

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ZIMMER SURGICAL, INC.,
Petitioner

v.

STRYKER CORPORATION,
Patent Owner

Case IPR2018-01089
Patent No. 9,579,428

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,579,428**

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Ex. 1007	U.S. Patent No. 5,419,687 to Adahan (“ <i>Adahan</i> ”)
Ex. 1008	U.S. Patent No. 4,737,148 to Blake (“ <i>Blake</i> ”)
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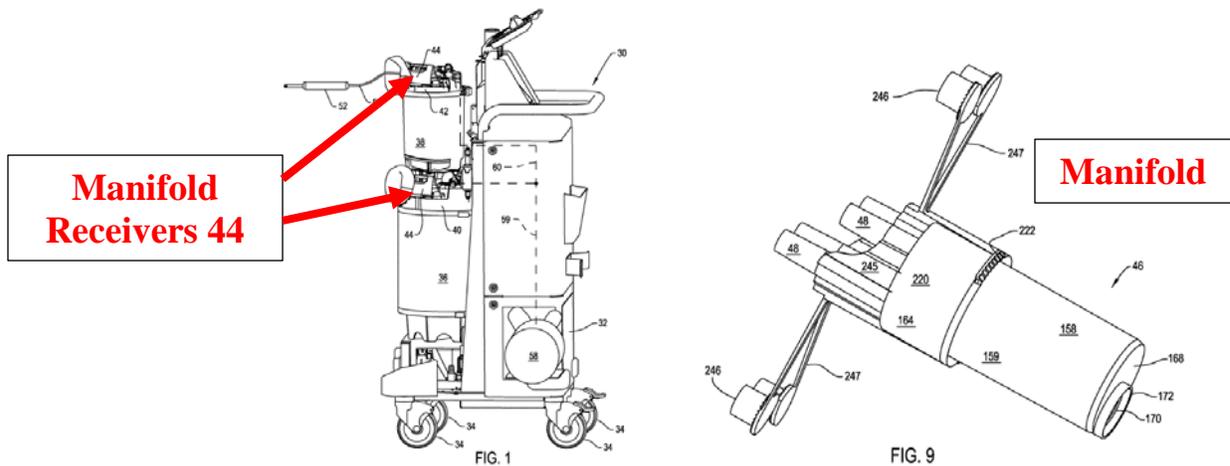
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I. Introduction

Zimmer Surgical, Inc. requests *inter partes* review of claims 1-6, 8, 10, 12, 14-16, 18, 20, 22-25, and 28-30 of U.S. Patent No. 9,579,428 (“the ’428 patent”) (Ex. 1001). The ’428 patent is directed to assemblies for collecting waste generated during a medical procedure. The assemblies allow medical personnel to use suction to remove body fluids and irrigating solutions that are introduced to a body during surgery. The assemblies comprise a manifold connecting suction tubing to a storage canister that holds the waste fluids for later disposal. Figure 1 (left) illustrates an exemplary waste collection cart, and Figure 9 (right) illustrates an exemplary manifold that connects to the cart via the labeled receivers.



(’428 Patent, Figs. 1 and 9 (annotated by Petitioner).)

The manifolds are removable, allowing them to be replaced for each patient. Removable manifolds existed in the art well before the application leading to the ’428 patent was filed, as the ’428 patent itself explains in its “Background of the

Invention.” (*See* ’428 Patent, 1:41-2:62.) The ’428 patent, therefore, is directed to a particular structure and orientation for its removable manifold and the receiver that holds the manifold to the larger assembly. One aspect of this structure is that the manifold must be inserted into a receiver and, upon rotating the manifold to seat it in the receiver, the manifold’s waste outlet must move to a position “below” its initial position. (*See, e.g.*, ’428 Patent Claim 1.) In the Examiner’s view, this specific structure and orientation were not obvious. (Ex. 1004, 120 (stating that the applied prior art did not teach “the limitations drawn to the receiver having a bore angled from the horizontal such that the manifold inserted into the bore can rotate where the outlet of said manifold is below the position of the outlet when rotated within the bore.”).)

While this feature was important in allowing the claims, Patent Owner has argued in related litigation that it is to be broadly interpreted to the point that it carries almost no meaning. In particular, Patent Owner contends that “below” refers to any lower point and is not limited to meaning “directly beneath.” (*See* Ex. 1012, 15-17.) According to Patent Owner, even an embodiment where the outlet rotates slightly, from a 12 o’clock position to 12:01, may be covered if the other claim limitations are also met. (*Id.* at 17.) Under such an expansive view of the claims, the claims are obvious in view of the prior art. As explained below, it would have been obvious to rotate the manifold’s outlet to a lower point—including to a point that is

directly beneath its original starting position and to every position in between—and it would have been obvious to do so in combination with the other claimed features. Thus, the distinguishing feature the Examiner relied on to allow the claims does not support patentability and Petitioner requests that the Board cancel the challenged claims.

II. 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 1-6, 8, 10, 12, 14-16, 18, 20, 22-25, and 28-30 of the '428 patent and cancellation of those claims as unpatentable.

B. Statutory Grounds

Claims 1-6, 8, 10, 12, 14-16, 18, 20, 22-25, and 28-30 of the '428 patent are unpatentable and should be canceled in view of the following prior art references:

Prior Art References	
Ref. 1:	<i>Dunn</i> , U.S. Patent App. Pub. No. 2003/0164600 A1 (Ex. 1005), published September 4, 2003, from an application filed in the United States on March 4, 2002. ¹

¹ The '428 patent claims priority to Provisional Application Serial No. 60/750,862, which was filed on December 14, 2005. Petitioner takes no position here

Prior Art References	
Ref. 2:	<i>Radford</i> , U.S. Patent No. 6,027,490 (Ex. 1006), issued February 22, 2000, from an application filed in the United States on January 24, 1997.
Ref. 3:	<i>Adahan</i> , U.S. Patent No. 5,419,687 (Ex. 1007), issued May 30, 1995, from an application filed in the United States on February 28, 1994.
Ref. 4:	<i>Blake</i> , U.S. Patent No. 4,737,148 (Ex. 1008); issued April 12, 1988, from an application filed in the United States on May 14, 1986.
Ref. 5	<i>Glenn</i> , U.S. Patent No. 4,857,063 (Ex. 1009); issued August 15, 1989, from an application filed in the United States on January 19, 1988.

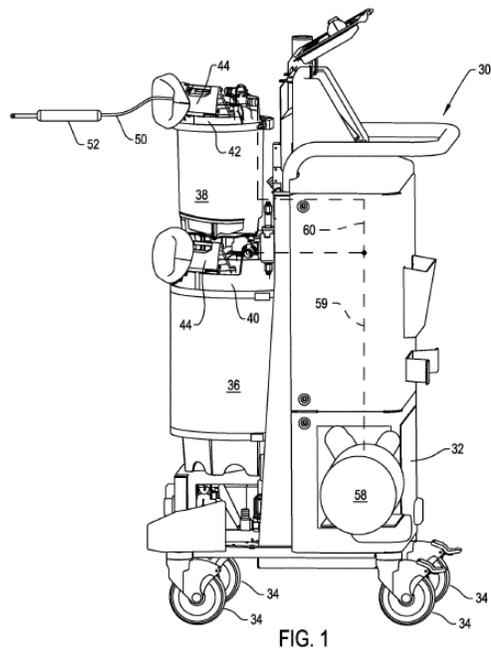
as to the validity of the priority claim, as each asserted reference is prior art under at least pre-AIA 35 U.S.C. §§ 102(a), (b), and (e), even assuming the claims are entitled to the provisional filing date.

Claims 1-6, 8, 10, 12, 14-16, 18, 20, 22-25, 28-30 are unpatentable under the following grounds:

Ground	Grounds of Unpatentability
1	<i>Dunn</i> in view of <i>Radford</i> and <i>Adahan</i> renders obvious claims 1-3, 5, 6, 8, 12.
2	<i>Dunn</i> in view of <i>Radford</i> , <i>Adahan</i> , and <i>Blake</i> renders obvious claims 4, 14, 15, and 22.
3	<i>Dunn</i> in view of <i>Radford</i> , <i>Adahan</i> , and <i>Glenn</i> renders obvious claims 10, 16, 18, 20, 23, 24, and 28-30.
4	<i>Dunn</i> in view of <i>Radford</i> , <i>Adahan</i> , <i>Blake</i> , and <i>Glenn</i> renders obvious claim 25.

III. Technology of the '428 Patent

The '428 patent includes three independent claims—claims 1, 14, and 23. Each is generally directed to a surgical waste collection assembly with a receiver for holding a removable manifold. ('428 patent, Abstract.) During medical procedures like surgery, the assemblies allow medical personnel to use suction to remove body fluids and irrigating solutions that are introduced to a body during the procedure. An example of a waste collection assembly in the form of a waste collection cart is depicted below in Figure 1 of the '428 patent, showing two canisters 36 and 38 on the cart for collecting waste fluid. ('428 Patent, 4:32-33; Ex. 1002 ¶¶ 22-25.)



**Medical/Surgical
Waste Collection
System**

('428 Patent, Fig. 1 (annotated by Petitioner).)

As illustrated in a preferred embodiment below, the manifold is a removable component with attachment points or fittings 48 where medical personnel can attach suction tubes that remove fluids from the body during the medical procedure. The manifold also includes an outlet opening 170 through which fluid flows into a collection canister. (*See, e.g.*, '428 Patent, 4:39-54, 9:40-50.)

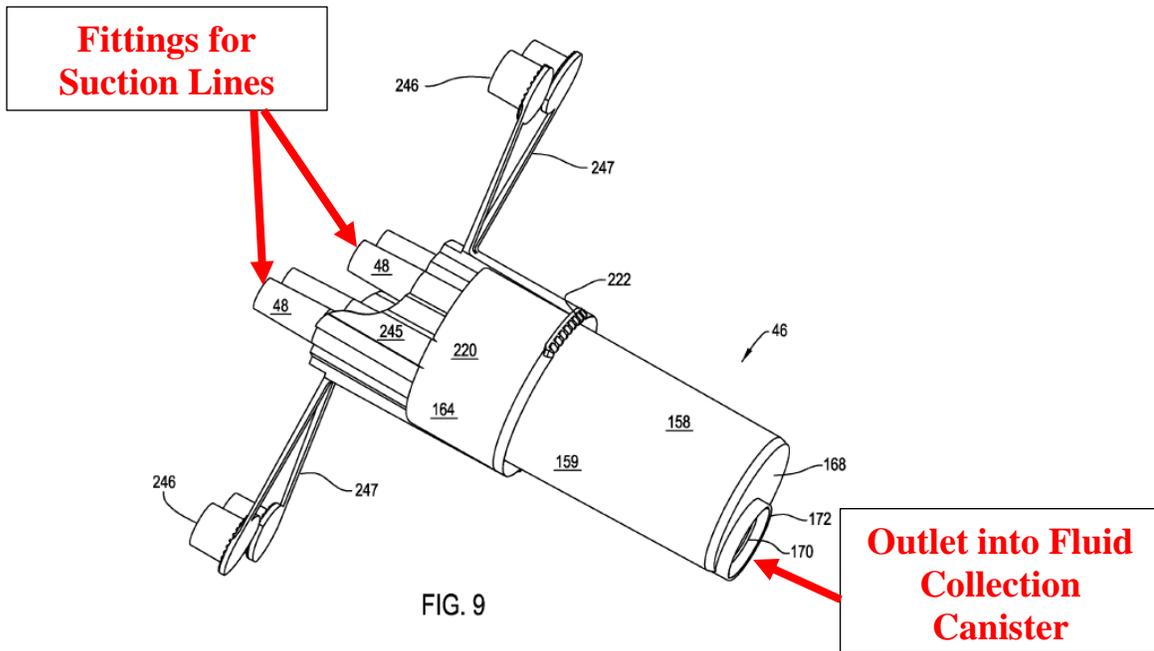


FIG. 9

('428 Patent, Fig. 9 (annotated by Petitioner).) Having a removable manifold allows a fresh manifold to be used for each patient.

The system includes a receiver 44 with a bore in its housing 62 for receiving the manifold 46, as shown below.

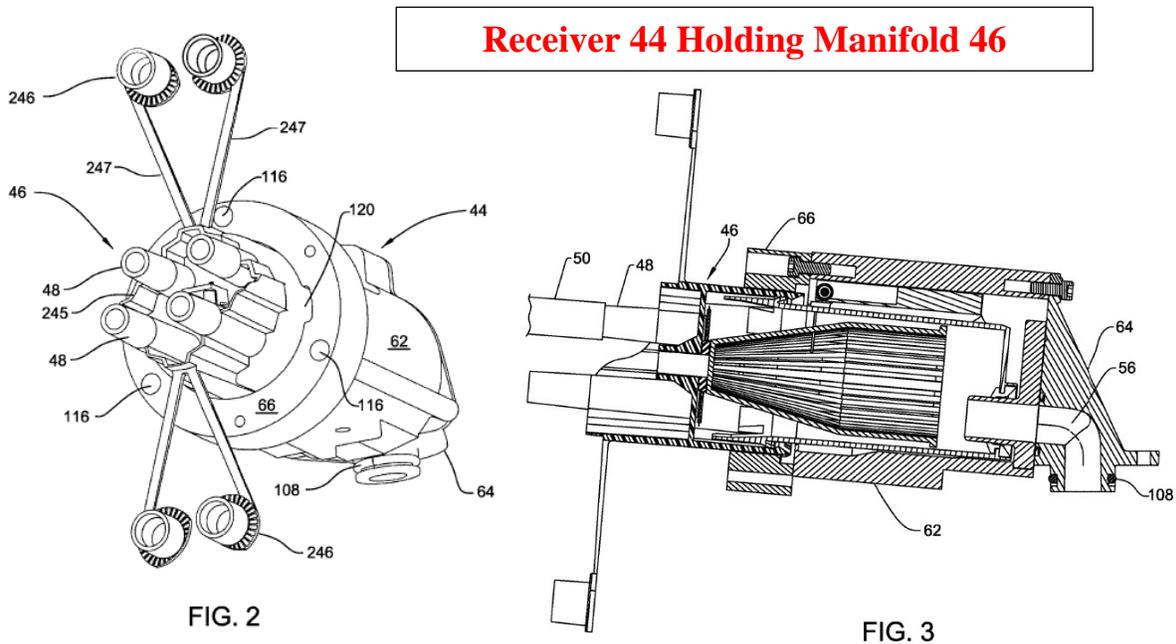


FIG. 2

FIG. 3

'428 patent, Figs. 2, 3 (annotated by Petitioner).) A receiver attaches to each canister so that the axis through the receiver bore is angled from the horizontal. (*Id.* at 16:22-30, 6:60-64.) When the manifold enters the receiver bore, it too sits at an angle. (*Id.* at 16:27-29.) The manifold and receiver have complementary alignment features (e.g., different-sized tabs, slots, and grooves) particularly orienting the manifold within the receiver and allowing the manifold to lock into the receiver. (*Id.* at 13:58-14:38, 15:15-25, 16:27-29.)

These features are arranged so that, when the manifold rotates from its initial position to its final position, the off-center outlet opening is below its initial position. (*Id.* at 16:30-35.) As Stryker's expert in the pending district court litigation, Mr. Sheehan, explained, "one could consider the location and movement of the outlet opening during rotation in terms of a clock face. The outlet opening could be at 3 o'clock in its first insertion position and then rotated to 5 o'clock in its second position, which is beneath or lower than 3 o'clock." (Ex. 1010 ¶ 16.)

IV. Prosecution History of the '428 Patent

The application leading to the '428 patent was filed on October 26, 2016. It received a first-action allowance less than one month later, on November 21, 2016. (Ex. 1004, 115.) In the Notice of Allowance, the Examiner stated his view that the prior art did not disclose "the limitations drawn to the receiver having a bore angled from the horizontal such that the manifold inserted into the bore can rotate where the

outlet of said manifold is below the position of the outlet when rotated within the bore.” (*Id.* at 120.) The applicant made several changes to the claims that it contended were “editorial in nature” and did “not change the scope of the invention defined by the claims.” (*Id.* at 165.) The Examiner allowed the amendments, (*see id.* at 179-92), and the ’428 patent issued on February 28, 2017.

V. The Level of Ordinary Skill in the Art

According to Patent Owner’s expert, Neil Sheehan, in a related litigation, “[a] person of ordinary skill in the art at the time of the invention of the 428 Patent would be an individual having a bachelor’s degree in mechanical engineering, biomedical engineering, industrial engineering, or similar technical degree, or equivalent work experience, and five to ten years of experience in the design and development of medical products, including fluid management and vacuum systems.” (Ex. 1010 ¶ 26.) For purposes of this *inter partes* review, Petitioner adopts Patent Owner’s definition of a person of ordinary skill in the art.

VI. Claim Construction

A claim in an unexpired patent subject to *inter partes* review “shall be given its broadest reasonable construction in light of the specification of the patent in which it appears.” 37 C.F.R. § 42.100(b). Claim terms not addressed below should be given their plain and ordinary meaning under the broadest reasonable

interpretation standard (“BRI”). *Id.*; Office Patent Trial Practice Guide, 77 Fed. Reg. 48756, 48764 (Aug. 14, 2012).

For purposes of this proceeding, Petitioner adopts a set of constructions previously advanced by Patent Owner in a related district court litigation.² Patent Owner argued for these constructions under the *Phillips* standard, and constructions under the BRI standard should be at least as broad as those under *Phillips*. *See, e.g., Rembrandt Wireless Techs., L.P. v. Samsung Elecs. Co.*, 853 F.3d 1370, 1377 (Fed. Cir. 2017) (“the Board in IPR proceedings operates under a broader claim construction standard than the federal courts”). But even if the Board were to apply *Phillips* to this proceeding, as the Office recently proposed,³ it is still reasonable to apply Patent Owner’s constructions here because those constructions were presented under *Phillips*.

² Patent Owner’s claim construction positions are reflected in its claim construction briefs in Exhibits 1011 and 1012.

³ *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 21221 (May 9, 2018).

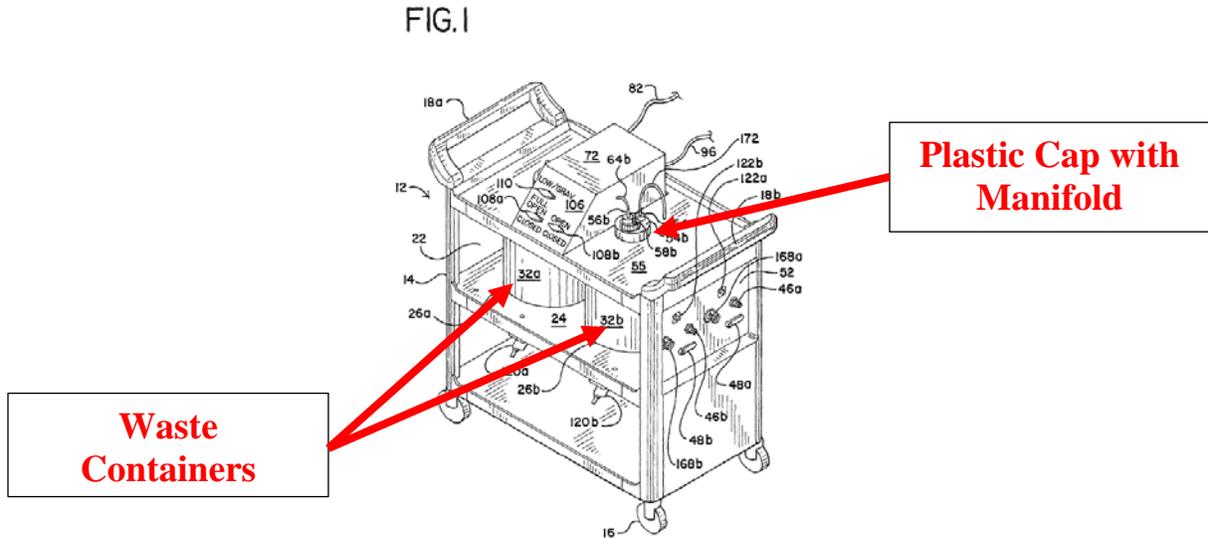
Term	Patent Owner’s Proposed Construction in Related Litigation
“distal end”/“proximal end” (Claims 1, 14, 23, 24, and 25)	Distal end: the portion or area that is closest towards the surgical site. Proximal end: the portion or area that is furthest away from the surgical site.
“an outlet opening” (Claims 1, 14, and 23)	An opening where material can exit.
“an axis [that] extends through the [receiver] bore” / “the bore having ... an axis between the ends” (Claims 1, 14, and 23)	An imaginary longitudinal line that extends through the bore (between the proximal and distal ends) about which the manifold can rotate when inserted into the bore.
“housing” (Claims 1, 3, 4, 6, 14, and 16)	A casing that contains or covers components or materials.
“receiver” (Claims 1-4, 8, 10, 12, 14, 18, 20, 22-25, and 29-30)	Receptacle.
“below” (Claims 1, 14, and 23)	Beneath (lower than).
“a fluid communications path” (Claims 8, 18, and 23)	A path (pathway) for conveying fluid from the receiver bore into the first canister.

