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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KEVIN L. POTUCEK, JAMES CARTER, JAMES MURDOCK,
JOE DIORIO, and STEVEN MITCHELL

Appeal 2019-002425
Application 12/769,038
Technology Center 2800

Before LINDA M. GAUDETTE, FRANCISCO C. PRATS, and
BRIAN D. RANGE, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL¹

The Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner’s decision finally rejecting claims 1, 2, 9, 14–17, 19, 33, and 48–56.

We affirm.

¹ This Decision includes citations to the following documents: Specification filed April 28, 2010, as amended (“Spec.”); Final Office Action dated August 25, 2017 (“Final”); Appeal Brief filed August 22, 2018 (“Appeal Br.”); Examiner’s Answer dated November 27, 2018 (“Ans.”) and Reply Brief filed January 28, 2019.

² We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. The Appellant identifies the real party in interest as Hayward Industries, Inc. Appeal Br. 4.

CLAIMED SUBJECT MATTER

The invention relates to an underwater light having a sealed polymer housing for use in pools and spas. Spec. 1:15–17. The light is illustrated in Figure 3, reproduced below.

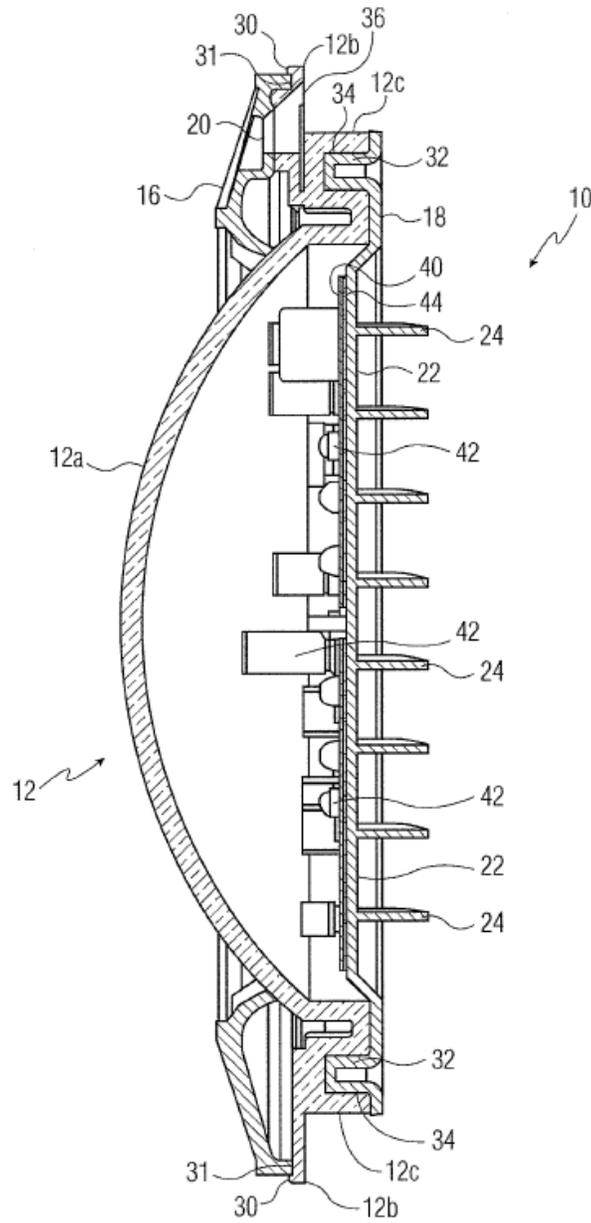


FIG. 3

Figure 3, above, is a cross-sectional view of underwater light 10. Spec. 5:9–10. Lens 12 includes recess 34 for receiving annular projection 32 on rear housing component 18. *Id.* at 9:19–20. Annular projection 32 may be bonded with annular recess 34 through the use of an adhesive to provide a watertight seal for light 10. *Id.* at 9:20–22. “Further, a gasket could be used to create a watertight seal between the lens 12 and the rear housing component 18.” *Id.* at 10:5–6.

