IN THE UNITED STATES PATENT TRIAL AND APPEAL BOARD

In re *Inter Partes* Review of:	)	
	)	
U.S. Patent No. RE 44,453	)	
	)	
Issued: August 27, 2013	)	
	)	
Inventors: Alexander Virr et al.	)	
	)	
Application No. 13/100,783	)	
	)	
Filed: May 4, 2011	)	
	)	FILED ELECTRONICALLY
For: HUMIDIFIER WITH STRUCTURE TO PREVENT BACKFLOW OF LIQUID THROUGH THE HUMIDIFIER INLET	)	PER 37 C.F.R. § 42.6(b)(1)

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PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. RE 44,453

BMC Medical Co. Ltd. requests *inter partes* review of claims 9-19, 23-36, 40, and 63 of U.S. Patent No. RE 44,453 (Ex. 1001), now assigned to ResMed Limited, in accordance with 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 *et seq*.

An electronic payment in the amount of $29,200.00 for the *inter partes* review fee specified by 37 C.F.R. § 42.15(b) is being paid at the time of filing this petition. If there are any additional fees due in connection with the filing of this paper, please charge the required fees to our Deposit Account No. 06-0916.

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LIST OF EXHIBITS

Petition Exhibit 1001:	U.S. Patent No. RE 44,453 to Virr et al.
Petition Exhibit 1002:	U.S. Patent No. 1,085,833 to Wilson ("*Wilson*").
Petition Exhibit 1003:	Sullivan HumidAire User's Instructions ("*Instructions*").
Petition Exhibit 1004:	Declaration of Steve Bordewick.
Petition Exhibit 1005:	IPR2014-00551, Paper No. 1, "Petition for *Inter Partes* Review of U.S. Patent No. RE44,453."
Petition Exhibit 1006:	IPR2014-001196, Paper No. 1, "Petition for *Inter Partes* Review of U.S. Patent No. RE44,453."
Petition Exhibit 1007:	ITC Investigation No. 337-TA-890: Initial Determination Granting Complainants' Motion to Amend Complaint and Notice of Investigation and Granting Respondents' Motion to Terminate the Investigation With Respect to U.S. Patent No. 7,614,398.
Petition Exhibit 1008:	Case No. 13-cv-1246-CAB: Order on Motion to Stay, Motion to Dismiss, and Related Discovery Request.
Petition Exhibit 1009:	Case No. SACV 13-00498: Order Granting Defendants' Motion to Stay Litigation Pending *Inter Partes* Review.
Petition Exhibit 1010:	Patent Prosecution History of Reissue Patent Application 13/944,960.
Petition Exhibit 1011:	Patent Prosecution History of U.S. Patent No. 7,614,398.
Petition Exhibit 1012:	Patent Prosecution History of U.S. Patent Reissue No. RE44,453.
Petition Exhibit 1013:	U.S. Patent No. 5,870,283 to Maeda et al. ("*Maeda*").
Petition Exhibit 1014:	Australian Application No. PR3117.
Petition Exhibit 1015:	ITC Investigation No. 337-TA-890: Order No. 8: Construing Terms of the Asserted Patents.

Petition Exhibit 1016:	ITC Investigation No. 337-TA-890: Denying Respondents' Motion for Summary Determination of Invalidity of U.S. Patent No. RE44,453.
Petition Exhibit 1017:	U.S. Patent No. 4,588,425 to Usry et al. ("*Usry*").
Petition Exhibit 1018:	PCT International Publication No. WO 00/21602 to *Prime*.
Petition Exhibit 1019:	U.S. Patent No. 5,673,687 to Dobson et al. ("*Dobson*").
Petition Exhibit 1020:	Australian Application No. PR7288.
Petition Exhibit 1021:	International Publication No. WO 02/066106A1.
Petition Exhibit 1022:	ITC Investigation No. 337-TA-890: Notice of Commission Determination Not to Review an Initial Determination Granting the Complainants' Motion to Amend the Complaint and Notice of Investigation to Substitute U.S. Patent No. RE 44,453 for U.S. Patent No. 7,614,398 and Granting Respondents' Motion to Terminate the Investigation with Respect to U.S. Patent No. 7,614,398.
Petition Exhibit 1023:	U.S. Patent No. 6,185,095 to Helot et al. ("*Helot*").
Petition Exhibit 1024:	U.S. Patent No. 2,780,708 to Glynn et al. ("*Glynn*").

I. PRELIMINARY STATEMENT

On March 4, 2011, the Patent Owner filed an application to reissue U.S. Patent No. 7,614,398. The inventors alleged they "had a right to claim a humidifier not limited by a connecting structure configured to connect between the humidifier and a CPAP apparatus as recited in claim 1 of the issued patent." Ex. 1012, Reissue Declaration, at ¶¶ 9-10. But they did not have a right to claim such subject matter (*see, e.g.*, claims 9-19, 23-24, 40, and 63), or any of the other subject matter that found its way into the new application claims issuing as claims 9-19, 23-36, 40, and 63 of U.S. Patent No. RE 44,453.

The '453 patent's specification acknowledges that humidifiers were well known. Ex. 1001, at 1:29-39. The only purported development in claims 9-19, 23-24, 40, and 63 is thus a humidifier that helps prevent "backflow of liquid through [a] humidifier inlet." *Id.* at title. But 87 years before the claimed priority date, U.S. Patent No. 1,085,833 to Wilson ("*Wilson*") (Ex. 1002) already disclosed the humidifier of claims 9-19, 23-24, 40, and 63. Indeed, back in 1914, *Wilson* disclosed an inhaler arranged to prevent backflow of liquid through an inlet port a^2, in the same way as claims 9-19, 23-24, 40, and 63 suggest. *See id.* at 1:44-60 and Figs. 2 and 3. For example, *Wilson* explains, "when the inhaler is tilted as shown in Fig. 3, the said exterior inlet port a^2 will be well above the level of the medicated liquid in the container, thereby guarding against overflow, even if the inhaler is placed in a horizontal position." *Id.*

Claims 25-36, which are directed to a humidifier assembly for a Continuous Positive Airway Pressure (CPAP) apparatus, Ex. 1001 at 13: 31-32, fare no better. Humidifiers and CPAP devices were well known. *Id.* at 1:29-39. The only purported development in claims 25-36 is thus a humidifier assembly with "a connecting structure configured to connect between the CPAP apparatus and humidifier and allow communication of an outlet of the CPAP apparatus with the inlet of the humidifier, the connecting structure comprising a housing, . . . a heating element . . ., and a retaining portion."

Although the patent claims priority to two Australian applications filed in 2001, the subject matter of claims 25-36 was not disclosed until PCT application PCT/AU02/00155 was filed on February 14, 2002, long after such subject matter had been described in a printed publication. More than one year before the PCT filing, ResMed published the User's Instructions for its Sullivan HumidAire ("*Instructions*") (Ex. 1003), disclosing the claimed humidifier assembly.

As discussed in more detail below, the disclosures of *Wilson* and the *Instructions*; as well as those of other patents and publications, warrant the cancellation of claims 9-19, 23-36, 40, and 63.

II. MANDATORY NOTICES

A. Real Party-in-Interest

The real parties-in-interest are BMC Medical Co. Ltd.; 3B Products, L.L.C.; and 3B Medical Inc.

B. Related Matters

The '453 patent is a reissue of the '398 patent, which was asserted in *In the Matter of Certain Sleep-Disordered Breathing Treatment Systems and Components Thereof*, ITC Investigation No. 337-TA-890, but later substituted for the '453 patent. Ex. 1007; Ex. 1022.

ResMed also asserted the '398 patent in *ResMed Inc. v. BMC Medical Co., Ltd., et al.*, 313-cv-01246 (CASD), and *ResMed Inc. et al v. Apex Medical Corporation et al.*, 8:13-cv-00498 (CACD), but has not asserted the '453 patent in these cases. The district court cases have been stayed pending the outcome of ITC Investigation Nos. 337-TA-890 and 337-TA-879, respectively. *See* Ex. 1008, Ex. 1009.

ResMed filed a second reissue application of the '398 patent, U.S. Patent Application No. 13/944,960, which has also been stayed pending the outcome of the related litigations. Ex. 1010, Interview Summary at 70.

The '453 patent is being challenged in two *inter partes* reviews. Apex Medical Corp. challenged claims 1-7 of the '453 patent in IPR2014-00551, filed March 27, 2014, Ex. 1005; and BMC challenged claims 1-7 of the '453 patent in IPR2014-01196, filed July 23, 2014, Ex. 1006. Regardless of whether the Board institutes trial in the earlier petitions, the Board should grant this petition and institute trial on all grounds because the claims in this petition were not addressed in the earlier petitions.

C. Lead and Back-Up Counsel, and Service Information

Lead Counsel: E. Robert Yoches (Reg. No. 30,120), Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, 901 New York Avenue, NW, Washington, DC 20001 (202.408.4039; e-mail: bob.yoches@finnegan.com; fax: 202.408.4400).

Backup Counsel: Joshua L. Goldberg (Reg. No. 59,369), Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, 901 New York Avenue, NW, Washington, DC 20001 (202.408.6092; e-mail: joshua.goldberg@finnegan.com; fax: 202.408.4400).

Petitioner consents to e-mail service at BMC-ResMed-IPR@finnegan.com.

III. THE '453 PATENT

The '453 patent describes humidifiers for use with devices that supply breathable gas, such as CPAP devices. Ex. 1001, at 1:25-28. Conventional CPAP devices included a blower to supply gas to a patient, and it was known to use a humidifier to add humidity to the gas for the comfort of the patients. *Id.* at 1:29-39. The humidifier and blower were typically separate components either connected via a flexible conduit or a rigid connection. *Id.* at 1:40-44. According to the patent, these known arrangements presented a problem in that "water may run or spill from the humidifier into the blower outlet." *Id.* at 1:46-50.

To address this issue, the patent discloses humidifiers intended to prevent liquid from leaving an inlet of the humidifier when the humidifier is not upright. *Id.* at 1:53-56; 2:3-7. A humidifier 10 (Fig. 1) with a fluid passage includes an inlet 22, an outlet 24, an orifice 20, and portions of chambers 14 and 16. *Id.* at 4:39-43. The patent

alleges that the configuration of the chambers, size and placement of the inlet and outlet, and size and placement of the orifice between the chambers "decrease the possibility of liquid exiting the inlet of the humidifier." *Id.* at 5:23-29. The '453 patent also discloses a humidifier 30 having an inlet 32 and outlet 34 in a top cover 36. *See id.* at 6:15-30; Figs. 6 and 7. Humidifier 30 includes a base 40 and a gasket 38 between top cover 36 and base 40. *Id.* at 6:41-43. Humidifier 30 is removably attachable to a CPAP apparatus through the use of a connecting structure. *See id.* at 9:25-29. Figure 14 shows humidifier 30 and connecting structure 100.

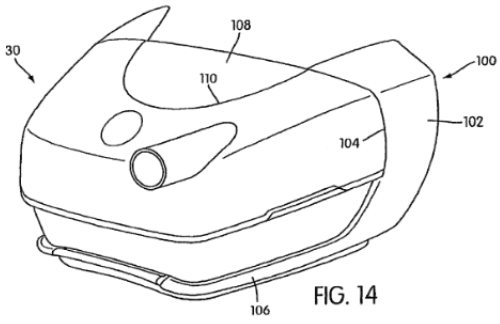


FIG. 14

Connecting structure 100 includes conventional components such as housing 102 with a base portion 106 to support humidifier 30, a heater 152 to heat humidifier 30, a retaining portion 108 to secure connecting structure 100 to humidifier 30, and a retaining mechanism 140 to secure a CPAP apparatus to connecting structure 100. *See id.* at 9:30-35, 10:4-9, 34; 11:23-25.

IV. GROUNDS FOR STANDING

Petitioner certifies the '453 patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review of the '453 patent challenging the patent claims on the grounds identified in this petition. The challenges in this petition are directed only at claims in the '453 patent that were not present in the '398 patent.

V. STATEMENT OF PRECISE RELIEF REQUESTED FOR EACH CLAIM CHALLENGED

A. Claims for Which Review is Requested

Petitioner respectfully requests review under 35 U.S.C. § 311 of claims 9-19, 23-36, 40, and 63 of the '453 patent, and the cancellation of these claims as unpatentable.

B. Statutory Grounds of Challenge

Claims 9-19, 23-36, 40, and 63 are unpatentable under 35 U.S.C. §§ 102 and/or 103. The claim construction, reasons for unpatentability, and specific evidence supporting this request are detailed below.

C. Claim Construction - Broadest Reasonable Interpretation

Claim terms are given their ordinary and accustomed meaning as understood by one of ordinary skill in the art. [1] *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc). A claim in an unexpired patent subject to *inter partes* review receives the "broadest reasonable construction in light of the specification of the patent in which it appears." 37 C.F.R. § 42.100(b). And as such, the constructions in this proceeding may differ from the constructions in any district court or ITC

[1] The ALJ in the 890 Investigation found that a person of ordinary skill in the art would have a degree in mechanical engineering, biomedical engineering, or a similar technical field, and at least five (5) years of relevant product design experience or equivalent advanced education. *See* Ex. 1015 at 5. Petitioner applies this level of ordinary skill in this petition.

litigation, including ITC Investigation No. 337-TA-890. The broadest reasonable interpretation should be applied to any claim terms not addressed below.

Claim 28 recites "a retaining mechanism configured to secure the connecting structure to the CPAP apparatus." Ex. 1001 at 14:2-3. In light of the specification, this phrase should be construed to mean "a structure that holds the CPAP apparatus in position on the connecting structure when in its normal orientation." *See, e.g.,* Ex. 1001, 10:7-16.

VI. CLAIMS 25-36 OF THE '453 PATENT ARE NOT ENTITLED TO ANY PRIORITY DATE EARLIER THAN FEBRUARY 14, 2002

The '453 patent is a reissue of the '398 patent, which was filed on July 15, 2005, as a continuation of U.S. Patent Application No. 10/467,382, a National Stage entry of PCT/AU02/00155, filed on February 14, 2002 (Ex. 1021). The '453 patent claims priority to Australian Application No. PR3117, filed February 16, 2001, and Australian Application No. PR7288, filed August 27, 2001, but claims 25-36 are not entitled to the filing dates of these Australian applications.

For a claim in a later application to be entitled to the filing date of an earlier application under 35 U.S.C. § 119, the earlier application must comply with 35 U.S.C. § 112, ¶ 1 as applied to such claim. *See In re Ziegler*, 992 F.2d 1197, 1200 (Fed. Cir. 1993). Section 112, paragraph 1, requires that the specification "contain a written description of the invention, and of the manner and process of making and using it." Thus, the priority application must reasonably convey to one of skill in the art that the

inventor possessed the later-claimed subject matter at the time the parent application was filed. *See Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991).

