

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ARLENE E. GWON and  
MICHAEL W. BERNS

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Appeal 2007-1229  
Application 09/953,121  
Technology Center 3700

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Decided: April 21, 2008

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Before TONI R. SCHEINER, DONALD E. ADAMS, and RICHARD M.  
LEBOVITZ, *Administrative Patent Judges*.

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DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-8 and 27-32. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

## STATEMENT OF THE CASE

The claims are directed to an apparatus for use in laser photoablation of ocular lens tissue and a method of using a laser to photoablate lens tissue.

Claims 1-8 and 27-32 are pending and appealed (App. Br. 2).

Appellants request review of the following rejections:

- (1) Claims 1-8 under 35 U.S.C. § 103(a) as obvious over Bille (U.S. Pat. No. 4,907,586, Mar. 13, 1990) and Niemz (*Lasers in Surgery and Medicine*, 11: 426-431, 1991) (Ans. 4); and
- (2) Claims 27-32 under 35 U.S.C. § 102(b) as anticipated by Niemz (Ans. 4).

The claims have not been separately argued, therefore, we select claims 1 and 27 as representative to decide all issues in this appeal. Claims 1 and 27 read as follows:

1. A method for the laser photoablation of ocular lens tissue said method comprising the steps of:

focusing a laser into an ocular lens with a focal point below an anterior surface of the ocular lens;

pulsing said laser to ablate the ocular lens at said focal point; and

moving the laser focal point towards the ocular lens anterior surface and pulsing said laser to ablate a volume of ocular lens, the volume being of a size enabling resolve by adjacent healthy ocular lens tissue.

27. Apparatus for use in laser photoablation of ocular lens tissue, said apparatus comprising:

an ND:YLF laser having an operating wave length of about 1053 nanometers; and said means<sup>[1]</sup> including a HeNe

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<sup>[1]</sup> The recitation of “said means” in claim 27 appears to be misplaced and would be clearer if placed after the first occurrence of the “means for focusing the laser” which appears later in the second clause of the claim.

focusing laser for directing an infrared laser beam from the exterior of said eye through the cornea and iris opening thereof in order to direct the Nd:YLF laser; and

means for focusing the laser into an ocular lens with a focal point below an anterior surface of the ocular lens and controlling the laser to provide a beam spot diameter of between about 1 micron and about 20 microns and a zone effect of less than about 200 microns in order to ablate a volume of ocular tissue.

#### FINDINGS OF FACT

##### *Bille patent*

1. Bille describes a method for modifying eye tissue with a laser “by focusing the beam at a preselected start point in the tissue and moving the beam’s focal point . . . throughout a specified volume of the tissue” (Bille, Abstract; *see* Ans. 5-6).
2. “Depending on the selected volumetric power density setting for the laser beam, tissue can be modified by either photoablation of the tissue or by modifying the visco-elastic properties of the tissue” (Bille, at col. 3, ll. 50-53).
3. Bille states that portions of eye tissue can be removed by photoablation (*id.* at col. 10, ll. 1-4; Ans. 5).
4. Bille describes laser modification of the lens in which “the interior tissue of lens 54 may be . . . evaporated by photoablation for cavitation of the region 56 . . . to prevent presbyopia” (*id.* at col. 10, ll. 64-68; *see* Ans. 5).

##### *Niemz*

5. Niemz describes photoablation of corneal tissue at 1053 nm using an Nd:YLF laser (Niemz, Abstract; *see* Ans. 7).
6. The pulses were 60 picoseconds in duration at a repetition rate of 1.0 kHz (1000 Hertz) (Niemz, Abstract; *see* Ans. 7).

7. The beam of Niemz's Nd:YLF can be focused to a spot diameter of 15  $\mu\text{m}$  (Niemz, at 427, col. 1; *see Ans. 7*).
8. "Niemz . . . also discuss[es] that the zone of effect is related to the power of the pulse (see page 427, first full paragraph), and that pulse energies up to 150  $\mu\text{J}$ , spot sizes of 15.5  $\mu\text{m}$  and ablating a square of 1.5 mm on a side, which would be 2.25  $\text{mm}^2$ , and with a thickness equal to the spot size of 15.5  $\mu\text{m}$  (see page 428, the section labeled "Ablation Method") or 0.0155 mm gives a volume of ablated tissue of 0.035  $\text{mm}^3$ , well below [Appellants's] maximum volume permitting resolve" (Ans. 7).
9. The beam can be focused "by means of a double HeNe laser and a Zeiss slit lamp" (Niemz, at 428, col. 1; *see Ans. 8*).
10. Niemz states that the "walls of the laser excisions were smooth with distortions of less than 1  $\mu\text{m}$ " (Niemz, Abstract; *see Ans. 8: 1-3*).

