

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CLARK FILTER, INC.,
Petitioner,

v.

CAMFIL USA, INC., d/b/a CAMFIL AIR POLLUTION CONTROL,
Patent Owner.

Case IPR2016-00982
Patent 8,673,037 B2

Before KRISTINA M. KALAN, JON B. TORNQUIST, and
JEFFREY W. ABRAHAM, *Administrative Patent Judges*.

TORNQUIST, *Administrative Patent Judge*.

DECISION

Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

Clark Filter, Inc. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–5 and 8 of U.S. Patent No. 8,673,037 B2 (Ex. 1001, “the ’037 patent”). Camfil USA, Inc., d/b/a Camfil Air Pollution Control (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 8 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless the Director determines . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

After considering the Petition and the Preliminary Response, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing any of the challenged claims are unpatentable. Accordingly, we do not institute *inter partes* review.

B. Related Matters

The parties indicate that the ’037 patent is subject to litigation in *Camfil USA, Inc. v. Imperial Systems, Inc.*, 2:15–cv–1755 (E.D. Tex.), and a related patent is being challenged in IPR2016-00987 (challenging U.S. Patent No. 9,174,155). Pet. 2; Paper 4, 1.

C. The Asserted Grounds of Unpatentability

Petitioner asserts the challenged claims are unpatentable on the following grounds (Pet. 3–4, 20–59):

Reference(s)	Basis	Claim(s) Challenged
Nostrand ¹	§ 102(b)	1–5
Nostrand and Haynam ²	§ 103	3, 5, and 8
Nostrand and Schrage ³	§ 103	3 and 8
Nostrand and Applicants’ Admitted Prior Art (“APA”)	§ 103	3 and 5
Nostrand, APA, and Haynam	§ 103	8
Maybee ⁴ and Millard ⁵	§ 103	1–4
Maybee, Millard, and Haynam	§ 103	5 and 8
Morgan ⁶ and Clements ⁷	§ 103	1–4
Morgan, Clements, and Matravers ⁸	§ 103	5
Morgan, Clements, and Haynam	§ 103	5 and 8
Beaufoy ⁹	§ 102	1–5
Beaufoy and Haynam	§ 103	8
Maybee and Morgan	§ 103	1–4 and 8
Maybee, Morgan, and Matravers	§ 103	5
Maybee and Haynam	§ 103	1–5 and 8
APA, Maybee, and Haynam	§ 103	1–5 and 8
Nostrand and Haynam	§ 103	1–5 and 8
Beaufoy and LeBlanc ¹⁰	§ 103	1–5
Beaufoy, LeBlanc, and Haynam	§ 103	8

¹ U.S. Patent No. 3,680,286, issued Aug. 1, 1972 (Ex. 1003).

² WO 2009/061998 A1, published May 14, 2009 (Ex. 1008).

³ U.S. Patent No. 7,524,349 B2, issued Apr. 28, 2009 (Ex. 1009).

⁴ U.S. Patent No. 6,245,130 B1, issued June 12, 2001 (Ex. 1004).

⁵ U.S. Patent No. 4,746,339, issued May 24, 1988 (Ex. 1010).

⁶ U.S. Patent No. 5,972,059, issued Oct. 26, 1999 (Ex. 1005).

⁷ U.S. Patent No. 6,440,188 B1, issued Aug. 27, 2002 (Ex. 1006).

⁸ U.S. Patent No. 3,334,752, issued Aug. 8, 1967 (Ex. 1011).

⁹ U.S. Patent No. 5,013,333, issued May 7, 1991 (Ex. 1007).

¹⁰ U.S. Patent No. 4,704,144, issued Nov. 3, 1987 (Ex. 1012).

D. The '037 Patent

The '037 patent is directed to an air filter “and a dust collector for use with [the] same.” Ex. 1001, 1:6–7. Figure 1 of the '037 patent, reproduced below, depicts a conventional air filter known in the art:

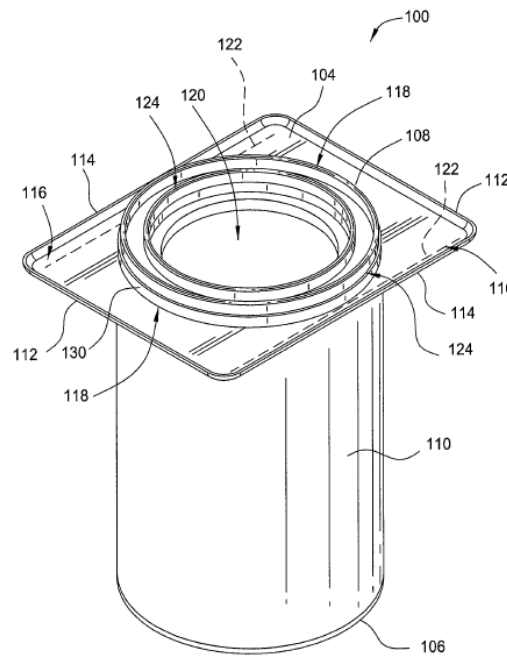


FIG. 1
(PRIOR ART)

Figure 1 is a top perspective view of a conventional air filter known in the art.

Air filter 100 includes cylindrical filter element 110 bounded at one end by end cap 106 and at the other end by rectangular flange 104. *Id.* at 1:32–34. The rectangular flange extends “beyond the periphery of the air filter” to provide “a surface for mounting the air filter” to a dust collector. *Id.* at 1:11–13. This flange includes aperture 120 to allow air passing through filter element 110 to exit filter 100 and ring shaped recessed channel 130 for receiving filter element 110. *Id.* at 1:36–39. Circular gasket 108

“closely circumscribes” aperture 120 to seal the filter against a mounting surface, such as a tube sheet. *Id.* at 1:13–16, 1:43–45.

During installation, gasket 108 is compressed against the tube sheet by two parallel clamping bars, which serve to apply “a force to an area 116 located immediately along the long edges 114 of the flange 104.” *Id.* at 1:13–16, 1:21–28, 1:49–51. In this configuration, however, the clamping force must be transferred laterally through flange 104 to gasket 108, which may result in less loading in region 118 of gasket 108 closest to short edges 112 as compared to region 124 of the gasket closest to long edges 114. *Id.* at 1:53–61. The ’037 patent reports that this non-uniform loading may contribute to air bypassing air filter 100 through gasket 108. *Id.* at 1:57–58.

Figure 3, reproduced below, depicts one embodiment of the air filter of the '037 patent:

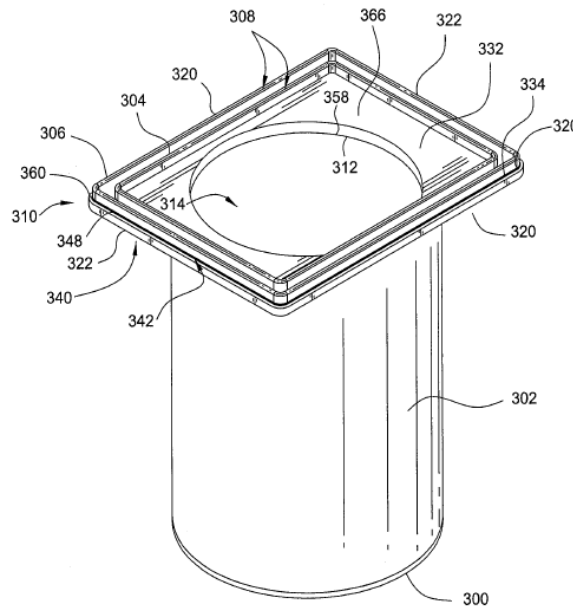


FIG. 3

Figure 3 is a top perspective view of one embodiment of the air filter of the '037 patent.

