey and Shoemaker
5	26 and 28	Obviousness over Saito in view of Lindsey, Schepisi, and Shoemaker

The above challenges are made in view of the following prior art references:

1. Japanese Unexamined Patent Application Pub. No. JP H11-178631 (“Saito”) (EX1004)

Japanese Unexamined Patent Application Pub. No. JP H11-178631 (“Saito”), titled “Hair Winding Tool,” was published on July 13, 1979 from an application filed on December 23, 1977. Saito therefore qualifies as prior art under AIA 35 U.S.C. § 102(a)(1). Saito was not considered during prosecution of the ’979 patent. The original Japanese language version of Saito and a certified English translation thereof are attached as Exhibit 1004, pursuant to 37 C.F.R. § 42.63(b).

² All obviousness grounds include the knowledge of POSITA.

2. U.S. Patent No. 5,868,148 (“Lindsey”) (EX1005)

U.S. Patent No. 5,868,148 (“Lindsey”), titled “Hair Styler,” issued on February 9, 1999 from an application filed on June 9, 1998. Lindsey therefore qualifies as prior art under AIA 35 U.S.C. § 102(a)(1). During prosecution of the ’979 patent, the Examiner rejected the independent claims four times as anticipated by Lindsey. EX1002, 735–48(Feb. 14, 2017 Non-Final Rejection), 1027–39 (Aug. 9, 2017 Final Rejection), 1155–65 (Jan. 10, 2018 Non-Final Rejection), 1297–309 (June 27, 2018 Final Rejection). Those rejections were finally overcome only when the applicant added the “cylindrical” requirement to the claims. *Id.*, 1331–35, 1346–47. In this Petition, Lindsey is presented in combination with Saito, which was not considered during prosecution of the ’979 patent.

3. UK Patent Application Pub. No. 2,093,526 (“Shoemaker”) (EX1009)

UK Patent Application No. 2,093,526 (“Shoemaker”), titled “Hand Held Air Dryers,” was published on September 2, 1982 from an application filed July 17, 1978. Shoemaker therefore qualifies as prior art under AIA 35 U.S.C. § 102(a)(1). Shoemaker was not considered during prosecution of the ’979 patent.

4. U.S. Patent No. 6,038,782 (“Schepisi”) (EX1006)

U.S. Patent No. 6,038,782 (“Schepisi”), titled “Blow Dryer Having Airflow Control Means,” issued on March 21, 2000 from an application filed on February 2, 1998. Schepisi therefore qualifies as prior art under AIA 35 U.S.C. § 102(a)(1).

Schepisi is cited on the face of the '979 patent, but was neither cited nor applied in any substantive action by the Examiner.

5. U.S. Patent No. 8,092,166 (“Nicolas”) (EX1007)

U.S. Patent No. 8,092,166 (“Nicolas”), titled “Fan,” issued on January 10, 2012 from an application filed on November 20, 2009. Nicolas therefore qualifies as prior art under AIA 35 U.S.C. § 102(a)(1). Because Nicolas published more than one year prior to the effective filing date of the '979 patent (March 20, 2014), the exceptions listed in AIA 35 U.S.C. 102(b)(1) do not apply. Nicolas is assigned to Patent Owner, Dyson Technology Limited. Nicolas is cited on the face of the '979 patent, but was neither cited nor applied in any substantive action by the Examiner.

C. How the Challenged Claims Are To Be Construed Under 37 C.F.R. § 42.104(b)(3)

A claim subject to IPR shall be construed using the same standard as in a civil action. 37 C.F.R. § 42.100(b). The Board need only construe terms “to the extent necessary to resolve the controversy.” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Patent Owner and the Litigation Petitioners have submitted proposed constructions for the Challenged Claims in *SharkNinja Operating LLC v. Dyson, Inc.*, No. 1:23-cv-11277-ADB (D. Mass.) (“the Litigation”). Petitioners base this Petition on constructions that Patent Owner advanced in the Litigation (that no construction is necessary. EX1013), the Petition does not present any controversy over claim meaning, and the Board need

not construe any terms. *Nidec*, 868 F.3d at 1017. Petitioners also submit that the claims are invalid under any reasonable construction, including Patent Owner’s proposed alternative constructions, as well as the constructions advanced by the Litigation Petitioners.

Although the Litigation Petitioners maintain that their proposed constructions should be adopted in the Litigation, that fact poses no obstacle to institution. A Petitioner need only identify “[h]ow the challenged claim is to be construed” for purposes of the petition—the Petitioner need not agree that the construction is correct. *10X Genomics, Inc. v. Bio-Rad Labs., Inc.*, IPR2020-00086, Paper 8 at 17–22 (PTAB Apr. 27, 2020). Regarding the terms that the Litigation Petitioners contend are indefinite in the district court, for purposes of this proceeding, Petitioners are applying what Patent Owner contends to be the plain and ordinary meaning of the term at the effective filing date of the ’979 patent. *10X Genomics*,

Inc. v. Bio-Rad Labs., Inc., IPR2020-00086, Paper 8 at 17–22 (PTAB Apr. 27, 2020).³

D. How the Challenged Claims Are Unpatentable Under 37 C.F.R. § 42.104(b)(4)

An explanation of how the Challenged Claims are unpatentable under the statutory grounds identified above, including the identification of where each element of the claim is found in the prior art patents or printed publications, is provided below.

E. Supporting Evidence Under 37 C.F.R. §42.104(b)(5)

The exhibit numbers of the supporting evidence relied upon and the relevance of the evidence to the challenged claims, including an identification of specific portions of the evidence that support the challenge, are provided below. A list of exhibits is also included in this petition pursuant to 37 C.F.R. § 42.63(e). The technical information and grounds for rejection explained in the Petition are further supported by the Declaration of Dr. Daniel M. Nosenchuck (EX1003).

³ The question of indefiniteness is not before the Board and is no barrier to the Board's inquiry. *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 813 (Fed. Cir. 2021); *Haas Automation, Inc. v. Olati LLC*, IPR2021-00146, Paper 11 at 11–13 (PTAB May 18, 2021) (instituting IPR notwithstanding Petitioner's position that claim term was subject to pre-AIA § 112, ¶ 6 and indefinite).

F. Payment of Fees

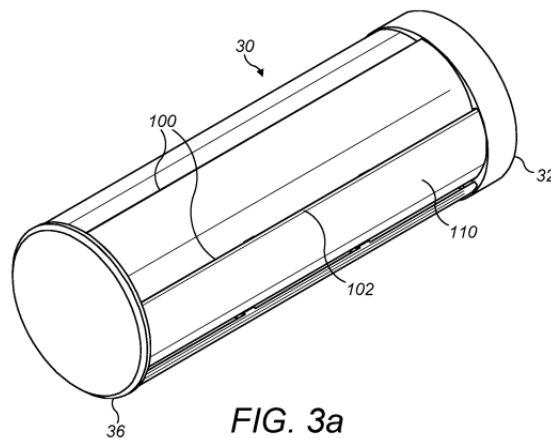
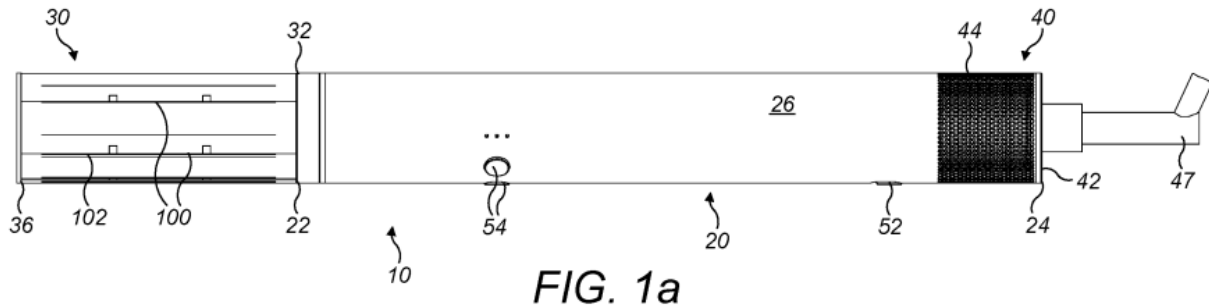
Pursuant to 37 C.F.R. §§ 42.103 and 42.15(a), the required fee is being submitted herewith. The Office is authorized to charge any fee deficiency, or credit overpayment, to Deposit Account 50-1408, including additional fees due in connection with this Petition.

III. TECHNICAL BACKGROUND

A. State of the Art

1. Hot Styling Brushes

The '979 patent “relates to an attachment for a hand held appliance, in particular a hair care appliance such as a hot styling brush.” EX1001, 1:13–15. Figure 1*a* “shows a hot styling brush 10 with a handle 20 and a detachable head or attachment 30,” and Figure 3*a* shows an isometric view of an attachment 30:



EX1001, Figs. 1a, 3a. In its “Background of the Invention,” the ’979 patent explains that, “[i]n a conventional hot styling brush, air is sucked into an inlet by a fan unit and directed towards the hair by an attachment or head,” and “[t]he head or attachment often includes bristles onto which hair is wrapped and held for styling.” *Id.*, 1:19–25.

When the ’979 patent was filed, hot styling brushes with detachable heads had been available for nearly half a century. EX1003, ¶45. One commercially-available example from 1975 is the Clariol Pretty Power hairbrush styling dryer:



Id., ¶46. The Clairol Pretty Power included five styling attachments, including one with elongated slots, to be used with its dual-fan, hand held dryer. *Id.* By the 1990s and early 2000s, commercially available hot air stylers having cylindrical attachments were commonplace. *Id.*, ¶47. For example, the Conair Aircare 2-in-1 Hot Air Styler, available in 2008, featured two detachable cylindrical brush heads:

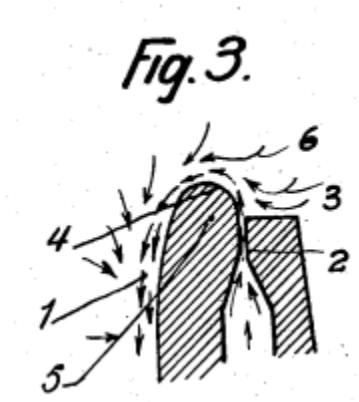


Id., ¶47.

2. Coanda Effect

The '979 patent explains that the fluid (*i.e.*, air) exiting the slots of its attachment/head “is attracted to the curved surface of the head 30 by the Coanda effect.” EX1001, 7:16–17. According to the patent, “[t]his in turn causes hair that is presented to the head 30 to automatically wrap around the surface and then styled into curls.” *Id.*, 7:17–19.

The Coanda effect—a natural phenomenon—is the tendency of a fluid jet to stay attached to an adjacent flat or curved surface. The effect was initially described in a 1936 patent issued to its namesake, Henri Coanda, which claimed a structure including “a slot-shaped passage” for utilizing the effect, and a later 1966 patent to Coanda referred to such as a “Coanda slot.” *E.g.*, EX1010, cl. 4; EX1011, 2:7–18.



EX1010, Fig. 3. The Coanda effect has applications in a variety of fields, including aircraft, air conditioning, vacuum cleaners, and fans. EX1003, ¶¶49–63. For example, the Coanda effect has been used in aircraft design since the mid-1950s and is still in use today. EX1008, 2.

Moreover, explicit use of the Coanda effect in hair care appliances was known and published prior to the effective filing date (March 20, 2014) of the '979 patent. EX1003, ¶¶50–54. For example, U.S. Patent Application Publication No. 2013/0111777 (“Jeong”) published on May 9, 2013, and discloses a “hair dryer” having a “discharge nozzle” with a “[C]oanda surface” disposed thereon. EX1026, Abstract. Jeong explains that “the air passing through the housing flows along the

[C]oanda surface to suction air outside the discharge nozzle into a central passage part of the discharge nozzle.” *Id.* and [0009] (“An object of the present invention is to provide a hair dryer in which an amount of air current generated by a fan . . . is increased by a [C]oanda effect to transfer a relatively large amount of air current into user’s hair.”). Likewise, international publication WO 2014/006365 (“Courtney”), assigned to Patent Owner Dyson Technology Limited, published on January 9, 2014 and discloses a hair dryer that “achieves the output and cooling effect described above with a nozzle which includes a Coanda surface to provide an amplifying region utilising the Coanda effect.” EX1014, 22:30–23:1. Courtney explains that a “Coanda surface is a known type of surface over which fluid flow exiting an output orifice close to the surface exhibits the Coanda effect,” and that “[t]he fluid tends to flow over the surface closely, almost ‘clinging to’ or ‘hugging’ the surface.” *Id.*, 23:1–3. Further, Courtney notes that “[t]he Coanda effect is already a proven, well documented method of entrainment whereby a primary air flow is directed over the Coanda surface,” and cites an article found in the June 1963 issue of *Scientific American*. *Id.*, 23:3–7. Another example, international publication WO 2011/131965 (“Tweedie”), also assigned to Patent Owner, published on Oct. 27, 2011, and discloses “[a]n air treating appliance, such as . . . a hairdryer” having an air outlet that “comprises a Coanda surface” and a “diffuser surface” that is “located downstream of the Coanda surface.” EX1015, 1, 17.

B. Summary of the Alleged Invention

The Challenged Claims are directed to a specific structure for “an attachment for a hand held appliance, in particular a hair care appliance such as a hot styling brush.” EX1001, 1:13–15. During prosecution, the independent claims were ultimately allowed after Patent Owner accepted an Examiner’s Amendment that to require “an outlet in a cylindrical second portion of the attachment” that “comprises at least one slot *extending continuously from the proximal first portion to a distal end of the attachment.*”⁴ However, this supposedly patentably distinguishing feature was taught in the art presented in the grounds of this Petition.

C. Prosecution History

The application that issued as the ’979 patent—Application No. 14/656,357 (“the ’357 application”)—was filed March 12, 2015 and purports to claim priority from GB Application No. 1404982.9 and 1404985.2, both filed on March 20, 2014. EX1002, 3–8. Applicant progressively narrowed the claims of the ’357 application during the course of the prosecution to recite a specific structure that was nonetheless known in the field, and therefore obvious, as demonstrated in this Petition.

Originally-filed claims 1–16 (drawn to an attachment to a hand held appliance) were rejected as anticipated by Lindsey (U.S. Pat. No. 5,868,148) or

⁴ All emphasis added unless otherwise noted.

McDougall (U.S. Pat. No. 5,212,366) and as obvious over Lindsey in combination with Tomaro (U.S. Pat. No. 4,295,283). *Id.*, 735–48. In response, Applicant amended the claims to require that the outlet of the attachment “is configured to direct fluid flow emitted from the outlet along and” around the external surface of the attachment. *Id.*, 912–22.

The Examiner again rejected the claims as anticipated by Lindsey or McDougall and as obvious over Lindsey and Tomaro. In response to Applicant’s argument that “this ‘Coanda’ effect is merely caused by the airflow being somewhat tangential to the surface of the attachment,” the Examiner noted that “the airflow of McDougall and Lindsey are able to emit air tangentially to the surface of their attachments,” and thus Lindsey and McDougall anticipated the claim limitation. Because “it has been held by the courts that where a prior art apparatus is identical or substantially identical in structure, claimed properties or functional characteristics are presumed to be inherent,” and because Lindsey and McDougall were substantially identical in structure to the claimed attachment, the Examiner found that each reference disclosed all of the properties or functional characteristics claimed. *Id.*, 1028–39.

The Examiner rejected the claims twice more over the Lindsey and McDougall references despite two amendments filed by Applicant. *Id.*, 1155–65,

1297–1309. Applicant then amended the claims to recite the “cylindrical” structure of the attachment to overcome Lindsay. *Id.*, 1331–35, 1346–47.

After further rejections based on different art, Applicant amended the claims to require the outlet to be configured to “direct fluid flow emitted from the outlet tangentially along and around the external surface of the wall to form a circumferential fluid flow around the cylindrical second portion of the attachment that encourages hair to automatically wrap around the cylindrical second portion,” *id.*, 1741–53, and that the wall of the attachment that partially defined the outlet is “substantially contiguous” and the distal end of the attachment is “closed.” *Id.*, 1833–41.

When Applicant appealed, the Examiner issued a notice of allowance along with an Examiner’s Amendment that required the outlet comprise at least one slot extending “continuously from the proximal first portion to a distal” end of the attachment and that the external surface of the substantially contiguous wall is an outermost surface of the attachment along “an entire length” of the attachment. *Id.*, 1941–58. The ’979 patent issued on June 29, 2021. *Id.*, 1998.

D. Person of Ordinary Skill in the Art

The ’979 patent relates to an attachment for a hand held appliance, in particular a hair care appliance such as a hot styling brush or hairdryer. EX1001, Abstract, 1:13–15, 10:56–59. POSITA in the field on or around March 20, 2014

would have had a Bachelor's degree or comparable technical degree in Industrial Design or Mechanical Engineering or equivalent work experience, and at least one year's worth of experience in research, design and/or development related to appliances for moving air such as hair dryers (or other comparable industrial design). Additional education could substitute for experience, and vice versa. EX1003, ¶¶17–19.

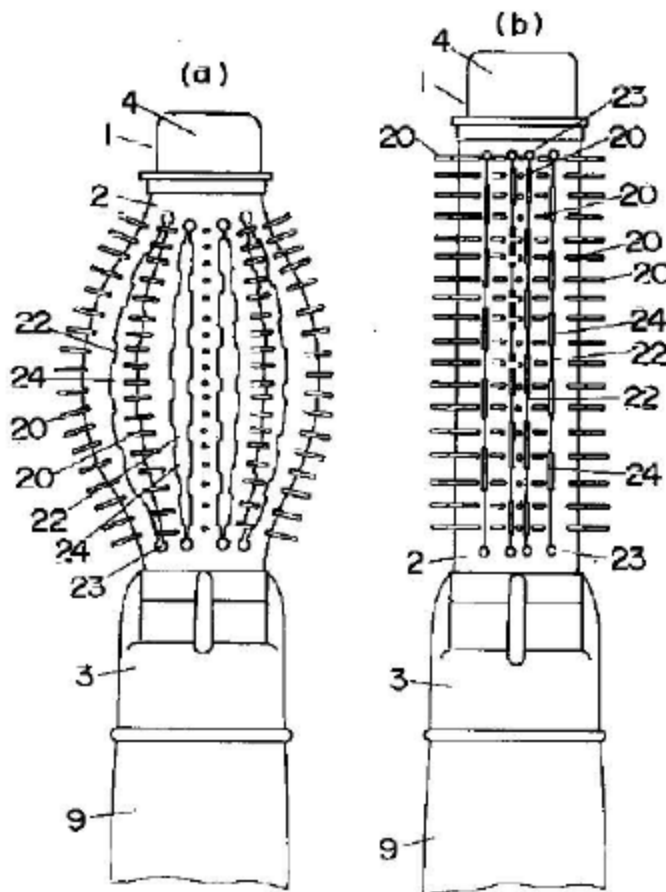
IV. GROUNDS OF UNPATENTABILITY

A. Ground 1: Obviousness over Saito in view of Lindsey

1. Summary of Saito

Saito discloses “a hair dryer with an attached brush” that comprises “a bristle base” that “is connected to a blowing port of a hair dryer body and air or steam is blown out from the hair dryer body via discharge ports formed in the bristle base of the brush”:

(Figure 5)



EX1004, (0005), Fig. 5. Specifically, the Saito brush attachment (*i.e.*, “brush 1”) “is mounted onto the hair dryer body 9 by covering a portion of a blowing port of the hair dryer body 9 with the brush base 3 of the brush 1.” *Id.*, (0013). Air or steam that is “discharged from the hair dryer body 9 enters a space between an outer surface of the tube 34 and an inner surface of the bristle base 2 from the airflow channel 39 within the tube . . . and is discharged to the outside from discharge ports 24.” *Id.*

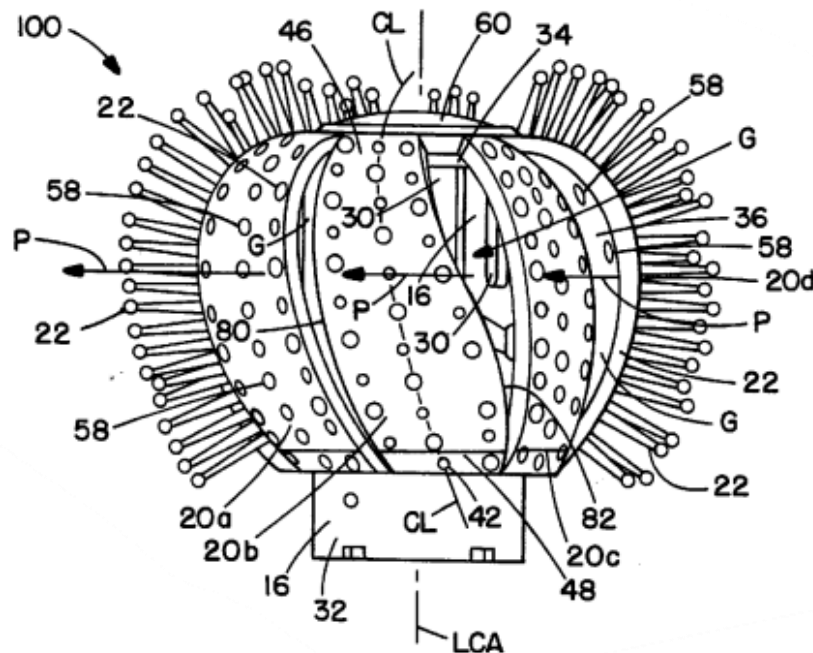
Notably, the bristle base 2 “is formed from a material with flexibility, such as a polyester elastomer or polypropylene” in a “cylindrical shape,” and “when the

bristle base 2 is compressed in the axial direction by a change in the distance between the brush bases 3, 4, the bristle base 2 flexes so that the middle thereof in the axial direction bulges outward, as shown in Figure 5(a).” *Id.*, (0017). Accordingly, and as shown in Figure 5(b), an axial cross section of the brush “can be made to form a circular arc, not a simple cylindrical shape.” *Id.*, (0018).

