

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEX RECREATION CORP.,
INTEX DEVELOPMENT COMPANY LTD.,
INTEX INDUSTRIES (XIAMEN) CO., LTD.,
INTEX MARKETING LTD.,
AND INTEX TRADING LTD.,
Petitioner,

v.

BESTWAY INFLATABLES & MATERIAL CORP.,
Patent Owner.

Case IPR2016-00180
Patent 7,159,731 B2

Before RICHARD E. RICE, JEREMY M. PLENZLER, and
CARL M. DEFRANCO, *Administrative Patent Judges*.

DEFRANCO, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Bestway Inflatables & Material Corp. (“Bestway”) is the owner of U.S. Patent No. 7,159,731 B2 (“the ’731 patent”). Intex Recreation Corp., Intex Development Company Ltd., Intex Industries (Xiamen) Co., Ltd., Intex Marketing Ltd., and Intex Trading Ltd. (collectively, “Intex”) filed a Petition (Paper 1, “Pet.”) seeking *inter partes* review of claims 1–14 of the ’731 patent. We instituted *inter partes* review of claims 1–14 (Paper 13, “Inst. Dec.”) because Intex demonstrated a “reasonable likelihood” of prevailing on “at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a).

In due course, Bestway filed a Patent Owner Response (Paper 15, “PO Resp.”), and Intex followed with a Reply (Paper 18, “Reply”). Later in the proceeding, Bestway raised a new theory of claim construction that the parties had not briefed previously. With our authorization, Bestway filed a Motion for Construction of Claims 5 and 10, arguing for a construction of these claims that was not asserted previously in its Patent Owner Response. Paper 25, “PO Claim Constr. Br.” In turn, Intex filed a Response to Bestway’s newly-asserted claim constructions. Paper 26, “Petr. Claim Constr. Br.”

An oral hearing was held on March 2, 2017, and a transcript of the hearing is included in the record. Paper 32 (“Tr.”). Subsequent to the hearing, and with our authorization, Bestway filed a Motion to Cancel Claims 1–4 of the ’731 patent. Paper 30.

After reviewing the parties’ evidence and arguments, and pursuant to our jurisdiction under 35 U.S.C. § 6, we grant Bestway’s motion to cancel

claims 1–4, and further determine that Intex has proven by a preponderance of the evidence that claims 5–14 are unpatentable.

II. BACKGROUND

A. *The Related District Court Action*

The '731 patent is involved in a concurrent district court action, *Bestway Inflatables & Materials Corp. v. Intex Recreation Corp.*, No. 2:16-cv-00017 (D. Ariz.), which commenced January 5, 2016. Paper 12. As requested by the parties, the district court dismissed the action *without prejudice*, subject to reinstatement on motion of either party. Ex. 1024.

B. *The '731 Patent*

The '731 patent relates to an air purge valve used to discharge excess air from a swimming pool pump system. Ex. 1001, 1:6–8, 20–25. As described, the air purge valve improves upon prior air purge valves by providing the valve with a “stem that is designed to hook into a filter pump cover so that [the valve] is not easily removed from the cover” when the valve is unscrewed to release excess air from the system. *Id.* at 1:26–56. More specifically, the bottom of the valve stem has “outward-facing inverse hooks,” which are “inwardly compressible” to permit insertion of the stem through a central opening in the pump cover, and, when uncompressed, prevent complete removal of the valve from the opening. *Id.* at 1:56–60, 2:1–11, 5:61–64.

C. *The Challenged Claims*

Of the challenged claims, three are independent—claims 1, 5, and 10. As mentioned earlier, Bestway has moved to cancel claims 1–4 under 37 C.F.R. § 42.121, a motion that we grant with our decision today. As such, only claims 5–14 remain for review. Claim 5 is directed to a “valve,” while

claim 10 is directed to a “filter pump cover,” with the only substantive difference between the two claims being that claim 10 includes the additional element of “a filter cap.”

Claim 5 is representative of the challenged claims:

5. A valve, comprising:
 - a valve cap having an attached valve cap screw-threaded portion being interrupted by at least one valve opening;
 - a filter cap retainer defining a central hollow portion having screw threads* that mate with the valve cap screw-threaded portion; and
 - a valve stem connected at the top to the bottom of the valve cap screw-threaded portion and having at least one inverse hook at the bottom, the inverse hook being inwardly compressible for insertion through the top of the filter cap retainer central hollow portion *wherein*
 - the width of the top of the valve stem is *smaller than* the width of the filter cap retainer central hollow portion [“the first comparative width limitation”] and
 - the uncompressed width across the inverse hook and the bottom of the valve stem is *wider than* the width of the filter cap retainer central hollow portion [“the second comparative width limitation”].

Ex. 1001, 6:9–24 (emphases added).

