NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

IN RE: VICTOR GORELIK, TATIANA GORELIK, NATALIA HANSON,
Appellants

2016-1432

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. 13/289,814.

Decided: June 14, 2016

VICTOR GORELIK, Brooklyn, NY, pro se.

TATIANA GORELIK, Brooklyn, NY, pro se.

NATALIA HANSON, Brooklyn, NY, pro se.

THOMAS W. KRAUSE, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, for appellee Michelle K. Lee. Also represented by SARAH E. CRAVEN, MEREDITH HOPE SCHOENFELD.

Before PROST, *Chief Judge,* BRYSON, and STOLL, *Circuit Judges.*

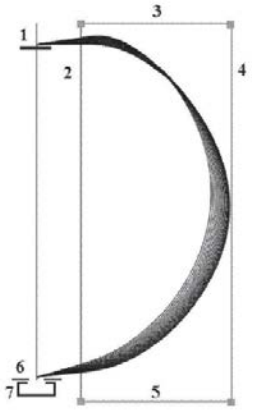
PER CURIAM.

Named inventors Victor Gorelik, Tatiana Gorelik, and Natalia Hanson (collectively, "Gorelik") appeal from a decision of the Patent Trial and Appeal Board in the examination of Patent Application Serial No. 13/289,814. The Board affirmed the examiner's rejection of claims 1–4 as obvious under 35 U.S.C. § 103. We affirm.

BACKGROUND

Gorelik filed the '814 application on November 4, 2011. The patent discusses a purportedly new apparatus for studying objects at a nanoscopic scale. '814 Application ¶ [0002]. The application seeks to provide an apparatus that can pair "a high spatial resolution image" with "high energy resolution spectra of a nano-object" to produce "valuable information" about the nano-object. *Id.* The high resolution image is produced by, for example, a transmission electron microscope ("TEM") or scanning probe microscope. *Id.* at ¶ [0010]. The spectra information is produced by a claimed "hollow cylindrical analyzer." Joint Appendix ("J.A.") 100. The application explains that pairing these two instruments "allows extracting additional elemental and chemical information about a nano-object of interest." '814 Application ¶ [0002].

The application provides several embodiments of its "hollow cylindrical analyzer," including the example in Figure 1 shown below:



Id. at Fig. 1. The analyzer has an upper window 2 where electrons, scattered from source 1, enter. Potentials applied to the hollow cylinder 4 and lids 3 and 5 create a field that forces the electrons toward diaphragm 6 and collector 7. *Id.* at ¶ [0014]. An object of the purported invention is to provide "an analyzer with entrance angles of electrons slightly greater than $\pi/2$ (90.5° – 98.5°) . . . ." *Id.* at ¶ [0009].

Claim 1 is generally directed to a hollow cylindrical analyzer and reads:

> An electrostatic electron spectrometry apparatus, comprising:
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> a source of electrons and
>
> a spectrometer that includes at least one hollow cylindrical analyzer having an electrically conductive inner cylinder coupled to a source of voltage, an electrically conductive upper lid coupled to another source of voltage, an electrically conductive outer cylinder coupled to yet another source of voltage, and an electrically conductive lower lid coupled to yet another source of voltage
>
> wherein the spectrometer is configured so that the electrons emitted from the source enter the

> hollow cylindrical analyzer through the windows in the inner cylinder, make at least one U-turn in the direction of the axis of the hollow cylinder analyzer, and then the electrons are being collected by a detector.

