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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* FREDERICK K. LESAN and CURTIS J. ELWELL

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Appeal 2015-000016<sup>1</sup>  
Application 12/902,477  
Technology Center 1700

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Before ROMULO H. DELMENDO, JEFFREY W. ABRAHAM, and  
JENNIFER R. GUPTA, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

The Applicants (hereinafter the “Appellants”)<sup>2</sup> appeal under 35 U.S.C. § 134(a) from a final decision of the Primary Examiner to reject claims 1, 2, 7–13, 16, 17, 22, and 23.<sup>3</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> We heard oral arguments from the Appellants’ representative on November 10, 2016. A written transcript will be entered into the record when it is made available.

<sup>2</sup> The Appellants state that the real party in interest is Toray Industries, Inc. Appeal Brief filed February 26, 2014 (hereinafter “Appeal Br.”), 2.

<sup>3</sup> Appeal Br. 2; Final Office Action delivered electronically on September 30, 2013 (hereinafter “Final Act.”), 2–11; Examiner’s Answer delivered electronically on July 18, 2014 (hereinafter “Ans.”), 2–11.

## BACKGROUND

According to the Appellants' Specification (hereinafter "Spec.," ¶ 2), the "*invention relates generally to membrane filtration systems and more particularly to seals used in spiral membrane elements of filtration systems*" (emphasis added). The Appellants explain that the faces of two seal plates, which may be used to couple adjacent spiral membrane filter elements, typically have complementary profiles that yield an intermeshed contact of the seal plates to create a tortuous, labyrinthine flow path from inside a filter element to the outside, thereby sealing the filter element at the point of coupling with the adjacent element (*id.* ¶ 7). An exemplary pair of seal plates is illustrated in the Appellants' Figure 3, which we reproduce as follows:

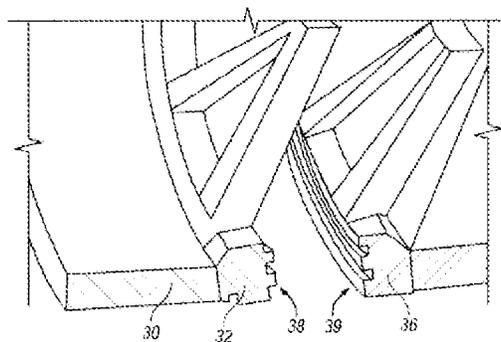


FIG. 3

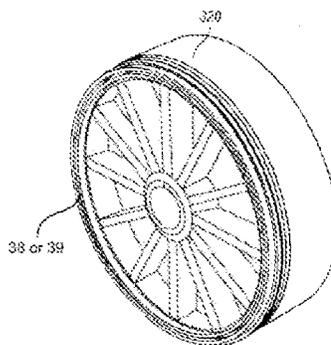


Figure 3 above depicts a seal plate with, *inter alia*, a surface 38 or 39 and an enlarged partial view of two seal plates 32 and 36 with respective intermeshing surfaces 38 and 39 to create a tortuous, labyrinthine flow path (*id.* ¶¶ 13, 24).

Representative claim 1 is reproduced from page 21 of the Appeal Brief (Claims Appendix), with the disputed limitations highlighted in italics, as follows:

1. A seal plate operative to seal a spiral membrane element of a filtration system, comprising a rim supported around a central channel and defining a second channel located between the central channel and the rim, wherein:
  - the rim has an axial surface substantially aligned with a plane perpendicular to an axis of the central channel;
  - a portion of the axial surface has a texture, the texture having a pattern that is complementary to a texture pattern of a portion of a corresponding axial surface of a second seal plate;
  - wherein the textures of the *axial surfaces* of the seal plate and the second seal plate are configured to intermesh when the seal plates are in contact; and
  - wherein, responsive to being in contact, *the intermeshed textures of the seal plate and the second seal plate create a tortuous path such that a labyrinth seal is formed between fluids in the second channel and a space external to the rim.*

#### REJECTION ON APPEAL

The Examiner rejected claims 1, 2, 7–13, 16, 17, 22, and 23 under 35 U.S.C. § 103(a) as unpatentable over Hallan et al. (hereinafter “Hallan”)<sup>4</sup> in view of Clary<sup>5</sup> (Ans. 2–11; Final Act. 2–11).

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<sup>4</sup> US 2003/0024868 A1, published February 6, 2003.

<sup>5</sup> US 2004/0200770 A1, published October 14, 2004.

## DISCUSSION

### A. *Grouping of Claims*

The Appellants do not provide any arguments for the separate patentability of any particular claim (Appeal Br. 5–19). Therefore, we confine our discussion to claim 1, which we select as representative pursuant to 37 C.F.R. § 41.37(c)(1)(iv). By rule, claims 2, 7–13, 16, 17, 22, and 23 stand or fall with claim 1.

