

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICH FOGAL

Appeal No. 2000-0949
Application No. 08/721,505¹

ON BRIEF

Before BARRETT, FLEMING, and DIXON, **Administrative Patent Judges**.
DIXON, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 5-8, 14, 15 and 20-26, which are all of the claims pending in this application.

We reverse and institute a rejection under 37 CFR 1.196(b).

¹ Application for patent filed September 26, 1996. This application is a reissue application of Serial Number 08/059,971, filed May 07, 1993, and issued, as US Patent 5,350,106 on September 27, 1994.

BACKGROUND

The appellant's invention relates to a semiconductor wire bonding method. An understanding of the invention can be derived from a reading of exemplary claim 14, which is reproduced below.

14. A semiconductor device wire bonding method, comprising:
- providing a semiconductor die having a plurality of bond pads thereon connected to integrated circuits formed on the die;
 - providing a semiconductor leadframe strip having a plurality of die mounting sites, each mounting site having an associated arrangement of lead fingers including tip portions;
 - attaching the die to the leadframe strip at a mounting site;
 - bonding a fine bond wire to a bond pad of the die;
 - determining a width (W) and a longitudinal axis of the tip portion of a selected lead finger;
 - locating a bond site on the tip portion of the selected lead finger generally along the longitudinal axis and spaced from a terminal edge of the selected lead finger by a predetermined distance; and
 - bonding the fine bond wire to the selected lead finger substantially at the bond site.

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

Holdgrafer	5,119,436	Jun. 02, 1992
Rostoker et al. (Rostoker)	5,404,047	Apr. 04, 1995
		(Filed Dec. 18, 1992)

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Claims 5 and 14 stand rejected under 35 U.S.C. § 102 as being unpatentable over Holdgrafer. Claims 6-8, 15 and 20-26 stand rejected under 35 U.S.C. § 103 as being unpatentable over Holdgrafer in view of Rostoker.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 16, mailed Sep. 10, 1999) for the examiner's reasoning in support of the rejections, and to the appellant's brief (Paper No. 15, filed Jun. 22, 1999) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations² which follow.

35 U.S.C. § 102

The examiner maintains that the "descriptions [in Holdgrafer] set forth the same meaning as is in the instant claim of determining a location of a longitudinal axis of the tip portion of the lead finger; locating the bond site on the lead finger along the longitudinal

² We also make the following observations: (1) Appellant has apparently deleted an additional line in the amendment of column 1 wherein line 31 should remain in the text. (2) In column 3, line 10 "leadfree" should be corrected to "leadframe."

axis and spaced by a predetermined distance from the terminal edge." (See answer at page 3.) Appellant argues that Holdgrafer does not teach the step of "determining a width (W)" and a "longitudinal axis of the tip portion of a selected lead finger" as recited in claim 14 and claim 5. (See brief at pages 7-8.) Appellant identifies the language in Holdgrafer which the examiner cites generally and concludes that "Holdgrafer does not actually determine the longitudinal axis of a lead finger." (See brief at page 8.) From our review of Holdgrafer, we are not certain whether Holdgrafer determines the longitudinal axis. While we do not necessarily agree with appellant that Holdgrafer does not determine the longitudinal axis, we disagree with the examiner that the language of Holdgrafer means the same thing as the claim limitation.

"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.'" **In re Robertson**, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) citing **Continental Can Co. v. Monsanto Co.**, 948 F.2d 1264, 1269, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991).

"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."

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Roberston, 169 F.3d at 745, 49 USPQ2d at 1950-51 citing **Continental Can**, 948 F.2d at 1269, 20 USPQ2d at 1749. Therefore, the examiner has not set forth a *prima facie* case of anticipation and we will not sustain the rejection of independent claims 5 and 14.

35 U.S.C. § 103

The examiner additionally applies Rostoker in combination with Holdgrafer. Rostoker is relied upon by the examiner to teach and suggest the modification of the predetermined distance D from the terminal edge of the lead finger as taught in Holdgrafer to be a distance in between the upper limit D taught by Holdgrafer and the lower limit or safety zone and taught by Rostoker. The examiner does not rely upon the teaching of Rostoker to teach or suggest the determination of the longitudinal axis, nor has the examiner maintained that this determination would have been obvious in view of either teaching. Since Rostoker does not remedy the deficiency as discussed in the rejection under 35 U.S.C. § 102, we will not sustain the examiner's rejection of claims 6-8, 15 and 20-26. Independent claims 21, 23, 24, 25 and 26 contain the same limitation that the longitudinal axis is determined.

CONCLUSION

To summarize, the decision of the examiner to reject claims 5 and 14 under 35 U.S.C. § 102 is reversed and the decision of the examiner to reject claims 6-8, 15 and 20-26 under 35 U.S.C. § 103 is reversed.

