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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BENJAMIN HYMAN FEINGOLD, VASUDEV NAMBAKAM, and SIMON S. HUI

Appeal 2019-002765
Application 15/134,488
Technology Center 2800

Before JEFFREY B. ROBERTSON, DONNA M. PRAISS, and MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

PRAISS, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

Appellant[2] appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1–9, 11, and 12. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We REVERSE.

[1] Our Decision refers to the Specification ("Spec.") filed Apr. 21, 2016, the Final Office Action dated Mar. 16, 2018 ("Final Act."), Appellant's Appeal Brief ("Appeal Br.") filed Oct. 15, 2018, the Examiner's Answer ("Ans.") dated Dec. 20, 2018, and Appellant's Reply Brief ("Reply Br.") filed Feb. 20, 2019.

[2] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies Stryker Corporation as the real party in interest. Appeal Br. 1.

STATEMENT OF THE CASE

The subject matter on appeal "relates to a solid-state system for providing illumination from an external light source through an endoscope to a surgical site." Spec. ¶ 2. Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative (disputed limitations italicized).

> 1. A light source comprising:
>
> a first LED for emitting light having a wavelength in a first wavelength range;
>
> a first collecting optic for receiving light from the first LED and transmitting light along a first light pathway;
>
> a first optic member for reflecting light from the first light pathway;
>
> a second LED for emitting light having a wavelength in a second wavelength range;
>
> a second collecting optic for receiving light from the second LED and transmitting light along a second light pathway;
>
> a second optic member for reflecting light from the second light pathway, the second optic member receiving and transmitting light in the first wavelength range, thereby combining light having a wavelength in the first wavelength range transmitted therethrough and light having a wavelength in the second wavelength range reflected thereby, creating a first combined light;
>
> a third LED for emitting light in a third wavelength range;
>
> a third collecting optic for receiving light from the third LED and transmitting light along a third light pathway;
>
> a third optic member for reflecting light from the third light pathway, the third optic member receiving the first combined light and transmitting light having a wavelength in the first wavelength range and transmitting light having a wavelength in the second wavelength range, thereby combining light having a wavelength in the first wavelength range

> transmitted therethrough, light having a wavelength in the second wavelength range transmitted therethrough, and light having a wavelength in the third wavelength range reflected thereby, creating a second combined light;
>
> *a focusing optic for receiving and condensing the second combined light to create a condensed light; and*
>
> *a collimating optic for receiving the condensed light and orienting the condensed light in a straight path direction*.

Claim 11, the only other independent claim on appeal, similarly requires a focusing optic and a collimating optic.

ANALYSIS

We review the appealed rejections for error based upon the issues Appellant identifies. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (*cited with approval in In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) ("[I]t has long been the Board's practice to require an applicant to identify the alleged error in the examiner's rejections.")). After considering the positions of both the Examiner and Appellant, we are persuaded the Examiner reversibly erred for the reasons set forth in Appellant's briefs and discussed below.

The Examiner rejects claims 1–9, 11, and 12 under 35 U.S.C. § 103 as being unpatentable over Buczek.[3] Final Act. 2–6; Ans. 3–8.

The Examiner finds "[c]ollimated light is light having parallel rays that do not converge or diverge (or do so minimally), while condensed light or light passing through a condensing lens converge to a focal point and then diverge." Ans. 7. The Examiner finds Buczek's Figure 1 discloses "lens

[3] US 2008/0246920 A1, published Oct. 9, 2008.

180 condenses . . . and shows uncollimated light directed at 150." Final Act. 3; *see* Ans. 8 ("Buczek teaches a focusing optic 180 shown in figure 1. Buczek alludes to, but does not specifically teach a collimating optic."). Buczek's Figure 1 is shown below.

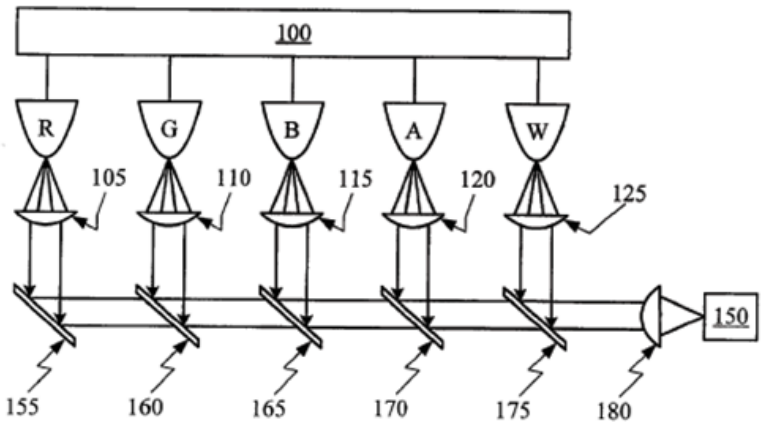

Fig. 1

Figure 1 is an ophthalmic endoilluminator utilizing five LEDs. Buczek ¶ 13. The Examiner finds Buczek discloses the light is collimated before entering endoilluminator assembly 150, therefore, "there must be a collimating element disposed between [focusing optic 180 and endoilluminator assembly 150]." Final Act. 3–4 (citing Buczek ¶ 26).

In the absence of an explicit disclosure, the Examiner finds it would have been obvious to a person having ordinary skill in the art "to utilize a collimating optic as indicated in [Buczek's] figure 3, or collimating the light in some way known in the art for the benefits of increasing the luminance efficiency, enhancing the energy density of the light received and transmitted by the fiber optic, and reducing loss over the distance of the fiber

optic" based on the teachings of Buczek and additional evidence.[4] Ans. 8–9. Buczek's Figure 3 is shown below.

