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| 3M INNOVATIVE PROPERTIES COMPANY<br>PO BOX 33427<br>ST. PAUL, MN 55133-3427 |             |                      | JORDAN, ANDREW      |                  |
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* TAKAYAKI HAYAUCHI and TERRY L. SMITH

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Appeal 2019-004889  
Application 15/115,428  
Technology Center 2800

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Before LINDA M. GAUDETTE, DONNA M. PRAISS, and  
JANE E. INGLESE, *Administrative Patent Judges*.

INGLESE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant<sup>1</sup> requests our review under 35 U.S.C. § 134(a) of the Examiner’s decision to finally reject claims 1–16.<sup>2</sup> We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We REVERSE and enter a NEW GROUND OF REJECTION under 37 C.F.R. § 41.50(b).

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<sup>1</sup> We use the word “Appellant” to refer to the “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies 3M Company and 3M Innovative Properties as the real parties in interest. Appeal Brief filed July 3, 2018 (“Appeal Br.”) at 2.

<sup>2</sup> Final Office Action entered February 9, 2018 (“Final Act.”) at 1.

CLAIMED SUBJECT MATTER

Appellant claims an optical ferrule (independent claim 1) and a connector with a housing (independent claims 3, 7, and 8). Appeal Br. 2–5. Independent claims 1 and 3 illustrate the subject matter on appeal, and read as follows:

1. An optical ferrule, comprising:
  - an upper wall;
  - a bottom wall on the opposite side of the upper wall;
  - a pair of side walls that face each other and connect the upper wall and the bottom wall, such that a guide opening is formed on an inside thereof together with the upper wall and the bottom wall;
  - a guide part that extends forward from the upper wall and the guide opening; and
  - an optical coupler provided on an upper surface of the upper wall so that the upper wall is disposed between the optical coupler and the guide opening;*
    - the optical coupler having a waveguide aligning part and a light direction converter, the waveguide aligning part aligns and holds an optical waveguide, and the light direction converter comprising:
      - an entrance surface that receives incoming light from the optical waveguide that is aligned and arranged by the waveguide aligning part;
      - a light direction converting surface that receives light from the entrance surface propagated along an incoming axis, and reflects the received light, wherein the reflected light is propagated by the light direction converting surface along a direction converted axis that is different from the incoming axis; and
      - an exit surface that receives light from the light direction converting surface and propagates the received light along an outgoing axis, and transmits the light as outgoing light emitted from the optical ferrule;
    - the optical ferrule having an integrated structure.

3. A connector with a housing,  
the housing comprising:  
*a first attaching region that holds and retains an optical waveguide, and moves inside the housing; and*  
*an optical coupler disposed inside the housing and that moves inside the housing;*  
the optical coupler comprising:  
a second attaching region that holds and retains an optical waveguide that is held and retained in the first attaching region;  
and  
a light direction converting surface that receives light from the optical waveguide and converts the direction, when an optical waveguide is held and retained in the first attaching region and the second attaching region;  
*wherein when the connector is mated to an opposing connector, the first attaching region moves within the housing and causes the optical coupler to move within the housing.*

Appeal Br. 13–14 (Claims Appendix) (emphasis added).

Like claim 3, independent claim 8 recites, in part, a connector with a housing comprising a first attaching region that moves inside the housing, an optical coupler that moves inside the housing, and when the connector is mated to the opposing connector, the first attaching region and the second attaching region move within the housing. Similar to claim 3, independent claim 7 recites a connector with a housing, an optical coupler that moves inside the housing, and when the connector is mated to the opposing connector, a second attaching region moves inside the housing.

### REJECTIONS

The Examiner maintains the following rejections in the Examiner's Answer entered April 9, 2019 ("Ans."):

I. Claims 3–11, 15, and 16 under 35 U.S.C. § 102(a)(1) as anticipated by Chiba (JP 2007011060 A, published January 18, 2007);<sup>3</sup> and

II. Claims 1, 2, and 12–14 under 35 U.S.C. § 103 as unpatentable over Chiba in view of Meadowcroft et al. (US 2012/0063725 A1, March 15, 2012).

#### FACTUAL FINDINGS AND ANALYSIS

Upon consideration of the evidence relied upon in this appeal and each of Appellant’s contentions, we procedurally reverse the Examiner’s rejection of claims 3–11, 15, and 16 under 35 U.S.C. § 102(a)(1) (Rejection I), and enter a new ground of rejection against these claims under 35 U.S.C. § 112(b). We reverse the Examiner’s rejection of claims 1, 2, and 12–14 under 35 U.S.C. § 103 (Rejection II) for reasons set forth in the Appeal and Reply Briefs, and below.

#### Rejection I and New Ground of Rejection Under 35 U.S.C. § 112(b)

We first address the Examiner’s rejection of claims 3–11, 15, and 16 under 35 U.S.C. § 102(a)(1) as anticipated by Chiba.