D. The Instituted Grounds

Intex challenges the claims of the ’731 patent on various grounds that include both anticipation and obviousness. Pet. 18. Apart from canceled claims 1–4, Intex challenges the remaining claims on the following bases:

- (1) claims 5–9 are anticipated by Blomquist¹;

¹ U.S. Patent No. 4,905,863, iss. Mar. 6, 1990 (Ex. 1018, “Blomquist”).

(2) claims 5–14 are rendered obvious by Blomquist and the 520 Manual²;

(3) claims 10–14 are rendered obvious by Blomquist, the 520 Manual, and the 12 Manual³;

(4) claim 5, 6, 9–11, and 14 are anticipated by the Intex Video⁴; and

(5) claims 5–14 are rendered obvious by the Intex Video and Blomquist.

Pet. 18. Intex also proffers two declarations from Joseph J. Beaman in support of the five asserted grounds, an initial declaration (Ex. 1006) submitted with its Petition and a supplemental declaration (Ex. 1033) submitted in response to Bestway’s newly-proposed claim construction.

III. ANALYSIS

We now decide, based on the five grounds on which we instituted *inter partes* review, whether Intex has proven unpatentability of claims 5–14 by a preponderance of the evidence. 35 U.S.C. § 316. Before weighing the evidence, we address several preliminary matters that arose in the course of trial.

A. *Preliminary Matters*

1. *Bestway’s Motion to Cancel Claims 1–4*

Shortly before the oral hearing, Bestway notified the Board that it “will not challenge the invalidity of claims 1–4 in view of the presented references.” PO Mot. to Cancel, Ex. B, 3. Subsequently, with our

² Intex Recreation Corp., *Krystal Clear™ Model 520 Filter-Pump*, OWNER’S MANUAL, © 2001) (Ex. 1002, “the 520 Manual”).

³ Intex Recreation Corp., *Krystal Clear™ Model 12 Filter-Pump*, OWNER’S MANUAL, © 2001 (Ex. 1017, “the 12 Manual”).

⁴ Intex Instructional Video (Exs. 1011–1016, “the Intex Video”).

authorization, Bestway moved to cancel claims 1–4. *Id.* Typically, the amendment or cancellation of claims must be done at the time of “the filing of the patent owner response.” 37 C.F.R. § 42.121(a)(1). Here, however, good cause exists for permitting Bestway to cancel claims outside the normal time frame. 37 C.F.R. § 42.121(c). Bestway does not seek to substitute any claims, only to remove claims, thereby simplifying the issues in this proceeding. Intex does not oppose the motion, and we see no reason to reject it. As such, Bestway’s motion is granted. Claims 1–4 will no longer be considered as part of our review and will be canceled.

2. *Bestway’s Stipulations on Certain Issues*

After filing its Patent Owner Response and seeing Intex’s Reply, Bestway informed us that it would no longer pursue certain issues raised in its Patent Owner Response. PO Mot. to Cancel Claims, Ex. B, 3. In particular, Bestway stipulated that it would no longer dispute:

- (1) “the authenticity or printed publication status of the Intex manuals or video;”
- (2) “the admissibility of the testimony of Dr. Beaman;”
- (3) “the construction of ‘air purge valve’ and ‘valve cap’” set forth in Decision to Institute; and
- (4) “that Blomquist is analogous art” to the Intex Video.

Id., Ex. B, 3. Bestway also stated the following sections of its Patent Owner Response were no longer applicable: “Section II (pp. 5–14), Section III (pp. 14–22), Section V.B. (pp. 30–31), and Section VI.B.2. (pp. 43–48).” PO Mot. to Cancel Claims (Paper 30), Ex. B, 2.

Given Bestway’s stipulations on these issues, we need no longer address them. *See In re Nuvasive, Inc.*, 842 F.3d 1376, 1380–81 (Fed. Cir. 2016) (holding that Board need not address the issue of public accessibility

in its final decision where patent owner explicitly confirmed that it “no longer contested” the issue). We deem Bestway to have waived any further challenge to the prior art status of the Intex Video (Exs. 1011–1014), the 512 Manual (Ex. 1002), and the 12 Manual (Ex. 1017). We also consider Bestway to have waived any further challenge to Blomquist being analogous art for purposes of obviousness, as well as the admissibility of Intex’s expert testimony in this case. Of course, Bestway may still argue the credibility and weight of such testimony.

B. Claim Construction

The parties center their dispute on the construction of two claim limitations found in independent claims 5 and 10: “filter cap retainer” and “the uncompressed width across the inverse hook and the bottom of the valve stem is wider than the width of the filter cap retainer central hollow portion.”⁵ We address each term in order.