As shown in Figure 3, the air filter assembly of the '037 patent moves gasket(s) 308 from a location immediately surrounding the central aperture of the filter flange assembly to a location along the perimeter of the assembly radially outward of the central aperture. *Compare* Ex. 1001, Fig. 1, gasket 108, *with* Fig. 3, gasket 308. The '037 patent indicates that in this configuration “the force urging the filter flange assembly 310” against the tube sheet is linearly aligned with gasket 308, “thereby applying a uniform compression force” to the portion of the gasket aligned with long edge 320. Ex. 1001, 6:15–31. According to the '037 patent, the resulting “uniform and balanced sealing forces improve sealing between the air filter and dust collector, thereby improving the performance of a dust collector utilizing such filters.” *Id.* at 6:60–62.

E. Illustrative Claim

Challenged claim 1 is independent, with claims 2–5 and 8 depending therefrom. Claim 1 is illustrative of the challenged claims and is reproduced below:

1. An air filter, comprising:
 - an end cap;
 - a filter element coupled at a first end to the end cap;
 - a rectangular filter flange assembly having a bottom surface coupled to a second end of the filter element, the rectangular filter flange assembly having a central aperture open to an interior region bounded by the filter element, the rectangular filter flange assembly comprising a pair of short edges and a pair of long edges; and
 - a gasket disposed on a top surface and perimeter of the rectangular filter flange assembly radially outward of the filter

element and circumscribing the central aperture, wherein the gasket is immediately adjacent the long edges.

Ex. 1001, 7:7–20.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, “[a] claim in an unexpired patent 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); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016) (upholding the use of the broadest reasonable interpretation standard). In determining the broadest reasonable construction, we presume that claim terms carry their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). A patentee may define a claim term in a manner that differs from its ordinary meaning; however, any special definitions must be set forth in the specification with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner requests that we construe the terms “air filter,” “a gasket disposed on a top surface,” “central aperture,” “assembly,” “the top surface is spaced from the bottom surface of the filter flange assembly by at least 3/8 inches,” and “bag.” Pet. 10–14. Patent Owner provides constructions for these same claim terms, as well as a proposed construction for the term “radially outward.” Prelim. Resp. 13–20.

Upon review of the parties’ arguments and supporting evidence, we determine that only the term “central aperture” requires construction. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir.

1999) (“only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”).

central aperture

Claim 1 recites “. . . a rectangular filter flange assembly having a bottom surface coupled to a second end of the filter element, the rectangular filter flange assembly having a *central aperture* open to an interior region bounded by the filter element, ...” Ex. 1001, 7:10–14 (emphasis added).

The parties agree that the term “central” requires an aperture that is “in, at, or near the center” or “of, at, or forming the center” of a structural element. Pet. 12 (citing Ex. 1017, 1) (Petitioner asserting the definition “in, at, or near the center” applies); Prelim. Resp. 17 (citing Ex. 1017, 1) (Patent Owner asserting a hybrid definition, “of, at, or forming the center,” applies).

Petitioner asserts “central” applies to “any portion of the overall claimed structure (e.g., filter flange assembly, filter element, or other structure),” and not just the filter flange assembly. Pet. 12. Patent Owner counters that the term “central aperture” “cannot be divorced from the surrounding claim language giving it context,” which indicates that the “central aperture” is at the center of the “filter flange assembly,” and “not some random ‘other structure,’ as Petitioner argues.” Prelim. Resp. 17 (citing Ex. 1017, 1).

In this case, the claims themselves identify the “rectangular filter flange assembly” as the structural element having a central aperture. Thus, we agree with Patent Owner that the term “central aperture” applies to the rectangular filter flange assembly and not “any portion of the overall claim structure,” as asserted by Petitioner. This understanding is consistent with the written description of the ’037 patent, which describes and depicts an

aperture at the center of the *filter flange assembly*. See Ex. 1001, 2:11–13 (“The rectangular filter flange assembly includes a central aperture open to an interior region bounded by the filter element.”), 5:39–40 (“The filter flange assembly 310 also includes a central aperture 312.”), Figs. 3, 4.

Based on the foregoing, we construe “central aperture,” as used in claim 1 of the ’037 patent, to be “an aperture that is in, at, or near the center of the rectangular filter flange assembly.”

B. Grounds Based on Nostrand – Claims 1–5, 8

Petitioner argues that claims 1–5 are unpatentable under 35 U.S.C. § 102 as anticipated by Nostrand. Pet. 18–27. Petitioner also argues that the subject matter of claims 3, 5, and 8 would have been obvious in view of Nostrand in combination with one or more additional prior art references. In support of these asserted grounds of unpatentability, Petitioner relies upon the declaration testimony of Mr. Travis Haynam. Ex. 1002.

1. Nostrand

Nostrand is directed to a highly efficient and compact air cleaner. Ex. 1003, 1:29–32. Figures 1 and 2 of Nostrand are reproduced below:

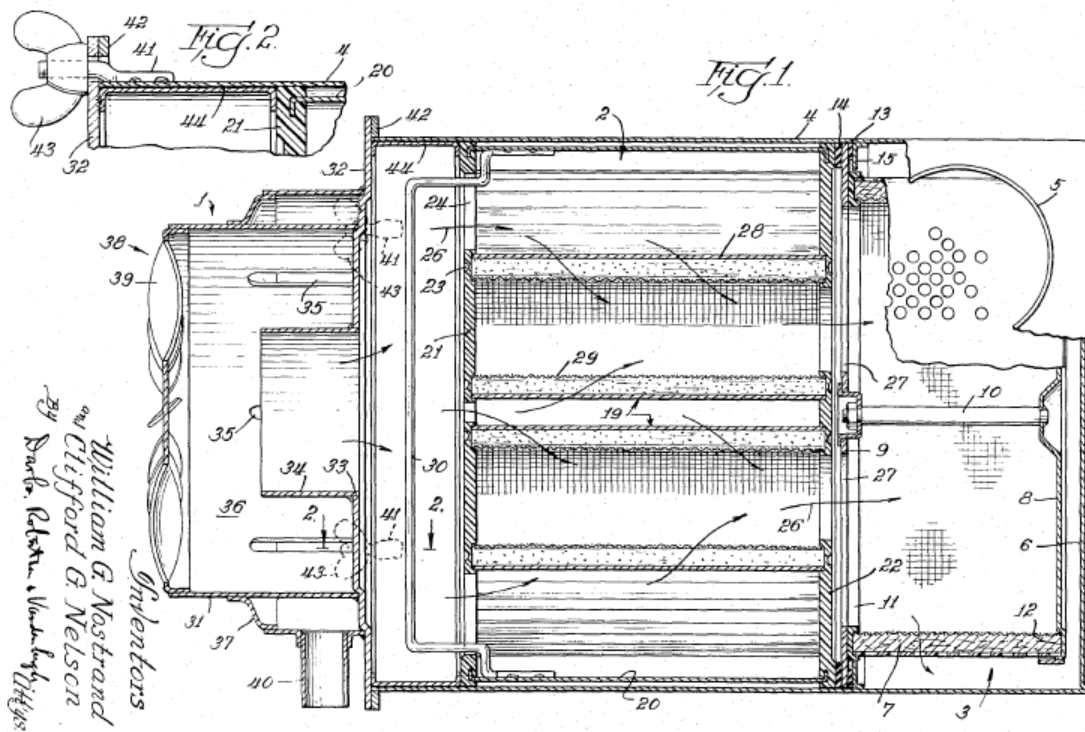


Figure 1 shows a preferred embodiment of the air cleaner of Nostrand.