2. Summary of Lindsey

Lindsey discloses “a hair styler which is attachable to an air blower, for example, to a hand-held hot air hair blower such as a hair dryer”:

FIG. II.

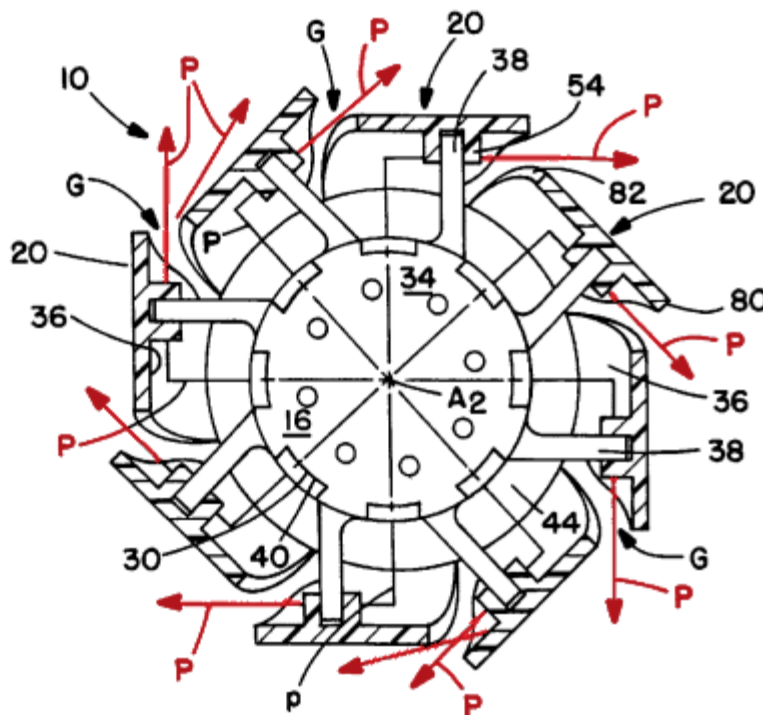


EX1005, 2:37–39, Fig. 11. One object of the Lindsey invention is to provide a “hair styler having a turbinate design comprised of an array of vanes angularly disposed about the axis of air flow through, or about the central axis of, the internal chamber

of the hair styler.” *Id.*, 3:10–14. Specifically, the vanes “are disposed in a turbinate arrangement about central axis CA of internal chamber 26, in the paths of the air exiting internal chamber 26, through vents 28, 30, in flow paths p which are approximately transverse or perpendicular to central axis CA of internal chamber 26.” *Id.*, 5:55–60. Further, “[t]he air impinging on interior surfaces 36 of vanes 20 in plural flow paths which are approximately transverse or perpendicular to, and manifest different angular or tangential directions about central axis CA of internal chamber 26.” *Id.*, 5:60–65. Like Saito’s bristle base, Lindsey’s vanes are described as being formed from a flexible material. EX1005, 10:13–19 (“[T]he preferred material for the preferred embodiments of the vanes described herein is an elastomeric material, such as the thermal plastic elastomer (TPE).”).

The vanes “are spaced from one another and have gaps G therebetween, which allow Some of the air exiting vents 28, 30 to be discharged through spaces or gaps G.” *Id.*, 5:65–67. Figure 9 illustrates “**plural flow paths P** which are approximately transverse or perpendicular to central axis CA of core internal chamber 26, [and] manifest in different angular directions entirely about central axis CA”:

FIG. 9.



Id., 8:13–16, Fig. 9.⁵

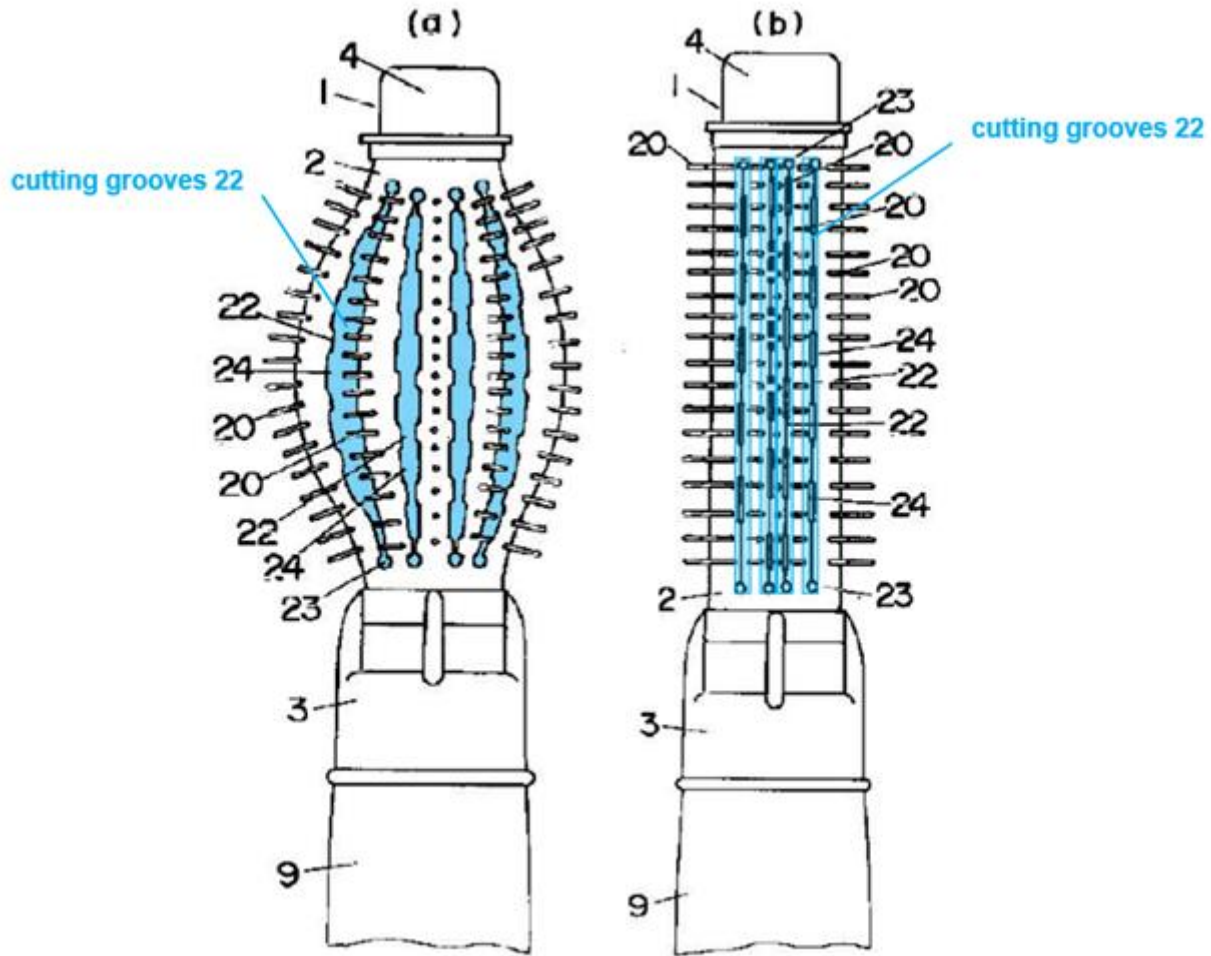
3. Motivation to Combine Saito and Lindsey and Reasonable Expectation of Success

It would have been obvious to a POSITA to use an array of vanes, as taught by Lindsey, to comprise Saito's bristle base to provide the tangential air flow resulting from the turbinate arrangement of the vanes. EX1003, ¶¶65–72, 82–94. Specifically, it would have been obvious to a POSITA to substitute individual turbinate vanes, as instructed by Lindsey, to form Saito's bristle base rather than Saito's one-piece construction that includes cutting grooves. This modification

⁵ All annotations and coloring have been added unless otherwise noted.

would have provided the enhanced tangential airflow from the use of an array of turbinate vanes, while retaining the ability of the Saito attachment to be changed between a cylindrical and bulbous shape by changing the distance between the brush bases. *Id.*, ¶89.

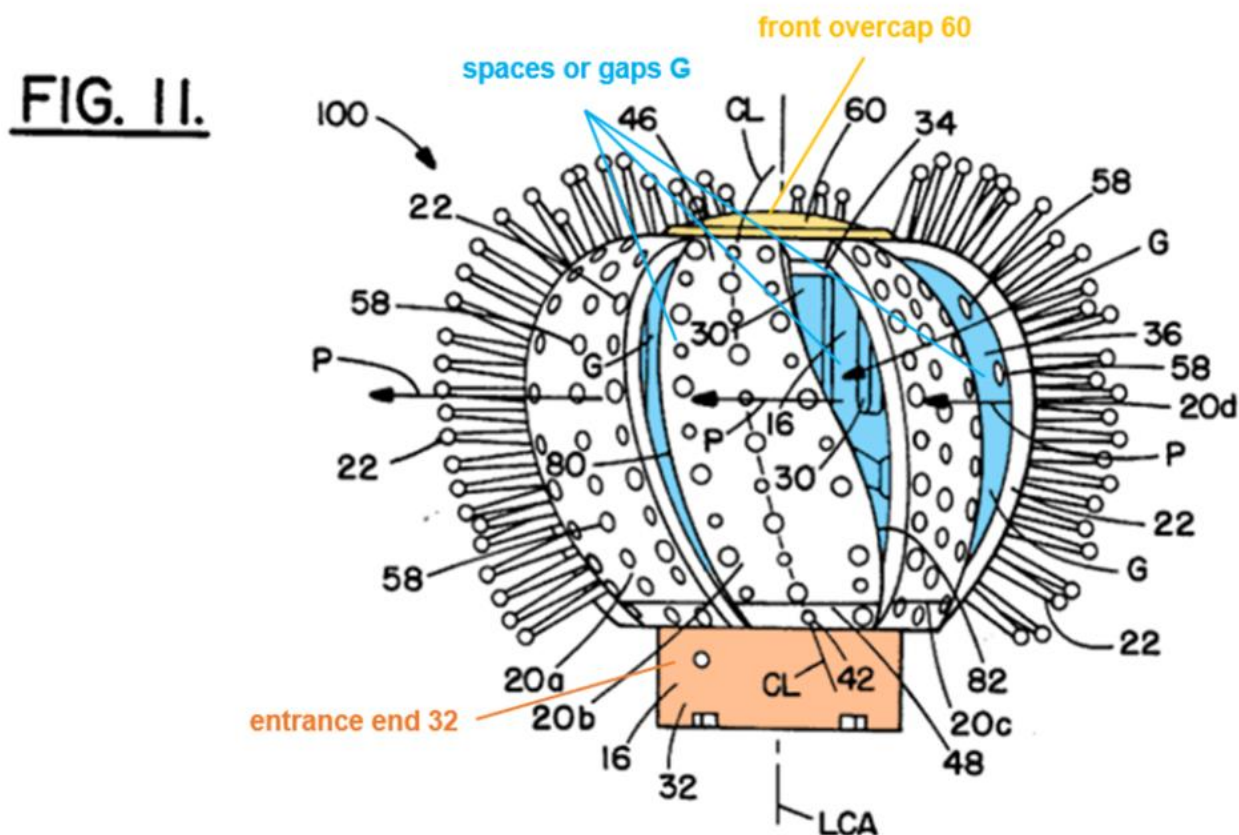
Saito discloses that “numerous discharge ports 24 are provided in the surface of the bristle base 2 that open between rows of the bristles 20.” EX1004, (0012). Further, the bristle base 2 “is formed in a cylindrical shape,” and is cylindrically shaped when “the distance between the brush bases 3, 4” is maximized, *i.e.*, when the bristle base 2 is fully extended. *Id.*, (0017)–(0018). Saito further explains that, as shown in Figure 5, the bristle base 2 “is provided with a plurality of cutting grooves 22” (*i.e.*, “at least one slot” as claimed), “that run in an axial direction thereof at equal intervals in a circumferential direction”:



Id., (0017), Figs. 5(a)–(b). Moreover, “the intervals between the cutting groove 22 portions widen” when the distance between the brush bases 3 and 4 is compressed in the axial direction, which is depicted in Figure 5(a). *Id.*, (0017); EX1003, ¶84. And, “when the bristle base 2 is made to bulge, the intervals between the cutting grooves 22 widens so that the hot air or steam is discharged not only from the discharge ports 24, but also from portions of the cutting grooves.” EX1004, (0019).

Lindsay’s “vanes 20 are elongated and, when viewed from their exterior, they are disposed generally longitudinally along and generally parallel to longitudinal

central axis LCA of hair styler 100.” EX1005, 8:29–32. The arrangement of the vanes “provide spaces or gaps G” that are formed “between side edges 80, 82 of mounted adjacent vanes”:



Id., 8:47–49, Fig. 11.

Both Saito and Lindsey generally describe hair styling attachments for hair driers having similar structures. EX1003, ¶89. Both attachments are described as using flexible materials. Saito’s bristle base 2 “is formed from a material with flexibility, such as a polyester elastomer or polypropylene” in a “cylindrical shape.” EX1004, (0017). Similarly, “the preferred material for the preferred embodiments

of [Lindsey’s] vanes described herein is an elastomeric material, such as the thermal plastic elastomer (TPE).” EX1005, 10:13–19.

A POSITA would have been motivated to combine Saito’s brush attachment with Lindsey’s teaching of an array of vanes, disposed in a turbinate arrangement, to generate a spinning airflow to provide increased lift and volume to the hair. EX1003, ¶¶90–94. Saito discloses a cylindrical attachment for a hair dryer that has slot-shaped outlets which discharge hot air or steam in an outwardly radial direction from the center of the attachment. Lindsey discloses an attachment for a hair dryer that has slot-shaped outlets formed from its vanes which discharge hot air in flow paths that are transverse or perpendicular to the central axis of the attachment. *Id.* It would have been obvious to a POSITA at the time of filing of the ’979 patent that incorporation of vanes, as taught by Lindsey, would have improved Saito’s hair styling attachment by changing the air flow paths from an outwardly radial direction to transverse or perpendicular (*i.e.*, tangential) to create a spinning/rotational flow. *Id.*, ¶90.

Lindsey describes “the discharge of air from the hair styler in plural flow paths P which are substantially transverse or perpendicular to central axis CA of the internal chamber, and which manifest in different angular directions about such axis” as a “main feature[]” of the hair styler. EX1005, 10:20–27. Likewise, Lindsey explains that “[a]nother main feature of the invention is that the air discharged from

one vane is directed over, preferably at shallow angles over, and through the prongs on the outer surface of an adjacent vane to thereby provide above-mentioned advantages of air flow along, rather than perpendicular to the lie of hair strands among the prongs.” *Id.*, 10:28–33. And, Lindsey teaches that “due to the preferred longitudinally concave shape of the vanes, air is discharged in a spinning, turbulent manner from a central portion of the concavely shaped elongated vanes, to thereby render the hair styler capable of providing additional lift and volume to hair.” *Id.*, 10:33–37. It would have been obvious to a POSITA that incorporating an array of vanes in Saito’s attachment in the same manner as taught by Lindsey would achieve Lindsey’s goal of “providing additional lift and volume to hair” as a result of the spinning air flow. EX1003, ¶¶91–92.

A POSITA would have been motivated to combine Saito’s brush attachment with individual vanes, as taught by Lindsey, to overcome the shortcomings of existing hair brush attachments that are explicitly identified in Lindsey (and are present in Saito). *Id.*, ¶¶93–94. Lindsey explains that “such attachment hair brushes have had the shortcoming that the air discharged through the holes in their cylindrical wall flows in paths which are radial and perpendicular to the axis of flow from the hair blower and to the axis of flow through the attachment device,” which “can result in an inefficient or limited use of the discharged air.” EX1005, 1:45–50. Further, Lindsey indicates that “when hair strands are wrapped around the [existing]

cylindrical attachment, much of the air so discharged through the holes of the attachment strikes the hair strands perpendicularly to their lie and in limited areas, and passes between the strands into the atmosphere,” which “tends to cause fly-aways, i.e., hair strands which are driven by the air flow to depart from or fly away from the cylindrical brush.” *Id.*, 1:50–57. And, “since most of the air exits the device in radial paths which are perpendicular to the axis of flow through the cylinder, their capability of styling the hair in a variety of waves, flips and shapes and of providing increased lift and volume to the hair is limited.” *Id.*, 1:62–67.

A POSITA would have had a reasonable expectation of success in incorporating an array of vanes in Saito’s hair styling attachment, in the same manner as taught by Lindsey, because both Saito and Lindsey generally describe hair styling attachments for hair dryers that have similar structures and fluid flow paths. EX1003, ¶89. Thus, modifying Saito’s bristle base 2 to be constructed using vanes to provide for tangential air flow around the central axis of the attachment, as taught by Lindsey, would have been nothing more than a predictable use of a prior art element according to its established function. *KSR Int’l Corp. v. Teleflex, Inc.*, 550 U.S. 398, 417 (2007).

Further, both Saito and Lindsey teach the use of flexible materials for forming the bristle base (Saito) and the vanes (Lindsey). EX1003, ¶89. Thus, the combination of Saito and Lindsey with respect to the use of Lindsey’s vanes would

have been nothing more than the use of a known technique (Lindsey’s vanes) to improve similar devices (Saito’s hair styling attachment) in the same way to yield predictable results (spinning airflow to provide increased lift and volume to the hair). *Id.*, ¶90. Using vanes to form Saito’s bristle base would have been obvious, since such a modification of Saito is simply a rearrangement of existing parts that does not generate “a novel or unexpected result.” *In re Kuhle*, 526 F.2d 553, 554 (CCPA 1975) (holding that the particular placement of a contact in a conductivity measuring device was an obvious matter of design choice); EX1003, ¶90.

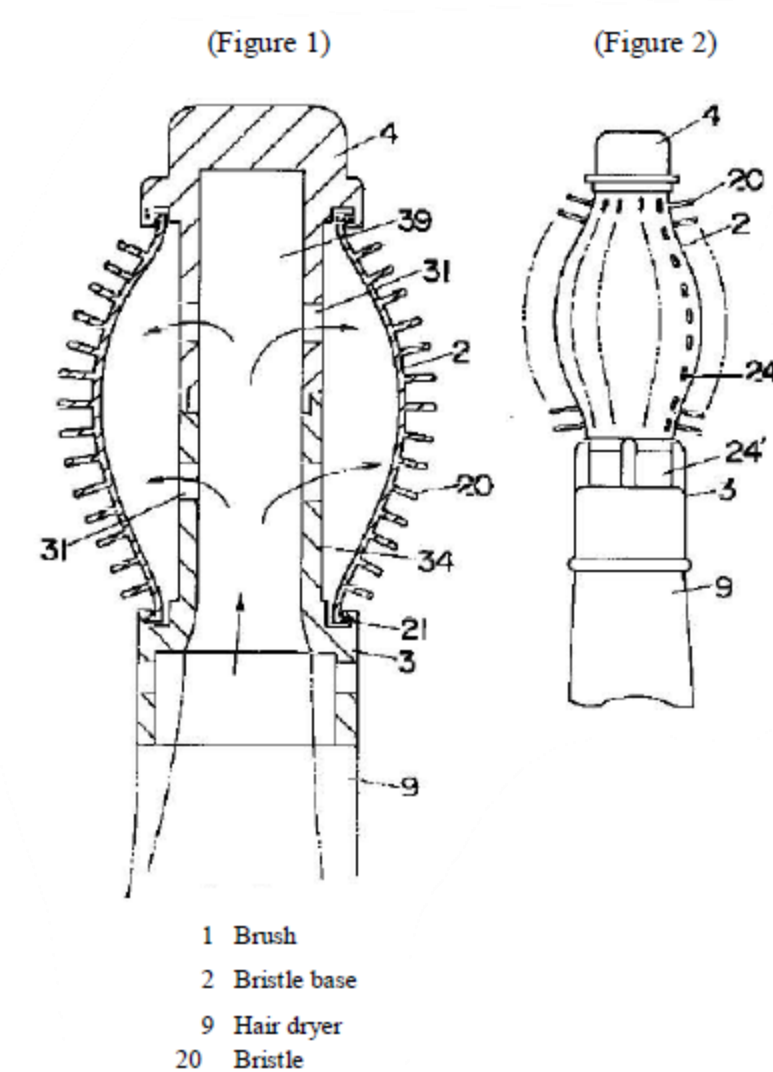
4. Detailed Analysis of Ground 1

The modification of Saito in view of the teachings of Lindsey (“Saito/Lindsey Modification”) renders claims 1–3, 5, 8, 9, and 12–15 of the ’979 patent obvious.

a. Independent Claim 1

1) [1pre] “An attachment for a hand held appliance comprising”

If preamble of claim 1 is limiting, the Saito/Lindsey Modification renders this limitation obvious. EX1003, ¶¶96–99. Saito discloses a “hair dryer” (*i.e.*, a “hand held appliance”). EX1004, Abstract. The “hair dryer,” which is depicted in Figures 1 and 2, “comprises a hair dryer body 9, into which is built a hot air blowing device or a steam generation device, and a brush 1 that is detachably mounted on a blowing port portion of this hair dryer body 9.” *Id.*, (0011).

