

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WHITEWATER WEST INDUSTRIES, LTD.,
Petitioner,

v.

AMERICAN WAVE MACHINES, INC.,
Patent Owner.

IPR2022-01033
Patent 8,434,966 B1

Before BENJAMIN D. M. WOOD, CARL M. DEFRANCO, and
ALYSSA A. FINAMORE, *Administrative Patent Judges*.

DEFRANCO, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

ORDER
Dismissing Petitioner's Motion to Exclude
37 C.F.R. § 42.64(c)

American Wave Machines, Inc. (“AWM”) is the owner of U.S. Patent No. 8,434,966 B1 (“the ’966 patent”). WhiteWater West Industries, Ltd. (“WhiteWater”) filed a petition requesting *inter partes* review of claims 1–18 of the ’966 patent. Paper 2 (“Pet.”). We instituted *inter partes* review of all the claims as challenged in the Petition. Paper 8.

AWM filed a response (Paper 15, “PO Resp.”), WhiteWater filed a reply (Paper 21, “Pet. Reply”), and AWM followed with a sur-reply (Paper 27, “PO Sur-Reply”). WhiteWater also filed a motion to exclude evidence (Paper 25, “Mot.”). AWM filed an opposition (Paper 26), and WhiteWater filed a reply (Paper 29). We held an oral hearing on July 12, 2023, a transcript of which is in the record. Paper 36 (“Hrg. Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons below, we determine that WhiteWater demonstrates by a preponderance of the evidence that challenged claims 1, 2, 7, 9–11, and 16–18 are unpatentable as obvious under 35 U.S.C. § 103(a), but fails to demonstrate by a preponderance of the evidence that claims 3–6, 8, and 12–15 are unpatentable as anticipated under 35 U.S.C. § 102(b) and/or obvious under 35 U.S.C. § 103(a). We also dismiss as moot WhiteWater’s motion to exclude evidence.

I. BACKGROUND

A. *Related Matters*

The ’966 patent is the subject of an infringement action filed May 20, 2022, in *Whitewater West Industries, Ltd. v. American Wave Machines, Inc.*, No. 3-22-cv-00729 (S.D. Cal.). See Paper 5, 2. WhiteWater identifies three related proceedings, namely, IPR2022-01032 (challenging U.S. Patent

No. 10,662,663 B2), IPR2022-01034 (challenging U.S. Patent No. 9,279,263 B2, which is in the same family as the '966 patent), and IPR2022-01035 (challenging U.S. Patent No. 10,738,492 B1). Pet. 1.

B. The '966 Patent

The '966 patent is directed to a wave generator for making waves in pools for surfing purposes. Ex. 1001, 1:7–8. According to the '966 patent, waves created by known wave generators can be ridden for only a short period of time and distance because the waves quickly decrease in amplitude and become unrideable. *Id.* at 1:30–33, 2:12–13. The invention in the '966 patent overcomes these shortcomings by using time-sequenced chambers to create waves that travel in a *non-perpendicular* direction to the wave generator so that wave strength is replenished by the wave generator as the wave moves across the pool. *Id.* at 2:24–28. Figure 1 of the '966 patent, reproduced below, illustrates an embodiment of the wave generator apparatus.

