

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

NEC CORPORATION
and SUMITOMO CHEMICAL CO., LTD.,
(United States Patent 6,357,595),

Patent Owners-Appellants,

v.

ENTEGRIS, INC.,

Third-Party Requester-Respondent.

Appeal 2006-3236
Inter Partes Reexamination Control No. 95/000,006
Technology Center 3900

HEARD: January 9, 2007

DECIDED: March 26, 2007

Before JOHN C. MARTIN, LEE E. BARRETT, and JAMESON LEE,
Administrative Patent Judges.

BARRETT, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. §§ 134(b) and 315(a) by the Patent Owners after a Right of Appeal Notice finally rejecting claims 1-11 and 16. Claims 12-15 have been canceled.

We affirm-in-part and enter new grounds of rejection.

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INTER PARTES REEXAMINATION

A request was filed on December 4, 2002, by Third-Party Requester Entegris, Inc., Chaska, MN, for *inter partes* reexamination of U.S. Patent 6,357,595 (the '595 patent) issued March 19, 2002, to Shigeru Sembonmatsu and Manubu Ishikawa, based on Application 09/559,348, filed April 27, 2000, entitled "Tray for Semiconductor Integrated Circuit Device," assigned to real parties in interest NEC Corporation and Sumitomo Chemical Co., Ltd., both of Japan, which claims the foreign filing priority benefit of Japanese Application 11/124326, filed April 30, 1999.

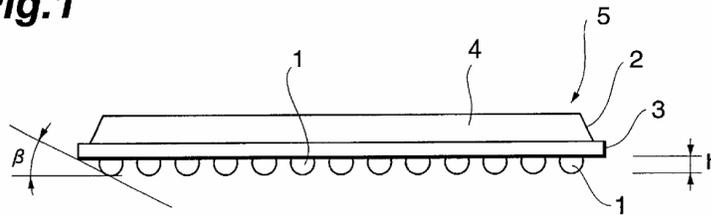
This *inter partes* reexamination was conducted under the regulations of 37 C.F.R. §§ 1.902-1.997 (effective Feb. 5, 2001), and 37 C.F.R. §§ 41.61-41.81 (effective September 13, 2004). The version of the regulations does not affect any issues in the appeal.

Both a patent owner and a third-party requester may appeal and a patent owner may be a party to any appeal taken by a third-party requester. 35 U.S.C. § 315. Thus, it is possible for the Requester, the Respondent here, to become the Appellant on appeal and for the Patent Owners, the Appellants here, to become Respondents or Cross-Appellants on appeal. To prevent confusion over the parties in any appeal from this decision, we refer in this opinion to the patent owners as the Patent Owners instead of Appellants and to the third-party requester as the Requester instead of the Respondent, except where "Appellants" and "Respondent" are used in the names of the briefs or are used in quotations.

BACKGROUND

The invention relates to a tray for storing a semiconductor integrated circuit device, such as an integrated circuit device in a ball grid array (BGA) package. Figure 1 of the '595 patent shows a side view of a BGA device.

Fig.1



A BGA device 5 is characterized by a thin planar housing and a plurality of external terminals 1 on the lower surface of the housing usually arranged in a two-dimensional array. Each external terminal is a small solder ball.

A BGA semiconductor device is stored in a storage portion of a tray to be transported or subjected to tests (Specification, col. 1, ll. 26-29). A storage portion of a conventional tray is a recess having almost the same shape as that of the package of the semiconductor device (*id.* at ll. 29-31). It is important that there not be any contact between the solder ball and the tray. The conventional tray supports the peripheral portion outside the outermost ball terminals of the lower surface of the package of the semiconductor device with a peripheral ledge of the storage portion of the tray, and restrains horizontal movement of the package with a wall surface of the storage portion (*id.* at ll. 31-43). As packages have become more and more compact, the width of the peripheral portion of the lower surface of the

package has become narrower making it more difficult to avoid contact between the ball terminals and the tray (*id.* at ll. 44-51).

The '595 patent claims a tray having an inclined first wall surface for supporting the lower edges of the BGA semiconductor device package and a second wall surface for limiting horizontal movement of the BGA package.

Fig.6

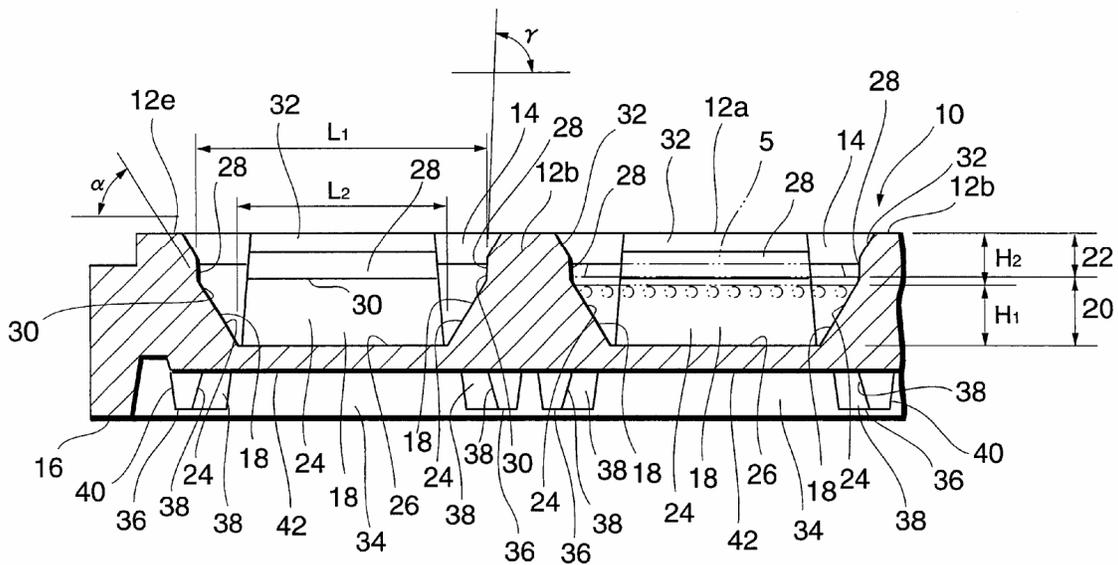


Figure 6 above is a sectional view of the tray. Each storage portion 14 has a first wall surface 24 which is inclined at an angle α greater than the angle β formed between the lower edge of the package and the outermost ball terminals (Fig. 1) to support a peripheral edge of the BGA package 5 (shown in place on the right in chain lines) without contacting the ball terminals. A second wall surface 28 extends upwardly from an upper edge of the first

wall surface and is inclined from the horizontal at an angle larger than the angle of the first wall surface to limit horizontal movement of the package.