Rear housing component 18 is constructed of a thermally conductive and electrically insulative polymer material, and includes an inner surface to which printed circuit board (PCB) 40 is attached by means of thermally conductive material 44. *Id.* at 7:17–18, 10:13–16. Thermally conductive material 44 allows for transfer of heat from electronic components 42 through central portion 22 of rear housing component 18 and ultimately to integrally-formed heat sink components (heat-radiating structures) 24, thereby cooling electronic components 42. *Id.* at 10:22–11:2. “PCB 40 may include several types of electronic components 42 including, but not limited to, light emitting diodes (LED’s), transistors, resistors, etc.” *Id.* at 11:3–4.

Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. An underwater light, comprising:
 - an external rear housing component including a rear wall having an inner surface that includes one of an annular recess or an annular projection extending about a periphery thereof, the external rear housing component being formed at least in part from a polymeric material that is both thermally conductive and electrically insulative;
 - an electronic assembly having a front surface and a rear surface, the front surface including at least one light-emitting element mounted thereto;

a layer of thermally conductive material positioned between and in contact with the rear surface of the electronic assembly and the inner surface of the rear wall; and

a lens including the other of the annular recess or the annular projection extending about a periphery thereof, the lens mounted to the external rear housing component forming a watertight seal therebetween and enclosing the electronic assembly,

wherein the annular recess and the annular projection surround the electronic assembly, the annular recess receiving the annular projection to form the water tight seal between the external rear housing component and the lens,

wherein said layer transfers heat from said electronic assembly to said rear housing component, and at least a portion of the external rear housing component conducts heat away from the electronic assembly to cool the electronic assembly.

Appeal Br. 36 (Claims Appendix). The Appellant states that claim 49, the only other independent claim on appeal, “recites similar features but with the additional limitation of ‘a lens including the other of the annular recess or the annular projection extending about a periphery thereof, the lens contacting and permanently sealed against the rear wall [of the external rear housing component] and forming a watertight seal therebetween.’” Appeal Br. 10.

REJECTIONS

1. Claims 1, 2, 9, 14–17, 19, 33, and 49–56 are rejected under 35 U.S.C. § 103(a) as unpatentable over Willis (US 2006/0002104 A1, published January 5, 2006) in view of Hochstein (US 5,785,418, issued July 28, 1998) and Huang (US 7,914,162 B1, issued March 29, 2011). Ans. 3.

2. Claim 48 is rejected under 35 U.S.C. § 103(a) as unpatentable over Willis in view of Hochstein, Huang, and Ahland (US 2009/0180281 A1, published July 16, 2009). Ans. 9.

OPINION

Willis discloses an underwater light, as shown in Figure 3, reproduced below.