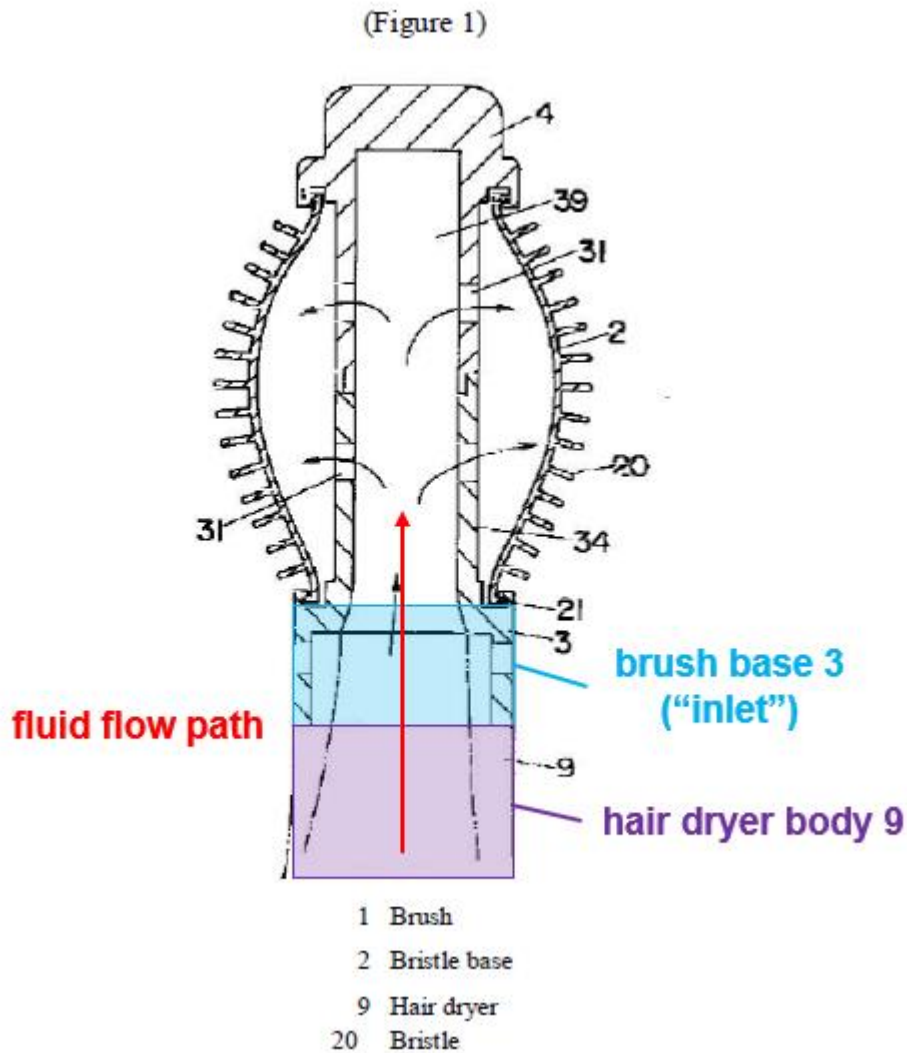


Id., Figs. 1 & 2. Specifically, Saito discloses “a hair dryer with an *attached brush*” (i.e., “an attachment”) that comprises “a bristle base” that “is connected to a blowing port of a hair dryer body and air or steam is blown out from the hair dryer body via discharge ports formed in the bristle base of the brush.” EX1004, (0005). Accordingly, Saito teaches “an attachment for a hand held appliance.” EX1003, ¶99. The substitution of Saito’s bristle base with Lindsey’s vanes would likewise result

in “an attachment.” Thus, this limitation is obvious over the combination of Saito and Lindsey. *Id.*

2) [1a] “an inlet in a proximal first portion of the attachment;”

The Saito/Lindsey Modification renders this limitation obvious. EX1003, ¶¶100–03. Saito’s attachment (element [1pre]) has a “brush base 3” that attaches to the hair dryer, which is therefore a “proximal first portion of the attachment.” *Id.*, ¶101. Moreover, the “brush base 3” comprises an “inlet” into the attachment, as it receives “air or steam discharged” from the hair dryer. *Id.*, ¶102. Saito’s attachment is “a brush 1 that is detachably mounted on a blowing port portion of [a] hair dryer body 9.” EX1004, (0011). Saito explains that “[t]his brush 1 is mounted onto the hair dryer body 9 by covering a portion of a blowing port of the hair dryer body 9 with the brush base 3 of the brush 1.” *Id.*, (0013). Further, “air or steam discharged from the hair dryer body 9 enters a space between an outer surface of the tube 34 and an inner surface of the bristle base 2 from the airflow channel 39 within the tube 34 via openings 31 provided in the tube 34.” *Id.*



EX1004, Fig. 1 (annotations added). Accordingly, Saito teaches “an inlet in a proximal first portion of the attachment.” EX1003, ¶102. The substitution of Saito’s bristle base with Lindsey’s vanes would not affect the structure or function of Saito’s brush base 3. Thus, this limitation is obvious over the combination of Saito and Lindsey. *Id.*, ¶103.

3) [1b] “an outlet in a cylindrical second portion of the attachment; and”

The Saito/Lindsey Modification renders this limitation obvious. EX1003, ¶¶104–08. Saito discloses a cylindrical second portion (bristle base 2) that has an outlet. Specifically, Saito’s bristle base 2 “is formed from a material with flexibility” in a “cylindrical shape.” EX1004, (0017). Saito’s bristle base is cylindrically shaped when “the distance between the brush bases 3, 4” is maximized, *i.e.*, when the bristle base 2 is fully extended, and can also be “compressed in the axial direction by a change in the distance between the brush bases 3, 4” such that “the bristle base 2 flexes so that the middle thereof in the axial direction bulges outward.” *Id.*, (0017)–(0018). Accordingly, Saito teaches a cylindrical attachment. EX1003, ¶¶105–06. As shown by the model that approximates the combination of Saito and Lindsey, modifying Saito to use an array of vanes as taught by Lindsey, in place of Saito’s bristle base, would have likewise resulted in a cylindrical attachment (as taught by Saito) with outlets formed between the adjacent vanes (as taught by Lindsey).

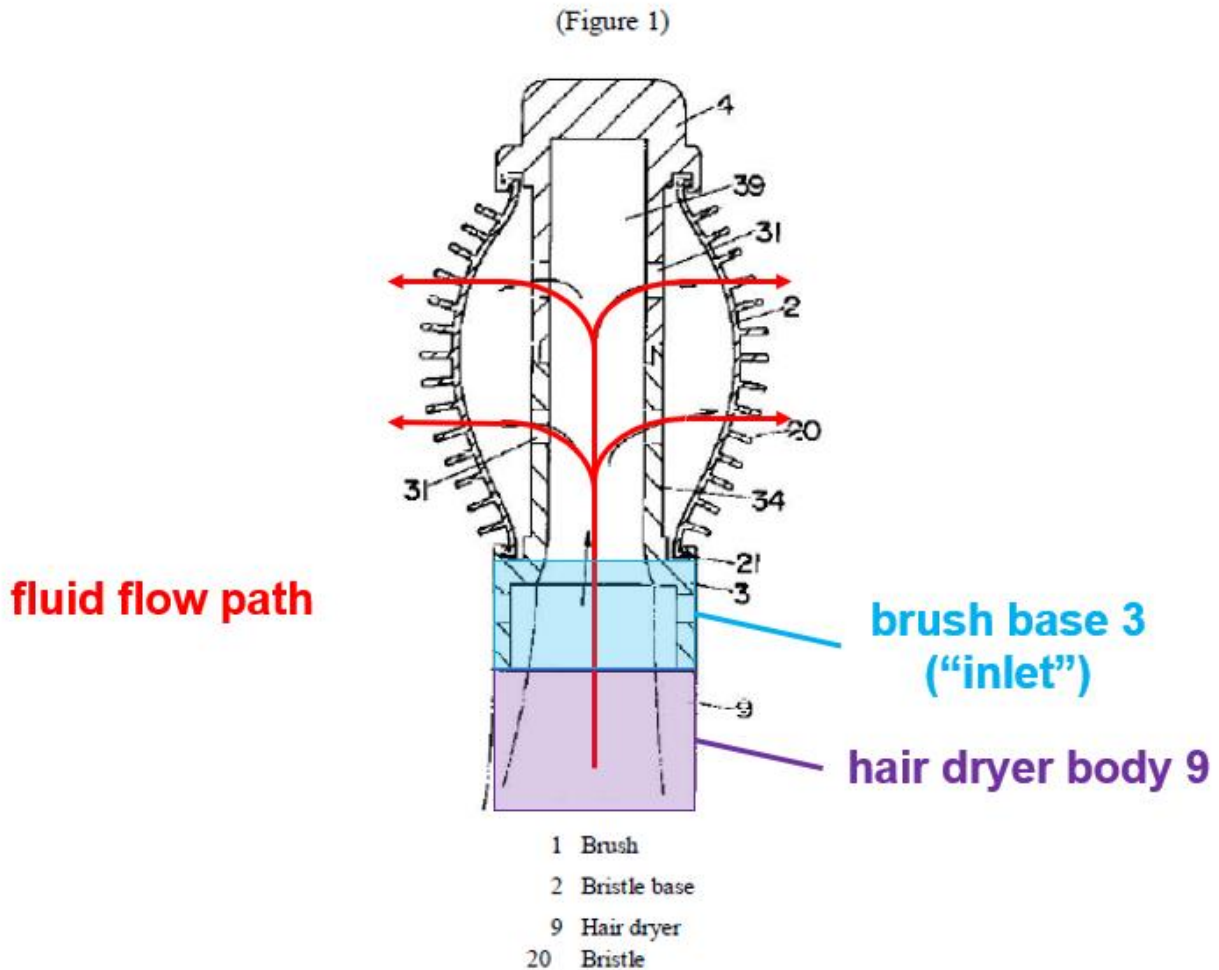


Id., ¶107. Thus, this limitation is obvious over the combination of Saito and Lindsey.

Id., ¶108.

4) [1c] “a fluid flow path between the inlet and the outlet,”

The Saito/Lindsey Modification renders this limitation obvious. EX1003, ¶¶109–12. Saito explains that fluid (*i.e.*, air) flows in a path from the inlet in brush base 3, into the brush base 2, and out through the outlets in bristle base 2. Saito teaches that the brush 1 “is mounted onto the hair dryer body 9 by covering a portion of a blowing port of the hair dryer body 9 with the brush base 3 of the brush 1.” EX1004, (0013). Further, when “air or steam [is] discharged from the hair dryer body 9,” the air or steam “enters a space between an outer surface of the tube 34 and an inner surface of the bristle base 2 from the airflow channel 39 within the tube 34 via openings 31 provided in the tube 34 and is discharged to the outside from discharge ports 24 formed in the bristle base 2.” *Id.*, (0014).



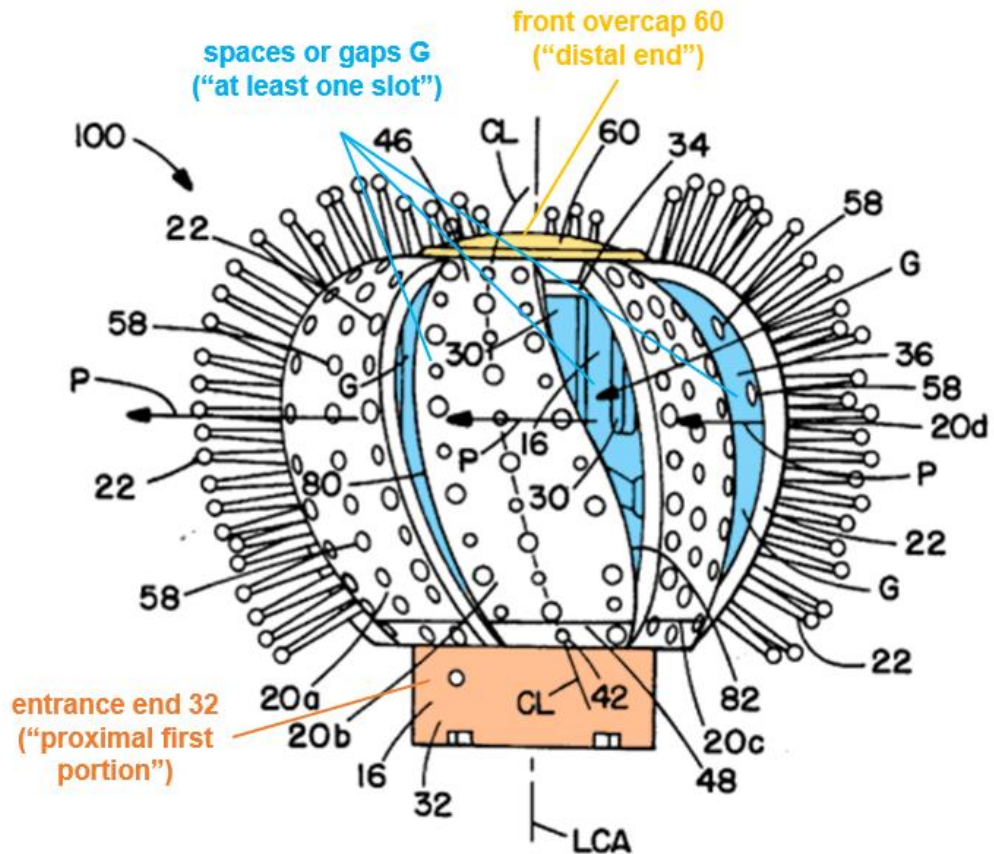
Id., Fig. 1. Accordingly, Saito teaches “a fluid flow path between the inlet and the outlet.” EX1003, ¶¶110–11. The substitution of Saito’s bristle base with Lindsey’s vanes would not affect the fluid flow path between the inlet (Saito’s brush base 3) and the outlet (the spaces or gaps formed between adjacent vanes). Thus, this limitation is obvious over the combination of Saito and Lindsey. *Id.*, ¶112.

- 5) [1d] **“wherein the outlet in the cylindrical second portion of the attachment comprises at least one slot extending continuously from the proximal first portion to a distal end of the attachment,”**

The combination of Saito and Lindsey renders this limitation obvious. EX1003, ¶¶113–20. Lindsey teaches this limitation because the “spaces or gaps G” (*i.e.*, “at least one slot”) that are formed between adjacent vanes extend from the entrance end 32 of the attachment (*i.e.*, the “proximal first portion”) continuously to the front overcap 60 (*i.e.*, the “distal end”). *Id.*, ¶114.

Lindsey’s “vanes 20 are elongated and, when viewed from their exterior, they are disposed generally longitudinally along and generally parallel to longitudinal central axis LCA of hair styler 100.” EX1005, 8:29–32. The arrangement of the vanes “provide[s] spaces or gaps G,” (*i.e.*, “at least one slot”), formed “between side edges 80, 82 of mounted adjacent vanes”:

FIG. 11.



Id., 8:47–49, Fig. 11.

Lindsey’s gaps G “extend continuously from the proximal first portion to a distal end of the attachment,” as required by this limitation. EX1003, ¶¶115–16. Lindsey explains that “[t]he means for mounting vanes 20 onto core 1[6] include . . . a circular array of pins 40 extending axially forward from the front surface of front wall 34, and a circular array of pins 42 extending axially rearward from vertical annular flange 44 located adjacent entrance end 32 of core 16.” EX1005, 6:32–40. At the distal end of the attachment, the “front ends 46 of vanes 20 are maintained in their mounted positions on pins 40 by front overcap 60 when it is secured to core

front wall 34, thereby retaining vane front ends 46 between overcap 60 and wall 34.”

Id., 7:32–35. Likewise, at the proximal first portion, “vane back ends 48 are mounted on pins 42 extending axially to the rear of core annular flange 44,” and the “[b]ack end edges 49 of vanes 20 are near or touch the outer surface of core entrance end 32.” *Id.*, 7:35–40.

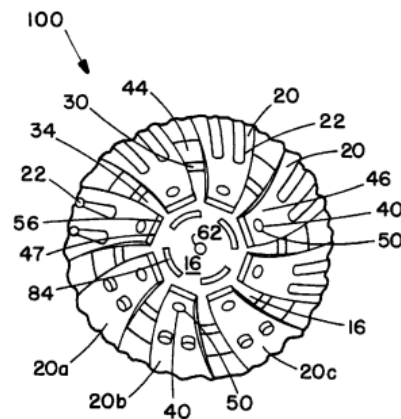
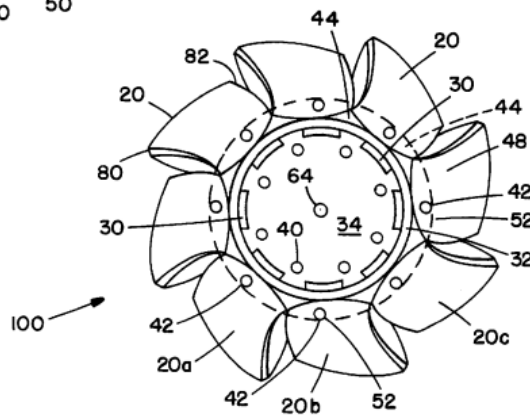


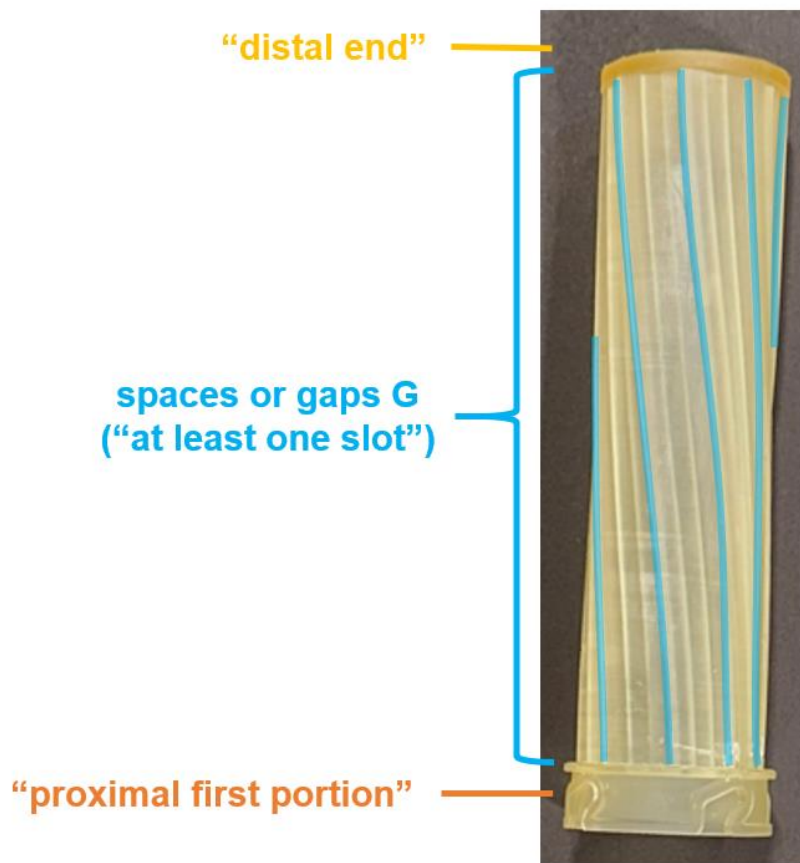
FIG. 12.

FIG. 13.



Id., Figs. 12 & 13. Accordingly, Lindsey teaches “wherein the outlet in the cylindrical second portion of the attachment comprises at least one slot extending continuously from the proximal first portion to a distal end of the attachment” as

required by this limitation. EX1003, ¶¶117–18. As shown by the model that approximates the combination of Saito and Lindsey, modifying Saito to use an array of vanes as taught by Lindsey, in place of Saito’s bristle base, would have likewise resulted in a cylindrical attachment with outlets formed between the adjacent vanes that extend continuously from the proximal first portion to the distal end of the attachment.