Independent claim 1 is reproduced below (omissions from the original patent claim 1 are enclosed in brackets and additions are underlined, *see* 37 C.F.R. §§ 1.941 and 1.530(f)).

1. A tray for storing a semiconductor integrated circuit device having a package and wiring terminals on a lower surface of the package, said tray comprising:

a substantially planar main body; and

a first storage portion provided on a first surface of said main body for storing the semiconductor integrated circuit device, said first storage portion having a bottom surface and a first wall surface extending from said bottom surface and arranged around the semiconductor integrated circuit device when the semiconductor integrated device is stored in said first storage portion;

a second wall surface disposed around a circumference of the semiconductor integrated circuit device so as to limit horizontal movement of the semiconductor integrated circuit device, said first wall surface being inclined at an angle so as to support an edge of the package of the semiconductor integrated circuit device such that the wiring terminals of the semiconductor integrated circuit device do not contact said first wall surface when the semiconductor integrated circuit device is stored in said first storage portion, and said second wall surface extending [from said first wall surface in a direction away from said first wall surface of said main body] upward from an upper edge of said first wall surface, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal.

Proposed new claim 16 in the reexamination is reproduced below. Claim 16 is almost identical to claim 1 in the '595 patent except that the word "wall" is eliminated, as indicated in brackets. For clarity, claim 16 is not underlined as required for a proposed new reexamination claim.

16. A tray for storing a semiconductor integrated circuit device having a package and wiring terminals on a lower surface of the package, said tray comprising:

a substantially planar main body; and

a first storage portion provided on a first surface of said main body for storing the semiconductor integrated circuit device, said first storage portion having a bottom surface and a first wall surface extending from said bottom surface and arranged around the semiconductor integrated circuit device when the semiconductor integrated device is stored in said first storage portion;

a second wall surface disposed around a circumference of the semiconductor integrated circuit device so as to limit horizontal movement of the semiconductor integrated circuit device, said first wall surface being inclined at an angle so as to support an edge of the package of the semiconductor integrated circuit device such that the wiring terminals of the semiconductor integrated circuit device do not contact said first wall surface when the semiconductor integrated circuit device is stored in said first storage portion, and said second wall surface extending from said first wall surface in a direction away from said first [wall] surface of said main body, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal.

THE REFERENCES

The Examiner relies on the following U.S. patent references:

Hutson	3,946,864	Mar. 30, 1976
Nemoto	5,551,572	Sep. 03, 1996
Brahmbhatt	5,791,486	Aug. 11, 1998
Murphy	5,848,703	Dec. 15, 1998
Narazaki	6,202,883	Mar. 20, 2001

(filed Jan. 28, 1999)

THE REJECTIONS

Claims 1, 2, 5-11, and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Brahmbhatt.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hutson and Brahmbhatt.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nemoto and Brahmbhatt.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Murphy and Brahmbhatt.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Narazaki and Brahmbhatt.

Claim 16 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Patent Owners regards as the invention.

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Claim 16 stands rejected under 35 U.S.C. § 305 [sic, § 314(a) for *inter partes* reexamination] as enlarging the scope of the claims of the '595 patent.

MAIN PAPERS IN REEXAMINATION

<i>Date</i>	
12/04/02	Request for <i>Inter Partes</i> Reexamination
02/06/03	Order Granting/Denying Request for <i>Inter Partes</i> Reexamination
02/06/03	Office Action in <i>Inter Partes</i> Reexamination
04/07/03	Response to Office Action in Reexamination
05/07/03	Comments of the 3rd Party Requestor on the First Office Action and Amendment
10/07/03	Action Closing Prosecution (37 CFR 1.949)
11/07/03	Response to Action Closing Prosecution (37 C.F.R. § 1.949)
12/10/03	Comments of the 3rd Party Requestor on the Action Closing Prosecution and Applicant's Response
03/02/04	Right of Appeal Notice (37 CFR 1.953)
05/28/04	Appellants' Brief on Appeal Under 37 C.F.R. § 1.965 (hereinafter "Patent Owner's Br.")
06/28/04	Respondent's Brief on Appeal Under 37 C.F.R. § 1.967 (hereinafter "Requester's Br.")
12/09/04	Examiner's Answer (hereinafter "Answer")
01/10/05	Appellants' Rebuttal Brief Under 37 C.F.R. § 41.69 [sic, § 41.71] (hereinafter "Patent Owner's Rebuttal Br.")

DISCUSSION

The basis for the anticipation rejection of claim 1

Requester proposed three rejections of independent claim 1: (1) claim 1 is anticipated under 35 U.S.C. § 102(b) by Figure 7 of Brahmbhatt; (2) claim 1 is anticipated under § 102(b) by prior art Figure 17 of Brahmbhatt; and (3) claim 1 is unpatentable for obviousness under § 103(a) over Brahmbhatt. *See* Comments of the 3rd Party Requestor on the First Office Action and Amendment. The Examiner did not adopt proposed rejections (2) and (3). *See* Action Closing Prosecution 7 and 17-18. Requester argued that the two proposed rejections were proper. *See* Comments of the 3rd Party Requestor on the Action Closing Prosecution and Applicant's Response. The Examiner again did not adopt the proposed rejections. *See* Right of Appeal Notice 8 and 18-20.

Requester did not file a notice of appeal under 37 C.F.R. § 1.959(a)(2) from the Examiner's final determination not to make the proposed rejections, and did not file a notice of cross appeal under § 1.959(b)(2) from the Examiner's final determination not to make the proposed rejections in response to Appellant's Brief on Appeal. Instead, Requester filed Respondent's Brief on Appeal, and is a "Respondent" rather than a "Cross Appellant" under 37 C.F.R. § 1.962. Accordingly, only the anticipation rejection of claim 1 based on Figure 7 of Brahmbhatt is on appeal.

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Anticipation

Grouping of claims

Patent Owners do not argue the separate patentability of dependent claims 2 and 5-11. Thus, the rejection of claims 2 and 5-11 stands or falls with the rejection of independent claim 1. See 37 C.F.R. § 41.67(c)(1)(vii). The rejection of independent claim 16 stands or falls by itself.