Australian Application Nos. PR3117 (Ex. 1014) and PR7288 (Ex. 1020) do not provide written-description support for claims 25-36 of the '453 patent. Neither application discloses the connecting structure recited in lines 46-60 of claim 25.[2] Ex. 1004 at ¶ 27. The figures and corresponding disclosure of the connecting structure and its components were first introduced in the PCT filing. *Compare* Ex. 1021 at 34-42 *with* Ex. 1014 and Ex. 1020, for example. Accordingly, claims 25-36 are not entitled to any priority date earlier than the PCT filing date, i.e., February 14, 2002.

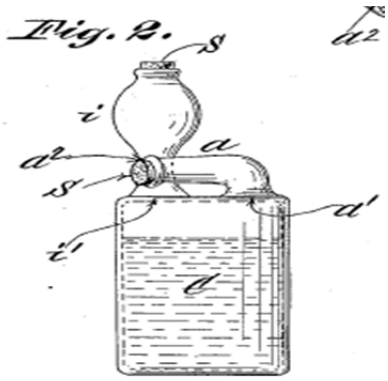
VII. CLAIMS 9-19, 23-36, 40, AND 63 OF THE '453 PATENT ARE UNPATENTABLE

A. Ground 1: *Wilson* anticipates claims 9-19, 40, and 63

U.S. Patent No. 1,085,833 to *Wilson* issued on February 3, 1914, so it is prior art under 35 U.S.C. § 102(b). *Wilson* describes an inhaler for humidifying a flow of air to be delivered to a user for purposes of inhalation in the treatment of diseases. *See* Ex. 1002 at title, 1:10-28, Figures 1-4; *see also* Ex. 1004 at ¶ 30. Fig. 2 of *Wilson*, reproduced below, illustrates a side elevation view of the inhaler.

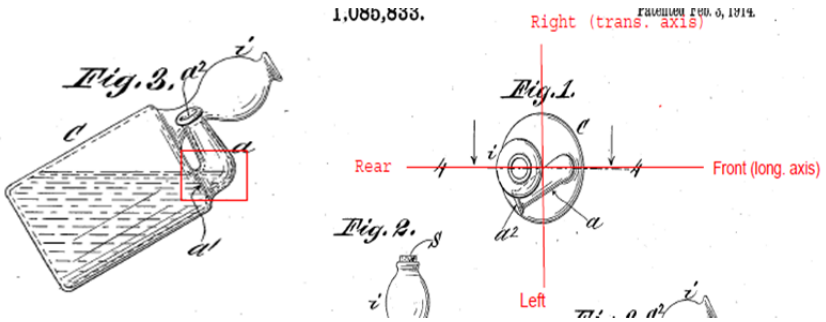
[2] In the related ITC litigation, ResMed did not dispute that the Australian Applications fail to disclose "any" connecting structure between the humidifier and the CPAP apparatus. *See* Ex. 1016 at 15-16.

The inhaler includes a container or receptacle C, integral and in communication with an inhalation or exhaust nozzle *i*, a vapor exhaust port i^1, an air inlet duct *a*, an air inlet port a^1, and an exterior inlet port a^2. *Id.* at 1:8-12, 1:17-28, 1:40-52, 1:64-96 and Figures 1-4.



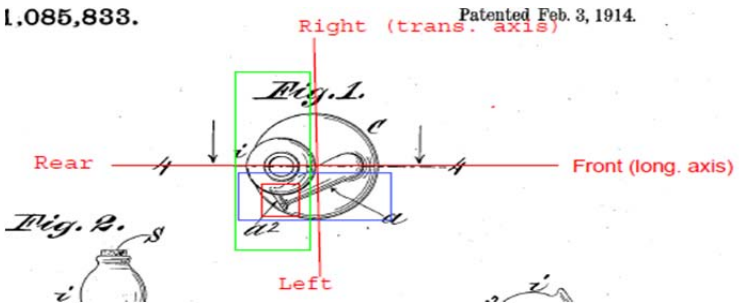
The receptacle C retains all the liquid to be used in the inhaler when the inhaler is in an upright, normal operating position. *Id.* at Figs. 2-4. The inhaler is arranged such that when liquid is contained in the receptacle C in the upright, normal operating position, the possibility of liquid flowing from the receptacle C through the air inlet port a^1 is reduced or prevented. *See id.* at 1:64-69 ("When held upright, or approximately so, the air and vapor may be withdrawn through the exhaust nozzle *i*, from above the surface of the medicated fluid in the container C, without having passed the air through said fluid."), and Figs. 1 and 4; *see also* Ex. 1004 at ¶ 31.

When the inhaler is rotated from an upright, normal operating position, as shown above, to a non-upright position, as illustrated by annotated Figure 3, below, liquid that flows from the receptacle C and through the air inlet port a^1 is collected in the air inlet duct *a* such that liquid does not flow out of exterior inlet port a^2. *See id.* at 1:44-60 and Figs. 2-3.

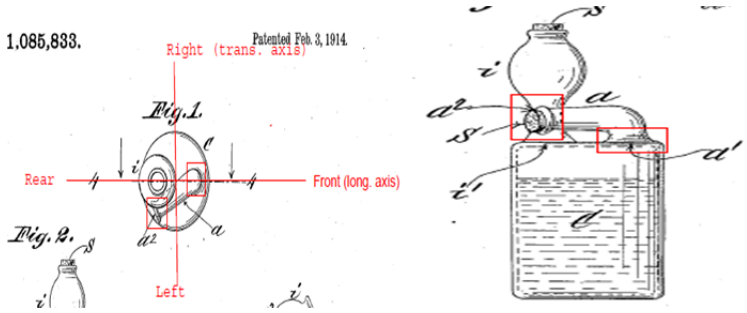


Additionally, as illustrated by annotated Figure 1 of *Wilson*, above, the inhaler has a longitudinal axis extending in a direction from a rear side of the inhaler to a front side of the inhaler, and a transverse axis extending in a direction from a left side of the humidifier body to a right side of the inhaler. *Wilson* further explains that no liquid will flow out of the exterior inlet port a^2 when the inhaler is rotated about 90° around the longitudinal axis and/or transverse axis from the upright, normal operating position. *Id.* at 1:44-60 ("When the inhaler is tilted as shown in Fig. 3, the said exterior inlet port a^2 will be well above the level of the medicated liquid in the container, thereby guarding against overflow, even if the inhaler is placed in a horizontal position."), and Figs. 2-3.

Wilson also discloses that the exhaust nozzle *i* is higher than the exterior inlet port a^2 in the upright, normal operating position, and that the receptacle C and the exhaust nozzle *i* have a larger volume than the air inlet duct *a*. *Id.* at Figs. 2-4. Further, as illustrated in annotated Figure 1, below, the exterior inlet port a^2 (red square) is positioned on a left side (blue rectangle) of the inhaler and rearward end (green rectangle) of a transverse side of the inhaler. *See id.* at Fig. 1.

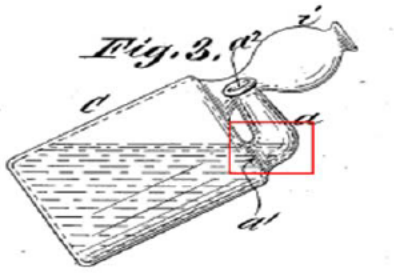


As shown in annotated Figures 1-2, below, *Wilson* discloses that a portion of the receptacle C extends forward of and to the side of the exterior inlet port a^2. *Id.* at Figs. 1-2. The outlet of the exhaust nozzle *i* is disposed above the air inlet port a^1. *Id.* at Fig. 2. Additionally, and as shown in the annotated Figure on the below right, *Wilson* discloses that a level of the predetermined maximum volume of liquid is below the air inlet port a^1 in the upright normal operating position. *See*, *e.g., id.* at 1:64-81 and Fig. 2.



As illustrated by the annotated Figure below, a level of the maximum volume of the body of liquid is below the exterior inlet port a^2 of the air inlet duct *a* when the inhaler is in a non-upright position in which a portion of the body of liquid is transferable along a fluid passage from the receptacle C to the air inlet duct *a*. *See* *id.* at 1:44-60 and Figs. 2-3. Additionally, the maximum volume of the body of liquid is

retained in the receptacle C and the air inlet duct *a* below the exterior inlet port a^2 of the air inlet duct *a* in a non-upright position in which a portion of the body of liquid is transferable along a fluid passage from the receptacle C to the air inlet duct *a*. *Id.*

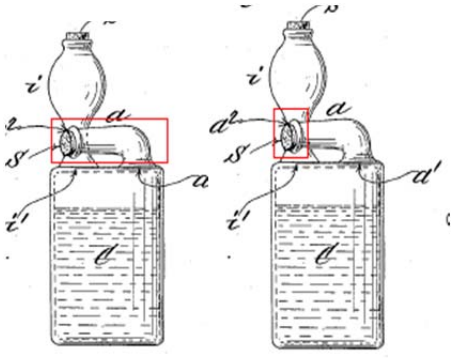


As further detailed in the claim chart below, *Wilson* discloses all elements of claims 9-19, 40, and 63 of the '453 patent.

Claims	**Exemplary Disclosure of Prior Art**
9. A humidifier for humidifying a flow of breathable gas to be delivered to a patient, the humidifier comprising:	*Wilson* discloses an inhaler (the claimed "humidifier")[3] for humidifying a flow of air (the claimed "breathable gas") to be delivered to a user (the claimed "patient"). Ex. 1002 at 1:8-12, 1:17-28, 1:64-96 and Figures 1-4.
a humidifier body configured to retain a body of liquid having a predetermined maximum volume, the humidifier body comprising:	*Wilson* discloses that the inhaler includes a container or receptacle C, integral with an inhalation or exhaust nozzle *i*, a vapor exhaust port i^1, an air inlet duct *a*, an air inlet port a^1, and an exterior inlet port a^2 (collectively, the claimed "humidifier body") configured to retain a body of liquid having a predetermined maximum volume[4]. Ex. 1002 at 1:8-11, 1:17-28, 1:40-52, 1:64-74 and Figures 2-4.

[3] The inhaler is a humidifier because the inhaler impregnates air with a liquid. Ex. 1004 at ¶ 30 (citing Ex. 1002 at 1:8-12, 1:17-28, and 1:64-96).

[4] The volume of liquid retained by *Wilson's* humidifier body, as shown in Figs. 2 and 4, is a predetermined maximum volume because the amount of liquid retained in

a first chamber having a first chamber inlet configured to receive the flow of breathable gas,	*Wilson* discloses that the humidifier body includes an air inlet duct *a* (the claimed "first chamber") having air inlet port a^2 (the claimed "first chamber inlet") configured to receive the air. Ex. 1002 at 1:40-52. The "first chamber" (left Figure) and the "first chamber inlet" (right Figure) are identified in annotated Figure 2, shown below: 
and a second chamber in communication with the first chamber through a passage,	*Wilson* discloses that the humidifier body also includes the receptacle C, exhaust nozzle *i*, and vapor exhaust port i^1 (collectively, the claimed "second chamber") in communication with the air inlet duct *a* through the air inlet port a^1 (the claimed "passage"). *See* Ex. 1002 at 1:40-52. The "second chamber" (left Figure) and the "passage" (right Figure) are identified in annotated Figure 2 shown below:

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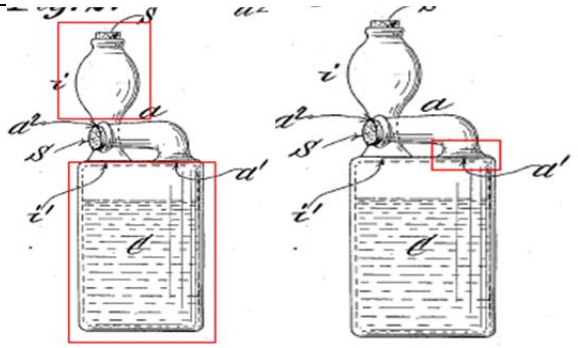
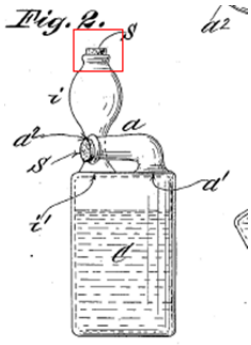
receptacle C is one of a number of maximum amounts of liquid for use during normal operation of the inhaler, which would still allow a user to inhale impregnated air taken from either above the surface of liquid or through the liquid, as well as preventing the risk of overflow when the inhaler is placed in a horizontal position. Ex. 1004 at ¶ 40 (citing Ex. 1002 at 1:8-11, 1:17-28, 1:40-52, 1:55-60, and 1:64-74).

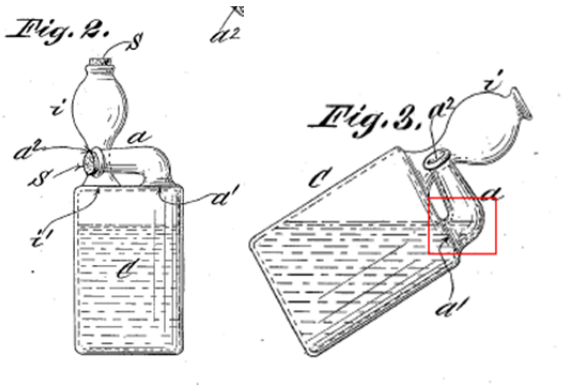
	
the second chamber being structured to contain a predetermined maximum volume of liquid when the humidifier body is in a normal upright, operating position,	*Wilson* discloses that the receptacle C, part of the claimed second chamber, is structured to contain the predetermined maximum volume of liquid[5] when *Wilson's* humidifier body is in a normal upright, operating position. *See* Ex. 1002 at 1:64-81 and Figs 2 and 4
the second chamber comprising a second chamber outlet configured to deliver the flow of breathable gas with added humidity,	*Wilson* discloses that the exhaust nozzle *i*, part of the claimed second chamber, includes an outlet (the claimed "second chamber outlet") configured to deliver the air with added humidity[6]. *See* Ex. 1002 at 1:64-74 and Figs. 1-4. The "second chamber outlet" is identified in annotated Figure 2, shown below:

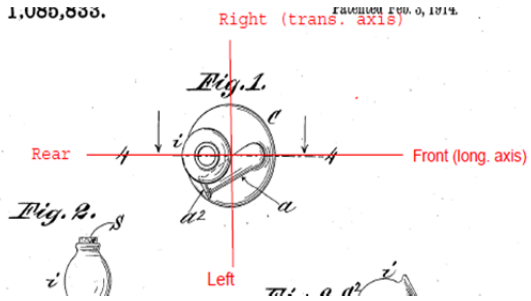
[5] The volume of liquid contained by receptacle C is a predetermined maximum volume. *See supra* at footnote 4 (citing *Id.* at 1:8-11, 1:17-28, 1:40-52, 1:55-60, and 1:64-74).

