

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 34

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte JOHN MAHON

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Appeal No. 1998-0180  
Application No. 08/471,309

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ON BRIEF

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Before KRASS, FLEMING, and BLANKENSHIP, Administrative Patent Judges. BLANKENSHIP,  
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 1, 3, 4, and 6.

We reverse.

### BACKGROUND

The invention is directed to a tracking antenna having coaxial waveguides. Claim 1 is reproduced below.

1. In a tracking antenna of the type having a feed for receiving electromagnetic energy from free space, the feed having a sum port and a difference port, the feed comprising,

a first coaxial waveguide having an input end and an output end, said waveguide being bounded longitudinally by an inner conducting surface and by an outer conducting surface, and

a second coaxial waveguide having an input end and an output end, said second waveguide being bounded longitudinally by an inner conducting surface and by an outer conducting surface,

the first coaxial waveguide being located inside of and coaxially with the second coaxial waveguide,

the first coaxial waveguide having an opening at its input end, the opening allowing electromagnetic energy to pass from free space into and propagate within the first coaxial waveguide, said electromagnetic energy propagating within the first coaxial waveguide in the TE<sub>11</sub> mode, the TE<sub>11</sub> mode having a dispersion,

the second coaxial waveguide having an opening at its input end, the opening allowing electromagnetic energy to pass from free space into and propagate within the second coaxial waveguide, said electromagnetic energy propagating within the second coaxial waveguide in the TE<sub>21</sub> mode; the TE<sub>21</sub> mode having a dispersion,

the dimensions of the first coaxial waveguide and the dimensions of the second coaxial waveguide being selected such that the dispersion of the TE<sub>11</sub> mode in the first coaxial waveguide is approximately the same as the dispersion of the TE<sub>21</sub> mode in the second coaxial waveguide,

the first coaxial waveguide having a first coupling device connected to its output end, the first coupling device coupling energy between the sum port and electromagnetic energy propagating within the first coaxial waveguide,

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the second coaxial waveguide having a second coupling device connected to its output end, the second coupling device coupling energy between the difference port and electromagnetic energy propagating within the second coaxial waveguide,

whereby the first coaxial waveguide provides a sum electromagnetic radiation pattern with respect to the electromagnetic radiation received from free space and the second coaxial waveguide provides a difference electromagnetic radiation pattern with respect to the electromagnetic radiation received from free space.

The examiner relies on the following references:

Low et al. (Low)	3,665,481	May 23, 1972
Liu et al. (Liu)	4,041,499	Aug. 9, 1977
Seavey	4,740,795	Apr. 26, 1988

Claim 1 stands rejected under 35 U.S.C. § 102 as anticipated by Liu.

Claim 1 stands rejected under 35 U.S.C. § 103 as unpatentable over Liu.

Claim 3 stands rejected under 35 U.S.C. § 103 as unpatentable over Liu and Low.

Claims 4 and 6 stand rejected under 35 U.S.C. § 103 as unpatentable over Liu, Low, and Seavey.

We refer to the Final Rejection (Paper No. 17) and the Examiner's Answer (Paper No. 29) for a statement of the examiner's position and to the Brief<sup>1</sup> (Paper No. 28) and the Reply Brief (Paper No. 30) for appellant's position.

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<sup>1</sup> We have not considered an initial Brief (Paper No. 25) that was determined by the examiner to lack compliance with 37 CFR § 1.192.

OPINION

The Section 102 rejection over Liu

“Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention.” RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

The examiner has rejected Claim 1 under 35 U.S.C. § 102 as being anticipated by Liu. The examiner contends that “first” and “second” coaxial waveguides as claimed are disclosed in Figure 7 of Liu, based on two alternative readings of the claims on the reference. (See Final Rejection, pages 2 and 3.) Additionally, the “dispersion relationship recited in the claims is inherent in the design of the waveguide radiator in Liu...” (Id. at 3.)

The first alternative reading, as set out on page 2 of the Final Rejection, is based on an interpretation of the reference such that Figure 7 of Liu, although appearing to show an innermost waveguide that is hollow<sup>2</sup>, actually has an inner surface as depicted in the waveguide in Figure 1 of the reference. Appellant disputes the interpretation (see, e.g., footnote 3 of page 23 of the Brief), but does not offer any alternative interpretations of the language in Liu’s written description upon which the examiner bases his interpretation.

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<sup>2</sup> We will follow appellant’s convention, as set forth on page 11 of the Brief, in referring to a waveguide having inner and outer conducting surfaces as “coaxial,” and to a waveguide having only an outer conducting surface as “hollow” or “circular.”

However, the first alternative reading with respect to the Liu reference does not appear to establish a case for anticipation, absent extrinsic evidence to support the interpretation. In column 4, lines 21 et seq. of the reference, Liu states that each section shown in Figure 7 is fabricated as shown in Figure 6. Column 3, lines 16 et seq. of the reference discloses that the embodiment of Figures 5 and 6 consists of two waveguide sections, with “the inner wall...omitted from the first section and an outer wall 24 forms a circular waveguide.” As the examiner points out, Liu prefaces the statement regarding omission of the inner wall with “[a]t this bandwidth,” which appears to suggest that at some other bandwidths the inner wall would be present. However, it is not clear that it necessarily follows that the innermost waveguide (52) shown in Figure 7 has both an inner and an outer conducting surface. We have considered the examiner’s position set forth in the Final Rejection and the Answer, but are not persuaded that the embodiment of Figure 7 discloses an innermost waveguide that is coaxial. As such, we find that the limitations of Claim 1 are not met by the first alternative reading of the claims on the reference.