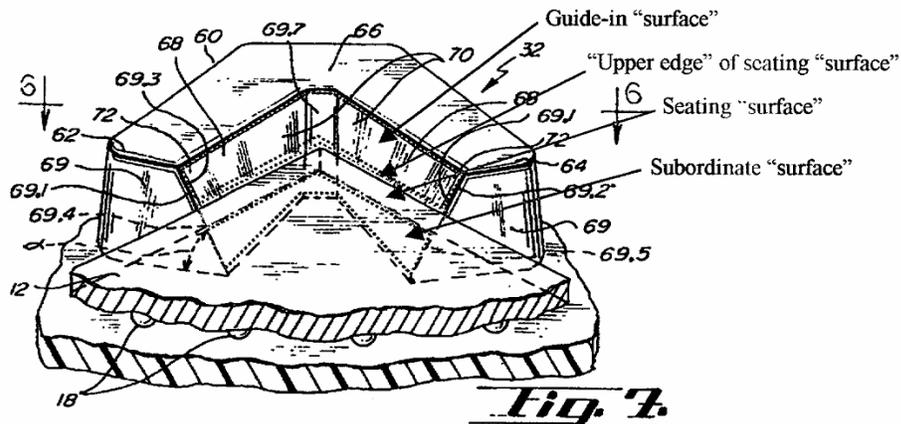
The rejection

The issues in the anticipation rejection of independent claim 1 involve the limitations of a "first wall surface" and a "second wall surface extending upward from an upper edge of said first wall surface." The issues in the anticipation rejection of independent claim 16 involve the limitations of a "first wall surface" and a "second wall surface extending from said first wall surface in a direction away from said first surface of said main body."

The Requester proposed the following reading of the "first wall surface," "second wall surface," and "upper edge of said first wall surface" in claim 1 onto Figure 7 of Brahmbhatt:

The ordinary meaning of "surface" is merely "the outer face or exterior of an object." [*Webster's New World College Dictionary* (3rd Edition, 1997).] Figure 7 of Brahmbhatt [sic] '486, and the relevant portion of the specification thereof, depict and disclose inclined component contact portions 69.2, each having a guide-in portion 69.3, a seating portion 69.4, and a subordinate portion 69.5 below the seating portion. These three portions may be characterized as "surfaces", since they are part of the exterior of the component support member. These

surfaces may extend across inner face 68 to junction 66. As depicted below, the surfaces are vertically disposed relative to each other, and each has an "upper edge" which may be merely a line where one surface ends and another begins.



As illustrated, the guide-in surface extends upward from the upper edge of the seating surface. Also, a portion of the guide-in surface near portion 70 is at a greater angle relative to the horizontal than a portion of seating surface near portion 72. Thus, amended claim 1 still reads directly on at least the Figure 7 embodiment of Brahmbatt [sic] '486.

Comments of the 3rd Party Requestor on the First Office Action and Amendment at 3-4, section entitled "Amended Claim 1 is Anticipated Under 35 U.S.C. 102(b) by Figure 7 of the Brahmbatt [sic] '486 patent."

The Examiner substantially adopted the Requester's proposed reasons for rejection (*see* Right of Appeal Notice 8) and stated (*id.* at 3):

The inner surface 68 may be considered to have relatively upper and lower adjacent surfaces commensurate with the levels of the guide-in portion 69.3, the seating portion 69.4. In addition,

said upper and lower surfaces may themselves each be considered to include plural inclined surfaces since the angle of incline of the inner surface 68 gradually varies from a surface portion at 69.2, 72 to a location near to a surface portion 70 (close to face 69.7). . . .

Accordingly, the angle of incline of a relatively upper surface (i.e. a second wall surface) near the surface portion 70 will be greater than the angle of incline of a relatively lower adjacent surface (i.e. a first wall surface) of the surface portion 69.2, 72.

The Examiner used a dictionary to interpret an "edge" to be a "line where something begins or ends" (*id.* at 4) and stated (*id.*):

Reexamined claim 1 does not call for the first and second wall surfaces to have an abruptly changing transition boundary disposed between them. Accordingly, there are no limitations to prohibit the inner surface 68 of Brahmbhatt from being interpreted in this rejection as including two (or even more) surfaces that are separated by lines of beginning and ending.

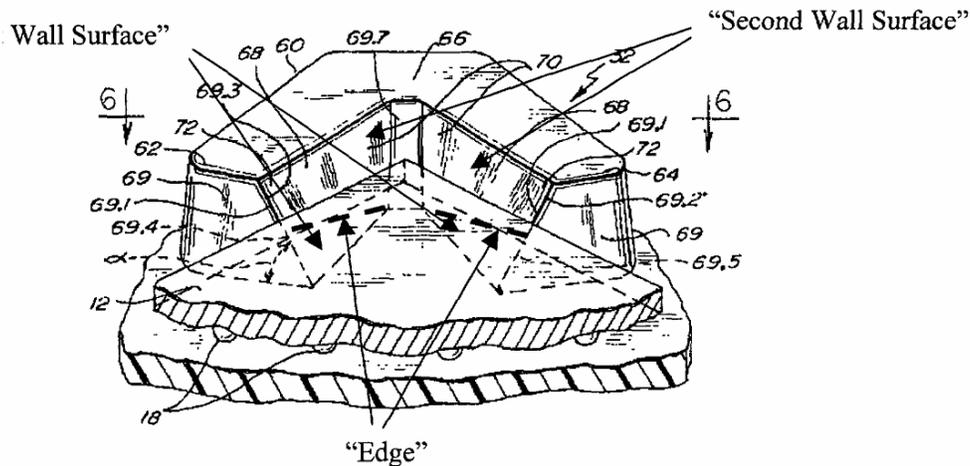
The Examiner further concluded (*id.*): "Finally, there is no requirement from the term 'upper' that the 'upper edge' be considered to have a horizontal orientation. For example the term 'upper edge' is broad enough to cover an edge that is slanted."

The Examiner finds that the vertical portion 70 of the surface 68 corresponds to a "second wall surface" (*id.*). The Examiner states that "[a]lthough the second wall surface might not be capable of contacting a side surface of the rectangular device shown (see Fig. 5 or 7) so as to limit horizontal movement thereof" (*id.*), the semiconductor device in the claims

is an intended use and is not part of the claimed structure, and the second wall surface of Brahmbhatt is capable of contacting the side edge of an "appropriately shaped" semiconductor integrated circuit and limiting movement of the device (*id.* 5).

The Examiner finds that claim 16 is anticipated by Brahmbhatt even if the "first surface of the main body" is interpreted to correspond to the bottom surface 26 of the '595 patent (note that there is a § 112, second paragraph, rejection as to what is meant by the "first surface") because the upper part of surface portion 70 extends from the lower part of surface 68 in a direction away from the bottom surface 22 (*id.* at 7).