1. “filter cap retainer”

Intex asks that we construe the term “filter cap retainer,” as recited in independent claim 5, in a manner that does not impart any actual structure of a filter cap to the term. Pet. 18–19. According to Intex, the term should be construed only as “a retainer capable of retaining a filter cap.” *Id.* Bestway counters that “filter cap retainer” means “a pump element that holds an air purge valve in place *on a filter cap.*” PO Resp. 36, 43 (emphasis added). In

⁵ Bestway withdrew arguments raised originally in its Patent Owner Response (at 43–47) with respect to the construction of the terms “air purge valve” and “valve cap,” as well as Intex’s application of the prior art to those terms. Mot. to Cancel Claims (Paper 30), Ex. B, 3.

other words, Bestway believes that the modifier “filter cap” should be construed as a positive structural element of claim 5.⁶

We need not construe this term expressly, for we resolve this case on a prior art basis that meets either party’s construction. We note that Bestway only disputes whether “Blomquist” meets the element of “a filter cap retainer.” PO Resp. 3, 35–43. Our resolution of this particular claim element, however, turns on its disclosure in the Intex Video, not Blomquist. It is undisputed that the Intex Video discloses a filter cap, and thus, meets that aspect of claims 5 and 10, regardless of whether or not it is construed as a required element of the claims.⁷ Tr. 38 (acknowledging that the Intex Video is missing only the claim elements relating to “compression” of the inverse hooks and “the width” of the hooks relative to the width of the opening). Thus, no further construction of this term is necessary.

2. *“the uncompressed width across the inverse hook and bottom of the valve stem is wider than the width of the filter cap retainer central hollow portion”*

The parties also argue over what is meant by the term “the width” in the comparative limitation of claims 5 and 10 requiring that “the uncompressed width across the inverse hook and bottom of the valve stem is *wider than the width of the filter cap retainer central hollow portion.*” Ex. 1001, 6:9–24, 6:36–54 (emphases added). According to Bestway, “the width” of the central hollow portion finds “antecedent basis” in the earlier-

⁶ Claim 10, also at issue, recites “a filter cap” separate and apart from “a filter cap retainer.”

⁷ If a construction were necessary, we see no reason to depart from our initial construction of this term as set forth in our institution decision. Inst. Dec. 5–6.

recited limitation of “a filter cap retainer defining *a central hollow portion having screw threads*.” PO Claim Constr. Br. 2. As such, Bestway argues that the “screw threads” are “not an optional feature . . . but rather a defining feature *necessary to constitute* a ‘central hollow portion’.” *Id.* (emphasis added). From there, Bestway concludes that “the width” of the central hollow portion must be “evaluated with reference to the *required* screw threads” and “not an opening without screw threads.” *Id.* at 4 (emphasis added). We disagree.

In an *inter partes* review, we give claims their broadest reasonable interpretation consistent with the specification. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142 (2016). To begin, we note that Bestway does not dispute that the “central hollow portion” encompasses “an opening” in the center of the filter retainer cap. PO Claim Constr. Br. 2, 3. For instance, the specification of the ’731 patent describes filter cap retainer 3 as having “a hollow part at the center,” “a central opening,” or “an opening in a filter retainer cap.” Ex. 1001, 2:14–15, 3:8–13, 4:61–62, Fig. 1.

With that in mind, our construction of the term “the width” centers on whether the central opening in the filter retainer cap must be fully threaded or can include an additional unthreaded section. Bestway predicates its proposed construction on the term “having” being a closed term, meaning that the opening in the central hollow portion has *only* screw threads and no additional elements. That interpretation, however, does not withstand scrutiny when viewed through the lens of governing law. Absent clear language to the contrary, the term “having” is an open term. *CIAS Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1361 (Fed. Cir. 2007) (discussing “comprising,” “including,” and “having” in the patent claim context as

“open-ended” terms meaning “including but not limited to,” and citing in support Robert A. Faber, *Landis on Mechanics of Patent Claim Drafting* § 2:5, 2–15 (5th ed. 2006)).

Here, we do not discern any language in the claims, nor in the specification of the ’731 patent, which suggests the central hollow portion is limited to having *only* “screw threads.” Though “screw threads” are recited as a positive limitation earlier in the claim, they are nowhere to be found in the later “wherein” clauses in which the dimensions of the valve stem and inverse hook are compared to “the width” of the central hollow portion. Instead, as claimed, the “screw threads” simply provide structure for the filter cap retainer to mate with a corresponding “screw-threaded portion” on the “valve cap.” The specification likewise provides that screw threads on the air purge valve “mate with corresponding *threads inside hollow part 31*.” Ex. 1001, 3:28–30. Because neither the specification nor the claim language further defines the extent of the screw threads inside the central opening, we find that a skilled artisan reading the claim language in light of the specification would understand the phrase “a central portion having screw threads” to define a hollow portion that is either fully threaded *or partially threaded*.⁸