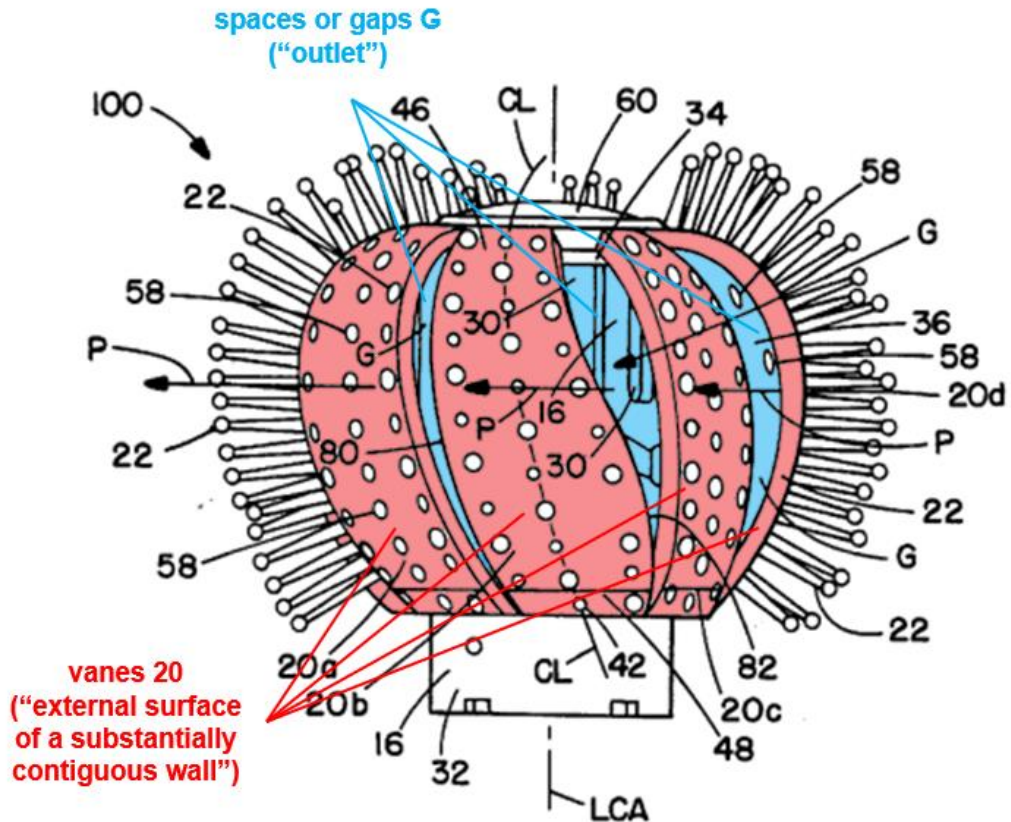


Thus, this limitation is obvious over the combination of Saito and Lindsey. *Id.*, ¶¶119–20.

6) [1e] “wherein the outlet is at least partially defined by an external surface of a substantially contiguous wall of the attachment and”

The proposed modification of Saito to use the vanes from Lindsey renders this limitation obvious. EX1003, ¶¶121–24. As discussed above, the gaps G that are provided form an outlet. Lindsey explains that its “vanes” form the “exterior of a portion of the hair styler,” (i.e., an external surface) and those vanes each are a substantially contiguous wall of the attachment. The outlet is at least partially defined by those substantially contiguous walls because as Lindsey explains, it “provide[s] spaces or gaps G of varying widths and radial extents along and between side edges 80, 82 of mounted adjacent vanes.” EX1005, 4:15–20, 8:47–49. Lindsey’s “gaps G” (i.e., its “outlets”) are defined in part by the vanes, and those vanes are substantially contiguous because they extend from the distal end of the attachment (at “front overcap 60”) to the “outer surface of core entrance end 32,” (i.e., the “proximal first portion” of the attachment as claimed):

FIG. II.



Id., 9:7–26, Fig. 11. Thus, in the combined Saito/Lindsey attachment, the “gaps G” formed between the adjacent vanes are “outlet[s]” that are “at least partially defined by an external surface of a substantially contiguous wall of the attachment,” as required by this limitation. EX1003, ¶¶122–24.

- 7) [1f] “[the outlet] is configured to direct fluid flow emitted from the outlet tangentially along and around the external surface of the substantially contiguous wall to form a circumferential fluid flow around the cylindrical second portion of the attachment that encourages hair to automatically wrap around the cylindrical second portion,”

The Saito/Lindsey Modification renders this limitation obvious. EX1003, ¶¶125–39. Saito teaches air outlets in the form of at least one slot along the

longitudinal direction of a cylindrical second portion of an attachment as discussed above. The proposed modification of Saito uses Lindsey's vanes to provide for the outlets in the form of slots and also replaces Saito's radial airflow with tangential airflow as taught by Lindsey's structure. Specifically, the proposed combination would replace Saito's single-piece design with Lindsey's "turbinate arrangement of vanes," to form Saito's cylindrical bristle base (*i.e.*, "the cylindrical second portion"). A POSITA would have been motivated to overcome Saito's shortcomings through Lindsey's vanes to generate the tangential airflow that yields the benefits of better hair styling. That tangential airflow would be along and around the Saito cylindrical base. It would have been obvious to combine Lindsey with Saito for the same reasons discussed above. *Id.*, ¶¶126–27.

Specifically, Lindsey discloses that its "vanes 20 are disposed in a turbinate arrangement about central axis CA of internal chamber 26, in the paths of the air exiting internal chamber 26, through vents 28, 30, in flow paths p which are approximately transverse or perpendicular to central axis CA of internal chamber 26." EX1005, 5:55–60. These "exterior plural flow paths . . . manifest different angular directions about the central axis of the internal chamber," and the "different angular directions can be approximately tangential to the hair styler." *Id.*, 3:26–30.

FIG. 9.

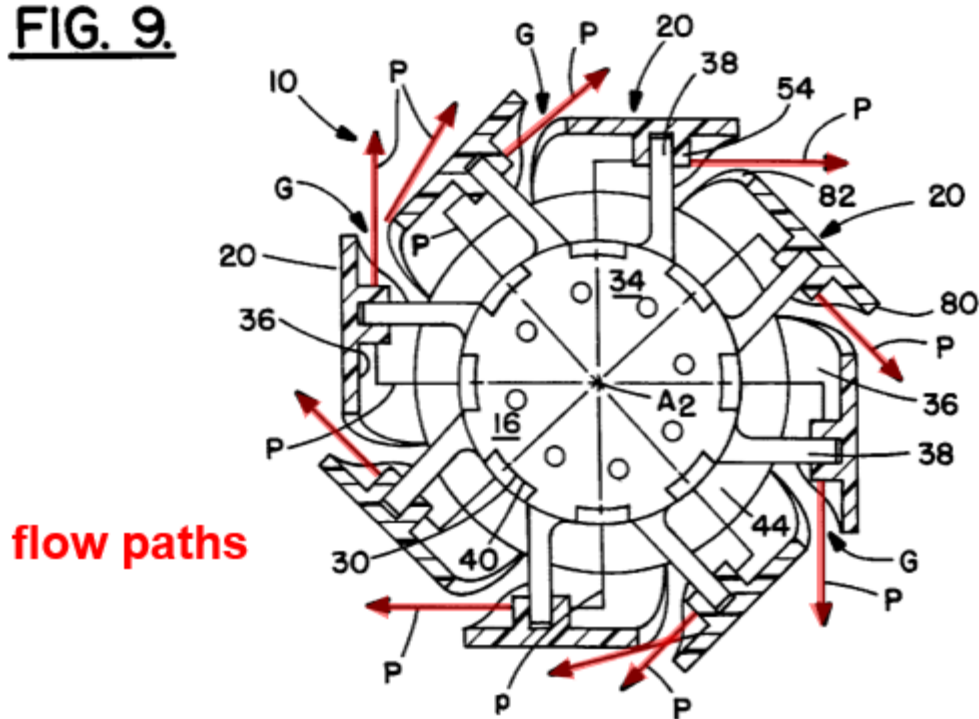
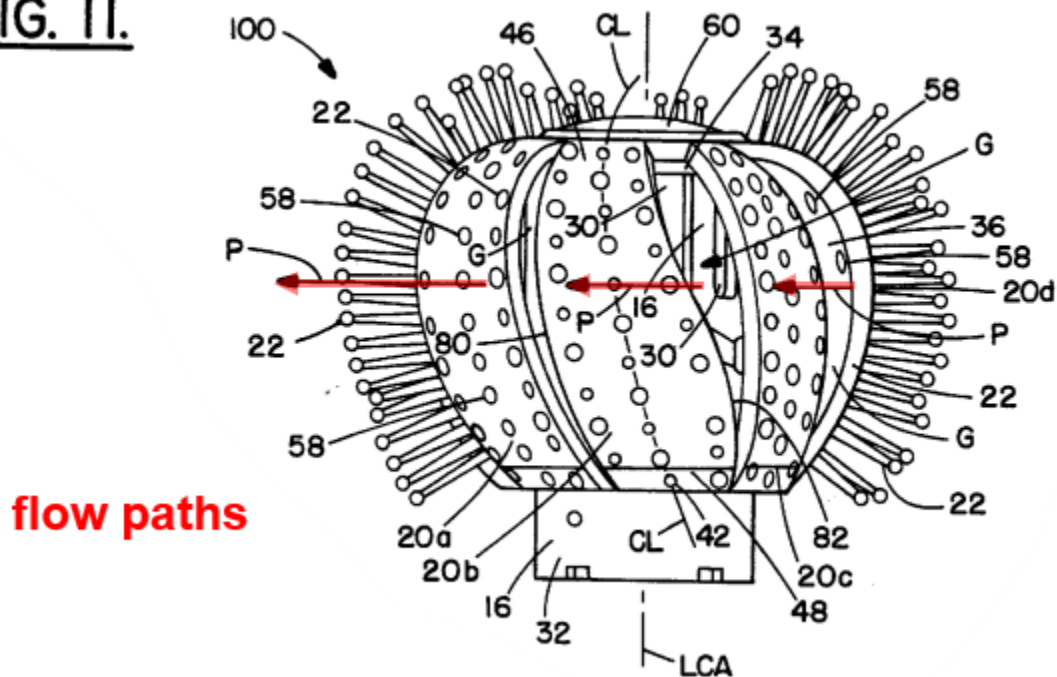


FIG. 11.



Id., Figs. 9 & 11. Further, “the air discharged from one vane is directed over, preferably at shallow angles over, and through the prongs on the outer surface of an

adjacent vane to thereby provide above-mentioned advantages of air flow along, rather than perpendicular to the lie of hair strands among the prongs.” *Id.*, 10:28–33. The air flow is directed “around the external surface of the substantially contiguous wall,” (e.g., the outer portion of a vane from Lindsey when applied to the Saito cylinder) as required by this limitation. And that airflow “render[s] the hair styler capable of providing additional lift and volume to hair.” *Id.*, 10:33–38. It would have been obvious to a POSITA that a modified Saito cylindrical attachment which used vanes in the manner taught by Lindsey would have produced the same spinning, turbulent fluid flow as Lindsey’s hair styler, and particularly would have done so in the fully extended, cylindrical shape. EX1003, ¶¶128–30.

Further, due to Lindsey’s disclosure of using multiple vanes around the circumference of the attachment, the airflow would have generated circumferential airflow around Saito’s cylindrical attachment. That improved Saito configuration would “encourage hair to automatically wrap around the cylindrical second portion” as required by this limitation. Indeed, it was known to a POSITA that air that is directed tangentially to a surface will be attracted to the surface due to the Coanda effect, and that effect has been used in hair care. *Id.*, ¶131; EX1016, 22:30–23:3; EX1017, 1, 17; EX1026, ¶¶[0009]–[0011]; EX1028, ¶[0036].

Petitioner’s expert experimentally confirmed that the improved Saito configuration using Lindsey’s vanes would have worked to “encourage hair to

automatically wrap around the second cylindrical portion” using a model that approximates⁶ a fully-extended (*i.e.*, cylindrical) Saito attachment that uses an array of vanes as taught by Lindsey:



⁶ Two minor modifications that would have been obvious to a POSITA (slightly curved vanes and slightly extended vane edges) were made to the vanes depicted in Lindsey’s Fig. 9 in the model. EX1003, ¶¶133–35.

EX1003, ¶¶132–33. The model attachment was tested by presenting a nine-inch sample of human hair to the attachment, which was mounted on a SharkNinja FlexStyle blower as an air supply. The sample hair wrapped around the cylindrical portion of the attachment:



Id., ¶¶136–37; EX1022/EX1023/EX1024 (depicting the sample hair wrapping around the attachment). Thus, this limitation is obvious over the combination of Saito and Lindsey. EX1003, ¶¶138–39.

Moreover, as the Examiner correctly (and repeatedly) indicated, where a prior art apparatus is identical or substantially identical in structure, claimed properties or functional characteristics are presumed to be inherent. EX1002, 1030 (citing *In re Best*, 195 USPQ 430 (CCPA 1977); MPEP § 2112.01). Because the modified Saito configuration using Lindsey’s vanes has all of the structural features of the claims, the function of that structure to cause circumferential airflow to encourage hair to

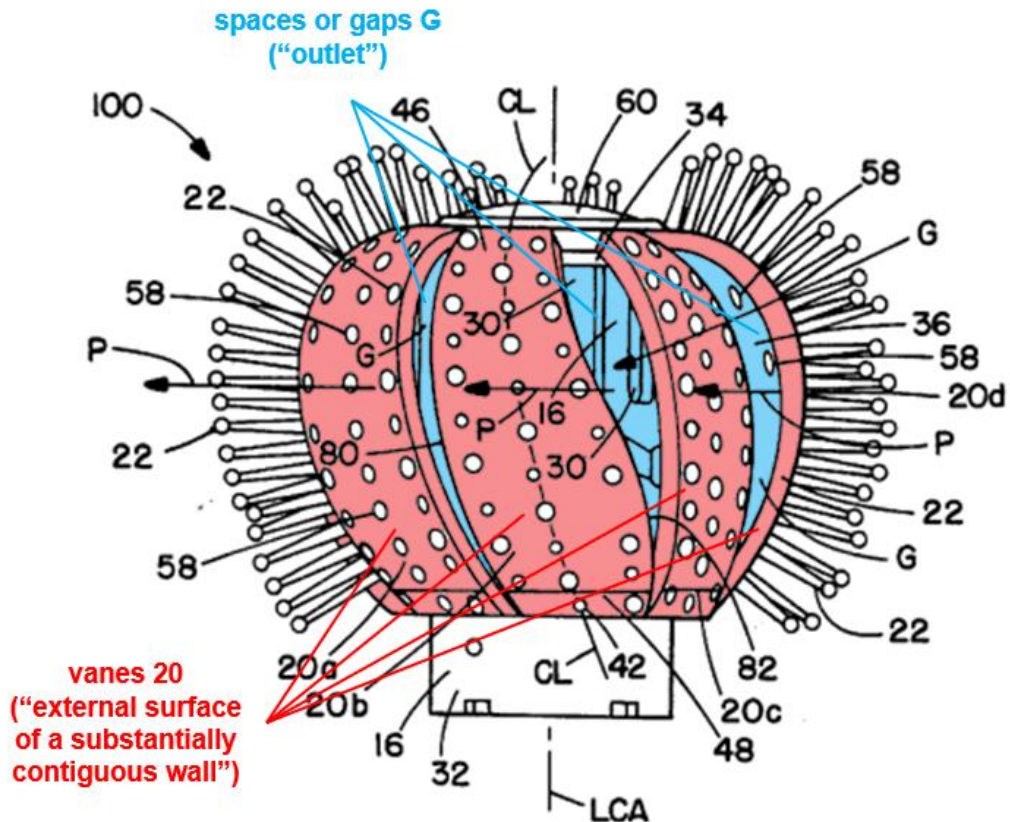
automatically wrap around the cylindrical portion of the attachment would have also been inherently present in that structure described in the claims.

- 8) [1g] **“wherein the external surface of the substantially contiguous wall is an outermost surface of the attachment along an entire length of the attachment from a beginning of the at least one slot to an end of the at least one slot, and”**

The Saito/Lindsey Modification renders this limitation obvious. EX1003, ¶¶140–44. In that combination, the vanes of Lindsey are used to form the outlets in Saito and the Lindsey vanes used in Saito each forms a substantially contiguous wall. The external surface of Lindsey’s vanes is an outermost surface and run from the beginning of the slot to an end of the slot. Lindsey’s gaps G (*i.e.*, “at least one slot”) “extend[s] continuously from the proximal first portion to a distal end of the attachment.” *Id.*, ¶141. Lindsey explains that “[t]he means for mounting vanes 20 onto core 1[6] include . . . a circular array of pins 40 extending axially forward from the front surface of front wall 34, and a circular array of pins 42 extending axially rearward from vertical annular flange 44 located adjacent entrance end 32 of core 16.” EX1005, 6:32–36. As shown in Figure 11, at the distal end of the attachment, the “front ends 46 of vanes 20 are maintained in their mounted positions on pins 40 by front overcap 60 when it is secured to core front wall 34, thereby retaining vane front ends 46 between overcap 60 and wall 34.” *Id.*, 7:32–35. Likewise, at the proximal first portion, “vane back ends 48 are mounted on pins 42 extending axially

to the rear of core annular flange 44,” and the “[b]ack end edges 49 of vanes 20 are near or touch the outer surface of core entrance end 32.” *Id.*, 9:22–26.

FIG. 11.



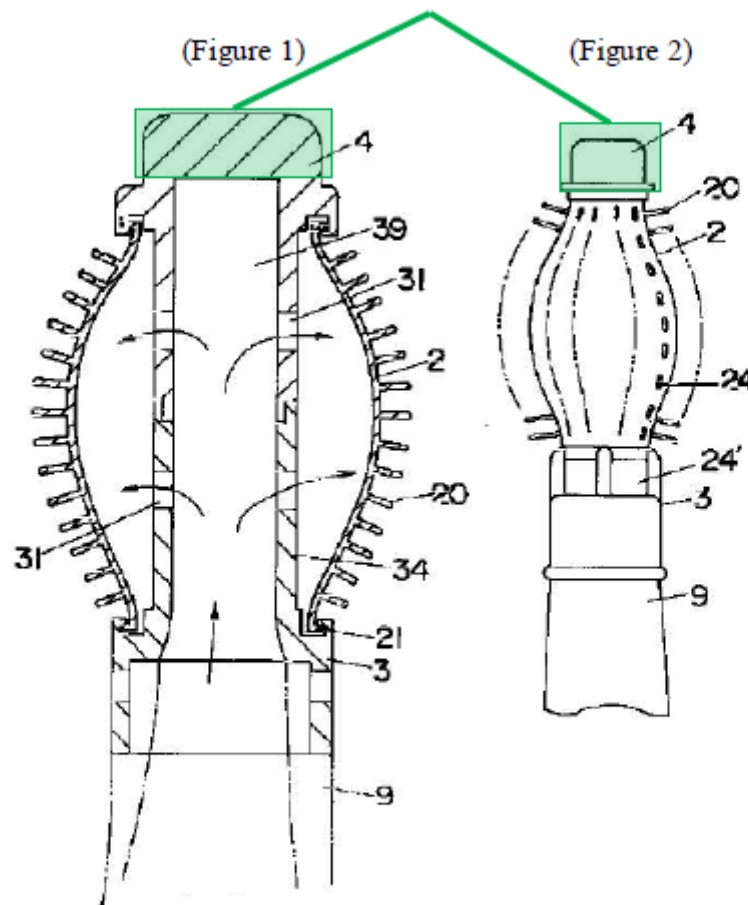
Id., Fig. 11. Lindsey’s vanes form the “exterior of a portion of the hair styler,” and extend from the “outer surface of core entrance end 32,” (*i.e.*, the “proximal first portion” of the attachment as claimed) to the distal end of the attachment (at “front overcap 60”). Accordingly, Lindsey teaches that “the external surface of the substantially contiguous wall” (*i.e.*, Lindsey’s vanes), “is an outermost surface of the attachment along an entire length of the attachment from a beginning of the at least one slot to an end of the at least one slot,” (*i.e.*, Lindsey’s “gaps G” formed by

the vanes), as required by this limitation. EX1003, ¶¶142–43. Thus, this limitation is obvious over the combination of Saito and Lindsey. *Id.*, ¶144.

9) [1h] “wherein the distal end of the attachment is closed.”

The Saito/Lindsey Modification renders this limitation obvious. EX1003, ¶¶145–48. Saito discloses that its brush attachment includes a “brush base 4” that is located at the distal end of the attachment, as shown in Figures 1 and 2:

brush base 4
(“distal end of the attachment is closed”)



EX1004, (0011), Figs. 1 & 2 (annotations added). The brush base 4 is connected to “tube 34 that penetrates a central section of the bristle base 2, and a plurality of ventilation ports 31 are formed in the tube 34, an interior space of which serves as an airflow channel 39.” EX1004, (0012). The brush base 4 is depicted as closing the distal end of the “tube 34,” and therefore Saito teaches that “the distal end of the

attachment is closed.” EX1003, ¶¶146–47. The substitution of Saito’s bristle base with Lindsey’s vanes would not affect the structure or function of Saito’s brush base 4, and the distal end of the combined attachment would remain closed. Thus, this limitation is obvious over the combination of Saito and Lindsey. *Id.*, ¶¶147–48.

b. Claim 2

“The attachment of claim 1, wherein the outlet comprises a plurality of slots radially spaced around the attachment.”