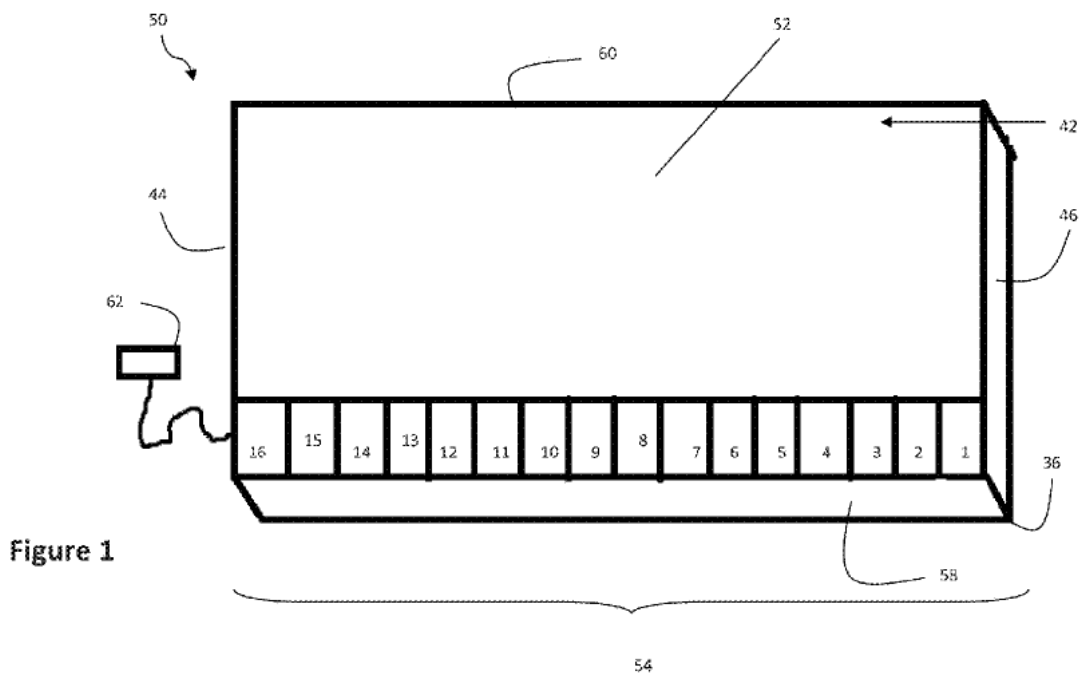


Figure 1

Figure 1 is a top view of a wave generator with a plurality of wave-generating chambers 54 (numbered 1–16). *Id.* at 3:6–7. As shown, wave pool 50 contains water 52 and includes: wave generating chambers 54 adjacent one end 58 of the pool; electronic controller 62 to operate wave generating chambers 54; and beach 42 adjacent an opposite end 60 of the pool. *Id.* at 3:55–58, 4:5–9. Figure 2, reproduced below, is a cross-section of wave generating chamber 54 in wave pool 50.

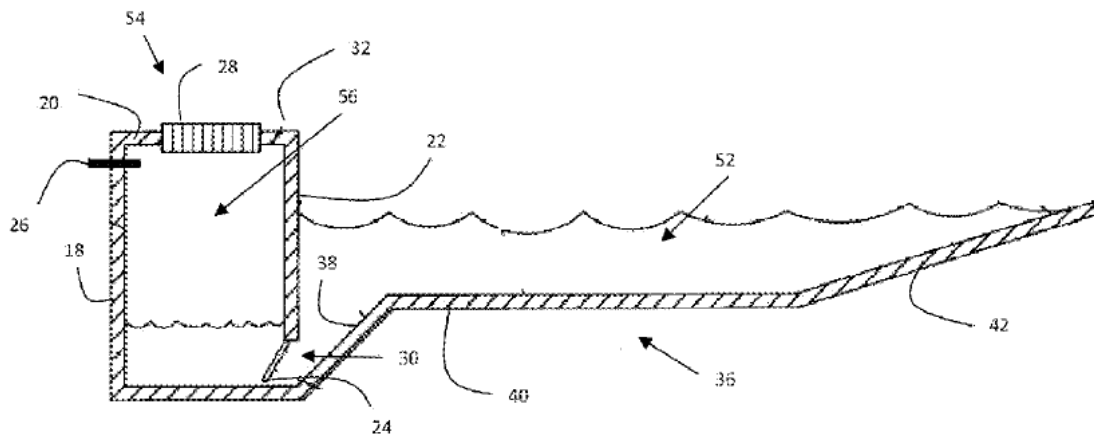


Figure 2

In operation, wave-generating chamber 54 is first filled with air through inlet valve 26 to displace water into pool 50. *Id.* at 4:36–38. Inlet valve 26 is then closed, and the air in the chamber is vented through vent valve 28, causing water 52 to flow from pool 50 through passageway 30 into the now empty space 56 in chamber 54. *Id.* at 4:38–41. This causes the water level in the pool to quickly drop, creating a depression or trough in the water that reflects against wave reflecting wall 22 of the pool, which creates a circulating motion of the water. *Id.* at 4:41–45. Vent valve 28 in the air chamber is then shut to prevent water resurgence back into the pool. *Id.* at 4:45–47. Mechanical two-way valve 24 can also be used to prevent

resurgence, and may be closed during the initial air fill phase to create a larger air volume in the chamber which, when released, creates a larger depression in the pool. *Id.* at 4:48–52.

Electronic controller 62 is connected to valves 24, 26, 28 to control the operation for each chamber, and actuates each of the chambers in sequence. *Id.* at 4:61–66. Controller 62 may begin by actuating the first chamber, then after a delay, actuating the second chamber, and, after another delay, actuating the third chamber, and so on, as desired. *Id.* at 4:66–5:4. Controller 62 controls the valves in each chamber so that, after actuating the first chamber, it controls the valves in that chamber and, after a delay, actuates the second chamber and controls its valves, and continues to actuate each chamber in sequence after a delay and controls its valves. *Id.* at 5:6–10. Notably, the '966 patent explains that by operating the valves in sequence with a delay between actuating each chamber, the wave generator apparatus creates waves where the peak of the wave travels in a direction that is not substantially perpendicular to the ends of the pool and the chambers. *Id.* at 5:11–14, 5:21–24, Fig. 3.

C. The Asserted Challenges

Claims Challenged	35 U.S.C. §¹	Basis
1–9, 11–18	102(b)	McFarland ²
1–18	103(a)	McFarland
1–9, 11–18	102(b)	Chutter ³

¹ We apply the pre-AIA version of the statute since the '966 patent's filing date, March 3, 2012, is before the effective date of the AIA's amendment of the statute, i.e., March 16, 2013.

² U.S. Patent No. 7,815,396 B2, iss. Oct. 19, 2010 (Ex. 1004, "McFarland").

³ U.S. Patent No. 4,999,860, iss. Mar. 19, 1991 (Ex. 1005, "Chutter").