[6] The exhaust nozzle *i* delivers the air with added humidity because the inhaled air is impregnated prior to inhalation, either over the surface of the liquid or through the liquid. Ex. 1004 at ¶ 44 (citing Ex. 1002 at 1:64-74).

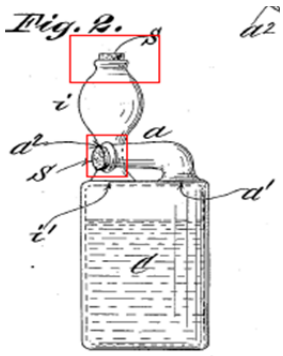
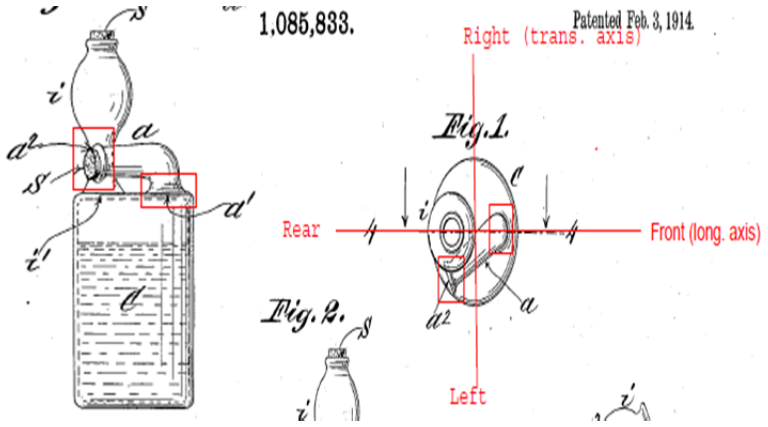
	
wherein the first chamber, the second chamber, and the passage are arranged such that when liquid is contained in the second chamber in the upright, normal operating position, the possibility of liquid flowing from the second chamber through the passage is reduced or prevented,	As shown in Figure 2, *Wilson* discloses that the exterior inlet port a^2 and air inlet duct *a* (the first chamber), the receptacle C, the vapor exhaust port i^1, and the exhaust nozzle *i* (the second chamber), and the air inlet port a^1 (the passage) are arranged such that when liquid is contained in the receptacle C, part of the claimed second chamber, in the upright, normal operating position, the possibility of liquid flowing from the receptacle C through the air inlet port a^1 is reduced or prevented.[7] *See* Ex. 1002 at 1:64-69 and Figs. 1 and 4.
and liquid that flows from the second chamber and through the passage is collected in the first chamber such that liquid is discouraged or	*Wilson* discloses that liquid that flows from the receptacle C, part of the claimed second chamber, and through the air inlet port a^1 is collected in the air inlet duct *a* such that liquid is discouraged or prevented from spilling back from the exterior inlet port a^2 when *Wilson's* humidifier body is inadvertently rotated from the upright, normal operating

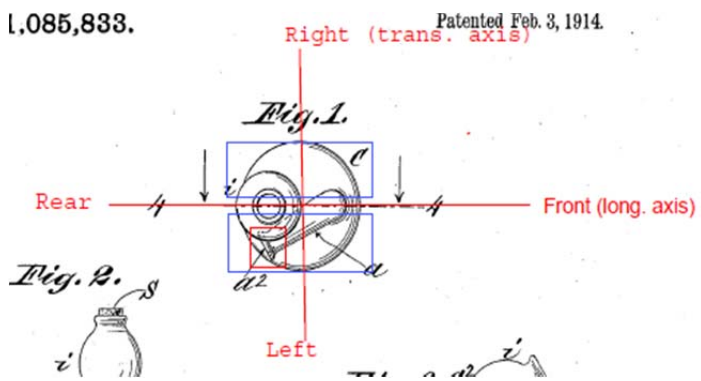
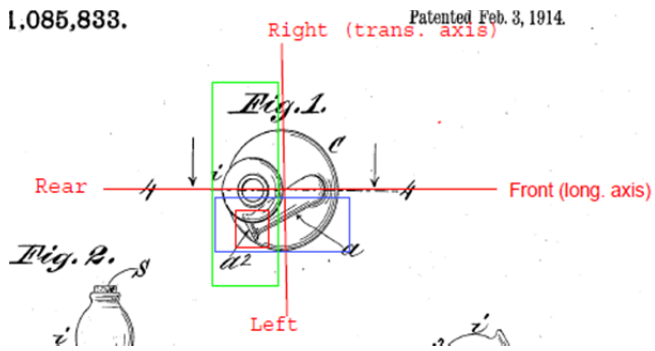
[7] The position of the inhaler, as shown in Fig. 2, is a normal operating position of the inhaler, not only because the inhaler is upright, but because such a configuration allows air and vapor to be withdrawn through the inhalation nozzle *i*, from above the surface of the liquid (and without passing through the liquid in the container C). Ex. 1004 at ¶ 46 (citing Ex. 1002 at Fig. 2).

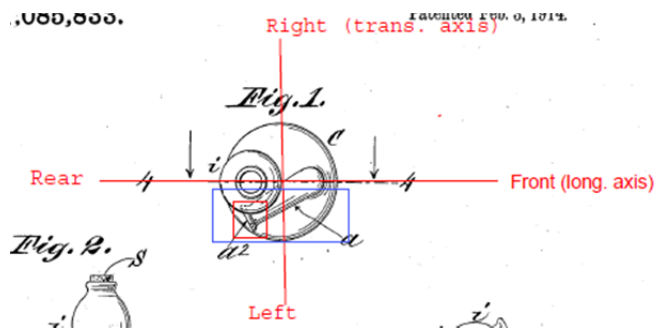
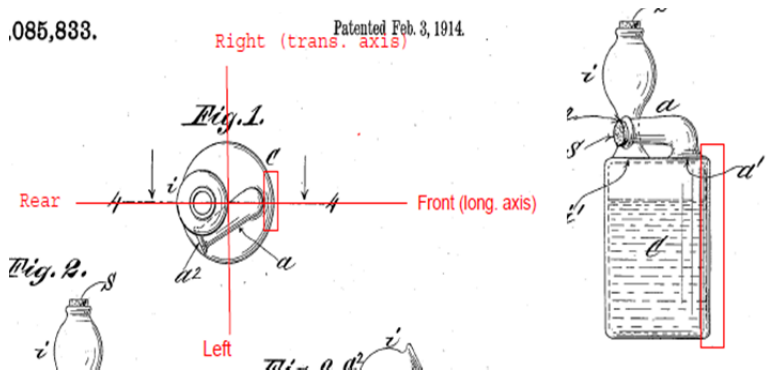
prevented from spilling back from the first chamber inlet when the humidifier body is inadvertently rotated from the upright, normal operating position to a non-upright position.	position to a non-upright position. Ex. 1002 at 1:44-60 and Figs. 2-3. "so that when the inhaler is tiled as shown in Fig. 3, the said exterior inlet port a^2 will be well above the level of the medicated liquid in the container, *thereby guarding against overflow, even if the inhaler is placed in a horizontal position*" (emphasis added). *Id.* at 1:54-60 and Figs. 2 and 3.  As shown in the Figures above, when *Wilson's* humidifier body is rotated from an upright, normal operating position (left Figure) to a non-upright position (right Figure), liquid that flows from the receptacle C and through the air inlet port a^1 is collected in the air inlet duct *a* (see red square in the right Figure) such that liquid is discouraged or prevented from spilling back from the exterior inlet port a^2.
10. A humidifier according to claim 9, wherein the humidifier body has a longitudinal axis extending in a direction from a rear side of the humidifier body to a front side of the humidifier body, and a transverse axis extending in a direction from a left side of the humidifier body to a	As shown in the annotated Figure 1, below, *Wilson's* humidifier body has a longitudinal axis extending in a direction from a rear side of the humidifier body to a front side of the humidifier body, and a transverse axis extending in a direction from a left side of the humidifier body to a right side of the humidifier body. *See* Ex. 1002 at Fig. 1.

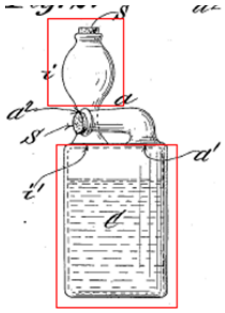
right side of the humidifier body, and	
no liquid will flow out of the first chamber inlet when the humidifier body is rotated about 80°-110° around the longitudinal axis and/or transverse axis from the upright, normal operating position	*Wilson* discloses that no liquid will flow out of the exterior inlet port a^2 when *Wilson's* humidifier body is rotated about 80°-110° around the longitudinal axis and/or transverse axis from the upright, normal operating position. *Id.* at 1:44-60 and Figs. 2-3.[8] For example, no liquid will flow out of the exterior inlet port a^2 when the humidifier body is rotated about 90° around the longitudinal axis and/or transverse axis from the upright, normal operating position "to a horizontal position." *Id.* "so that when the inhaler is tiled as shown in Fig. 3, the said exterior inlet port a^2 will be well above the level of the medicated liquid in the container, thereby guarding against overflow, *even if the inhaler is placed in a horizontal position*" (emphasis added). *Id.* at 1:54-60.
11. A humidifier according to claim 10, wherein the second	As shown in annotated Figure 2, *Wilson* discloses that the outlet of the exhaust nozzle *i* is higher than the exterior inlet

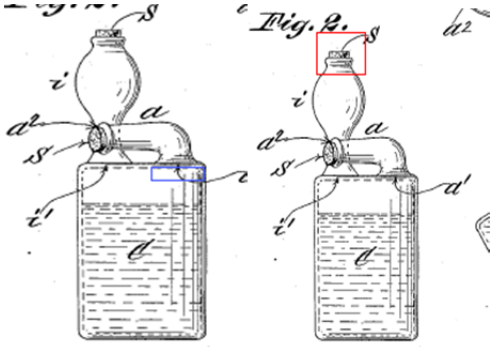
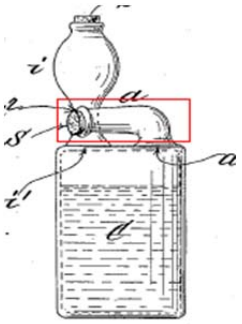
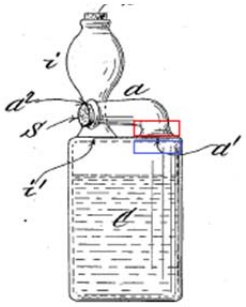
[8] Since the exterior inlet port a^2 of *Wilson's* humidifier body is designed to be "well above" the level of the liquid in the container, "for guarding against overflow, even if the inhaler is placed in a horizontal position," rotation of the inhaler to about 80°-110° around the longitudinal axis and/or transverse axis from the upright, normal operating position (i.e., a horizontal position), would result in no liquid flowing out of the exterior inlet port a^2. Ex. 1004 at ¶ 50 (citing Ex. 1002 at 1:44-60).

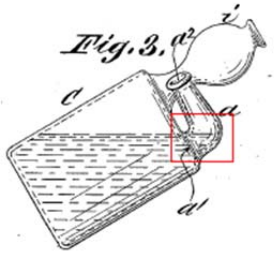
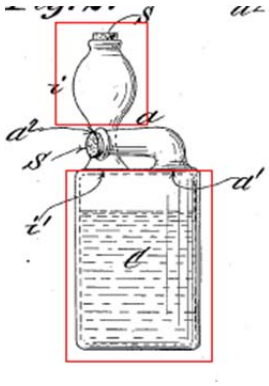
chamber outlet is higher than the first chamber inlet in the upright, normal operating position.	port a^2 in the upright, normal operating position. *See also* Ex. 1002 at 1:64-69. 
12. A humidifier according to claim 11, wherein the second chamber has a larger volume than the first chamber.	*Wilson* discloses that the combination of receptacle C and the exhaust nozzle *i,* has a larger volume than the air inlet duct *a*. Ex. 1002 at Figs. 2-4.
13. A humidifier according to claim 12, wherein the passage is forward of and to the side of the first chamber inlet.	As shown below in annotated Figures 1-2, *Wilson* discloses that the air inlet port a^1 is forward of and to the side of the exterior inlet port a^2. Ex. 1002 at Figs. 1-2. 
14. A humidifier according to claim 13, wherein the first chamber inlet is positioned on a transverse side of the humidifier body.	*Wilson* discloses that the exterior inlet port a^2 is positioned on a transverse side of its humidifer body. *See* Ex. 1002 at Fig. 1 As shown below, each blue rectangle represents a "transverse side" of *Wilson's* humidifier body. The red square delineates the first chamber inlet, which is "positioned on" one of the blue rectangles.

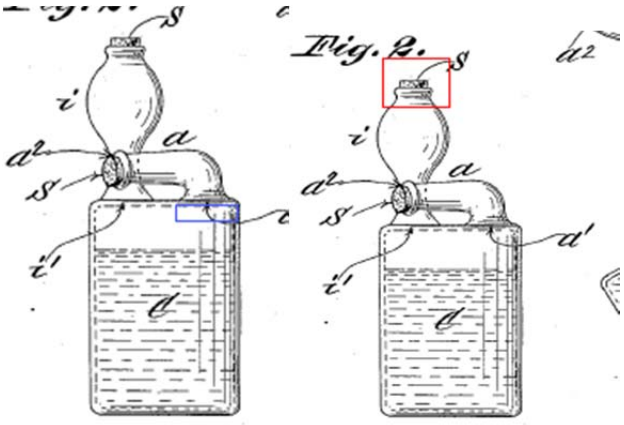
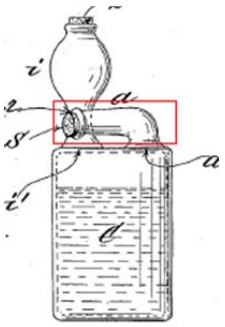
	
15. A humidifier according to claim 14, wherein the first chamber inlet is positioned on a rearward end of the transverse side of the humidifier body.	*Wilson* discloses that the the exterior inlet port a^2 is positioned on a rearward end of the transverse side of its humidifier body. *See* Ex. 1002 at Fig. 1.  As shown above in annotated Figure 1, the green rectangle represents a "rearward end" of *Wilson's* humidifier body and the blue rectangle represents one "transverse side" of *Wilson's* humidifier body, as previously defined in claim 14. The red square delineates the first chamber inlet, which is "positioned on" the green rectangle and the blue rectangle.
16. A humidifier according to claim 14, wherein the first chamber inlet is positioned on the left side of the humidifier body.	*Wilson* discloses that the exterior inlet port a^2 is positioned on the left side of its humidifier body. *See* Ex. 1002 at Fig. 1. As shown below in annotated Figure 1, the blue rectangle represents a "left side" of *Wilson's* humidifier body. The red square delineates the first chamber inlet, which "is positioned on" the blue rectangle.