The Saito/Lindsey Modification renders this additional element obvious. EX1003, ¶¶149–51. Saito discloses a plurality of slots (element 22) and the Saito/Lindsey Modification would provide slots that run the length of the attachment. Further, Lindsey discloses that the arrangement of its vanes “provide[s] spaces or gaps G,” (*i.e.*, “a plurality of slots” as claimed), “of varying widths and radial extends along and between side edges 80, 82 of mounted adjacent vanes”:

FIG. 9.

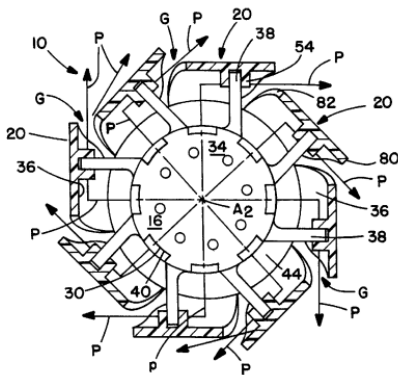
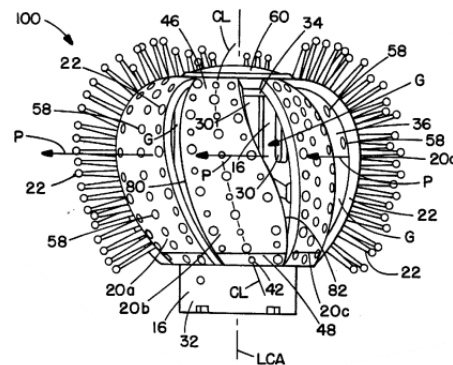


FIG. 11.



EX1005, 8:47–54, Figs. 9 & 11. Thus, Lindsey teaches that “the outlet comprises a plurality of slots radially spaced around the attachment.” A POSITA modifying Saito would have been motivated to replace Saito’s slots with a plurality of slots spaced around the attachment given the benefits of tangential airflow around the entire attachment as Lindsey provides. EX1003, ¶¶150–51.

c. Claim 3

“The attachment of claim 1, wherein the attachment is configured so that, in use, the fluid emitted from the outlet is attracted to the external surface of the attachment.”

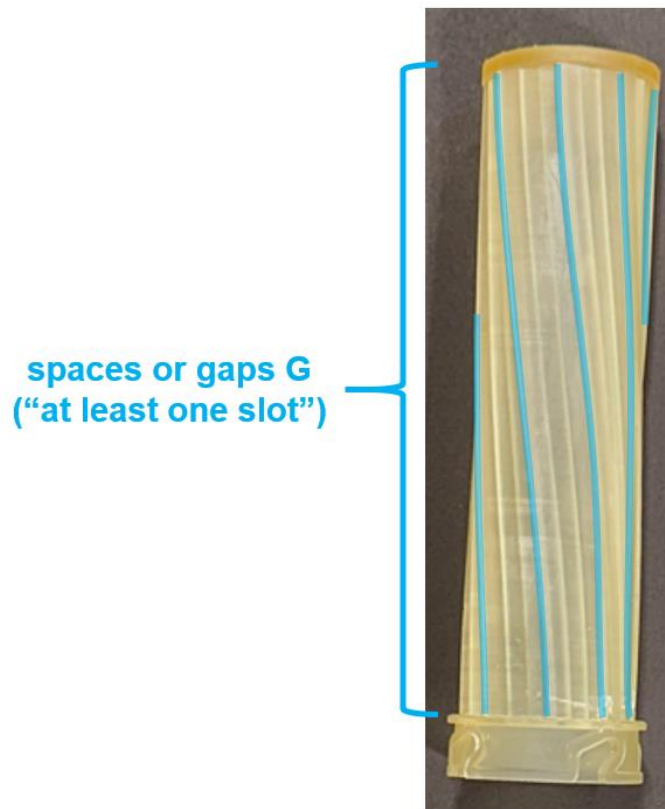
The Saito/Lindsey Modification renders this additional element obvious. EX1003, ¶¶152–54. As discussed for element [1f], Lindsey discloses that “the air discharged from one vane is directed over, preferably at shallow angles over, and through the prongs on the outer surface of an adjacent vane to thereby provide above-mentioned advantages of air flow along, rather than perpendicular to the lie of hair strands among the prongs.” EX1005, 10:28–33. Saito, modified to use an array of vanes as taught by Lindsey in place of the bristle base, would have caused “the fluid emitted from the outlet [to be] attracted to the external surface of the attachment” as required by this limitation. Indeed, this would have been a known, natural result of the Coanda effect (*i.e.*, an entrained airflow around the cylindrical attachment). *Id.*, ¶¶153–54.

In any event, and as the Examiner correctly (and repeatedly) indicated, where a prior art apparatus is identical or substantially identical in structure, claimed properties or functional characteristics are presume to be inherent. *See, e.g.*, EX1002, 1030. Thus, because the modified Saito configuration using an array of vanes as taught by Lindsey has all of the structural features of the claims, the additional functional limitations of this dependent claim are inherently present.

d. Claim 4

“The attachment of claim 1, wherein the outlet comprises two slots.”

The Saito/Lindsey Modification renders obvious this additional element. EX1003, ¶¶155–58. That modification replaces Saito’s cutting grooves 22 with longitudinal slots from Lindsey around the circumference of the attachment, which “provides spaces or gaps G,” between adjacent vanes (*i.e.*, “comprises two slots”):

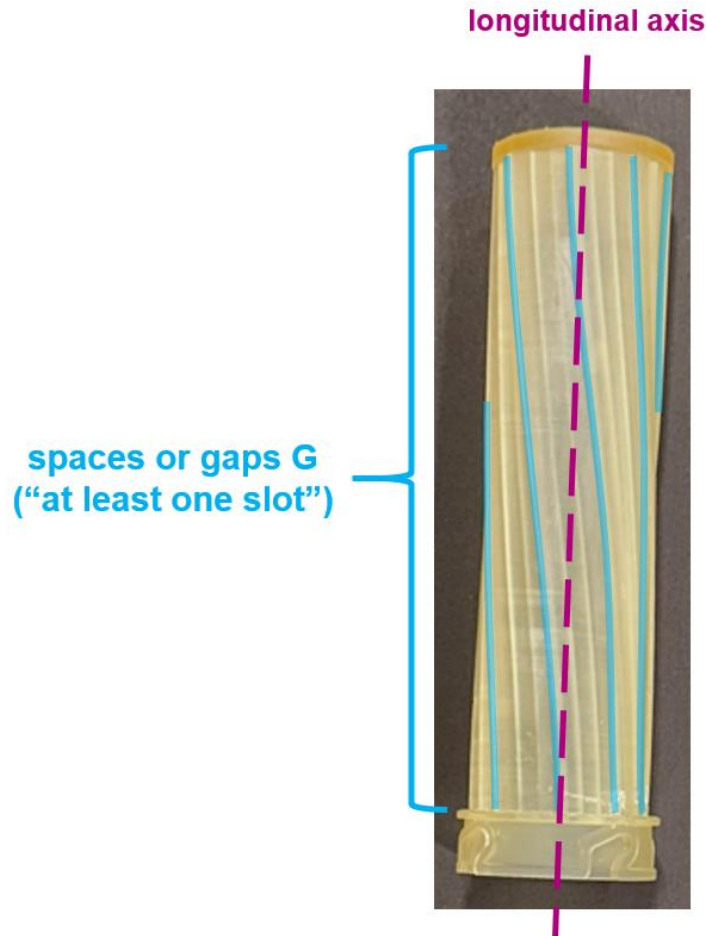


Id., ¶¶156–58.

e. Claim 5

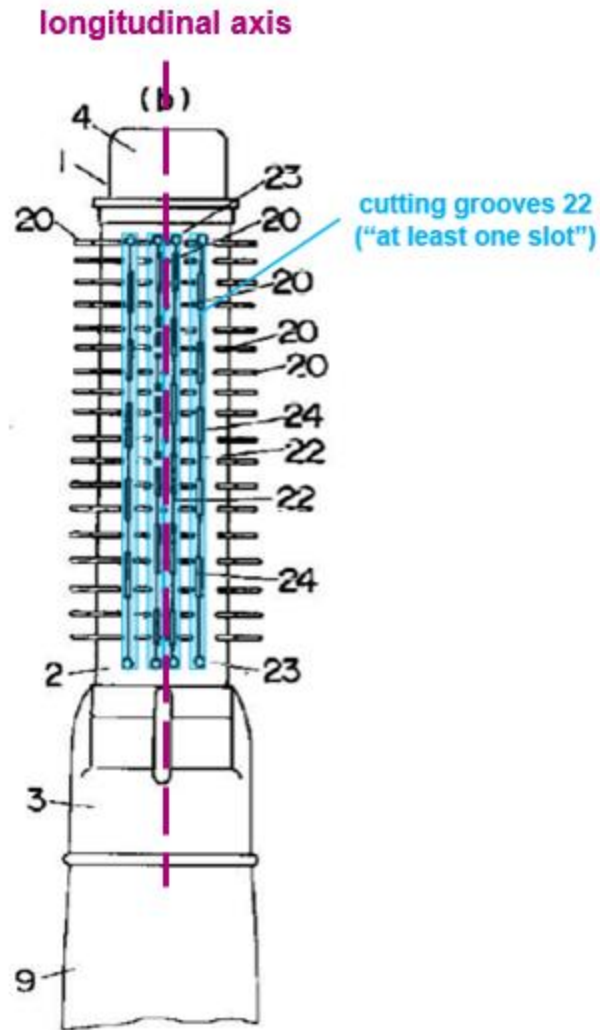
“The attachment of claim 1, wherein the attachment has a longitudinal axis and the at least one slot is parallel to the longitudinal axis.”

The Saito/Lindsey Modification renders obvious this additional element. EX1003, ¶¶159–62. In that combination, the vanes “are disposed in a turbinate arrangement,” which results in slots that are non-parallel and helical to the longitudinal axis of the attachment:



Id., ¶160.

However, Saito teaches an attachment having slots that are parallel to a longitudinal axis. EX1004, (0006) (“[I]t is preferable for the bristle base to be divided into the plurality of pieces in the lateral direction by cutting grooves *that run in the longitudinal direction*, the discharge ports being formed in the cutting grooves.”).



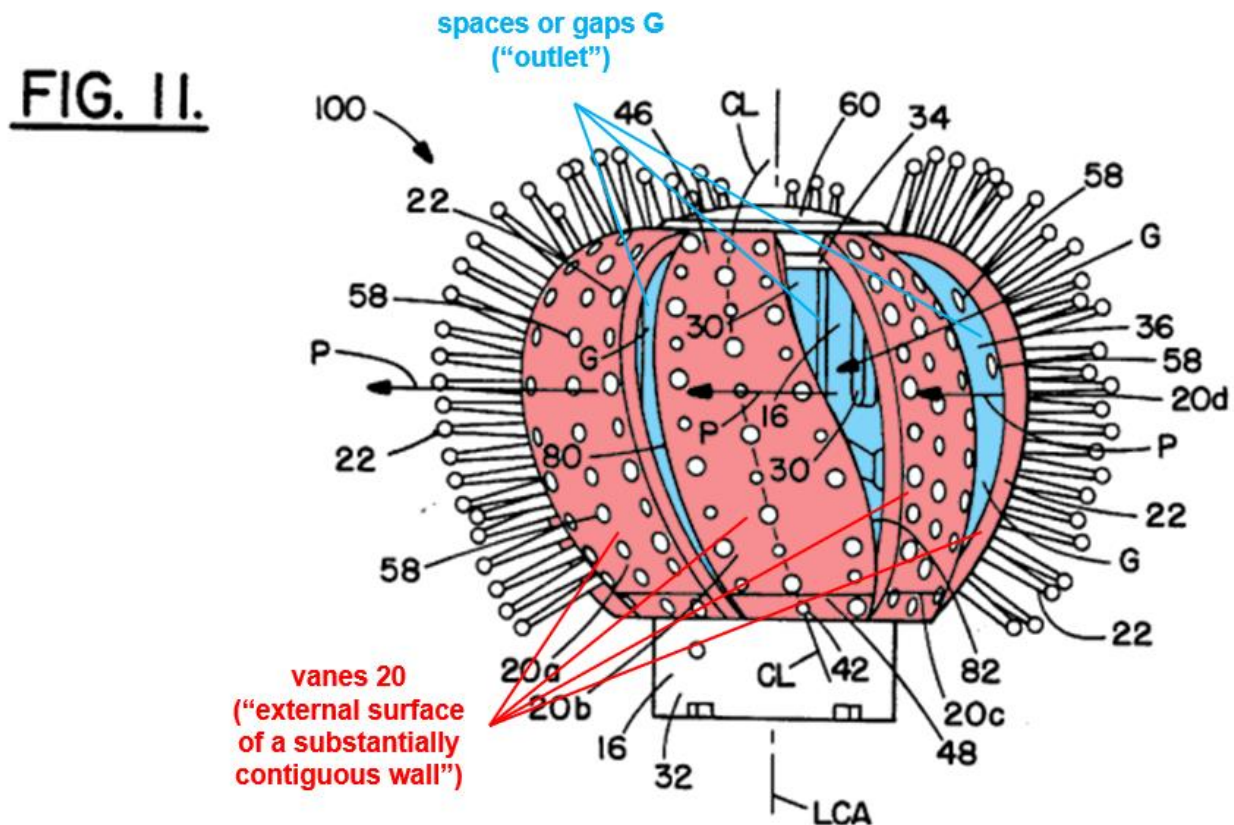
EX1004, Fig. 5(b). Thus, it would have been obvious to a POSITA to have modified the shape of Lindsey's vanes to result in parallel slots as taught by Saito. EX1003, ¶¶161–62.

f. Claims 6 & 7

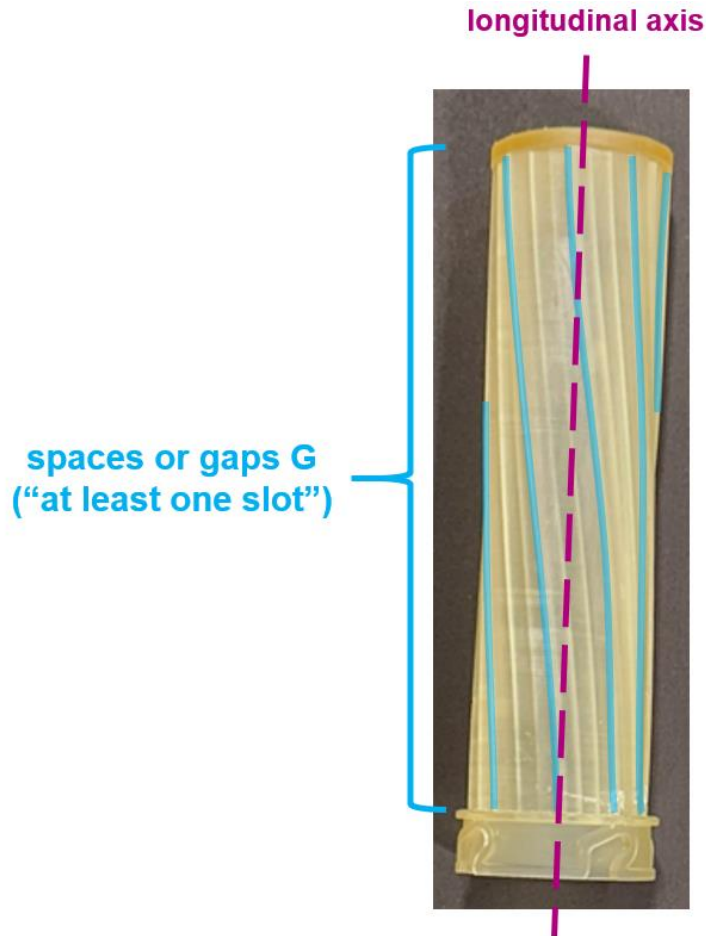
“The attachment of claim 1, wherein the attachment has a longitudinal axis and the at least one slot is non-parallel to the longitudinal axis.”

“The attachment of claim 6, wherein the at least one slot is helical with respect to the longitudinal axis.”

The Saito/Lindsey Modification renders obvious the additional elements of claims 6 and 7. EX1003, ¶¶163–74. As discussed, Saito’s slots would be formed by using Lindsey’s vane system to generate tangential airflow. Lindsey teaches an example in which the slots are helical and thus, non-parallel to the longitudinal axis of the attachment:



EX1005, 8:35–41 (“Vane center lines CL angularly intersect longitudinal central axis LCA and central axis CA,” and “portions of the upper ends of the vanes . . . are offset to the left of, and portions of the lower ends of the vanes . . . are offset to the right of, longitudinal axis LCA of hair styler 100.”), Fig. 11. Accordingly, the gaps G (*i.e.*, “the at least one slot”) formed between each pair of adjacent vanes is non-parallel to the longitudinal axis LCA of Lindsey’s attachment. For the same reasons, the gaps G are also “helical” with respect to the longitudinal axis LCA of Lindsey’s attachment. EX1003, ¶164–67, 171–72. Modifying Saito to use an array of vanes as taught by Lindsey in place of Saito’s bristle base would have likewise resulted in non-parallel, helical slots:



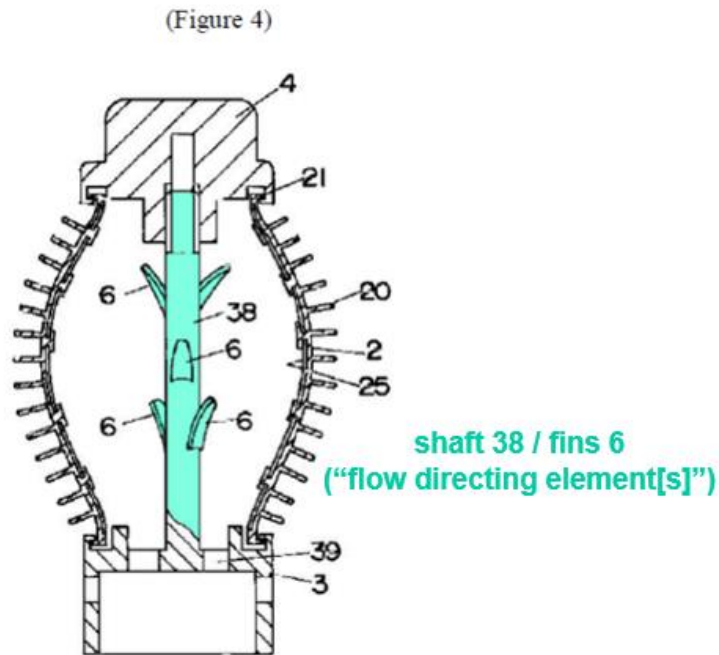
Thus, the additional limitations of claims 6 and 7 would have been obvious over the combination of Saito and Lindsey. *Id.*, ¶¶168–69, 173–74.

g. Claim 8

“The attachment of claim 1, further comprising a flow directing element between the inlet and the outlet.”

The Saito/Lindsey Modification renders obvious this additional element. EX1003, ¶¶175–77. Saito teaches the inclusion of “fins 6 for airflow direction adjustment [that] are provided on an outer peripheral surface of a shaft 38,” and that “the fins 6 change the direction of air or steam fed from the hair dryer that is heading

toward the tip of the brush 1 so that the air or steam is discharged from the discharge ports 24 of the bristle base 2”:



EX1004, (0014), Fig. 4. Accordingly, Saito teaches “a flow directing element between the inlet and the outlet.” EX1003, ¶176. The substitution of Saito’s bristle base with Lindsey’s vanes would not affect the structure or function of Saito’s shaft 38 / fins 6. Thus, this additional limitation is obvious over the combination of Saito and Lindsey. *Id.*, ¶177.