This broader construction aligns with other parts of the specification. For instance, the specification describes the size of central hollow part 31 simply in terms of having an “inner diameter.” Ex. 1001, 3:31; *see also id.* at 4:60–64 (same but using the term “opening”). The specification then

⁸ At the hearing, Bestway conceded that “having screw threads” is “an open-ended clause . . . consistent with comprising.” Tr. 59; *see also id.* at 57 (agreeing the term “having” is not the same as “consisting of”).

proceeds to explain that “inverse hooks 15 *fix into* hollow part 31, preventing unintentional removal of the valve stem from filter cap retainer 3.” *Id.* at 3:33–35; *see also id.* at 4:36–37 (“[i]nverse hooks 15 remain fixed into the bottom of central protruding part 31”). That the inverse hooks “fix into” the inner diameter of the central hollow part suggests that some unthreaded section of the central hollow part accommodates the inverse hooks. Thus, although the preferred embodiment of the central hollow portion must have a threaded section for mating with the valve cap, a skilled artisan would reasonably understand the inverse hooks also “fix into” an additional, unthreaded section of the hollow part. In that respect, the intrinsic evidence indicates that the phrase “a central hollow portion having screw threads” is open-ended and covers a fully-threaded central opening, as well as a partially-threaded central opening having both a threaded section to mate with the valve cap and an unthreaded section to affix the inverse hook.⁹

Finally, while the central hollow portion necessarily has a “width” or “diameter” dimension, the claim language does not elaborate on a definitive point of reference for comparing that width to the width of the inverse hooks. The claim recites “the width” simply in broad terms of “the central hollow portion,” without any further definition. Had the patentee intended for the comparison to be limited to the screw threads within the central opening, the patentee could easily have used language to that effect, for

⁹ By construing the claim language to encompass a hollow portion that may be fully threaded or partially threaded, we emphasize that our construction in no way limits the structure or form of any unthreaded section to being a “slot,” as Intex suggests. Petr. Claim Constr. Br. 1–2. The “slot” is a limitation of the dependent claims, not a requirement of claims 5 and 10.

example, by saying “the width of *the screw threads* in the filter cap retainer central hollow portion” or “the *threaded* width of the central hollow portion.” That is especially true given the earlier, express reference to “screw threads” in claims 5 and 10. Instead, the patentee chose to rely on broader, less restrictive, language in the later “wherein” clauses. Absent any language specifying the point of origin for “the width” within the central hollow portion, we will not now read into that dimension an additional modifier of “threaded.”

In sum, we conclude that the proper construction of the phrase “a filter cap retainer defining a central hollow portion having screw threads,” recited in claims 5 and 10, is “an opening in the center of the retainer cap that includes but is not limited to screw threads along the inner diameter.” We further conclude that the phrase “the width of the filter cap retainer central hollow portion,” also recited in claims 5 and 10, is properly construed as “the inner diameter of the opening in the center of the retainer cap, be it threaded or unthreaded.”

C. Obviousness over the Intex Video and Blomquist (Claims 5–14)

Having construed the disputed terms, we turn to Intex’s challenge of claims 5–14 on the ground of obviousness over the combination of the Intex Video and Blomquist. Pet. 57–60. Again, we note Bestway’s stipulation that the Intex Video is prior art to the claimed invention and that Blomquist is analogous art for purposes of combining the references. After reviewing the parties’ evidence and arguments, we find that a preponderance of the evidence weighs in favor of Intex on this ground of obviousness. See 35 U.S.C. § 316(e). Our decision is dispositive in this regard and we need not consider Intex’s other grounds.

1. *Independent Claims 5 and 10*

Intex challenges claims 5 and 10 on two slightly different bases of obviousness over the Intex Video and Blomquist. In one part of the Petition, Intex relies on Blomquist to teach the claim element of “inwardly compressible” inverse hooks, and incorporates by reference its anticipation analysis for the Intex Video to show the other claim elements—“this section is the same as in Ground 4 (Section V.D.2.) except for . . . elements 1(d), 5(d), and 10(f) are satisfied by Blomquist disclosing how ‘barbs 25 are resiliently deformable inwards.’” Pet. 59–60 (citing Ex. 1018, 3:11–14). Intex also makes an alternative argument that relies on Blomquist not only for teaching inwardly compressible hooks but also for teaching the second comparative width limitation. *Id.* at 58 (citing Ex. 1006 ¶¶ 68, 74–77); *see also* Reply 21 (citing Ex. 1006 ¶¶ 71, 84).