In Respondent's Brief on Appeal, Requester offers a modified version of Figure 7 showing a "first wall surface," a "second wall surface," and a slanted "upper edge of said first wall surface," as reproduced below, where the edge conforms with the Examiner's comment about a slanted edge.



The figure shows an "edge" drawn as a slanted line between the top of seating portion 69.4 (where point the package 12 contacts the ridge 69.1) and the lower corner of the surface 68, instead of a line parallel to the top and bottom edges of the surface 68 as in Requester's previous Figure 7.

The Examiner's Answer maintains the rejection and reasoning.

Issues - claims 1, 2, 5-11, and 16

Based on the contentions of the Patent Owners and the Requester, the specific issues for claims 1 and 16 are:

Issue (1): Does Brahmhatt disclose a "second wall surface extending upward from an upper edge of said first wall surface, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal," as recited in claim 1?

Issue (2): Does Brahmhatt disclose a "second wall surface extending from said first wall surface in a direction away from said first surface of said main body, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal," as recited in claim 16?

Issue (3): Does Brahmhatt disclose a "second wall surface . . . to limit horizontal movement of the semiconductor integrated circuit device," as recited in claims 1 and 16?

Analysis

Issue (1): Does Brahmbhatt disclose a "second wall surface extending upward from an upper edge of said first surface, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal," as recited in claim 1?

Arguments

Patent Owners argue that the Examiner improperly attempts to apply a single surface 68 of Brahmbhatt against the claimed first wall surface and second wall surface (Patent Owners' Br. 8). It is argued that Brahmbhatt does not disclose or suggest an "edge" between a first wall surface and a second wall surface, where the second wall surface extends upward from an "upper edge" of the first wall surface (*id.* at 9-10).

Requester states that Patent Owners' "first contention is that the Examiner's interpretation of the term 'surface' is unreasonable, apparently in that it enables regions of a surface not separated by an abrupt discontinuity to be themselves referred to as 'surfaces'" (Requester's Brief 5). Requester submits that the Examiner's interpretation that "a surface may be considered to include plural surfaces even though there is not an abrupt change thereof" (Action Closing Prosecution 3) is reasonable and consistent with the '595 patent because the '595 patent uses the term "surface" to refer to different structures. For example: the entirety of each side of the tray having multiple distinct surface areas is a "surface" ('595 patent, col. 3, ll. 40-42); discrete sub-portions of each side are also referred to as a "surface," e.g., a first wall

surface 24 (*id.* at col. 4, ll. 27-30); a discontinuous group of selected separate surfaces is referred to as a single "surface," e.g., the four inclined surfaces 24 around a package are claimed as a "first wall surface"; and sub-portions of a larger surface not interrupted by any discontinuity are referred to as "surfaces," e.g., each bottom surface 42 of the lower side storage portion 34 on the bottom of the tray (Fig. 5) is part of a larger continuous lower planar surface. *See* Requester's Br. 5-7.

Requester notes that the Patent Owners complain that the Examiner's interpretation of the term "edge" as "a line where something begins or ends" is unreasonable (Requester's Br. 7): "Although never specifically articulated by Appellants as such, it appears that Appellants contend that 'edge' as it is used in the '595 patent, necessarily denotes a physical structure, and that therefore, the Examiner's construction, which includes a boundary between surfaces that may or may not be a physical structure, is too broad."

Requester states that the term "edge" is not expressly defined in the '595 patent, so it should be construed to include any and all dictionary definitions that are not inconsistent with the usage of the term in the claims and specification of the patent (*id.* at 8-9). Requester states that an "edge" can be defined as "a line where something begins or ends" or as "the boundary line of a surface or a region, a border; the region adjacent to this, a margin," which definitions do not require a physical structure marking a boundary (*id.* at 9). For example, it is argued, the '595 patent discloses bottom surfaces 42 on the bottom surface of the tray, which are not delineated by

any visible lines, but which must be demarcated by edges somehow to define where one bottom surface leaves off and the other begins (*id.* at 13).

Patent Owners do not respond to the Requester's arguments in their Rebuttal Brief. Patent Owners suggest that an edge between two surfaces requires a discontinuity; *see* Patent Owners' Rebuttal Br. 5 ("The Examiner asserts that he is interpreting the inner first face 68 of Brahmbhatt as comprising multiple surfaces, even though [sic] there is no discontinuity between such multiple surfaces."). At the oral argument, counsel for Patent Owners stated that an "edge" requires a "visual" line. Patent Owners argue that it is impossible to determine from Brahmbhatt's written description where the Examiner's proposed first and second wall surfaces begin or end, and a skilled artisan would not be able to locate the alleged edge because an edge is not illustrated or described (Patent Owners' Rebuttal Br. 5-6).

The Examiner agrees with the Requester that it is consistent with the '595 patent "to broadly interpret a single surface as comprising multiple surfaces, even where there is no discontinuity between such multiple surfaces" (Answer 22). The Examiner also agrees with the Requester that the '595 patent does not expressly define the term "edge," that the dictionary definitions of an "edge" as a boundary do not require a structural mark, and that the definitions are not inconsistent with the use of the term "edge" in the '595 patent (Answer 24).

Analysis

The issue involves several subissues: (1) Does claim 1, interpreted in light of the '595 patent, require that the "edge" between the "first wall surface" and the "second wall surface" be a physical discontinuity?; (2) Does Brahmbhatt have a "first wall surface" and a "second wall surface"?; and (3) Does Brahmbhatt have a "second wall surface extending upward from an upper edge of said first wall surface"?

(1)

Patent Owners' arguments can be construed as saying that there must be some way to identify the "edge" where one surface stops and another surface starts, and that there is no way to identify the "edge" in Brahmbhatt because there is no discontinuity or other indicia of a line between the two surfaces alleged to correspond to the first and second wall surfaces. The '595 patent describes "the upper wall surfaces 28 sharply rising from the upper edges of the lower wall surfaces 24" (col. 5, ll. 17-18) and shows sharp distinct boundaries 30 at the intersection between the lower first wall surface 24 and the upper second wall surface 28 (Fig. 6). Nevertheless, this embodiment is nonlimiting and the '595 patent does not expressly define that a "surface" or an "edge" requires a discontinuity.