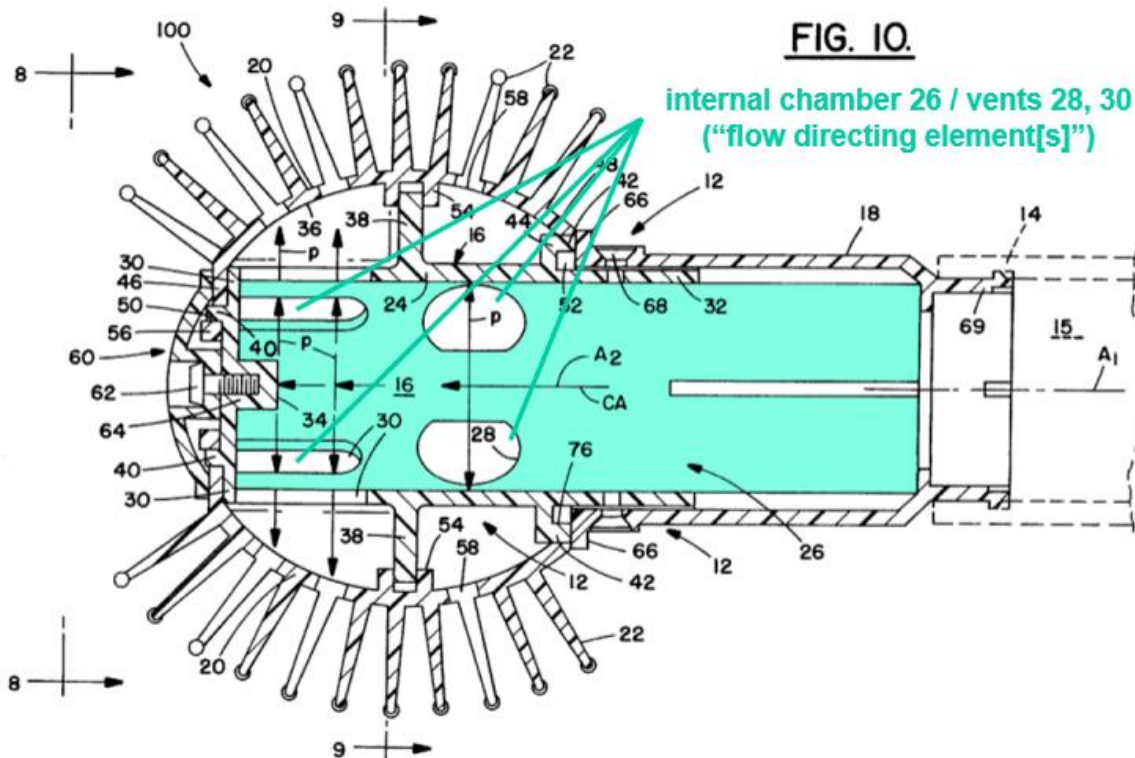
h. Claim 9

“The attachment of claim 8, wherein the flow directing element comprises a perforated layer.”

The Saito/Lindsey Modification renders obvious this additional element. EX1003, ¶¶178–82. As explained above, Saito teaches a flow directing element (shaft 38 / fins 6) that would be present and functional in the combined attachment

of Saito with Lindsey's vanes. However, Saito's "flow directing element" does not comprise a "perforated layer" as required by claim 9. *Id.*, ¶179.

Lindsey describes an "internal chamber 26" (*i.e.*, a "flow directing element") that "has a plurality of vents therethrough" that "allow air received from hair blower 15 to exit chamber 6." EX1005, 6:6–9. As shown in Lindsey's Figure 10, the plurality of "vents 28, 30" are perforations in the "internal chamber 26":



Id., Fig. 10 (annotations added). Accordingly, Lindsey teaches that "the flow directing element comprises a perforated layer." EX1003, ¶¶181.

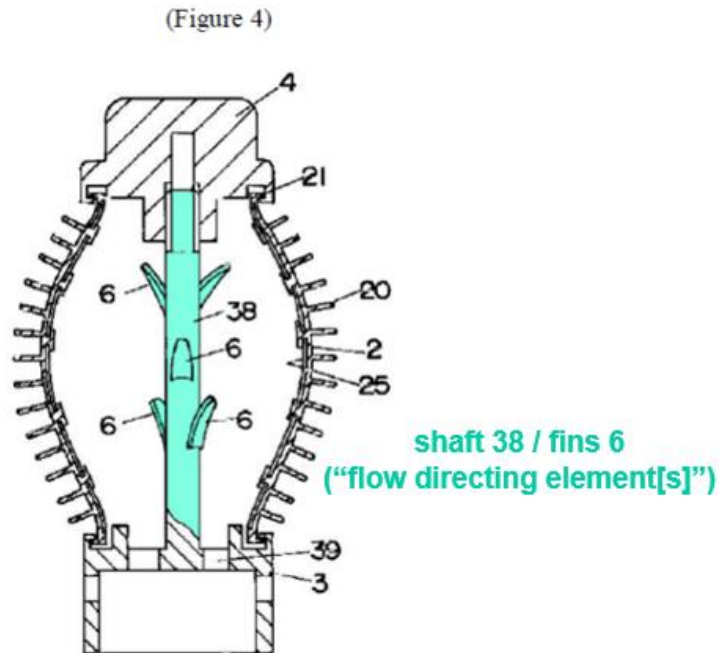
It would have been obvious to a POSITA to have modified Saito's shaft 38 to be hollow and have "a plurality of vents therethrough" like the "internal chamber

26” described in Lindsey. Lindsey explains that “wall 34” at the end of the “internal chamber 26” serves as means for changing the path of the received air and causing the air to flow in paths substantially transverse or perpendicular to central axis CA,” and that wall 34 “blocks the received air and builds up a back pressure of air in internal chamber 26, which accelerates the air out of vents 28, 30,” thus “deflect[ing] the air received from blower 15 out of core 16 through vents 28, 30 in paths p which are approximately transverse or perpendicular to central axis CA of internal chamber 26.” EX1005, 5:55–60. A POSITA would have modified Saito’s shaft 38 to be hollow and include vents as taught by Lindsey in order to enhance the tangential airflow of the combined Saito/Lindsey attachment by building up back pressure of air, which would accelerate the air out of the vents. Thus, this additional limitation is obvious over the combination of Saito and Lindsey. EX1003, ¶182.

i. Claim 12

“The attachment of claim 9, wherein the flow directing element extends substantially along a length of the at least one slot.”

The Saito/Lindsey Modification renders obvious this additional element. EX1003, ¶¶183–85. Saito teaches that “the flow directing element extends substantially along a length of the at least one slot,” because the “shaft 38” (*i.e.*, “the flow directing element”) is the same length as the cutting grooves (*i.e.*, the slots):



EX1004, (0014), Fig. 4. The substitution of Saito's bristle base with Lindsey's vanes would not affect the structure or function of Saito's shaft 38. Thus, this additional limitation is obvious over the combination of Saito and Lindsey. EX1003, ¶¶184–85.

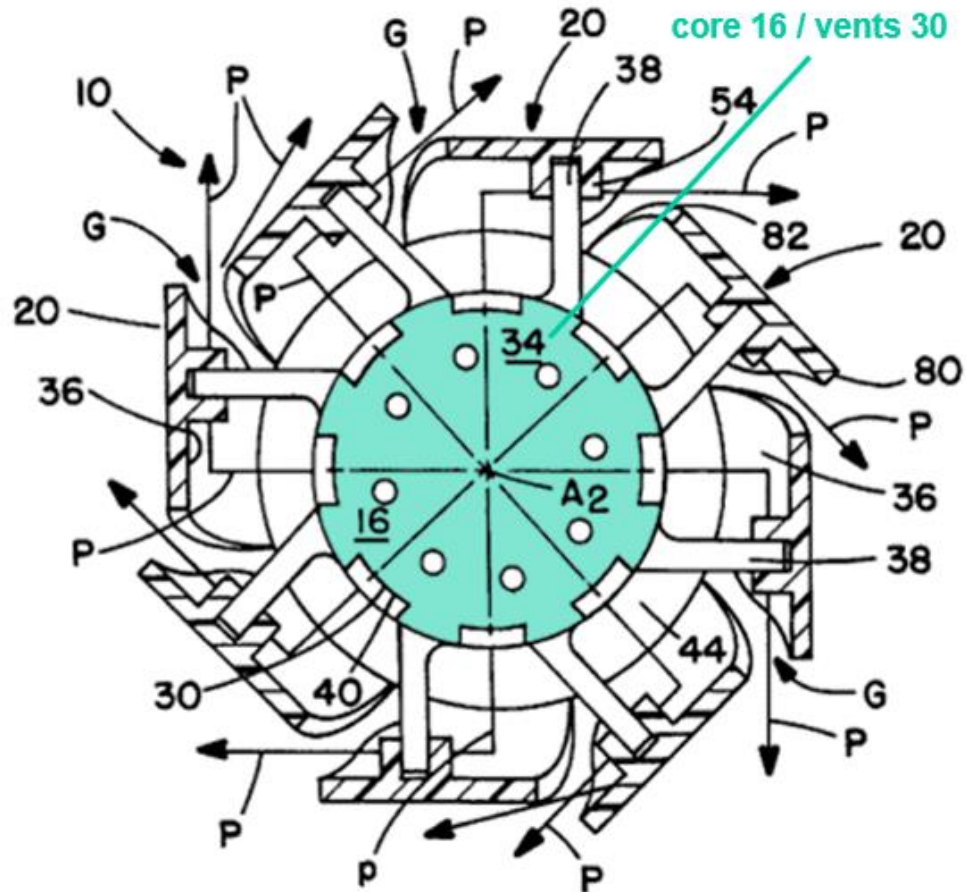
j. Claim 13

"The attachment/ of claim 9, wherein the flow directing element extends substantially around an inner circumference of the attachment."

The Saito/Lindsey Modification teaches this additional element. EX1003, ¶¶186–89. As explained above with respect to claim 9, It would have been obvious to a POSITA to have modified Saito's shaft 38 to be hollow and have "a plurality of vents therethrough" like the "internal chamber 26" described in Lindsey. *Id.*, ¶187.

As shown in Lindsey's Figure 9, the "core 16," which defines the "internal chamber 26," extends substantially around an inner circumference of the Lindsey attachment:

FIG. 9.



EX1005, Fig. 9 (annotations added). Accordingly, Lindsey teaches that “the flow directing element extends substantially around an inner circumference of the attachment.” EX1003, ¶188. A POSITA would have modified Saito’s shaft 38 to be hollow and include vents, which would extend substantially around an inner circumference of the attachment, as taught by Lindsey in order to enhance the

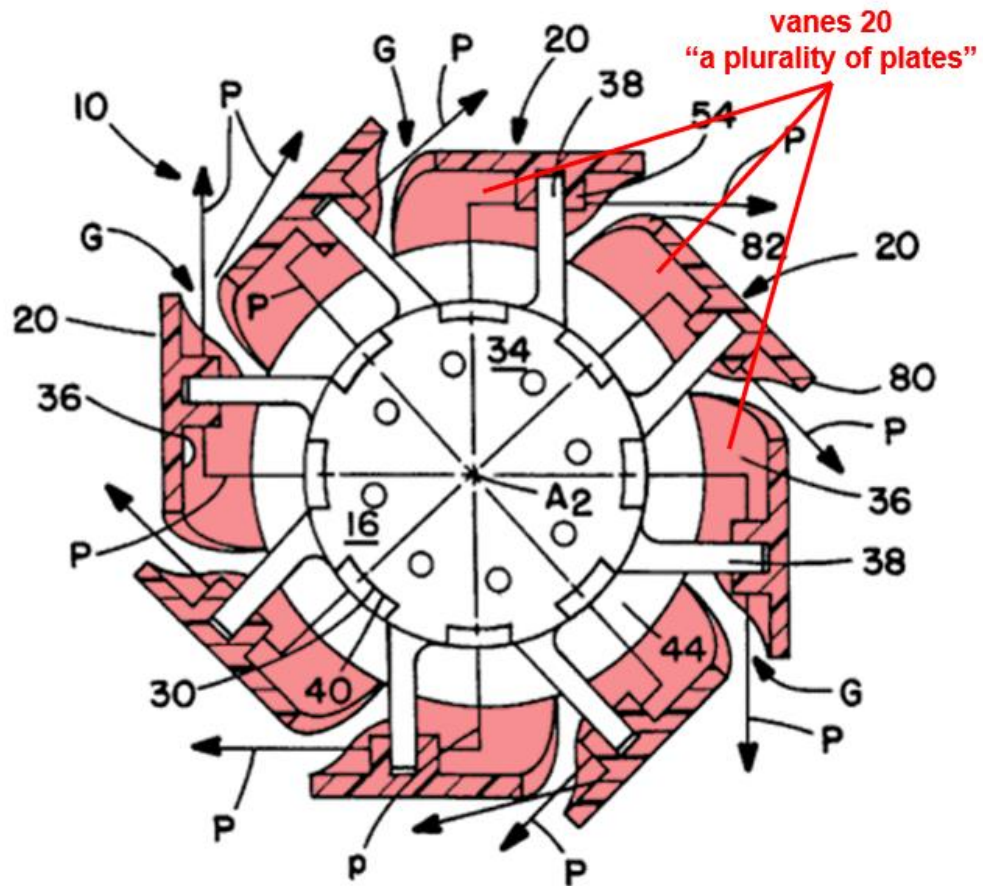
tangential airflow. Thus, this additional limitation is obvious over the combination of Saito and Lindsey. *Id.*, ¶¶187–189.

k. Claim 14

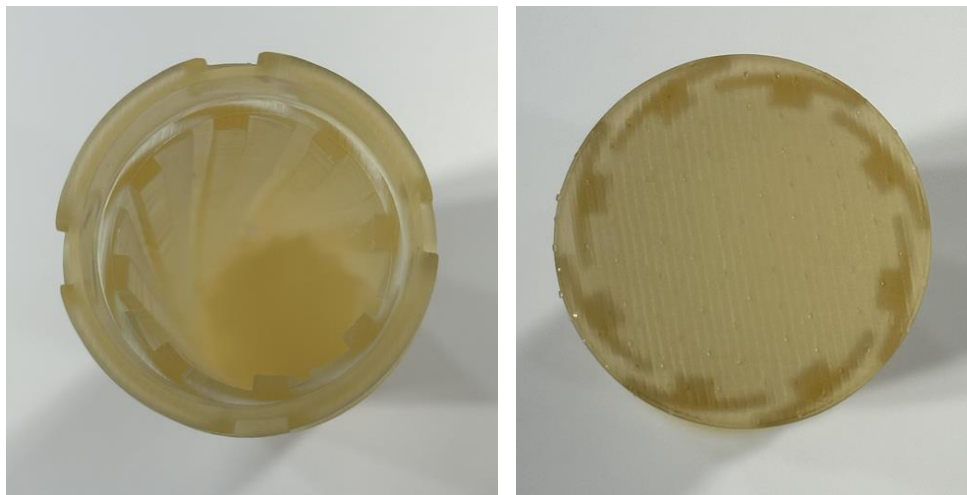
“The attachment of claim 1, wherein the wall comprises a plurality of plates.”

The Saito/Lindsey Modification renders obvious this additional element. EX1003, ¶¶190–93. Lindsey explains that its “vanes,” which are the wall that comprises a plurality of plates, form the “exterior of a portion of the hair styler,” and “provide spaces or gaps G of varying widths and radial extents along and between side edges 80, 82 of mounted adjacent vanes.” EX1005, 4:15–20, 8:47–49. The individual vanes are mounted using “a circular array of pins 40 extending axially forward from the front surface of front wall 34, and a circular array of pins 42 extending axially rearward from vertical annular flange 44 located adjacent entrance end 32 of core 16.” *Id.*, 6:32–40.

FIG. 9.



Accordingly, Lindsey teaches that “the wall comprises a plurality of plates.” EX1003, ¶¶191–92. Modifying Saito to use an array of vanes as taught by Lindsey in place of Saito’s bristle base would have likewise resulted in a wall that “comprises a plurality of plates” in the combined attachment.

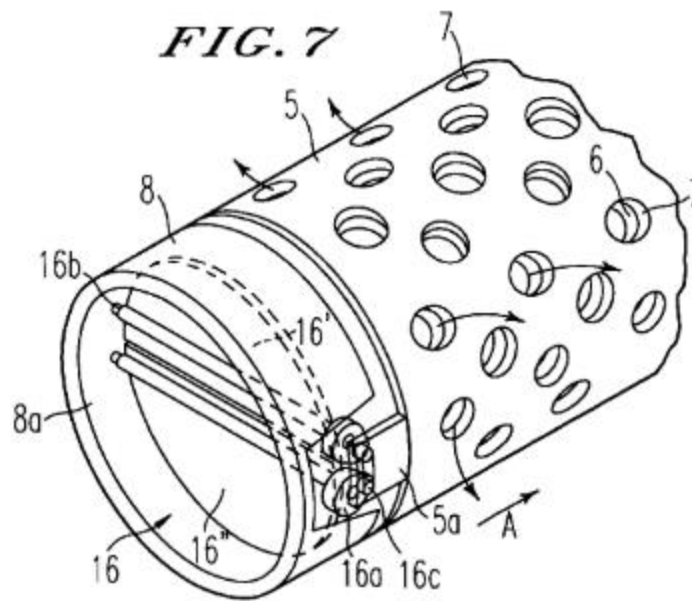


Thus, this additional limitation is obvious over the combination of Saito and Lindsey. *Id.*, ¶193.

B. Ground 2: Obviousness over Saito in view of Lindsey and Schepisi (Claims 10 and 11)

1. Summary of Schepisi

Schepisi discloses “a blow dryer” that “includes a barrel having an opening,” as well as “[a] deflector, having an aperture, positioned within or substantially within the barrel.” EX1006, Abstract. The blow dryer has a “first or open mode in which air flow is directed through the barrel opening of the barrel,” and a “fully deflecting mode” where air flow is directed to the “aligned holes 6 and 7 of the inner and outer cylinders 4, 5,” which results in “air be[ing] discharged through the surface of the barrel 3.”



Id., Abstract, 5:40–45, Fig. 7.

More specifically, Schepisi discloses that the barrel of the blow dryer “can include a mesh-type screen” that “can be positioned cylindrically within the barrel”:

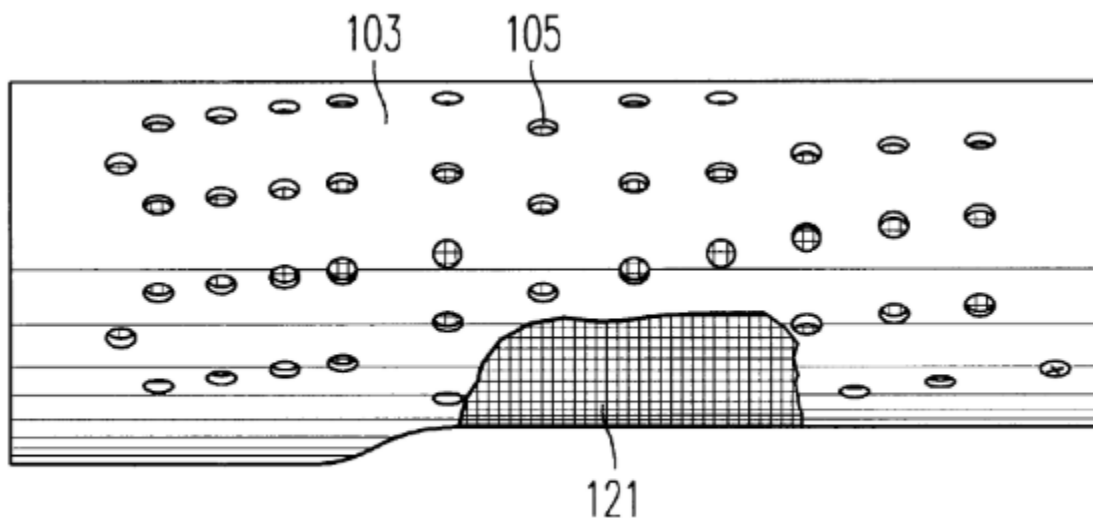


FIG. 23

Id., 11:12–30, Fig. 23. Schepisi teaches that “[t]he mesh-type screen 121 serves to block or obstruct some of the air travelling through holes 105.” *Id.*, 11:17–20.

2. Motivation to Combine Saito, Lindsey, and Schepisi and Reasonable Expectation of Success

It would have been obvious to a POSITA to have formed the modified hollow shaft of the combined Saito/Lindsey attachment using Schepisi’s mesh-type screen, because Schepisi’s mesh-type screen would have further enhanced the tangential flow of the air exiting the vents into the “plural flow paths P” exiting through Lindsey’s “gaps G” by diffusing the airflow through the attachment and slowing down the longitudinal velocity of the airflow through the attachment. EX1003, ¶¶76–78, 194–96.

The use of Schepisi’s mesh-type screen to form the modified hollow shaft of the combined Saito/Lindsey attachment to improve the deflection of the air exiting the shaft would have been nothing more than a predictable use of a prior art element according to its established function. *KSR*, 550 U.S. at 417. Further, using Schepisi’s mesh-type screen—which is explicitly intended to be included in a hair dryer/styler—with the combined attachment for a hair styler would have been obvious as a rearrangement of existing parts that does not generate “a novel or unexpected result.” *In re Kuhle*, 526 F.2d at 554; EX1003, ¶196.

A POSITA would have been motivated to combine Saito’s brush attachment with Lindsey’s teaching of the use of an array of vanes for the reasons expressed in

Ground 1 that is incorporated into this Ground. Section IV.A, *supra*. A POSITA would have been further motivated to combine the Saito/Lindsey brush attachment as discussed above in Ground 1 with Schepisi's "mesh-type screen" to take advantage of the benefits of blocking or obstructing (*i.e.*, diffusing) some of the air travelling out through the gaps G formed by Lindsey's vanes. EX1003, ¶201, 204. Schepisi explains that the material of its "mesh-type screen" is such that when the blow dryer is in the "fully deflecting" position (*i.e.*, the air flows through the aligned holes of the inner and outer cylinders), that "air forced out through the holes . . . can pass through the materials for the use of the blow dryer for horizontal lifting/drying, etc." EX1006, 12:15–19.