Claims Challenged	35 U.S.C. § ¹	Basis
1–18	103(a)	Chutter
1–18	103(a)	McFarland and Chutter
10	103(a)	McFarland, Chutter, and GIP Blueprint ⁴

In further support of these challenges, WhiteWater submits initial and supplemental declarations of Glen Stevick, Ph.D., P.E. *See* Exs. 1009, 1016. AWM responds with the declaration of Charles Alexander Garris, Jr., Ph.D. *See* Ex. 2006.

D. The Challenged Claims

Of the challenged claims, claims 1, 11, and 16 are independent. Claims 1 and 16 are directed to an aquatic sports amusement apparatus. Claim 11 is directed to a method of generating waves in a pool and includes limitations similar to those of claims 1 and 16. *Compare* Pet. 67, 70–71 (listing elements of claims 1 and 16), *with id.* at 69–70 (listing elements of claim 11).

Claim 1 is illustrative and reproduced below (with nomenclature added for clarity):

[1.Preamble] An aquatic sports amusement apparatus, comprising:

[1.A] a pool which holds a body of water, the pool having a first and second end, two sides, and a floor;

[1.B] a plurality of wave generating chambers that communicate with the body of water so as to release water into the pool, the chambers located adjacent to each other on one of the ends of the pool;

⁴ Grand Island Pool Blueprint, dated Oct. 21, 1992 (Ex. 1008, “GIP Blueprint”).

[1.C] *each of the plurality of chambers having a valve structure, wherein each valve structure is connected to a controller wherein the connection is constructed to allow for the actuation of the [sic] each valve structure independently of the other valve structures; and*

[1.D] *the controller operates each valve structures independently, the operation comprising the steps of:*

[1.D.1] *actuating each valve structure in a sequenced fashion to release water into the pool from each chamber in the plurality;*

[1.D.2] *creating a wave, wherein the wave comprises a peak defined as the highest water level in the pool; and*

[1.D.3] *traveling the peak in a direction that is not substantially perpendicular to the ends of the pool.*

Ex. 1001, 7:58–8:11 (emphases added).

II. ANALYSIS

A. Burden of Proof

To prevail on its challenges, WhiteWater must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2018); *see also Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”). This burden of persuasion never shifts to AWM as the patent owner.⁵ *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burdens of proof in an *inter partes* review).

⁵ Although occasionally we may focus on AWM’s arguments, we do not shift the ultimate burden from WhiteWater. We focus on AWM’s arguments merely to identify issues in dispute.

B. Level of Ordinary Skill in the Art

WhiteWater asserts that one skilled in the art of wave generators for pools would have “knowledge and familiarity with: (i) design of mechanical structures and (ii) fluid characteristics and the interaction of fluid forces upon mechanical structures,” and that this knowledge “could be obtained by: (i) successfully completing a Master’s degree in Mechanical Engineering or (ii) at least 5 years of experience in a job working with control systems, including designing or implementing such wave generation machines.” Pet. 15–16 (citing Ex. 1009 ¶¶ 36–37). AWM does not contest that assertion. See PO Resp. 2 (“it will be assumed that a PHOSITA has a background and the level of skill described in Petitioner’s definition”).

We see no reason to deviate from WhiteWater’s proffered level of skill in the art. Thus, we adopt WhiteWater’s definition of the level of skill in the art.

C. Claim Construction

We construe a claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b).” 37 C.F.R. § 42.100(b) (2019). Furthermore, we expressly construe the claims only to the extent necessary to resolve the controversy. See *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Here, the parties dispute the meaning of two claim limitations: (1) “each valve structure is connected to a controller,” as recited in each of independent claims 1, 11, and 16; and (2) “the delay . . . is a fraction of the

chamber period,” as recited in each of dependent claims 3, 8, and 12. *See* PO Resp. 3–8; Pet. Reply 1–5.

1. “*each valve structure is connected to a controller*”

AWM asserts that one skilled in the art would understand from the face of the claim language itself that “each valve structure is connected to a controller” means that each valve structure is connected to “*a single common controller*.” PO Resp. 3, 5. In support, AWM points to the claim language’s recitation that “the *plurality* of chambers” and associated valve structures are “connected to *a controller*” and “*the controller*” operates each of the valve structures. *Id.* at 3–4 (first emphasis added); *see also* PO Sur-Reply 1–2 (“The claim language clearly and unmistakably refers to ‘a’ and ‘the’ (*singular*) controller having a connection to a *plurality* of chambers.”).

WhiteWater, in turn, argues that the “the plain and customary meaning of ‘a controller’ should be ‘a device that has the ability to offer commands or control another device.’” Pet. Reply 4. According to WhiteWater, the “indefinite article ‘a’ or ‘an’ in patent parlance carries the meaning of ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising’ . . . Unless the claim is specific as to the number of elements, the article ‘a’ receives a singular interpretation only in rare circumstances when the patentee evinces a clear intent to so limit the article.” *Id.* at 2 (quoting *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000) (alteration in original)).

