

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 37

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT B. LACOUNT

Appeal No. 97-1107
Application No. 08/047,512

ON BRIEF

Before KIMLIN, PAK, and TIMM, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 10, 15-21, 23, and 25-27. Claims 11-14, 22, 24, 29, and 30 have been allowed by the examiner. Claim 28 has been objected to as being dependent upon rejected claim 27, but the examiner has not rejected this claim over the prior art.

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BACKGROUND

The appellant's invention relates to a gas analysis cell with an hourglass-like central waist. The cell is used in a gas analysis system employing a fourier transform infrared (FTIR) spectrometer. In use, a gas is introduced into the cell and an IR beam is passed through the gas within the cell. After passing through the gas, the IR beam is sensed by a detector. According to the specification at page 8, because the cell has a reduced volume due to the central waist, the time it takes to purge the gas from the cell is about one-third shorter than it would be in a conventional cylindrical cell. Claims 26 and 27 are representative of the subject matter on appeal and are reproduced below:

26. A gas analysis cell comprising an axially elongated cell body in a shape of a body of revolution formed about an elongated axis, the body having a uniform thickness non-porous wall, a central waist portion, first and second tapered portions extending axially in opposite directions from the waist portion and uniformly tapering radially and axially outwardly from the waist portion, the waist portion being narrower than the first and second portions, end portions on outer ends of the tapered portions and radially extending windows at outer axial ends of the end portions closing the cell body, an inlet near one end of the cell body and an outlet near another end of the cell body.
27. The gas analysis cell of claim 26, further comprising an internal tube fixed to the inlet and extending into the cell body.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Rossiter	4,181,437	Jan. 01, 1980
Lew	4,591,268	May 27, 1986
Nelson et al. (Nelson)	4,736,103	Apr. 05, 1988

Barnes Analytical/Spectra-Tech IR/FTIR product catalog, pp 6-7, 1990 (Barnes).

Claims 10, 15-21, 23, 25, and 26 stand rejected under 35 U.S.C. § 103 as being unpatentable over Barnes in combination with Rossiter and with or without the teachings of Lew. Claim 27 stands rejected under 35 U.S.C. § 103 as being unpatentable over Barnes in combination with Rossiter and with or without the teachings of Lew and further in combination with Nelson.

We sustain the examiner's rejections for the following reasons.

OPINION

Claim Groupings

The appellant states at page 3 of the brief that the claims do not stand or fall together. However, the appellant does not dispute the examiner's determination, at page 3 of the examiner's answer, that claims 10, 15-21, 23, 25 and 26 are not argued separately. We also note that merely pointing out differences in what the claims cover is not a substantive argument as to why the claims are

separately patentable. Appellant has not explained how the different limitations render the claimed subject matter unobvious over the combinations of prior art applied by the examiner. See CFR § 1.192(c)(7) and (c)(8)(1995). The examiner groups claim 27 separately. For purposes of this appeal, we limit our consideration of the issues raised by the rejections under 35 U.S.C. § 103, as they pertain to the groups of claims as set forth by the examiner.

Obviousness of Claims 10, 15-21, 23, 25, and 26

In the first claim grouping, claim 26 is the broadest claim. We focus on this claim for purposes of discussion. Claim 26 is rejected as obvious over Barnes in combination with Rossiter and optionally Lew. As pointed out by the examiner in the rejection (Answer, page 4), Barnes teaches several different kinds of gas analysis cells. All these cells have windows on opposite axial ends of the cell with an inlet near one end and an outlet near the other end as required by claim 26. However, the cells vary in body shape and wall material. The different cell types taught by Barnes include:

1. Standard Demountable Gas Cell - cylindrical glass (Pyrex®) cell.
2. Large Beam Demountable Gas Cell - similar to the standard demountable cell except it has a larger aperture for use with a spectrophotometer of small f-number.
3. Beam Conforming Gas Cells - rectangular cast aluminum cells contoured to match the beam geometry of dispersive IR beams.

4. Ultra Micro Gas Cells - glass (Pyrex®) cell contoured to approximate the shape of a condensed IR beam as the beam passes through the sampling section of the beam condenser. It is beam conforming for minimum volume. It is unclear from the copy of Barnes submitted by appellant whether the cell is cylindrical or rectangular in shape.

