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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JEFFREY W. ZERFAS, CARL DONADIO,
DAVID W. ROBERTSON, and RICHARD TUMMINELLI

Appeal 2014-008106
Application 12/948,941
Technology Center 3700

Before CHARLES N. GREENHUT, JILL D. HILL, and
GORDON D. KINDER *Administrative Patent Judges*.

HILL, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Jeffrey W. Zerfas et al. ("Appellants") appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1–3, 6, 7, 9, 10, 16, and 19–25.[1] We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] Claims 4, 5, 8, 11–15, 17, and 18 are cancelled. Appeal Br. 20–22 (Claims App.).

CLAIMED SUBJECT MATTER

Independent claims 1, 16, and 20 are pending. Claim 1, reproduced below, illustrates the claimed subject matter.

> 1. An apparatus comprising:
>
> a unitary optical fiber having a proximal end and a distal end having a substantially spherically shaped portion, the optical fiber including a cladding layer circumferentially disposed about a core layer;
>
> a first coating circumferentially disposed on a first length of the cladding layer; and
>
> a second coating different from the first coating circumferentially disposed on a second length of the cladding layer, wherein the second coating initiates at, and extends distally from, a distal end surface of the first coating, the second coating including a second inner coating and a second outer coating, the second outer coating comprising a polymeric or acrylic material.

REJECTIONS

I. Claims 1–3, 6, 7, 9, 10, 16, and 19–25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kosa (US 4,695,697; iss. Sept. 22, 1987), Samson (EP 0355200 A1; pub. Feb. 28, 1990), Everett (US 5,242,437; iss. Sept. 7, 1993), and Prince (US 5,133,709; iss. July 28, 1992). Final Act. 5.

II. Claims 1–3, 6, 7, 9, 10, 16, and 19–25 also stand rejected under 35 U.S.C. § 103(a) as unpatentable over Samson, Kosa, and Prince. *Id.* at 10.

ANALYSIS

Rejection I

Appellants argue claims 1–3, 6, 7, 9, 10, 16, and 19–25 as a group. Appeal Br. 15. We select claim 1 as representative. Claims 2, 3, 6, 7, 9, 10, 16, and 19–25 stand or fall with claim 1.

The Examiner finds that Kosa discloses the claimed invention, except for (1) a *unitary* optical fiber 20 with a spherical shaped distal end 30, and (2) a second coating that includes an inner coating (Examiner finds this inner coating to be disclosed by Kosa's sleeve 31) and *a polymeric/acrylic outer coating*. Final Act. 6. The Examiner finds that Samson discloses a unitary optical fiber 21 and distal spherical lens 32, and that the unitary aspect of the components reduces optical loss between the lens and the fiber. *Id.* (citing Samson, Fig. 5, 4:23–27, 12:46–55). The Examiner also finds that Samson discloses a polyamide or polydimethyl siloane coating over a collar 34 to increase an apparent lens aperture and reduce adhesion of proteins formed during lasing. *Id.* (citing Samson, 6:55–58, 11:17–23). The Examiner then finds that Everett discloses alternative embodiments of a medical device, one having a unitary fiber 62 and lens 66 (*see* Everett, Fig. 7), and another having an abutting fiber 72 and lens 76 (*see id.* at Fig. 8). Final Act. 7. The Examiner lastly finds that Prince discloses an optical fiber 1 and spherical tip 2, with a cladding layer 6, an inner coating (sleeve 7) on the cladding, and an outer coating (plastic tube 9) over the sleeve, the plastic tube 9 providing a smooth, biocompatible, non-thrombogenic surface to facilitate manipulation and minimize clot formation. *Id.* (citing Prince, Figs. 1, 2, 4:29–33).