The second alternative offered is that there are at least two coaxial waveguides shown in Figure 7; namely a first waveguide 54 propagating the  $TE_{11}$  mode (at 8-16 GHz) and a second waveguide 56 propagating the  $TE_{21}$  mode (at 8-16 GHz), with a conducting surface common to waveguide 54 and waveguide 56. (See Final Rejection, page 3.) Appellant never directly addresses this interpretation of

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the reference.<sup>3</sup> The argument which comes closest to the terms of the rejection appears on pages 20 and 21 of the Brief (nominally in response to the rejection under 35 U.S.C. § 103), wherein appellant speaks of coaxial waveguides 58 and 60. In any event, we will assume that those arguments were presented to be responsive to the instant rejection -- anticipation in view of waveguides 54 and 56.<sup>4</sup>

Appellant contends first that if the coaxial waveguides in Figure 7 of Liu had “approximately the same” dispersion, as required by Claim 1, then the radii would not have the relative dimensions as shown in the figure, but would have, based upon appellant’s calculations, the relative dimensions as shown in Figure A5 appended to the Brief. (See Brief, page 20 and 21.) However, as the examiner correctly points out (see Answer, page 12), Figure 7 of Liu cannot be considered as representative of the actual relative dimensions of the waveguide radii. The figures are not disclosed as being drawn to scale, and conclusions cannot be drawn based on the drawings alone. See In re Wright, 569 F.2d 1124, 1127, 193 USPQ 332, 335 (CCPA 1977) (“Absent any written description in the specification of quantitative values, arguments based on measurement of a drawing are of little value.”); In re Wilson, 312 F.2d 449, 454, 136 USPQ 188, 192 (CCPA 1963) (“Patent drawings are not working drawings

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<sup>3</sup> In this regard, we note that the bulk of appellant’s arguments in the Brief and Reply Brief are based on the assumption that Figure 7 of Liu discloses a circular waveguide within a coaxial waveguide, which is not germane to the second interpretation.

<sup>4</sup> Appellant acknowledges the examiner’s interpretation on pages 7 and 8 of the Reply Brief, but returns to arguments concerning hollow waveguides.

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[and arguments are not persuasive when based on a] drawing obviously never intended to show the dimensions of anything.").

Appellant also contends, as expanded on page 13 of the Reply Brief, that successive pairs of coaxial waveguides that propagate  $TE_{11}$  and  $TE_{21}$  modes (as shown in Figure 7 of Liu) do not necessarily have the same cutoff frequencies -- and hence the same "dispersions" -- but the cutoff frequencies are a separate design consideration. The examiner contends otherwise; that since the  $TE_{11}$  and  $TE_{21}$  frequencies are disclosed as being the same in coaxial pairs in Figure 7 of Liu, then the dispersions are the same or "approximately the same." (See Final Rejection, page 3 and Answer, page 7.)

Since Liu does not speak of "dispersions," or disclose actual cutoff frequencies of waveguides 54 and 56, the examiner's argument for inherency appears to be based on an allegation that is disputed by appellant. Our reviewing court, however, requires much more than allegation to establish inherency.

To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient."

In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)(citations omitted).

Here, we do not have any extrinsic evidence in support of the examiner's position that the "dispersions" in the relevant waveguides in the reference are necessarily the same or approximately the same. We have considered the examiner's position, as set out in the Final Rejection and Answer, but

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do not agree that a case for anticipation has been established. Accordingly, we cannot sustain the rejection under 35 U.S.C. § 102.

In a matter relevant to the instant rejection and to the other standing rejections, the examiner appears to reinterpret the claims ex post facto, on page 8 of the Answer, by interpreting “dispersion” differently. However, as appellant responds on pages 18 through 20 of the Reply Brief, the specification clearly delineates the meaning that appellant attaches to the term, and we interpret “dispersion” accordingly. Appellant has met the requirements for interpretation of the term limited to the meaning urged. See In re Paulsen, 30 F.3d 1475, 1480, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994)(repeating the principle that where an inventor chooses to be his own lexicographer and gives terms uncommon meanings, he must set out the uncommon definition in the patent disclosure). See also Beachcombers Int’l, Inc. v. WildeWood Creative Prods., Inc., 31 F.3d 1154, 1158, 31 USPQ2d 1653, 1656 (Fed. Cir. 1994)(“As we have repeatedly said, a patentee can be his own lexicographer provided the patentee's definition, to the extent it differs from the conventional definition, is clearly set forth in the specification.”)