5. Econo-Gas Cells - cylindrical glass (Pyrex®) cells.

Both the rectangular Beam Conforming Cell and the Ultra Micro Cell are designed to conform to the IR beam traversing the cell. In reference to the Ultra Micro Cell, Barnes teaches that this cell is “contoured to approximate the shape of the condensed beam” (Barnes, page 7). We note that neither appellant, in the brief, nor the examiner have indicated what shape beam is obtained by a beam condenser such as the Barnes Model 128, the condenser for which the Ultra Micro Cell is specifically designed. Page 7 of the Barnes catalog indicates that the Barnes Model 128 is described on page 19 of the catalog. However, page 19 has not been submitted by appellant. While it is not clear whether the Ultra Micro Cell is circular in cross-section, it is Pyrex® glass like the cylindrical cells and not aluminum like the rectangular cell.¹

¹ We note that appellant in the brief only discusses the cast aluminum Beam Conforming Cell (Brief page 7). Appellant has not attempted to enlighten either the examiner or us as to the shape of the Ultra Micro gas cell depicted in the poorly photocopied Barnes reference which he submitted. We note that the examiner advised appellant in the office action of November 17, 1995 and again in the final rejection of May 1, 1996 that he could not determine the shape of the Ultra Micro Cell due to the poor quality of the reference copy. However, the examiner did not affirmatively request a better copy.

The examiner, recognizing that Barnes does not specifically teach a converging-diverging cell, adds Rossiter and Lew to the rejection as further evidence of known cell and beam shapes. The examiner cites Rossiter for the following teaching at column 3, lines 46-51:

The shape of the interior tubular portion should be so arranged that its cross-sectional area at any point follows the optical beam of the particular spectrometer been [sic; being] used. For example, the interior body portion could have a cross-sectional area which converges from both ends to an intermediate throat.

Rossiter clearly teaches a cell with a converging-diverging shape.

Appellant's main dispute is that Rossiter is directed to a metal cell of rectangular shape, not a uniformly thick cell that is a body of revolution. While that is true, the examiner points out that Barnes teaches both rectangular and cylindrical cells and one of ordinary skill in the art would have recognized that the teaching of shaping the cell to conform to the IR beam could be transferred from one type of cell to the other (Answer, pages 10 and 11). The key fact here is that Barnes teaches contouring the cell to match the IR beam with respect to both the rectangular cast aluminum Beam Conforming Demountable Cell and the glass Pyrex® Ultra Micro cell. That fact shows that Barnes recognized using the concept of a cell shape that conforms to the IR beam in various types of cells.

Lew further shows a range of beam configurations for use in IR spectroscopy including beams that converge and then diverge. See, for instance, the IR beams depicted in Figures 3 and 6 of Lew. Appellant argues that Lew is directed to a totally different cell and principle of operation from that of Barnes and Rossiter. That is of little consequence in this particular combination of references because

Rossiter itself specifically teaches using converging-diverging optical beams and cells (Rossiter, col. 3, lines 46-51) and Barnes teaches contouring the cell to approximate the shape of an optical beam (Barnes, page 6, lines 30-34 and page 7, lines 7-9). The references as a whole imply that various beam configurations are used in the processes of Barnes and Rossiter. Lew provides examples of various known beam configurations.

Appellant cites *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1599 (Fed. Cir. 1988) for the proposition that teachings of references can be combined only if there is some suggestion or incentive to do so. We note that a suggestion to combine the references may come expressly from the references themselves. However, it may also come from the knowledge of those skilled in the art that certain references, or disclosures in the references, are known to be of special interest or importance in the particular field. In addition, it may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem. (citations omitted).

Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 73 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996). Here, the Barnes reference suggests that various types of cells can be fashioned to conform to an IR beam and thus minimize the volume of the cell. Rossiter teaches designing a cell in a converging-diverging shape and Lew teaches IR beams that converge and diverge. When the nature of a spectroscopic problem required a converging-diverging beam, one of ordinary skill in the art would have conformed the cell to that shape to minimize cell volume as indicated in Barnes and for the reasons

given in Rossiter. The suggestion to combine comes from the nature of the problem to be solved and the express teachings in the references.