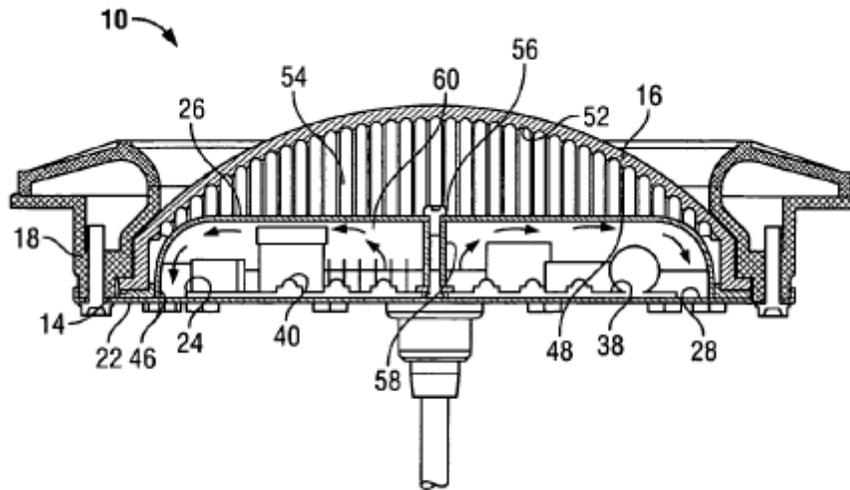


FIG. 3

Figure 3 is a side cross-sectional view of underwater light assembly 10. The Examiner found that Willis's underwater light assembly comprises an external rear housing component (backplate 22) that is formed from a thermally conductive and electrically insulative polymeric material. Final 3 (citing Willis ¶ 28). The Examiner found that the external rear housing component (backplate 22) includes a rear wall having an inner surface that includes an annular projection (side wall extending upwardly) extending about a periphery thereof. *Id.* The Examiner found that Willis's underwater light assembly comprises an electronic assembly (printed circuit 24) having light-emitting elements (LEDs 40) mounted thereto, and a lens (lens 16)

located concentrically about the electronic assembly (printed circuit 24) and mounted to the external rear housing component (backplate 22) and forming a watertight seal therebetween (combination of lens 16's interior surface 52, lens gasket 14, and backplate 22's interior surface 28). *Id.* (citing Willis ¶ 22). The Examiner found that “Willis fails to disclose or fairly suggest a layer of thermally conductive material positioned between and in contact with the rear surface of the electronic assembly,” and “an annular recess for receiving an annular projection formed on the external rear housing . . . component [(backplate 22),] the annular projection inserted into the annular recess to form the watertight seal between the external rear housing component ([backplate] 22) and the lens (16).” *Id.* at 3–4.

As to the thermally conductive material layer, the Examiner found that modification of Willis to include this feature would have been obvious in view of Hochstein. Final 5. Referring to Hochstein Figures 3 and 8, the Examiner found that Hochstein discloses a lamp assembly comprising a lens (transparent cover 46) mounted to an inner surface of an external rear housing wall that functions as a heat sink (base 36) so as to form a watertight seal and enclose circuit board 26. Final 4. LEDs 28 are mounted on circuit board 26's first surface. Hochstein 5:11–16. The heat sink (base 36) overlies circuit board 26's second, or back, surface. *Id.* at 5:21–22. The Examiner found that Hochstein discloses a thermally conductive layer disposed between circuit board 26 and the heat sink (base 36) in order to increase the transfer of heat from circuit board 26 to the heat sink (base 36). Final 4 (citing Hochstein 6:10–67). In the cited disclosure, Hochstein teaches that “a thin layer 56 of electrically insulating material” may be secured to the circuit board 26 with adhesive 58, or “the adhesive 58 may itself comprise the

electrically insulating but heat conductive layer.” Hochstein 6:55–60, 62–64. The Examiner determined that the ordinary artisan would have modified Willis’s underwater light by positioning a thermally conductive material between and in contact with the rear surface of the electronic assembly and the inner surface of the rear housing component as taught by Hochstein to promote an effective heat transfer from the circuit board to the heat sink. Final 5.

The Appellant argues that one of ordinary skill in the art would not have modified Willis to include Hochstein’s electrically insulating material 56 or adhesive 58. Appeal Br. 17–24. The Appellant argues that Willis is concerned with eliminating the threat of electric shock to bathers if, for example, an underwater light is damaged, allowing water to flood the housing. *See id.* at 18. The Appellant argues that to avoid the possibility of stray electrical current escaping into water occupied by bathers, Willis mounts printed circuit assembly 24 to conductive interior surface 28 of backplate 22 such that the combination of the

close proximity of the edge 46 [of the current shield 26] to the interior surface 28 of the backplate 22, ***the conductive characteristics of the interior surface 28, and the path to ground originating therefrom***, causes substantially all such stray electrical current (e.g., such stray electrical current as enters the relevant interface) to pass entirely out of the flood water, ***enter the backplate 22 via the adjacent interior surface 28 and flow directly to ground.***