J.A. 100. Claim 2 depends from claim 1 and adds the requirement that the "electrons enter the spectrometer within the diapason 90.5°–98.5° of entrance angles in respect to the axis of the hollow cylinder analyzer, move in radial directions, and then the electrons are being collected in full azimuth directions." *Id.* Claim 3 depends from claim 1 and adds several requirements, including a TEM and an entrance-angle requirement. It reads:

> An electrostatic electron spectrometry apparatus, comprising:
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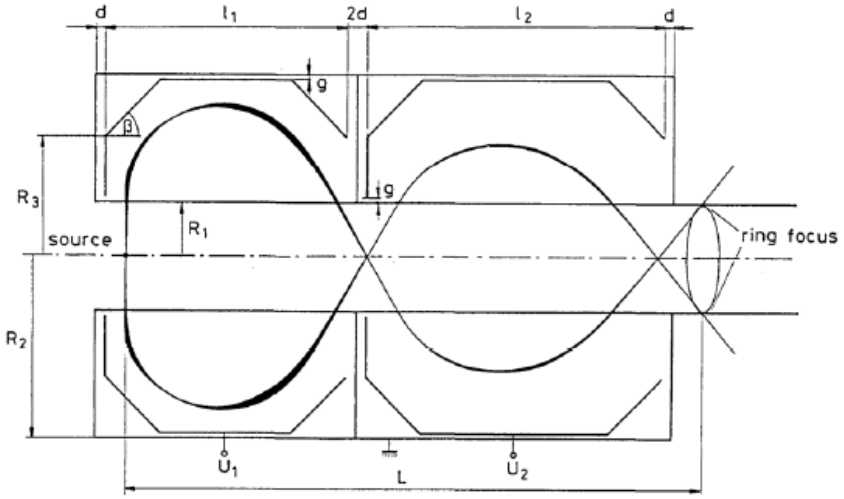
> the hollow cylindrical analyzer of claim 1 and a transmission electron microscope
>
> wherein the analyzer and the microscope are configured so that the electrons emitted from the specimen of the microscope within the diapason 90.5°–98.5° 90.5°– 95.5° in respect to the axis of the microscope enter the analyzer, move through the electrostatic field of the analyzer, and then the electrons are being collected by a detector.

Id. Claim 4 depends from Claim 3, and adds the requirement that "the analyzer comprises at least two hollow cylindrical analyzers and fits around the objective lens of the microscope." *Id.*

The examiner rejected independent claim 1 and dependent claim 2 over D. Varga et al., *Design of an Electrostatic Electron Spectrometer For Simultaneous Energy and Angular Distribution Measurements,* 76 J. ELECTRON SPECTROSCOPY & RELATED PHENOMENA 433–36 (1995) ("Varga"), and claims 3 and 4 over Varga in view of U.S.

Patent No. 7,582,868 to Jiang. The Board affirmed these rejections and denied Gorelik's motion for rehearing.

The Board explained that Varga discloses a two-stage electrostatic analyzer capable of measuring electrons incident at a range of angles, including those claimed by Gorelik. As shown in Figure 1 below, Varga's analyzer has an inner cylinder and an outer cylinder with conical ends.



Varga, *supra,* at 434. The Board noted that "Varga discloses a double-pass spectrometer which comprises a mirror-type analyzer with distorted cylindrical field and can be suitable for measuring both energy and angular distributions of electrons simultaneously in the full 0°–180° range of scattering with high energy resolution." J.A. 4 (citing Varga, *supra*, at 433). The entrance for electrons into the analyzer shown in Figure 1 is 90°.

Before the Board, Gorelik argued that Varga did not render its claims obvious because the "claim term 'hollow cylindrical' is limited to the space between two cylinders having flat ends and, therefore, excludes Varga's cylinders having conical ends." *Id.* The Board determined that the broadest reasonable interpretation of "hollow cylindrical"

was consistent with Varga's cylinders having conical ends because the specification did not limit the term to cylinders having flat ends. *Id.* The Board therefore affirmed the examiner's rejection of claims 1 and 2 as obvious over Varga.