A POSITA would have had a reasonable expectation of success in combining the Saito/Lindsey brush attachment with Schepisi's "mesh-type screen," because each of Saito, Lindsey, and Schepisi describe hair styling using air that is discharged in a transverse direction to the longitudinal axis of the styling attachment (in Saito and Lindsey) or the cylindrical barrel of the blow dryer (in Schepisi). EX1003, ¶196. Thus, the combination of Saito, Lindsey, and Schepisi would have been nothing more than the use of a known technique (Schepisi's "mesh-type screen") to improve similar devices (the Saito/Lindsey attachment) in the same way to yield predictable results (greater diffusion of the air flow passing through the attachment and exiting through the gaps G). *Id.*, ¶201, 204.

3. Detailed Analysis of Ground 2

The combination of Saito/Lindsey and Schepisi renders the “perforated layer” limitations of claims 10 and 11 obvious. EX1003, ¶¶197–204. Regarding claim 9, Lindsey teaches that its “flow directing element comprises a perforated layer” by reason of the plurality of “vents 28, 30” located in the “internal chamber 26.” EX1005, 5:55–60. And, it would have been obvious to have modified Saito’s shaft 38 to be hollow and have “a plurality of vents therethrough” like the “internal chamber 26” described in Lindsey. EX1003, ¶¶198, 203.

Lindsey does not disclose that its “internal chamber 26” and “vents 28, 30” are “formed from a mesh or weave of elongate material” as required by claim 10, or from “a mesh or a weave of elongate wire,” as required by claim 11. However, Schepisi describes these features. EX1003, ¶¶199, 203.

Schepisi teaches the use of a “mesh-type screen” that “can be positioned cylindrically within the barrel” that permits “enough air [to be] forced through the holes 105 to permit horizontal lifting/drying, etc.,” when the barrel is in the fully deflecting position, as shown in Figure 23:

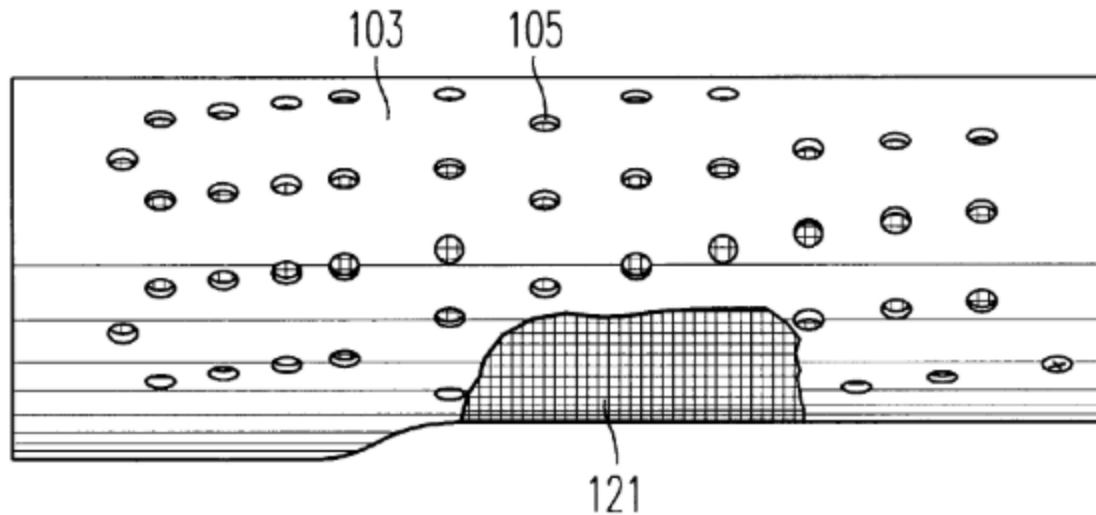


FIG. 23

EX1006, 11:12–30 , Fig. 23. Further, Schepisi teaches that “the mesh-type screen 121 can be a frame grid of wire netting.” *Id.*, 12:10–11. Accordingly, Schepisi teaches a “perforated layer” that “is formed from a mesh or weave of an elongate material” and that “the perforated layer is formed from a mesh or a weave of elongate wire,” as required by claims 10 and 11, respectively. EX1003, ¶¶200, 203. As explained above, it would have been obvious to a POSITA to use Schepisi’s mesh-type screen to form the modified hollow shaft of the combined Saito/Lindsey attachment to improve the deflection of the air exiting the shaft. Thus, these additional limitations are obvious over the combination of Saito, Lindsey, and Schepisi. *Id.*, ¶¶197–204.

**C. Ground 3: Obviousness over Saito in view of Lindsey and Nicolas
(Claims 15 and 16)**

1. Summary of Nicolas

Nicolas discloses a “fan assembly for creating an air current” that includes a “nozzle” that includes “an interior passage for receiving the air flow from the base, a mouth through which the air flow is emitted, the mouth being defined by facing surfaces of the nozzle, and spacers for spacing apart the facing surfaces of the nozzle”:

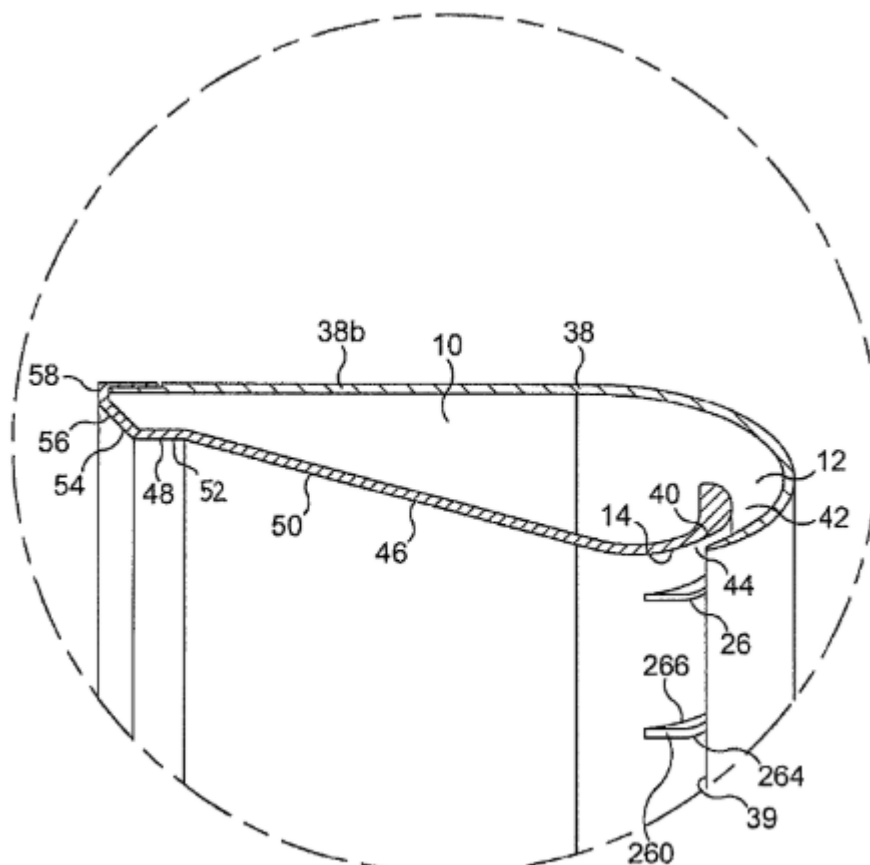


FIG. 4

EX1007, Abstract, Fig. 4. More specifically, Nicolas discloses that its “spacers are preferably arranged to maintain a set distance between the facing surfaces of the nozzle.” *Id.*, 3:39–40. Nicolas indicates that preferably, “the spacers are mounted on, preferably integral with, one of the facing surfaces of the nozzle,” and are “arranged to contact the other one of the facing surfaces.” *Id.*, 3:31–38.

2. Motivation to Combine Saito, Lindsey, and Nicolas and Reasonable Expectation of Success

A POSITA would have been motivated to combine Saito’s brush attachment with Lindsey’s teaching of the use of an array of vanes for the reasons expressed in Ground 1 that is incorporated into this Ground. *See* Section IV.A, *supra*.

It would have been obvious to a POSITA to combine Nicolas’s spacers with the slots formed by the vanes in the Saito/Lindsey attachment. EX1003, ¶¶79–81, 205–207. Nicolas indicates that the spacers “are mounted on, preferably integral with, one of the facing surfaces of the nozzle.” EX1007, 3:31–33. Thus, it would have been obvious to modify the array of vanes in the Saito/Lindsey attachment to include integral spacers that would contact the adjacent vane when in the cylindrical position while still allowing the attachment to be adjusted to a bulbous shape. EX1003, ¶206.

The use of Nicolas’s spacers with the Saito/Lindsey slots to “enable[] a smooth, even output of air flow to be delivered to a user’s location without the user feeling a ‘choppy’ flow” would have been nothing more than a predictable use of a

prior art element according to its established function. *KSR*, 550 U.S. at 417. Further, using Nicolas’s spacers—which is explicitly intended to be included in an air blower such as a fan—with the Saito/Lindsey attachment for an air-based hair dryer/styler would have been obvious as a rearrangement of existing parts that does not generate “a novel or unexpected result.” *In re Kuhle*, 526 F.2d at 554; EX1003, ¶207.

A POSITA would have been motivated to combine the Saito/Lindsey brush attachment as discussed above in Ground 1 with Nicolas’s spacers to take advantage of the benefits of maintaining a set distance between the gaps G formed between the adjacent vanes when the attachment is in the fully extended, cylindrical shape EX1003, ¶207. For example, Nicolas explains that “the use of spacers spacing apart the facing surfaces of the nozzle enables a smooth, even output of air flow to be delivered to a user’s location without the user feeling a ‘choppy’ flow.” EX1007, 2:38–41. Nicolas also notes that its spacers “provide for reliable, reproducible manufacture of the nozzle of the fan assembly,” which “means that a user should not experience a variation in the intensity of the air flow over time due to product aging or a variation from one fan assembly to another fan assembly due to variations in manufacture.” *Id.*, 2:41–46.

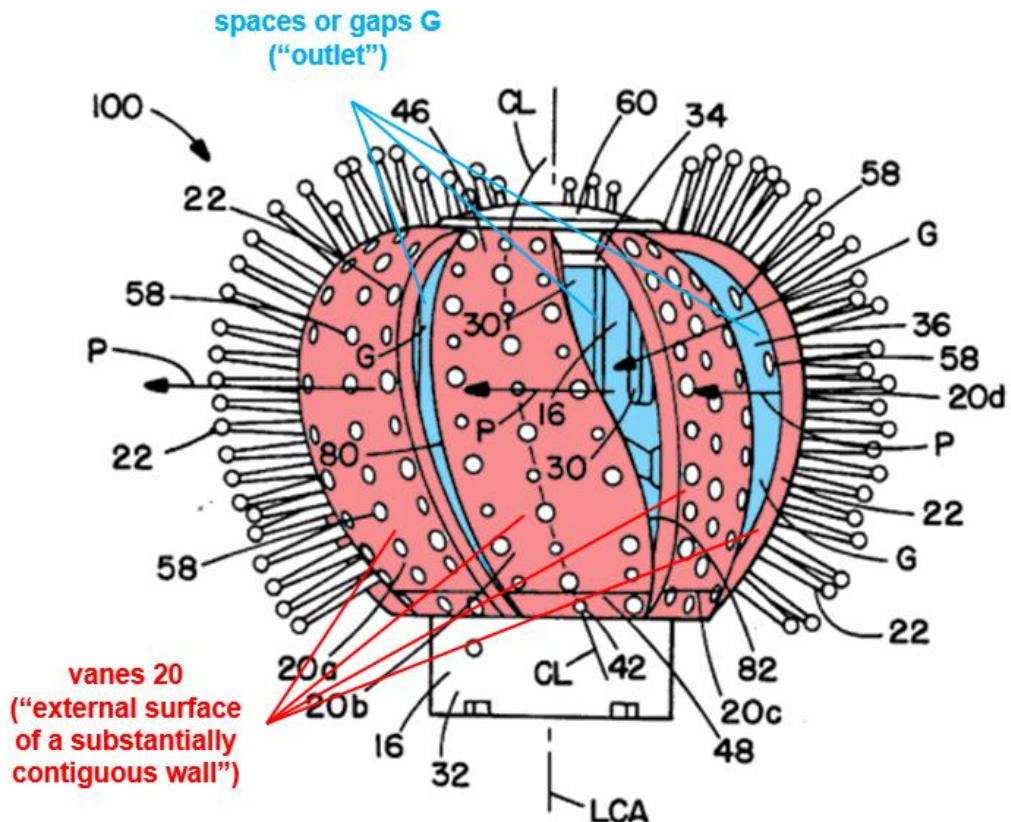
A POSITA would have had a reasonable expectation of success in combining the Saito/Lindsey brush attachment with Nicolas’s spacers because each of Saito,

Lindsey, and Nicolas describe the discharge of airflow from slot-shaped outlets. Thus, the combination of Saito, Lindsey, and Nicolas would have been nothing more than the use of a known technique (Nicolas’s spacers) to improve similar devices (the Saito/Lindsey attachment) in the same way to yield predictable results (maintenance of a set distance between the gaps G formed between the adjacent vanes and a “smooth, even output of air flow”). *Id.*, ¶206.

3. Detailed Analysis of Ground 3

The combination of Saito/Lindsey and Nicolas renders the additional spacer limitations of claims 15 and 16 obvious. EX1003, ¶¶208–16. Regarding element [1e] in Ground 1, Lindsey teaches that its “vanes” form the “exterior of a portion of the hair styler,” and “provide spaces or gaps G of varying widths and radial extents along and between side edges 80, 82 of mounted adjacent vanes.” EX1005, 4:15–20, 8:47–49. Lindsey’s “gaps G” (*i.e.*, “the at least one slot”) is “formed by a gap between adjacent sections of the wall,” *i.e.*, the vanes:

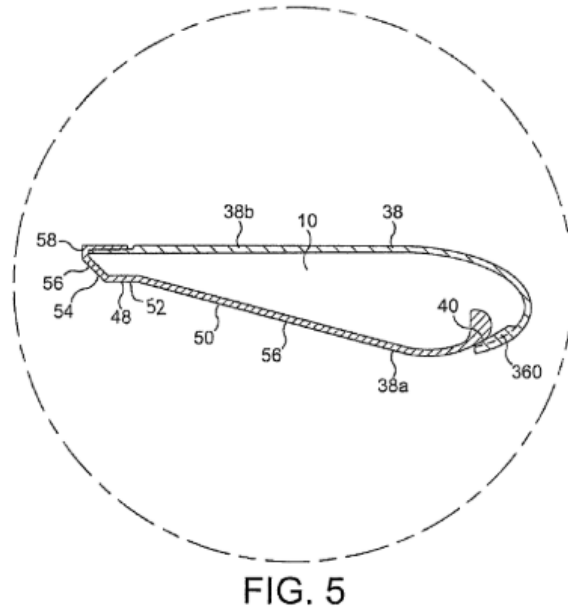
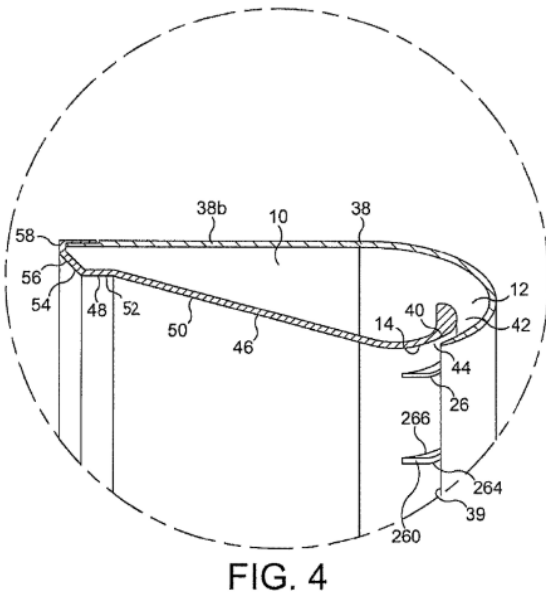
FIG. II.



Id., 5:65–67, Fig. 11 (annotations added). The Saito/Lindsey combination does not disclose that the Lindsey adjacent vanes “are joined by at least one spacer disposed between the beginning of the at least one slot and the end of the at least one slot to maintain the gap,” or that “the at least one spacer extends from an edge of a first section of the adjacent sections of the wall to an edge of a second section of the adjacent sections of the wall,” as required by claims 15 and 16. However, Nicolas discloses these features. EX1003, ¶¶209–10, 214.

Nicolas teaches the use of “spacers for spacing apart the facing surfaces of the nozzle,” which “[a]dvantageously . . . enables a smooth, even output of air flow to be delivered to a user’s location without the user feeling a ‘choppy’ flow.” EX1007,

2:38–41. “[T]he[] facing portions of the inner surface 39 and the outer surface 40 are held apart by spacers”:

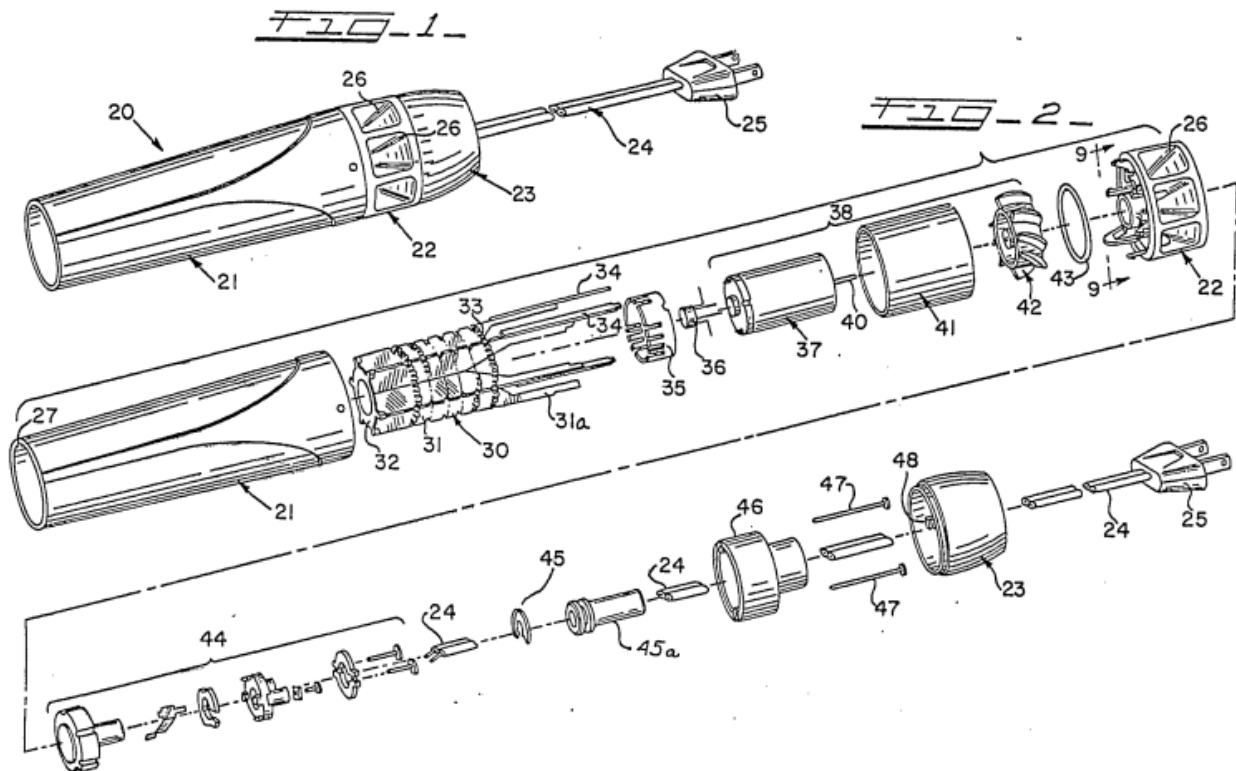


Id., 6:50–52, Figs. 3, 4. Accordingly, Nicolas teaches that “the at least one slot is formed by a gap between adjacent sections of the wall that are joined by at least one spacer disposed between the beginning of the at least one slot and the end of the at least one slot to maintain the gap” and that “the at least one spacer extends from an edge of a first section of the adjacent sections of the wall to an edge of a second section of the adjacent sections of the wall,” as required by claims 15 and 16, respectively. EX1003, ¶¶211, 215. As explained above, it would have been obvious to a POSITA to incorporate Nicolas’s spacers in the vanes of the combined Saito/Lindsey attachment. *Id.*, ¶¶211–216

D. Ground 4: Obviousness over Saito in view of Lindsey and Shoemaker (Claims 17–25, 27, and 29–32)

1. Summary of Shoemaker

Shoemaker discloses a “hand-held hair dryer or styler [that] is of tubular shape and is not provided with the normal handle grip.” EX1009, Abstract. Rather, “[a]n axial-flow fan ... having a small diameter enables the housing 21, 22 of the dryer or styler to be small enough to be comfortably held in the hand”:



Id., Figs. 1–2. Shoemaker teaches that “styling attachments” may be “releasably connected to the air outlet housing 27 to adapt the appliance for various combing and brushing operations in connection with the styling and drying of a user’s hair.”