VII. Ground 1: *Dunn* in View of *Radford* and *Adahan* Renders Obvious Claims 1-3, 5-6, 8, and 12

A. Overview of *Dunn*

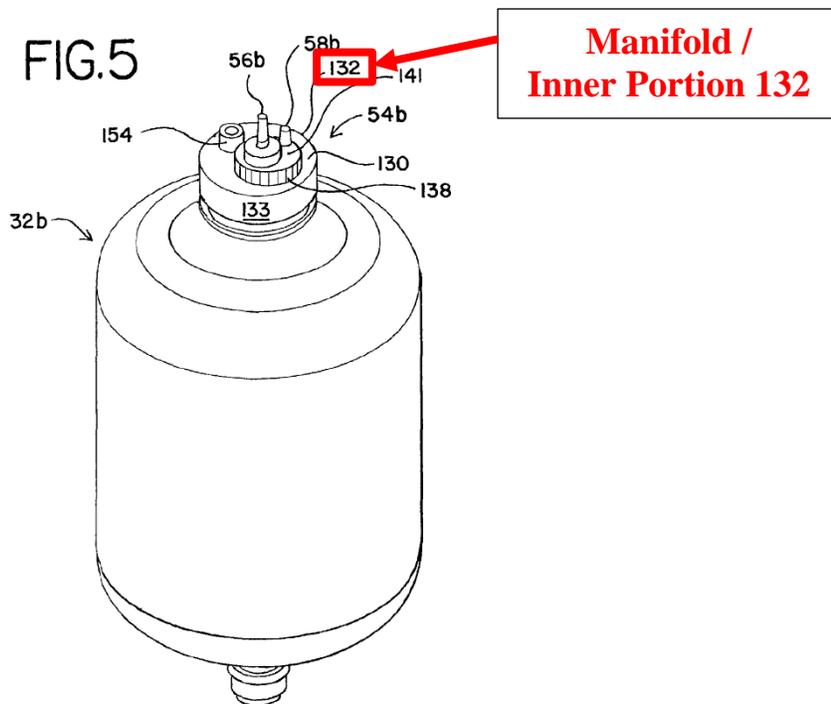
Dunn, like the ’428 patent, is directed to a system for collecting and disposing of liquid waste during surgery. (Ex. 1002 ¶¶ 27-31.) According to *Dunn*, the medical industry faced numerous challenges in handling medical waste. Surgery produces a

large amount of liquid waste, which “generates significant disposal problems due to its possible contamination with various infectious diseases,” posing a significant risk to hospital employees and patients. (*Dunn*, [0005].) *Dunn* provides a portable cart with two containers for fluid waste disposal and a removable manifold for each:



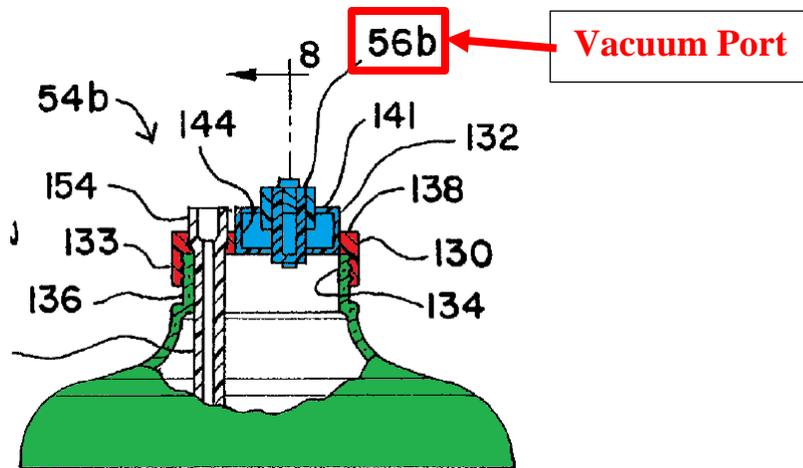
(*Dunn*, Fig. 1 (annotated by Petitioner).)

Dunn's Figure 5 illustrates the container structure more closely, with each container having a corresponding rotatable manifold, which *Dunn* alternatively refers to as “inner portion 132.” (*Dunn*, Fig. 5, [0050].)

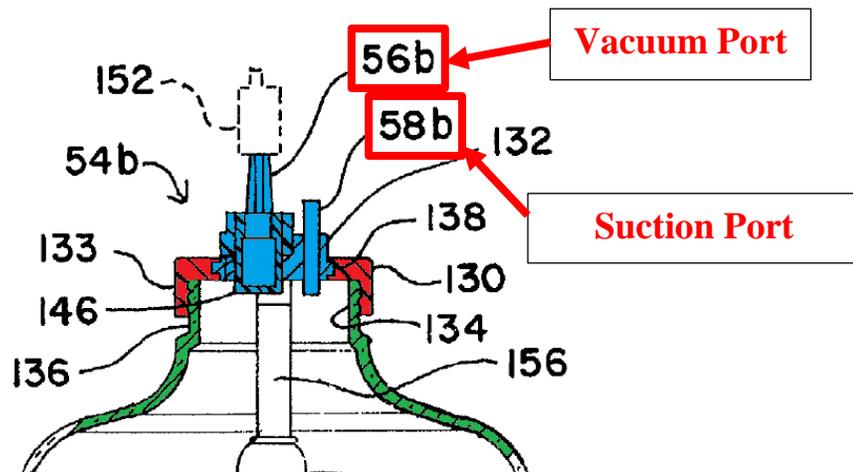


(*Dunn*, Fig. 5 (annotated by Petitioner).)

Dunn's manifold/inner portion comprises a fitting 58b for connecting a suction line that extends to the surgery site, as well as a second fitting 56b for connecting a vacuum source to provide suction. (*Dunn*, [0050].) *Dunn*'s Figure 7 zooms in to show that inner portion 132 (shaded blue below) inserts into the container (shown in green) through a vertical bore in an outer portion 130 (shaded red below).



(*Dunn*, Fig. 7 excerpt (annotated by Petitioner); see also *Dunn*, [0033], [0049]-[0051].) And *Dunn*'s Figure 8 shows a sectional view of the container of Figure 7 taken along line 8-8, with similar shading applied.

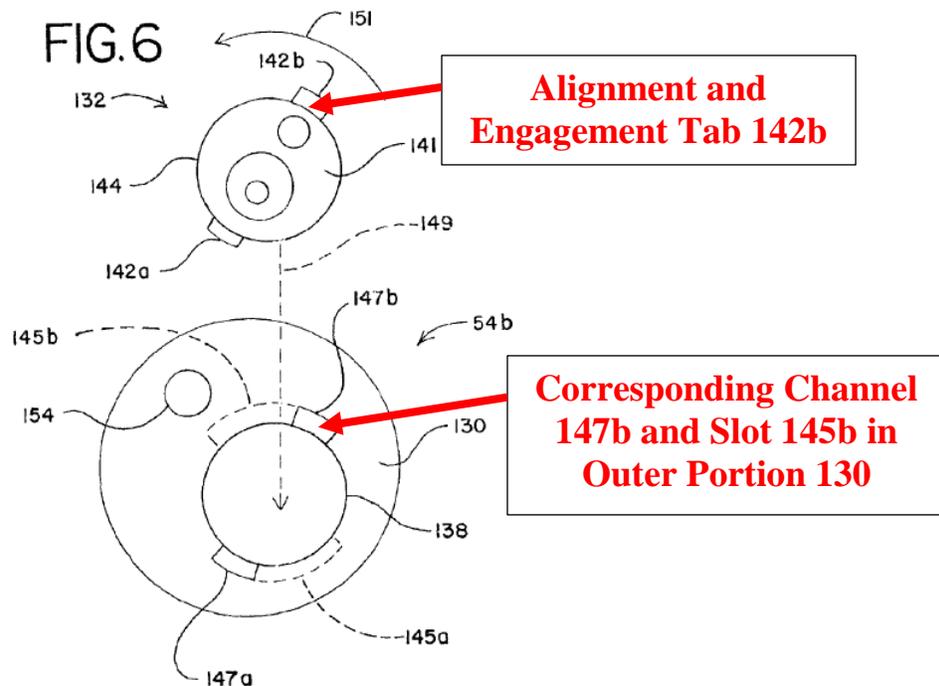


(*Dunn*, Fig. 8 excerpt (annotated by Petitioner); see also *Dunn*, [0034], [0049]-[0051].)

Dunn teaches that its manifold is removable, stating that “inner cap portion 132 may be removed from the outer cap portion 130 for disposal after use. This is

desirable in that potentially contaminated biological fluids from a medical procedure flow through suction port 58b during a medical procedure.” (*Dunn*, [0051].)

To ensure that its removable manifold is properly inserted and securely connected to the container, *Dunn* discloses that in certain embodiments the inner portion 132 includes tabs (142a and 142b) that correspond with vertical channels (147a and 147b) and slots (145a and 145b) in the outer portion 130. These tabs fit into the channels that drop them into the slots, allowing the inner portion 132 to be inserted, rotated, and locked into outer portion 130, as illustrated in *Dunn*’s Figure 6:



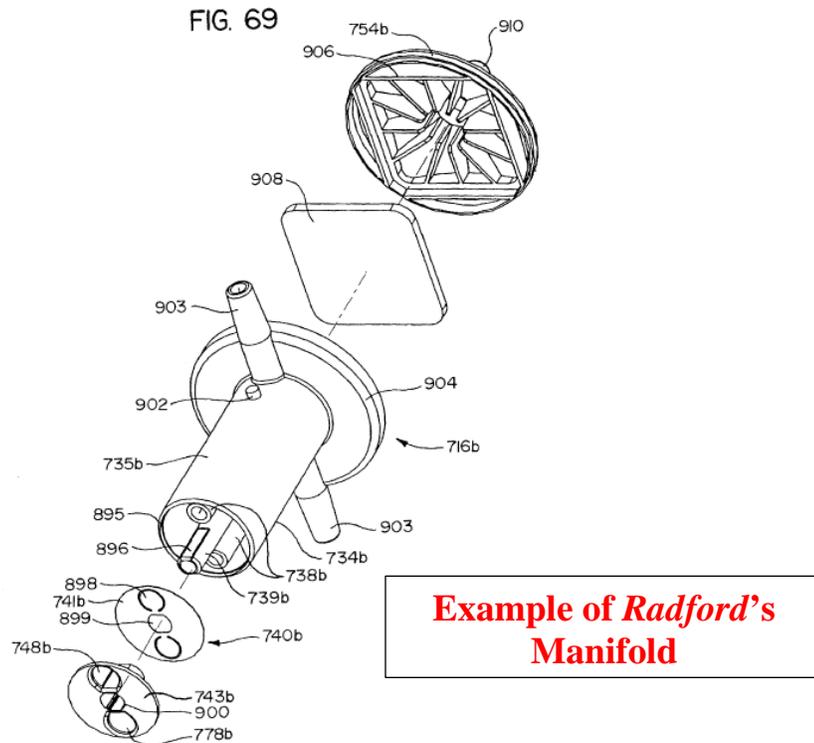
(*Dunn*, Fig. 6 (annotated by Petitioner); *see also Dunn*, [0049]-[0052].) *Dunn* also discloses an alternative embodiment where the manifold enters the bore and rotates on threads to secure the manifold to the container. (*Dunn*, [0052].)

B. Overview of *Radford*

Radford, like both the '428 patent and *Dunn*, discloses a system for disposing of liquid medical waste in hospitals. (*Radford*, Abstract; Ex. 1002 ¶¶ 32-33.)

Radford also recognizes the dangers facing healthcare workers when transporting hazardous liquid medical waste. (*Radford*, Abstract.) To prevent or mitigate these dangers, *Radford* discloses a system for collecting, transporting, and disposing of this waste using a portable container and manifold. (*Id.*)

Radford's manifold includes multiple intake fittings connecting to suction lines through which liquid medical waste can be removed from the surgery site. (*Radford*, 45:26-38, Fig. 69.)



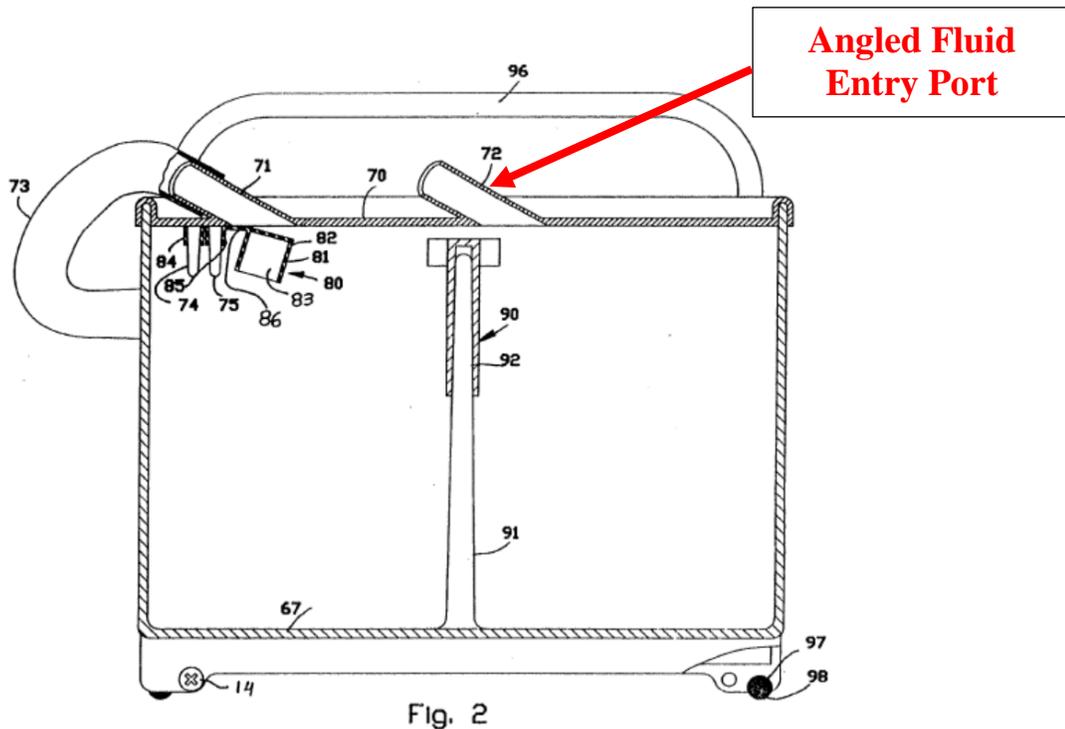
Radford also teaches the use of a valve between the storage container and the suction lines, which can close to prevent fluids from leaving the container and to ensure that the system does not contaminate the environment. (See, e.g., *Radford*, 42:31-42, 43:1-14.)

C. Overview of *Adahan*

Adahan, like the '428 patent, *Dunn*, and *Radford*, discloses a system for removing “waste fluids, for example in medical applications.” (*Adahan*, 1:9-11; Ex. 1002 ¶¶ 34-37.) It teaches a unitary design containing a pump and a collection container. *Adahan* discusses the need to allow fluid to enter the container without agitating the fluid already in the container. (*Adahan*, 5:26-33.) Agitating the pre-existing fluid can cause foaming of the waste and splashing that can prematurely trigger vacuum shutoff valves. The system essentially believes the canister is full when it is not.

To address this issue, *Adahan* angles its fluid entry port. (*Adahan*, 5:26-33.) The angled inlet sits on the top of the container and allows the entering fluid to hit the container sidewall as it flows into the container. (*Id.*) The result is that the new fluid joins the pre-existing fluid in a gentler manner with less agitation, preventing prematurely causing “the shutoff valve 80 to float and shut off the vacuum inlet port 71.” (*Id.*) The angled port also helps the connected tube “assume a substantially horizontal position with less danger of forming a kink in the tube tending to obstruct

the passage of air or liquids therethrough.” (*Id.* at 5:15-25.)



(*Adahan*, Fig. 2 (annotated by Petitioner).)

D. Rationale to Combine *Dunn*, *Radford*, and *Adahan*

Each of *Dunn*, *Radford*, and *Adahan* provide suction-based systems for removing liquid medical waste from a surgical site. (Ex. 1002 ¶¶ 27-37, 44-55.) As *Dunn* notes, by at least the filing of the *Dunn* application in 2002, “[v]arious systems and methods [were] used for collecting, handling and disposing of fluids from procedures that produce large volumes of liquid medical waste.” (*Dunn*, [0006].) Each reference discloses containers aiding the easy and safe transportation of medical waste. (Ex. 1002 ¶¶ 27-28, 32-37.)

A skilled artisan would have understood that these systems provide similar ways to remove fluids from surgical sites. (Ex. 1002 ¶¶ 45-55.) A skilled artisan

would therefore have looked to references like *Radford* and *Adahan*, which describe specific implementations of these systems, to modify *Dunn*'s teachings. (*Id.*)

In addition to this general similarity, a skilled artisan would have been motivated more specifically to modify *Dunn*'s vertical bore through its receiver/outer portion 130 to angle the bore in the manner described by *Adahan*. (Ex. 1002 ¶¶ 45, 47-48.) As explained above in Section VII.C, *Adahan* teaches angling the fluid entry port to reduce splashing and general agitation caused by the newly-suctioned fluid when it meets with the pre-existing fluid in the waste canister. (*Adahan*, 5:26-33.) This prevents prematurely activating a shut-off mechanism in the canister. (*Id.*)

One skilled in the art would also recognize that high velocity or high turbulent fluids may agitate the pre-existing fluid and cause the creation of foam, which can result in at least two unfavorable conditions. (Ex. 1002 ¶¶ 35-36.) The first is that fluid with foam on the top may give an inaccurate volume collection reading, and similar to splashing, may prematurely activate the shut-off mechanism. (*Id.*; *see also* Ex. 1018, 6-7.) The second is that foam bubbles may move into the vacuum line, creating additional potential failure modes (e.g., the foam bubbles may not exert enough force to close the shut-off valve). (*Id.*) One skilled in the art would have recognized these issues and introduced into *Dunn*'s system a solution like *Adahan*'s angling of the fluid entry port. (Ex. 1002 ¶¶ 47-48.)

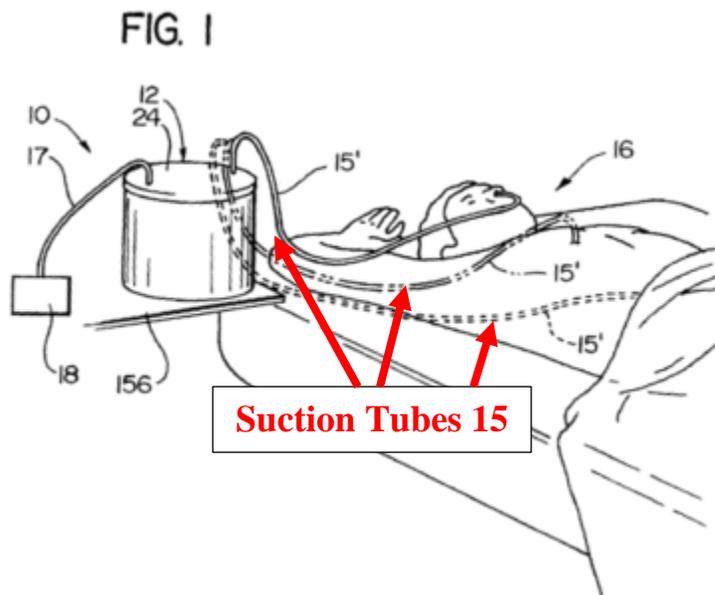
Adahan also teaches that angling the vacuum and suction ports can provide additional flexibility in routing the vacuum and suction lines, helping prevent kinks in the lines that could obstruct the passage of air or liquids. (*Adahan*, 5:15-25; see also Ex. 1018, 6-7; Ex. 1002 ¶ 47.)