With respect to claims 3 and 4, the Board considered Gorelik's argument against the examiner's rejection of Varga in view of Jiang. Jiang teaches the use of a cylindrical mirror analyzer in concert with a TEM, and the examiner explained that it would have been obvious to combine Jiang with Varga "to improve measurement accuracy by utilizing highly precise calibrations." *Id.* at 112. On appeal, Gorelik did not contest the examiner's finding that Varga could be combined with Jiang. Instead, Gorelik argued that the resulting combination would be impractically large. Gorelik reasoned that the only workable combination would require the entire TEM to be inside of the Varga analyzer's first stage, and that such a combination would not work as well as the purported invention in Gorelik's application. The Board rejected Gorelik's argument because it was unsupported by evidence. *Id.* at 5–6, 10.

Gorelik timely appeals to this court. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. § 141.

DISCUSSION

We review the Board's factual findings for substantial evidence and its legal conclusions de novo. *Rambus Inc. v. Rea*, 731 F.3d 1248, 1251 (Fed. Cir. 2013). An obviousness determination under § 103 is a "legal conclusion based on underlying factual determinations." *Id.* at 1251–52. We review the Board's claim construction de novo "because the intrinsic record fully determines the proper construction . . . ." *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1297 (Fed. Cir. 2015). "During examination, 'claims . . . are to be given their broadest reasonable

interpretation consistent with the specification . . . ." *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (alteration in original) (quoting *In re Bond*, 910 F.2d 831, 833 (Fed.Cir.1990)).

With respect to the first two claims, Gorelik presses the same issue on appeal as before the Board, asserting that the term "hollow cylindrical" cannot, by definition, include a cylinder with conical ends. Gorelik further argues that the specification proposes only one embodiment of a cylindrical analyzer, which has a flat lid. And Gorelik notes that the specification describes only one electrostatic field, that of an analyzer with flat lids.

While we agree with Gorelik that the specification describes a hollow cylindrical analyzer with flat lids, we do not agree that the broadest reasonable interpretation of the claims is so limited. This court has recognized that a patentee "may demonstrate an intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *Id.* at 1365 (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002)). But that the "claims are interpreted in light of the specification does not mean that everything expressed in the specification must be read into all the claims." *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957 (Fed. Cir. 1983). Here, we agree with the Board that the broadest reasonable interpretation of "hollow cylindrical" is not limited to cylinders with flat ends. Even though the specification only discusses cylindrical analyzers with flat lids, it does not disclaim "hollow cylindrical" analyzers with non-flat lids. Indeed, the specification notes that "[v]arious modifications will become apparent to those skilled in the art after having read this disclosure," and provides an example modification to the lid, noting that an "analyzer can be made of several lids of increasing radiuses . . . ." '812 Application ¶ [0023]. This recognition of an embodiment

with stacked flat lids at minimum suggests Gorelik's proposed definition of "hollow cylindrical" is not the broadest reasonable interpretation consistent with the specification. Instead, we agree with the Board that the broadest reasonable interpretation of "hollow cylindrical" in light of the specification includes hollow cylinders with conical ends. Under this claim interpretation, Gorelik does not contest that the Board's finding that Varga renders claims 1 and 2 obvious is supported by substantial evidence. We thus affirm the Patent Office's rejection of claims 1 and 2 as obvious over Varga.

Turning to claims 3 and 4, we also affirm the Board's rejection of these claims as obvious over a combination of Varga and Jiang. Gorelik argues that the Board's combination of Varga with a TEM is impractical because the resultant analyzer would need to be very large to fit inside the first stage of the analyzer. Appellant Br. 5–8. When Gorelik presented the same argument to the Board, it found the argument lacking evidentiary support. J.A. 5–6, 10. We agree. Gorelik fails to submit any evidence beyond conjecture to support its contention that the combination of the references would result in a very large device. Moreover, the obviousness determination is "not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole." *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985). Thus, Gorelik does not establish that the Board's judgment was unsupported by substantial evidence. Because Gorelik brings no further challenge to the rejection of claims 3 and 4 as obvious over a combination of Varga in light of Jiang, we affirm the Board's rejection of these claims.

We have considered Gorelik's additional arguments and find them unconvincing. We thus affirm the Board's decision.

AFFIRMED

COSTS

No Costs.