### B. *The Examiner’s Rejection*

The Examiner found that Hallan describes a seal plate including every limitation recited in claim 1 except it “does not specifically teach that the intermeshed textures of the seals[’] plates form a labyrinth seal” (Ans. 3). The Examiner found, however, that Clary teaches the implementation of teeth and grooves to mate disc members (i.e., plates) in a filtration device, thereby creating a labyrinth seal to prevent water from flowing into the bearing (*id.* at 3–4). Based on these findings, the Examiner concluded that a person having ordinary skill in the art would have found it obvious to provide Hallan’s seal plates with Clary’s labyrinth seal in order to provide a water-tight seal (*id.* at 4).

### C. *The Appellants’ Contentions*

As a threshold matter, the Appellants contend that Clary is non-analogous art and, therefore, “Clary cannot be properly considered in an obviousness analysis” (Appeal Br. 5, 16–19). The Appellants also argue that “Hallan does not teach or suggest the formation of any seal whatsoever (labyrinth or otherwise) on the axial surfaces of the filter elements” (*id.* at 5, 13). According to the Appellants, an axial labyrinth seal, as specified in claim 1, reduces or eliminates the need for radial seals at the ends of the

joined filter elements, such as the O-rings disclosed in Hallan (Appeal Br. 7, 9–10, 13). In addition, the Appellants argue that the Examiner failed to articulate “why a person of ordinary skill in the art would have imported structural features of the [swimming] pool filter of Clary into the water delivery filtration system of Hallan” (*id.* at 6). Specifically, the Appellants contend that Clary’s labyrinth seal is designed for creating a seal between two rotating bearing plates in a device designed to spray water through and rotate a single filter cartridge (for cartridge cleaning purposes) rather than a seal for connecting a plurality of filter elements end-to-end as in the current invention (*id.* at 10–11). Furthermore, the Appellants argue that the combination of Hallan and Clary would have resulted in a labyrinth seal on a radial surface of the seal plates—not an axial surface (*id.* at 14–15).

D. *Opinion*

The Appellants’ arguments fail to identify a reversible error in the Examiner’s rejection. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011).

1. *Whether Clary Is Analogous Art*

We start with the Appellants’ argument that Clary constitutes non-analogous art. The non-analogous art test considers the threshold question whether a prior art reference is “too remote to be treated as prior art.” *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992) (quoting *In re Sovish*, 769 F.2d 738, 741 (Fed. Cir. 1985)).

The two separate tests for determining whether a prior art reference is analogous are as follows: (i) whether the art is from the same field of endeavor, regardless of the problem addressed; and (ii) if the reference is not within the inventor’s field of endeavor, whether the reference is reasonably pertinent to the particular problem with which the inventor is involved. *Id.*

at 658–659. The same field of endeavor test “for analogous art requires the PTO to determine the appropriate field of endeavor by reference to explanations of the invention’s subject matter in the patent application, including the embodiments, function, and structure of the claimed invention.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004) (reference describing a toothbrush found to be in the same field of endeavor as a claim to a hairbrush based on findings regarding function and structural similarity). With respect to the second test, a reference is reasonably pertinent to the particular problem with which the inventor is involved if it addresses the same or similar problem. *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1380–81 (Fed. Cir. 2007) (prior art disclosing springs as part of a counterbalancing mechanism in a folding bed is reasonably pertinent to an application describing a gas spring used as part of a lift assist assembly in a claimed treadmill).

Applying each of these tests, we agree with the Examiner’s determination (Ans. 9–11) that Clary is analogous art. As we pointed out above, the Appellants define their field of endeavor broadly by stating that the “invention relates generally to membrane filtration systems” (Spec. ¶ 2). Although Clary discloses a filter system that is suitable for use in swimming pools (Clary ¶¶ 6, 40), Clary’s system is nonetheless a membrane filtration system that falls within the scope of the Appellants’ field of endeavor, as broadly defined in the Specification. Therefore, Clary’s teachings concerning the filter system (including components thereof) are in the same field of endeavor as defined in the current application. In this regard, our reviewing court has explained that *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 420 (2007) “directs us to construe the scope of analogous art broadly.”

*Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010). *See also id.* (“[T]he ’649 patent itself defines its scope broadly, and makes clear that the claims are directed to ‘locking device[s]’ generally.”).