Figure 2 is a detail view taken at line 20–2 of Figure 1.

As shown in Figure 1, the air cleaner of Nostrand is composed of three functional units: centrifugal precleaner 1, working filter unit 2, and safety filter element 3 (arrows 26 show the path of air flow through the air cleaner). *Id.* at 2:2–6, 3:15–17.

Centrifugal precleaner 1 is composed of cylindrical wall 31 mounted upon plate 32, which has a central opening 33 “from which rises a short, open-ended cylindrical tube 34.” *Id.* at 3:28–31. Flow turning vane 38 causes the air entering the cleaner to swirl within chamber 36, thereby “resulting in the movement of at least a substantial portion of the denser airborne particles outwardly toward cylindrical wall 31 and out of the air flow stream through slots 35.” *Id.* at 3:34–42. The partially cleaned air stream then flows through tube 34 into working filter unit 2 while the

accumulated particulate matter is withdrawn from the system via dust discharge 40. *Id.* at 3:42–45, 4:1–5.

Working filter unit 2 contains a “cluster of spaced, parallel cylindrical filter elements 19 surrounded by a wall 20, the whole being mounted between end plates 21 and 22 to form a rigid subassembly unit.” *Id.* at 2:55–59. “Inlet end plate 21 is provided with openings 24 which permit and guide the flow of air into the spaces between filter elements 19.” *Id.* at 3:9–11. Outlet end plate 22, depicted in Figure 5 below, has openings 25 that “communicate with the interiors of the cylindrical filter elements 19.” *Id.* at 3:11–14. In this configuration, the flow of air “is into the cylindrical filter elements 19 from the space surrounding them” and then through openings 25 of plate 22. *Id.* at 3:14–17.

Figure 5 of Nostrand is reproduced below:

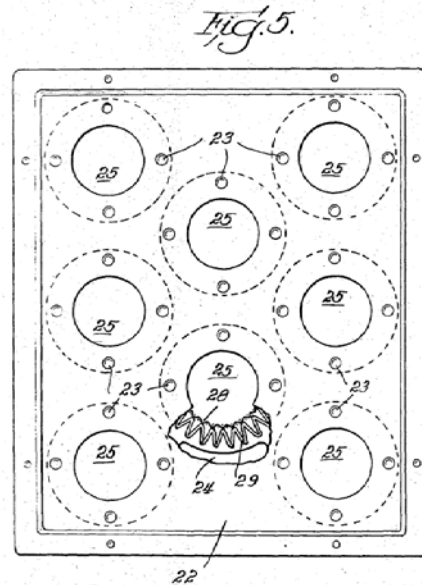


Figure 5 is a plan view of the outlet end of the working filter unit.

After exiting openings 25, the air flow enters safety element 3, which consists of rectangular filter element 7 clamped between cover 8 and spider

plate 9 by means of post 10 (as shown in Figure 1). Ex. 1003, 2:31–34.

Figure 8 is reproduced below:

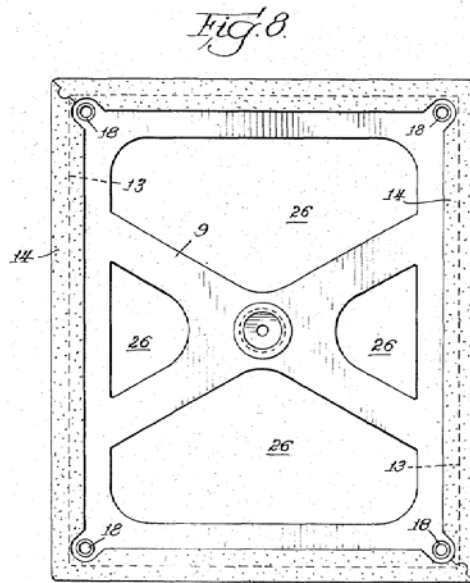


Figure 8 is a plan view of the safety filter subassembly.

As shown in Figure 8, spider plate 9 has four openings 26, which permit air to flow through filter element 7 to air cleaner outlet 5. *Id.* at 3:14–21.

2. Asserted Anticipation by Nostrand

Petitioner contends the working filter unit of Nostrand anticipates at least claims 1–3 and 5 of the '037 patent and the safety filter element of Nostrand anticipates at least claims 1, 2, and 5. Pet. 18–27. Petitioner contends claim 4 is also anticipated if a broad interpretation of the term “bag” is adopted. *Id.* at 19.

In its claim chart, Petitioner identifies either end plate 22 or spider plate 9 in conjunction with gasket 11 as the claimed “rectangular filter flange assembly.” Pet. 21–22. Petitioner further identifies any one of openings 25 of end plate 22 or openings 26 of spider plate 9 as the claimed “central aperture.” *Id.* at 22–23 (citing Ex. 1002 ¶¶ 48, 58). In support of

Petitioner's arguments, Mr. Haynam testifies that each opening 25 would be understood to be a "central aperture," and openings 26 of spider plate 9 would be understood to collectively constitute a central aperture "with intersecting webbing." Ex. 1002 ¶¶ 48–49, 58 ("FIGs. 1 and 8 show spider plate 9 (i.e., flange assembly) has a [sic] openings 26 (i.e., central apertures, that collectively are also a central aperture with intersecting webbing) providing access to the interior of filter element 7.").

Patent Owner responds, *inter alia*, that because openings 25 and 26 are not at the center of their respective plates, Petitioner has not demonstrated that either end plate 22 or spider plate 9 represent a "rectangular filter flange assembly having a central aperture," as recited in claim 1. Prelim. Resp. 24, 28–29.