Id., 2:64–69.

2. Motivation to Combine Saito, Lindsey, and Shoemaker and Reasonable Expectation of Success

It would have been obvious to a POSITA to combine the Saito/Lindsey attachment with Shoemaker's hand-held hair styling appliance, because Shoemaker's hair styling appliance is expressly intended to be used with "styling attachments." EX1003, ¶¶73–75, 217–19. Moreover, the Shoemaker hair styler provides ergonomic benefits, as Shoemaker notes that "lightweight axial flow fans have been incorporated in hair styling appliances," but that "[u]nless the outer diameter of the axial flow fan can be reduced to a size which can be easily and comfortably grasped for relatively long periods of time (5 to 10 minutes or more) by the hand of a user, an external handle, or a longer appliance is necessary for consumer acceptance." EX1009, 1:63–69. Thus, Shoemaker provides a hair styler with an axial-flow fan "having an outer diameter of sufficiently small dimension to allow a maximum diameter of said tubular body which is suitable for being grasped by a user during use so that the appliance may be used without any additional handle." *Id.*, 1:101–17.

Accordingly, the use of the combined Saito/Lindsey attachment with Shoemaker's axial-flow fan type hair styler to take advantage of its improved ergonomics would have been nothing more than a predictable use of a prior art element according to its established function. *KSR*, 550 U.S. at 417. Further, using Saito's brush attachment—which is explicitly intended to be used with a "hair

dryer”—with Shoemaker’s hand-held hair dryer/styler would have been obvious as a rearrangement of existing parts that does not generate “a novel or unexpected result.” *In re Kuhle*, 526 F.2d at 554; EX1003, ¶219.

A POSITA would have been motivated to combine Saito’s brush attachment with Lindsey’s teaching of the use of an array of vanes for the reasons expressed in Ground 1 that is incorporated into this Ground. Section IV.A, *supra*. A POSITA would have been further motivated to combine the Saito/Lindsey brush attachment as discussed above in Ground 1 with Shoemaker’s hand-held styling appliance to take advantage of the ergonomic benefits provided by Shoemaker’s axial-flow fan type design. Although both Saito and Lindsey disclose attachments for hair dryers, both just refer to use with a hair dryer generally. A POSITA would have looked to preexisting hair dryer designs, such as that taught by Shoemaker, for the structure of a hair dryer to be used. *Id.*, ¶219. Shoemaker explains that “[t]he short length of an axial flow fan eliminates the necessity of a separate handle,” and that its “hand-held hair drying or styling appliance” includes an axial-flow fan “having an outer diameter of sufficiently small dimension to allow a maximum diameter of said tubular body which is suitable for being grasped by a user during use so that the appliance may be used without any additional handle.” EX1009, 1:53–55, 1:101–17.

A POSITA would have had a reasonable expectation of success in combining the Saito/Lindsey brush attachment with Shoemaker's axial-flow fan hair styler, because both Saito and Lindsey disclose styling attachments for hair dryers. Shoemaker teaches that "styling attachments" may be "releasably connected to the air outlet housing 27 to adapt the appliance for various combing and brushing operations in connection with the styling and drying of a user's hair." EX1009, 2:64–69; EX1003, ¶¶75, 218–19, 227. The combination of Saito, Lindsey, and Shoemaker would have been nothing more than the use of a known technique (Shoemaker's axial-fan type hair styler) to improve similar devices (the Saito/Lindsey brush attachment) in the same way to yield predictable results (a handle-less styler that "can be easily and comfortably grasped for relatively long periods of time"). EX1003, ¶¶217–19.

3. Detailed Analysis of Ground 4

The combination of Saito, Lindsey, and Shoemaker renders claims 17–25, 27, and 29–32 of the '979 patent obvious.

a. Independent Claim 17

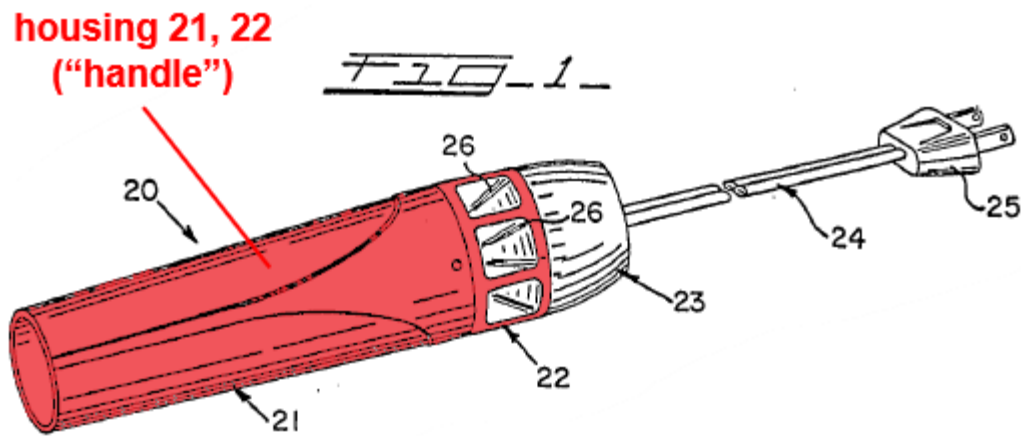
Independent claims 1 and 17 differ only in their respective preambles: claim 1 is directed to "[a]n attachment for a hand held appliance," and claim 17 is directed to "[a] hand held appliance comprising ... an attachment." EX1001, cls. 1, 17. The limitations relating to the "attachment" are identical in both claims, and are rendered

obvious by Saito and Lindsey for the same reasons expressed above with respect to Ground 1. Section IV.A, *supra*. The remaining limitations of element [17pre] are obvious in view of Shoemaker.

- 1) [17pre] **“A hand held appliance comprising a handle having a fluid flow path from a handle inlet to a handle outlet, a fan unit for drawing fluid into the handle inlet, and an attachment for attaching to the handle, the attachment comprising”**

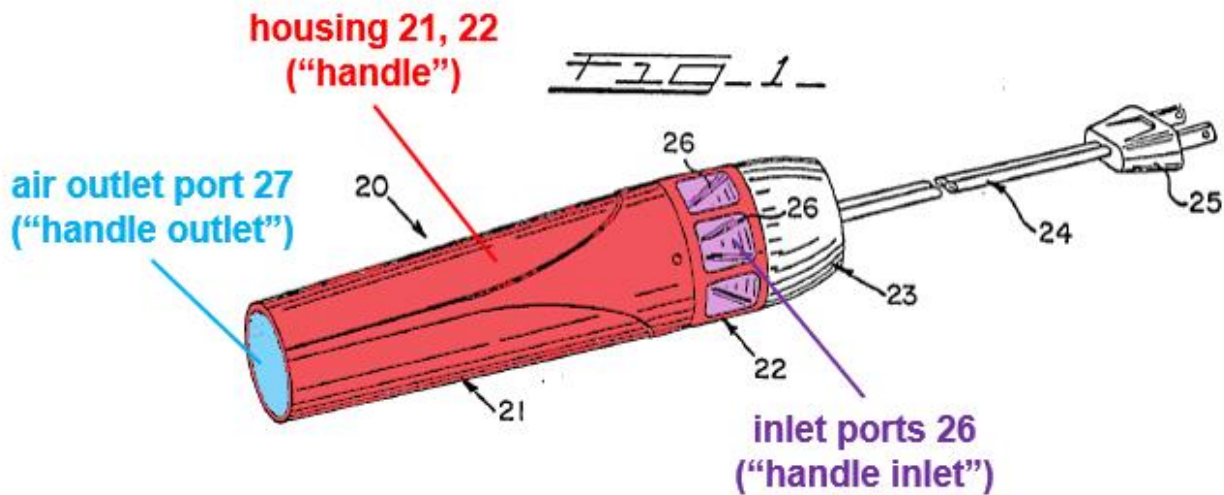
The combination of Saito/Lindsey and Shoemaker renders [17pre] obvious. EX1003, ¶¶222–27.

A hand held appliance comprising a handle. Saito discloses a “hair dryer” (*i.e.*, a “hand held appliance”), but Saito does not explicitly disclose that its “hair dryer” comprises a handle. However, Shoemaker discloses this limitation. EX1003, ¶223. Shoemaker discloses a “hand-held hair drying or styling appliance” that includes a “tubular body which is suitable for being grasped by a user during use so that the appliance may be used without any additional handle.” EX1009, 1:101–17. As shown in Figure 1, the Shoemaker hair styler “is of tubular shape,” and “the housing 21, 22 of the dryer or styler [is] small enough to be comfortably held in the hand”:



Id., Abstract, Fig. 1. Accordingly, the “housing 21, 22” of the Shoemaker hair styler is a “handle” as required by [17pre]. EX1003, ¶223.

A fluid flow path from a handle inlet to a handle outlet. Shoemaker’s hair styler has “inlet ports 26” that are “positioned around the tubular outline of the air inlet and switching housing 22,” (*i.e.*, “a handle inlet”), as well as a “circular air outlet port 27,” (*i.e.*, “a handle outlet”) at the end of the housing 21:



EX1009, Fig. 1. Shoemaker also describes “a fluid flow path” from its inlet ports 26 to its air outlet port 27. EX1003, ¶¶224–25. Shoemaker explains that “air passing through the styler 20 enters same through a plurality of air inlet ports 26-26,” and the “air flows through the fan and heater housing 21 from right to left.” EX1009, 2:53–58. Subsequently, “[t]he warm and rapid flowing air exits the styler 20 through a circular air outlet port 27 defining the left end of the appliance as shown.” *Id.*, 2:62–64.

A fan unit for drawing fluid into the handle inlet. Shoemaker’s hair styler includes an “axial flow fan 42” within its housing 21. *Id.*, 2:110–12. Shoemaker explains that “the air is driven through the housing 21 by the fan.” *Id.*, 2:58–62. EX1003, ¶226.

An attachment for attaching to the handle. Shoemaker explains that “styling attachments ... may be releasably connected to the air outlet housing 27 to adapt the

appliance for various combing and brushing operations in connection with the styling and drying of a user's hair.” EX1009, 2:64–69; EX1003, ¶227.

2) [17a]–[17h]

As explained above, it would have been obvious to a POSITA to use Shoemaker's hand-held hair styling appliance with the combined Saito/Lindsey attachment. Thus, these additional limitations are obvious over the combination of Saito, Lindsey, and Shoemaker. EX1003, ¶¶218–19, 228–35.

b. Claims 18–25, 27, and 29

These claims recite the same limitations as dependent claims 2–13,⁷ and are obvious over the combinations of Saito, Lindsey, and Shoemaker for the same reasons expressed in Ground 1. EX1003, ¶¶236–45.

⁷ Claims 27 and 29 recite the same limitations as claims 12 and 13, but claims 12 and 13 refer to claim 9, which further requires that “the flow directing element comprises a perforated layer,” whereas claims 27 and 29 refer back to claim 24 (corresponding to claim 8), which requires only “a flow directing element between the inlet and the outlet,” *i.e.*, no “perforated layer” is required.

c. Claim 30

“The appliance of claim 17, wherein the appliance is a hair care appliance.”

Shoemaker describes a “hand-held hair styling or drying appliance[] using axial-flow fans therein.” EX1009, 1:5–6. Accordingly, the combination of Saito, Lindsey, and Shoemaker renders obvious “a hair care appliance.” EX1003, ¶246.

d. Claim 31

“The appliance of claim 17, wherein the appliance is a hot styling appliance.”

Shoemaker describes a “hand-held hair styling appliance” that includes a “heater housing” and “heating element” that warms the air prior to exiting the styler. EX1009, 2:24–29, 2:56–64. Accordingly, the combination of Saito, Lindsey, and Shoemaker renders obvious “a hot styling appliance.” EX1003, ¶247.

e. Claim 32

“The appliance of claim 17, wherein the appliance is a hot styling brush.”

As explained above with respect to claim 31, Shoemaker describes a “hand-held hair styling appliance” that includes a “heater housing” and “heating element” that warms the air prior to exiting the styler. EX1009, 2:24–29, 2:56–64. Shoemaker further notes that “styling attachments (not shown) may be 130 releasably connected to the air outlet housing 27 to adapt the appliance for various *combing and brushing operations* in connection with the styling and drying of a user’s hair.” EX1009,

2:64–69. Accordingly, the combination of Saito, Lindsey, and Shoemaker renders obvious “a hot styling brush.” EX1003, ¶248.

E. Ground 5: Obviousness over Saito in view of Lindsey, Schepisi, and Shoemaker (Claims 26 and 28)

Claims 26 and 28 recite the same limitations as claims 10 and 11, respectively, and are obvious over the combination of Saito, Lindsey, Schepisi, and Shoemaker for the same reasons expressed in Ground 2. EX1003, ¶¶249–51.

V. ENABLEMENT AND SECONDARY CONSIDERATIONS

The references relied upon herein are all enabled. EX1003, ¶¶68, 72, 75, 78, 81. There are no secondary considerations of non-obviousness tied to the Challenged Claims. *Id.*, ¶¶252–54.

VI. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

A. Discretionary Denial Under § 314(a) Is Not Warranted

The Litigation Petitioners include a stipulation under *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12, at 19 (PTAB Dec. 1, 2020), stipulating that if the Board institutes an IPR in response to this petition, then the Litigation Petitioners will not pursue in the district court litigation the grounds raised in this petition for IPR or any other grounds that could have reasonably been raised before the Board in this proceeding. EX1027. The USPTO Director’s Memorandum from

June 21, 2022 (“Director’s Memorandum”)⁸ explains that when a petitioner makes a *Sotera*-type stipulation, “the PTAB will not discretionarily deny institution of an IPR ... in view of parallel district court litigation where a petitioner stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition.” Director’s Memorandum at 7 (citing *Sotera* at 18–19). Pursuant to the Director’s Memorandum, the Board should not exercise its discretion to deny institution here.

B. Discretionary Denial Under § 325(d) Is Not Warranted

The arguments presented in this Petition are new and non-cumulative of the art considered during prosecution. The Examiner did not consider Lindsey in combination with Saito (Grounds 1–5) or Shoemaker (Grounds 4 and 5), neither of which is listed on the face of the ’979 patent. EX1001, Cover. And, the Lindsey reference explicitly discloses “at least one slot *extending continuously from the proximal first portion to a distal end of the attachment*,” which was the limitation added as an Examiner’s Amendment in order for the claims of the ’979 patent to be

⁸ “Interim Procedure for Discretionary Denials in AIA Post Grant Proceedings with Parallel District Court Litigation,” *available at* https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

allowed. EX1002, 1941–58. Accordingly, institution should not be denied under Section 325(d).

VII. CONCLUSION

Petitioners established a reasonable likelihood that the Challenged Claims are unpatentable. Petitioners therefore respectfully request that IPR be instituted.

DATED: June 7, 2024

Respectfully Submitted,

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CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Under the provisions of 37 C.F.R. § 42.24(d), the undersigned attorney hereby certifies that the word count for Sections I–VII of the foregoing Petition for *Inter Partes* Review is 13,991, according to the word count tool in Microsoft Word.

DATED: June 7, 2024

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CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(a), (b) on the Patent Owner via FedEx overnight mail of a copy of this Petition for *Inter Partes* Review and supporting materials at the Patent Owner at the correspondence address of record for the '979 patent:

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APPENDIX: CHALLENGED CLAIM LISTING

No.	Limitation
[1pre]	An attachment for a hand held appliance comprising
[1a]	an inlet in a proximal first portion of the attachment;
[1b]	an outlet in a cylindrical second portion of the attachment; and
[1c]	a fluid flow path between the inlet and the outlet,
[1d]	wherein the outlet in the cylindrical second portion of the attachment comprises at least one slot extending continuously from the proximal first portion to a distal end of the attachment,
[1e]	wherein the outlet is at least partially defined by an external surface of a substantially contiguous wall of the attachment and
[1f]	[the outlet] is configured to direct fluid flow emitted from the outlet tangentially along and around the external surface of the substantially contiguous wall to form a circumferential fluid flow around the cylindrical second portion of the attachment that encourages hair to automatically wrap around the cylindrical second portion,
[1g]	wherein the external surface of the substantially contiguous wall is an outermost surface of the attachment along an entire length of the attachment from a beginning of the at least one slot to an end of the at least one slot, and
[1h]	wherein the distal end of the attachment is closed.
2	The attachment of claim 1, wherein the outlet comprises a plurality of slots radially spaced around the attachment.
3	The attachment of claim 1, wherein the attachment is configured so that, in use, the fluid emitted from the outlet is attracted to the external surface of the attachment.
4	The attachment of claim 1, wherein the outlet comprises two slots.
5	The attachment of claim 1, wherein the attachment has a longitudinal axis and the at least one slot is parallel to the longitudinal axis.
6	The attachment of claim 1, wherein the attachment has a longitudinal axis and the at least one slot is non-parallel to the longitudinal axis.

No.	Limitation
7	The attachment of claim 6, wherein the at least one slot is helical with respect to the longitudinal axis.
8	The attachment of claim 1, further comprising a flow directing element between the inlet and the outlet.
9	The attachment of claim 8, wherein the flow directing element comprises a perforated layer.
10	The attachment of claim 9, wherein the perforated layer is formed from a mesh or weave of an elongate material.
11	The attachment of claim 9, wherein the perforated layer is formed from a mesh or a weave of elongate wire.
12	The attachment of claim 9, wherein the flow directing element extends substantially along a length of the at least one slot.
13	The attachment of claim 9, wherein the flow directing element extends substantially around an inner circumference of the attachment.
14	The attachment of claim 1, wherein the wall comprises a plurality of plates.
15	The attachment of claim 1, wherein the at least one slot is formed by a gap between adjacent sections of the wall that are joined by at least one spacer disposed between the beginning of the at least one slot and the end of the at least one slot to maintain the gap.
16	The attachment of claim 15, wherein the at least one spacer extends from an edge of a first section of the adjacent sections of the wall to an edge of a second section of the adjacent sections of the wall.
[17pre]	A hand held appliance comprising a handle having a fluid flow path from a handle inlet to a handle outlet, a fan unit for drawing fluid into the handle inlet, and an attachment for attaching to the handle,
[17a]	the attachment comprising an inlet in a proximal first portion of the attachment;
[17b]	an outlet in a cylindrical second portion of the attachment; and
[17c]	a fluid flow path between the inlet and the outlet,

No.	Limitation
[17d]	wherein the outlet in the cylindrical second portion of the attachment comprises at least one slot extending continuously from the proximal first portion to a distal end of the attachment,
[17e]	wherein the outlet is at least partially defined by an external surface of a substantially contiguous wall of the attachment and
[17f]	[the outlet] is configured to direct fluid flow emitted from the outlet tangentially along and around the external surface of the substantially contiguous wall to form a circumferential fluid flow around the cylindrical second portion of the attachment that encourages hair to automatically wrap around the cylindrical second portion,
[17g]	wherein the external surface of the substantially contiguous wall is an outermost surface of the attachment along an entire length of the attachment from a beginning of the at least one slot to an end of the at least one slot, and
[17h]	wherein the distal end of the attachment is closed.
18	The appliance of claim 17, wherein the outlet comprises a plurality of slots radially spaced around the attachment.
19	The appliance of claim 17, wherein the attachment is configured so that, in use, the fluid emitted from the outlet is attracted to the external surface of the attachment.
20	The appliance of claim 17, wherein the outlet comprises two slots.
21	The appliance of claim 17, wherein the attachment has a longitudinal axis and the at least one slot is parallel to the longitudinal axis.
22	The appliance of claim 17, wherein the attachment has a longitudinal axis and the at least one slot is non-parallel to the longitudinal axis.
23	The appliance of claim 22, wherein the at least one slot is helical with respect to the longitudinal axis.
24	The appliance of claim 17, further comprising a flow directing element between the inlet and the outlet.
25	The appliance of claim 24, wherein the flow directing element comprises a perforated layer.
26	The appliance of claim 25, wherein the perforated layer is formed from a mesh or weave of an elongate material.

No.	Limitation
27	The appliance of claim 24, wherein the flow directing element extends substantially along a length of the at least one slot.
28	The appliance of claim 25, wherein the perforated layer is formed from a mesh or a weave of elongate wire.
29	The appliance of claim 24, wherein the flow directing element extends substantially around an inner circumference of the attachment.
30	The appliance of claim 17, wherein the appliance is a hair care appliance.
31	The appliance of claim 17, wherein the appliance is a hot styling appliance.
32	The appliance of claim 17, wherein the appliance is a hot styling brush.