Based on at least these benefits, a person of ordinary skill would have been motivated to incorporate *Adahan*'s angling into *Dunn*'s system. (Ex. 1002 ¶¶ 47-48.) Doing so would have required only a minimal redesign of *Dunn*'s system. Instead of the receiver bores being oriented vertically, a skilled artisan would angle them at the desired angle (*e.g.*, at 30 degrees, as taught by *Adahan*), leaving the other features of the waste collection system essentially unchanged. (Ex. 1002 ¶ 48.) Given the relatively minor nature of this change, it is within the capability of one of ordinary skill, and one skilled in the art would have expected success in making this straightforward modification to *Dunn*'s system. (*Id.*)

A skilled artisan also would have been motivated to modify *Dunn*'s design to include multiple suction fittings on its manifold/inner portion 132, as taught by *Radford*. A skilled artisan would understand that several benefits flow from *Radford*'s multiple fittings, including (1) the ability to provide suction to multiple surgery sites simultaneously, (2) to provide a choice of which fitting to use if using fewer lines than fittings, which helps with routing the suction lines in a convenient and safe manner, and (3) if using fewer lines than fittings, providing backup fittings

to use if the original suction fittings are clogged or otherwise unusable. (Ex. 1002 ¶¶ 49-55.)

For these reasons and perhaps others, it was well-known in the art to connect multiple suction lines to a single manifold. (See, e.g., Ex. 1017, 4:11-20 (“Each port in manifold 131 is an independent vacuum source [and] multiple vacuum lines can be used simultaneously”); Ex. 1016, [0021] (providing plural “suction tubes 28” attached to “inlets 16 of the manifold 14 to draw the medical waste from the surgical site”); Ex. 1002 ¶¶ 50-52.) *Radford* depicts this common feature in its Figure 1, which shows in solid and dashed lines three suction tubes 15 attached to a single suction system.



(*Radford*, Fig. 1.)

In addition to being motivated to implement multiple suction fittings on *Dunn*'s manifold, a skilled artisan would have expected success in doing so because *Dunn*'s manifold already provides sufficient space on its circular surface 141 for additional fittings. (Ex. 1002 ¶ 51; *see also Dunn*, Fig. 6.) And if one wished to increase the size of *Dunn*'s manifold to further accommodate additional fittings, this modification would have been relatively minor and within the skill of one of ordinary skill in the art. (*Id.*) The manifold and related components interfacing with the manifold (e.g., the receiver) could be resized readily by one skilled in the art without departing from *Dunn*'s disclosed structure and operation. Indeed, *Dunn* does not disclose specific dimensions for its manifold and other components, nor does it limit its teachings to any particular size. (*Id.*)

It was also within the level of ordinary skill to add extra suction to the vacuum system to support the additional suction lines, if needed. (Ex. 1002 ¶ 52.) Some suction systems may not need additional suction to support the additional lines, depending on the existing system capability and desired end use, but one skilled in the art would recognize that additional suction could be provided through a more powerful vacuum/pump. (*Id.*) This is another straightforward modification, particularly in *Dunn*'s system, which already contains a regulator 76 for adjusting the suction pressure applied to the suction lines. (*Dunn*, [0042]-[0047]; Ex. 1002 ¶ 52.) *Dunn*'s system, therefore, could accommodate a more powerful suction source

without overloading any particular suction port. (Ex. 1002 ¶ 52.) And the suction force is adjustable such that one could connect a single suction line or multiple suction lines and still provide appropriate suction at each. (*Id.*)

One of ordinary skill also would also have been motivated to modify *Dunn*'s receiver to include *Radford*'s valve. *Dunn* already discloses a shut-off mechanism by teaching that “the vacuum port is equipped with a Porex filter 146 that, in addition to filtering . . . , may cooperate with the hospital vacuum source to automatically stop suction when the canister is full.” (*Dunn*, [0040].) It also explains that its vacuum regulator housing includes check valve 84 and control valve 86. (*Dunn*, [0042].) It would have been obvious to replace or add *Radford*'s valve to these existing flow control mechanisms.

One of ordinary skill in the art would have recognized that, in addition to providing the automatic shut-off feature described in *Dunn*, one could have realized the additional benefits disclosed in *Radford* regarding its valve. (Ex. 1002 ¶¶ 53-55.) In particular, *Radford* teaches that including its valve would eliminate any “reverse flow of the biofluids back up the tubular member,” and would seal the container when removed from the base. (*Radford*, 26:42-27:60, 35:59-67.) It was also known in the art that sealing mechanisms like *Radford*'s valve can “reduce or eliminate odors from escaping from the canister.” (Ex. 1016, [0028].) For these reasons, it was well-known in the art to include a valve, such as the one disclosed in *Radford*.

(Ex. 1002 ¶¶ 53-55.)

Additionally, a skilled artisan would have expected success in adding a valve to *Dunn*'s system because doing so would not have required a significant redesign. *Dunn*'s container and cap have ample space to include a valve, which may take the form of a ball valve, as described in *Radford*. (*Radford*, 34:65-35:25.)

Accordingly, it would have been obvious to one of ordinary skill to make this straightforward modification to *Dunn*'s system. (Ex. 1002 ¶¶ 27-37, 45-55.)

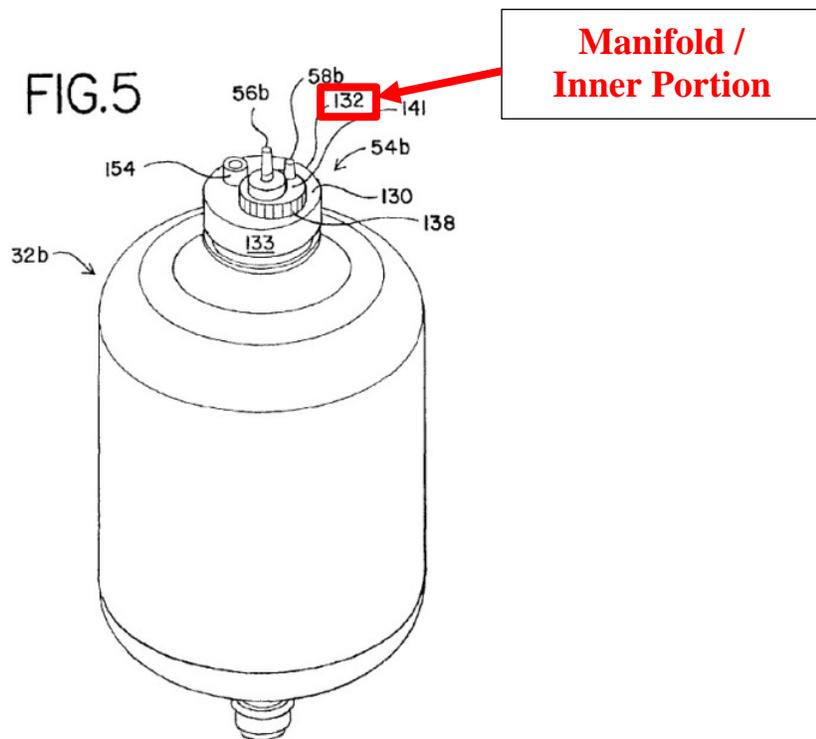
E. *Dunn/Radford/Adahan* Renders Obvious Claims 1-3, 5, 6, 8, and 12

The *Dunn/Radford/Adahan* system teaches every feature of claims 1-3, 5, 6, 8, and 12, as explained below.

1. Independent Claim 1

a. “A medical/surgical waste collection assembly”

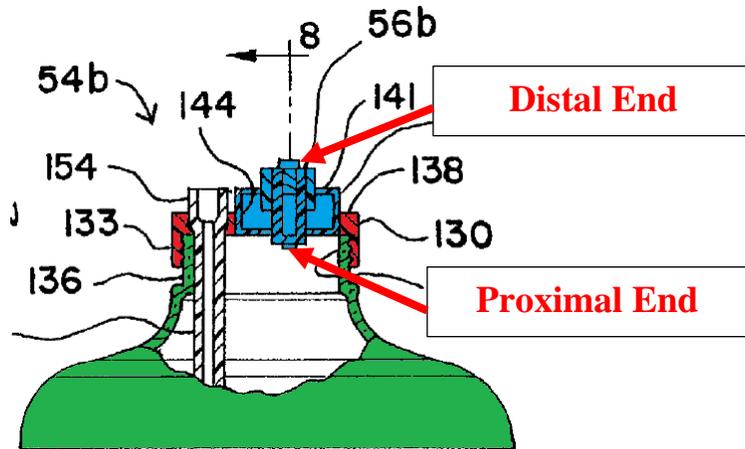
If the Board finds the preamble limiting, *Dunn/Radford/Adahan* discloses it by *Dunn* teaching, for example, a “system for collecting and disposing of liquid medical waste [that] includes a fluid collection cart and a draining and cleaning station.” (*Dunn*, Abstract.) *Dunn* illustrates this system in Figure 1, reproduced below.



(*Dunn*, Fig. 5 (annotated by Petitioner).)

The manifold/inner portion 132 has a “housing”⁴ that contains the vacuum and suction ports, among other things. The housing, which surrounds the manifold/inner portion 132 shown in blue below, has several surfaces, including circular surface 141 into which “vacuum ports 56b and patient or suction port 58b [are] formed.” (*Dunn*, [0050].)

⁴ According to Patent Owner, a “housing” is “a casing that contains or covers components or materials.” (Ex. 1011, 11.)



(*Dunn*, Fig. 7 (excerpt annotated by Petitioner); see also *Dunn*, [0033], [0049]-[0051].) The housing has proximal and distal ends,⁵ as annotated in the figure above.

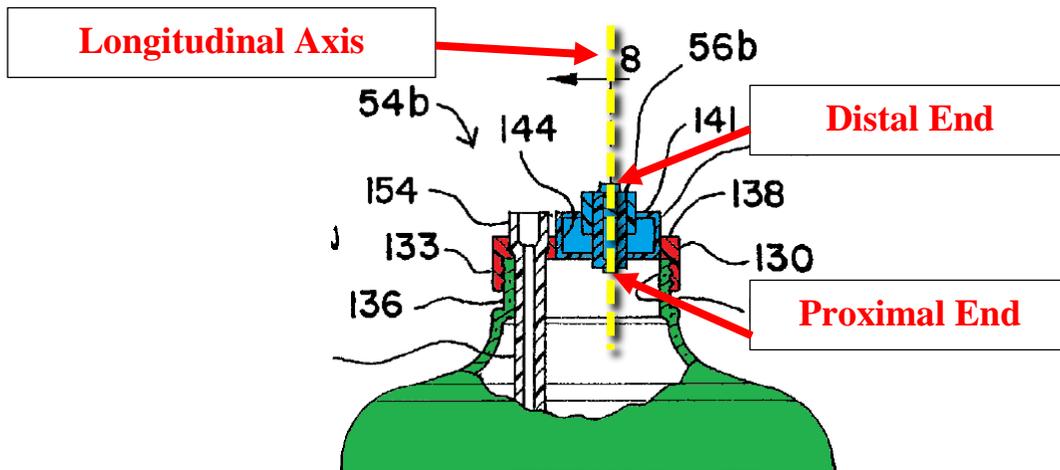
Dunn's manifold has a longitudinal axis that extends between the proximal and distal ends. For a different axis recited in the challenged claims, Patent Owner contends that an "axis" is an imaginary longitudinal line that extends through a specified component, which in this case is the housing. (See Ex. 1011, 15-17.) This imaginary line is illustrated as a dashed yellow line in Patent Owner's infringement contentions in a related litigation, as shown below.

⁵ "Proximal end" and "distal end" are defined above in Section VI.



(Ex. 1013, 10 (annotations by Patent Owner in original document).)

Dunn's manifold/inner portion 132 has a similar axis that extends between the proximal and distal ends of the housing, as shown by the dashed yellow line in annotated Figure 7 below.

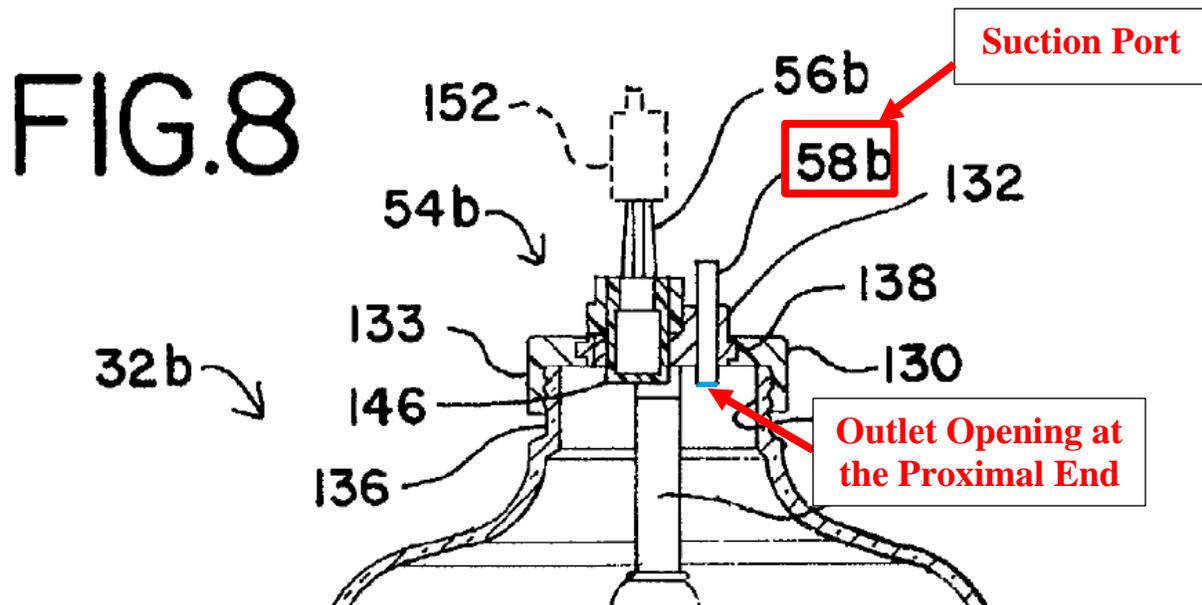


(*Dunn*, Fig. 7 (excerpt annotated by Petitioner).)

Accordingly, *Dunn/Radford/Adahan* discloses “a manifold, said manifold including: a housing with proximal and distal ends, a longitudinal axis that extends between the proximal and distal ends,” as claimed. (Ex. 1002 ¶¶ 57-61.)

- c. “an outlet opening at the proximal end, the outlet opening being off center from the longitudinal axis of the manifold housing”

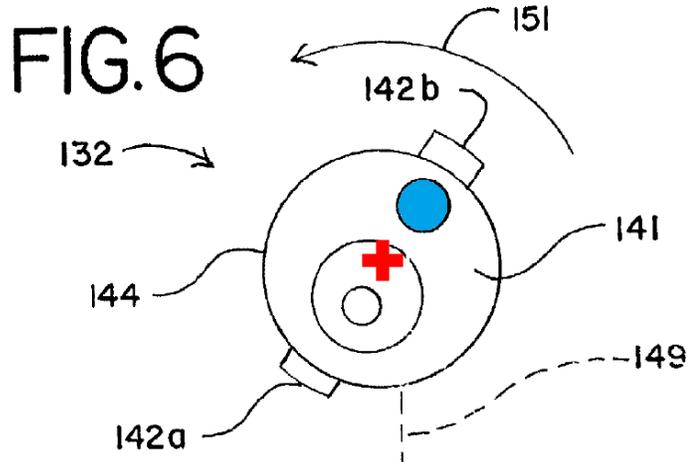
Dunn/Radford/Adahan discloses these claimed features through *Dunn*’s disclosure of an off-center outlet opening at the manifold housing’s farthest point away from the surgical site. *Dunn*’s Figure 8, which shows a cross sectional view of the manifold, illustrates in blue one embodiment of the outlet opening at the opposite end of suction port 58b.



(*Dunn*, Fig. 8 (excerpt annotated by Petitioner).)

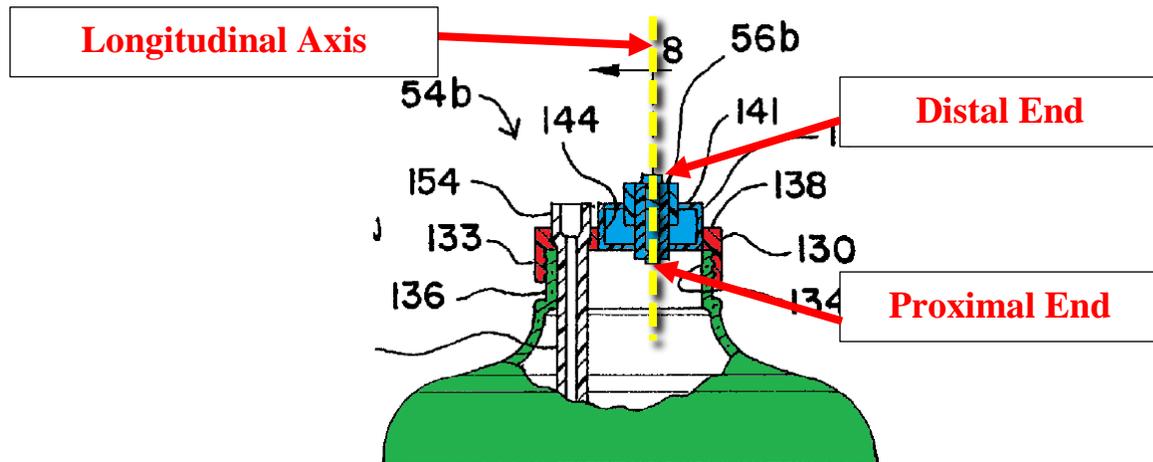
Dunn explains that this structure allows the “contaminated biological fluids from a medical procedure [to] flow through suction port 58b” and into the container below. (*Dunn*, [0051].) It therefore meets Patent Owner’s interpretation that an “outlet opening” is “an opening where material can exit.” (Ex. 1011, 9-11.)

Dunn also discloses that an outlet opening may be off-center from a longitudinal axis of the manifold housing. As shown in the top-down view in *Dunn*'s Figure 6, the outlet opening (as viewed through suction port 58b and shaded blue) is located away and off-center from the longitudinal axis that passes through the red +.



(*Dunn*, Fig. 6 (excerpt annotated by Petitioner).)

Dunn's Figure 7 also shows a longitudinal axis through a side view of the container and inner cap portion 132.



(*Dunn*, Fig. 7 (excerpt annotated by Petitioner).)

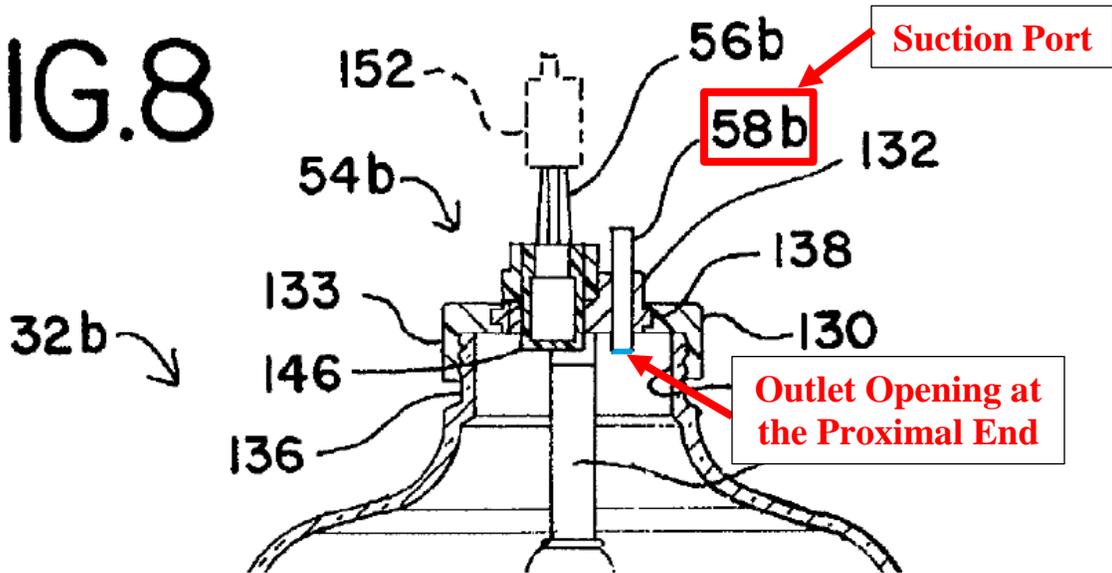
Thus, *Dunn/Radford/Adahan* discloses the claimed outlet opening features.

(Ex. 1002 ¶¶ 62-65.)