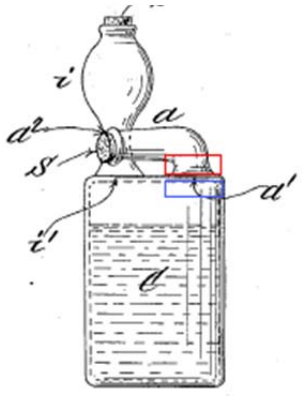
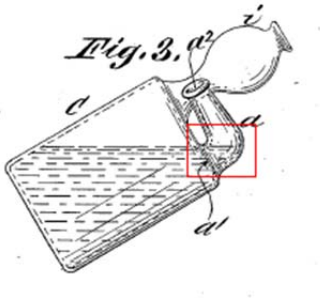
	
17. A humidifier according to claim 14, wherein a portion of the second chamber extends forward of the first chamber.	As shown in annotated Figures 1-2 below, *Wilson* discloses that "a portion" (rectangle) of the receptacle C, part of the claimed second chamber, "extends forward of" the air inlet duct *a*. *See* Ex. 1002 at Figures 1-2. 
18. A humidifier according to claim 9, wherein the second chamber outlet is disposed above the passage from the first chamber to the second chamber.	As shown in Figure 2, *Wilson* discloses that the outlet of the exhaust nozzle *i* is disposed above the air inlet port a^1 from the air inlet duct *a* to the receptacle C, part of the claimed second chamber. Ex. 1002 at Figure 2.
19. A humidifier according to claim 9, wherein a level of the predetermined maximum volume of liquid is below the passage in the upright, normal operating	As shown in Figure 2, *Wilson* discloses that a level of the predetermined maximum volume of liquid is below the air inlet port a^1 in the upright normal operating position. Ex. 1002 at 1:64-81 and Figure 2.

position.	
40. A humidifier, comprising:	*Wilson* discloses an inhaler (the claimed "humidifier"). Ex. 1002 at 1:8-12, 1:17-28, 1:64-69, and 1:75-96 and Figs. 1-4. *See also* footnote 4, *supra*.
a humidification chamber having a reservoir configured to store a body of liquid having a maximum value,	*Wilson* discloses that the inhalor includes a container or receptacle C, integral with an inhalation or exhaust nozzle *i*, and a vapor exhaust port i^1 (collectively, the claimed "humidification chamber having a reservoir") configured to store a body of liquid having a maximum value. *See* Ex. 1002 at 1:8-11, 1:17-28, 1:40-52, 1:64-74. Also, *Wilson* discloses this feature for at least the same reason discussed above in footnote 5, *supra*. The humidifier chamber is identified in annotated Figure 2: 
the humidification chamber defining a portion of a fluid passage, the fluid passage configured to direct a flow of breathable gas into exposure with the body of liquid to humidify the flow of breathable gas,	*Wilson* discloses that the receptacle C, part of the claimed humidification chamber, defines a portion of a fluid passage, the fluid passage configured to direct a flow of air (the claimed "breathable gas") into exposure with the body of liquid to humidify the flow of air. Ex. 1002 at 1:17-28, 1:64-81, 1:85-96. *See also* footnote 6, *supra*.
the humidification chamber also having an inlet for the flow of breathable gas and an outlet for the humidified flow of breathable gas; and	*Wilson* discloses that the receptacle C, part of the claimed humidication chamber, has an inlet for the flow of air and the exhaust nozzle *i*, another part of the claimed humidification chamber, has an outlet for the humidified flow of air. Ex. 1002 at 1:40-52, 64-74. The "humidification chamber inlet" (left Figure) and the "humidification chamber outlet" (right Figure) are identified in annotated Figure 2, shown below:

	
a backflow chamber forming another portion of the fluid passage and in fluid communication with the humidification chamber,	*Wilson* discloses that the inhaler also includes an air inlet duct *a* (the claimed "backflow chamber") forming another portion of the fluid passage and in fluid communication with the receptacle C and the exhaust nozzle *i*, parts of the claimed humidification chamber. *See* Ex. 1002 at 1:40-52. The "backflow chamber" is identified in annotated Figure 2: 
the backflow chamber having an inlet to receive the flow of breathable gas and an outlet in fluid communication with the inlet of the humidification chamber,	*Wilson* discloses that the air inlet duct *a* has an exterior inlet port a^2 (the claimed "inlet" of the backflow chamber) to receive the flow of air and an air inlet port a^1 (the claimed "outlet" of the backflow chamber) in fluid communication with the inlet of the receptacle C. *See* Ex. 1002 at 1:40-52. As shown in annotated Figure 2, the air inlet port a^1 (red rectangle) is in communication with the inlet of the receptacle C (blue rectangle). 
wherein the maximum volume of the body of liquid is contained entirely in the humidification chamber when the humidifier is	As shown in Figure 2, *Wilson* discloses that the maximum volume of the body of liquid is contained entirely in the receptacle C when the inhaler is in a normal, upright operating position. *See* Ex. 1002 at 1:64-74 and Figs 2 and 4.

in a normal, upright operating position, and	
a level of the maximum volume of the body of liquid is below the humidification chamber inlet and/or the backflow chamber inlet when the humidifier is in a non-upright position in which a portion of the body of liquid is transferrable along the fluid passage from the humidification chamber to the backflow chamber.	*Wilson* discloses that a level of the maximum volume of the body of liquid is below the exterior inlet port a^2 of the air inlet duct *a* when *Wilson's* inhaler is in a non-upright position (see Figure) in which a portion of the body of liquid is transferable along the fluid passage from the receptacle C to the air inlet duct *a* (red square in annotated Figure 3). *See* Ex. 1002 at 1:44-60 and Fig. 3.  "so that when the inhaler is tiled as shown in Fig. 3, the said exterior inlet port a^2 will be well above the level of the medicated liquid in the container, *thereby guarding against overflow, even if the inhaler is placed in a horizontal position*" (emphasis added). *Id.* at 1:54-60 and Figs. 2-3.
63. A humidifier, comprising:	*Wilson* discloses an inhaler (the claimed "humidifier"). Ex. 1002 at 1:8-12, 1:17-28, 1:64-96 and Figs. 1-4. *See also* footnote 3, *supra*.
a humidification chamber having a reservoir configured to store a body of liquid having a maximum volume,	*Wilson* discloses that the inhaler includes a container or receptacle C, integral with an inhalation or exhaust nozzle *i*, and a vapor exhaust port i^1 (collectively, the claimed "humidification chamber having a reservoir") configured to store a body of liquid having a maximum volume. Ex. 1002 at 1:8-11, 1:17-28, 1:40-52, and 1:64-74 and Figs. 2-4. Also, *Wilson* discloses this feature for at least the same reason discussed above in footnote 5, *supra*. The "humidification chamber" is identified in annotated Figure 2: 
the humidification	*Wilson* discloses that the receptacle C, part of the claimed

chamber defining a portion of a fluid passage, the fluid passage configured to direct a flow of breathable gas into exposure with the body of liquid to humidify the flow of breathable gas,	humidification chamber, defines a portion of a fluid passage, the fluid passage configured to direct a flow of air (the claimed "breathable gas") into exposure with the body of liquid to humidify the flow of air. *See* Ex. 1002 at 1:17-28, 1:64-81, 1:85-96. Also, *Wilson* discloses this feature for at least the same reason discussed above in footnote 7, *supra*.
the humidification chamber also having an inlet for the flow of breathable gas and an outlet for the humidified flow of breathable gas; and	*Wilson* discloses that the receptacle C, part of the claimed humidification chamber, has an inlet for the flow of air and the exhaust nozzle *i*, another part of the claimed humidification chamber, has an outlet for the humidified flow of air. *See* Ex. 1002 at 1:40-52, 64-74. The "humidification chamber inlet" (left Figure) and the "humidification chamber outlet" (right Figure) are identified in annotated Figure 2, shown below: 
a backflow chamber forming another portion of the fluid passage and in fluid communication with the humidification chamber,	*Wilson* discloses that the inhaler also includes an air inlet duct *a* (the claimed "backflow chamber") forming another portion of the fluid passage and in fluid communication with the receptacle C and the exhaust nozzle *i*, both parts of the claimed humidification chamber. *See* Ex. 1002 at 1:40-52. The "backflow chamber" is identified in the annotated Figure included here: 

the backflow chamber having an inlet to receive the flow of breathable gas and an outlet in fluid communication with the inlet of the humidification chamber,	*Wilson* discloses that the air inlet duct *a* has an exterior inlet port a^2 (the claimed "inlet" of the backflow chamber) to receive the flow of air and an air inlet port a^1 (the claimed "outlet" of the backflow chamber) in fluid communication with the inlet of the receptacle C. *See* Ex. 1002 at 1:40-52. As shown in annotated Figure 2, the air inlet port a^1 (red rectangle) is in fluid communication with the inlet of the receptacle C (blue rectangle). 
wherein the maximum volume of the body of liquid is contained entirely in the humidification chamber when the humidifier is in a normal, upright operating position, and	*Wilson* discloses that the maximum volume of the body of liquid is contained entirely in the receptacle C when the humidifier is in a normal, upright operating position. *See* Ex. 1002 at 1:64-74 and Figs 2 and 4. Also, *Wilson* discloses this feature for at least the same reason discussed above in footnote 5, *supra*.
the maximum volume of the body of liquid is retained in the humidification chamber or in the humidification chamber and the backflow chamber below the inlet of the backflow chamber in a non-upright position in which a portion of the body of liquid is transferrable along the fluid passage from the humidification chamber to the backflow chamber.	*Wilson* discloses the maximum volume of the body of liquid is retained in the receptacle C and the air inlet duct *a* below the exterior inlet port a^2 of the air inlet duct *a* in a non-upright position (see adjacent Figure) in which a portion of the body of liquid is transferable along the fluid passage from the receptacle C to the air inlet duct *a* (red square in annotated Fig. 3). *See* Ex. 1002 at 1:44-60 and Fig. 3.  "so that when the inhaler is tiled as shown in Fig. 3, the said exterior inlet port a^2 will be well above the level of the medicated liquid in the container, *thereby guarding against overflow, even if the inhaler is placed in a horizontal position*" (emphasis added). *Id.* at 1:54-60 and Figs. 2 and

	3.

B. Ground 2: *Wilson* in combination with *Dobson* renders claims 23 and 24 obvious

Claim 23 recites:

> An apparatus for supplying breathable gas under pressure, comprising:
>
> a blower to generate a flow of pressurized breathable gas;
>
> the humidifier according to claim 9 structured to reduce risk of or prevent spillback of liquid from the humidifier to the blower;
>
> a connecting structure configured to connect between the blower and the humidifier and allow communication of an outlet of the blower with the first chamber inlet of the humidifier; and
>
> an air delivery conduit in communication with output from the humidifier.

Claim 24 depends from claim 23 and recites, "further comprising: a patient interface connected to the air delivery conduit."

Wilson discloses that its inhaler (the claimed "humidifier according to claim 9") is structured to reduce risk of or prevent spillback of liquid from the exterior inlet port a^2 (the claimed "first chamber inlet") of the inhaler. *See* Ex. 1002 at 1:54-60 and Fig. 3 ("when the inhaler is tilted as shown in Fig. 3, the said exterior inlet port a^2 will be well above the level of the medicated liquid in the container, thereby guarding

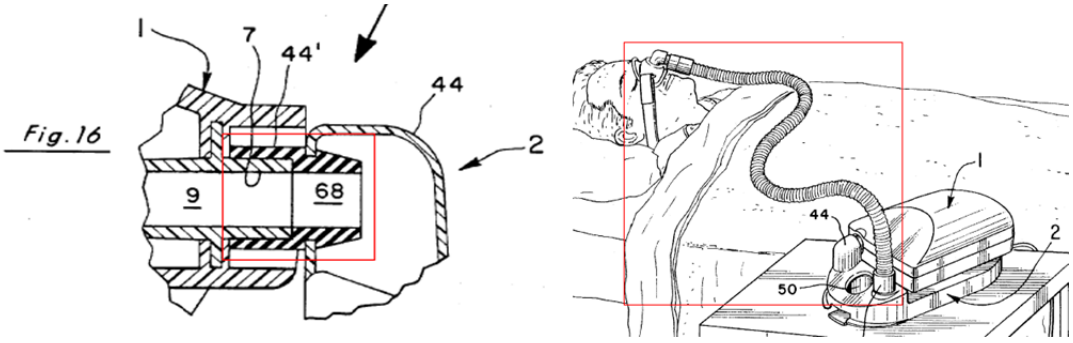
against overflow, even if the inhaler is placed in a horizontal position"). *Wilson* also discloses that its exhaust nozzle *i* includes an outlet (the claimed "second chamber outlet").

It would have been obvious to one of ordinary skill in the art to implement *Wilson's* inhaler in an apparatus for supplying breathable gas under pressure including a blower, a connecting structure, an air delivery conduit, and a patient interface, as recited in claims 23 and 24. Implementing a humidifier, even of the type described by *Wilson* (a bottle filled with water with air inlets and outlets), in such an apparatus was well known long before the earliest claimed priority date of the '453 patent.[9] For example*, Dobson*, which issued on October 7, 1997, and is prior art under 35 U.S.C. § 102(b), explains, "Humidifiers are commonly used with ventilators and other respiratory devices to add humidity to the air being supplied to a patient. Early humidifying arrangements were simply bottles filled with water with air inlets and outlets." Ex. 1019 at 1:13-16.

Dobson discloses an apparatus for supplying breathable gas under pressure, comprising a ventilator 1 with a variable speed fan 3 (collectively, the claimed "blower") to generate a flow of pressurized breathable gas to a humidifier 2. *See* Ex. 1019 at 3:9-20 and Figs. 1-3. *Dobson* also discloses a seal member 44' (the claimed

[9] The '453 patent recognizes that conventional CPAP devices included a blower to supply gas to a patient. Ex. 1001 at 1:29-39.