The Examiner concludes that it would have been obvious to (1) fuse Kosa's "spherical lens to the distal end of the optical fiber," or (2) use "a fiber optic with a unitary spherical lens, as disclosed by Samson and Everett[,] to predictably increase the control and efficiency of light transfer between the optical fiber and spherical lens." Final Act. 7. The Examiner also concludes that it would have been obvious to add "a polyimide, polydimethyl siloane, or plastic coating" over Kosa's radio opaque sleeve 31, forming a second outer coating "to predictably provide a smooth, biocompatible, non-thrombogenic surface to facilitate manipulations and minimize clot formation and protein adhesion on the surface of the apparatus" as taught by Prince. *Id.*

Appellants argue that modifying Kosa to have a unitary fiber 29 and lens 30 "would destroy the [separately formed] configuration of Kosa." Appeal Br. 13. According to Appellants, Kosa "requires that the optical fiber and lens are distinct components made of distinct materials," and "teaches the advantages of a separate fiber and lens configuration" in stating that its sapphire lens 30 "provides a feedback signal, which is related to the output power of the laser being delivered at the fiber tip and to the temperature of the sapphire lens element and its ambience or surroundings." *Id.* (citing Kosa, 11:20–25); Reply Br. 3. Appellants identify this argument as a "teaching away" argument. Reply Br. 3.

We disagree with Appellants' contention that the cited text of Kosa teaches the desirability of distinct (i.e., non-unitary) lens and fiber. Rather, the cited text of Kosa discloses benefits of employing a sapphire lens element. Indeed, touting the advantages of a sapphire lens does not amount to criticizing, discrediting, or discouraging provision of a unitary optical

fiber with a spherical distal tip. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

Regarding the Examiner's conclusion that it would have been obvious to fuse Kosa's "spherical lens to the distal end of the optical fiber" (Final Act. 7), Appellants argue that fusing Kosa's optical fiber 20 and lens 30 would not yield a "unitary optical fiber" with a spherical distal end as claimed, but rather would yield "an optical fiber with a lens affixed thereon." Reply Br. 3. Lacking an explanation of how an optical fiber with a lens affixed thereto differs from a "unitary optical fiber," we are not persuaded by this argument.

Regarding the Examiner's conclusion that it would have been obvious to use "a fiber optic with a unitary spherical lens, as disclosed by Samson and Everett[,] to predictably increase the control and efficiency of light transfer between the optical fiber and spherical lens" (Final Act. 7), Appellants argue that replacing Kosa's sapphire lens with an end of the optical fiber 20 would oppose "the advantages of Kosa with respect to the use of the sapphire lens 30." *Id.* Here, it is unclear whether Appellants are contending that (1) Kosa thus teaches away from using an optical fiber with a unitary spherical lens, or (2) using an optical fiber with a unitary spherical lens would render Kosa unsuitable for its intended purpose. If this is a teaching away argument, we fail to see where Kosa criticizes, discredits, or discourages using an optical fiber with a unitary spherical lens. If Appellants contend that Kosa would be rendered unsuitable for its intended purpose, Appellants have failed to identify the intended purpose and explain why an optical fiber with a unitary spherical lens would frustrate such purpose.

Appellants then argue that Kosa "contradicts" a modification that would add a polyimide, polydimethyl siloane, or plastic coating to its sleeve 31 when it discloses the advantageous use of an outer metal sleeve for fluoroscopic identification and location of the optical fiber tip. Appeal Br. 15 (quoting Kosa, 10:65–11:7). According to Appellants, one skilled in the art would not add a coating to Kosa's sleeve, "as such a modification may impede the 'ease of identification and location of the optical fiber tip.'" *Id.*

The Examiner responds that adding an outer layer of "a radio opaque plastic would enhance the detection of the tip of the apparatus by providing more radio opaque material, while" adding an outer layer of "a non-radio opaque plastic would have a negligible effect on detection because detection waves would simply pass through the plastic." Ans. 4.

The Examiner has the better position. Indeed, as noted by the Examiner, Prince specifically teaches applying a plastic coating to a radio opaque sleeve. *Id.* (citing Prince, 4:27–40 ("[t]he fiber 3 and . . . radio-opaque sleeve 7 are covered with a thin tube of plastic material 9 [that] provides a smooth, biocompatible, nonthrombogenic surface.")).

For the reasons set forth above, we sustain the rejection of claim 1. Claims 2, 3, 6, 7, 9, 10, 16, and 19–25 fall with claim 1.

Rejection II

Appellants again argue claims 1–3, 6, 7, 9, 10, 16, and 19–25 as a group. Appeal Br. 18. We select claim 1 as representative. Claims 2, 3, 6, 7, 9, 10, 16, and 19–25 stand or fall with claim 1.