We have construed "central aperture" as "an aperture that is in, at, or near the center of the rectangular filter flange assembly." Upon review of the parties' arguments and supporting testimony, we agree with Patent Owner that Petitioner and Mr. Haynam have not explained sufficiently why one of ordinary skill in the art, upon reviewing the '037 patent as a whole, would conclude that any of openings 25 and 26 of Nostrand constitute a "central aperture." First, as is evident from Figures 5 and 8 of Nostrand, openings 25 and 26 are not "in" or "at" the center of outlet plate 22 or spider plate 9, respectively. Indeed, spider plate 9 and post 10 physically prevent an aperture from being "in" or "at" the center of either structure. Second, Petitioner has not provided evidence or argument that persuasively demonstrates that one of ordinary skill in the art would consider one or more of Nostrand's openings to be "near" the center of a rectangular filter flange assembly. Finally, Mr. Haynam does not explain sufficiently why one of

ordinary skill in the art would consider four openings surrounding a central location in a solid plate (i.e., openings 26 in spider plate 9) to collectively constitute a “central aperture.” See Ex. 1002 ¶ 58; see also *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (noting that the “[l]ack of factual support” for an expert opinion “may render the testimony of little probative value”). As we find that Petitioner has not demonstrated that every element of independent claim 1 is disclosed in Nostrand, we need not address Petitioner’s arguments relating to claim 4.

Based on the foregoing, we are not persuaded that Petitioner has demonstrated a reasonable likelihood that Nostrand anticipates claims 1–5 of the ’037 patent.

3. Claims 1–5 and 8 over Nostrand and Haynam

Petitioner asserts that, “[i]f unexpectedly, ‘central aperture’ requires the geometric centermost location,” then claims 1–5 and 8 would have been obvious based upon the combined teachings of Nostrand and Haynam. Pet. 58. Petitioner reasons as follows:

Nostrand contemplates eliminating webbing (e.g. “post and its support structure”) for the safety filter in the FIG. 10; and web-free is also taught by Haynam FIG. 1. Also, Nostrand’s primary filter element may be rearranged with a 4-3-4 or 2-1-2 filter array, having a centermost filter opening. Ex. 1002 ¶ 136. See also MPEP 2144.04 (reversal, duplication or rearrangement).

Pet. 58.

As noted by Petitioner, Nostrand discloses an alternative embodiment wherein spider plate 9 is replaced with reinforced circular plastic ring 48, to which the safety filter element is permanently attached. Ex. 1003, 4:42–49. Petitioner does not adequately explain, however, how a circular plastic ring

reads upon a rectangular filter flange assembly, as recited in claim 1. Nor does Petitioner adequately explain why Figure 1 of Haynam would teach or suggest, to one of ordinary skill in the art, retaining spider plate 9 while removing the interior webbed portions of the plate. See Pet. 58; Ex. 1008, Fig. 1.

With respect to Petitioner's argument that one of ordinary skill in the art could rearrange the orientation of Nostrand's primary filter element into a 4-3-4 or 2-1-2 array, Pet. 58; Ex. 1002 ¶ 136, Petitioner supports this argument by citation to MPEP 2144.04 and, in particular, MPEP 2144.04 § VI, entitled "Reversal, Duplication, or Rearrangement of Parts." In this section of the MPEP, however, it is noted:

The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device.

MPEP 2144.04 § VI (citing *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (BPAI 1984)); see also *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 (Fed. Cir. 2008) (noting that "some kind of motivation must be shown" to explain why a person of ordinary skill in the art would have modified a prior art reference to achieve the patented method).

Here, Petitioner provides no reasoned explanation as to why one of skill in the art would modify the array of Nostrand to a 4-3-4 or 2-1-2 configuration. See Ex. 1002 ¶ 136 (Mr. Haynam testifying that other configurations are available, but not explaining why these configurations would be chosen in place of the configuration depicted in Nostrand).

Accordingly, we are not persuaded by Petitioner's argument that the subject matter of claims 1–5 and 8 would have been obvious over Nostrand and Haynam.

4. Additional Grounds Based on Nostrand

Petitioner also asserts that the subject matter of: (1) claims 3 and 8 would have been obvious over Nostrand and Schrage, (2) claims 3 and 5 would have been obvious over Nostrand and Camfil's Admitted Prior Art ("APA"), and (3) claim 8 would have been obvious over Nostrand, Camfil's APA, and Haynam. Pet. 28–34. Each of these claims depends from claim 1. Petitioner does not assert, however, that these additional references would teach or suggest repositioning any one of openings 25 or openings 26 of Nostrand to a location "in, at, or near the center" of end plate 22 or spider plate 9, respectively. Accordingly, we are not persuaded that Petitioner has demonstrated a reasonable likelihood that these additional recited references would have rendered the subject matter of claims 3, 5, and 8 obvious.

C. Grounds Based on Maybee

Petitioner contends that the subject matter of claims 1–5 and 8 of the '037 patent would have been obvious under 35 U.S.C. § 103 over Maybee in combination with one or more of Millard, Haynam, Morgan, Matravers and Applicant's APA. Pet. 34–42, 56–58. In support of these arguments, Petitioner relies upon the testimony of Mr. Haynam. Ex. 1002 ¶¶ 83–99, 132–135.

1. Maybee

Maybee discloses a filter system having one or more bag filters removably placed in a mounting structure. Ex. 1004, 1:66–2:1. According to Maybee, a "rigid support holding member, or ring of the bag filter abuts

part of the mounting structure,” and a “seal member, e.g. a sealing gasket . . . is emplaced between the rigid support (or holding member) and the mounting structure to inhibit or eliminate fluid leakage between the interface of these two members.” *Id.* at 2:1–7.

Maybee explains that:

In certain aspects, the seal member is secured to or formed integrally of the filter bag’s rigid support, holding member, or ring. In other aspects, the seal member is secured to or formed integrally of the mounting structure. In other embodiments one or more seal members are used on both the rigid support, etc. and on the mounting structure. *Id.* at 2:9–14.

One embodiment of Maybee’s filter system is shown in Figure 3, reproduced below.

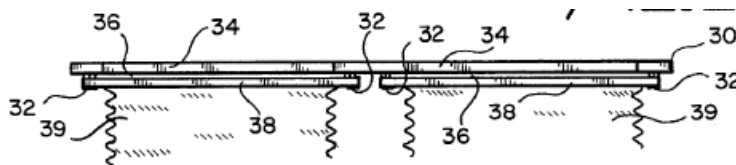
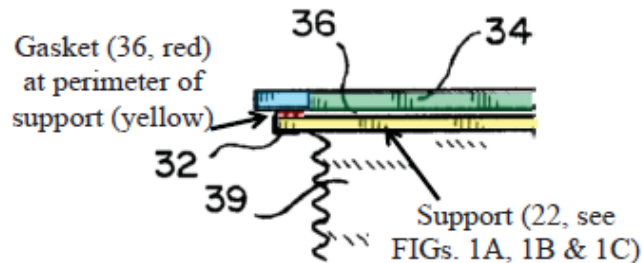


Figure 3 shows mount structure 30 with brackets 32 for holding bag filters 38 comprised of filter fabric 39. *Id.* at 3:61–63. “A sealing gasket 36 encompasses each opening 34” in mount 30. *Id.* at 3:65–67.

2. *Claims 1–4 over Maybee and Millard*

Petitioner argues that the subject matter of claims 1–4 would have been obvious in view of the combined teachings of Maybee and Millard. Pet. 35–40.

Petitioner contends that Maybee discloses a gasket disposed on a top surface of the filter flange, in a position radially outward of the filter element and circumscribing the central aperture, as required by claim 1. Pet. 35, 39. Petitioner relies on Figure 3 of Maybee, and provides an annotated version of that figure, which is reproduced below.