*Reason to combine the prior art*

11. Persons of ordinary skill in the art would have had reason to utilize the laser settings described by Niemz in Bille's method since Niemz teaches that its method achieves precise tissue removal, leaving a smooth surface (Niemz, Abstract; *see Ans. 7-8; FF 10*).

## DISCUSSION

### Obviousness over Bille and Niemz

Claims 1-8 stand rejected under 35 U.S.C. § 103(a) as obvious over Bille and Niemz<sup>2</sup> (Ans. 4).

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<sup>2</sup> In stating the rejection on page 4 of the Appeal Brief, Appellants only refer to Bille as being a basis of the rejection. However, in the Final Rejection, the Examiner explicitly referred to both Bille and Niemz in the statement of the rejection (Final Rejection 2).

The “Examiner bears the initial burden, on review of the prior art . . . , of presenting a prima facie case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). Once prima facie obviousness has been established, it is Appellant’s burden to provide rebuttal arguments or evidence. *Oetiker*, 977 F.2d at 1445 (Fed. Cir. 1992); *Hyatt v. Dudas*, 492 F.3d 1365, 1369-70 (Fed. Cir. 2007). Thus, we first turn to the Examiner’s findings.

The Examiner finds that Bille describes a method for laser photoablation of lens tissue as recited in claim 1 (Ans. 4). The method includes “focusing the [laser] beam . . . in the tissue and moving the beam’s focal point . . . throughout a specified volume of the tissue” (FF 1; Bille, Abstract; *see* Ans. 5-6) – satisfying the limitations of claim 1 of “focusing a laser . . . below an anterior surface of” eye tissue and “moving said focal point” through the tissue. Bille also describes performing photoablation on the lens to prevent presbyopia (FF 2-4; Bille, at col. 10, ll. 64-68; *see* Ans. 5) as in claim 1 (using the laser “to ablate a volume of ocular lens”).

The Examiner also finds that Niemz describes the method as claimed, but for performance on corneal tissue, not ocular lens tissue as claimed (Ans. 4). Niemz’s method involves delivering laser pulses to eye tissue to accomplish photoablation (FF 5, 6; Niemz, Abstract; Ans. 7), and thus satisfies the limitation of claim 1 of “pulsing said laser to ablate the ocular lens”. The parameters utilized by Niemz are the same as those which are claimed, *e.g.*, a wavelength of 1053 nanometers from an Nd:YLF laser (instant claim 3; FF 5; Niemz, Abstract); a repetition rate of 1000 Hertz for 60 picoseconds (instant claim 4; FF 6; Niemz, Abstract); and a beam spot

between 1  $\mu\text{m}$  and 20  $\mu\text{m}$  (instant claim 7; FF 7-8; Niemz, at 427, col. 1; Ans. 7).

In making an obviousness determination, it is the Examiner's burden to identify a reason why persons of ordinary skill in the art would have been prompted to combine the prior art to have made the claimed invention. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). In this case, the Examiner finds that persons of ordinary skill in the art would have had reason to utilize the laser settings described by Niemz in Bille's method since Niemz teaches that its method achieves precise tissue removal, leaving a smooth surface (FF 10, 11; Niemz, Abstract; *see* Ans. 7-8). Thus, the Examiner concludes that the claimed method would have been obvious to persons of ordinary skill in the art (Ans. 7-8).

After reviewing the record before us, we conclude that there is sufficient evidence, as summarized above (*see also* FF 1-10), to establish prima facie obviousness of the claimed subject matter, including adequate reason to have combined Bille's method with Niemz's teachings (FF 11). Thus we turn to Appellants' rebuttal arguments and evidence. *See Hyatt*, F.3d 492 at 1369-70.

Appellants contend that there is no teaching or suggestion in "Bille . . . of correcting a vision defect by photoablation of an ocular lens tissue which does not include accompanying surgical procedure" (App. Br. 5).

We do not agree. As pointed out by the Examiner, Bille describes photoablating the lens to prevent presbyopia, a vision defect (FF 4; Bille, at col. 10, ll. 64-68; *see* Ans. 5). There is no statement in Bille that laser surgery to prevent presbyopia must be accompanied by additional surgical

procedures as Appellants contend. Bille refers to surgical procedures that involve lens implantation (Bille, at col. 10, ll. 60-62), but specifically distinguishes these procedures from presbyopia surgery by characterizing the latter as “a different procedure” (*id.*).

Appellants also argue that “there is no teaching in Bille . . . of selecting a volume of ocular lens tissue for laser photoablation which is of a size enabling resolve by adjacent healthy ocular lens tissue” (App. Br. 5).

This argument is not persuasive. The Examiner provided evidence that the volume of ablated lens tissue that would result from using Niemz’s laser parameters in Bille’s method would be of size that would permit tissue resolve (Ans. 7; FF 8). Appellants have not provided any rebuttal arguments or evidence that the Examiner’s findings are flawed.