Bestway, in its Patent Owner Response, disputes Intex’s proof of whether the Intex Video meets the “inwardly compressible” limitation (PO Resp. 33–35), as well as whether a skilled artisan would have had reason to combine Blomquist with the Intex Video (*id.* at 27–32). Although Bestway does not address the first or second comparative “width” limitations of claims 5 and 10 in its Patent Owner Response, it nonetheless raises the issue of the second comparative width limitation in asserting a new claim construction. PO Claim Constr. Br. 3. Specifically, Bestway argues that neither the Intex Video nor Blomquist shows that limitation. Once Bestway raised this issue, Intex asserted, just as it did in its Petition, that the second comparative width limitation is taught not only by the combination of the

Intex Video and Blomquist, but also by the Intex Video alone.¹⁰ See Petr. Claim Constr. Br. 6, 8.

With respect to the Intex Video, Intex proffers a series of annotated screenshots to show how the Intex Video meets all of the elements of claims 5 and 10, except for the inverse hooks being compressible. Ex. 1006 ¶¶ 55–57, 101 (pp. 32–34, 98–137); Ex. 1033 ¶ 9 (pp. 10–13). As shown, the Intex Video discloses a swimming pool filter assembly equipped with a filter cap and an air purge valve. Ex. 1006 ¶ 101 (pp. 99–132). The filter cap has a threaded opening in its center, and the air purge valve has a slotted stem, with inverse hooks at the bottom, for insertion through the threaded opening in the filter cap. *Id.* Notably, when the valve is unscrewed, the Intex Video shows the air purge valve “shak[ing] loosely” but staying positioned within the opening as water bubbles out of the opening. *Id.* ¶ 101 (pp. 115–116) (citing Ex. 1012, 00:09–00:15).

Bestway concedes that the Intex Video discloses all but two of the claim elements. Tr. 38:16–22 (acknowledging that the Intex Video is missing only elements relating to “compression” of the inverse hooks and “the width” of the hooks relative to the diameter of the opening). Specifically, Bestway concedes that the Intex Video discloses an air purge valve having a valve stem and inverse hooks. *Id.* at 40:8–21. Bestway further concedes that the Intex Video shows a filter cap having a threaded opening for insertion of the valve, with the valve stem “passing through” the

¹⁰ Because the Patent Owner Response did not contest Intex’s application of the prior art to the second comparative width limitation, Intex was foreclosed from elaborating further on this point in its Reply. See 37 C.F.R. § 42.23(b) (“[a] reply may only respond to arguments raised in the corresponding opposition or patent owner response”).

opening. *Id.* at 41:10–43:21. As to how the valve works in the Intex Video, Bestway concedes that, when you “unscrew it,” “the portion at the bottom” of the valve stem, i.e., the inverse hooks, “is going to hold that whole top cap from coming out” and prevent the valve stem from “popping through.” *Id.* at 46:1–9. Finally, Bestway does not contest that the Intex Video teaches the first comparative width limitation wherein the valve stem has a width “smaller than the width” of the threaded opening. *Id.* at 44:5–12.

We are free to use a party’s admissions against it, “even if the opposing party bears the burden of persuasion.” *Rovalma, S.A. v. Bohler-Edelstahl GmbH & Co. KG*, Appeal No. 2016-2233, 2017WL 1946601, slip op. at 14 (Fed. Cir. May 11, 2017) (citations omitted). Thus, the success of Intex’s obviousness ground boils down to two issues, *first*, whether the combination of the Intex Video and Blomquist teaches the inverse hooks being “inwardly compressible,” and, *second*, whether the Intex Video, either alone or in combination with Blomquist, teaches the inverse hooks having a width “wider than the width of the filter cap retainer central hollow portion.” As to both, Intex must show that a skilled artisan would have had a reason to combine the teachings of Blomquist and the Intex Video.

The “Inwardly Compressible” Limitation

Although the Intex Video clearly shows inverse hooks on the bottom of the air purge valve, what is not clear is the compressibility of the hooks. As such, Intex turns to the teaching in Blomquist (Ex. 1018) of providing inwardly compressible hooks on an air purge valve for facilitating insertion through a central opening in the lid of a pressurized container. Pet. 57–60; Reply 21. A side-by-side comparison of Blomquist’s air purge valve to the air purge valve of the ’731 patent at issue reveals their identity.