37 CFR 1.196(b)

While we do not agree with the examiner with respect to the rejection under 35 U.S.C. § 102, in our view, claim 14 would have been obvious to one of ordinary skill in the art at the time the invention was made over the combination of Holdgrafer in view of the admitted prior art at column 1, lines 58-68 and column 2, lines 16-29 of the specification as filed in the reissue application.³

Holdgrafer teaches the following limitations of claim 14:

Limitations of Claim 14	Teachings in Holdgrafer
A semiconductor device wire bonding method	Holdgrafer teaches the use of the pattern recognition in a wire bonding system.
providing a semiconductor die having a plurality of bond pads thereon connected to integrated circuits formed on the die;	Holdgrafer teaches the use of the vision system for use with dies with plural bond pads as shown in figures 1-3.

³ We have only applied the prior art to claim 14 for the sake of brevity and to address the aspect of "determining the longitudinal axis." We leave the remainder of the claims for the examiner to evaluate and make determinations thereto.

<p>providing a semiconductor leadframe strip having a plurality of die mounting sites, each mounting site having an associated arrangement of lead fingers including tip portions;</p>	<p>Holdgrafer teaches the use of the vision system for use with dies with a leadframe strip with associated lead fingers having tip portions as shown in figures 1-3.</p>
<p>attaching the die to the leadframe strip at a mounting site;</p>	<p>Inherent in the production of the chip would have been the connection of the die to the substrate bearing the leadframe strip. Alternatively, it would have been obvious to one of ordinary skill in the art to have connected the two bodies together prior to performing wire bonding.</p>
<p>bonding a fine bond wire to a bond pad of the die;</p>	<p>Since the vision system of Holdgrafer is intended to be associated with a wire bonding apparatus, the wire bonding apparatus would bond the wire to the die. (See col. 7, lines 19-32)</p>
<p>determining a width (W) and a longitudinal axis of the tip portion of a selected lead finger;</p>	<p>Holdgrafer discloses the use of determining the width of the lead finger and dividing this width by 2 to determine the center. (See col.5, lines 29- col. 6, lines 22.) Holdgrafer does not specifically disclose the determination of the longitudinal axis. In our view, it would have been obvious to a skilled artisan to have the vision system similarly determine the longitudinal axis and use it for tracking the bonding tool. As evidence to support this position, we rely upon appellant's own discussion in the "Background of the Invention" section.</p>

<p>locating a bond site on the tip portion of the selected lead finger generally along the longitudinal axis and spaced from a terminal edge of the selected lead finger by a predetermined distance; and</p>	<p>Holdgrafer discloses the bonding point to be a predetermined distance from the edge, 25 or tip. (See col. 5 lines 54-58 and figure 3.)</p>
<p>bonding the fine bond wire to the selected lead finger substantially at the bond site.</p>	<p>Since the vision system of Holdgrafer is intended to be associate with a wire bonding apparatus, the wire bonding apparatus would bond the wire to the lead finger. (See col. 7, lines 19-32).</p>

Appellant's specification discloses that determining and using the longitudinal axis of the lead finger in wire bonding was well known. In the "Background of the Invention" section, Appellant states:

In general, such vision systems are adapted to sense the lateral edges of the lead fingers and to teach a bond site in the middle of the lead finger somewhere along the longitudinal axis of the lead finger. There is, however, no provision for precisely locating the bond site on a lead finger an exact distance from the tip of the lead finger. Typically, the bonding tool is programmed by an operator to move a set distance away from the bond pad for placing the bond site along the longitudinal axis of a lead finger. This is not an accurate or consistent method for teaching a bond site location on a lead finger. In addition, this method of locating a bond site tends to use more bond wire than is necessary because the length of the bond wire is consistently oversized.

(Emphasis added.) (See column 1, line 58- col. 2, line 3.)

Appellant further states:

For teaching the location of a bond site 20' on a particular lead finger 16', the locations of the lateral edges 22', 24' of the lead finger 16' are sensed by the vision system of the wire bonding apparatus. The wire bonding apparatus is then programmed to determine a midpoint between the edges 22, 24 of the lead finger 16'. This is the dimension "Y" in FIG. 1. Accordingly, axis 28' is the longitudinal axis of the lead finger 16'. Following this determination, the bonding tool of the wire bonding apparatus is programmed to move along the longitudinal axis 28' of the lead finger 16', a predetermined distance "X" from the appropriate bond pad 18 on the semiconductor die 10, to locate the bond site 20' and make the bond.

(Emphasis added.) (See column 2, lines 16-29.)

For the tool to move along the longitudinal axis, the axis must have been determined by the vision system and communicated to the tool. In our view, it would have been obvious to one of ordinary skill in the art at the time of the invention to have incorporated the determination and the use of the longitudinal axis of lead fingers into the tracking system of Holdgrafer to move the predetermined distance D to attach the wire bond.

We make no finding with respect to the determination of the bonding distance which is not PRE-determined since this limitation is not in the broadest claims, in our view, which are claims 5 and 14. In our view, the choice of a predetermined value is a value which may be chosen by a skilled artisan through routine experimentation whereas a measured and determined value based upon a measurement or calculation

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which is variable and not the same as the predetermined or set value. Holdgrafer clearly teaches the use of a set predetermined value which is not based upon a measured value.

This decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b) (amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63, 122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides that "[a] new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record

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

REVERSED - 37 CFR § 1.196(b)

LEE E. BARRETT)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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JOSEPH L. DIXON)	
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