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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DESHENG HUANG,
RUOXI SUN, and WEI ZHANG

Appeal 2020-001162
Application 14/729,664
Technology Center 3700

Before CHARLES N. GREENHUT, MICHAEL L. HOELTER, and
ANNETTE R. REIMERS, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner’s decision to reject claims 1, 3, 8–13, 19–24, and 27–32. Claims 2, 4–7, 14–18, 25, and 26 have been canceled. Final Act. 1–2.² We have jurisdiction under 35 U.S.C. § 6(b).

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as “Covidien LP. The ultimate parent of Covidien LP is Medtronic plc.” Appeal Brief (“Appeal Br.”) 1, filed May 28, 2019.

² Final Office Action (“Final Act.”), dated Dec. 31, 2018.

We REVERSE.

CLAIMED SUBJECT MATTER

The claimed subject matter “relates to endosurgical devices and systems for observing internal features of a body during minimally invasive surgical procedures, and more particularly, to endoscope systems and the like.” Spec. ¶ 1.

Claim 1, the sole independent claim on appeal, is representative of the claimed subject matter and recites:

1. An endoscope comprising:
 - a handle;
 - an elongated body having a cylindrical wall extending distally from the handle, the cylindrical wall of the elongated body including a distal portion terminating at a distal end;
 - an image sensor disposed within the distal portion of the cylindrical wall;
 - a lens disposed at the distal end of the cylindrical wall;
 - a light source including light-emitting diodes disposed at the distal end of the cylindrical wall and positioned radially outward of the lens;
 - a thermally conductive substrate disposed within the distal portion of the cylindrical wall and including a distal side affixed to the light source;
 - a heat sink disposed within the distal portion of the cylindrical wall and extending to the distal end, the heat sink having a cylindrical shape including an outer surface in full contact with the cylindrical wall of the elongated body and an inner surface having a profile matching the lens and the light source, the heat sink including a distal side coupled to the thermally conductive substrate; and

a thermally conductive adhesive disposed between the distal side of the heat sink and the thermally conductive substrate.

THE REJECTIONS³

- I. Claims 1, 3, 8–10, 24, and 28–32 stand rejected under 35 U.S.C. § 103 as unpatentable over Krivopisk (US 2014/0316198 A1, published Oct. 23, 2014) and Rogers (US 2012/0320581 A1, published Dec. 20, 2012).
- II. Claims 11–13, 19–23, and 27 stand rejected under 35 U.S.C. § 103 as unpatentable over Krivopisk, Rogers, and Yamaguchi (US 2002/0184122 A1, published Dec. 5, 2002).

ANALYSIS

Rejection I – Obviousness over Krivopisk and Rogers

As to independent claim 1, the Examiner finds that Krivopisk discloses an endoscope having a light source (illuminators 740a–740c), a thermally conductive substrate (substrate 720), and a heat sink (manifold 2700 and housing 780). Final Act. 4–5 (citing Krivopisk Figs. 25, 27A).⁴

Appellant contends that Krivopisk does not disclose the limitation “the heat sink having . . . an inner surface having a profile matching . . . the light source,” as claimed. Appeal Br. 6. Appellant points out that

³ The rejection of claim 31 under 35 U.S.C. § 112, second paragraph, as indefinite, has been withdrawn. See Examiner’s Answer (“Ans.”) 9, dated Sept. 26, 2019; Final Act. 3.

⁴ The Examiner relies on Rogers for disclosing limitations other than those discussed above. Final Act. 5–6.

Krivopisk's illuminators 740a–740c “are disposed on” substrate 720, “which, in turn, is placed against a distal end of” housing 780. *Id.* at 7.

The Examiner responds that the limitation at issue is disclosed in Krivopisk's Figure 27A. Ans. 10. The Examiner asserts that this limitation is broad and interprets “profile matching” as “any configuration and/or shape that correspondingly ‘matches’ or ‘fits’ with the lens and the light source.” *Id.* at 12.

Appellant has the better position here. The Specification does not define “profile matching.” Spec., *passim*. However, the Specification discloses that “[t]he *profile* of the heat sink 172 may be designed to *match* the lens 144 and the light source 150 so that in addition to conducting heat, the heat sink 172 *also aids in fixing* the lens 144 and the light source 150 within the elongated body 114.” Spec. ¶ 39 (emphases added). We thus construe “profile matching” as “any configuration or shape that correspondingly matches or fits for aiding fixation” within the elongated body of the endoscope.