According to Petitioner, Figure 3 “shows the gasket (36) positioned on the top surface and perimeter of the support (unlabeled, yellow) radially outward of the filter fabric (39).” *Id.* at 38 (citing Ex. 1004, Fig. 3; Ex. 1002 ¶ 94).

Patent Owner argues that Maybee does not teach or suggest positioning the gasket on a top surface and perimeter of a rectangular filter flange assembly radially outward of the filter element. Prelim. Resp. 41. In particular, Patent Owner argues that Maybee “always discloses the sealing gasket as ‘encompassing the opening through which air flows,’” and is “silent as to whether gasket 36 is radially outward of filter fabric 39.” *Id.* at 41–42 (citing Ex. 1004, 3:51–56; Ex. 2001 ¶¶ 109, 111). Patent Owner further argues that Petitioner’s annotated drawing is “inaccurate and

misleading” because the portions of Figure 3 that Petitioner colored red to depict the gasket do not correspond to the area indicated by lead line 36 in the figure. *Id.* Patent Owner also asserts that Maybee “provides no teaching as to the relative location of gasket 36 and filter fabric 39” because “[t]here is no indication from the side view of Figure 3 where filter fabric 39 ends.” *Id.* at 42.

After considering the arguments presented by both sides, we are not persuaded that Petitioner has met its burden. Maybee indicates that reference number 36 corresponds to the sealing gasket in the filter system shown in Figure 3. As Patent Owner points out, the lead line from reference number 36 points to the center of the space above the support structure, which is colored yellow in Petitioner’s annotated figure. Petitioner, however, appears to indicate that the gasket (colored red) is located only above reference numbers 32 in the space above the support (colored yellow). Petitioner, however, does not explain adequately why we should consider only the portions colored red in annotated Figure 3 to be the gasket, when the text of Maybee states that the gasket corresponds to reference number 36 in Figure 3, and reference number 36 points to a different portion of the figure that is not colored red. Furthermore, we agree with Patent Owner that Figure 3 of Maybee, which “is a side view of the part of a mounting structure,” does not disclose sufficient information about the relative positions of the gasket and filter element. As a result, on the current record, we are unable to conclude that Maybee discloses or suggests a gasket in a position on the top surface and perimeter of the filter flange assembly radially outward of the filter element.

Petitioner does not argue that Millard discloses or suggests such a

gasket.

Accordingly, on this record, Petitioner has not established sufficiently that Maybee and Millard disclose or suggest every element of claims 1–4, and we determine that Petitioner does not show a reasonable likelihood of prevailing on its assertion that claims 1–4 are unpatentable as obvious in view of the combined teachings of Maybee and Millard.

3. Claims 5 and 8 over Maybee, Millard, and Haynam

Petitioner contends that the subject matter of claims 5 and 8, which depend from claim 1, would have been obvious in view of the combined teachings of Maybee, Millard, and Haynam. Pet. 40–42.

Here, Petitioner again relies on Maybee as disclosing a gasket on a top surface and perimeter of the rectangular filter flange assembly radially outward of the filter media, and relies on Haynam’s disclosure of known methods of securing filter media to end caps with outer flanges. *Id.* at 41–42 (referring to Haynam’s disclosure of a plastisol or adhesive contained within an annular well to adhere a filter media to a top end cap).

For the reasons discussed above, we are not persuaded that Maybee discloses or suggests a gasket on a top surface and perimeter of the rectangular filter flange assembly radially outward of the filter media. Accordingly, we determine that Petitioner does not show a reasonable likelihood of prevailing on its assertion that claims 5 and 8 are unpatentable as obvious in view of the combined teachings of Maybee, Millard, and Haynam.

4. Claims 1–5 and 8 over Maybee and Haynam

Petitioner contends that the subject matter of claims 1–5 and 8 would have been obvious over Maybee and Haynam. Pet. 57.

Petitioner repeats its arguments regarding the disclosure of Maybee and Haynam, and adds that Haynam discloses a filter cartridge with a higher capacity than Maybee's bag filter. *Id.* Petitioner contends that a person of ordinary skill in the art would have replaced Maybee's filter with Haynam's filter cartridge and further asserts that Haynam teaches moving gasket 110 to the outer periphery of flange 108 on end cap 92. *Id.* Petitioner does not explain adequately, however, why a person of ordinary skill in the art would have modified the position of the gasket on Maybee's bottom loaded filter based on Haynam's disclosures regarding a top loaded filter. See 37 C.F.R. § 42.65(a); *KSR Int'l Co., v. Teleflex, Inc.*, 550 U.S. 398, 401 (2007).

As a result, on this record, Petitioner does not show a reasonable likelihood of prevailing on its assertion that claims 1–5 and 8 are obvious in view of the combined teachings of Maybee and Haynam.

5. Claims 1–5 and 8 over Maybee, Haynam, and APA

Petitioner contends that the subject matter of claims 1–5 and 8 would have been obvious over Maybee, Haynam, and Applicant's APA. Pet. 57–58.

Petitioner acknowledges that Figure 1 of the '037 patent does not disclose “a gasket disposed on a top surface and perimeter of the rectangular filter flange assembly radially outward of the filter element,” as required by independent claim 1. *Id.* at 57. Petitioner argues that Haynam and Maybee provide a motivation to move the gasket in Figure 1 to the outer perimeter region of the filter flange assembly. *Id.* at 57–58.

Petitioner, however, offers no new arguments or evidence here regarding the combination of Figure 1 of the '037 patent, Maybee, and Haynam. Thus, for the same reasons discussed above, we find that

Petitioner has failed to explain adequately why a person of ordinary skill in the art would have made the proposed modifications to include a gasket disposed on a top surface of the filter flange assembly in a position radially outward of the filter element. See 37 C.F.R. § 42.65(a); *KSR*, 550 U.S. at 401.

As a result, on this record, Petitioner does not show a reasonable likelihood of prevailing on its assertion that claims 1–5 and 8 are obvious in view of the combined teachings of Figure 1 of the '037 patent (APA), Maybee, and Haynam.

D. Grounds Based on Morgan—Claims 1–5, and 8

Petitioner contends that the subject matter of claims 1–5 and 8 of the '037 patent would have been obvious over Morgan in combination with one or more of Clements, Maybee, Matravers, and Haynam. Pet. 42–50, 56–57.