As discussed above, independent claims 3 and 8 recite a connector with a housing comprising a first attaching region that moves inside the housing, and an optical coupler that moves inside the housing. Independent claim 7 recites a connector with a housing, and an optical coupler that moves inside the housing. Claims 3 recites that when the connector is mated to an opposing connector, the first attaching region moves within the housing and

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<sup>3</sup> Although the Examiner refers to this published patent application as “Sony,” the application’s assignee, we refer to this application as “Chiba,” the last name of the sole inventor. Appellant does not dispute the Examiner’s reliance on an English translation of this application entered into the record on May 18, 2017.

causes the optical coupler to move within the housing, claim 8 recites that when the connector is mated to the opposing connector, the first attaching region and the second attaching region move within the housing, and claim 7 recites that when the connector is mated to the opposing connector, the second attaching region moves inside the housing.

Claims 3, 7, and 8 thus recite an apparatus (a connector with a housing), recite movement of particular components of the apparatus (first and second attaching regions, and an optical coupler), but also recite certain conditions under which the components move (when the connector is mated to an opposing connector). For reasons discussed below, we are unable to ascertain the scope of the subject matter encompassed by claims 3, 7, and 8.

Claims are in compliance with 35 U.S.C. § 112(b) if “the claims, read in light of the specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits.” *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385 (Fed. Cir. 1986) (citing *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 624 (Fed. Cir. 1985)). A claim is properly rejected as indefinite if, after applying a broadest reasonable interpretation consistent with the Specification, the metes and bounds of the claim are not clear because the claim “contains words or phrases whose meaning is unclear.” *Ex parte McAward*, Appeal 2015-006416, 2017 WL 3669566, at \*5 (PTAB Aug. 25, 2017) (precedential) (citing *In re Packard*, 751 F.3d 1307, 1310 (Fed. Cir. 2014) (per curiam)).

Appellant’s Specification describes exemplary optical connectors 5, 6, and explains that optical connector 5 includes optical coupler or ferrule 1A (second attaching region), optical connector 6 includes optical coupler or

ferrule 1B (second attaching region), and both optical connectors 5, 6 include securement members 4 (first attaching regions). Spec. 18, ll. 24–31; 19, l. 37–20, l. 8; Fig. 24. The Specification indicates that Figure 24 illustrates an initial mating state of optical connectors 5, 6, while Figure 25 illustrates a final mating state of optical connectors 5, 6. Spec. 18, ll. 24–28.

As shown in Figure 24, in the initial mating state, securement members 4 (first attaching regions), optical coupler or ferrule 1A (second attaching region), and optical coupler or ferrule 1B (second attaching region) are each static. The Specification explains that to reach the final mating state shown in Figure 25, however, securement members 4 (first attaching region) of optical connector 6 move in a direction perpendicular to the mating direction of optical connectors 5, 6, causing optical ferrules 1A, 1B (second attaching regions) to slant relative to the mating direction of optical connectors 5, 6. Spec. 18, ll. 27–30.

In view of this description in the Specification, we are unable to determine whether Appellant intends to claim a connector in the process of reaching a final mating state, such that first and second attaching regions and an optical connector are moving inside a housing (“a first attaching region that moves inside the housing,” “an optical coupler that moves inside the housing,” “a second attaching region moves inside the housing”), or if Appellant intends to claim a connector in an initial mating state that is capable of such movement, or a connector in a final mating state that has undergone such movement (“when the connector is mated to an opposing connector, the first attaching region moves within the housing and causes the optical coupler to move within the housing,” “when the connector is mated to the opposing connector, the first attaching region and the second attaching

region move within the housing,” and “when the connector is mated to the opposing connector, the second attaching region moves inside the housing.”).

We, therefore, cannot determine what is encompassed by claims 3, 7, and 8. *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1217 (Fed. Cir. 1991) (A claim is considered indefinite under 35 U.S.C. § 112, second paragraph, if it does not reasonably apprise those skilled in the art of its scope). Consequently, we cannot determine the propriety of the Examiner’s rejection of claims 3–11, 15, and 16 under 35 U.S.C. § 102(a)(1) as anticipated by Chiba because to do so would require considerable speculation with regard to the metes and bounds of the claimed subject matter, and such speculation would not be appropriate. *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970); *In re Steele*, 305 F.2d 859, 862 (CCPA 1962).

We, accordingly, procedurally reverse the Examiner’s rejection of claims 3–11, 15, and 16 under 35 U.S.C. § 102(a)(1), and enter a new ground of rejection against these claims under 35 U.S.C. § 112(b). We emphasize that this is a technical reversal of the rejections under 35 U.S.C. § 102(a)(1), and is not a reversal based upon the merits of the rejection.