We need not expressly construe the disputed “controller” limitation because, as discussed below, WhiteWater prevails in its challenge of claims 1, 11, and 16, even assuming AWM’s proposed construction is correct.

2. “*the delay . . . is a fraction of the chamber period*”

AWM construes this claim limitation to mean that the delay is “a *portion* of the whole chamber period,” in other words, a time period “less than the whole chamber period.” PO Resp. 6–7. WhiteWater, in turn, contends that the term “fraction” is not limited to “something ‘less than a whole’” and can be represented simply as a “quotient of two numbers.” Pet. Reply 5. We need not expressly construe term “fraction” as used in this claim limitation because, as discussed below, WhiteWater fails in its challenge of claims 3, 8, and 12, even assuming its proposed construction is correct.

D. Claims 1, 2, 7, 9–11, and 16–18

We begin with WhiteWater’s challenge that independent claims 1, 11, and 16 are unpatentable as obvious over the combined teachings of McFarland and Chutter. *See* Pet. 4, 55–60. In challenging these claims, WhiteWater submits a detailed mapping, supported by expert testimony, of how the asserted combination satisfies each of the recited claim limitations.⁶ *See id.* at 58–60 (citing Ex. 1009 ¶¶ 165–175). WhiteWater also articulates a reason why one skilled in the art would have combined the teachings of McFarland and Chutter with a reasonable expectation of success at arriving at the claimed invention. *See id.* at 55–58 (citing Ex. 1009 ¶¶ 160–164).

⁶ In combining the teachings of McFarland and Chutter, WhiteWater refers back, in part, to its analysis of those references individually. *See* Pet. 58–60. To the extent AWM contends that WhiteWater’s approach lacks “the requisite degree of specificity” and “fails to clearly explain what modifications are being proposed,” we disagree. PO Resp. 62–63. WhiteWater clearly and fully explains the proposed modification of McFarland based on the teachings of Chutter. *See* Pet. 55–58.

AWM does not dispute WhiteWater’s articulation of a reason to combine the teachings of McFarland and Chutter. *See* PO Resp. 62–64; PO Sur-Reply 27. Instead, AWM centers on whether the asserted combination discloses that each valve structure in the series of chambers is connected to “a single common controller” for actuating each valve structure “independently of the other valve structures” and “in a sequenced fashion to release water into the pool.” PO Resp. 62 (identifying certain claim elements as being absent from the asserted combination); *see also id.* at 64 (disputing Chutter’s disclosure of a single controller for actuating the plurality of wave-generating chambers).

At the outset, we note that WhiteWater relies on McFarland for teaching many of the essential features of the claimed invention, including wave pool 4, a series of wave-generating rear chambers 52, valve structure 6, 34, 35 within each chamber, and electronic controller 45 for actuating the valve structure to release water into the pool so as to create a wave that travels across the length of the pool.⁷ *See* Pet. 29–32 (citing Ex. 1004, Figs. 2, 2A, 3). Although McFarland discloses a controller to operate the valve structure in each of McFarland’s wave-generating chambers, it is not entirely clear that the controller is capable of actuating them “independently” of one another and “in a sequenced fashion to release water into the pool,” as required by claim 1, or actuating the chambers in a “delay” fashion, as required by claims 11 and 16.

⁷ With the exception of how the controller functions, it appears that the ’966 patent and McFarland share many of the same structural features of a wave-generating pool. *Compare* Ex. 1001, claim 1, Figs. 2, 2A, *with* Ex. 1004, claim 1, Figs. 2, 2A.

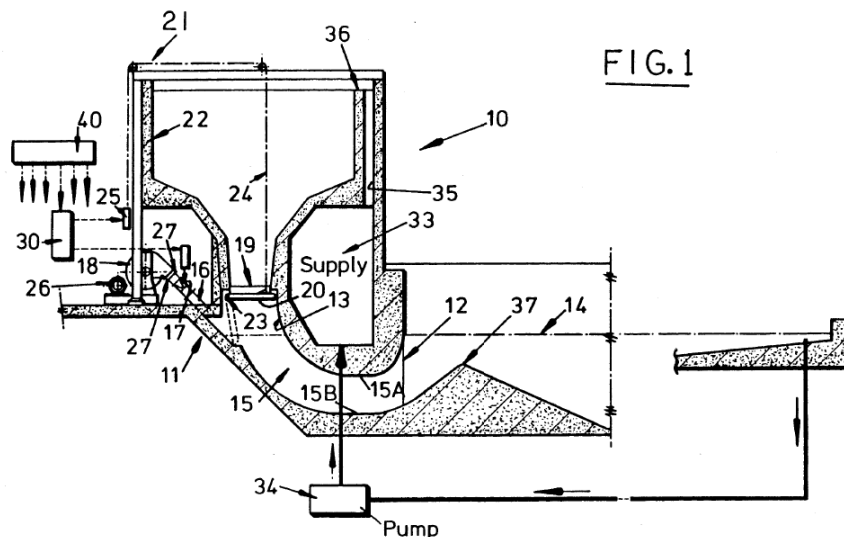
Indeed, in an initial effort to meet the “sequenced” and “delay” limitations, WhiteWater relies on McFarland as teaching these limitations. *See* Pet. 31–32. In doing so, WhiteWater points to McFarland’s disclosure that controller 45 “may be connected to the valves 34, 35, and 6 in order to *control the sequence of operation . . .*, or the valves may be operated manually.” *Id.* at 31 (citing Ex. 1004, 4:3–14). But, apart from repeating this disclosure in McFarland, WhiteWater’s expert does not otherwise opine on or confirm its meaning. *See* Ex. 1009 ¶ 100. More persuasive, in our view, is the testimony of AWM’s expert that this disclosure relates simply to the sequence of operating individual valves in each chamber, not to controlling the actuation of the valve structure as a whole in one chamber relative to another chamber. *See* Ex. 2006 ¶ 48 (citing Ex. 1004, 5:13–15). Moreover, we agree with AWM’s expert that “[t]he only disclosure in McFarland regarding the actuation of multiple chambers indicates that the chambers are actuated in unison.” *Id.* (citing Ex. 1004, 5:31–47).