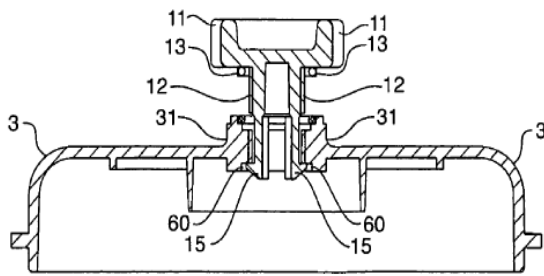


Fig. 3 of the '731 Patent

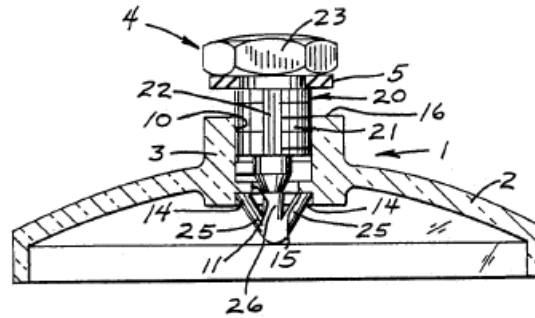


Fig. 3 of Blomquist

Each of the above figures depicts an air purge valve that screws into the opening of a container lid. Much like the claimed invention (above left), Blomquist (above right) teaches inverse hooks (25) on the bottom of a valve stem (26), which extend from a threaded portion (20) of a valve cap (23). Ex. 1018, 1:5–24, 2:49–68. Notably, Blomquist teaches that the inverse hooks (i.e., “barbs”) are “resiliently deformable inwards” when inserted through central opening (11) and “abruptly snap back to their normal, unflexed position” when inserted through the opening. *Id.* at 3:11–43. The purpose of the hooks, according to Blomquist, is to “reduc[e] the likelihood of the closure member [i.e., valve] becoming lost” or “damaged.” *Id.* at 1:17–24; 3:59–61. That is the same problem addressed by the '731 patent— “[c]omplete removal of the valve stem also increases the likelihood of valve stem loss or breakage.” Ex. 1001, 1:33–40 (emphasis added).

More importantly, Intex’s expert testifies that the inverse hooks (or “barbs”) in Blomquist serve the same purpose as the inverse hooks in the Intex Video, which is to prevent the valve stem from coming out of the opening in the lid. Ex. 1006 ¶¶ 69–72. Intex’s expert further testifies that, to the extent the compressibility of the hooks is not apparent from the Intex Video, a skilled artisan would have modified the hooks to incorporate the

resiliency teaching of Blomquist to “facilitate[] the insertion of the air release valve into the opening of the top cover during initial installation.” *Id.* ¶ 73. Such a modification, according to Intex’s expert, “would have been a simple, mechanical modification” within the abilities of a skilled artisan. *Id.* ¶¶ 76–77. That testimony, along with the fact that the inverse hooks in the Intex Video and Blomquist serve the same purpose of holding the valve within the opening, persuades us that a skilled artisan would have applied Blomquist’s teaching of making the hooks inwardly resilient to the structurally-similar hooks shown in the Intex Video. As such, we find that Intex has demonstrated a reason to combine the teachings of Blomquist with the air purge valve shown in the Intex Video to arrive at an air purge valve with inwardly compressible hooks.

In its Patent Owner Response, Bestway never addresses Blomquist’s teaching of resilient hooks, and instead focuses on the Intex Video’s hooks as not being inherently compressible.¹¹ PO Resp. 33–35; *see also id.* at 35–43 (focusing on other limitations in Blomquist). That argument is irrelevant, however, because Intex relies on Blomquist, not the Intex Video, for teaching “resiliency” of the hooks. Pet. 58.

With respect to Intex’s evidence of a reason to combine, Bestway argues that we should give little weight to the testimony of Intex’s expert because “he has no experience in the field of the invention” and fails to testify “from the perspective a person with ordinary skill in the field of the invention.” PO Resp. 27–32. We reject Bestway’s argument, as it is without merit and relies on attorney speculation. As noted in our institution

¹¹ We agree with Bestway that the Intex Video lacks sufficient clarity to indicate whether the inverse hooks are inherently compressible.

decision, Bestway admits that the relevant art is “swimming pools, filters, or valves.” Inst. Dec. 8 n.5. Moreover, the ’731 patent itself recognizes that the claimed invention “may be used with a wide variety of filter pump covers, or with any other system that may advantageously employ an air purge valve.” Ex. 1001, 1:60–62 (emphasis added). In our view, Intex’s expert is eminently qualified to testify on the topic of air purge valves, which is the proper scope of the claimed invention. See Ex. 1006 ¶¶ 3–8. Thus, Bestway does not persuade us that the testimony of Intex’s expert is entitled to little weight. Instead, we find the testimony of Intex’s expert, as well as the references themselves, to be persuasive evidence of a reason to combine the teachings of Blomquist with the air purge valve and filter cap assembly shown in the Intex Video.

The Second Comparative “Width” Limitation

As discussed above, Intex proffers two bases for teaching the claim limitation requiring that “the uncompressed width” of the inverse hook and valve stem be “wider than the width of the filter cap retainer central hollow portion.” We start with Intex’s reliance on the Intex Video itself and testimony from its expert as to what a skilled artisan would have understood from the video about the size of the inverse hooks relative to the diameter of the central opening. Pet. 50–57 (applying Intex Video to claim elements in Ground 4); *id.* at 59 (incorporating by reference analysis from “Ground 4” into its obviousness analysis); Petr. Cl. Contr. Br. 8 (citing Ex. 1033 ¶ 9).