"connecting structure") configured to connect between the ventilator 1/variable speed fan 3 and the humidifier 2 and allow communication of an air outlet 7 (the claimed "outlet of the blower') of the ventilator 1/variable speed fan 3 with an air inlet 44 of the humidifier 2. *See* Ex. 1019 at 6:11-39 and Fig. 16. Further, as shown in Fig. 1, *Dobson* discloses an air delivery conduit in communication with an output 48 from the humidifier 2, and a patient interface connected to the air delivery conduit. Ex. 1019 at Figs. 4:52-54 and Figs. 1-3 ("the air A then flows around the divider 46 and exits through the outlet 48 and onto the patient"). The "connecting structure," "outlet of the blower," "first chamber inlet," "air delivery conduit," and "patient interface" are identified, for example, in annotated Figures 1 and 16, shown below:



It would have been obvious to one of ordinary skill in the art to implement the inhaler of *Wilson* with the apparatus for supplying breathable gas under pressure of *Dobson*, including a blower 1/variable speed fan 3 generating a flow of pressurized breathable gas. It also would have been obvious to one of ordinary skill in the art to implement the inhaler of *Wilson* with a seal member 44' configured to connect between the blower 1/variable speed fan 3 and the inhaler and allow communication

of the air outlet 7 of the blower 1 with the exterior inlet port a^2 of the inhaler; resulting in reducing risk of or preventing spillback of liquid from the exterior inlet port a^2 of the inhaler to the blower 1/variable speed fan 3. Further, it would have been obvious to one of ordinary skill in the art to implement the inhaler of *Wilson* with an air delivery conduit, connected to a patient interface, in communication with output from the exhaust nozzle *i* of *Wilson*.

At the very least, one of ordinary skill in the art would have been motivated to apply the blower 1/variable speed fan 3 of *Dobson* to the inhaler of *Wilson* to provide pressurized breathable gas to the inhaler via the exterior inlet port a^2 of *Wilson* in order to provide an automated means by which to provide pressurized air to the inhaler for the treatment of various diseases. Ex. 1004 at ¶ 94. For example, in many cases, patients are sick, weak, and barely able to get out of bed. They may also have shallow breathing and lack sufficient energy to produce and inhale adequate pressurized air through the inhaler. *Id.* By implementing the inhaler with a blower which provides pressurized air, the patient would no longer have to worry about creating and inhaling adequate pressurized air; ultimately allowing the patient to breath normally and more comfortably; especially in a home environment where many humidifiers are used to treat various diseases and affections. *See e.g.*, Ex. 1019 at 1:27-29; Ex. 1004 at ¶ 94.

One of ordinary skill in the art would also have been motivated to apply the air delivery conduit, connected to a patient interface of *Dobson*, to the inhaler of *Wilson*

such that it would be in communication with output from the exhaust nozzle *i* of the inhaler of *Wilson*, to ensure an optimum and effective delivery of the humidified air to the patient after exiting the inhaler. Ex. 1004 at ¶ 95. Indeed, the patient could simply lay in bed and allow the air delivery conduit and patient interface to help deliver the humidified air with or without the addition of medication; allowing the patient to rest comfortably and with limited interaction and involvement with the inhaler. *Id.* And by limiting the patient's physical interaction, the efficacy of such a humidification system would also increase dramatically. Ex. 1019 at 1:27-29, Ex. 1004 at ¶ 95.

Moreover, such a modification of *Wilson* would constitute no more than an obvious design choice—one of a "finite number of identified, predictable solutions"—to one skilled in the art at the time the '453 patent was filed. Ex. 1004 at ¶ 96; *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 402-3 (2007). Given the disclosures of *Wilson* and *Dobson*, one having ordinary skill in the art would have recognized that blowers providing pressurized breathable gas to a humidifier, and air delivery conduits with patient interfaces, were familiar elements before the earliest priority date of claims 23-24 and that applying the blower providing pressurized breathable gas, air delivery conduit, and patient interface of *Dobson* to the inhaler of *Wilson* would have done nothing more than combine familiar elements according to known methods. Ex. 1004 at ¶ 96; *see KSR* 550 U.S. at 416. Such application would yield the predictable results of providing an automated and more effective system to provide pressurized

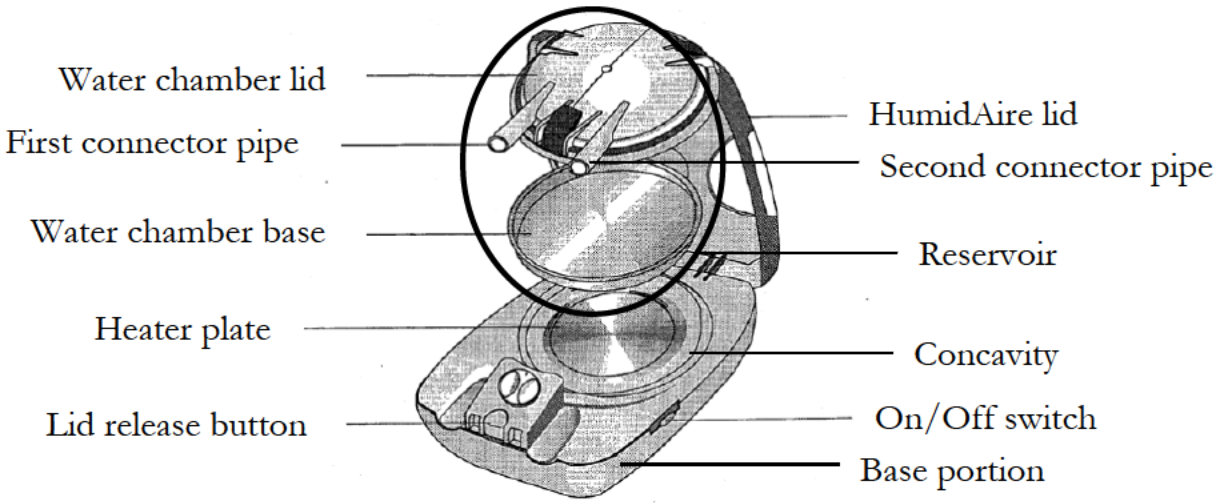
and humidified air directly to a patient with limited patient involvement. Ex. 1004 at ¶ 96; *see KSR*, 550 U.S. at 416.

Also, such application would simply improve the apparatus disclosed by *Wilson* in the same way it improves the apparatus in *Dobson* (e.g., by providing an automated and more effective system to provide pressurized and humidified air directly to a patient with limited patient involvement), and would have been within the ordinary skill in the art. Ex. 1004 at ¶ 97; *see KSR,* 550 U.S. at 417.

C. Ground 3: The Sullivan HumidAire User's Instructions anticipate claims 25-27

The Sullivan HumidAire User's Instructions ("*Instructions*") was published in 1998, and is prior art under 35 U.S.C. § 102(b).[10] The *Instructions* disclose a SULLIVAN® HumidAire™ Heated Humidifier ("HumidAire") for use with a flow generator or Continuous Positive Airway Pressure (CPAP). Ex. 1003 at 7. Components of the HumidAire are shown in the annotated Figure below:

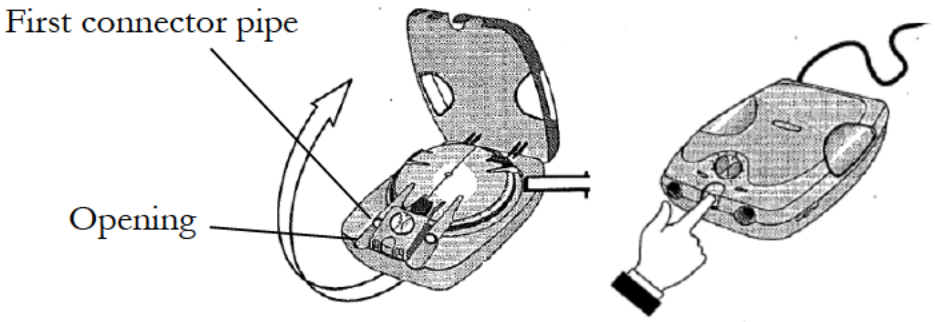
[10] On the left side of page 8, the *Instructions* indicate a 1998 copyright date, "©1998." During prosecution of the '453 patent, an IDS was filed, which cited the *Instructions*, admitting that the *Instructions* had a date of 1998. Ex. 1012 at 1416. That 1998 is the publication date of the *Instructions* is confirmed by the absence of a check in box 9, which, if checked, would have reserved the right for the Applicant to challenge the listed publication date. *Id.* at 1410.



The HumidAire includes a water chamber (circled) configured to create a reservoir to hold a body of water. *Id.* at 3. The water chamber includes a base configured to retain the body of water and a lid covering the base. *Id.* at 2, 3. The water chamber lid has a first connector pipe and a second connector pipe. *Id.* at 2. Air from the flow generator or CPAP passes into the water chamber via the first connector pipe, through the water chamber for exposure to the water, and out of the water chamber via the second connector pipe. *See id.* at 2-4. The first connector pipe is at a rear side of the water chamber when the water chamber is viewed from a side opposite the first connector.[11] Ex. 1004 at ¶ 100. The water chamber base and lid are detachably connected to each other via catches. Ex. 1003 at 2, 3, 5. For example, the *Instructions* disclose that the water chamber lid includes catches that are configured to detachably connect the water chamber lid to the water chamber base for disassembly and reassembly during cleaning. *Id.* at 5.

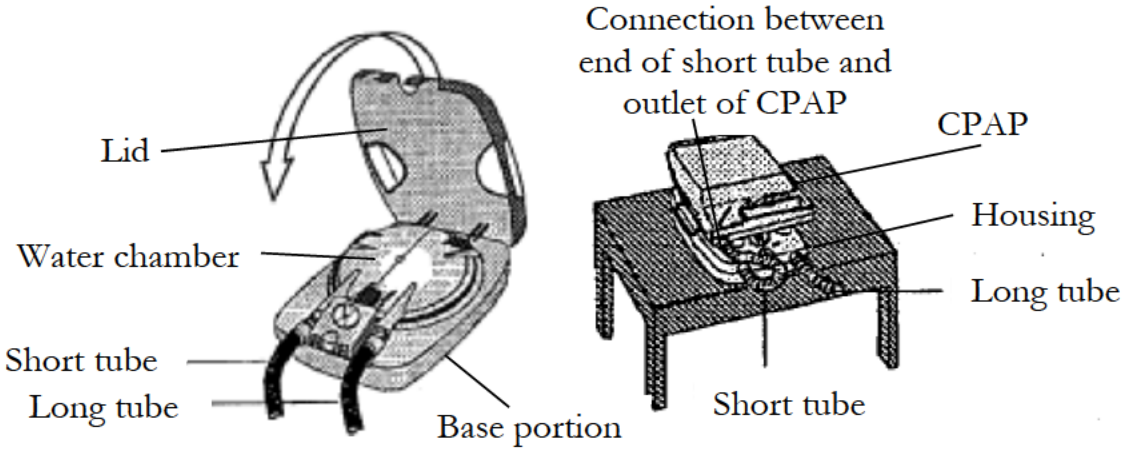
[11] Claim 25 does not define the "rear" side relative to any feature of the "humidifier."

The HumidAire includes a lid and base portion that collectively form a housing for retaining the water chamber. *Id.* at 2-5. The HumidAire housing provides a concavity in the base portion and recessed portion in the lid forming a receptacle that is generally horizontal and open for removably disposing the water chamber. *See id.* at 2, 3. The water chamber is removably disposed in the receptacle by generally horizontally inserting the water chamber within and pulling it out of the receptacle. *Id.* Specifically, when inserting the water chamber within and pulling it out of the receptacle, the water chamber must be moved at least partially in a generally horizontal direction, over the sides of the housing. *Id.*; Ex. 1004 at ¶ 101. When the water chamber is inserted in the receptacle, the first connector extends into an opening of the HumidAire housing, and the lid is then closed to retain the water chamber within the HumidAire housing. *See* Ex. 1003 at 2-3, and the figures reproduced below:



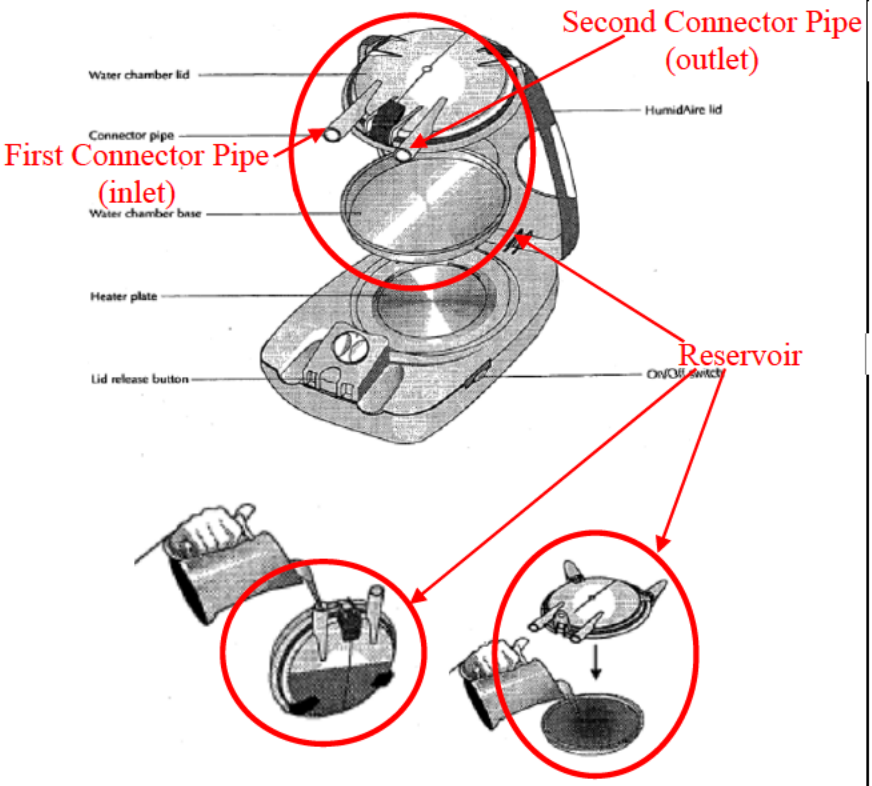
The water chamber is connected to the flow generator or CPAP via a short tube and the HumidAire housing. *See id.* at 2-4. Additionally, the short tube allows the

flow generator or CPAP to be connected on top of the HumidAire housing. *Id.* at 3-4, and the annotated figures reproduced below:

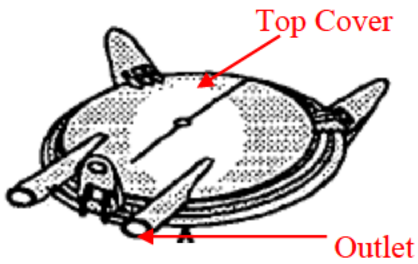


The concavity in the base portion includes a heater plate "for the humidification and warming of the air from nasal Continuous Positive Airway Pressure (CPAP)." *Id.* at 2, 7. The heater plate must be in thermal contact with the heat conducting material of the water chamber base when the water chamber is disposed in the receptacle, for otherwise the water chamber would be unable to effectively transfer heat to (and thus heat) the water in the water chamber. *Id.* at 2-4, 7; Ex. 1004 at ¶ 103. As detailed in the claim chart below, the *Instructions* disclose all elements of claims 25-27 of the '453 patent.