- d. **“a fitting that extends from the distal end of said manifold housing, said fitting shaped to receive a suction line and being in fluid communication with the outlet opening of said manifold housing”**

Dunn/Radford/Adahan discloses these features through *Dunn*'s “suction port 58b.” (See *Dunn*, [0041], [0050]-[0051].) As shown in annotated Figure 8 below, this port extends from the distal end of the manifold housing on manifold/inner portion 132. It is shaped to “connect[] to flexible tubing suction line[] 62b which lead[s] to the region of the patient from which the fluid wastes are collected.” (*Dunn*, [0041].) As noted in the previous section, the outlet opening (shaded blue) is located at the opposite end of the channel that extends from the tubing connection point of port 58b down into the waste container 32b.

FIG.8



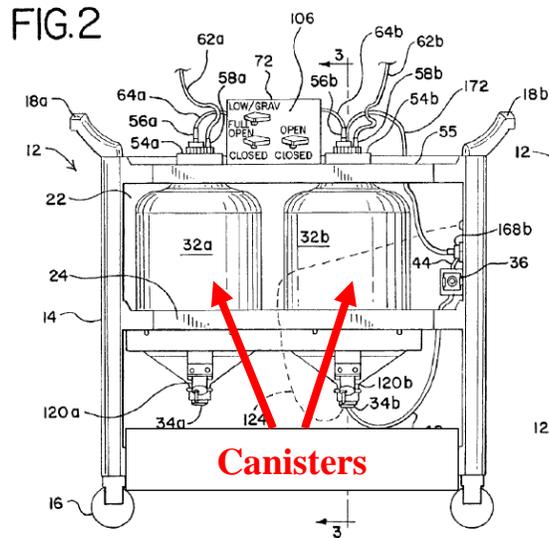
(Dunn, Fig. 8 (excerpt annotated by Petitioner).)

Dunn also discloses that the fitting connects to the outlet opening such that fluid waste can flow from the opening in the distal end of port 58b to the outlet opening at the proximal end of port 58b. It explains that “[f]luids are withdrawn from the patient via tubing 62a and 62b and collected in containers 32a and 32b.” (*Dunn*, [0041].) Accordingly, the fitting is in fluid communication with the outlet opening, as claimed. (Ex. 1002 ¶¶ 66-68.)

- e. **“a waste collection unit including: a first canister for holding medical/surgical waste”**

Dunn/Radford/Adahan discloses at least two canisters for holding medical/surgical waste via *Dunn*’s teachings. (*Dunn*, [0023], [0039]-[0041], [0044]-[0058], Figs. 1-3 and 5-9.) *Dunn* refers to the canisters as “bottle-shaped containers 32a and 32b” and teaches that “[f]luids are withdrawn from the patient . . . and

collected in containers 32a and 32b.” (*Dunn*, [0041].) An embodiment of these canisters is shown in *Dunn*’s Figure 2 below:



(*Dunn*, Fig. 2 (annotated by Petitioner); Ex. 1002 ¶ 69.)

- f. **“a suction pump in fluid communication with said first canister, said suction pump configured to draw a suction on said first canister”**

Dunn/Radford/Adahan discloses the claimed “suction pump” features at least through *Dunn*’s teaching to connect its waste fluid disposal cart to a “hospital vacuum source” to provide suction to its canisters and the attached suction lines. (*Dunn*, [0023], [0041]-[0047].) *Dunn*’s vacuum source connects to “a regulator housing 72 that is mounted upon the . . . cart body.” (*Dunn*, [0041].) That regulator housing then connects to “vacuum source line 82[, which] is connected to a hospital

vacuum source.”⁶ (*Dunn*, [0042].) In one embodiment, “[i]f both lines 82 and 96 are connected to hospital vacuum sources, and valves 86, 104 and 94 are open, a full vacuum of approximately 25 in. Hg is pulled on each container 32a and 32b.” (*Dunn*, [0047].) The ’428 patent similarly discusses pulling a vacuum to provide suction, explaining various approaches to preventing the loss of the vacuum through the manifold. (*See, e.g.*, ’428 Patent, 13:9-32, 15:1-3, 21:13-15.) A skilled artisan would thus understand that *Dunn*’s vacuum source serves as a suction pump configured to draw suction on a first canister and is in fluid communication with *Dunn*’s canister. (Ex. 1002 ¶ 70.)⁷

⁶ It is well-known in the art that hospital vacuum sources like those disclosed in *Dunn* may take the form of suction pumps. (Ex. 1002 ¶ 70; *see also* Ex. 1014, 4:52-56 (“Vacuum source 22 may be of any conventional type normally found in hospitals and the like. Such vacuum sources typically include a network of piping extending through the walls of the hospital that lead to a common vacuum pump”); Ex. 1015, [0156].)

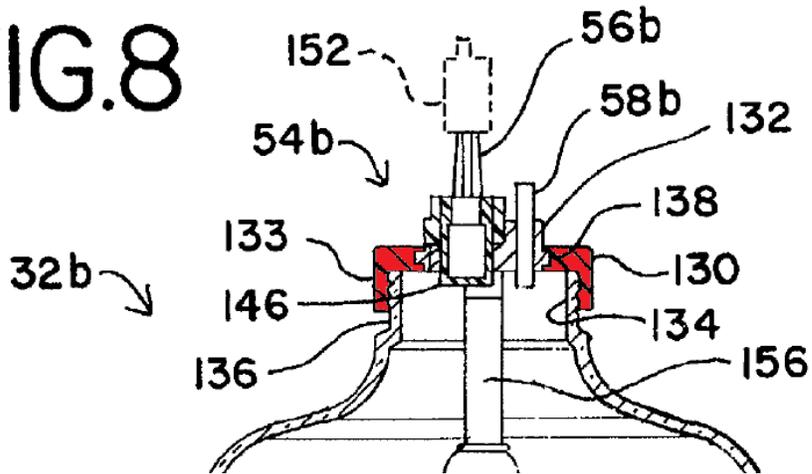
⁷ Claim 1 does not require the suction pump to be mounted to a fluid collection cart. That requirement appears in claim 10, which is obvious for the reasons stated in below Section IX.C.1. If the Board were to construe claim 1 to require the suction pump to be mounted on a unitary structure with the other claimed components,

- g. “a first receiver adjacent said first canister, said first receiver shaped to have: a bore dimensioned to receive said manifold housing, the bore having an open distal end into which said manifold housing is inserted and having a proximal end in fluid communication with said first canister; and an axis that extends through the bore”**

Dunn/Radford/Adahan teaches the claimed “first receiver” at least through *Dunn*’s disclosure of an outer portion of a cap that receives a manifold/inner portion 32. (Ex. 1002 ¶¶ 71-73.) *Dunn* explains that “the outer portion 130 of cap 54b features a downward extending skirt 133 with a threaded inner surface 134.” (*Dunn*, [0049].) The outer portion “screws onto the threaded top opening 136 of container 32b via threaded inner surface 134,” so it resides adjacent to the first canister (i.e., container 32b). (*Id.*) The outer portion 130 is shown in red below, adjacent and connected to container 32b:

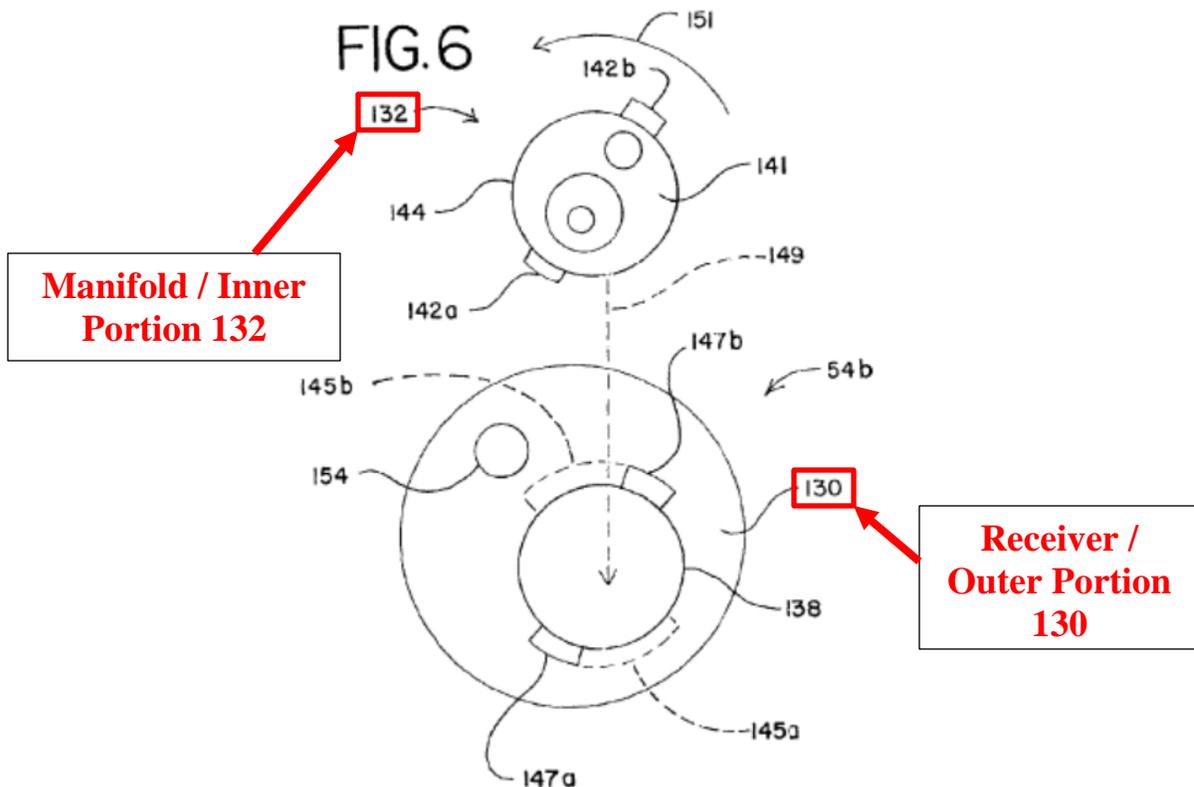
Petitioner requests that the Board include *Glenn* in Grounds 1 and 2, and institute the proceeding for the same reasons explained below for claim 10.

FIG.8



(*Dunn*, Fig. 8 (excerpt annotated by Petitioner).)

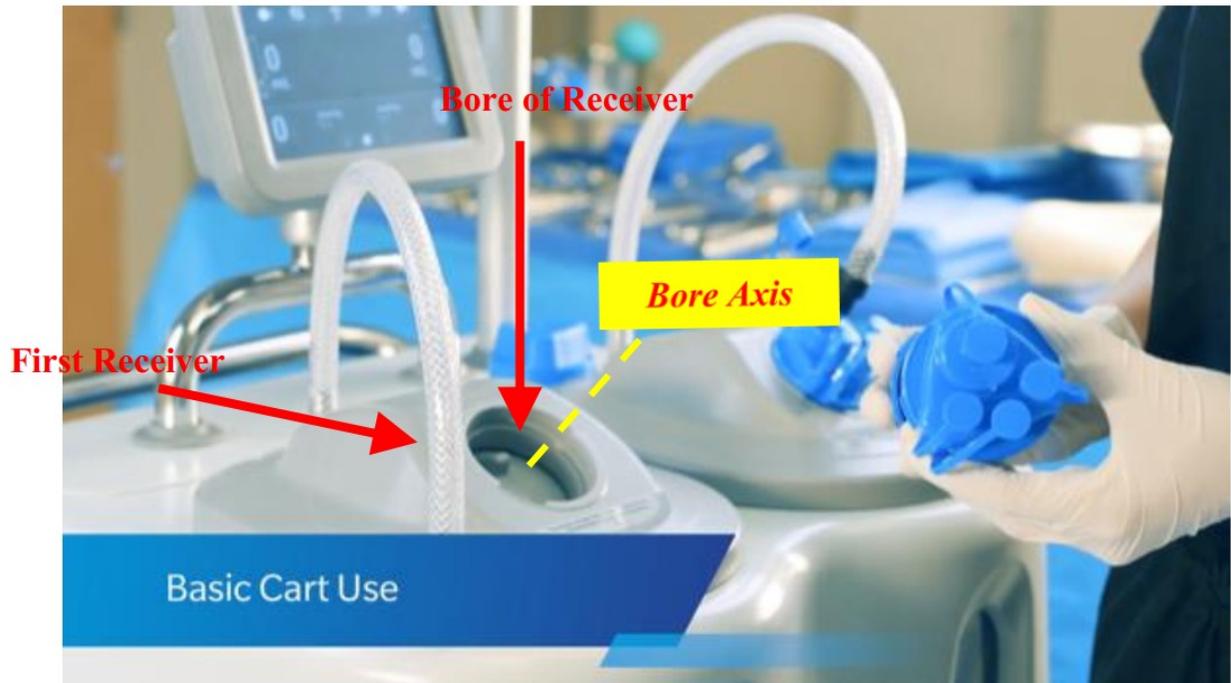
According to *Dunn*, outer cap 130 “features a bore 138.” (*Dunn*, [0049].) The bore is open so that the “inner cap portion 132 may be lowered” and “locked within the bore 138 of the outer cap portion 130,” i.e., the bore can receive the manifold. (*Dunn*, [0050].) *Dunn*’s Figure 6 illustrates manifold/inner cap portion 132 being configured to lock into the receiver/outer cap portion 130:



(*Dunn*, Fig. 6 (annotated by Petitioner).) This bore is open on the distal end (the end closest to the surgical site) such that the inner cap portion 132 can be inserted into the outer cap portion 130, as shown in Figure 6 and 8 above and as described in *Dunn*. (See, e.g., *Dunn*, [0049]-[0052]; Ex. 1002 ¶ 72.) Outer cap portion 130 is open in the proximal end (the end farthest from the surgical site) for fluid to pass into the container, as shown in Figure 8 above. (See also Ex. 1002 ¶ 72.)

A skilled artisan would also understand that an axis passes through the bore. (Ex. 1002 ¶ 73.) While the specification does not define this axis, the Patent Owner has asserted in district court that the axis is an imaginary longitudinal line that extends through the bore (between the proximal and distal ends) about which the

manifold can rotate when inserted into the bore. (Ex. 1011, 15-17.) Patent Owner provided an example of what it views as this claimed axis in the following image from its infringement contentions in a related litigation.⁸



⁸ Petitioner takes no position here on the validity of this construction since the specification does not provide any guidance about the metes and bounds of this feature. There is an infinite number of potential axes passing through the bore, so to the extent the term can be construed in the context of the '428 patent, Petitioner agrees that it encompasses at least the single axis identified by Patent Owner. (Ex. 1002 ¶ 73.)

(Ex. 1013, 13 (annotations by Patent Owner in original document).) *Dunn's* receiver/outer portion 130 has a similar bore axis through the center, which can be seen above in Figures 6 and 8. (Ex. 1002 ¶¶ 71-73.)

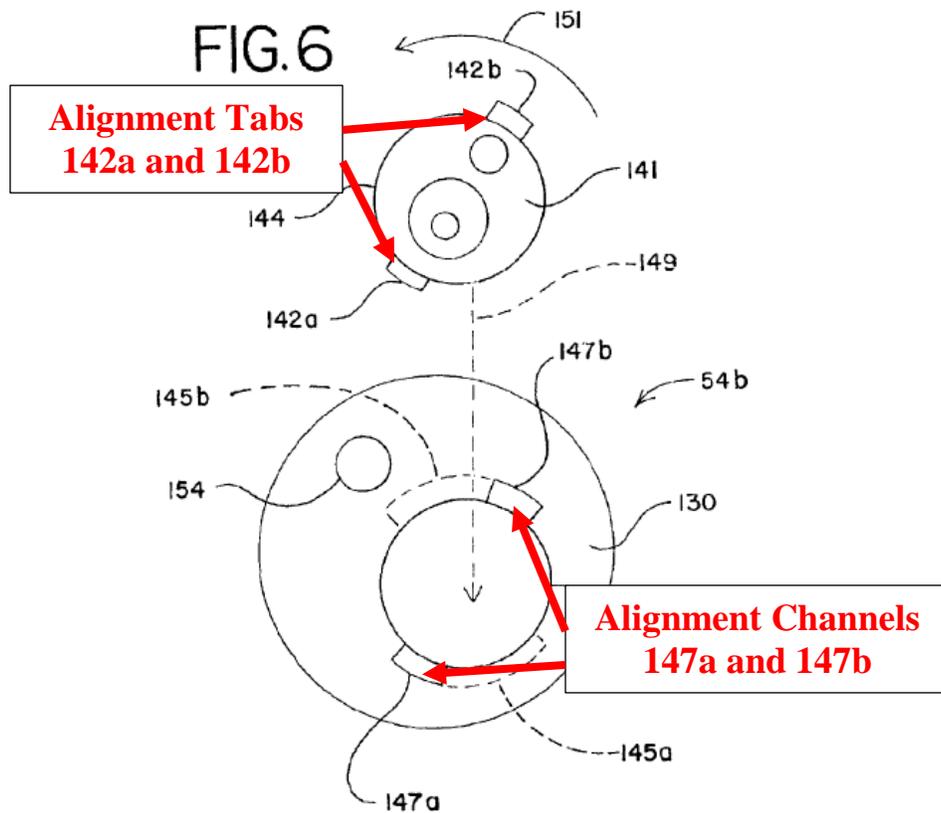
- h. “wherein: said manifold housing and said first receiver are collectively configured so that said manifold housing is able to rotate in the bore of said first receiver”**

Dunn/Radford/Adahan discloses this feature by teaching that *Dunn's* manifold/inner portion 132, including its housing, can rotate and lock into the bore of receiver/outer cap portion 130. (*Dunn*, [0049]-[0052], Fig. 6; Ex. 1002 ¶ 74.) This operation is depicted in *Dunn's* Figure 6, which is reproduced in the previous section. In describing Figure 6, *Dunn* states that “tabs 142a and 142b of the inner cap portion 132 may be lowered via the vertical channels 147a and 147b into the horizontal slots 145a and 145b and *turned in the direction indicated by arrow 151* so that the inner cap portion 132 is locked within the bore 138 of the outer cap portion 130.” (*Dunn*, [0050] (emphasis added); Ex. 1002 ¶ 74.)

- i. “said manifold and said first receiver are formed with complementary alignment features that engage when the manifold is inserted into the bore of said first receiver so as to cause the outlet opening of said manifold housing to be, upon insertion into the bore, in a specific rotational alignment in the bore; and”**

Dunn/Radford/Adahan discloses this feature at least through *Dunn's* teaching of complementary alignment features that allow *Dunn's* manifold/inner portion 132,

including its housing, to be inserted into receiver/outer cap portion 130's bore in a specific rotational alignment and then to rotate and lock into place. (*Dunn*, [0049]-[0052], Fig. 6; Ex. 1002 ¶ 75.) *Dunn*'s Figure 6 illustrates examples of the alignment features, which comprise a pair of tabs 142a and 142b on the manifold/inner portion 132 and a corresponding pair of vertical channels 147a and 147b on receiver/outer portion 130.



(*Dunn*, Fig. 6 (annotated by Petitioner).) Vertical channels 147a and 147b require manifold/inner portion 132 to be inserted into the bore in a specific rotational alignment. (*Dunn*, [0050].) The manifold/inner portion 132 is then “turned in the

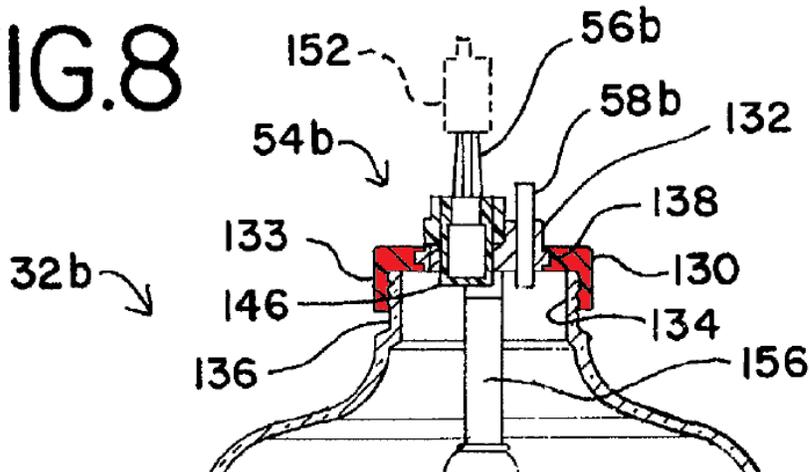
direction indicated by arrow 151 so that the inner cap portion 132 is locked within the bore 138 of the outer cap portion 130,” causing the tabs to move along and engage in the horizontal slots 145a and 145b. (*Id.*; Ex. 1002 ¶ 75.)⁹

- j. “said first receiver is attached to said first canister so that the axis through the receiver bore is angled from the horizontal”**

Dunn/Radford/Adahan discloses this feature at least through *Dunn*’s disclosure of a receiver attached to a canister, as discussed and illustrated in Sections VII.E.1.e and VII.E.1.g above, with the axis through the receiver bore at a 90-degree angle from the horizontal. (*Dunn*, [0041], Figs. 1-3 and 5-9; Ex. 1002 ¶¶ 76-80.) In Figure 8, for example, the receiver/outer portion 130 (in red below) attaches to the container through a vertically-oriented opening that results in the receiver bore being oriented generally vertical as well. Thus, it is angled “from the horizontal.” (Ex. 1002 ¶ 76.)