Changing course, WhiteWater contends that McFarland’s “submerged, secondary chambers 68,” as used in connection with primary chambers 52, “may be individually controlled and operated *after a delay* following the operation of the primary chambers 52.” *See* Pet. 21 (citing Ex. 1004, Figs. 3, 4, 4A) (emphasis added); *see also id.* at 31 (referencing same). But, as described in McFarland, secondary chambers 68 are “used to *amplify a pre-existing wave* by releasing air from the chambers as the wave trough approaches” and “as [the] wave passes over, forcing water out and *amplifying the wave peak.*” Ex. 1004, 6:11–16 (emphasis added). In other words, McFarland’s controller actuates secondary chambers 68 only *after* the release of water into the pool from primary chambers 52 and only *after* a

wave has already been created. In contrast, the claimed “controller” actuates the *wave-generating* chambers sequentially “to release water into the pool” so as to “creat[e] a wave” in the first instance, and not merely to amplify a wave that has already been created. Ex. 1001, 8:5–8, 9:12–13, 10:10–25.

Understanding the potential “shortcomings” of McFarland, WhiteWater argues in the alternative that one skilled in the art would have applied the teachings of Chutter to modify McFarland’s controller to be fully capable of independently operating each of the valve structures in McFarland’s wave-generating chambers to actuate in a sequential and delayed fashion to release water into the pool so as to create a surf wave. Pet. 57–58. We agree with that reasoning.

Figure 1 of Chutter, reproduced below, illustrates a wave-generating apparatus for creating “a gigantic or surf-simulating wave” in a swimming pool. Ex. 1005, 2:25–27.



As shown above, wave-generating apparatus 10 comprises “a plurality of wave-generating chambers 11” at one end of the pool, wherein each

chamber 11 includes “operating device 30” and “flow control devices 17, 19.” Ex. 1005, 3:11-16, 3:43–45. According to Chutter, each chamber 11 “has similar mechanisms and the bank of chambers can be operated in *any desired rhythm or sequence by a controller 40 coupled to each of operating devices 30* so that the pool can be provided with recreational waves of any desired pattern.” *Id.* at 4:3–13 (emphasis added). The pattern of waves “may be varied, as is well known, according to the *sequencing* at which pressurized air is delivered to the plurality of chambers.” *Id.* at 2:55–58 (emphasis added).

Notably, Chutter teaches that central controller 40 is “arranged to *control the rhythm or pattern of the several operating means* so that, for example, all operating means” are actuated either “simultaneously” to create an “essentially linear” wave effect, or “sequentially” to create a “curved” or “non-orthogonal” wave effect. *Id.* at 2:12–39 (emphasis added); *see also id.* at 2:58–59 (“Adjacent chambers may be air pressurized alternately or simultaneously.”). Consistent with that disclosure, Chutter depicts controller 40 with multiple “connection” arrows to also indicate that a single, common controller controls the valve structure⁸ in multiple of Chutter’s wave-generating chambers 11. *See id.* at Fig. 1.

Based on Chutter’s disclosures as a whole, we find that Chutter’s central controller 40 exemplifies a well-known and conventional controller

⁸ During the oral hearing, AWM’s counsel conceded that the term “valve structure,” as used in the claims, means not only “a set of valves,” but also “additional structure,” such as the means “to operate those valves” or “the actuator for the valves.” Hrg. Tr. 33:1–17. As such, we view Chutter’s operating means 30 and flow control devices 17 and 19 as corresponding to the claimed “valve structure.”

capable of being connected to the valve structure in each of a series of wave-generating chambers so as to actuate the valve structures in a sequential and delayed fashion to create a surf-simulating wave in a pool. *See* Ex. 1009 ¶ 162; Ex. 1016 ¶¶ 129–130. With that in mind, we further find that one skilled in the art would have looked to Chutter to reprogram or modify McFarland’s controller to operate in the same manner as Chutter’s controller so that McFarland’s controller was also capable of actuating the wave-generating chambers in a *sequential* and *delayed* fashion, as required by independent claims 1, 11, and 16. *See* Ex. 1009 ¶¶ 163–164; Ex. 1016 ¶¶ 131–133. Indeed, both McFarland and Chutter seek to create desirable surf waves and have similar wave-generating structures, such as a bank of chambers at one end of a pool and a controller for actuating a valve structure in each chamber to release water from the chamber into the pool. *See* Ex. 1009 ¶ 163; Ex. 1016 ¶ 131.