The Examiner finds that Samson discloses a unitary optical fiber 21 with a proximal end and a spherical distal end 32, and a cladding (epoxy 90) with a coating (metal collar 34) thereon. Final Act. 10–11. The Examiner

finds, however, that Samson does not disclose separate first and second coatings, with the second coating including both an inner coating and an outer polymeric or acrylic coating. *Id.* at 11. The Examiner looks to Kosa for a first coating (epoxy fillet 34) and a second coating (radio opaque sleeve 31), and finds that Prince discloses an optical fiber 1 with a spherical tip 2, a cladding 6, and a coating (radio opaque sleeve 7) covered with a thin tube of plastic material 9 "to provide a smooth, biocompatible, nonthrombogenic surface to facilitate manipulations and minimize clot formation on the fiber surface." Final Act. 11–12 (citing Kosa, Fig. 2, 9:1–40 and Prince, Fig. 2, 4:29–33).

The Examiner concludes that it would have been obvious to add Prince's plastic tube 9 over Samson's metal collar 34 "extending proximally from the metallic collar and sealed together using a[n] epoxy first layer, as disclosed by Kosa, [] to predictably increase the biocompatibility of the apparatus," the metal collar 34 being an inner layer of the second coating, and the plastic tube 9 being an outer layer of the second coating, the plastic tube "provid[ing] a smooth, biocompatible, nonthrombogenic surface to facilitate manipulations and minimize clot formation and protein adhesion on the surface of the apparatus." *Id.* at 12.

Appellants argue that (1) Samson, Kosa, and Prince require a bonded outer metal component that differs from the claimed coatings, and (2) the epoxy 90 on Samson's fiber 21 "is required to bond the metal collar 34 and lens 32," such that replacing the epoxy and collar with a cladding or "the coatings recited in claim 1 would destroy the integrity of the configuration taught in Samson. Appeal Br. 17. Thus, argue Appellants, it would not have been obvious to one skilled in the art to modify or replace Samson's bonded

metal collar 34 with a second coating having an inner coating and an outer coating comprising a polymer or acrylic. *Id.* at 18.

The Examiner responds that the pending rejection does not propose replacement of Samson's metal collar with cladding, such that Appellants' argument does not address the combination proposed by the Examiner. Ans. 5. According to the Examiner, Samson explicitly discloses applying a polyimide coating over the metal collar (*see* Samson, 6:55–58 ("A . . . polyimide coating can be applied to the exterior surface of . . . the metallic cup-like collar member 34.")) to meet the claimed "second coating," and the pending rejection proposes that the claimed "first coating" is added to Samson via "inclusion of a biocompatible coating over the cladding [90] proximal to the 'second' coating [34]," wherein the biocompatible coating of the "first coating" and the polyimide coating over the metal collar of the "second coating" are bound by the epoxy 90 as cladding. Ans. 5–6. Further, Kosa discloses first 34 and second 31 adjacent coatings. Final Act. 11. The Examiner then explains that Prince is relied on because it teaches that a polymeric coating is desirable because it provides "a smooth, biocompatible surface." *Id.* at 6.

Appellants reply that, because Samson's metal collar 34 does not initiate at, and extend distally from, a distal surface of any biocompatible coating, it cannot form the claimed second outer coating. Reply Br. 4–5.

We are not persuaded by this argument, because it does not address the Examiner's rejection, which proposes to add a "first coating" to Samson via inclusion of a biocompatible coating over its cladding 90 proximal to the (metal collar 34). Ans. 5–6. Appellants do not refute the Examiner's

contention that it would have been obvious to add a first (biocompatible) coating to Samson as proposed by the Examiner.

For the reasons set forth above, we sustain the rejection of claim 1. Claims 2, 3, 6, 7, 9, 10, 16, and 19–25 fall with claim 1.

DECISION

We AFFIRM the rejection of claims 1–3, 6, 7, 9, 10, 16, and 19–25 under 35 U.S.C. § 103(a) as unpatentable over Kosa, Samson, Everett, and Prince.

We AFFIRM the rejection of claims 1–3, 6, 7, 9, 10, 16, and 19–25 under 35 U.S.C. § 103(a) as unpatentable over Samson, Kosa, and Prince.

AFFIRMED