1. Morgan

Morgan discloses “a filter assembly for use in dust collecting systems which utilizes a conical filter element mounted within a cylindrical filter element.” Ex. 1005, 1:5–8. Figures 2 and 5 of Morgan are reproduced below:

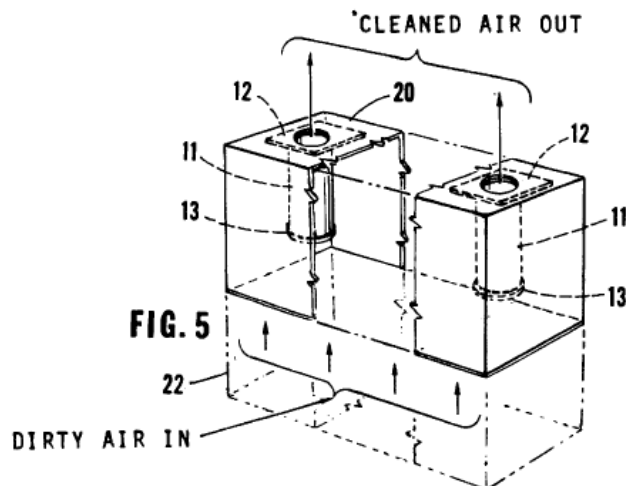
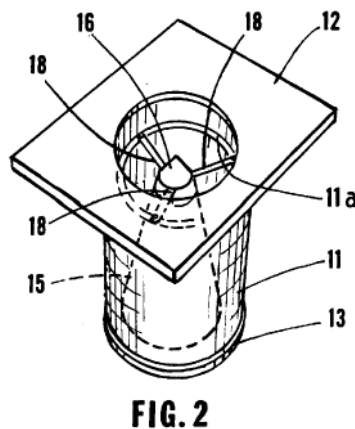


Figure 2 is a top perspective view of the preferred air filter of Morgan.

Figure 5 is a diagrammatic view illustrating the orientation of the filter units in the disclosed device.

As shown in Figure 2, cylindrical filter element 11 is attached at its top end to top member 12, “which is a flat piece fabricated of fiberboard or plastic which extends beyond the periphery of the cylindrical element.” *Id.* at 2:18–22. As shown in Figure 5, a plurality of these filter units are mounted within housing 20, which has an opening at its bottom for air to enter into hopper 22 from below. *Id.* at 2:57–61. Top member 12 of each filter unit “is installed over a mating aperture formed in the top of the housing with the edges of the top member being sealed to the top wall of the housing by means of a gasket running around the periphery thereof.” *Id.* at 2:61–65.

2. Clements

Clements discloses air filters that are “capable of being mounted from either the top or the bottom of the tubesheet.” Ex. 1006, 1:13–16. Clements explains that prior art filter assemblies for use in industrial environments were designed as either “top load” or “bottom load” cartridges, but not both. *Id.* at 1:37–54. Thus, “[i]n industrial environments having both top and bottom load baghouses, an inventory of filter cartridges must be maintained for each baghouse.” *Id.* at 1:58–60. To remedy this situation, one object of Clements is “to provide an air filter cartridge capable of top and bottom loading within a filter assembly.” *Id.* at 1:65–67.

Figure 3 of Clements is reproduced below:

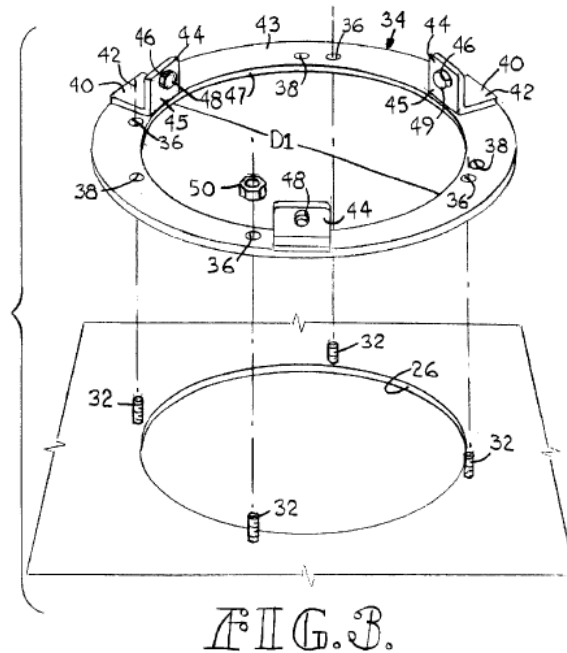


Figure 3 of Clements is an exploded perspective view of an adaptor plate and tube sheet.

As shown in Figure 3, an adaptor plate is placed over bolts 32 in tubesheet 20 (not numbered in Figure 3). *Id.* at 3:65–67. This adaptor plate has “a number of L-brackets 40 spaced around the top surface” of the plate. *Id.* at 4:8–11. The upstanding portion 44 of the L-brackets contains threaded apertures 46, which are designed to accept bolts 48 that extend “radially inwardly toward the center” of adaptor plate 34. *Id.* at 4:16–23.

Figure 4 of Clements, reproduced below, depicts top end cap 52 of the filter cartridge:

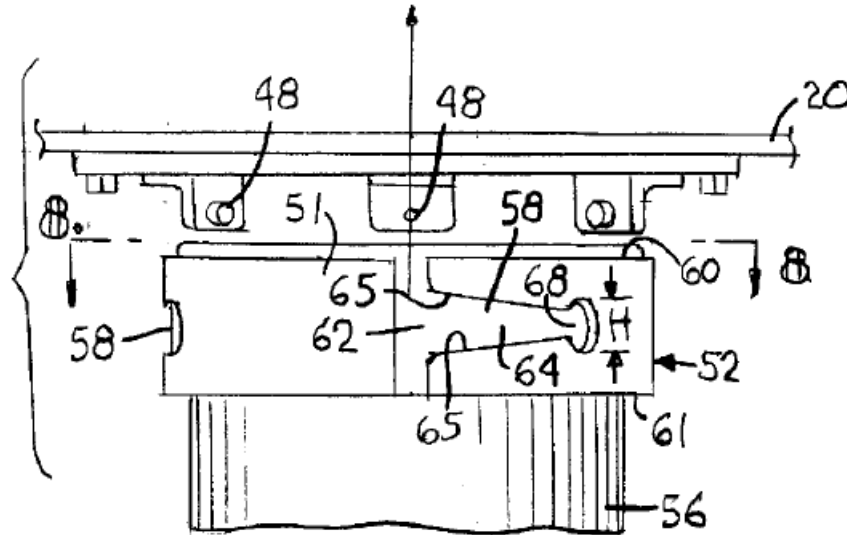


Figure 4 depicts the air filter cartridge being bottom loaded with the filter assembly.

In Figure 4, peripheral sidewall 51 of annular top end cap 52 has a “plurality of connection areas 58” that are defined between upper edge 60 and lower edge 61. *Id.* at 4:42, 4:50–53. During installation of the filter assembly, bolts 48 of adaptor plate 34 are aligned with longitudinal channels 62 of connection areas 58 of top end cap 52. *Id.* at 5:31–34. The filter cartridge is then rotated until “bolts 48 are positioned within the locking areas 68.” *Id.* at 5:34–36. At this point, annular gasket 69 on the filter cartridge (not numbered in Figure 4) contacts tubesheet 20 to form a seal. *Id.* at 5:36–37.

3. Claims 1–4 over Morgan and Clements

Petitioner contends that Morgan discloses every element of claims 1–4 of the '037 patent, including a filter having an end cap, a rectangular filter flange assembly with a central aperture, and a gasket disposed at the periphery of a rectangular filter flange assembly. Pet. 45–46. Petitioner further contends that, because Figure 5 of Morgan depicts top member 12 with dashed lines, a person of ordinary skill in the art would understand that “top member 12 is mounted on the underside of the top of the housing 20,

i.e., in a bottom loaded configuration” and that in this configuration the gasket would be disposed on the top surface of top member 12. *Id.* at 43 (citing Ex. 1002 ¶ 103).

