

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOSHIBA CORPORATION,
Petitioner,

v.

OPTICAL DEVICES, LLC,
Patent Owner.

Case IPR2014-01443
Patent RE40,927 E

Before ERICA A. FRANKLIN, GLENN J. PERRY, and JAMES B. ARPIN,
Administrative Patent Judges.

FRANKLIN, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. *Background*

Toshiba Corporation (“Petitioner”) filed a Petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 37, 38, 48, 49, 51–53, 55–58, 60, 61, 63, 64, 67–69, and 71 of Patent No. US RE40,927 E (Ex. 1001, “the ’927 patent”). Optical Devices, LLC (“Patent Owner”) filed a Preliminary Response (Paper 7, “Prelim. Resp.”).

On March 10, 2015, we instituted an *inter partes* review of claims 37, 38, 48, 49, 51–53, 55, 57, 58, 60, 61, 63, 64, 67–69, and 71 of the ’927 patent. Paper 8 (“Dec. Inst.”). Patent Owner filed a Patent Owner Response to the Petition. Paper 15 (“PO Resp.”). Petitioner filed a Reply to the Patent Owner Response. Paper 21 (“Pet. Reply”).

Additionally, Patent Owner filed a Contingent Motion to Amend seeking to replace any of original claims 37, 38, 48, 49, 51–53, 55, 57, 58, 60, 61, 63, 64, 67–69, and 71 found to be unpatentable with substitute claims 72–89, respectively. Paper 16 (“Mot.”). Petitioner filed an Opposition to the Contingent Motion to Amend. Paper 22 (“Opp.”). Patent Owner filed a Reply to Petitioner’s Opposition. Paper 31 (“Reply”). On January 12, 2016, the parties presented arguments at an oral hearing. Paper 37 (“Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6(c). In this Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, we determine that Petitioner has shown by a preponderance of the evidence that claims 37, 38, 48, 49, 51–53, 55, 57, 58, 60, 61, 63, 64, 67–69, and 71 are unpatentable. We also *deny* the Motion to Amend.

B. The Cited Reference and Declaration

Petitioner relies upon Patent No. US 3,506,839 to Ando, filed February 20, 1967 (“Ando”) (Ex. 1007) in support of its ground challenging the identified claims of the ’927 patent. Petitioner relies also upon the Declaration of Lambertus Hesselink, Ph.D. (Ex. 1008).

Patent Owner relies upon the Declaration of James R. Leger, Ph.D. (Ex. 2104).

C. The Instituted Ground of Unpatentability

Petitioner challenges the patentability of claims 37, 38, 48, 49, 51–53, 55, 57, 58, 60, 61, 63, 64, 67–69, and 71 under 35 U.S.C 102(e) (pre-AIA) as anticipated by Ando. Pet. 12.

D. Related Proceedings

The parties indicate that the ’927 patent is the subject of *Optical Devices, LLC v. Toshiba Corp.*, Case No. 1:13-cv-10530 (D. Del. 2013). Pet. 1; Paper 6, 2 (also identifying other related cases). In addition, the patent currently is the subject of an investigation before the U.S. International Trade Commission: *In the Matter of Certain Optical Disc Drives, Components Thereof, and Products Containing the Same*, Inv. No. 337-TA-897. Pet. 1; Paper 6, 1. Further, we instituted *inter partes* reviews for claims of the following patents covering related subject matter: Patent Nos. US RE42,913 E (IPR2014-01439, Paper 7) and US RE43,681 E (IPR2014-01441, Paper 8, and IPR2014-01442, Paper 7). IPR2014-01442 was consolidated with IPR2014-01441 (IPR2014-01441, Paper 9; IPR2014-01442, Paper 8).

E. The '927 Patent

The '927 patent describes an optical system having a focusing lens and a reflective surface positioned near the focal plane of the lens, whereby radiant energy from a radiant energy source directed at the system is reflected back towards the source by the optical system due its retroreflection characteristics. Ex. 1001, 2:48–53. The retroreflected rays are recovered by a radiant energy receiver to allow detection of the presence and relative position of the optical system. *Id.* at 2:52–55. The claims at issue are directed to an apparatus for measuring the retroreflective characteristics of such an optical system, as well as a method and apparatus for detecting characteristics or properties of such a system. *See, e.g., id.* at Claims 38, 48, and 61.

The Specification defines a “retroreflector” as “a reflector wherein incident rays or radiant energy and reflected rays are parallel for any angle of incidence within the field-of-view.” *Id.* at 1:10–13. The Specification explains that “[a] characteristic of a retroreflector is that the energy impinging thereon is reflected in a very narrow beam, herein referred to as the retroreflected beam.” *Id.* at 1:13–15. According to the Specification, “[t]his phenomenon is termed retroreflection.” *Id.* at 1:15–16.

Figure 1 of the '927 patent is reproduced below:

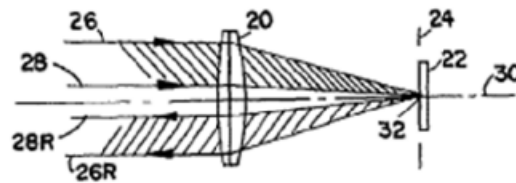


FIG. 1.

Figure 1 of the '927 patent depicts an optical system including lens 20 and reflective surface 22 (e.g., a mirror) positioned in focal plane 24 of lens 20. Ex. 1001, 2:59–62. Radiation rays 26 and 28 are directed towards lens 20 of the optical system from a radiation (e.g., light) source (not shown). *Id.* at 2:62–65. For purposes of clarity, the '927 patent shows the *incident* rays at the top of lens 20 and the *reflected* rays at the bottom of lens 20. *Id.* at 2:66–3:2. Incident rays 26 and 28 are refracted by lens 20 and focused at focal point 32 on mirror 22. *Id.* at 3:2–4. The rays are reflected, such that the angle of reflection equals the angle of incidence, and the reflected rays are refracted again by lens 20 and emerge therefrom as retroreflected rays 26R and 28R. *Id.* at 3:4–8.

Figure 3 of the '927 patent is reproduced below:

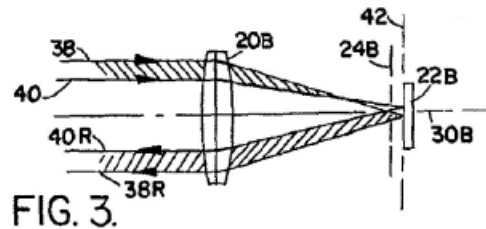


Figure 3 of the '927 patent shows that the radiant flux density at surface 22B may vary based on characteristics of the components of the optical system, such as placement of or imperfections in lens 20B. *Id.* at 3:28–44; 3:66–4:59; *see* Prelim. Resp. 3. For example, in Figure 3, reflective surface 22B is positioned substantially, but not entirely, in focal plane 24B. *Id.* at 3:28–44. According to the '927 patent,

[i]n the system depicted in FIG. 3 . . . the lens 20B is assumed to be imperfect; i.e., it has aberrations. In this case the rays 38 and 40 are parallel to the optical axis 30B but are not focused at a single point on the focal plane 24B, and instead form an image on the mirror 22B, which image is referred to as the circle of confusion. In most practical optical systems there are circles of

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