A "surface" is defined as "**1**: the exterior or outside of an object or body : the outermost or uppermost boundary : one or more of the faces of a three-dimensional thing : a plane of a solid <the uneven ~ of the earth> <on the ~ of the water> <planks with a rough ~> <the octagonal ~s of a

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diamond>." *Webster's Third New International Dictionary (Unabridged)* (G.&C. Merriam Co. 1971). One relevant definition of a "face" is "[6] **f**: any one of the plane surfaces that bound a polyhedron (as a crystal) or other geometrical solid." *Id.* Examiner and the Requester define an "edge" as "a line where something begins or ends" or as "the boundary line of a surface or a region, a border; the region adjacent to this, a margin," and Patent Owners do not provide a counter-definition. According to these definitions, a "surface" can be one of the distinct planar faces on the tray defined by interruptions (such as a discontinuity where the surface stops or the line of intersection where two distinct surface areas meet), or the entire exterior of the tray (which is a collection of the individual faces), but this does not help answer the question of whether the single surface 68 in *Brahmbhatt* can have both a first wall surface and a second wall surface.

Regardless of what definitions are used, there must be some objective way to identify a "surface" and an "edge" if the terms are to have any meaning. There are two interpretation clues in claim 1.

First, claim 1 defines the first and second wall surfaces in terms of their function. The function of the "first wall surface" is "to support an edge of the package of the semiconductor integrated circuit device," and the function of the "second wall surface" is "to limit horizontal movement of the semiconductor integrated circuit device." It is reasonable to interpret the extent of a wall surface to be defined by a physical interruption indicating the extent of the surface *or*, on a single surface, by where the surface ceases

to perform its stated function. The boundary where a surface reaches a physical interruption *or*, on a single surface, where the surface ceases to perform its function is the "edge" of the surface. It does not make any difference whether the edge is a visible structural discontinuity or an imaginary line. As an example of defining separate surfaces on a single continuous surface by their function, the single continuous lower planar surface of the tray in the '595 patent is disclosed to have a bottom surface 42 for each of several lower side storage portions 34 (Figs. 5 and 6; col. 6, ll. 11-15) where the extent of each bottom surface 42 is defined by its function of it being a bottom. Different portions of a single uninterrupted surface can perform different functions and each portion can be considered a different surface. Thus, it is possible for Brahmhatt's surface 68 to have first and second wall surfaces, each defined by function.

Second, claim 1 recites that "said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal." This does not imply that either wall surface is flat or approximately flat. The claimed angle could refer to the average angle of its associated, possibly non-planar, surface area. It is possible that a part of the surface 68 in Brahmhatt with a constantly varying angle could be a wall surface. Nevertheless, the requirement that the first and second wall surfaces have different angles implies the existence of an identifiable, physical transition between them, although it need not be abrupt. Thus, it is

possible for Brahmbhatt's surface 68 to have first and second wall surfaces defined by the angle between the surface 68 and the horizontal base 20.

(2)

There is no dispute that the ridge 69.1 in Brahmbhatt, which may be slightly rounded (col. 5, ll. 39-40), corresponds to the claimed "first wall surface" because clearly it is inclined at an angle and supports an edge of the component 12. The most reasonable interpretation is that the first wall surface (ridge 69.1) extends the vertical length of the ridge 69.1, so the upper and lower edges of the first wall surface are defined by physical interruptions at the top and bottom of the ridge 69.1. The ridge 69.1 has one angle with respect to the horizontal. The edge between the first wall surface and the rest of surface 68 is just to the side of the ridge 69.1 where the ridge 69.1 ceases to perform the support function.

The Examiner finds that the upper portion of the surface 68 near the vertical surface portion 70 corresponds to the "second wall surface." It is not clear where the edge of the second wall surface on surface 68 is located, because it is not clear where the portion of surface 68 would cease to perform the function of limiting horizontal movement (if, in fact, it performs this function). Since the "angle between the inner surface 68 and the base 20 progressively increases to substantially perpendicular as the junction 66 is approached" (Brahmbhatt, col. 5, ll. 46-48), a logical location for the edge is along the vertical line where the surface 70 meets the rest of surface 68. The vertical portion 70 of the surface 68 meets the limitation that "said second

wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal." We assume that the upper portion of the surface 68 near the surface portion 70 in Brahmbhatt corresponds to the "second wall surface" for consideration of the next subissue, although we find in connection with Issue (3) that it does not perform the function of limiting horizontal movement.

(3)

We interpret the limitation of "said second wall surface extending upward from an upper edge of said first wall surface" in claim 1 to mean that the second wall surface is in contact with (it is "extending . . . from") the upper edge of the first wall surface *and* that the second wall surface is at least partly directly above (it is "upward from") the upper edge of the first wall surface when the tray is horizontal. Assuming, *arguendo*, that the upper portion of surface 68 near surface 70 in Brahmbhatt corresponds to the second wall surface, this surface is not "extending upward from" an upper edge of the first wall surface because is laterally (horizontally) disposed with respect to the *side* edge of surface 69.1, and is not above the surface 69.1. Accordingly, Brahmbhatt does not disclose the structural relationship of "said second wall surface extending upward from an upper edge of said first wall surface." The anticipation rejection of claims 1, 2, and 5-11 is reversed.

There is no support for the "upper edge" locations proposed by the Requester and relied on by the Examiner. In the first annotated Figure 7 in the Comment of the 3rd Party Requestor on the First Office Action and

Amendment, Requester shows the "upper edge" extending horizontally on a level with the upper edge of the seating surface. However, the proposed edge location does not represent a discontinuity between two surfaces *or* the boundary of a surface defined by its function *or* the boundary between two surfaces as defined by a change in the angle between the two wall surfaces. The upper edge of the seating portion 69.4 in Brahmbhatt does not extend all the way across the surface 68 because the component 12 has point contact with the seating portion 69.4 (col. 5, ll. 34-37). Thus, one of ordinary skill in the art would not have been led to draw the "upper edge" as shown except by hindsight in view of the claim language. In the annotated Figure 7 in Respondent's Brief on Appeal, Requester shows the "edge" extending on a slant from the top of seating portion 69.4 to a lower corner of the surface 70 which is part of surface 68. Again, the proposed edge does not represent a discontinuity between two surfaces *or* the boundary of a surface defined by its function *or* the boundary between two surfaces as defined by a change in the angle between the two wall surfaces. The upper edge of the seating portion 69.4 does not extend all the way across the surface 68 as drawn. Again, one of ordinary skill in the art would not have been led to draw the "upper edge" as shown except by impermissible hindsight.

Issue (2): Does Brahmbhatt disclose a "second wall surface extending from said first wall surface in a direction away from said first surface of said main body, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal," as recited in claim 16?