⁹ *Dunn* also discloses that other “fastening arrangements may be substituted for the one illustrated in FIG. 6,” including “mating threads so that the inner cap portion is screwed into the bore of the outer cap portion.” (*Dunn*, [0052].)

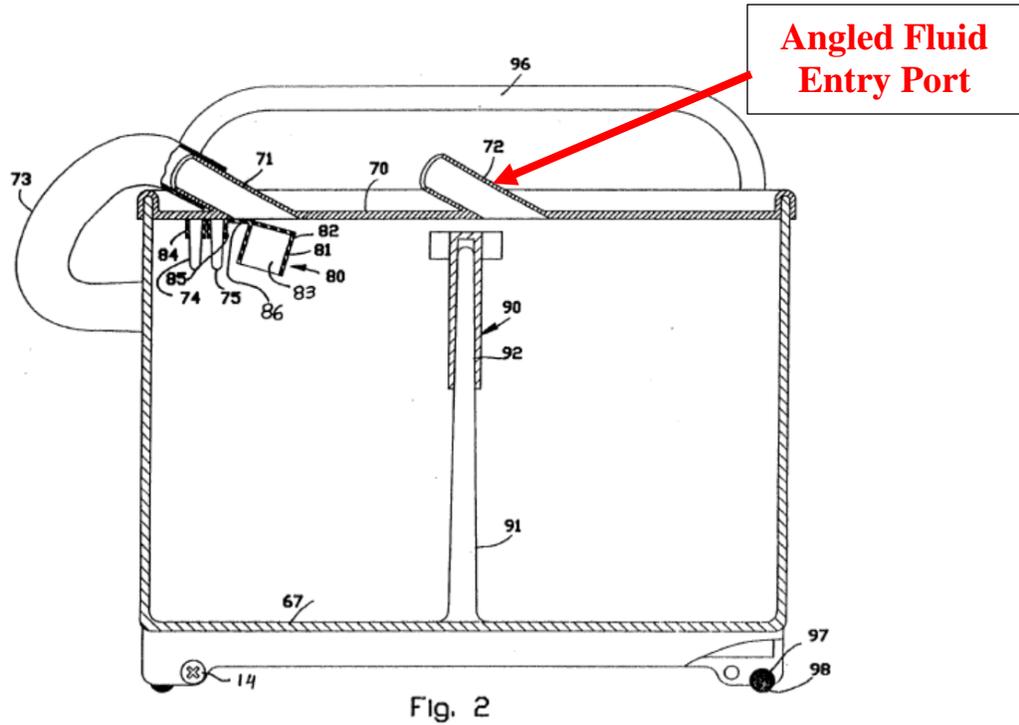
FIG.8



(*Dunn*, Fig. 8 (annotated by Petitioner).)

Additionally, dependent claim 12 states that the angle can be less than 45°. Claim 1 should therefore be construed to include angles larger than 45°, such as 90°. *See, e.g., Hitachi Metals, Ltd. v. Alliance of Rare-Earth Permanent Magnet Indus.*, 699 Fed. App'x. 929, 937 (Fed. Cir. 2017) (“the doctrine of claim differentiation requires that the scope of ‘rapid cooling method’ covered by claim 1 be broader than the range specified in dependent claim 5”). An angle of 90° is also consistent with the '428 patent's disclosure, which states that the receiver is angled to “ensure[] that substantially all waste material drawn into the manifold flows out through the valve disk bore.” ('428 patent, 16:33-35.) The generally vertical orientation in *Dunn* would meet this goal, further supporting that “angled from the horizontal” encompasses a vertical orientation. (Ex. 1002 ¶ 77.)

Dunn/Radford/Adahan also discloses that the receiver bore may be angled from the horizontal through *Adahan*'s teaching of angling the bore "preferably about 30°," as shown in *Adahan*'s Figure 2 below. (*Adahan*, 5:5-33.)



(*Adahan*, Fig. 2 (annotated by Petitioner).)

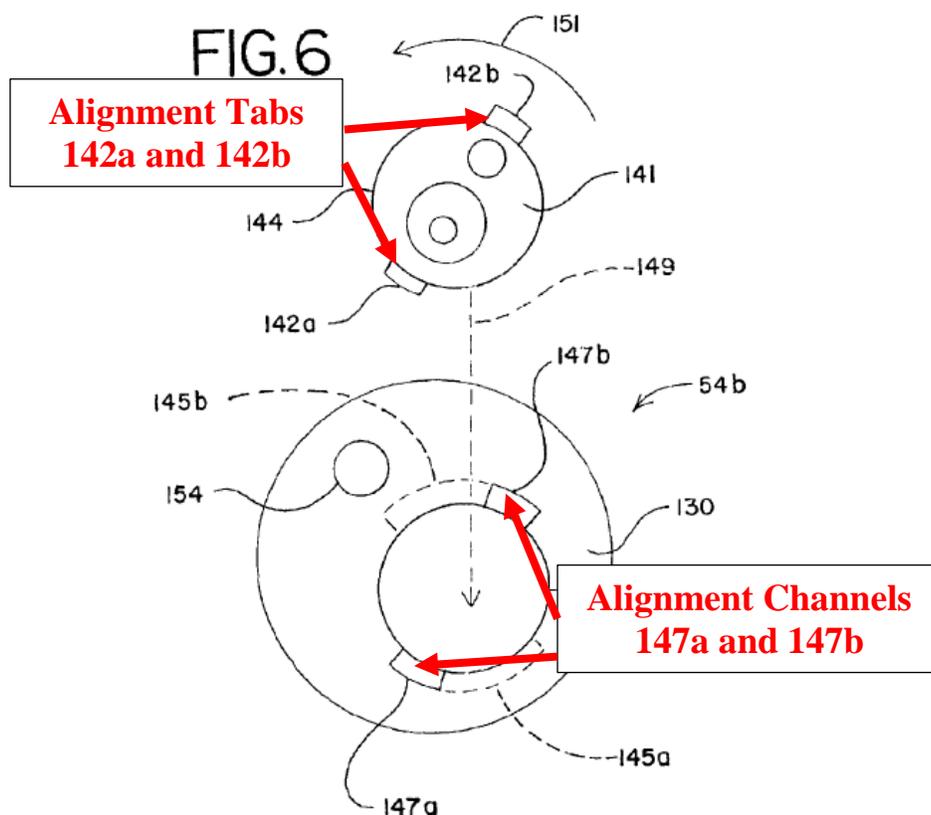
Adahan explains that this angle is preferred in some instances over vertical inlets because "[v]ertical fluid entry ports cause fluid turbulence which does not permit use of the full volume of the fluid container." (*Adahan*, 5:29-34.) Accordingly, *Adahan* angles its entry port so the fluid "will hit the side wall 66 of fluid collection container 4, running down the wall without agitating the fluid already in the container." (*Id.* at 5:26-29.) The result is that the new fluid joins the pre-existing fluid in a gentler manner with less agitation, preventing prematurely

causing “the shutoff valve 80 to float and shut off the vacuum inlet port 71.” (*Id.* at 5:29-34.) The angled port also helps the connected tube “assume a substantially horizontal position with less danger of forming a kink in the tube tending to obstruct the passage of air or liquids therethrough.” (*Id.* at 5:15-25.)

Accordingly, the combined *Dunn/Radford/Adahan* system is implemented with the receiver bore angled from the horizontal at any of various angles, such as 30° and 90°. (Ex. 1002 ¶¶ 76-80.)

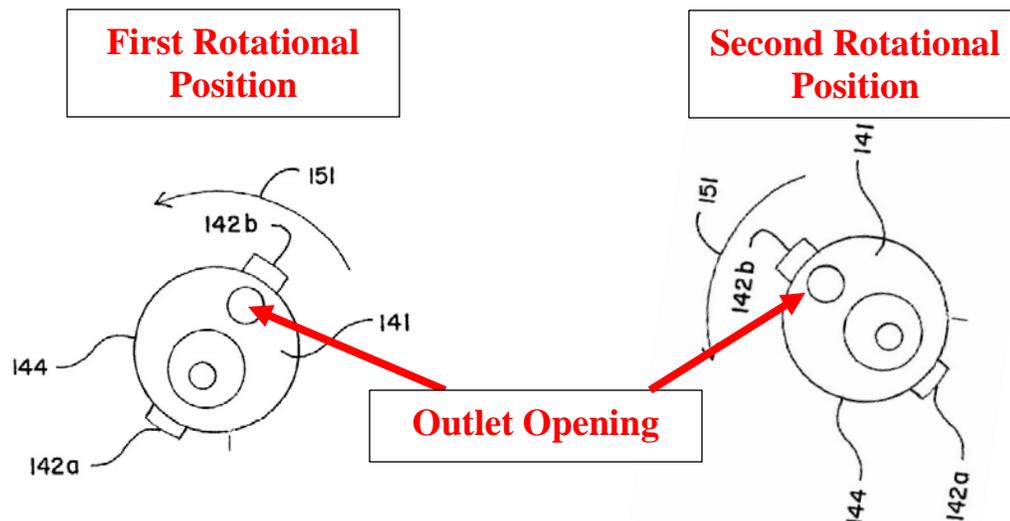
- k. “said alignment features of said manifold and said first receiver are arranged so that, when said manifold is initially inserted into the bore of said first receiver, the outlet opening of said manifold housing is in a first rotational position about the axis through the receiver bore and, when said manifold housing is rotated in the bore, the outlet opening is in a second rotational position about the axis through the receiver bore so that the outlet opening is located below the position of the outlet opening when the outlet opening is in the first rotational position.”**

As discussed above in Section VII.E.1.i, through *Dunn’s* teachings, *Dunn/Radford/Adahan* discloses alignment features on the manifold/inner cap portion 132 for inserting the manifold into the receiver/outer cap portion 130. These alignment features are arranged so that the manifold must be inserted into the bore in a first rotational position, as shown in *Dunn’s* Figure 6.



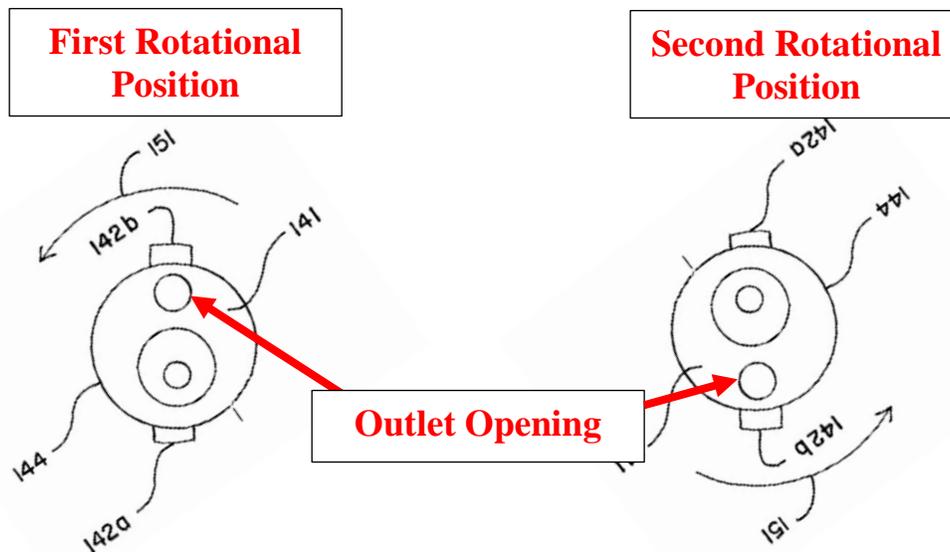
(Dunn, Fig. 6 (annotated by Petitioner).)

After the manifold is inserted, it is rotated in the bore along the horizontal slots 145a and 145b, depicted above. (Dunn, [0050].) The result is that the entire manifold/inner portion 132, including the outlet opening, rotates from a first rotational position about the axis through the receiver bore to a second rotational position about the axis through the receiver bore, as shown below. (Ex. 1002 ¶ 82.)



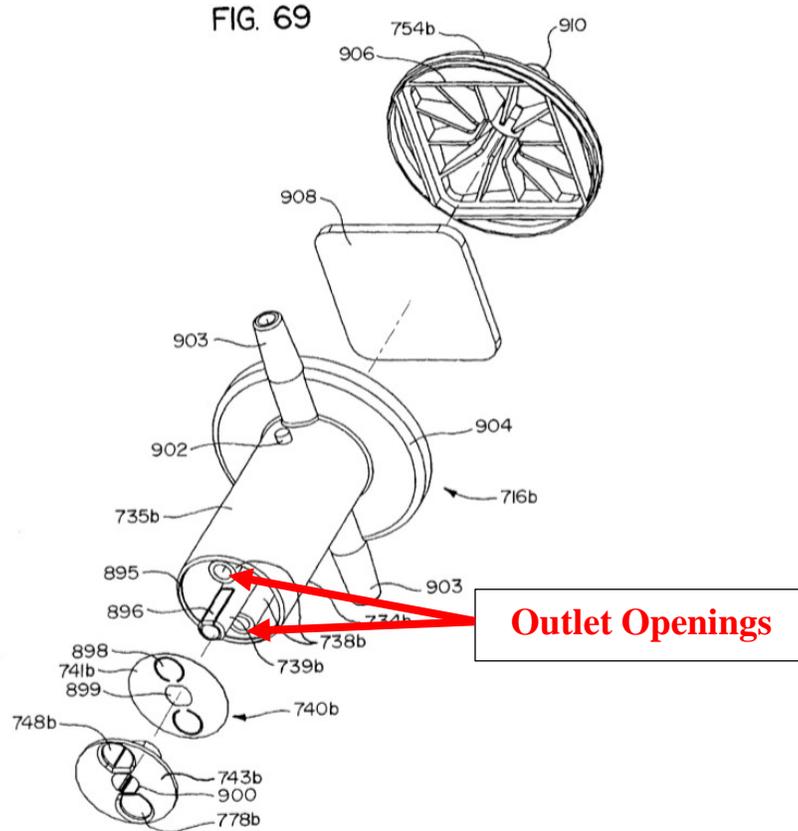
(Dunn, Fig. 6 (excerpt annotated and rotated by Petitioner).)

Dunn/Radford/Adahan also discloses that the rotation occurs as claimed, “so that the outlet opening is located below the position of the outlet opening when the outlet opening is in the first rotational position.” (Ex. 1002 ¶ 83.) Patent Owner contends that “below” simply means “beneath (lower than).” (Ex. 1011, 17-19.) *Dunn* teaches this feature because, as a person of skill would have understood, the outlet starting position and degree of rotation were matters of design choice and that any starting and ending position would be options. (Ex. 1002 ¶¶ 81-87.) For example, one skilled in the art would just as readily have designed a system based on *Dunn*’s teachings where the outlet opening starts at 12 o’clock and rotates to 6 o’clock (*i.e.*, directly beneath its starting position), as shown below. (Ex. 1002 ¶ 83.)

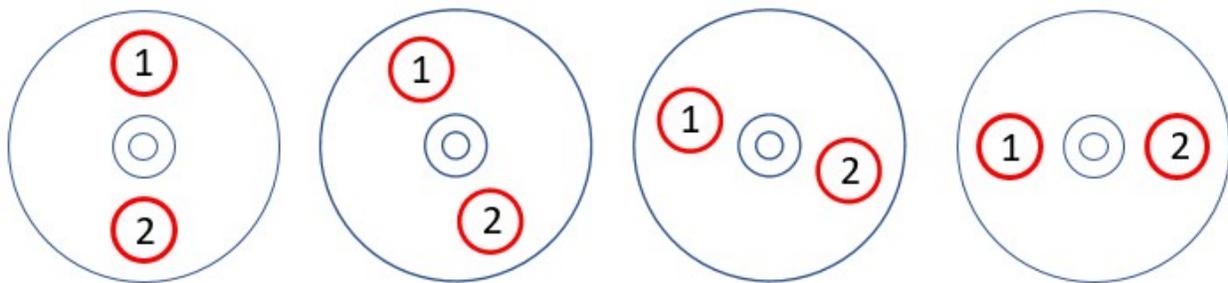


(*Dunn*, Fig. 6 (excerpt annotated and rotated by Petitioner).) A skilled artisan would have recognized multiple benefits of this configuration. For example, the fluid enters at the lowest point of the manifold, helping with drainage. And in this configuration, the waste fluid does not pass over the vacuum port as it enters the canister, making the waste less likely to be sucked toward or into the vacuum pump, potentially clogging it or any related filter. (Ex. 1002 ¶ 83.)

That an outlet opening will move below its starting position is a near certainty when one modifies *Dunn*'s manifold to have multiple outlet openings that are arranged as in *Radford*'s Figure 69, shown below.



(*Radford*, Fig. 69 (annotated by Petitioner).) In this embodiment, nearly every rotation will result in one of the outlets being below its starting position, as when one outlet opening rises, the other moves lower and satisfies the “below” feature of the claims. This is true in nearly all pairs of starting and ending positions, and across nearly all rotational angles, including the exemplary 45 degrees of rotation mentioned by *Radford*. (*Radford*, 38:58-64.) In the example below, outlet opening 2 rises but outlet opening 1 moves below its initial position. (Ex. 1002 ¶¶ 84-85.)



Additionally, a skilled artisan would understand that by incorporating into *Dunn's* system *Radford's* multiple outlet openings with *Adahan's* angled inlet, rotating the manifold will cause at least one of the openings to be “below” the position it was in when the manifold was in the first position. (Ex. 1002 ¶ 86.) For each starting position (except when the outlets are oriented at 12 o'clock and six o'clock), there is exactly one degree of rotation that would result in both outlets being at the same height in both the first and second rotational positions. But a skilled artisan would understand that many other options exist that would result in at least one of the outlets in the second rotational position being “below” its position in the first rotational position. (*Id.*)

The *Dunn/Radford/Adahan* combination teaches both the narrow special case of same-height rotation as well as the much more common case where one of the outlets moves “below” its initial position. (Ex. 1002 ¶¶ 81-87.) The combination, therefore, teaches or suggests a range of starting positions and rotations that overlaps with the claimed range (i.e., the range of positions and rotations that result in the second rotational position being “below” the first), rendering obvious this feature

and the claim as a whole. *See, e.g., Tyco Healthcare Group LP v. Mutual Pharm. Co.*, 642 F.3d 1370, 1372 (Fed. Cir. 2011) (“where there is a range disclosed in the prior art, and the claimed invention falls within that range, there is a presumption of obviousness.”) (quoting *Iron Grip Barbell Co., v. USA Sports, Inc.*, 392 F.3d 1317, 1322 (Fed. Cir. 2004)).

Dunn also teaches this feature in its embodiment where, instead of alignment/engagement tabs, “mating threads” are provided to allow the manifold/inner portion 132 to “screw[] into the bore of the outer cap portion.” (*Dunn*, [0052].) By screwing the manifold into a vertically-oriented receiver (*i.e.*, a receiver at 90 degrees from the horizontal), the entire manifold (including the outlet opening on the manifold) will travel vertically downward such that the outlet opening is lower in its second position than in its first position. The downward distance traveled will depend on the pitch of the screw threads and the number of turns used to engage the mating threads, but in all cases the outlet opening will be below, beneath, and lower than its original position. (Ex. 1002 ¶ 87.)

2. Dependent Claim 2

“The medical/surgical waste collection assembly of claim 1, wherein said complementary alignment features of said manifold and said first receiver comprise: one of said manifold or said first receiver being formed with at least one outwardly extending member; and the other of said first receiver or said manifold being formed with at least one slot dimensioned to receive the at least one outwardly extending member.”