We are not persuaded by AWM’s arguments to the contrary. *See* PO Resp. 62–64; PO Sur-Reply 27–28. Rather than disputing WhiteWater’s reason for combining the teachings of McFarland and Chutter, AWM argues that, “even if [one skilled in the art] were to combine Chutter with McFarland, the claimed invention would not result” because “Chutter clearly discloses a dual controller (30, 40)” for actuating the valve structure in each chamber. PO Sur-Reply 27–28. According to AWM, “to release water into the pool, Chutter teaches a structure that relies upon the use of two separate controllers – controller 40 which selects the mode of operation for providing a desired wave-forming effect in the pool, and a separate controller 30 associated with each chamber that . . . selectively control the operation of the flow control devices or valves (17, 19, 20, etc.) of each chamber.” PO Resp.

64 (citing Pet. 44; Ex. 1009 ¶ 131). On the other hand, the claims require that “each valve structure is connected to a controller,” which, according to AWM, “means that each valve structure of the plurality of chambers is connected to a *single common* controller.” *Id.* at 44 (emphasis added). With that premise in mind, AWM surmises that Chutter’s “dual control structure fails to satisfy the requirements of the presently claimed invention.” *Id.* at 64 (citing Ex. 2006 ¶ 185).

We disagree with AWM’s characterization of Chutter’s operating devices 30 as “controllers.” Nowhere do we discern that Chutter describes them as such. And, contrary to AWM’s assertion, WhiteWater does not rely on Chutter’s operating devices 30 as corresponding to the claimed controller, but, instead, annotates Chutter’s Figure 1 to identify “controller 40” as meeting that claim element. *See* Pet. 44. WhiteWater makes this abundantly clear by also pointing to Chutter’s disclosure that “the bank of chambers can be operated in any desired rhythm or sequence by *a controller 40* coupled to each of the operating devices 30.” *Id.* at 45 (emphasis added). Although WhiteWater identifies operating devices 30 in each chamber as an additional intermediary device for operating flow control devices 17 and 19, that does not negate the fact that controller 40 acts as a single, common controller for multiple operating devices 30.

Moreover, if anything, Chutter’s operating devices 30 are more akin to actuators, rather than controllers. And, as noted earlier, AWM concedes that the mechanism for operating valves, such as actuators, are better characterized as being part of the valve structure, not the controller structure. *See infra* n.8. Thus, we are not persuaded by AWM’s characterization of Chutter’s operating device 30 as a “separate controller” in order to support

its assertion that Chutter teaches a “dual control structure.” PO Resp. 64. More persuasive is WhiteWater’s assertion that Chutter’s controller 40 is a single, common controller that is connected to, and controls, the valve structure in each of Chutter’s chambers, with the valve structure comprising operating device 30 and flow control devices 17 and 19.

As discussed above, WhiteWater persuasively shows that the combination of McFarland and Chutter teaches or suggests the disputed “controller” limitations of independent claims 1, 11, and 16, in particular, limitations 1.C, 1.D, 1.D.1, 11.C, 11.D, 11.D.1, 16.C, and 16.D.1. AWM does not otherwise dispute WhiteWater’s showing of how the asserted combination teaches the remaining limitations of the independent claims. *See* PO Resp. 44, 49, 53, 62 (identifying claim elements 1.C, 1.D, 1.D.1, 11.C, 11.D, 11.D.1, 16.C, and 16.D.1 as being absent from the asserted combination). Nor does AWM dispute WhiteWater’s showing that the asserted combination teaches the limitations of dependent claims 2, 7, 9, 10, 17, and 18, contending only that they are “distinguishable over McFarland and Chutter for at least the same reasons previously explained” with respect to claims 1, 11, and 16. Based on our review, we find that the record fully supports WhiteWater’s showing that the asserted combination teaches or suggests all the limitations of claims 1, 11, and 16, as well as the limitations of dependent claims 2, 7, 9, 10, 17, and 18. *See* Pet. 58–63.

In sum, after weighing all relevant factual findings, including the level of ordinary skill in the art, the scope and content of McFarland and Chutter, and any differences between their combined teachings and the claimed

invention,⁹ we conclude that WhiteWater demonstrates, by a preponderance of the evidence, that claims 1, 2, 7, 9–11, and 16–18 of the '966 patent are unpatentable as obvious over McFarland and Chutter. Having determined those claims to be unpatentable, we do not address whether they are also unpatentable under WhiteWater's alternative theories based on McFarland alone and Chutter alone. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App'x 984, 990 (Fed. Cir. 2020) (non-precedential) (recognizing that the “Board need not address issues that are not necessary to the resolution of the proceeding” and, thus, has “discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims”).