Arguments

Patent Owners argue that Brahmbhatt does not disclose the "second wall surface extending from the first wall surface in a direction away from said first surface of said main body" as recited in claim 16 because "[t]he single surface is not disclosed as being broken into a first wall surface and a second wall surface, nor does the single surface 68 disclose a second wall surface that extends from the first wall surface at an angle larger than the angle of the first wall surface [with respect to the horizontal]" (Patent Owners' Br. 13-14). It is argued that Brahmbhatt describes element 68 as a "first face" and element 69 as a "second face" which are separated by a ridge 69.1, which is evidence that one skilled in the art acknowledges the need for some demarcation between the two surfaces 68 and 69, but no such demarcation is found on the single surface 68 of Brahmbhatt (*id.* at 14).

Requester relies on the arguments for claim 1.

Analysis

Any prior art rejection of claim 16 is problematic because it is indefinite what is meant by "said second wall surface extending from said first wall surface in a direction away from said *first surface* of said main

body" because the second wall surface is actually part of the first surface of the main body and, as claimed, extends away from itself, as discussed in the § 112, second paragraph, rejection. Nevertheless, it appears from Patent Owners' proposed amendment that what was intended was "said second wall surface extending from said first wall surface in a direction away from said *bottom* surface," and the Examiner assumed for purposes of the anticipation rejection that this is what was intended (Right of Appeal Notice 7). We examine claim 16 with this interpretation rather than conclude that it is not definite enough to decide the issue of patentability. *Cf. In re Steele*, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962) ("[O]ur analysis of the claims leaves us in a quandary as to what is covered by them. We think the examiner and the board were wrong in relying on what at best are speculative assumptions as to the meaning of the claims and basing a rejection under 35 U.S.C. § 103 thereon.").

Claim 16, as proposed to be amended, recites "said second wall surface extending from said first wall surface in a direction away from said bottom surface," whereas claim 1 recites "said second wall surface extending upward from an upper edge of said first wall surface." Although claim 16 does not recite an "upper edge," there implicitly must be some way to distinguish the first and second wall surfaces. The limitation, "said second wall surface extending from said first wall surface," impliedly requires that the second wall surface extends from an "edge" of the first wall surface. The limitation, "said second wall surface extending . . . in a direction away from

said bottom surface," requires that the second wall surface is above at least part of the first wall surface and, hence, upward from an upper edge of the first wall surface. Thus, claim 16, although differently worded, is essentially the same scope as claim 1 and the subject matter of claim 16, is not anticipated by Brahmbhatt for the reasons stated in the discussion of Issue (1). The anticipation rejection of claim 16 is reversed for this reason.

Issue (3): Does Brahmbhatt disclose a "second wall surface . . . to limit horizontal movement of the semiconductor integrated circuit device"? (Claims 1 and 16.)

Arguments

Patent Owners argue that Brahmbhatt does not disclose a "second wall surface disposed around a circumference of the semiconductor integrated circuit device so as to limit horizontal movement of the integrated circuit device" (Patent Owners' Br. 10). It is argued that the structure of Brahmbhatt will not physically permit contact between the surface portion 70 (which the Examiner finds to correspond to the "second wall surface") and the component 12, as evidenced by Exhibit A to the brief (*id.* at 11-12). It is argued that the Examiner acknowledges that Brahmbhatt does not limit horizontal movement, but improperly attempts to make up for this deficiency by stating that the semiconductor device does not have to be rectangular (*id.* at 12). It is argued that the Examiner attempts to render the claimed second wall meaningless by alleging that the semiconductor device

is an intended use, but the Examiner fails to recognize that intended use refers to statements in the preamble and the second wall surface is not in the preamble (*id.* at 12-13).

Requester argues that "[t]here are no limitations in the claim specifying the shape of the device, nor are there any limitations specifying the manner in which horizontal movement is to be limited or quantifying the amount of the limitation of movement" (Requester's Br. 15). "If the semiconductor device is dislodged upward from this 'seated' position, so long as it is below the top of the 'corner guide 60', its horizontal movement will be 'limited,' since it will eventually contact some portion of the 'second wall surface' as it moves horizontally in either direction." (*Id.* at 16.)

Patent Owners do not respond to the Requester's arguments in their Rebuttal Brief. Patent Owners again argue that "it is improper for Examiner to add to the disclosure of Brahmbhatt by contending that 'if a component 12 were designed in a particular way, its horizontal movement would be limited by the vertical portion 70" (Patent Owners' Rebuttal Br. 7) since Brahmbhatt does not disclose such a component.

The Examiner maintains the position in the Right of Appeal Notice that "[t]he second wall surface of Brahmbhatt is capable of functioning to limit horizontal movement of a semiconductor device of appropriate shape (as explained in the rejection) . . . " (Answer 27).

Analysis

As a matter of claim interpretation, we conclude that the limitation of "a second wall surface disposed around a circumference of the semiconductor integrated circuit device so as to limit horizontal movement of the semiconductor integrated circuit device" does not define how much or under what conditions the second wall surface limits horizontal movement. The limitation can be interpreted to mean that the second wall surface prevents any horizontal movement of the integrated circuit device from its seated position, or that it limits horizontal movement when the circuit device is displaced (slightly or a great deal) from its seated position.

The portion 70 of the surface 68 adjacent the junction 66 and the corner face 69.7 are both substantially vertical surfaces, perpendicular to the base 20, and extend above the top of the component 12 when it is seated. The tip 19.1 of the corner 19 of the component 12 is slightly separated from the face 69.7 of the junction 66 when the component is in the seated position (Fig. 5; col. 5, ll. 61-65). Brahmhatt does not describe any function for the portions 70 and face 69.7; thus, any rejection must rely on inherency.

"Inherency . . . may not be established by probabilities or possibilities."

In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981).

If the component 12 is displaced laterally from its seated position, the component 12 will ride up the ridges 69.1 and will never hit the surfaces 70. If the component 12 is displaced diagonally from its seated position, it appears that the tip 19.1 of the component 12 will hit the face 69.7 and not

the surfaces 70. The face 69.7 cannot be the "second wall surface" because it is not "extending . . . from" the first wall surface. If the component 12 is twisted, it is not certain whether it is capable of touching surface 70.

Requester's argument that the component can touch the walls is unpersuasive because it requires reading too much into the drawings. *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."). The mere fact that the surfaces 70 extend above the top of the component 12 does not necessary imply that they will operate to limit horizontal movement. It is our responsibility to resolve disputed facts, and we find that the evidence does not show that Figure 7 of Brahmbhatt discloses a "second wall surface . . . to limit horizontal movement of the semiconductor integrated circuit device."