For the foregoing reasons, we affirm the rejection of claim 1. Claims 7-8 fall with claim 1 because they were not separately argued. *See* 37 C.F.R. § 41.37(c)(1)(vii).

#### Anticipation by Niemz

Claims 27-32 stand rejected under 35 U.S.C. § 102(b) as anticipated by Niemz (Ans. 4).

Claim 27 is directed to an apparatus for laser ablation of ocular lens tissue. The apparatus comprises: (1) an Nd:YLF laser which operates at a wavelength of about 1053 nanometers; and (2) a HeNe focusing means for focusing the laser. The focusing means is capable of:

focusing the laser into an ocular lens with a focal point below an anterior surface of the ocular lens and controlling the laser to provide a beam spot diameter of between about 1 micron and

about 20 microns and a zone effect of less than about 200 microns in order to ablate a volume of ocular tissue.

(Claim 27.)

The Examiner finds that Niemz describes an Nd:YLF laser which operates at a wavelength of 1053 nm (FF 5; Niemz, Abstract; *see Ans. 7*), meeting the limitations of the laser (1) of claim 27. The Examiner also finds that Niemz's laser apparatus has a focusing beam comprising a HeNe laser and Zeiss slit lamp (FF 9; Niemz, at 428, col. 1; *see Ans. 8*), which satisfies the limitation of (2) a "HeNe focusing means" as recited in claim 27.

With regard to the ability of Niemz's apparatus to provide a "beam spot diameter of between about 1 micron and about 20 microns and a zone effect of less than about 200 microns in order to ablate a volume of ocular tissue" as recited in the claim, the Examiner states that that the spot size, pulse energy, and zone of effect fall within the claimed ranges and therefore Niemz's laser apparatus meets such limitations (*Ans. 7; FF 8*). For example, Niemz describes using the laser to produce a spot diameter of 15  $\mu\text{m}$  (FF 7, 8; Niemz, at 427, col. 1), which is within the claimed range of "1 micron and about 20 microns." Based on these findings, the Examiner concludes that the apparatus of claim 27 is anticipated by Niemz.

We agree with the Examiner. After reviewing the record before us, we conclude that there is sufficient evidence to establish that each element of claim 27 is described in Niemz, therefore anticipating it. (Anticipation requires a showing that each element of the claim is identifiable in a single reference. *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375 (Fed. Cir. 2005).) Thus we turn to Appellants' rebuttal arguments and evidence. *See Hyatt*, 492 at 1369-70.

Appellants contend that the Niemz does not describe the structure recited in claim 27 of:

means focusing the laser onto an ocular lens with a focal point below an anterior surface of the ocular lens and controlling the laser to provide a beam spot diameter of between 1 micron and about 20 microns and a zone effect of less than about 20 microns in order to ablate a volume of ocular lens.

(Claim 27; quoted at App. Br. 7). They also argue that the “Examiner is attempting to interpret the ‘means for’ structure as a method limitation” (App. Br. 7).

This argument is not persuasive. The Examiner has identified the various parameters in Niemz (*e.g.*, a wavelength of 1053 nm, pulse energy, pulsing times, and beam spot in the claimed range) which would enable the laser to photoablate a volume of lens tissue having the size and zone of effect as required by the claim (FF 8; Ans. 7). Appellants have not identified any deficiency in the Examiner’s findings.

In addition to this, the Examiner has found that both a laser and a focusing means with structures that fall within the scope of claim 27, are met by Niemz (*see* Ans. 7-8; FF 5, 9). Thus, we see no defect in the Examiner’s case. Appellants have not specifically identified what element is required by claim 27, but missing from Niemz’s laser apparatus.

Appellants also argue that the Examiner’s statement that “[s]ituating the patient one quarter to one half inch closer to the device would cause the means for focusing of Niemz . . . to focus the beam in the lens” (Ans. 4) is not “taught, suggested or hinted in the Niemz reference . . . and there is no means to focus the [laser] beam” (App. Br. 9).

What the Examiner intended by the suggestion that the patient could be moved closer to the device is moot because Niemz describes a HeNe laser

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and slit lamp for focusing the laser beam (FF 9; Niemz, at 428, col. 1; *see Ans.* 8) and thus explicitly discloses a structure that meets the focusing means limitation of claim 27 (*Ans.* 8-9). Appellants have not distinguished the prior art focusing structure from that which is claimed.

For the foregoing reasons, we affirm the rejection of claim 27. Claims 28-32 fall with claim 27 because they were not separately argued. *See* 37 C.F.R. § 41.37(c)(1)(vii).

#### CONCLUSION

In summary, we affirm the rejection of claims 1-8 as obvious over Bille and Niemz and claims 27-32 as anticipated by Bille.

#### TIME PERIOD

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

#### AFFIRMED

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