E. Claims 3–5, 8, and 12–14

Dependent claims 3, 8 and 12 recite that the controller's actuation of the valve structure in the chambers is based on a “chamber period,” which the claims define as the amount of time it takes to release water from the chamber and refill it to a predetermined level. Ex. 1001, 8:27–28, 8:55–56, 9:31–32. These claims also recite that “the delay” between actuating the chambers “is a fraction of the chamber period,” with claims 3 and 12 specifying that “the fraction is 0.10-0.75” (*id.* at 8:29–30, 9:33–34), and claim 8 specifying that “the fraction is selected to adjust the amplitude of the

⁹ Despite stating that the claimed invention “has received strong industry praise,” AWM does not further address objective indicia of nonobviousness. PO Resp. 22 (citing Ex. 2007). Given the lack of further analysis by AWM, we consider this statement to be offered simply as background information.

wave peak” (*id.* at 8:58–59). Claims 4 and 5 depend from claim 3, and further define the valve structure, while claims 13 and 14 depend from claim 12, and further define the chamber period.

WhiteWater advances alternative theories for challenging these dependent claims, asserting they are anticipated by either McFarland or Chutter, or obvious over McFarland and Chutter, either individually or in combination. *See* Pet. 4, 35–39, 42, 48–51, 60–63. In doing so, WhiteWater first points to Figures 6–9 of McFarland as showing “the period of actuation, release, and refilling [of the chambers] to a predetermined level called ‘quiescent level.’” *Id.* at 36 (citing Ex. 1004, 5:31–67). From there, WhiteWater contends that one skilled in the art would understand that “*the delay between the actuation*” of McFarland’s chambers “must be timed appropriately to achieve the desired wave.” *Id.* at 36–37 (emphasis added).

WhiteWater’s contentions rest on the false premise that McFarland actually teaches some “delay” in actuating the plurality of chambers relative to one another. Indeed, WhiteWater’s misperception of a “delay” in McFarland appears to pervade all of its arguments with respect to claims 3, 8, and 12. *Id.* at 37–39; *see also* Pet. Reply 14–16. But, as discussed above with respect to claims 1, 11, and 16, we find that McFarland fails to disclose or otherwise suggest any delay between actuation of the plurality of chambers. Indeed, McFarland’s sole disclosure of a wave-generating cycle involves actuating the chambers *in unison*, i.e., without delay. *See* Ex. 1004, 5:31–47; Ex. 2006 ¶¶ 119–123. As such, we are not persuaded that McFarland teaches any sort of delay between actuation of the various chambers, let alone any quantification of a delay in terms of a chamber period, as required by claims 3, 8, and 12.

WhiteWater also contends that one skilled in the art “would look to Chutter to reprogram or modify the controller in McFarland in the same manner as the controller in Chutter to enable the controller in McFarland to be capable of actuating the chambers in *sequence*” and that “this combined wave generator of McFarland and Chutter would also be *capable of controlling the delay* between sequential actuating of subsequent chambers to create a wave.” *See* Pet. 57–58 (citing Ex. 1009 ¶ 164) (second emphasis added). While we do not disagree with that contention, the fact that Chutter may teach the capability of controlling the delay between chambers says nothing about the delay being “a fraction of the chamber period,” as required by claims 3, 8, and 12.

To the extent WhiteWater contends that one skilled in the art would know that Chutter’s delay between actuating the chambers “must be timed appropriately to achieve the desired wave” (Pet. 48–49, 61), that contention falls short because WhiteWater fails to explain how Chutter’s determination of the timing of the delay utilizes a fraction of the chamber period as a variable, as called for by claims 3, 8, and 12. Nor does WhiteWater fare any better by pointing to examples in the ’966 patent for why “Chutter inherently discloses a delay—whether measured in seconds or other units or as fractions of a chamber period.” *Id.* at 50. That is because WhiteWater cannot properly fill gaps in the prior art with disclosures from the challenged patent. For all the above reasons, we are not persuaded that WhiteWater demonstrates, by a preponderance of the evidence, that dependent claims 3, 8, and 12 are unpatentable as anticipated by either McFarland or Chutter, or as obvious over McFarland and Chutter, either alone or in combination.

As mentioned above, claims 4 and 5 depend from claim 3, and claims 13 and 14 depend from claim 12. Because WhiteWater’s challenge of claims 4, 5, 13, and 14 fails to remedy deficiencies of its challenge of base claims 3 and 12, we determine that WhiteWater also fails to demonstrate that claims 4, 5, 13, and 14 are unpatentable for the same reasons as claims 3 and 12.

F. Claims 6 and 15

Claims 6 and 15 each recite “wherein the delay in step (b) is of a *different length* than the delay in step (c).” Ex. 1001, 8:39–40, 9:42–43 (emphasis added). Like the other claims, WhiteWater challenges dependent claims 6 and 15 as being unpatentable over McFarland alone, Chutter alone, and/or the combination of McFarland and Chutter. *See* Pet. 4, 40–41, 43, 52–53, 55, 63, 64.