We are not persuaded by Petitioner’s argument. Although Figure 5 of Morgan depicts top surface 12 with dashed lines, the written description of this figure explains that top member 12 is installed *over* a mating aperture formed in the top of housing 20. Ex. 1005, 2:61–65. Thus, we agree with Patent Owner that the filter is installed from the top of housing 20, with the gasket running around the periphery of the *bottom* surface of top member 12. Prelim. Resp. 46–47 (citing Ex. 1005, 2:61–65).

To the extent that Morgan is found to not teach or suggest a gasket on the top surface of top member 12, Petitioner contends it would have been obvious to use either a bottom loaded or a top loaded air filter in Morgan in view of Clements. Pet. 44. According to Petitioner, bottom loaded filter flange assemblies with a gasket on the top surface were well known in the art and Clements’ disclosure that “there is a need for an air filter cartridge capable of top and bottom loading within a baghouse” “provides an express teaching and suggestion that it is desirable to provide a filter element suitable for a bottom loading configuration in addition to a top loading configuration.” *Id.* (citing Ex. 1006, 1:60–62; Ex. 1002 ¶ 108). Thus, Petitioner contends “Clements provides an express teaching and suggestion to provide the filter element of Morgan with a gasket located on the upper side of the top member, and also at the perimeter thereof.” *Id.* (citing Ex. 1002 ¶ 109).

Clements discloses the need for a filter that may be used in both bottom and top mounted baghouses, and purports to solve this problem

through the use of an adaptor plate and a circular filter flange assembly that is twisted into a locked position. Petitioner does not explain adequately how or why this circular, screw-mounted filter flange solution could be adapted for use with the rectangular filter flange assembly of Morgan. Accordingly, we are not persuaded that one of ordinary skill in the art would modify Morgan's filter flange assembly in view of Clements to provide a rectangular filter flange assembly capable of being used in both bottom and top loaded baghouses.

Petitioner also contends that one of ordinary skill in the art would have found it obvious to try both bottom loading and a top loading configurations in Morgan. Pet. 44. The Supreme Court in *KSR* noted that a combination may be "obvious to try" "[w]hen there is a design need or market pressure to solve a problem" and "a finite number of identified, predictable solutions" within the technical grasp of one of ordinary skill in the art. *KSR*, 550 U.S. at 421. Here, Petitioner identifies no known problem or design need related to top loaded housing 20 in Morgan that would prompt one of ordinary skill in the art to try a bottom loaded configuration.

Moreover, although Petitioner points to Clements as demonstrating that a person of ordinary skill in the art "would have a reasonable expectation that a bottom-loading configuration would be successful," Petitioner's argument is undermined by Clements' requirement of a specific adaptor plate and circular filter flange to provide an air filter cartridge designed for both top and bottom loading. Pet. 44. And, as discussed above, Petitioner does not explain adequately how or if Clements' configuration could successfully be used with the filter flange assembly of Morgan, and, thus, has failed to adequately demonstrate, on this record, the

existence of “anticipated success” in pursuing bottom loaded filters in connection with Morgan. *KSR*, 550 U.S. at 421.

Based on the foregoing, we are not persuaded that Petitioner has presented sufficient credible argument or evidence to demonstrate a reasonable likelihood that claims 1–4 of the ’037 patent would have been obvious over Morgan and Clements.

4. Claims 1–4 and 8 over Maybee and Morgan

Petitioner contends the subject matter of claims 1–4 and 8 would have been obvious over the combined teachings of Maybee and Morgan. Pet. 56.

Petitioner repeats its arguments regarding the disclosures of Maybee and Morgan noted above, and adds that Morgan’s cartridge filter has a greater filter media capacity than Maybee’s bag filter. *Id.* Petitioner contends that it would have been obvious to a person of ordinary skill in the art “to use Morgan’s cartridge with ‘a gasket 36’ applied on the ‘top member 12’ to be used in a bottom loaded design in FIG. 3 of Maybee” and that “Maybee also discloses the interchangeability of top and bottom loaded designs.” *Id.* (citing Ex. 1002 ¶¶ 131–132).

We are not persuaded by Petitioner’s arguments because Petitioner does not demonstrate adequately why it would have been obvious to a person of ordinary skill in the art to use Morgan’s cartridge and top member 12 in combination with Maybee’s gasket 36. *KSR*, 550 U.S. at 401 (stating that “[a] patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art” and that “it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does”). As noted above, top member 12 of Morgan is part of

a top loaded design, whereas gasket 36 is part of Maybee's bottom loaded design.

Furthermore, the fact that Maybee permits the use of a similar support structure in both top loaded and bottom loaded designs is insufficient, on this record, to demonstrate that Maybee discloses or suggests gasket 36 is in a position radially outward of the filter element in the bottom loaded configuration depicted in Figure 3 of Maybee. Thus, we are not persuaded that the combined teachings of Maybee and Morgan disclose or suggest a first gasket disposed on a top surface and perimeter of the filter flange assembly in a position radially outward of the filter element.

Therefore, on this record, Petitioner does not show a reasonable likelihood of prevailing on its assertion that claims 1–4 and 8 are unpatentable as having been obvious over Maybee and Morgan.

5. Claim 5 over Maybee, Morgan, and Matravers

Petitioner contends that the subject matter of claim 5 would have been obvious over Maybee, Morgan, and Matravers. Pet. 56–57.

Once again, Petitioner repeats its earlier arguments regarding the disclosures of Maybee and Morgan. *Id.* Petitioner relies on Matravers for its disclosure regarding securing filter media to a fiberboard top member. *Id.* at 48. Claim 5, however, depends from claim 1, and Petitioner does not direct us to evidence showing that Matravers cures the aforementioned deficiencies in the combined teachings of Maybee and Morgan with regard to claim 1.

Accordingly, we determine that Petitioner does not show a reasonable likelihood of prevailing on its assertion that claim 5 would have been

obvious in view of the combined teachings of Maybee, Morgan, and Matravers.