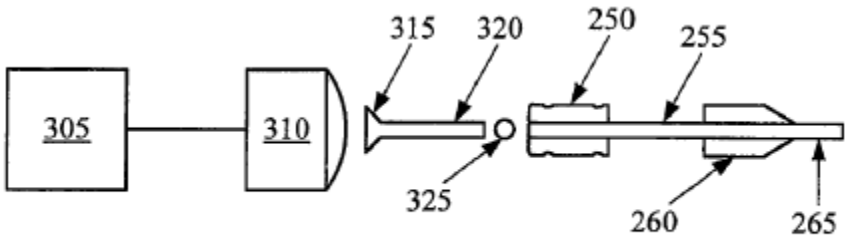

Fig. 3

Figure 3 is another embodiment of Buczek's ophthalmic endoilluminator depicting power source 305 and light source 310 at one end, probe 265 at another end, and ball lens 325 coupling optical fiber 320, having taper 315 and decreasing in diameter, with optical fiber 255. Buczek ¶¶ 15, 41, 42. The Examiner finds Buczek's ball lens 325 collimates the light before entry into optical fiber 255 because light emitted from taper 315 and fiber optic 320 is divergent and ball lenses collimate any divergent light received. Ans. 6–7 (citing Assenheim, US 4,818,049, issued Apr. 4, 1989, 2:43–50; Engineering 360, Ball Lenses Information (https://www.globalspec.com/learnmore/optics_optical_components/optical_components/ball_/lenses) (last visited July 13, 2018) (Engineering 360)).

Appellant contends the Examiner's reasoning does not support a legal conclusion of obviousness because neither of Buczek's embodiments includes a collimating optic for receiving condensed light from a focusing optic. Appeal Br. 9. Appellant argues that Buczek does not disclose

[4] The Examiner cites US 2004/0170014 A1, published Sept. 2, 2004 ("Pritchard") and US 6,922,288 B2, issued July 26, 2005 ("Yamanaka") as evidence to establish the benefits of collimating light before entry into a fiber optic. Ans. 7 (citing Pritchard ¶ 54; Yamanaka 1:11–23).

collimating light in the Figure 3 embodiment and does not disclose any element having a collimating function besides collimating lenses 105, 110, 115, 120, and 125, which collimate light from the individual LEDs. *Id.* at 8. Regarding the Examiner's reliance on Buczek's paragraph 26 statement "the beam of light exiting condensing lens 180 and entering endoilluminator assembly 150 is a collimated beam of different colors," Appellant asserts it is more likely referring to the beam being previously collimated, not the beam being collimated at the entrance of the optical fiber. Reply Br. 6. Appellant argues that Buczek's disclosure supports this explanation, specifically the disclosure that collimating light prior to reaching condensing lens 180 is important to separate the colors so that they propagate independently, thus, independently propagated colors are condensed on the smaller fiber optic via condensing lens 180. *Id.* at 6–7 (citing Buczek ¶¶ 26, 29).

Regarding the evidence cited in the Examiner's Answer, Appellant contends that both Pritchard and Yamanaka disclose the same arrangement as Buczek, i.e., light is first collimated or parallel rays and then condensed onto the end of an optical fiber. Reply Br. 9–13 (citing Yamanaka 1:11–23; Pritchard ¶ 54). Appellant points out that Buczek teaches collimating light and then condensing the light via a condensing lens 180 onto the end of an optical fiber "allows an optical fiber to have a greater carrying capacity than utilizing a single broad spectrum source." *Id.* at 17 (quoting Buczek ¶ 26). Appellant argues that this advantage is not attributed to collimating after being condensed. *Id.* at 17–18. Appellant also argues that the "collimating optic" recited in independent claims 1 and 11 is a single optical component, rather than a combination of optical components that the Examiner

assembles with Buczek's fiber optic and ball lens to comprise "a collimating structure." *Id.* at 15.

Appellant's arguments are persuasive of harmful error. Buczek is directed to an ophthalmic endoilluminator that collimates the light produced by light emitting diodes and aligns the light individually produced into a single focused light beam. Buczek Abstract. Referring to Buczek's Figures 1 and 3 and accompanying disclosure, there is no collimating optic component or function identified after condensing the light. Accordingly, we agree with Appellant that Buczek's paragraph 26 refers to the beam being previously collimated, not the beam being collimated at the entrance of the optical fiber.

The Examiner's rejection does not sufficiently explain why it would have been obvious for one of ordinary skill in the art to have modified Buczek's Figure 1 device with a combination of elements from Buczek's Figure 3, namely the taper and ball lens, to perform a function Buczek does not disclose as required to achieve the benefits that Buczek discloses. The Examiner also does not adequately explain why it would have been obvious for one of ordinary skill in the art to have modified Buczek's Figure 1 device with a single collimating optic component rather than the combination of components disclosed in Buczek's Figure 3 that, together, the Examiner finds would have collimated the light.

In view of the above and for the reasons provided in the Appeal Brief and the Reply Brief, we reverse the Examiner's rejection of claims 1 and 11 over Buczek.

Because claims 2–9 and 12 require the light source of independent claim 1 or 11, we do not sustain the Examiner's rejection of dependent claims 2–9 and 12 over Buczek for the same reasons.

CONCLUSION

For these reasons and those the Appellant provides, we reverse the Examiner's rejection of claims 1–9, 11, and 12 under 35 U.S.C. § 103.

DECISION SUMMARY

In summary:

Claim(s) Rejected	**35 U.S.C. §**	**Reference(s)/Basis**	**Affirmed**	**Reversed**
1–9, 11, 12	103	Buczek		1–9, 11, 12

REVERSED