#### The Section 103 rejection over Liu

The examiner bears the initial burden of presenting a prima facie case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant. After evidence or argument is submitted by the applicant in response, patentability is determined on the

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totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

The examiner submits a rejection of Claim 1 under 35 U.S.C. § 103 as being unpatentable over Liu on pages 4 and 5 of the Final Rejection. The rejection for obviousness, as opposed to the rejection for anticipation over the same reference, may be based on an alternative view that the “dispersion” being “approximately the same” is not inherent in Liu, but is absent from the reference. “Since dispersion is a recognized phenomenon, and the frequencies in the sum and difference patterns...are identical, it would therefore have been obvious to a skilled artisan to design the inner and outer waveguides to have approximately the same dispersion.” (Final Rejection, page 5.)

The rejection is facially inconsistent. Although the examiner states, within the Section 103 rejection, that the dispersion relationship is "inherent," the rejection appears to treat the dispersion relationship as the thing in the claims that is not disclosed by the reference. Inherency and obviousness are distinct concepts. W. L. Gore & Associates v. Garlock, Inc., 721 F.2d 1540, 1555, 220 USPQ 303, 314 (Fed. Cir. 1983).

[The] modest flexibility in the rule that "anticipation" requires that every element of the claims appear in a single reference accommodates situations where the common knowledge of technologists is not recorded in the reference; that is, where technological facts are known to those in the field of the invention, albeit not known to judges. It is not, however, a substitute for determination of patentability in terms of § 103.

Continental Can Co. v. Monsanto Co., 948 F.2d 1264, 1269, 20 USPQ2d 1746, 1749-50 (Fed. Cir. 1991).

Based on the examiner's stated conclusion of what "would have been obvious," we assume there is a rejection for obviousness based upon an underlying factual finding that the sole difference between the subject matter of the claims and the reference is the "dispersion" relationship.<sup>5</sup>

Appellant's response to the obviousness rejection applied to Claim 1, on pages 17 through 27 of the Brief, appears based on the view that Liu discloses only a circular waveguide within a coaxial waveguide. However, as we set forth supra in our review of the rejection for anticipation, we are persuaded that the reference also discloses a coaxial waveguide within a coaxial waveguide. Claim 1 requires that two coaxial waveguides have substantially the same dispersion. The claim does not require that every waveguide in an antenna have substantially the same dispersion as an adjacent waveguide. The open-ended "comprising" form of the claim does not preclude the existence of a circular waveguide in combination with the first and the second coaxial waveguide.

Apparently, appellant never directly responds to a rejection for obviousness where the only difference between Claim 1 and Liu is that the dispersion of the  $TE_{11}$  mode in the first coaxial waveguide is approximately the same as the dispersion of the  $TE_{21}$  mode in the second coaxial waveguide, even though appellant appears to agree that there are at least two coaxial waveguides

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<sup>5</sup> At the bottom of page 9 of the Answer, the examiner appears to suggest that placing an inner conducting surface within innermost waveguide 52 as disclosed by Liu is also an issue for an obviousness enquiry. However, in view of the original statement of the rejection, the suggestion appears to be an ex post facto expansion of the rejection.

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shown in Figure 7 of the reference. However, since the examiner's statement of rejection was ambiguous, we will assume that the thrust of such a rejection was not understood by appellant.

Upon our review of the evidence of record we are unconvinced that a prima facie case of obviousness of Claim 1 has been established. There is insufficient factual basis to show that the artisan would have been motivated to design the relevant dispersions to be substantially the same. The examiner appears to rely on an "admission" in appellant's specification (within the Brief Summary of Invention). (See Final Rejection, page 6.) Appellant's description of his invention in his specification is not prior art, and cannot serve as any sort of evidence upon which a prima facie case of obviousness may be based.

That "dispersion is a recognized phenomenon" (id. at 5) does not end the obviousness enquiry. "That the claimed invention may employ known principles does not in itself establish that the invention would have been obvious. Most inventions do." Lindemann Maschinenfabrick GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 489 (Fed. Cir. 1984).

In summary, although we agree with the examiner that Liu discloses a first and a second coaxial waveguide, the rejections over the reference are deficient in that: (1) there is insufficient evidence of record to show that the dispersion of the  $TE_{11}$  mode in waveguide 54 is, of necessity, approximately the same as the dispersion of the  $TE_{21}$  mode in waveguide 56 (with respect to anticipation); and (2) there is insufficient evidence of record that the artisan would have been motivated to design the waveguides

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such that the dispersion of the TE<sub>11</sub> mode in waveguide 54 would be approximately the same as the dispersion of the TE<sub>21</sub> mode in waveguide 56 (with respect to obviousness).

The Section 103 rejections over Liu, Low, and Seavey

Since the references of Low and Seavey, as applied by the examiner, do not remedy the deficiencies of Claim 1 in view of Liu that we have noted above, the 35 U.S.C. § 103 rejections of dependent Claims 3, 4, and 6 are not sustained.

CONCLUSION

The rejections of Claims 1, 3, 4, and 6 are reversed.

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

REVERSED

ERROL A. KRASS )  
Administrative Patent Judge )  
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) BOARD OF PATENT  
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HOWARD B. BLANKENSHIP )  
Administrative Patent Judge )

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