Figure 25 of Krivopisk is reproduced below.

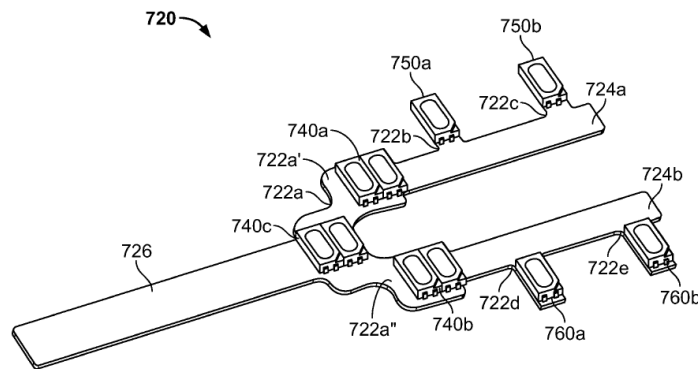


FIG. 25

Figure 25 of Krivopisk above “shows a perspective view of a flexible illumination circuit board” including substrate 720 having connector 726, and illuminators 740a–740c. Krivopisk ¶¶ 245, 683, 690.

Figure 27A of Krivopisk is reproduced below.

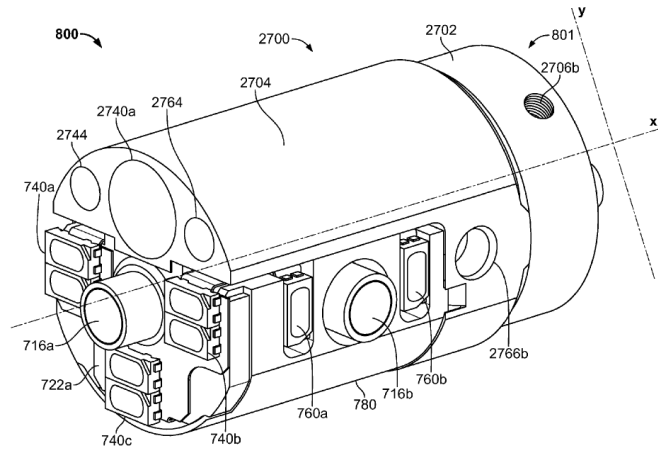


FIG. 27A

Figure 27A of Krivopisk above “shows a perspective view of an endoscope’s tip section” having illuminators 740a–740c, manifold 2700, and housing 780. Krivopisk ¶¶ 250, 682, 693, 696. As seen from Figures 25 and 27A, illuminators 740a–740c are positioned on connector 726. It is connector 726—rather than illuminators 740a–740c—that *contacts the inner surfaces* of manifold 2700 and housing 780. Thus, the inner surfaces of manifold 2700 and housing 780 (corresponding to the claimed heat sink) cannot be said as having a configuration or shape that correspondingly matches or fits with illuminators 740a–740c (corresponding to the claimed light source) for aiding fixation within the elongated body of the endoscope. As such, the Examiner does not establish adequately by a preponderance of the evidence that Krivopisk discloses the limitation “the heat sink having . . . an inner surface having a profile matching . . . the light source,” as required by claim 1.

Accordingly, for the above reasons, we do not sustain the Examiner’s rejection of claim 1, and claims 3, 8–10, 24, and 28–32 depending therefrom as unpatentable over Krivopisk and Rogers.

Rejection II – Obviousness over Krivopisk, Rogers, and Yamaguchi

Claims 11–13, 19–23, and 27 depend either directly or indirectly from claim 1. Appeal Br. 16–17 (Claims App.). The Examiner relies on Yamaguchi for disclosing “an integrated processor disposed within the handle.” Final Act. 8. Thus, the Examiner does not rely on the teachings of Yamaguchi in any manner that remedies the deficiencies of the combination of Krivopisk and Rogers discussed above. Accordingly, for reasons similar to those discussed above for claim 1, we do not sustain the Examiner’s rejection of claims 11–13, 19–23, and 27 as unpatentable over Krivopisk, Rogers, and Yamaguchi.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1, 3, 8–10, 24, 28–32	103	Krivopisk, Rogers		1, 3, 8–10, 24, 28–32
11–13, 19–23, 27	103	Krivopisk, Rogers, Yamaguchi		11–13, 19–23, 27
Overall Outcome				1, 3, 8–13, 19–24, 27–32

REVERSED