The Examiner also found that the surfaces 70 do not limit horizontal movement of the rectangular device shown in Brahmbhatt, but found that Brahmbhatt would limit horizontal movement of an "appropriately shaped" device. We disagree with the Examiner's reasoning about an "appropriately shaped" device. The Examiner does not explain what kind of device would be "appropriately shaped," but the term implies a device that is designed to be limited in horizontal movement by the structure in Figure 7. The rejection is based on anticipation, not obviousness. Inherency cannot be based on speculation or possibilities. *See Oelrich*, 666 F.2d at 581, 212 USPQ at 326.

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For the reasons stated above, we find that the evidence is insufficient to establish that Figure 7 of Brahmbhatt discloses a "second wall surface . . . to limit horizontal movement of the semiconductor integrated circuit device," as recited in claims 1 and 16. The anticipation rejection of claims 1, 2, 5-11, and 16 is also reversed because of this limitation.

Obviousness

Hutson, Nemoto, Murphy, and Narazaki are applied to the rejection of dependent claims 3 and 4 for their teachings of ridges. We have considered the teachings of the references, but find that they do not cure the deficiencies of Brahmbhatt with respect to the rejection of independent claim 1. Accordingly, the obviousness rejections of claims 3 and 4 over Brahmbhatt and one of Hutson, Nemoto, Murphy, or Narazaki are reversed.

35 U.S.C. § 314(a)

Rejection and arguments

New claim 16 added during the reexamination proceeding is almost identical to claim 1 in the '595 patent except that the word "wall" is eliminated as indicated in brackets in the limitation "said second wall surface extending from said first wall surface in a direction away from said first [wall] surface of said main body." The Examiner rejects claim 16 under 35 U.S.C. § 305 (this should be § 314(a) for an *inter partes* reexamination) as being impermissibly broader than the original claims of the '595 patent because "away from said first surface of said main body" in claim 16 does

not have the same meaning as "away from a first *wall* surface of said main body" as in original claim 1. Right of Appeal Notice 17-18.

Patent Owners argue that the test for broadening is not whether the claim has the same meaning. It is argued that claim 16 contains all the features of issued claim 1, with a mere rephrasing of terminology (Patent Owners' Br. 21):

In particular, this rejection is improper because claim 16 describes the second wall surface as extending from the first wall surface. One skilled in the art would acknowledge that a second wall surface extending from a first wall surface means that the second wall surface extends away from the first wall surface. The fact that claim 16 also describes the second wall surface as extending in a direction away from the bottom surface of the first storage portion does not result in claim 16 being broader than claim 1.

We note that claim 16 does not recite extending from a "bottom surface."

Requester responds that claim 16 is broader than claim 1 in that it no longer requires the "second wall surface" to extend "in a direction away from said first wall surface" (Requester's Br. 21). It is argued that Patent Owners' argument that the claims have the same meaning contradicts the claim construction axiom that each claim element is material (*id.*).

Patent Owners argue that a "second wall surface that extends 'from' a first wall surface inherently means that the second wall surface extends 'away' from the first wall surface and therefore the features of claim 16 would not be afforded a broader scope than those of claim 1 in the reexamined patent" (Patent Owners' Rebuttal Br. 9).

The Examiner's Answer maintains the rejection.

Analysis

In an *inter partes* reexamination, "no proposed amended or new claim enlarging the scope of the claims of the patent shall be permitted."

35 U.S.C. § 314(a). A claim is broader in scope if it includes within its scope any subject matter that would not have infringed the original patent. *See In re Freeman*, 30 F.3d 1459, 1464, 31 USPQ2d 1444, 1447 (Fed. Cir. 1994). Eliminating a claim limitation usually constitutes a prima facie broadening because a claim with fewer limitations is normally broader. However, the claim language must always be analyzed case-by-case.

Original claim 1 in the '595 patent recites "a first surface of said main body," "a first wall surface," and "said second wall extending away from said first wall surface in a direction away from said first wall surface of said main body":

1. A tray for storing a semiconductor integrated circuit device having a package and wiring terminals on a lower surface of the package, said tray comprising:

a substantially planar main body; and

a first storage portion provided on *a first surface of said main body* for storing the semiconductor integrated circuit device, said first storage portion having a bottom surface and *a first wall surface* extending from said bottom surface and arranged around the semiconductor integrated circuit device when the semiconductor integrated device is stored in said first storage portion;

a second wall surface disposed around a circumference of the semiconductor integrated circuit device so as to limit horizontal movement of the semiconductor integrated circuit device, said first wall surface being inclined at an angle so as to support an edge of the package of the semiconductor integrated circuit device such that the wiring terminals of the semiconductor integrated circuit device do not contact said first wall surface when the semiconductor integrated circuit device is stored in said first storage portion, and *said second wall surface extending from said first wall surface in a direction away from said first wall surface of said main body*, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal.

There is no clear antecedent basis for "said first *wall* surface of said main body." Instead, the phrase refers to and combines two different antecedents: "a first surface of said main body" and "a first wall surface." The claim is ambiguous in this respect, which is the most likely reason that claim 16 was added with the word "wall" omitted (Patent Owners do not explain why claim 16 was added). The most reasonable construction is that "said first wall surface of said main body" should be understood to mean "said first surface of said main body," as now recited in claim 16. Therefore, claim 16 is not broader in this respect than original patent claim 1.¹

Assuming that "said first wall surface of said main body" refers to the "first wall surface" instead of "said first surface of said main body," claim 16 is still not broader than original claim 1. In the limitation, "said second wall

¹ The question of what is meant by "in a direction away from said first surface of said main body" is treated in the indefiniteness rejection of claim 16 under § 112, second paragraph.

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surface extending from said first wall surface in a direction away from said first wall surface of said main body," in original claim 1, we interpret "said second wall surface extending from said first wall surface" to mean the same thing as "said second wall surface extending . . . in a direction away from said first wall surface of said main body" for the reason stated by Patent Owners, i.e., a "second wall surface that extends 'from' a first wall surface inherently means that the second wall surface extends 'away' from the first wall surface" (Patent Owners' Rebuttal Br. 9). Therefore, the limitation "extending . . . in a direction away from said first wall surface of said main body" could be deleted as redundant without broadening the claim. Because the limitation has been changed to "extending . . . in a direction away from said first surface of said main body," this adds a limitation that the second wall surface extends "from" both the "first wall surface" *and* the "first surface," which narrows the scope of original patent claim 1.

We conclude that claim 16 is not broader than original claim 1 in the '595 patent. The rejection under 35 U.S.C. § 314(a) is reversed.