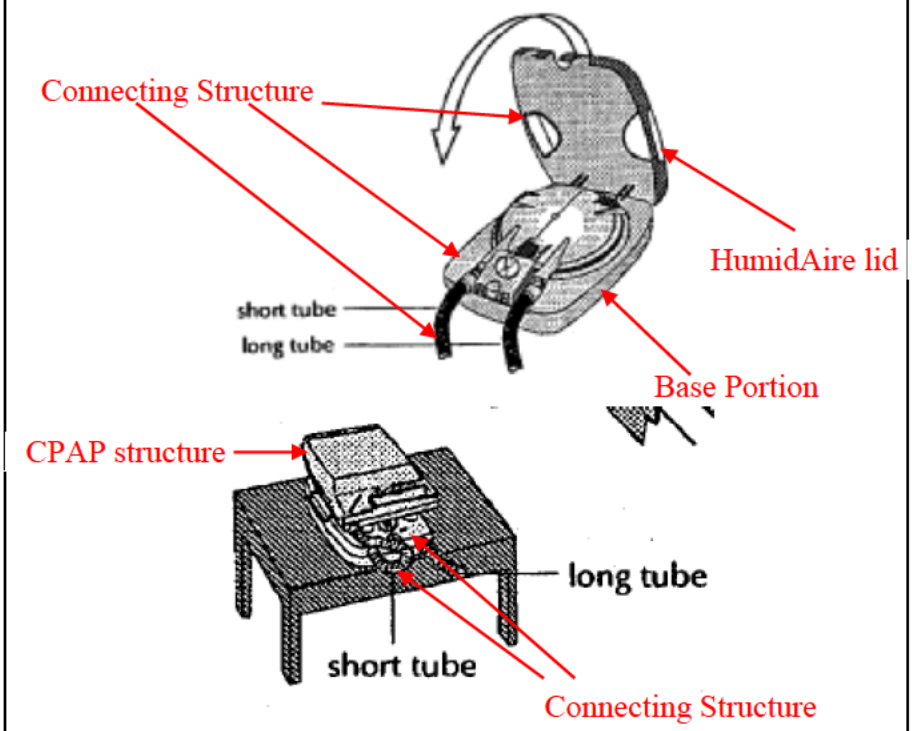
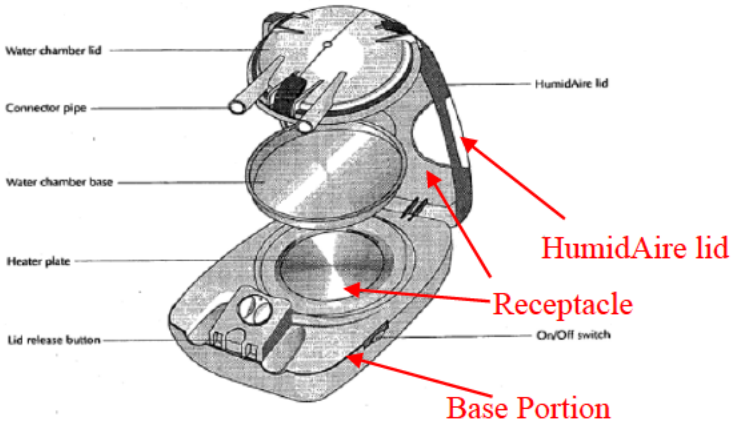
Claims	**Exemplary Disclosure of Prior Art**
25. A humidifier assembly for a CPAP apparatus, comprising	The *Instructions* disclose a HumidAire (the claimed "humidifier assembly") for use with a flow generator or CPAP (the claimed "CPAP apparatus"). Ex. 1003 at 2-4 and 7.
a humidifier that defines a reservoir for a body of liquid, and a	The *Instructions* disclose that the HumidAire includes a water chamber (the claimed "humidifier") that defines a reservoir

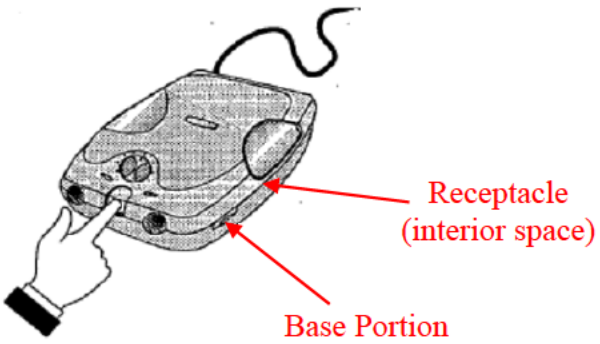
fluid passage between an inlet provided at a rear side of the humidifier and an outlet of the humidifier for exposure of a flow of breathable gas from the CPAP apparatus to the body of liquid, the humidifier comprising	for a body of water (the claimed "liquid"). Ex. 1003 at 2; *see also id.* at 3 ("[f]ill the water chamber with water"). The "reservoir" is identified in the annotated Figures from pages 2 and 3 of the *Instructions* included below:  The water chamber also includes two connector pipes, annotated in the Figures above, such that a flow of air (the claimed "breathable gas") from the flow generator or CPAP passes into the water chamber via a first of the connector pipes (the claimed "inlet"), through the water chamber for exposure to the water (the claimed "fluid passage"), and out of the water chamber via a second of the connector pipes (the claimed "outlet"). *Id.* at 2-4. The first connector pipe is provided at a rear side of the water chamber.[12] *Id.* at 3-4.

[12] Claim 25 does not define the "rear" side with respect to any particular feature of the "humidifier." The first connector pipe is at a rear side of the water chamber when the water chamber is viewed from a side opposite the first connector. Ex. 1004 at ¶ 106.

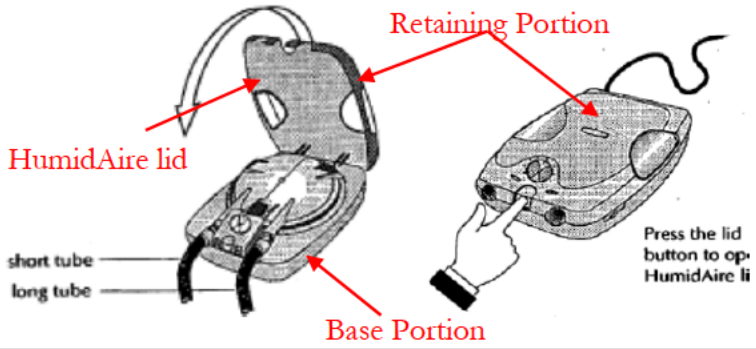
a base configured to retain the body of liquid therein and including a heat conducting material,	The *Instructions* disclose that the water chamber includes a water chamber base configured to retain the body of water therein and including a heat conducting material.[13] *See* Ex. 1003 at 2. *See id.* at 2-4.
a top cover that covers the base, the top cover including the outlet, and	The *Instructions* disclose that water chamber includes a water chamber lid (the claimed "top cover") that covers the water chamber base. Ex. 1003 at 2. The water chamber lid includes the second connector pipe. *Id.* The "top cover" and "outlet" are identified in the annotated Figure from page 5 of the *Instructions*: 
a connecting structure configured to connect between the CPAP apparatus and humidifier and allow communication of an outlet of the CPAP apparatus with an inlet of the humidifier, the connecting structure comprising	The *Instructions* disclose that the HumidAire includes a HumidAire lid and base portion (collectively, the HumidAire housing) and a short tube (collectively with the HumidAire housing, the claimed "connecting structure") configured to connect between the flow generator or CPAP and the water chamber, and allow communication of an outlet of the flow generator or CPAP with the first connector pipe of the water chamber. *See* Ex. 1003 at 2-4. The HumidAire lid, base portion, short tube and "connecting structure" is identified in the annotated Figures from pages 3 and 4 of the *Instructions* included below:

[13] The water chamber base must be constructed of a heat conducting material, for otherwise the water chamber would be unable to effectively transfer heat to (and thus heat) the water in the water chamber. Ex. 1004 at ¶ 107.

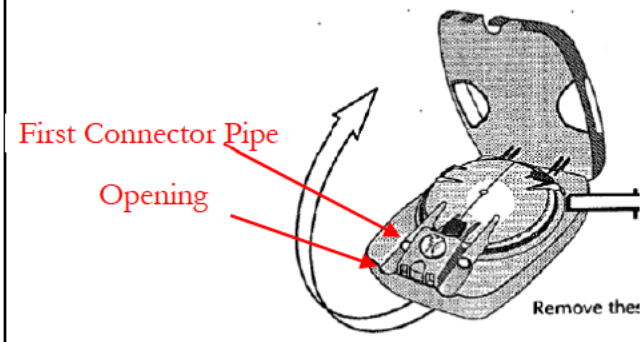
	
a housing, the housing providing a generally horizontal, open receptacle within which the humidifier may be removably disposed by generally horizontally inserting the humidifier within and pulling it out of the receptacle,	The connecting structure of the *Instructions* includes the HumidAire housing, which provides a concavity in the base portion and recessed portion in the HumidAire lid (collectively the claimed "receptacle") that is generally horizontal and open for removably disposing the water chamber. *See* Ex. 1003 at 2-3. The "generally horizontal, open receptacle" is identified in the annotated Figures from pages 2 and 3 of the *Instructions* shown below: 

	 The *Instructions* further disclose that the water chamber is removably disposed in the receptacle by generally horizontally inserting the water chamber within and pulling it out of the receptacle. *Id.* at 2-3.[14]
the housing comprising a base portion forming a lower surface of the receptacle and configured to support the humidifier thereon	The *Instructions* disclose that the HumidAire housing includes a base portion, annotated in the Figure above, forming a lower surface of the receptacle and configured to support the water chamber thereon. *See* Ex. 1003 at 2-3.
a heating element positioned on the lower surface and in thermal contact with the heat conducting material of the base when the humidifier	The *Instructions* disclose that the HumidAire housing includes a heater plate (the claimed "heating element") positioned on the lower surface of the receptacle. Ex. 1003 at 2. The heater plate is in thermal contact with the water chamber base, which is made of the heat conducting

[14] When inserting the water chamber within and pulling it out of the receptacle, the water chamber must be moved at least partially in a generally horizontal direction, over the sides of the HumidAire housing. Ex. 1004 at ¶ 112.

is disposed in the receptacle, and	material, when the water chamber is disposed in the receptacle.[15] *Id.* at 2-4.
a retaining portion positioned adjacent the top cover of the humidifier and being spaced above the base portion, the retaining portion being configured to assist in retaining the humidifier in the generally horizontal receptacle.	The *Instructions* disclose that the HumidAire housing includes the HumidAire lid (the claimed "retaining portion") positioned adjacent the water chamber lid and spaced above the base portion of the HumidAire housing. *Id.* at 2-4. Further, the HumidAire lid assists in retaining the water chamber in the generally horizontal receptacle, at least where the humidifier sits between the base portion and the HumidAire lid. *Id.* at 2-4. The HumidAire lid, base portion, and the "retaining portion" are identified in the annotated Figures shown below: 
26. A humidifier assembly according to claim 25, wherein the base and the top cover are detachably connected to each	The *Instructions* disclose that the water chamber base and water chamber lid are detachably connected to each other. Ex. 1003 at 2, 3, 5. Further, the *Instructions* disclose that the water chamber lid includes catches that are configured to detachably connect the water chamber lid to the water chamber base for disassembly and reassembly during

[15] The heater plate must be in thermal contact with the heat conducting material of the water chamber base when the water chamber is disposed in the receptacle, for otherwise the water chamber would be unable to effectively transfer heat to (and thus heat) the water in the water chamber. Ex. 1004 at ¶ 115.

other.	cleaning. *Id.* at 5.
27. A humidifier assembly according to claim 26, wherein the housing comprises an opening that communicates with the inlet when the humidifier is fully inserted into the generally horizontal receptacle.	The *Instructions* disclose that the HumidAire housing includes an opening that communicates with the first connector pipe when the water chamber is fully inserted into the generally horizontal receptacle. *See* Ex. 1003 at 2, 3. Specifically, the first connector pipe extends into the opening of the housing.[16] *Id.* The first connector pipe and the "opening" are identified in the annotated Figure from page 3 of the *Instructions* included below: 

D. Ground 4: The *Instructions* in combination with *Helot* render claim 28 obvious

Claim 28 depends from claim 27 and recites:

> A humidifier assembly according to claim 27, further comprising a retaining mechanism to secure the connecting structure to the CPAP apparatus.

The *Instructions* disclose all of the features of the humidifier assembly according to claim 27. *Supra*. Further, it would have been obvious to one of ordinary skill in the

[16] Petitioner notes that the "opening" in the Instructions functions in the same manner as the opening of the device described in the '453 patent. *See e.g.,* Ex. 1004 at ¶ 121 (citing Ex. 1001 at 10:27-30 and Fig. 17).

art to implement the HumidAire of the *Instructions* with a retaining mechanism to secure the flow generator or CPAP on top of the HumidAire housing.

The use of a retaining mechanism to secure one component on top of another component is very well known. For example, *Helot*, which issued on February 6, 2001, and is prior art under 5 U.S.C. § 102(b), describes "[a] computer docking station for a portable computer [that] has an enclosure to mate physically and electrically with the portable computer. The enclosure has a docking tray upon which the portable computer rests when docked." Ex. 1023 at 2:33-36. *Helot* discloses a portable computer 24 that is configured to be secured on top of a tray of docking station 22. *Id.* at 3:29-39. As shown in Fig 1., the docking station includes engagement members 36 and lever 38 for enabling the docking and undocking of the computer 24 on top of the docking station 22. *Id.* at 3:58-62 and Figs. 1-2B, 4A, and 4B.