Specifically, Intex proffers a screenshot from the Intex Video, annotated by Intex’s expert, to show how the uncompressed width across the inverse hooks (grey) is wider than the width of the opening (white) in the filter cap retainer. Ex. 1006 ¶ 101 (p. 117) (citing Ex. 1014, 00:21).

Bestway never addresses what is shown in that particular screenshot, other than to argue cursorily that the Intex Video “fails to shown any specifics with respect to the width of the screw threaded portion.” PO Claim Constr. Br. 3. We disagree.

The screenshots in the Intex Video must be viewed collectively from the vantage point of a skilled artisan. The screenshot showing the width of the hooks being greater than the diameter of the opening (Ex. 1014, 00:21), when viewed in conjunction with other screenshots showing, *first*, the valve stem slightly smaller than the diameter of the opening (Ex. 1011, 00:21), and *second*, the valve cap and stem staying positioned within the opening as water bubbles out of it (Ex. 1012, 00:09–00:15), leads to the logical conclusion that the inverse hooks must be wider than the opening in order for the valve stem to stay within the opening while under the upward force of the bubbling water. In that regard, Bestway conceded at oral hearing that a skilled artisan would have understood the inverse hooks in the Intex Video as retaining the valve within the opening:

[PTAB]: A person of ordinary skill in the art looking at those two pictures together at the bottom of page 53 [of the Petition], first one is showing a valve stem going into the central hollow portion, and the central hollow portion has threads, and then the next picture there shows the valve stem with the hooks.

What would a person of ordinary skill in the art take away from those two pictures? Wouldn't they necessarily see that the hooks have to be for the purpose of retaining the [valve] cap within that hole? What other purpose would those hooks have?

[BESTWAY COUNSEL]: So as I understand how this device is going to work, you can have it installed, unscrew it, and then *the portion at the bottom is going to hold that whole top cap from coming out*, which is to, I think your second question was, *was this at least going to be holding it in place in some way?*

And I think the answer to that is yes because their [Intex's] expert has already shown in some way where water is bubbling out and it is not popping through. That's not the issue we're contesting.

Tr. 44–46 (emphasis added).

Rather than contest that the Intex Video teaches the inverse hooks holding the valve within the opening, Bestway faults Intex's expert for failing to take a "measurement" of the hooks, and surmises, from that failure, that a skilled artisan would not have been able to glean the width of the hooks from the Intex Video:

[BESTWAY COUNSEL]: I don't know if the dimensional requirements that are very specific in claims 5 and 10 are met here [by the Intex Video]. Beyond the compressibility issue, *we don't know what the width is. It is certainly possible. But if their expert . . . is saying I could have done a measurement, I didn't do it, . . . we are going beyond the bounds of what a person of ordinary skill in the art should glean from it [the video].*"

Tr. 46; *see also id.* 39 ("[Intex's expert] concedes that he could have done measurements but he didn't do so . . . He is doing an incomplete obviousness analysis.").

Contrary to Bestway's argument, this case does not turn on proof of actual dimensions of a claim element to establish obviousness. Rather, the key inquiry centers on what a skilled artisan, looking at the Intex Video, would have understood about the width of the inverse hooks *relative to* the diameter of the opening. An actual measurement is not necessary to assess the relative width of these two parts, a simple comparison works just as well. *See, e.g., Ex. 1006* ¶ 101 (p. 117) (second screenshot). Moreover, a skilled artisan would have viewed the uncompressed width of the hooks in the Intex

Video as necessarily “too great to fit through the threaded width” of the central opening due to the fact that the valve “shakes loosely” within the opening but “does not disconnect from the opening” as water bubbles therethrough. Ex. 1033 ¶ 9 (pp. 12–13) (citing Ex. 1012). Intex’s expert testified to that understanding, and we find that testimony persuasive. See *id.*

Bestway provides no evidence in rebuttal, aside from arguing that the failure of proof “is apparent in the references themselves.” PO Claim Constr. Br. 4. As discussed above, we see the references as supporting the testimony of Intex’s expert, not discrediting it. As such, we find that the Intex Video itself satisfies both of the comparative “width” limitations of the “wherein” clause of claims 5 and 10.¹²

Alternatively, Intex relies on Blomquist for teaching a central opening of “reduced diameter” for ensuring that inwardly compressible hooks on an air purge valve are of a sufficient uncompressed width to prevent removal of the valve from the opening. Pet. 58–59 (citing Ex. 1006 ¶¶ 74–77). More specifically, Intex proffers an annotated figure from Blomquist illustrating how the hooks meet the second comparative width limitation of the claims. Petr. Claim Constr. Br. 3.