### Rejection II

We turn now to the Examiner’s rejection of claims 1, 2, and 12–14 under 35 U.S.C. § 103 as unpatentable over Chiba in view of Meadowcroft. We limit our discussion to claim 1, the only independent claim subject to this rejection. Claim 1 recites an optical ferrule comprising, in part, an upper wall and an optical coupler provided on an upper surface of the upper wall.

The Examiner finds that Chiba discloses an optical ferrule comprising housing 11 having a top wall (upper wall), and optical element part 43 (optical coupler) provided on a lower surface of housing 11's top wall (upper wall), rather than on an upper surface the wall as recited in claim 1. Final Act. 12–13; Chiba ¶¶ 45, 47–49, Fig. 11. The Examiner finds, however, that Meadowcroft discloses optical communications module 1 comprised of two generally flat optical connector modules 10, 20 that slidably engage one another. Final Act. 13 (citing Meadowcroft Figs. 2, 4). The Examiner finds Meadowcroft discloses that first optical connector module 10 includes optical coupling system 50 (optical coupler) provided on the top of module 10 (on an upper surface of an upper wall). *Id.*

In view of this disclosure in Meadowcroft, the Examiner concludes that it would have been obvious to one of ordinary skill in the art “to provide optical coupling via a projecting module protrusion along the lines of Meadowcroft” in Chiba’s optical ferrule “to provide more compact connection structures.” Final Act. 13.

The Examiner’s reasoning for the proposed modification of Chiba’s optical ferrule lacks rational underpinning, however, for reasons expressed by Appellant and discussed below.

Chiba discloses optical connector plug 41a comprising optical element 43 disposed inside housing 11, and Chiba illustrates optical element 43 positioned adjacent to the inner surface of the upper wall of housing 11. Chiba ¶¶ 18, 19, 23, 28, 46, 47; Fig. 11. Chiba discloses that this configuration achieves the objectives of preventing laser light from leaking from the connector, and preventing dust and dirt from damaging optical fibers in the connector. Chiba ¶¶ 9, 11, 12.

Meadowcroft discloses optical communications module 1 comprising connector module 10 and optical coupling system 50 (optical coupler) disposed on upper surface 10a (outer surface) of connector module 10. Meadowcroft ¶ 24; Fig. 2. As discussed above, in view of this disclosure in Meadowcroft, the Examiner determines that it would have been obvious to modify Chiba's optical connector plug 41a so that optical element 43 (optical coupler) projects from the outer surface of upper wall of housing 11 in order "to provide more compact connection structures." Final Act. 13. As Appellant points out, however, modifying Chiba's optical connector plug 41a in this way so that optical element 43 (optical coupler) projects from the outer surface of upper wall of housing 11 would actually increase the height or thickness of optical connector plug 41a, rather than making it more compact as the Examiner asserts. Appeal Br. 11. Furthermore, such modification of Chiba's optical connector plug 41a would likely undermine Chiba's objectives of preventing laser light from leaking from the connector, and preventing dust and dirt from damaging optical fibers in the connector, as Appellant also points out. Appeal Br. 10.

On the record before us, therefore, the Examiner does not provide sound technical reasoning having rational underpinning that explains why one of ordinary skill in the art would have modified Chiba's optical connector plug 41a so that optical element 43 (optical coupler) projects from the outer surface of upper wall of housing 11. As a consequence, the Examiner does not establish that one of ordinary skill in the art would have combined the relied-upon disclosures of Chiba and Meadowcroft in the manner proposed to arrive at an optical ferrule comprising, in part, an upper

wall and an optical coupler provided on an upper surface of the upper wall, as required by claim 1.

We, accordingly, do not sustain the Examiner’s rejection of claim 1, and claims 2 and 12–14, which each depend from claim 1, under 35 U.S.C. § 103 as unpatentable over Chiba in view of Meadowcroft.

DECISION SUMMARY

| Claims Rejected         | 35 U.S.C. § | Reference(s)/ Basis | Affirmed | Reversed     | New Ground   |
|-------------------------|-------------|---------------------|----------|--------------|--------------|
| 3–11, 15, 16            | 112(b)      | Indefiniteness      |          |              | 3–11, 15, 16 |
| 3–11, 15, 16            | 102(a)(1)   | Chiba               |          | 3–11, 15, 16 |              |
| 1, 2, 12–14             | 103         | Chiba, Meadowcroft  |          | 1, 2, 12–14  |              |
| <b>Overall Outcome:</b> |             |                     |          | 1–16         | 3–11, 15, 16 |

37 C.F.R. § 41.50(b) provides that an appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

- (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .
- (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same Record.

Appeal 2019-004889  
Application 15/115,428

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). *See* 37 C.F.R. § 41.50(f).

REVERSED;  
37 C.F.R. §41.50(b)