Dunn discloses alignment features in the form of “opposing tabs 142a and 142b formed on the circumference 144 of inner cap portion 132,” which is the claimed manifold. (*Dunn*, [0050].) These tabs are outwardly extending members from the manifold. (Ex. 1002 ¶ 88.) Further, “[c]orresponding horizontal slots 145a and 145b are formed in the bore 138 of the outer cap portion 130 [*i.e.*, the claimed receiver]. A pair of vertical channels 147a and 147b corresponding to the width of the tabs are formed between the top surface of the outer cap portion 130 and the horizontal slots.” (*Dunn*, [0050].) *Dunn* further explains that tabs 142a and 142b “may be lowered via the vertical channels 147a and 147b into the horizontal slots 145a and 145b and turned in the direction indicated by arrow 151 [in Figure 6] so that the inner cap portion 132 is locked within the bore 138 of the outer cap portion 130.” (*Id.*) Accordingly, the slots with vertical channels are formed in the receiver and are dimensioned to receive the manifold’s tabs (*i.e.*, its outwardly extending members). These structures are illustrated in *Dunn*’s Figure 6, which is annotated in the

previous section. As a result, a skilled artisan would understand that *Dunn/Radford/Adahan* teaches the features added by claim 2. (Ex. 1002 ¶ 88.)

3. Dependent Claim 3

“The medical/surgical waste collection assembly of claim 2, wherein: said at least one outwardly extending member extends outwardly from said manifold housing; and said first receiver is formed with at least one slot that extends outwardly from the bore of said first receiver and that is dimensioned to receive the said outwardly extending member of said manifold housing so that the at least one slot is the alignment feature of said first receiver.”

As explained above regarding claim 2, *Dunn*'s manifold tabs extend outwardly from the manifold house, and *Dunn*'s receiver slots and channels are dimensioned to receive *Dunn*'s manifold tabs. (See Section VII.E.1.i above.) The receiver slots and channels serve as the alignment feature of the receiver. Accordingly, a skilled artisan would understand that *Dunn/Radford/Adahan* teaches the features added by claim 3. (Ex. 1002 ¶ 89.)

4. Dependent Claim 5

“The medical/surgical waste collection assembly of claim 1, wherein said suction pump is connected to said first canister by a conduit that is connected to said first canister.”

Dunn/Radford/Adahan discloses this feature through *Dunn*'s teaching of a conduit connecting its vacuum source to its canisters via the manifold.¹⁰ (*Dunn*, [0041]-[0042], Figs. 1-3 and 5-9.) One embodiment of the conduit is flexible tubing 64a and 64b. *Dunn* teaches that the manifold's “[v]acuum ports 56a and 56b are connected via flexible tubing 64a and 64b, respectively, to a regulator housing 72.” (*Dunn*, [0041].) The regulator housing then connects to the vacuum source: “vacuum source line 82 is connected to a hospital vacuum source and communicates with regulator 76 through check valve 84 and control valve 86.” (*Dunn*, [0042].) The suction provided by the vacuum source through the conduit lines results in a vacuum being “pulled on the containers via vacuum ports 56a and 56b.” (*Dunn*, [0041].) As

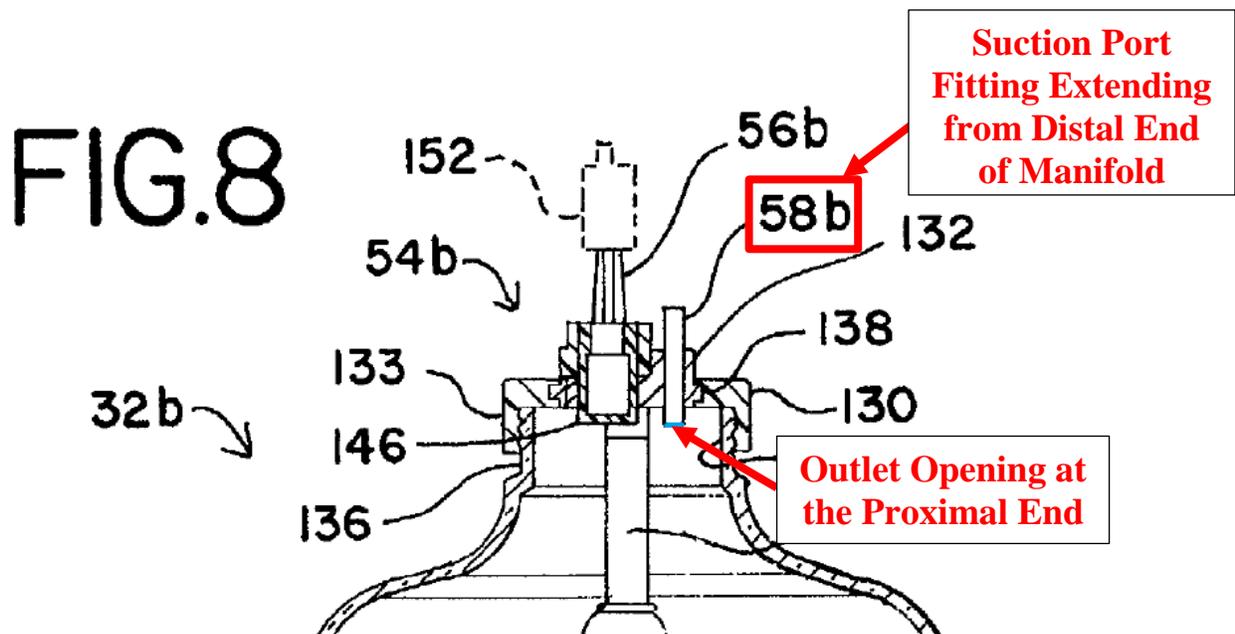
¹⁰ Patent Owner has asserted in related litigation that the suction pump does not need to directly connect to the canister but instead can be connected to the canister through the manifold, which is the same structure taught in *Dunn*. (*See* Ex. 1013, 24 (“the suction pump is connected to the canister by a conduit that is connected to the canister via the manifold”).)

a result, a skilled artisan would understand that *Dunn/Radford/Adahan* teaches the features added by claim 5. (Ex. 1002 ¶ 90.)

5. Dependent Claim 6

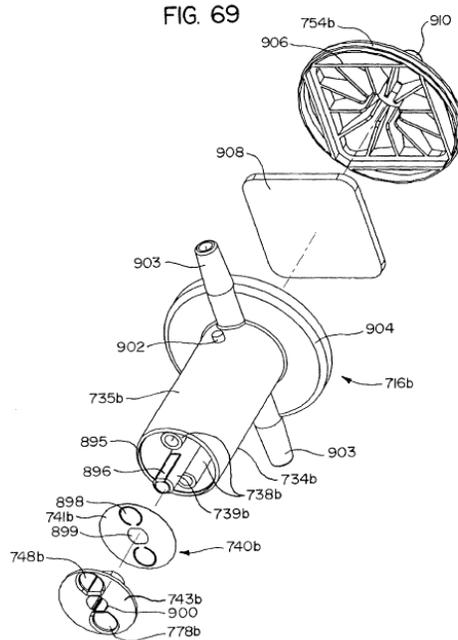
“The medical/surgical waste collection assembly of claim 1, wherein said manifold is formed with plural said fittings that extend distally from said manifold housing.”

Dunn/Radford/Adahan discloses these features through *Dunn* and *Radford*'s disclosures of fittings. *Dunn* discloses a fitting extending distally from the manifold, i.e. toward the surgical site. (See *Dunn*, [0050], Figs. 1-3, 5, 7-9). *Dunn*'s Figure 8, for example, shows the suction port fitting 58b extending out of the distal end of the manifold and extending further in the distal direction. (Ex. 1002 ¶ 91.)



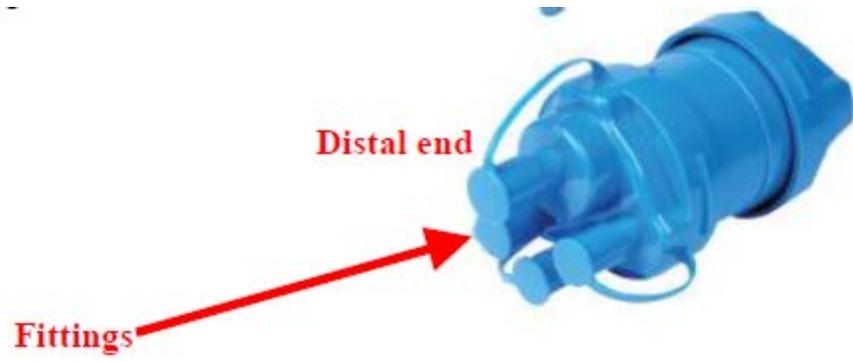
(*Dunn*, Fig. 8 (excerpt annotated by Petitioner).)

Radford discloses using multiple fittings on a single manifold, as discussed earlier, specifically disclosing “fittings” 903. (*Radford*, 35:32-36, 45:15-49.) Figure 69 shows two of these fittings extending from the manifold.



(*Radford*, Fig. 69.) These fittings extend laterally, but as discussed in Section VII.D, a skilled artisan would have been motivated to combine *Dunn* and *Radford* to provide multiple suction ports onto *Dunn*'s manifold/inner portion 132. The result is *Dunn*'s manifold having multiple fittings (as taught by *Radford*), each of which extend distally (as taught by *Dunn*). (Ex. 1002 ¶¶ 91-92.)

Moreover, this combination produces a manifold with the same structure and orientation that Patent Owner has alleged to infringe the '428 patent, as shown in the figures from Patent Owner's district court infringement contentions below.

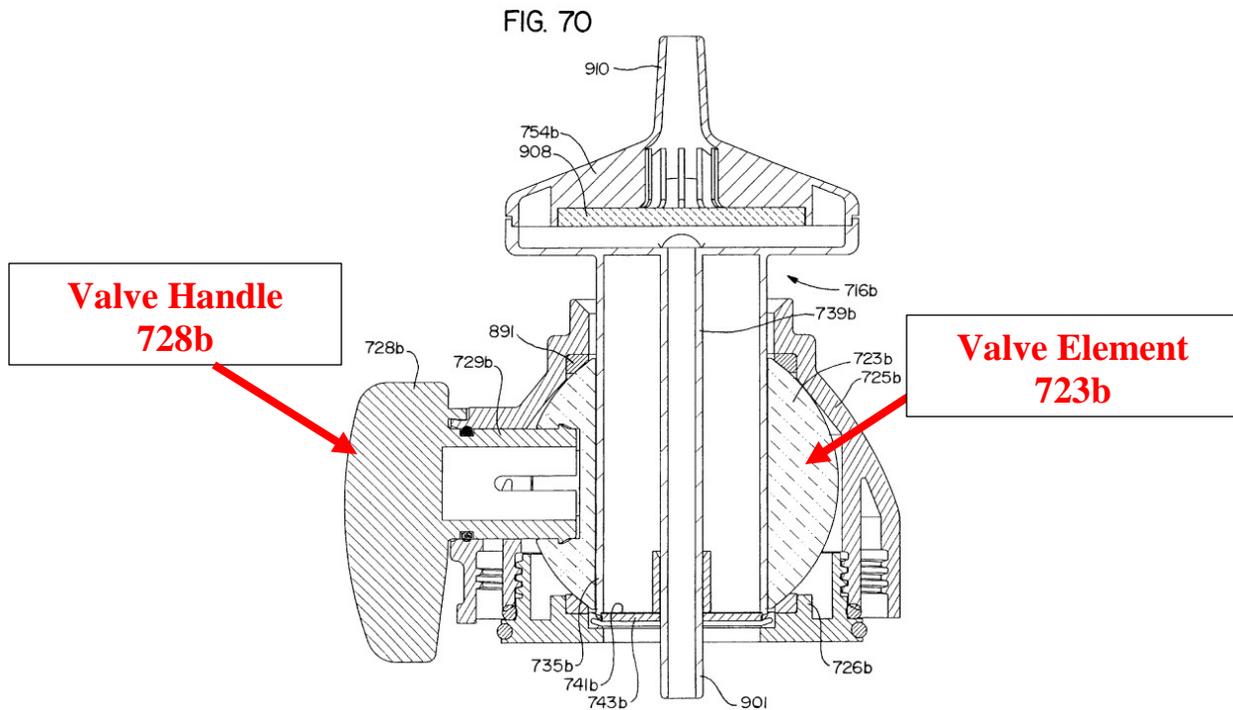


(Ex. 1013, 24-25 (annotations by Patent Owner in original document).)

6. Dependent Claim 8

“The medical/surgical waste collection assembly of claim 1, further including a valve disposed in said first receiver that opens and closes a fluid communications path from the bore of said first receiver into said first canister.”

Dunn/Radford/Adahan discloses these features through *Radford*'s teachings. (*Radford*, 34:22-36:67, 38:50-46:21, 47:24-48:54.) *Radford* describes a valve and connection assembly 706 that closes the connection to the container. It has a “ball valve element 723 rotatably positioned in the valve housing 724 There is a valve handle 728 fitting in a mating recess of one side of the valve ... by which the ball valve can be rotated by a motor ... or manually.” (*Radford*, 34:65-35:5, Figs. 41, 42.) This discussion pertains to the embodiment in Figures 41 and 42, which use elongated tubes instead of fittings on a manifold. But *Radford* also teaches a valve in a manifold embodiment. It explains that the “plug and manifold assembly” in Figure 69 is also shown in Figure 70, “where the plug and manifold assembly 716b is positioned within the valve and connector assembly 706b.” (*Radford*, 44:49-53; *see also Radford*, 44:53-46:21.)

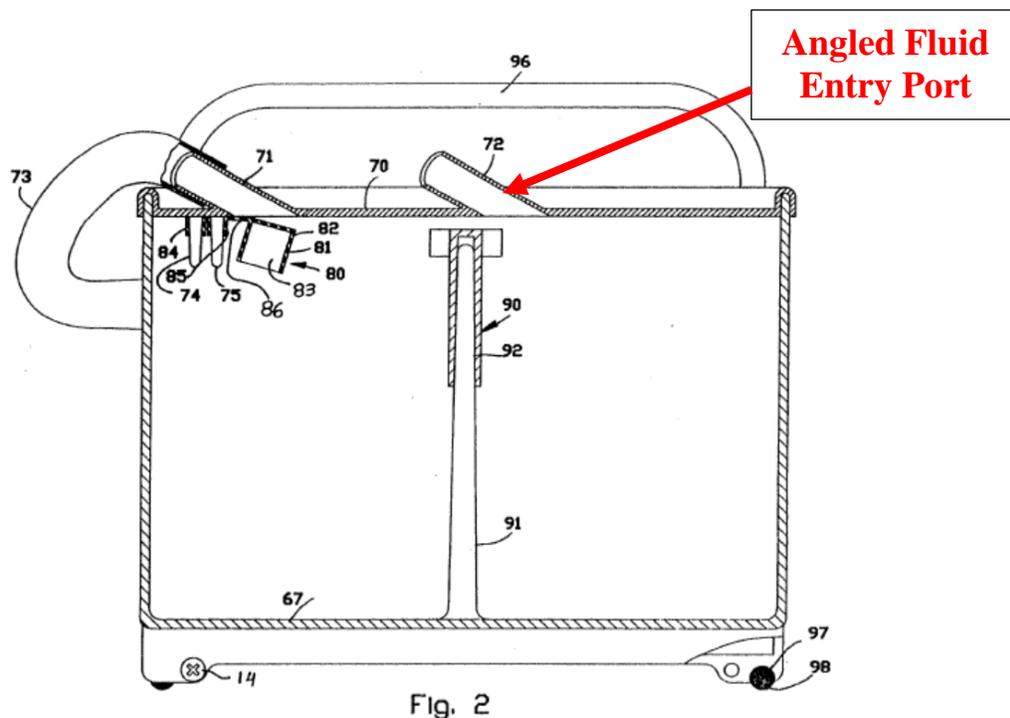


The valve opens and closes a fluid communications path from *Radford's* valve and connector assembly, which corresponds to the claimed “receiver.” (*Radford*, 44:49-53; *see also Radford*, 44:53-46:21; Ex. 1002 ¶ 94.) Consequently, a skilled artisan would understand that *Dunn/Radford/Adahan* teaches the features added by claim 8. (Ex. 1002 ¶¶ 93-94.)

7. Dependent Claim 12

“The medical/surgical waste collection assembly of claim 1, wherein said first receiver is attached to said first waste canister so that the axis through the receiver bore is at an angle that, relative to the horizontal, is less than 45°.”

Adahan discloses an angled bore at “preferably about 30°,” as shown in Figure 2. (*Adahan* at 5:5-9; Fig. 2.)



(Adahan, Fig. 2.) As a result, a skilled artisan would understand that *Dunn/Radford/Adahan* teaches the features added by claim 12. (Ex. 1002 ¶¶ 95.)

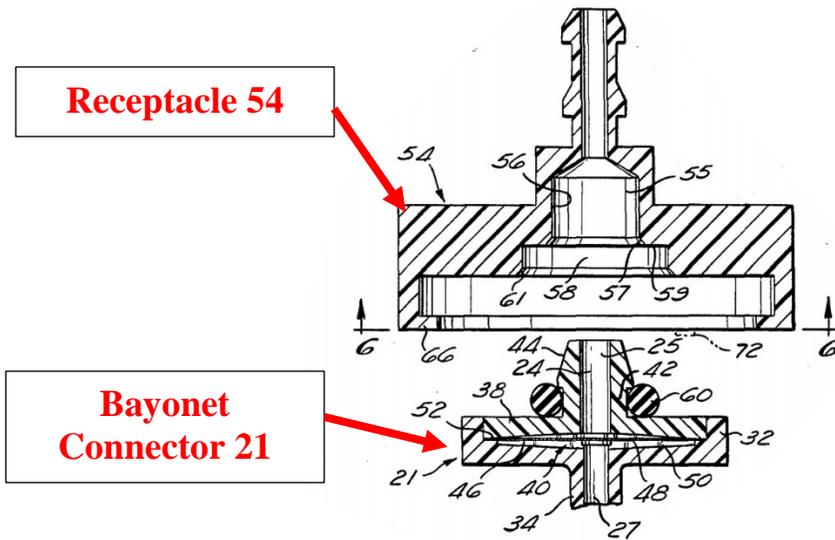
VIII. Ground 2: *Dunn/Radford/Adahan* in View of *Blake* Renders Obvious Claims 4, 14, 15, and 22

A. Overview of *Blake*

Like the '428 patent, *Blake* discloses a vacuum system for removing waste liquids from a surgery site. (*Blake*, 1:11-14; Ex. 1002 ¶¶ 38-41.) To avoid damage to the patient's body, (*Blake*, 1:11-23), *Blake* teaches the need for accurate and consistent alignment of disposable parts through the use of alignment mechanisms, (*Blake*, 2:16-31.)

In particular, *Blake* describes a “bayonet connector 21” that inserts into a receptacle 54, as shown in *Blake*'s Figure 5 below. This bayonet is inserted into a

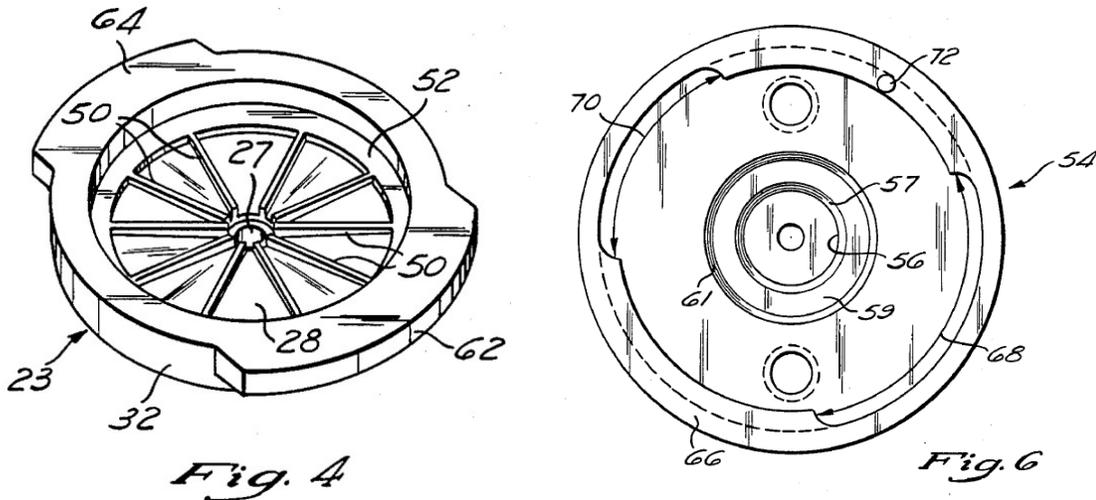
receptacle to connect to an aspirator and provide a vacuum. (*Blake*, 3:11-18.)



(*Blake*, Fig. 5 (annotated by Petitioner).)