¹² As discussed above, Bestway conceded at the oral hearing that the Intex Video meets the first comparative width limitation of claims 5 and 10. Tr. 44:8–12.

Bestway responds that Blomquist “fails to account for [the] requirement of ‘having screw threads,’” and that “Blomquist only shows that the bottom of the valve stem is wider than the throat, not screw threads.” PO Claim Constr. Br. 3. That argument is unavailing for the simple reason that Intex relies on the Intex Video, not Blomquist, for teaching a screw-threaded central opening. Pet. 54 (citing Ex. 1006 ¶ 101 (element 5(c))); Petr. Claim Constr. Br. 8. In other words, Intex relies on Blomquist to teach that the width of the inverse hooks must be wider than the opening through which they are inserted for holding them in place, regardless of whether the opening is threaded or unthreaded. That the central opening include screw threads is already taught by the Intex Video itself. Thus, we reject Bestway’s argument for failing to address the combined teachings of the Intex Video and Blomquist.

Thus, to the extent there is any doubt about the width of the inverse hooks in the Intex Video, we find that Blomquist teaches making inverse hooks on an air purge valve “wider than” the inner diameter of the opening through which they pass when the valve is unscrewed. We have already found that Intex provides sufficient reasoning to combine Blomquist with the Intex Video, specifically, that the purpose of the inverse hooks (or “barbs”) in Blomquist serves the same purpose as the inverse hooks shown in the Intex Video, which Bestway concedes is to prevent the valve stem from “coming out” of the opening in the cap. *See* Section III.C.1 *supra* (citing Tr. 46:1–9). That the inverse hooks in the Intex Video and Blomquist serve the same purpose persuades us that a skilled artisan would have had reason to combine Blomquist’s teaching of making inverse hooks of a sufficient width to hold them in place within an opening with the Intex

Video's inverse hooks having the same purpose. As such, we find that the combination of the Intex Video and Blomquist additionally teaches the second comparative width limitation of claims 5 and 10, over and above the Intex Video alone.

Conclusion

In sum, we find that a skilled artisan would have known to make the inverse hooks on the air purge valve in the Intex Video not only of a resilient material, as taught by Blomquist, but also of a width wider than the diameter of the opening through which the inverse hooks pass to hold the valve in place when unscrewed, as taught by the Intex Video itself or in combination with Blomquist. We also find that Intex provides persuasive evidence of a reason to combine those teachings, as indicated from the references themselves and the credible testimony of Intex's expert. Accordingly, we conclude that the preponderance of the evidence shows that claims 5 and 10 are unpatentable for obviousness over the Intex Video and Blomquist.

2. The Dependent Claims

Intex argues that the dependent limitations of claims 6, 9, 11, and 14 are taught by the Intex Video and that the dependent limitations of claims 7, 8, 12, and 13 are satisfied by Blomquist. Pet. 56–57, 60, respectively. In its Patent Owner Response, Bestway does not dispute Intex's evidence regarding obviousness of the dependent limitations, nor does it make any attempt to argue the dependent claims separately from claims 5 and 10. PO Resp. *passim*. We also do not discern any attempt by Bestway to argue the dependent claims separately in its claim construction brief, where it had yet another opportunity. PO Claim Constr. Br. 3–4.

We have considered fully the evidence and arguments presented by Intex with respect to the dependent claims. We find that Intex’s evidence demonstrates that each of the dependent limitations is taught by either the Intex Video (“seal ring” and “two inverse hooks”) or Blomquist (“fixing slot”). *See* Pet. 56–57, 60. We further find that Intex proffers sufficient evidence showing that a skilled artisan would have combined their teachings to arrive at the claimed invention. *See* Pet. 58–59. We adopt that rationale as our own. Bestway offers no rebuttal, though *inter partes* review by its very nature is meant to be an interactive process. Accordingly, we determine that the preponderance of the evidence weighs in favor of Intex’s proof that dependent claims 6–9 and 11–14 are unpatentable for obviousness over the Intex Video and Blomquist.

IV. CONCLUSION

After considering the totality of the evidence, we conclude that Intex has demonstrated, by a preponderance of the evidence, that claims 5–14 are unpatentable under 35 U.S.C. § 103 for obviousness over the Intex Video and Blomquist. Because all of the challenged claims are unpatentable over the Intex Video and Blomquist, we need not reach Intex’s additional grounds for which we instituted *inter partes* review.

V. ORDER

Accordingly, it is hereby:

ORDERED that Bestway’s Motion to Cancel Claims 1–4 is hereby *granted* and claims 1–4 of the ’731 patent are deemed to be *canceled*;

FURTHER ORDERED that claims 5–14 of the ’731 patent are deemed to be *unpatentable*; and

FURTHER ORDERED that any party seeking judicial review of this Final Written Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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