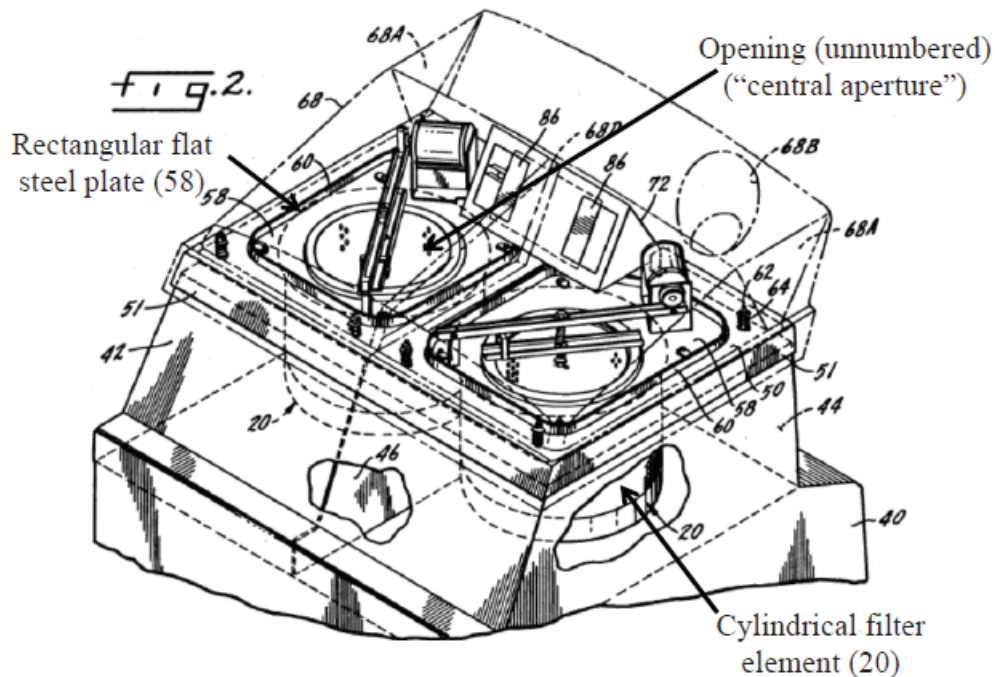
6. Additional Grounds Based on Morgan

Petitioner also contends that the subject matter of claim 5 of the '037 patent would have been obvious over Morgan, Clements, and Matravers, and that the subject matter of claims 5 and 8 would have been obvious over Morgan, Clements, and Haynam. Pet. 47–50. As Petitioner does not assert persuasively that Matravers or Haynam teach or suggest modifying the design of Morgan to place a gasket on the top surface of the filter flange assembly, for the reasons set forth above we are not persuaded that Petitioner has demonstrated a reasonable likelihood that the challenged claims would have been obvious over the recited prior art references.

E. Grounds Based on Beaufoy

1. Claims 1–5 in View of Beaufoy

Petitioner contends that claims 1–5 of the '037 patent are anticipated by Beaufoy. Pet. 50–55. Figure 2 of Beaufoy is reproduced below (annotation by Petitioner):



Beaufoy FIG. 2 (annotated)

Figure 2 is a front perspective view showing the disposition of the air filters within the device.

Figure 2 shows rectangular plates 58 attached to cover plate 50 by bolts 62. *Id.* at 4:53–55, 5:17–29. Air filters 20 are positioned underneath rectangular plates 58 and “are firmly held up in sealing contact” with these plates by clamps 66, “which bear against the flanges.” *Id.* at 5:38–41.

Claim 1 requires, *inter alia*, a “rectangular filter flange assembly having a central aperture open to an interior region bounded by the filter element.” Petitioner argues that rectangular steel plates 58 of Beaufoy each have a circular hole in their respective central area approximately the same size as the interior diameter of filters 20. Pet. 52 (citing Ex. 1007, 5:17–20, Fig. 2). Petitioner further argues that, because “there is no requirement that the flange be integral and non-removable from the second end of the filter,” “when filters 20” of Beaufoy “are secured to the bottom surface of plates 58

by four clamps 66, the plates 58 are part of a multi-piece flange assembly.”
Id. at 54–55.

Patent Owner responds that, contrary to Petitioner arguments, “[r]ectangular steel plates that are integral to the machine cannot constitute a filter flange assembly as claimed in the ‘037 Patent.” Prelim. Resp. 53–54

In this case, the claims and written description of ’037 patent distinguish between the filter flange assembly and the tubesheet to which it is clamped or mounted. *See* Ex. 1001, 1:10–12 (“The rectangular flange extends beyond the periphery of the air filter and provides a surface for mounting the air filter to the dust collector.”), 6:20–23 (noting the *filter flange assembly* is urged against the tubesheet), 8:8–14 (claiming as separate elements the filter flange assembly and the tubesheet to which it is mounted), Fig. 6 (depicting filter flange assembly 310 and tubesheet 218 as distinct structural elements). Moreover, Petitioner identifies no intrinsic or extrinsic evidence to support its argument that the tubesheet and filter flange assembly, when clamped or mounted together, may also constitute a filter flange assembly, as that term is used in the ’037 patent. *See* Pet. 54–55; Ex. 1002 ¶ 122; *see also* Ex. 2004 (defining “flange” as “an edge that sticks out from something (such as a wheel) and is used for strength, for guiding, or *for attachment to another object*”) (emphasis added)).

As Petitioner does not direct us to any other component of Beaufoy’s air filter that corresponds to a rectangular filter flange assembly, we are unable to conclude that Beaufoy discloses a “rectangular filter flange assembly having a central aperture open to an interior region bounded by the filter element.” Therefore, on this record, Petitioner has not established sufficiently that Beaufoy discloses every element of claims 1–5, and we

determine that Petitioner does not show a reasonable likelihood of prevailing on its assertion that Beaufoy anticipates claims 1–5 of the '037 patent.

2. Claim 8 over Beaufoy and Haynam

Petitioner contends that the subject matter of claim 8 would have been obvious over the combined teachings of Beaufoy and Haynam. Pet. 55. Petitioner relies on Haynam for its disclosure of the spacing dimensions recited in claim 8. *Id.* Claim 8, however, depends from claim 1, and Petitioner has not demonstrated that Haynam cures the deficiencies in the disclosure of Beaufoy noted above, namely Beaufoy's failure to disclose a rectangular filter flange assembly. Therefore, we determine that Petitioner does not show a reasonable likelihood of prevailing on its assertion that the subject matter of claim 8 would have been obvious in view of the combined teachings of Beaufoy and Haynam.

3. Claims 1–5 over Beaufoy and LeBlanc

Petitioner contends that the subject matter of claims 1–5 would have been obvious over the combined teachings of Beaufoy and LeBlanc. Pet. 58–59. Petitioner, however, has not demonstrated that LeBlanc cures the deficiencies in the disclosure of Beaufoy noted above, namely, Beaufoy's failure to disclose all of the limitations in claim 1. Therefore, we determine that Petitioner does not show a reasonable likelihood of prevailing on its assertion that the subject matter of claims 1–5 would have been obvious in view of the combined teachings of Beaufoy and LeBlanc.

4. Claim 8 over Beaufoy, LeBlanc, and Haynam

Petitioner contends that the subject matter of claim 8 would have been obvious over the combined teachings of Beaufoy, LeBlanc and Haynam. Pet. 58–59. Petitioner, however, has not demonstrated that Haynam or

LeBlanc cure the deficiencies in the disclosure of Beaufoy noted above, namely, Beaufoy's failure to disclose all of the limitations in claim 1, from which claim 8 depends. Therefore, we determine that Petitioner does not show a reasonable likelihood of prevailing on its assertion that the subject matter of claim 8 would have been obvious in view of the combined teachings of Beaufoy, LeBlanc, and Haynam.

III. CONCLUSION

Upon consideration of the Petition and the Preliminary Response, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing the challenged claims are unpatentable. Accordingly, we do not institute *inter partes* review of any of the challenged claims on any of the asserted grounds.

IV. ORDER

For the reasons given, it is hereby

ORDERED that the Petition is *denied* as to all challenged claims, and no trial is instituted.

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Patent 8,673,037 B2

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