Blake's system includes "two diversely sized and/or shaped tabs, 62 and 64, in combination with their corresponding notches, 68 and 70, ensur[ing] that the bayonet connector 21 will be inserted into the receptacle 54 in only one, correct orientation." (*Blake*, 7:5-9.) These tabs 62 and 64 are sized differently so they can only be inserted into the receptacle in one orientation, as illustrated below.

**Differently Sized Tabs 62 and 64 Fit Into
Differently Sized Notches 68 and 70**



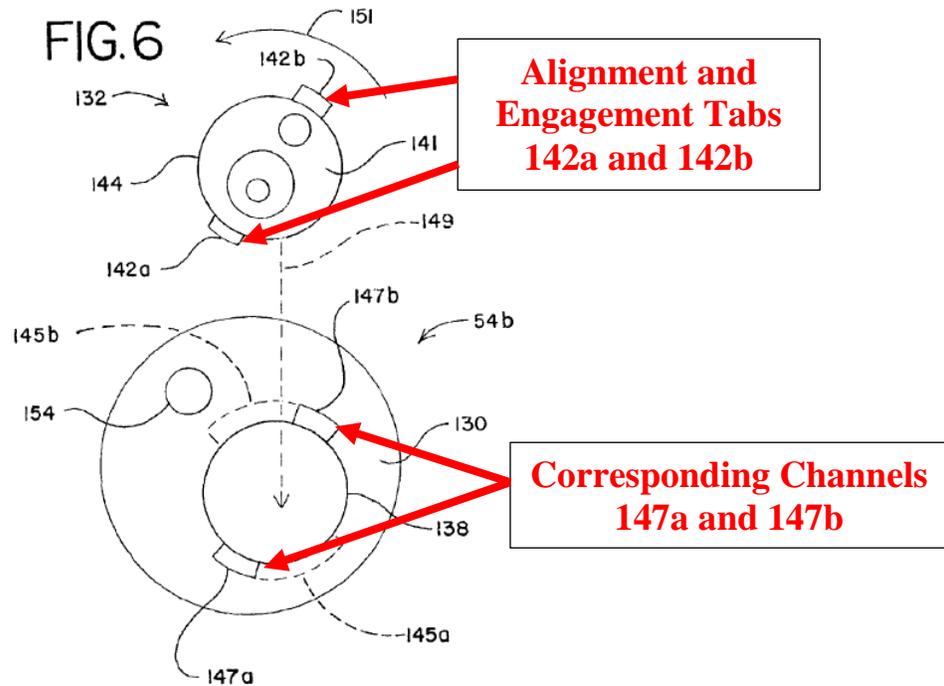
(Blake, Figs. 4, 6 (annotated by Petitioner).)

Similar to *Dunn*, *Blake* discusses that the “tabs, 62 and 64, when correctly oriented, [are] to be inserted through their respective notches, 68 and 70, so that the bayonet connector 21 can be rotated about the axis of the vent path 24 to lock the tabs, 62 and 64, beneath the over-hanging flange 66.” (*Blake*, 6:67-7:4.)

B. Rationale to Combine *Dunn/Radford/Adahan* with *Blake*

A person of ordinary skill would have combined *Dunn*, *Radford*, and *Adahan* for the reasons discussed in Section VII.D. Those references all teach suction systems to remove medical waste from surgical sites, and *Blake* teaches a similar suction system for use during eye surgery. (*Blake*, 3:12-28.) Accordingly, a skilled artisan would have looked to references like *Blake* to further modify the combined *Dunn/Radford/Adahan* system. (Ex. 1002 ¶¶ 96-100.)

In particular, one skilled in the art would have been motivated to modify *Dunn*'s alignment and engagement tabs to be different sizes, as well as to have differently-sized channels for those tabs to pass through, as taught in *Blake*. Indeed, as shown below, *Dunn*'s tabs 142a and 142b on the manifold, and the corresponding vertical channels 147a and 147b on the receiver, already appear to be of different sizes. (Ex. 1002 ¶ 98.)



(*Dunn*, Fig. 6 (annotated by Petitioner).) But if Patent Owner contends that *Dunn*'s tabs and channels are of the same size, it would have been obvious to modify them to be of different sizes, as taught in *Blake*. (Ex. 1002 ¶¶ 97-100.)

A skilled artisan would have been motivated to do so to ensure that *Dunn*'s manifold is consistently inserted in the same orientation. This is particularly

important with a manifold like *Dunn*'s, which is asymmetrical and has a vacuum fitting on one side and a suction fitting (or multiple suction fittings, when modified by *Radford*) on the other side. Ensuring that the manifold is consistently placed with fittings in the same orientation will aid in troubleshooting and will force users to utilize the optimum orientation that provides improved suction and minimizes negative effects, like splashing of waste fluid in the container. (Ex. 1002 ¶ 99.) In addition, one skilled in the art would recognize that slightly altering the shapes of *Dunn*'s pre-existing tabs would require only a minimal redesign that is well within the capabilities of one of ordinary skill in the art. (Ex. 1002 ¶ 99.)

Accordingly, one of ordinary had good reason to modify *Dunn*, had a clear path with an expectation of success based on *Blake*, and had the skill necessary to achieve the combined system as of the earliest priority date of the '428 patent. (Ex. 1002 ¶¶ 97-100.)

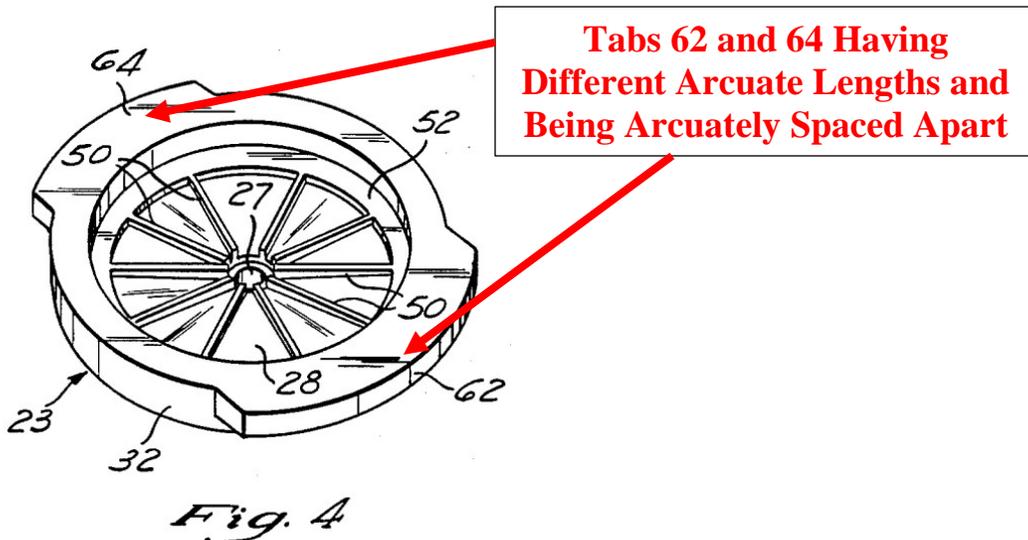
C. *Dunn/Radford/Adahan/Blake* Renders Obvious Claims 4, 14, 15, and 22

1. Dependent Claim 4

- a. **“The medical/surgical waste collection assembly of claim 2, wherein: said at least one outwardly extending member of said alignment features comprises two arcuately spaced apart tabs that extend outwardly from said manifold housing, wherein said tabs have different arcuate lengths;”**

As explained in Section VII.E.2, *Dunn/Radford/Adahan* discloses the features of claim 2. Modifying *Dunn/Radford/Adahan* with *Blake* discloses the additional

features of claim 4. (Ex. 1002 ¶¶ 101-02.) In particular, *Dunn*'s "opposing tabs 142a and 142b" (*Dunn*, [0050], Figs.1-3 and 5-9) would be modified to have "different arcuate lengths" based on *Blake*'s teaching that "[t]he use of the two diversely sized and/or shaped tabs, 62 and 64, in combination with their corresponding notches, 68 and 70, ensures that the bayonet connector 21 will be inserted into the receptacle 54 in only one, correct orientation." (*Blake*, 7:5-9; see also *Blake*, 2:29-46, 3:29-50, 6:56-8:2.) *Blake*'s figures illustrate that its tabs and corresponding notches have different arcuate lengths and are arcuately spaced apart, as shown below.

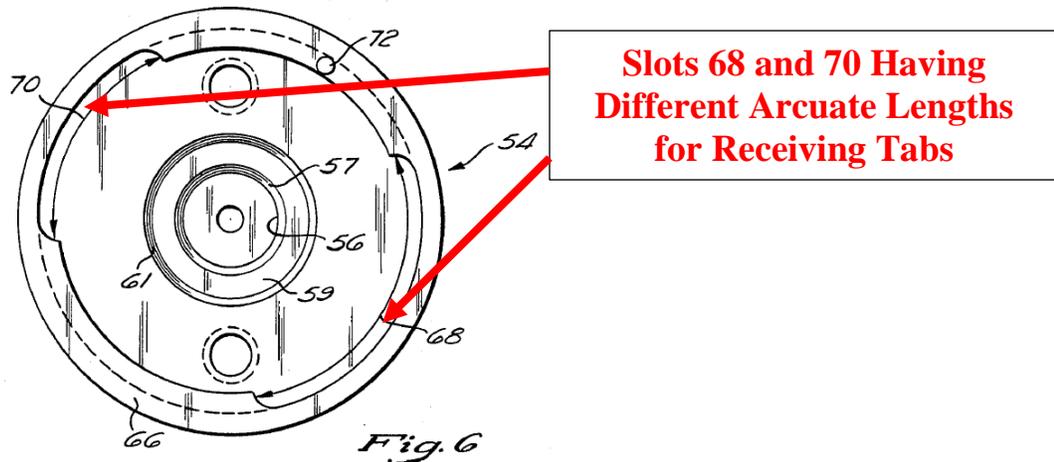


(*Blake*, Fig. 4 (annotated by Petitioner); see also *Blake*, Fig. 6.)

Accordingly, *Dunn/Radford/Adahan/Blake* discloses these features of claim 4. (Ex. 1002 ¶¶ 101-02.)

- b. “the at least one slot of said alignment features comprises two slots formed in said first receiver that extend outwardly from the bore of said first receiver, said receiver being formed so the slots have different arcuate lengths, the slots being dimensioned to receive the tabs of said manifold housing”

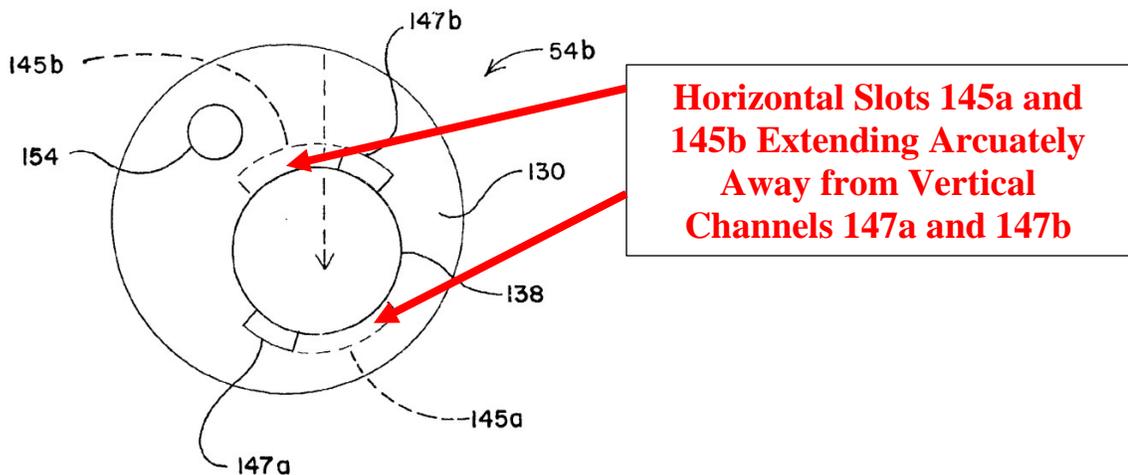
As explained in Section VII.E.1.i, *Dunn*'s receiver alignment features include “[c]orresponding horizontal slots 145a and 145b [that] are formed in the bore 138 of the outer cap portion 130. A pair of vertical channels 147a and 147b corresponding to the width of the tabs are formed between the top surface of the outer cap portion 130 and the horizontal slots.” (*Dunn*, [0050], Figs. 1-3 and 5-9.) These vertical channels extend outwardly from the bore of the receiver, as depicted in *Dunn*. (See, e.g., *Dunn*, Fig. 6.) When modified by *Blake*, these vertical channels are modified to have different arcuate lengths so they are dimensioned to receive the differently-shaped tabs of the manifold housing, as shown in *Blake*'s Figure 6 below.



(Blake, Fig. 6 (annotated by Petitioner); see also Blake, 2:29-46, 3:29-50, 6:56-8:2, Fig. 4.) *Dunn/Radford/Adahan/Blake*, therefore, discloses these features of claim 4. (Ex. 1002 ¶ 103.)

- c. **“said first receiver is formed with two grooves, each said groove extending arcuately away from a separate one of said slots and each said groove is dimensioned to allow the tab seated in the associated slot to rotate in said groove.”**

As explained in Section VII.E.1.i, *Dunn*'s receiver alignment features include “[c]orresponding horizontal slots 145a and 145b [that] are formed in the bore 138 of the outer cap portion 130. A pair of vertical channels 147a and 147b corresponding to the width of the tabs are formed between the top surface of the outer cap portion 130 and the horizontal slots.” (*Dunn*, [0050], Figs. 1-3 and 5-9.) The horizontal slots 145a and 145b (the claimed grooves) are depicted to extend arcuately away from the vertical channels 147a and 147b (the claimed slots), and the tab seated in the associated slot rotates in the horizontal slots, as shown below. (Ex. 1002 ¶ 104.)



(*Dunn*, Fig. 6 (excerpt annotated by Petitioner).) Thus, *Dunn/Radford/Adahan/Blake* discloses these features and the others of claim 4. (Ex. 1002 ¶ 104.)

2. Independent Claim 14

The features of claim 14 are substantially similar to those of claim 1. The primary exception is that claim 14 recites additional details for the alignment features. (Ex. 1002 ¶¶ 105-07.) But these additional details are similarly recited in claim 4, so *Dunn/Radford/Adahan/Blake* discloses these features for the same reasons discussed above for claims 1 and 4. (See Sections VII.E.1 and VIII.C.1 above; Ex. 1002 ¶¶ 105-07 (comparing claim 14 to claims 1 and 4).)

3. Dependent Claims 15 and 22

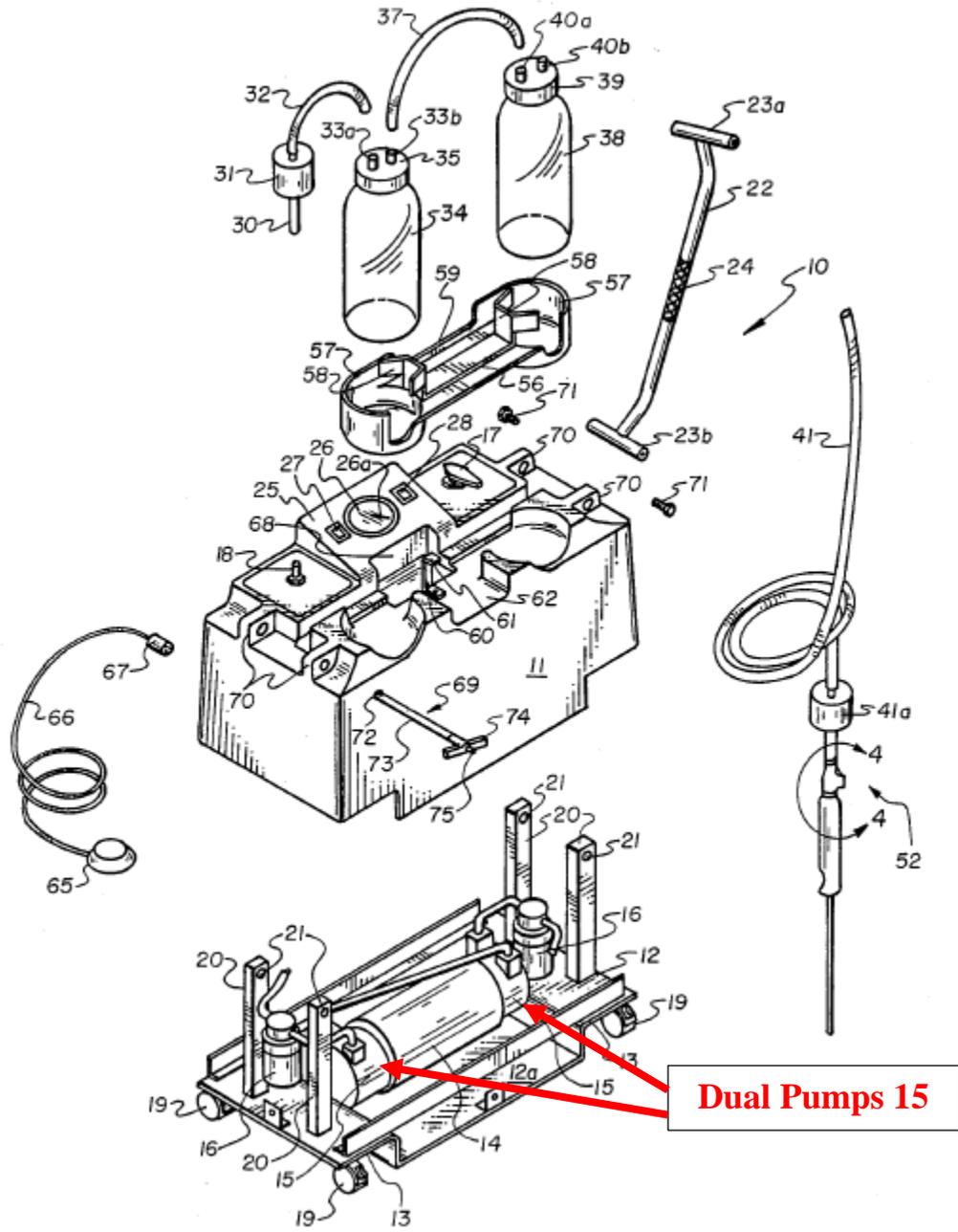
The features of claims 15 and 22 are substantially similar to those of claims 5 and 12. Therefore, the same proof of unpatentability discussed above for the claims applies to disclose or suggest the similar features of claims 15 and 22. (See Sections VII.E.4 and VII.E.7 above; Ex. 1002 ¶ 108 (comparing claims).)

IX. Ground 3: *Dunn/Radford/Adahan* in View of *Glenn* Renders Obvious Claims 10, 16, 18, 20, 23, 24, 28-30

A. Overview of *Glenn*

Glenn discloses a system for suctioning liquid and tissue from a surgery site where the suction system resides on casters in a mobile cart. (*Glenn*, Abstract; Ex. 1002 ¶¶ 42-43.) *Glenn* includes dual pumps 15 on the cart to “provide[] a vacuum that is present in both bottles 34 and 38 and at the cannula hose 41” to

remove liquid and tissue, as shown below. (Glenn, 6:42-50.)



(Glenn, Fig. 2 (annotated by Petitioner).) The dual pumps 15 are “turned by motor 14 [to] provide a vacuum that, on demand, will approach an atmosphere of pressure.”

(Glenn, 4:50-56; see also 3:5-11, 5:52-54.)

Glenn teaches that incorporating the dual pumps 15 and the motor 14 in the housing provides better mobility for the system (*see, e.g., Glenn*, Abstract), and allows the system to provide the vacuum on demand with minimal lag time (*Glenn*, 3:5-11, 5:54-60; Ex. 1002 ¶¶ 42-43).

B. Rationale to Combine *Dunn/Radford/Adahan* and *Glenn*

Dunn teaches connecting a waste fluid collection cart to a hospital vacuum source, (*Dunn*, [0041]-[0047]), but it does not state that this hospital vacuum source is a suction pump mounted to the cart. *Glenn*, however, teaches that a pump can be included within the housing a mobile system mounted on casters (*i.e.*, on a cart). (*Glenn*, 3:5-11, 4:50-56, 6:42-50, Fig. 2.) *Glenn*'s dual pumps 15 "pull[] materials collected through the cannula tube 55 end that are passed into and are collected in bottle 38." (*Glenn*, 6:42-50.) A skilled artisan would understand that dual pumps 15, or a similar on-cart suction pump, could replace the hospital vacuum systems taught in *Dunn*. (Ex. 1002 ¶¶ 109-13.)