Appeal Br. 18–19 (quoting Willis ¶ 26 (Appellant’s emphasis)). The Appellant argues that in Hochstein, “electrically insulating layer 56 and adhesive 58 prevent the flow of electrical current from the printed circuit board 26 to the heat sink 36.” Appeal Br. 19 (citing Hochstein 6:55–59 (“[A] thin layer 56 of electrically insulating material [is] disposed between the

pads 50 and the heat sink to prevent electrical shorting between the pads 50 by the flow of electrical current through the heat sink.”)). The Appellant contends that modifying Willis to include Hochstein’s electrically insulating materials (layer 56 or adhesive 58) would prevent the flow of electrical current from printed circuit assembly 24 to ground via backplate 22, thereby rendering Willis’s underwater light ineffective for reducing the exposure of nearby bathers to electrical shock if the underwater light flooded with water. *Id.* at 20. The Appellant also argues that one of ordinary skill in the art would not have modified Willis’s lighting assembly to include a thermally conductive material as taught by Hochstein, because Hochstein’s heat dissipation method—conducting heat to the light emitting side of the assembly—is contrary to and mutually incompatible with Willis’s heat dissipation method—dissipating heat from the LEDs to the rear of an underwater light by cooling a back surface of a backplate of the underwater light via a wet niche (i.e., conductive cooling). *Id.* at 20.

In the Response to Argument section of the Answer, the Examiner finds that Willis teaches that “*printed circuit assembly 24 is secured directly to the interior surface 28 via thermally conductive adhesive* so as to facilitate conductive cooling of the printed circuit assembly 24 during high-voltage operation.” Ans. 5 (emphasis added) (quoting Willis ¶ 19). The Appellant does not dispute that Willis, alone, discloses the use of a layer of thermally conductive material as claimed. *See generally* Reply Br.; *see* Spec. 10:15–17 (“PCB 40 could be bonded to rear housing component 18 by means of a *thermally conductive material 44, such as a thermally-conductive grease, adhesive, or potting compound.*” (emphasis added)). Accordingly, we are not persuaded of reversible error in the Examiner’s

finding that Willis discloses “a layer of thermally conductive material positioned between and in contact with the rear surface of the electronic assembly and the inner surface of the rear wall” as recited in independent claims 1 and 49. Because Willis’s structure is the same as that claimed—electronic assembly rear surface / thermally conductive adhesive / rear wall inner surface—the Examiner had a reasonable basis for finding that Willis’s thermally conductive (adhesive) layer would be capable of functioning in the manner recited in the final “wherein” clause of claims 1 and 49 (“said layer transfers heat from said electronic assembly to said rear housing component”). See *In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997) (quoting *In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971) (“[W]here the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.”)).

As to the use of an annular recess and an annular projection for forming a water tight seal between the external rear housing component and the lens, the Examiner found that modification of Willis to include this feature would have been obvious in view of Huang. Final 6. With reference to Huang Figures 3 and 5, the Examiner found that Huang discloses lighting assembly 10 comprising “two exterior elements, a top cover (20) and a bottom cover (60), and three interior elements, the reflector plate (30), the heating board (40), and the LED board (50).” *Id.* at 5 (citing Huang 7:43–51). The Examiner found that Huang’s top cover 20 includes two concentric collars—peripheral collar 25 and inner collar 26—that form an annular

recess. *Id.* The Examiner found that top cover 20 is releasably secured to bottom cover 60 by a snap fit utilizing spine 29 encircling peripheral collar 25 along a side that abuts exterior surface 61 of a projection (circumferential wall 63) of bottom cover 60. *Id.* (citing Huang 8:1–24). The Examiner found that the ordinary artisan at the time of the invention would have modified Willis’s underwater light device to include an annular recess in the lens for receiving the annular projection of the external rear housing in order to provide a closely-fit and releasably-formed watertight seal between the external rear housing component and the lens as taught by Huang, thereby eliminating the need for Willis’s external coupling element. *Id.* at 5–6.