Where, as here, the prior art establishes that the shape is one of various configurations that one of ordinary skill in the art would have found obvious for the purpose of confining the gas to the optical beam and reducing the quantity of gas required in the cell, appellant must show that the particular configuration produces an unexpected result or provide some other evidence of secondary considerations. *Cf. In re Dailey*, 357 F.2d 669, 672-73, 149 USPQ 47, 50 (CCPA 1966). The evidence must be sufficient to rebut the *prima facie* case when all the evidence is evaluated as a whole. *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

Appellant draws our attention to the declarations filed June 21, 1996 and August 26, 1996, the latter of which is said to specifically point out the advantages of the present cell as compared to the Rossiter type cell. This second declaration proffers data for cell clearing time of the inventive cell as compared to a Rossiter type cell. Objective evidence of non-obviousness must be commensurate in scope with the claims. *In re Kulling*, 897 F.2d 1147 1149, 14 USPQ2d 1056, 1058 (Fed Cir. 1990). We agree with the examiner that the data is not commensurate in scope with the claims on appeal. The cell used as the inventive cell includes right cylindrical ends. Such ends are not required by claim 26. Furthermore, the cell includes a directed flow nozzle not required by any of the claims on appeal.

We also point out that appellant is not alleging that the declarations show any unexpected results. Instead, the declarations state that the data shows optimum results and alleges that the invention fulfills a long-felt need. We note that establishing a long-felt need requires a showing that there was a problem recognized by others in the art that persisted for a long period of time and for which there was no solution. *In re Gershon*, 372 F.2d 535, 538, 152 USPQ 602, 605 (CCPA 1967). Appellant presents no objective evidence that others recognized a problem and could not find a solution. The evidence submitted in the declarations instead tends to show that the appellant recognized a problem which he himself solved. Such a showing does not suffice as evidence of a long felt need. *Id.* 372 F.2d at 538, 152 USPQ at 605.

As to the optimization of results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Here, Barnes and Rossiter both suggest changing the shape of the cell based upon the configuration of the beam used to minimize cell volume (Barnes, page 7, lines 18-19), reduce the sample quantity and ensure that the gas is almost completely confined to the optical path (Rossiter, col. 3, lines 34-41). Therefore, the cell shape is a result effective variable. Optimizing the shape to confine the gas to the beam and reduce the quantity of gas required and reduce cell volume would be a matter of routine experimentation.

We conclude that the examiner has established a *prima facie* case of obviousness with respect to the subject matter of claims 10, 15-21, 23, 25 and 26, which has not been sufficiently rebutted by appellant.

Obviousness of Claim 27

Claim 27 requires that the gas analysis cell have an internal tube fixed to the inlet that extends into the cell body. As Barnes does not teach an internal tube at the inlet, the examiner has rejected claim 27 over Barnes in combination with Rossiter, optionally Lew and additionally Nelson. As pointed out by the examiner in the rejection (Answer, page 7), Nelson teaches a gas inlet 87 that extends into the cell body. The extended inlet 87 is positioned to direct the gas in a manner that results in a reduction in the time required to achieve gas purge. We note that the gas cell body is designed to conform to a conical optical beam. We agree with the examiner that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the cell of Barnes with a tube extending into the cell interior as taught by Nelson so that the gas could be admitted at a tangent and thus the gas purging time could be reduced.

The fact that Nelson teaches a conical cell and admitting the gas at the diverging end and purging the gas at the converging end does not teach away from using an extending inlet in Barnes to create a flow of gas that results in faster purge. One of ordinary skill in the art would have reasonably expected that gas flow would have improved at least up to the necked down area of a converging-

diverging cell and would have increased the purge rate in comparison with a cell without any directed gas flow.

Therefore, we conclude that the examiner has established a *prima facie* case of obviousness with respect to the subject matter of claim 27 and that appellant has not sufficiently rebutted this *prima facie* case.

OTHER ISSUES

Should prosecution on this case continue, we bring to the attention of the examiner a possible written description problem with respect to claim 26 and those claims dependent thereon. These claims require that the cell body have “a uniform thickness non-porous wall.” This language was not present in the original claims and we found no descriptive support in the specification for uniformity of the wall. Should the “uniform thickness” language be present in any of the claims further prosecuted, the examiner should determine whether the written description required of 35 U.S.C. § 112, first paragraph is violated.

It is also suggested that the examiner request a better copy of the Barnes reference, including page 19 of the catalog if it can be obtained.

CONCLUSION

To summarize, the decision of the examiner to reject claims 10, 15-21, 23, and 25-27 under 35 U.S.C. § 103 is affirmed.

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

AFFIRMED

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
CHUNG K. PAK)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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