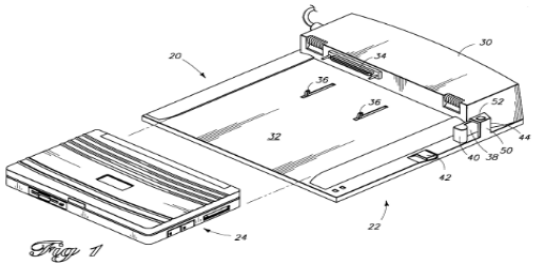


Fig. 1

One of ordinary skill in the art would have been motivated to implement the retaining mechanism of *Helot* to prevent the CPAP from falling off the top of the HumidAire housing. The *Instructions* disclose placing the CPAP on top of the HumidAire housing on a table next to a patient. Ex. 1003 at 4. This arrangement would allow for a more compact configuration such that either a smaller table could be used or additional space is left on the table for other items. However, without a device to secure the CPAP to the HumidAire housing it could be easily bumped off

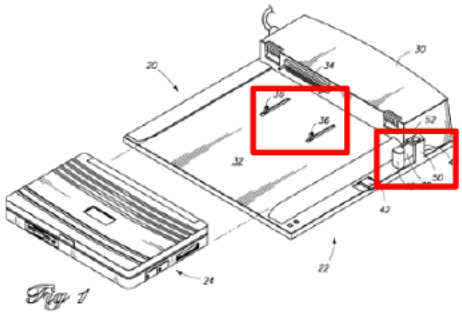
the top and broken. Ex. 1004 at ¶ 129. By implementing the retaining mechanism of *Helot* with the CPAP and HumidAire housing, the patient would be able to save space without having to worry about accidentally bumping the CPAP and breaking it.[17] Ex. 1004 at ¶ 129.

Such a modification would simply improve the apparatus disclosed by the *Instructions* in the same way as it improves the apparatus in *Helot* (e.g., by providing a secure connection between two stacked components) and would not have been beyond the ordinary skill in the art. Ex. 1004 at ¶ 129; *see KSR,* 550 U.S. at 417. As detailed in the claim chart below, the *Instructions* in combination with *Helot* render all of the elements of claim 28 of the '453 patent obvious.

[17] The benefits of implementing the HumidAire of the *Instructions* with a retaining mechanism to secure the flow generator or CPAP on top of the HumidAire housing are further evidenced by *Dobson* which discloses stacking a ventilator 1 atop the humidifier 2 and the need for a retaining mechanism to help secure the ventilator 1 atop the humidifier 2. Ex. 1004 at ¶ 130, Ex. 1019 at 6:38-46 and Figs. 1-3, 14-15. ("The bottom of the ventilator 1 . . . has one or more strips 11 of non-skid material (e.g., rubber) to fictionally engage the top surface 70 of the humidifier 2 . . . to inhibit relative sliding between the horizontal surfaces 13 and 70 of the ventilator 1 and humidifier 2.")

Claims	Exemplary Disclosure of the Prior Art
28. A humidifier assembly according to claim 27, further comprising a retaining mechanism to secure the connecting structure to the CPAP apparatus.	As discussed above, the *Instructions* disclose a connecting structure (i.e., the HumidAire housing and the short tube) and a CPAP apparatus (i.e., the flow generator or CPAP). *See* Ex. 1003 at 2-4. The short tube allows the CPAP apparatus to be connected on top of the housing of the HumidAire housing. *Id.* at 3-4. To the extent that the *Instructions* do not disclose "a retaining mechanism to secure the connecting structure to the CPAP apparatus," *Helot* discloses these features. As shown in Fig. 1 below, *Helot* discloses engagement members 36 and lever 38 (collectively, the claimed "retaining mechanism") to secure portable computer 24 on top of a docking station 22.[18] Ex. 1023 at 3:58-62.

[18] As discussed above, "a retaining mechanism to secure the connecting structure to the CPAP apparatus" should be construed to mean "a structure that holds the CPAP apparatus in position on the connecting structure when in its normal orientation." *Supra* at V.C. The *Instructions* disclose the flow generator or CPAP on the HumidAire housing. Further, *Helot* discloses engagement members 36 and lever 38 that hold one component in position on a second component when in its normal orientation. Ex. 1023 at 3:58-62.

E. Ground 5: The *Instructions* in combination with *Helot* and *Maeda* render claims 29-31 obvious

Claim 29 depends from claim 28 and recites:

> A humidifier assembly according to claim 28, wherein the retaining mechanism comprises a resiliently biased locking member configured to releasably engage a projection of the CPAP apparatus.

Claim 30 depends from claim 29 and recites:

> A humidifier assembly according to claim 29, further comprising a release member coupled to the resiliently biased locking member to move the resiliently biased locking member out of engagement with the projection of the CPAP apparatus.

Claim 31 depends from claim 30 and recites:

> A humidifier assembly according to claim 30, wherein the release member is provided in the base portion of the housing.

The *Instructions* and *Helot* disclose all of the features of the humidifier assembly according to claim 28. *Supra*. Further, in addition to disclosing a retaining mechanism including engagement members 36 and lever 38, *Helot* discloses that lever 38 and, therefore, connected engagement members 36 are resiliently biased via spring 66. *See* Ex. 1023 at 5:7-14, 5:35-6:27; and Figs. 4A and 4B. *Helot* also discloses that engagement members 36 are "hooks" that "grasp corresponding apertures or slots in the underside of the computer 24." *Id.* at 3:58-62. Moreover, *Helot* discloses that lever 38 is coupled to the engagement members 36 to move the engagement members 36 out of engagement with corresponding apertures or slots of the computer 24. *See id.* at 3:58-4:11 and Figs. 1, 4A, and 4B. Finally, *Helot* discloses that lever 38 is provided in a base portion of the docking station 22. *See id.* at Fig. 1; *see also*, Ex. 1004 at ¶ 140 . For the same reasons discussed above, one of ordinary skill in the art would have been motivated to implement these additional components of the retaining mechanism of *Helot* with the HumidAire of the *Instructions*.

It would have been obvious to one of ordinary skill in the art to implement the base portion of the HumidAire housing with the lever of *Helot*, to provide a patient with easy access to the lever as well as preventing accidental and unintended release of the CPAP structure from the HumidAire housing. Ex. 1004 at ¶ 141. Indeed, such a modification would simply be an obvious choice design choice. *Id.* And by positioning the lever on the base portion of the HumidAire housing, not only is the patient provided with easy access to the lever, but this configuration also helps deter

accidental and unintended release of the CPAP structure from the HumidAire housing. *Id.* at ¶ 142. Additionally, such a modification would necessarily and predictably improve the apparatus disclosed by the *Instructions* in the same manner as in *Helot* (to provide a user with easy access to the lever when one component is placed on top of another component and help deter accidental and unintended release of the one component from the other component) and would not be beyond the skill of one having ordinary skill in the art. *Id.* at ¶ 142; *see KSR,* 550 U.S. at 417.

To the extent that *Helot* does not explicitly disclose that the corresponding apertures or slots in the underside of the computer 24 include a "projection," it would have been obvious to one of ordinary skill in the art to implement the aperture or slot of *Helot* to include a projection for the engagement members 36 to grasp. The use of projections in a hook and aperture connection is very well known. For example, *Maeda*, which issued on February 9, 1999, and is prior art under 5 U.S.C. § 102(b), describes "a docking unit that is to be coupled with a portable computer." Ex. 1013 at 1:7-8.

Maeda discloses a notebook computer 100 connected on top of a docking unit 200 via a hook 215 on the docking unit 200 and an opening on the notebook computer 100. *See id.* at 4:49-58, 6:56-60 and FIG. 9. The opening includes a projection engaged by hook 215, as

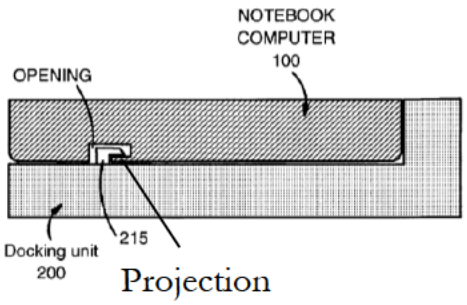
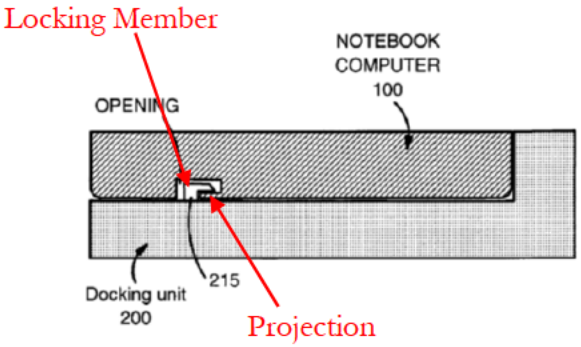


FIG. 9

shown in annotated FIG. 9:

At the very least, one of ordinary skill in the art would have been motivated to implement the projection of *Maeda* to improve the connection between the flow generator or CPAP and the HumidAire housing. For example, *Helot* discloses securing one component on top of another component via a hook and aperture or slot connection. *See* Ex. 1023 at 3:58-62. However, *Helot* does not specifically disclose the shape of the aperture or slot. By implementing the projection in the opening of *Maeda* in the aperture or slot of *Helot*, the connection between the engagement members 36 of docking station 22 with corresponding apertures or slots of the computer 24 could be better secured. Ex. 1004 at ¶ 136. As further detailed in the claim chart below, the *Instructions* in combination *Helot* and *Maeda* render all elements of claims 29-31 of the '453 patent obvious.

Claims	**Exemplary Disclosure of Prior Art**
29. A humidifier assembly according to claim 28, wherein the retaining mechanism comprises a resiliently biased locking member configured to releasably engage a projection of the CPAP apparatus.	As discussed above, the retaining mechanism of *Helot* (i.e., the engagement members 36 and lever 38) secures the portable computer 24 above the docking station 22. Ex. 1023 at 3:58-62. *Helot* further discloses that engagement members 36 (the claimed "resiliently biased locking member") are configured to releasably engage a projection of the portable computer 24. *See id.* at 3:58-4:37, 5:7-14, 5:35-6:27; and Figs. 1, 2B, and 4A. In particular, *Helot* discloses that lever 38 and therefore connected engagement members 36 are resiliently biased via spring 66. *See id.* at 5:7-14, 5:35-6:27; and Figs. 4A and 4B. Furthermore, *Helot* discloses that engagement members 36

	are "hooks" that "grasp corresponding apertures or slots in the underside of the computer 24." *Id.* at 3:58-62. To the extent that *Helot* does not specifically disclose that the corresponding apertures or slots in the underside of the computer 24 include a "projection," *Maeda* discloses this feature. *Maeda* discloses a notebook computer 100 connected to a docking unit 200 via a hook 215 on the docking unit 200 and an opening on the notebook computer 100. Ex. 1013 at 4:49-58, 6:56-60 and FIG. 9. The opening includes a projection engaged by hook 215. *See id.* at FIG. 9. The "locking member" and "projection" are identified in the annotated FIG. 9 included below:  FIG. 9
30. A humidifier assembly according to claim 29, further comprising a release member coupled to the resiliently biased locking member to move the resiliently biased locking member out of engagement with the projection of the CPAP apparatus.	*Helot* further discloses lever 38 (the claimed "release member") coupled to the engagement members 36 (the claimed "resiliently biased locking member") to move the engagement members 36 out of engagement with corresponding structures (the claimed "projection") of the computer 24. *See* Ex. 1023 at 3:58-4:11 and Figs. 1, 4A, and 4B.
31. A humidifier assembly according to claim 30, wherein the	As shown *supra* in Fig. 1, *Helot* further discloses that the lever 38 is provided in a base portion of the docking station 22 (the claimed "housing"). Ex. 1023 at Fig. 1; *see also*, Ex.

release member is provided in the base portion of the housing.	1004 at ¶ 140 (citing Ex. 1023 at Fig. 1).

F. Ground 6: The *Instructions* in combination with *Ursy* and *Prime* render claim 32 obvious

Claim 32 depends from claim 25 and recites:

> A humidifier assembly according to claim 25, wherein the heat conducting material of the base of the humidifier is provided in an opening in a bottom wall of the base of the humidifier.

The *Instructions* disclose all of the features of the humidifier assembly according to claim 25. *Supra* at VII.C. Further, it would have been obvious to one of ordinary skill in the art to implement the HumidAire of the *Instructions* with the heat conducting material of the base in an opening in a bottom wall of the water chamber base.

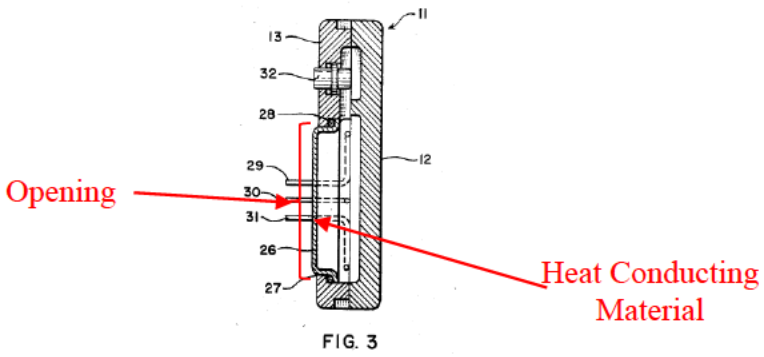
The use of a heat conducting material in an opening in a wall of a humidifier adjacent the heating element is very well known in the industry. For example, *Ursy*, which issued on May 13, 1986, and is prior art under 5 U.S.C. § 102(b), describes a humidifier "which includes a heating panel to enhance the vaporization of water." Ex. 1017 at 1:46-48. In particular, *Ursy* discloses a humidifier, which includes a housing 11 that includes a front section 12 joined to a back section 13. *Id.* at 1:66-68, 2:1-5 and Fig. 3. *Ursy* also discloses that a wall of a reservoir 19 on the back section 13 is formed by a flat cup 26 made of a heat conductive material. *See id.* at 3:5-7. *Ursy* discloses that a heater plate presses against cup 26 at the back section. *See id.* at 3:48-50.

It would have been obvious to one of ordinary skill in the art to have modified the base of the water chamber of the *Instructions* to incorporate heat conductive material panel of *Ursy* in an opening in a bottom wall of the base of the water chamber such that the heat conductive material is positioned next to the heater plate. Such a modification would have done nothing more than combine familiar elements according to known methods. Ex. 1004 at ¶ 147; *see KSR* 550 U.S. at 416. Furthermore, only having the heat conductive material in an opening in a bottom portion of the base of the water chamber would increase the ability of the water chamber to retain heat for cost effective operation. Ex. 1004 at ¶ 147.