The Appellant argues that the ordinary artisan would have understood that Huang’s “close fitting or friction fitting” between top cover 20 and bottom cover 60 “is not synonymous with a ‘water tight seal.’” Appeal Br. 27. The Appellant further argues that “at least one of the components involved in [Huang’s] ‘snap fit’ connection . . . must be able to deflect so that the ridge 65 of the rim 64 can ‘snap’ over the spine 29 of the peripheral collar 25 to attach the top cover 20 to the bottom cover 60.” *Id.* According to the Appellant, “[t]he ability of these components to deflect creates an unstable connection such that water may penetrate [Huang’s] light assembly 10 if it were to be submerged.” *Id.*

In response, the Examiner argues that the ordinary artisan would have utilized Willis’s gasket to form the watertight seal. Ans. 7–8; *see* Final 3. The Examiner explains that the resultant structure would have been identical to the structure utilized by the present inventors to form a watertight seal. *Id.* at 7 (citing, e.g., Spec. 10:5–6).

Where the Examiner establishes that the products claimed by an applicant and disclosed in the prior art appear to be the same, the burden is properly shifted to the applicant to show that they are not. *See In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990); *In re Best*, 562 F.2d 1252, 1254–56 (CCPA 1977). The Appellant’s arguments alone are insufficient to meet this burden of production. For example, the Appellant argues that to form a watertight seal, Willis requires both a gasket and an external element to compress the gasket. Reply Br. 12. The Appellant has not shown persuasively, however, that a snap fit connection as described in Huang would not have performed a similar compression of the gasket, thereby rendering a watertight seal. Many of the Appellant’s arguments, including those as to the ordinary artisan’s understanding of Huang’s teachings, lack evidentiary support and, therefore, are unpersuasive of reversible error. *See In re Geisler*, 116 F.3d 1465, 1471 (Fed. Cir. 1997) (explaining that argument by counsel cannot take the place of evidence).

The Appellant presents arguments in support of patentability of claim 48. *See* Appeal Br. 30–34. However, these arguments are limited to a contention that Ahland fails to cure the deficiencies in the primary references. *See id.*; Ans. 9. Accordingly, the Appellant has not persuaded us of reversible error in the Examiner’s rejection of claim 48.

Any additional arguments made by the Appellant but not discussed explicitly in this Decision are unpersuasive for the reasons stated in the Final Office Action and the Answer. In general, as observed by the Examiner, the Appellant’s arguments are directed primarily to differences between the claims and the teachings of the references individually. The Appellant fails to appreciate that the Examiner relies on Willis for a teaching of the claimed

underwater light and relies on Hochstein and Huang for disclosures of only particular features and suggestions to modify Willis's underwater light to include those features. *See* Ans. 3–4.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

In re Keller, 642 F.2d 413, 425 (CCPA 1981). In other words, the Appellant's arguments that Hochstein's and Huang's lights are designed to function in a manner that differs from Willis's light are not persuasive because the Appellant fails to take into account the knowledge of the ordinary artisan. *See, e.g.*, Ans. 6, 8.

In sum, the Appellant has not identified reversible error in the rejections of claims 1, 2, 9, 14–17, 19, 33, and 48–56. We sustain both grounds of rejection.

CONCLUSION

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 2, 9, 14–17, 19, 33, 49–56	103(a)	Willis, Hochstein, Huang	1, 2, 9, 14–17, 19, 33, 49–56	
48	103(a)	Willis, Hochstein, Huang, Ahland	48	
Overall Outcome			1, 2, 9, 14–17, 19, 33, 48–56	

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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)(iv).

AFFIRMED