Indeed, it was well-known as of the priority date of the '428 patent that suction could be provided by various sources, including in-hospital vacuums, fixed pumps, and portable pumps mounted to carts, like *Glenn*'s pump. (Ex. 1002 ¶¶ 110-11.) U.S. Patent No. 5,997,733 to Wilbur, for example, discloses an on-cart pump 56 to "selectively move[] material from waste collection system 30 to the waste treatment system 40." (Ex. 1017, 2:16-18.) Similarly, U.S. Patent No. 2,784,717 to Thompson

discloses on-cart “suction power unit 10” for “evacuative purposes, particularly in connection with medical and dental procedures.” (Ex. 1019, 1:15-17; *see also id.* at 2:16-24, Fig. 1.) *Thompson* also explains that “[i]t is advantageous that the suction power unit 10 and the catch receptacle 14, together with their appurtenant devices, be housed within a cabinet 15, which may be provided with caster wheels 16 to facilitate movement of the entire apparatus from place to place” (Ex. 1019, 2:25-30.) These references further demonstrate that on-cart suction devices were well known and that skilled artisans would have been motivated to provide a vacuum source on a cart long before the ’428 patent was filed. (*See* Ex. 1019, 2:16-24; Ex. 1002 ¶ 111.)

A person of ordinary skill would have been motivated to place the suction pump on *Dunn*’s cart as shown in *Glenn* because it would provide users with more mobility, minimal lag time to create a vacuum, improved surgical room setup that would no longer be dictated by the hospital vacuum locations, improved surgical room safety because the cart-to-wall tubing would no longer be required to connect the vacuum source, and enhanced reliability because it would be generally easier to troubleshoot or replace a failed on-cart pump than to troubleshoot or replace a large-scale hospital vacuum and its associated network of in-wall pipes and tubes. (Ex. 1002 ¶ 112.)

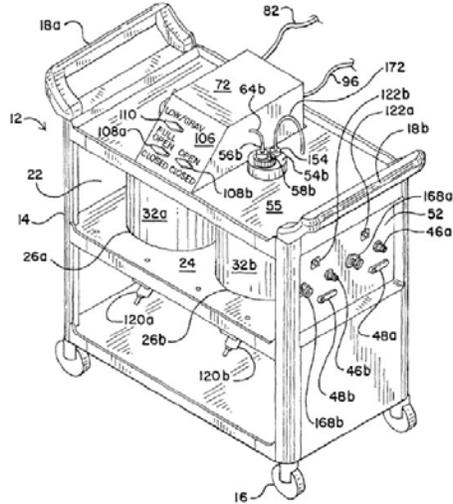
Adding an on-cart suction pump to *Dunn* would not require a significant redesign of the pump or the cart. (Ex. 1002 ¶ 113.) Instead, a relatively small pump like the one depicted in *Glenn* could be added to *Dunn*'s cart with little detrimental effect. (Ex. 1002 ¶¶ 110-13.) One could mount the pump in the ample space already provided on *Dunn*'s cart, or one could slightly increase the size of the cart to accommodate the pump. (Ex. 1002 ¶ 113.) These modifications are well within the capability of an ordinarily skilled artisan. (Ex. 1002 ¶¶ 110-13.)

C. *Dunn/Radford/Adahan/Glenn* Renders Obvious Claims 10, 16, 18, 20, 23, 24, 28-30

1. Dependent Claim 10

- a. “The medical/surgical waste collection assembly of claim 1, wherein: said waste collection unit includes a mobile cart;”**

Dunn/Radford/Adahan/Glenn discloses this feature at least through *Dunn*'s teaching of a “fluid collection cart [12] . . . that is supported at its bottom four corners by wheels 16.” (*Dunn*, [0023]-[0025], [0038]-[0041], Figs. 1-3, 9.) The mobile cart is depicted in *Dunn*'s Figure 1 below.

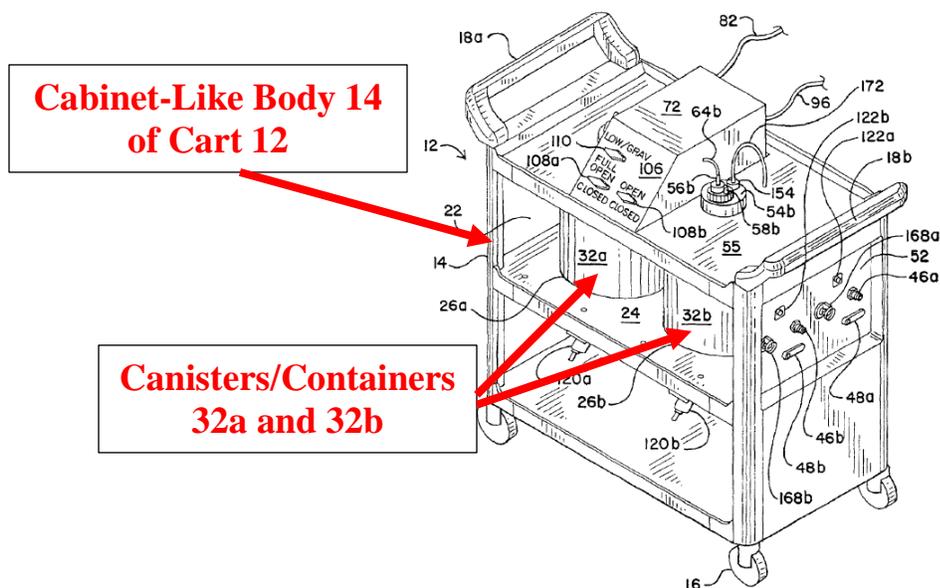


As a result, a skilled artisan would understand that *Dunn* teaches that its waste collection unit includes a mobile cart. (Ex. 1002 ¶¶ 114-15.)

- b. “said first canister and said first receiver are mounted to said cart; said manifold disposed in the bore of said first receiver is a first said manifold;”**

As discussed in Section VII.E.1.e, *Dunn* discloses a cart 12 with bottle-shaped containers 32a and 32b (i.e., each a claimed “canister”) and receivers/outer portions 130 on two different caps, 54a and 54b. (*Dunn*, [0023]-[0045], Figs. 1-3, 9; Ex. 1002 ¶¶ 116-17.) Figure 1 shows that the canisters/containers and caps are mounted to the “cabinet-like body 14” of cart 12 (*Dunn*, [0038]):

FIG. 1



(Dunn, Fig. 1 (annotated by Petitioner).)

While not labeled, *Dunn*'s Figure 1 also shows the manifold/inner portion 132 inserted into the receiver/outer portion 130's bore, as described for claim 1 in Sections VII.E.1.g and VII.E.1.h. (See *Dunn*, [0050]; Ex. 1002 ¶ 117.) This manifold is disposed in the bore of this first receiver, so it is the claimed "first said manifold." (Ex. 1002 ¶¶ 116-17.)

- c. "a second canister is mounted to said cart; a second receiver is mounted to said cart and is [in] fluid communication with said second canister and said second receiver has a bore dimensioned to receive a second manifold that is separate from the first said manifold;"

As illustrated in the prior section, *Dunn* discloses a pair of canisters/containers 32a and 32b, each of which has a separate cap 54a and 54b. (See also Sections

VII.E.1.e, VII.E.1.g, and VII.E.1.h.) Each cap has its own receiver/outer portion 130, and each has a bore dimensioned to receive a separate manifold/inner portion 132. (*Id.*) Indeed, *Dunn* explains that “[i]t is to be understood that container 32a features an identical construction.” (*Dunn*, [0049].) Therefore, the description of the inner and outer cap portions of claim 1 applies equally to the first and second containers. (*See* Section VII.E.1.) And as explained in Section VII.E.1.g, the receivers are in fluid communication with their respective canisters 32a and 32b. Accordingly, *Dunn/Radford/Adahan/Glenn* teaches this feature of claim 10. (Ex. 1002 ¶ 118.)

- d. **“said suction pump is mounted to said cart and is connected to both said first canister and said second canister for drawing a suction on both said first canister and said second canister.”**

As explained in Section IX.B, *Dunn/Radford/Adahan/Glenn* mounts a suction pump on the cart. Instead of the hospital’s vacuum system providing suction to the first and second canisters, in *Dunn/Radford/Adahan/Glenn* the on-cart suction pump provides suction to those canisters. (Ex. 1002 ¶ 119.) Accordingly, *Dunn/Radford/Adahan/Glenn* teaches this feature and the others of claim 10. (*Id.*)

2. Dependent Claims 16, 18, and 20

The features of claims 16, 18, and 20 are substantially similar to those of claims 6, 8, and 10. Therefore, the same proof of unpatentability discussed above for those claims applies to disclose or suggest the similar features of claims 16, 18, and 20. (*See* Sections VII.E.5, VII.E.6, and IX.C.1; Ex. 1002 ¶ 120 (comparing claims).)

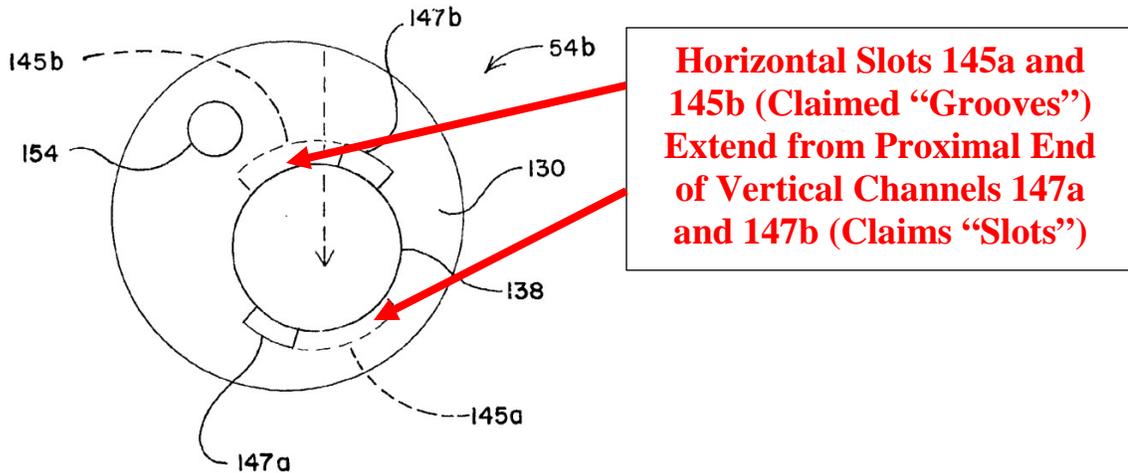
3. Independent Claim 23

Dunn/Radford/Adahan/Glenn teaches each feature of claim 23. (Ex. 1002 ¶¶ 121-25.) With two exceptions, the features of claim 23 all appear in similar or identical form in previously-discussed claims 1, 2, 4, and 10. (Ex. 1002 ¶¶ 121-22 (comparing claims).) Accordingly, *Dunn/Radford/Adahan/Glenn* teaches the similar features for the same reasons discussed above for those claims. (See Sections VII.E.1, VII.E.2, VIII.C.1, and IX.C.1.)

Claim 23 adds two features not previously mentioned. The first is that it recites “a fluid communications path from the receiver bore into said first canister.” In related litigation, Patent Owner contends “that all that is required by a fluid ‘path’ is that there is a way for fluid to get from point A to point B, e.g., ‘from the receiver bore into said first canister.’” (Ex. 1012, 20.) Accordingly, Patent Owner states that a “fluid communications path” is “a path (pathway) for conveying fluid from the receiver bore into the first canister.” (Ex. 1011, 19.) Based on this construction, *Dunn* teaches the claimed “fluid communications path” because the waste fluid flows through the receiver bore into the canister, passing through the manifold that rests in the receiver bore, as explained in Section VII.E.1.g regarding claim 1. (Ex. 1002 ¶ 123.)

The second feature not previously mentioned is that the claimed groove “extends from a proximal end of the at least one slot.” *Dunn* teaches this feature by

disclosing its vertical channels 147a and 147b (each a claimed “slot”) that serve as entry points into horizontal slots 145a and 145b (each a claimed “groove”) formed in the bore of receiver/outer portion 130, as shown below. (*Dunn*, [0050]-[0052]; see also Sections VII.E.1.i and VIII.C.1.c.)



(*Dunn*, Fig. 6 (excerpt annotated by Petitioner).)

A skilled artisan would understand that these horizontal slots (claimed “grooves”) extend from the proximal end of the vertical channels 147a and 147b (claimed “slots”) because the manifold/inner portion 132 is inserted into the distal end of the receiver and its alignment tabs first pass through the vertical channels on their way to being seated in the more proximally-located horizontal slots. (*See Dunn*, [0050]-[0052]; Ex. 1002 ¶ 124.) The channels are therefore located distally relative to the slots, while the slots extend from the proximal ends of the channels. (Ex. 1002 ¶ 124.)

Based on this discussion and the related sections addressing claims 1, 2, 4, and 10, *Dunn/Radford/Adahan/Glenn* renders obvious claim 23. (Ex. 1002 ¶¶ 121-25.)

4. Dependent Claim 24

The features of claim 24 correspond to and are generally broader than similar features recited in claim 4. (Ex. 1002 ¶¶ 126-127 (comparing claims).) The primary distinctions are (1) that claim 24 depends from claim 23 instead of claim 2, and (2) that claim 24 requires each groove to extend from a “proximal end of a separate said slot.” The first distinction is resolved by including *Glenn* in the combination of references, as the features of claim 23 are obvious in view of *Dunn/Radford/Adahan/Blake/Glenn* as opposed to only *Dunn/Radford/Adahan/Blake* for claim 4. (See Sections VIII.C.1 and IX.C.3.) The second distinction—the groove extending from a “proximal end of a separate said slot”—is taught by *Dunn*, as explained in Section IX.C.3 regarding claim 23. Thus, *Dunn/Radford/Adahan/Blake/Glenn* teaches every feature of claim 24, rendering it obvious.

5. Dependent Claims 28-30

The features of claims 28-30 are substantially similar to those of claims 5, 10, and 12. Therefore, the same proof of unpatentability discussed above for those

claims applies to disclose or suggest the similar features of claims 28-30. (*See* Sections VII.E.1.4, VII.E.1.7, and IX.C.1; Ex. 1002 ¶ 128 (comparing claims).)

X. Ground 4: *Dunn/Radford/Adahan/Blake* in View of *Glenn* Renders Obvious Claim 25

A. Rationale to Combine *Dunn/Radford/Adahan/Blake* with *Glenn*

Sections VII.D and VIII.B explain why one of ordinary skill in the art would have modified *Dunn* based on *Radford*, *Adahan*, and *Blake*, to achieve several benefits from those modifications. And Section IX.B explains why *Dunn*'s system, as modified by *Radford* and *Adahan*, would have been further modified by *Glenn* to include an on-cart suction pump. The same reasons for modifying *Dunn/Radford/Adahan* in view of *Glenn* also apply to modifying *Dunn/Radford/Adahan/Blake* in view of *Glenn*. (Ex. 1002 ¶¶ 129-30.) The *Glenn* modification to add a suction pump to *Dunn/Radford/Adahan/Blake*'s cart, is largely independent of the modifications the other references apply to *Dunn*, which focus more on the structure and orientation of the manifold and receiver. (*See, e.g.*, Sections VII.D, VIII.B and IX.B.) Accordingly, one of ordinary skill in the art would have expected to be able to successfully modify *Dunn/Radford/Adahan/Blake* to include an on-cart suction pump in the same manner and for the same reasons one would have done so for the *Dunn/Radford/Adahan* cart, as discussed in Section IX.B. (Ex. 1002 ¶¶ 129-30.)

B. *Dunn/Radford/Adahan/Blake/Glenn* Renders Obvious Claim 25

The features of claim 25 correspond to similar features recited in claim 4. (Ex. 1002 ¶¶ 131-34 (comparing claims).) Aside from expressing similar ideas in slightly different terminology, the primary differences are (1) that claim 25 depends from claim 23 instead of claim 2, and (2) that claim 25 requires each groove to extend from a “proximal end of a separate said slot.” The first distinction is resolved by including *Glenn* in the combination of references, as the features of claim 23 are obvious in view of *Dunn/Radford/Adahan/Blake/Glenn* as opposed to only *Dunn/Radford/Adahan/Blake* for claim 4. (See Sections VIII.C.1 and IX.C.3.) The second distinction—each groove extending from a “proximal end of a separate said slot”—is taught by *Dunn*, as explained in Section IX.C.3 regarding claim 23. Thus, *Dunn/Radford/Adahan/Blake/Glenn* teaches every feature of claim 25, rendering it obvious.

XI. Petitioner Presents New Grounds of Rejection

Adahan, *Blake*, and *Glenn* were not before the Examiner during prosecution of the '428 patent. (See '428 Patent, References Cited.) Because at least *Adahan* is in every obviousness ground, none of the prior-art combinations in this petition were previously considered by the Office. In addition, *Dunn* and *Radford* or related references were among the over 90 “References Cited” during prosecution of the '428 patent. (*Id.*) But there is no evidence the Examiner substantively addressed

these references, and there is no evidence that the Examiner considered them in the light and combinations presented in this Petition. (*See* Ex. 1004.) As a result, Petitioner’s proposed grounds of unpatentability are not cumulative of issues previously presented and considered by the Office.

XII. Mandatory Notices Under 37 C.F.R. § 42.8

A. Real Party-in-Interest

Zimmer Surgical, Inc.; Zimmer, Inc.; Zimmer U.S., Inc.; Zimmer Biomet Holdings, Inc., and Dornoch Medical Systems, Inc. are the real parties-in-interest.

B. Related Matters

Patent Owner, Stryker Corporation, has asserted the ’428 patent against Petitioner in a case filed September 12, 2017 (counterclaims), and captioned *Zimmer Surgical, Inc., et al. v. Stryker Corporation et al.*, No. 16-679-RGA-MPT (D. Del.). Stryker first asserted the ’428 patent against Petitioner in a case filed August 11, 2017, and captioned *Zimmer Surgical, Inc., et al. v. Stryker Corporation et al.*, No. 17-1130-RGA (D. Del.), but Stryker voluntarily dismissed this case without prejudice to pursue their claims in the later Delaware action 16-679-RGA-MPT.

To the best of Petitioner’s knowledge, the following currently-pending U.S. patent applications and issued U.S. patents claim priority to one or more of the same application(s) to which the ’428 patent claims priority:

U.S. Applications	
15/722,527	14/288,503

U.S. Applications	
PCT/US06/61791	15/874,178
PCT/US06/47531	

U.S. Patents		
7,615,037	8,216,199	8,518,002
8,915,897	9,782,524	8,509,736
9,143,610	7,621,898	8,740,866

Patent Owner, Stryker Corporation, has asserted U.S. Patent No. 7,615,037 against a third party in a case filed October 4, 2016, and captioned *Stryker Corp. v. Poseidon Surgical, LLC*, No. 1:16-cv-01199 (W.D. Mich.).

C. Lead and Backup Counsel

Lead counsel is Kathleen Daley (Reg. No. 36,116), (202) 408-4098, kathleen.daley@finnegan.com. Backup counsel are Jason Stach (Reg. No. 54,464), (404) 653-6428, jason.stach@finnegan.com; Benjamin A. Saidman (Reg. No. 69,325), (404) 653-6510, benjamin.saidman@finnegan.com; and Nathan I. North (Reg. No. 72,979), (404) 653-6485, nathan.north@finnegan.com.

D. Service Information

Please send all correspondence to the lead and backup counsel at 901 New York Avenue NW, Washington, DC 20001-4413. Petitioner consents to e-mail service.

XIII. Grounds for Standing

Pursuant to 37 C.F.R. § 42.104(a), Petitioner certifies that the '428 patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting this review. This Petition is timely filed under 35 U.S.C. § 315(b) because it is filed within one year of service of Patent Owner's first effective counterclaims alleging infringement of the '428 patent against Petitioner. And no Post-Grant Review has been instituted on the '428 patent. *See* 35 U.S.C. § 311(c).

XIV. Conclusion

For these reasons, Zimmer has established a reasonable likelihood of prevailing against at least one challenged claim and respectfully requests institution.

Date: May 21, 2018

Respectfully submitted,

/Kathleen Daley/

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CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing **Petition for Inter Partes Review** contains 12,730 words, including footnotes and added text labels on figures, but excluding those portions identified in 37 C.F.R. § 42.24(a), as measured by the word-processing system used to prepare this paper.

/Kathleen Daley/

Kathleen Daley

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing **Petition for Inter Partes Review** was served on May 21, 2018, by Express Mail or by means at least as fast and reliable as Express Mail at the following address of record for the subject patent. The associated Exhibits 1001 through 1019 and the Power of Attorney were also served on May 21, 2018.

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