Ursy discloses that the "manufacture and assembly [of housing 11 with flat cup 26] is simple and inexpensive." Ex. 1017 at 3:38-41; Ex. 1004 at ¶ 148 (citing Ex. 1017 at 3:38-41). Moreover, the benefit of reducing the amount of heat conductive material is further evidenced by *Prime*. *Prime* discusses that it is beneficial to have the portion of the humidifier in contact with a heat source made out of a heat conductive material, and the remaining portion of the humidifier made out of a plastic material, so as to help retain heat. Ex. 1018 at 1:20-25; Ex. 1004 at ¶ 148 (citing Ex. 1018 at 1:20-25). Specifically, *Prime* notes, "In order for the efficient transfer to occur between the chamber and the heat source, the base of the chamber is formed from a highly heat conductive material such as Aluminum. The humidification chamber however is designed to retain heat . . . . Accordingly, the humidification chamber has been formed from plastics material." *Id.* at 1:20-25.

Therefore, in light of the advantages of reducing the amount of heat conductive material in a humidifier in *Prime*, it would have been obvious to one having ordinary skill in the art, at the time of the filing of the alleged invention, to modify the water chamber base of the *Instructions* to incorporate the flat cup 26 of *Ursy*, instead of making the entire base of the water chamber out of a heat conductive material. This modification would have improved the heat retention at noted in *Prime*. Ex. 1004 at ¶ 149. Such a modification of the water chamber base of the *Instructions* to include flat cup 26 of *Ursy*, as suggested by *Prime*, would have been an obvious combination of familiar elements to yield predictable results. *See KSR*, at 416; *see also* Ex. 1004 at ¶ 149. As further detailed in the claim chart below, the *Instructions*, in combination with *Ursy* and *Prime* renders claim 32 of the '453 patent obvious.

Claims	**Exemplary Disclosure of Prior Art**
32. A humidifier assembly according to claim 25, wherein the heat conducting material of the base of the humidifier is provided in an opening in a bottom wall of the base of the humidifier.	As discussed above, the *Instructions* disclose that the base of the water chamber includes a heat conducting material. *See* Ex. 1003 at 2-4. To the extent that the *Instructions* do not disclose that the heat conducting material of the base "is provided in an opening in a bottom wall" of the base, *Ursy* discloses these features. *Ursy* discloses a humidifier, which includes a housing 11 that includes a front section 12 joined to a back section 13. Ex. 1017 at 1:66-68, 2:1-5 and Fig. 3. *Ursy* also discloses that a wall of a reservoir 19 on the back section 13 is formed by a flat cup 26 made of a heat conductive material. See id. at 3:5-7. *Ursy* discloses that the flat cup 26 is "retained in sealing relation within an opening 27 in the section by means [of] an O-ring 28." Id. at 3:7-9. The "heat conducting

	material" and "opening" are identified in the annotated Figure included below (Ex. 1004 at ¶ 146 (citing Ex. 1017 at 1:66-68, 2:1-5, 3:5-7, 3:48-50):  *Prime* further notes improved heat retention properties by minimizing the amount of heat conductive material in a humidifier. *See* Ex. 1018 at 1:20-25. Ex. 1004 at ¶ 148 (citing Ex. 1018 at 1:20-25).

G. Ground 7: The *Instructions* in combination with *Helot*, *Maeda*, and *Ursy* render claim 33 obvious

Claim 33 depends from claim 31 and recites, "A humidifier assembly according to claim 31, wherein the heating element is upwardly biased into engagement with the heat conducting material." The *Instructions*, *Helot*, and *Maeda* disclose all of the features of the humidifier assembly according to claim 31. *Supra* at VII.E. The *Instructions* further disclose that the heater plate is upwardly positioned and engages the heat conducting material of the water chamber base. Ex. 1003 at 2-5. Further, it would have been obvious to one of ordinary skill in the art to modify the upwardly positioned heater plate of the HumidAire of the *Instructions* to be biased into engagement with the heat conducting material of the water chamber base.

The use of a biased heating element was very well known in the industry. *Ursy* describes a motivation for modifying the upwardly positioned heater plate disclosed in the *Instructions* to be biased against the heat conducting material of the water chamber base. Ex. 1017 at 3:48-50. In particular, *Ursy* discloses that a spring-loaded heater element provides for "good thermal contact" between the heater element and heat conductive material. *Id.*

In particular, and as noted above, *Ursy* discloses a humidifier, which includes a housing 11 that includes a front section 12 joined to a back section 13. *Id.* at 1:66-68, 2:1-5 and Fig. 3. *Ursy* also discloses that a wall of a reservoir 19 on the back section 13 is formed by a flat cup 26 made of a heat conductive material. *See id.* at 3:5-7. *Ursy* discloses that the water in the housing 11 is heated "by application of heat to the cup 26. *Id.* at 3:5-10. Further, the flat cup 26 presses against a *spring-loaded* heater plate for good thermal contact." *Id.* at 3:48-50 (emphasis added).

It would have been obvious to one of ordinary skill in the art to have modified the upwardly positioned heater plate of the *Instructions* to be biased against the heat conducting material of the water chamber base. Such a modification would have done nothing more than combine familiar elements according to known methods. Ex. 1004 at ¶ 154; *see KSR* 550 U.S. at 416.

Therefore, in light of the advantages of increasing the thermal contact between the heater plate and heat conducting material discussed in *Ursy*, it would have been obvious to one having ordinary skill in the art to modify the upwardly positioned

heater plate of the *Instructions* to include the spring-loaded heater plate of *Ursy*, so as to be upwardly biased into engagement with the heat conducting material of the water chamber base. Ex. 1004 at ¶ 155. This modification would have improved the thermal contact and thus heat transfer as noted in *Ursy*. *Id.* Such a modification of the upwardly positioned heater plate of the *Instructions* to be biased into engagement with the heat conducting material would have been an obvious combination of familiar elements to yield predictable results. *See KSR*, at 416; *see also* Ex. 1004 at ¶ 155. As further detailed in the claim chart below, the *Instructions*, in combination with *Helot*, *Maeda*, and *Ursy* render claim 33 of the '453 patent obvious.

Claims	**Exemplary Disclosure of Prior Art**
33. A humidifier assembly according to claim 31, wherein the heating element is upwardly biased into engagement with the heat conducting material.	As discussed above, the *Instructions* disclose that an upwardly positioned heater plate engaging the heat conducting material of the water chamber base. *See* Ex. 1003 at 2. To the extent the *Instructions* do not disclose that the upwardly positioned heater plate is "biased into engagement" with the heat conducting material, *Ursy* discloses these features. *Ursy* discloses a spring-loaded heater plate that is biased against the flat cup 26 which is made of a heat conductive material for heating water within a reservoir. *See* Ex. 1017 at 3:5-10, 3:48-50.

H. Ground 8: The *Instructions* in combination with *Helot*, *Maeda*, *Ursy*, and *Glynn* render claims 34-36 obvious

Claim 34 depends from claim 33 and recites:

> A humidifier assembly according to claim 33, wherein the heating element is a resistance heater.

Claim 35 depends from claim 34 and recites:

> A humidifier assembly according to claim 34, further comprising a seal between the heat conducting material and the bottom wall.

Claim 36 depends from claim 35 and recites:

> A humidifier assembly according to claim 35, wherein the connecting structure includes contact elements that communicate with a power supply, a controller, and/or sensors within the CPAP apparatus.

The *Instructions*, *Helot*, *Maeda*, and *Ursy* disclose all of the features of the humidifier assembly according to claim 33. *Supra*. Further, in addition to disclosing a heater plate, the *Instructions* disclose that the heater plate is a resistance heater. Ex. 1003 at 2, 4. *See also*, Ex. 1004 at ¶ 158. In particular, the heater plate must be a resistance heater because it operates on electricity, which creates heat through resistance. Ex. 1004 at ¶ 158.

To the extent the Board finds otherwise, the use of a heater plate that uses a resistance heater is obvious in view of the teachings of *Glynn*. *Glynn* describes a heater plate that is a resistance heater. *See* Ex. 1024 at 1:15-17, 1:42-48. Specifically, Glynn discloses "electric resistance heaters . . . in which a resistance element covers most of one side of a glass plate." *Id.* at 1:15-17. Accordingly, since the *Instructions* disclose a

heater plate that uses electricity, as recognized and appreciated by Glynn, it would have been obvious to use a resistance heater in the heater plate. Ex. 1004 at ¶ 159.

Further, in addition to disclosing positioning a heat conducting material in an opening in a wall of a humidifier, *Ursy* discloses placing a sealing mechanism between the heat conducting material and the wall of the humidifier. Specifically, *Ursy* discloses that the "heat conductive material . . . is retained in sealing relation within an opening 27 in the section by means of an O-ring 28." *See* Ex. 1017 at 3:5-9.

It would have been obvious to one of ordinary skill in the art to have modified the water chamber base of the *Instructions* to further include a seal between the heat conducting material and the wall in the bottom of the base. Such a modification would have done nothing more than combine familiar elements according to known methods. Ex. 1004 at ¶ 162; *see KSR* 550 U.S. at 416.

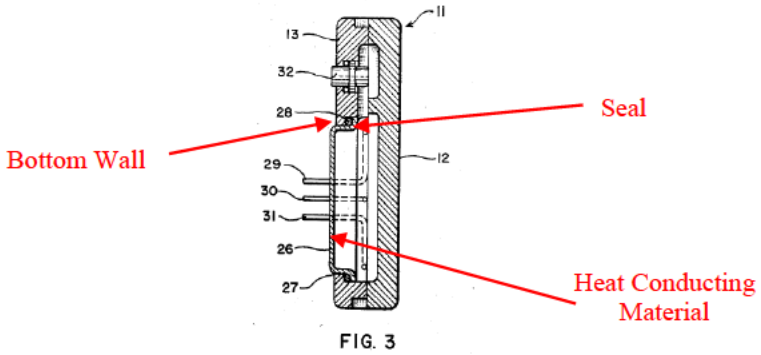
Furthermore, including a seal would prevent the leakage of water from the water chamber. Ex. 1004 at ¶ 163. Thus, such a modification would simply improve the apparatus disclosed by the *Instructions* in the same way as it improves the apparatus in *Ursy* (e.g., by providing a mechanism for preventing the leakage of water) and would not have been beyond the ordinary skill in the art. *Id.*; *see KSR,* 550 U.S. at 417.

Moreover, in addition to disclosing a retaining mechanism including engagement members 36 and lever 38, *Helot* discloses a connecting structure having contact elements for communicating with a power supply of a connected device. Specifically, *Helot* discloses that docking station 22 includes an interface port 34 to

connect to a compatible port in the back of computer 24 to facilitate electronic coupling of the computer to the docking station. *See* 1023 at 1:44-50, 3:51-57. Furthermore, the interface port 34 communicates with a power supply (e.g., a battery) of the computer 24. *See id.* at 1:48-50 ("Power might also be directed through a port replicator so that the portable computer need not be manually plugged in before desktop use").

It would have been obvious to one of ordinary skill in the art to have modified the HumidAire housing of the *Instructions* to further include contact elements for communicating with a power supply of the flow generator or CPAP. Such a modification would have done nothing more than combine familiar elements according to known methods. Ex. 1004 at ¶ 166; *see KSR* 550 U.S. at 416.

Furthermore, including the contact elements would enable power to be directed to the flow generator or CPAP through the HumidAire housing so that the flow generator or CPAP need not be manually plugged in before use. Ex. 1004 at ¶ 167. Thus, such a modification would simply improve the apparatus disclosed by the *Instructions* in the same way as it improves the apparatus in *Helot* (e.g., by providing a mechanism for supplying power to a connected device) and would have been well within the purview of one of ordinary skill in the art. *Id.*; *see KSR,* 550 U.S. at 417. As further detailed in the claim chart below, the *Instructions*, in combination with *Helot*, *Maeda*, *Ursy*, and *Glynn* render claims 34-36 of the '453 patent obvious.

Claims	Exemplary Disclosure of Prior Art
34. A humidifier assembly according to claim 33, wherein the heating element is a resistance heater.	The *Instructions* disclose that the heater plate is a resistance heater.[19] Ex. 1003 at 2, 4. *See also*, Ex. 1004 at ¶ 158. *Glynn* discloses a heater plate that is a resistance heater. *See* Ex. 1024 at 1:15-17, 1:42-48.
35. A humidifier assembly according to claim 34, further comprising a seal between the heat conducting material and the bottom wall.	*Ursy* further discloses that the O-ring 28 (the claimed "seal") is between the flat cup 26 and the bottom wall. *See* Ex. 1017 at 3:5-9. The "heat conducting material," "seal," and "bottom wall" are identified in the annotated Figure 3 of *Ursy* included below:  FIG. 3
36. A humidifier assembly according to claim 35, wherein the connecting structure includes contact elements that communicate with a power supply, a controller, and/or sensors within the CPAP apparatus.	Claim 36 is dependent upon claim 35. The *Instructions* disclose that the connecting structure includes a power cord configured to be plugged into a power outlet. Ex. 1003 at 4. ("Plug the power cord into a power outlet and turn the power outlet on.") To the extent the *Instructions* do not disclose that the connecting structure "includes contact elements that communicate with a power supply, a controller, and/or sensors within the CPAP apparatus," *Helot* discloses these features. *Helot* discloses that docking station 22 includes an interface

[19] The heater plate must be a resistance heater because it operates on electricity, which creates heat through resistance. Ex. 1004 at ¶ 158.

	port 34 (the claimed "contact elements") to connect to a compatible port in the back of computer 24 to facilitate electronic coupling of the computer to the docking station. *See* 1023 at 1:44-50, 3:51-57. Furthermore, the interface port 34 communicates with a power supply of the computer 24. *See id.* at 1:48-50 ("Power might also be directed through a port replicator so that the portable computer need not be manually plugged in before desktop use").

VIII. CONCLUSION

For the reasons set forth above, the challenged claims 9-19, 23-36, 40, and 63 are unpatentable, so trial should be instituted and the claims should be cancelled. Petitioner reserves the right to apply additional prior art and arguments, depending on what arguments and/or amendments Patent Owner might present. Petitioner also reserves the right to cite and apply any additional art it might discover as relevant to the issued claims or any amended claims, as the *inter partes* review proceeds.

Respectfully submitted,

Dated: August 22, 2014

By: /E. Robert Yoches/
E. Robert Yoches, Lead Counsel
Reg. No. Reg. No. 30,120

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for Inter Partes Review was served on August 22, 2014, by Federal Express at the following addresses of record for the subject patent. The associated Power of Attorney and Exhibits 1001 through 1024 were also served on August 22, 2014.

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