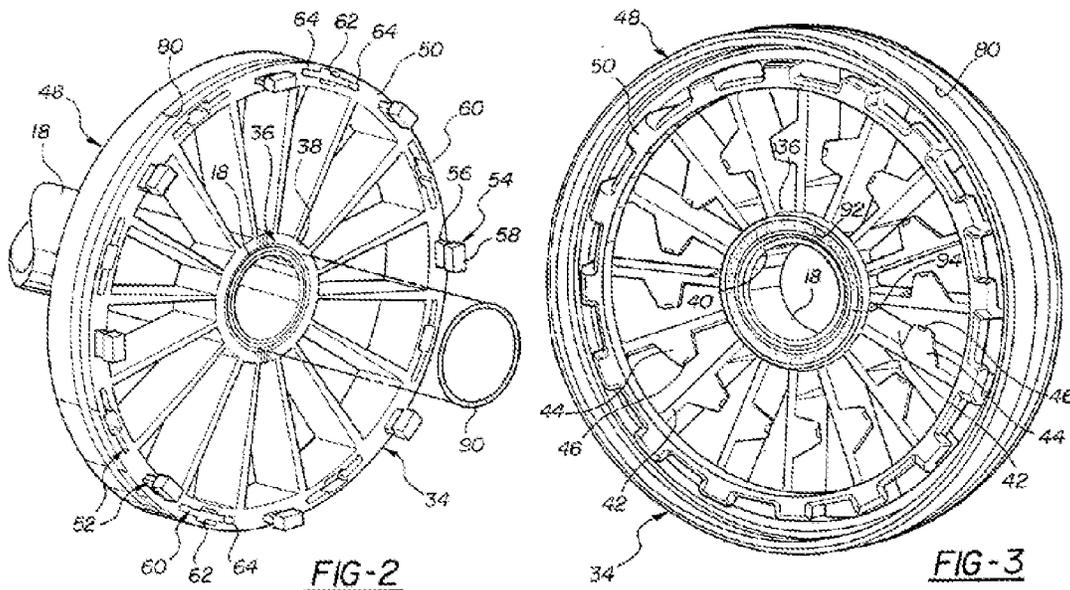
Even assuming that Clary is not in the same field of endeavor as that defined in the Appellants’ Specification, Clary constitutes analogous art under the second test. The Appellants’ claim 1 recites that the “intermeshed textures of the seal plate and the second seal plate create a tortuous path such that a labyrinth seal is formed” (Appeal Br. 21 (Claims App’x)). Thus, the purpose of the Appellants’ intermeshed textures, which forms a labyrinth seal, is to increase resistance to flow through the seal and, consequently, reduce the degree of leakage through the seal (Spec. ¶ 7). Clary teaches the same or similar purpose—i.e., to create a water-tight seal—for cooperating teeth on respective faces of two discs that intermesh with each other to create a labyrinth seal (Clary ¶ 16, Fig. 5). Therefore, Clary’s teachings concerning the cooperating teeth that form a labyrinth seal are reasonably pertinent to the Appellants’ invention. *ICON Health*, 496 F.3d at 1380–1381 (“[A]n inventor considering a hinge and latch mechanism for portable computers would naturally look to references employing other ‘ housings, hinges, latches, springs, etc.,’ which in that case came from areas such as ‘a desktop telephone directory, a piano lid, a kitchen cabinet, a washing machine cabinet, a wooden furniture cabinet, or a two-part housing for storing audio cassettes.’”) (quoting *In re Paulsen*, 30 F.3d 1475, 1481–82 (Fed. Cir. 1994)).

For these reasons, we hold that Clary is analogous art.

2. Reason to Combine Hallan and Clary

Having determined that Clary is analogous art, we next consider whether the Examiner articulated a sufficient reason with some rational underpinning to support a conclusion that a person having ordinary skill in the art would have combined the references in the manner claimed by the Appellants. We answer this question in the affirmative.

Hallan's Figures 2 and 3 are reproduced below:



Hallan's Figures 2 and 3 above depict first and second end caps 34 for connecting two adjacent separation elements 12 (one of which is shown in, e.g., Figure 7), wherein the end caps 34 include, *inter alia*, locking structure 52 comprising a plurality of projections (spades 54) and receptacles (openings 60) disposed about an outer hub surface 50 (Hallan ¶¶ 45–47). Hallan teaches that when locked together, a seal structure or sealing force is created (*id.* ¶ 53). Referring to an embodiment (Fig. 1), Hallan teaches that

the “end caps *may* also include an outer O-ring groove . . . for receiving an O-ring” (*id.* ¶ 54 (emphasis added)). Thus, a person having ordinary skill in the art would have understood from Hallan’s disclosure that a fluid-tight seal is required between mated end caps 34—with or without an optional O-ring.

Although directed to a self-cleaning filter assembly for use in, e.g., a swimming pool, Clary teaches providing cooperating teeth on respective faces of two rotating bearing discs that form a labyrinth seal when the teeth are intermeshed (Clary, Fig. 5; ¶¶ 1, 16, 53, 57). Given Hallan’s need to create a sealing structure between two end caps 34, a person having ordinary skill in the art would have been prompted to implement Clary’s cooperating, intermeshing teeth to provide a water-tight seal without the need for an O-ring. *KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”).

### 3. *Whether the Prior Art Suggests Sealing Axial Surfaces*

Lastly, we discern no merit in the Appellants’ argument that “the sections of Clary relied on by the Examiner, at best, teach the inclusion of a labyrinth seal on a radial surface of a seal plate, not an axial surface” and that “Hallan describes a water tight seal only between the radial surface of a filter element near an end cap and the inside diameter of a pipe” (Appeal Br. 14–15). As pointed out by the Examiner (Ans. 10), Hallan is concerned with providing a seal between surfaces 50 as shown in, e.g., Figures 2 and 3 (Hallan ¶ 54). No difference is seen between the orientation of surfaces 50 in Hallan and the Appellants’ intermeshing surfaces 38 and 39 as shown in Figure 3 of the current application.

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For these reasons, we uphold the Examiner's rejection.

#### SUMMARY

The Examiner's final decision to reject claims 1, 2, 7-13, 16, 17, 22, and 23 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED