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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DOMINIQUE LUNEAU and PAUL VARILLON

Appeal 2014-006787
Application 12/117,646¹
Technology Center 2400

Before JOHNNY A. KUMAR, CARL L. SILVERMAN, and
JOYCE CRAIG, *Administrative Patent Judges*.

SILVERMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–26. Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

¹ The real party in interest is identified as STMicroelectronics SA. App. Br. 2.

STATEMENT OF THE CASE

Appellants' invention relates to a cavity exploration device, such as an endoscope. Abstract. Claim 1 is exemplary of the matter on appeal:

1. A process, comprising:

manufacturing a head of a cavity exploration device, the head including an integrated circuit support presenting first and second surfaces, and a plurality of through-holes associated with respective first and second conducting pads respectively placed on the first and second surfaces of the integrated circuit support, by:

positioning respective conducting micro-cables in the through-holes, the micro-cables having an uninsulated portion of a length greater than or equal to a thickness of the support;

soldering the micro-cables onto the first and second associated conducting pads;

gluing the micro-cables with a glue onto the first and second associated conducting pads; and

molding the micro-cable in first and second layers of resin onto the respective first and second conducting pads, with said resin layers covering the uninsulated portion of said micro-cable.

App. Br. 40 (Claims Appendix).

REJECTIONS

The following rejections are before us for review:

Claims 1–11 and 13–26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Aizenfeld et al. (US 2006/0063976 A1; published March 23, 2006) (“Aizenfeld”) in view of Kondo et al. (US 5,438,478; issued August 1, 1995) (“Kondo”) and Thomas Lee Ellison (US 2005/0244095 A1; published November 3, 2005) (“Ellison”). Final Act. 2–34.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Aizenfeld in view of Kondo, Ellison, and Miyazaki (US 5,966,168; issued October 12, 1999). Final Act. 34–35.

ANALYSIS

Appellants argue the Examiner errs in finding Kondo teaches the claim 1 limitations

positioning respective conducting micro-cables in the through-holes, the micro-cables having an uninsulated portion of a length greater than or equal to a thickness of the support; [and]
soldering the micro-cables onto the first and second associated conducting pads.

App. Br. 22–25; Reply Br. 2–3.

Appellants argue “[t]he Examiner does not identify specific elements of Kondo that allegedly correspond to the recited elements.” *Id.* at 23 (citing Final Act. 3–4; Kondo Fig. 10; col. 13, ll. 51–67). According to Appellants, regarding Kondo:

To the extent the Examiner points to the lead 112 of lead frame 110 or the protrusion 128 of the lead 112, and to the through-hole 102 of substrate 100, there is no indication the lead 112 or the protrusion 128 is “a micro-cable” having “an uninsulated portion of a length greater than or equal to a thickness,” of the substrate 100, or that the lead 112 or the protrusion 128 is soldered “onto first and second associated conducting pads.” The Examiner does not contend that Ellison or Miyazaki provide the missing teachings. The Examiner fails to even acknowledge the teachings are missing, and thus also does not provide any explanation for why the required further modifications would be obvious. Thus, the Examiner has failed to present even a *prima facie* case of obviousness as none of the references disclose or otherwise render obvious the above-discussed features claim 1.

App. Br. 23–24; *see also* Reply Br. 2.

The Examiner finds Kondo teaches the disputed limitations:

Kondo describes a small protrusion 128 having a soldered joint between the lead and the through-hole in diameter smaller than the diameter of the through-hole ... two or more through-holes the through-hole instead of using the auxiliary electrode per lead may be formed in the substrate (Kondo, col. 13, lines 51- 67; FIG. 20).

Therefore, one of ordinary skill in the art at the time of invention would have been motivated to combine the teachings of Kondo and Aizenfeld (from same field of endoscopy/cavity exploration) so that the Aizenfeld optical head for an endoscope would receive the benefits of Kondo electronic component carriers and method of producing the same as well as electronic devices in order for microcables/conductors/wires/electrodes to be inserted or “engaged” in a “through-hole” straggling the two parallel surfaces of a substrate (Kondo, col. 13,[] lines 51-62; col. 14, lines 1-25; Fig. 20-2Id) and then soldered to a terminal (Kondo: col 14, lines 1-4; col. 13, lines 51-56; FIG. 20).

Ans. 38.

Based on the record before us, we are persuaded by Appellants’ arguments because the Examiner’s findings are insufficient to establish obviousness. In particular, the Examiner does not identify specific elements of Kondo that correspond to “the micro-cables having an uninsulated portion of a length greater than or equal to a thickness of the support.”

Here, the record presents insufficient factual evidence required to support the Examiner’s finding of obviousness regarding claim 1.

In view of the above, we do not sustain the rejection of claim 1 and independent claim 8 which recites the disputed limitations. We also do not sustain the rejection of dependent claims 2–7 and 9–12. *Cf. In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious . . .”).