To begin, WhiteWater contends that McFarland expressly or inherently discloses actuating chambers relative to one another “after a delay.” Pet. 40 (citing Ex. 1004, 4:3–14, 4:64–65; Ex. 1009 ¶ 119). But, as discussed above with respect to WhiteWater’s other challenges, we reject the notion that McFarland alone teaches or suggests any sort of “delay” between actuating chambers, much less a “different length” of delay in actuating one chamber relative to another chamber. McFarland only teaches actuating chambers *in unison*, without any recognition of delay between their actuation. *See* Ex. 1004, 5:31–47; Ex. 2006 ¶¶ 119–123, 129–131.

WhiteWater also contends that Chutter, either alone or in combination with McFarland, teaches the “different length” of delay limitation by disclosing “a controller arranged to control the rhythm or pattern of the several operating means,” whereby “[t]he sequence may be changed from

one rhythm to another” and “[t]he pattern of the recreational waves may be varied, as is well known, according to the sequence at which pressurized air is delivered to the chambers.” Pet. 52–53 (citing Ex. 1005, 2:14–21, 2:55–60).

But, Chutter’s use of the terms “rhythm,” “pattern,” and “sequence” says nothing about the *relative amounts of delay* between actuating the various chambers. This is made clear by Chutter’s description of “rhythm” and “pattern” as being when “all operating means enter the said other mode *simultaneously*,” and “[i]n an alternative rhythm the several operating means enter the said other mode *sequentially*.” Ex. 1005, 2:14–20 (emphases added). Likewise, Chutter’s use of the term “sequence” relates to choosing a mode that generates a specific shape of wave—

[A]ccording to the *sequencing or rhythm* [sic] of the several operating means[,] the gigantic wave may have a wavefront traversing the whole or part of the width of the plurality of chambers and the wavefront may be essentially *linear* (when the several operating means simultaneously enter the said other mode) *or may be curved* either concave or convex with respect to the direction of movement of the wavefront (when the several operating mean enter the said other mode sequentially in pairs).

Id. at 2:27–36 (emphases added).

Those disclosures show that, while Chutter may use the terms “rhythm,” “pattern,” and “sequence” in describing the actuation of its various chambers, Chutter makes clear that those terms relate to the selection of a mode, either simultaneous or sequential, for actuating the chambers and convey nothing about the *relative amounts of delay* between those actuations, much less that the amounts may be of different lengths. *See* Ex. 2006 ¶ 173 (AWM’s expert confirming as much). Thus, we are not

persuaded that Chutter, either alone or in combination with McFarland, teaches or suggests “different lengths” of delay in actuating wave-generating chambers, as required by claims 6 and 15.

III. WHITEWATER’S MOTION TO EXCLUDE

WhiteWater seeks to exclude certain portions of Exhibit 2006, which is an expert declaration submitted in support of AWM’s response. *See* Mot. 1. According to WhiteWater, AWM’s expert proffers a “hypothetical” that depicts three random wave-generating chambers and “artificially creates a new scenario that has no realistic bearing on the issues actually presented by the claims at issue.” *Id.* at 3–4 (citing Ex. 2006 ¶¶ 103–106). As such, WhiteWater contends that AWM’s hypothetical is “irrelevant, confusing and prejudicial” under Federal Rules of Evidence (“FRE”) 401–403. *Id.* at 4–5.

WhiteWater also seeks to exclude Exhibit 2007, which includes feedback about AWM’s PerfectSwell® wave-generation system. *Id.* at 1–2, 5–12. WhiteWater argues that Exhibit 2007 should be excluded under FRE 106, 401–403, 701–703, 802, 901–902, and 1006 “because the information contained therein constitutes impermissible hearsay and is unduly prejudicial.” *Id.* at 1–2.

In assessing patentability of the challenged claims, we do not rely on any of the evidence WhiteWater seeks to exclude from this proceeding. As such, we dismiss as moot WhiteWater’s motion to exclude with respect to Exhibits 2006 and 2007.

IV. CONCLUSION

Claims	35 U.S.C. §	Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–18	103(a)	McFarland, Chutter	1, 2, 7, 9–11, 16–18 ¹⁰	3–6, 8, 12–15
1–9, 11–18	102(b)	McFarland		3–6, 8, 12–15
1–18	103(a)	McFarland		3–6, 8, 12–15
1–9, 11–18	102(b)	Chutter		3–6, 8, 12–15
1–18	103(a)	Chutter		3–6, 8, 12–15
10	103(a)	McFarland, Chutter, GIP Blueprint		
Overall Outcome			1, 2, 7, 9–11, 16–18	3–6, 8, 12–15

V. ORDER¹¹

Accordingly, it is hereby:

ORDERED that only claims 1, 2, 7, 9–11, and 16–18 of the '966 patent have been proven to be unpatentable;

¹⁰ As noted above, because we find that claims 1, 2, 7, 9–11, and 16–18 are unpatentable over McFarland and Chutter, we do not address whether any of those same claims are unpatentable under WhiteWater's other challenges.

¹¹ Should AWM wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw AWM's attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If AWM chooses to file a reissue application or a request for reexamination of the challenged patent, we remind AWM of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

FURTHER ORDERED that WhiteWater's Motion to Exclude is dismissed; and

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

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