Regarding independent claims 13, 17, and 25, we are not persuaded by Appellants' arguments, which rely in part on arguments presented for claim 1. App. Br. 33–34; Reply Br. 7–10. We note none of these claims recite the claim 1 disputed limitation “the micro-cables having an uninsulated portion of a length greater than or equal to a thickness of the support” and, except for this disputed limitation, we agree with the Examiner's findings discussed, *supra*, regarding the combination of Aizenfeld and Kondo with respect to the remaining limitations of claim 1. Ans. 38, 46 (citing Kondo Figs. 20a–21d; col. 13. ll. 51–67; col. 14. ll. 1–25).

Regarding independent claim 13, we are not persuaded by Appellants' argument that Aizenfeld, Kondo, and Ellison do not disclose the limitations “gluing the micro-cable to the integrated circuit” and “covering exposed uninsulated portions of the micro-cable adjacent to the solder joint with a resin.” App. Br. 34–35. According to Appellants, “[t]he Examiner does not identify what in Ellison allegedly corresponds to the recited micro-cable, and there is no discussion or suggestion of ‘gluing’ micro-cables to anything, or of ‘covering’ portions of glued micro-cables ‘adjacent to a solder joint with a resin.’” *Id.* at 34.

Regarding the term “micro-cable,” Appellants provide no persuasive evidence that the Examiner's interpretation of the term as including the teachings of Aizenfeld, Kondo, and Ellison is unreasonable or overbroad. *See* Spec. 3, l. 27 to 4, l. 5. Claim terms in a patent application are given the broadest reasonable interpretation consistent with the Specification, as understood by one of ordinary skill in the art. *In re Crush*, 393 F.3d 1253, 1256 (Fed. Cir. 2004). However, our reviewing court cautions that great

care should be taken to avoid reading limitations of the Specification into the claims. *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003). Further, we agree with the Examiner’s findings that Ellison teaches adhesives and resins can be used to secure and protect leads. Ans. 47 (citing Ellison Fig. 4; ¶ 41). Moreover, as shown by the cited references, soldering, gluing, and applying resin are well known techniques for use with electrical connections.

Appellants argue unreasonably narrow interpretations of the references as would be understood by one of ordinary skill in the art and argue the references individually. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (“[O]ne cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references” (citations omitted)); *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

We agree with the Examiner’s findings that the combination of Aizenfeld, Kondo, and Ellison teaches the limitations of claim 13 and one of ordinary skill in the art would have been motivated to combine the teaching of these references to improve electrical connections. Final Act. 19–20; Ans. 45–47.

On this record, Appellants do not present sufficient evidence that the combination of the cited references was “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art.” *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418–19).

Therefore, we sustain the rejection of independent claim 13, and dependent claims 14–16, not argued separately. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Regarding independent claims 17 and 25, we are not persuaded by Appellants' arguments that Aizenfeld, Kondo, and Ellison do not disclose the limitations

a plurality of pairs of bonding pads associated with respective through-holes in the plurality of through-holes;

a plurality of micro-cables passing through respective through-holes in the plurality of through-holes, each micro-cable in the plurality of micro-cables soldered and glued to a respective pair of bonding pads of the plurality of bonding pads to form respective solder joints;

a first layer of resin on a first side of the integrated circuit support configured to cover electrically conductive surfaces associated with the solder joints on the first side of the integrated circuit support; and

a second layer of resin on a second side of the integrated circuit support configured to cover electrically conductive surfaces associated with the solder joints on the second side of the integrated circuit support.

App. Br. 35–38; Reply Br. 7–10.

The Examiner finds, and we agree:

Ellison discloses . . . wherein an optoelectronic component 250 includes an optoelectronic device 252 (with electrical leads or cables as was known by the skilled artisan at the time of the claimed invention) mounted with an adhesive 254 on substrate 256, such as a printed circuit board where optically clear adhesive or epoxy was used to protect device 252, wires 258, and optical conduit 260 on substrate 256 (Ellison, [0041]; Fig. 4).

Therefore, one of ordinary skill in the art at the time of invention would have been motivated to combine the teachings of Ellison, Aizenfeld and

Kondo (from same fields of micro-electronic and packaging technologies) so that the Aizenfeld and Kondo systems would receive the benefit of Ellison integrated optical sub-assembly having epoxy chip package in order to provide mounting, fastening and insulating electrical leads in a packaging substrate.

Ans. 50.

Appellants argue unreasonably narrow interpretations of the cited references as would be understood by one of ordinary skill in the art and argue the references individually rather than in combination.

In view of the above, we sustain the rejection of independent claims 17 and 25, and dependent claims 18, 19, 23, 24, and 26, not argued separately.

Regarding dependent claims 20–22, Appellants argue Aizenfeld does not disclose the limitation “a guide-hole through the integrated circuit support cavity.” App. Br. 38.

The Examiner finds Aizenfeld teaches an opening (hole) for passing tools or as a passageway. Ans. 39–40 (citing Aizenfeld Figs. 8, 12a–13; ¶¶ 31, 56, ll. 21–24; ¶¶ 58–64). We are not persuaded by Appellants’ arguments, which rely on unreasonably narrow teachings of Aizenfeld as would be understood by one of ordinary skill in the art. Therefore, we sustain the rejections of claims 20–22.

DECISION

We reverse the Examiner’s decision rejecting claims 1–12.

We affirm the Examiner’s decision rejecting claims 13–26.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R.

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§ 1.136(a)(1)(iv).

AFFIRMED-IN-PART