35 U.S.C. § 112, second paragraph

Rejection and arguments

The Examiner rejected claim 16 under 35 U.S.C. § 112, second paragraph, as being indefinite, stating that "it is unclear what surface is being relied on to be the first surface of the main body." Action Closing Prosecution 15. The Examiner noted that the '595 patent describes an "upper

surface of the tray" (col. 3, ll. 41-42) and an "upper surface of the tray main body" (col. 3, ll. 60-61), but concluded "that such descriptions are insufficient, with respect to indicating the location of the first/upper surface of the main body, to support using the first surface of the main body as a reasonable basis for which to claim the relative location of the second wall surface in the reexamined claim 16" (Action Closing Prosecution 16).

Patent Owners proposed an amendment to claim 16 to: (1) delete the recitation of "a first surface of" in the limitation "a first storage portion provided on a first surface of said main body"; and (2) to change "said second wall surface extending from said first wall surface in a direction away from said first surface of said main body" to "said second wall surface extending from said first wall surface in a direction away from said bottom surface of said first storage portion." Response to Action Closing Prosecution 2 and 12-13. The Examiner denied entry of the amendment. Right of Appeal Notice 2. NOTE: in Patent Owners' Brief in eDAN², a handwritten notation "incorrect" appears next to the statement that "an amendment to claim 16 was filed, but not entered," and the amendment to claim 16 appears to have been entered as indicated by the handwritten notation "B1" in the Response to Action Closing Prosecution 2. We assume that the amendment has *not* been entered.

² eDAN (electronic Desktop Application Navigator) is an interface to IFW (image file wrapper), PALM (patent application locating and monitoring), and other data available in USPTO Automated Information Systems.

Patent Owners argue that claim 16 recites a planar body and a first storage portion provided on a first surface of the main body, that the planar main body is disclosed in the detailed description and represented with a reference numeral, and that "[o]ne skilled in the art would be apprised of the scope of claim 16 because that person would realize that a planar main body includes a surface" (Patent Owners' Br. 20).

Requester responds (Requester's Br. 20):

Indeed, the detailed description of the '595 patent discloses that the "tray main body 11" has an "upper surface." See '595 patent, col. 3, ll. 59-61. This, however, cannot be the "first surface of said main body" from which the "second wall surface" extends in a "direction away", because the "second wall surface" is a part of the "upper surface" of the tray. If the "upper surface" of the tray were the "first surface of said main body", the claim would nonsensically call for the "second wall surface" to extend in a direction away from itself. Clearly, Appellants argument does nothing to dispel the ambiguity and vagueness of the language referenced in the rejection.

Patent Owners essentially repeat the arguments from the brief (Patent Owners' Rebuttal Br. 8), without addressing Requester's arguments.

The Examiner agrees with the Requester's reasons why it is unclear what surface is referred to by the limitation (Answer 35).

Analysis

As discussed in the rejection under 35 U.S.C. § 314(a), there was no clear antecedent basis for "said first *wall* surface of said main body" in

original patent claim 1. Claim 16 was apparently added to delete the word "wall" to correct the antecedent basis problem. However, it is now indefinite what is meant by "said second wall surface extending . . . in a direction away from said first surface of said main body."

The '595 patent discloses that in "the ordinary use state of the tray 10, i.e., a state wherein the tray 10 is set horizontally, . . . the surface which can be seen will be referred to as the upper surface of the tray 10, and that the surface which cannot be seen will be referred to as the lower surface of the tray 10" (col. 3, ll. 38-43) and that "[t]he tray 10 shown in FIG. 3 comprises a substantially rectangular and planar main body 11" (col. 3, ll. 58-59) having a "plurality of linear ridges 12 formed on the upper surface of the tray main body 11" (col. 3, ll. 60-61) to form storage portions 14. The tray 10 is "planar" because the tray is relatively thin compared to its width and length, not because it is perfectly flat and smooth. In the limitations, "a substantially planar main body; and a first storage portion provided on a first surface of said main body" in claim 16, we interpret the "first surface of said main body" to refer to the upper surface of tray 10 as seen in Figure 3, which contains many discrete surfaces, including, for example, the claimed "bottom surface," "first wall surface," and "second wall surface." Because the "second wall surface" is one of the many distinct surfaces which makes up the "first surface," the limitation of "said second wall surface extending . . . in a direction away from said first surface of said main body" is

indefinite because it confusingly implies that the "second wall surface" extends away from itself. The rejection of claim 16 is sustained.

Although we think that Patent Owners meant to claim "said second wall surface extending . . . in a direction away from said *bottom* surface," as evidenced by the proposed amendment, claim 16 is indefinite as it stands. "[D]uring patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. . . . An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process." *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). Patent Owners' proposed amendment would overcome the indefiniteness rejection.

NEW GROUNDS OF REJECTION UNDER 37 C.F.R. § 41.77(b)

Claims 1, 2, 9-11, and 16 are rejected under 35 U.S.C. § 102(b) as being anticipated by Brahmbhatt

Claims 1, 2, 5-11, and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brahmbhatt

Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Brahmbhatt and Murphy.

Anticipation

This anticipation rejection is based on a proposed anticipation rejection of claim 1 by the Requester, and is extended to claims 2, 9-11, and 16. Requester found that the prior art pocket of Figure 17 of Brahmhatt anticipates the structure of claim 1 because it is *capable* of storing a semiconductor integrated circuit device as shown in Figure 17, reproduced below from the Comments of the 3rd Party Requestor on the First Office Action and Amendment 6. The Examiner did not adopt the rejection, so it has never been argued against by the Patent Owners.

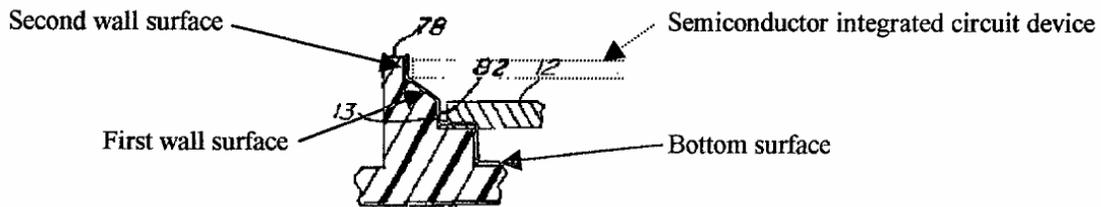


Fig. 17.
PRIOR ART

The above Figure 17 is annotated by Requester to show an integrated circuit device in dotted lines sitting on the inclined guide-in surface of a prior art wall structure to illustrate that a device is capable of sitting on the inclined surface. The inclined surface is labeled a "first wall surface," the vertical surface above the inclined surface is labeled a "second wall surface," and the lower horizontal surface and surfaces leading to the lower edge of the first wall surface are labeled a "bottom surface."

The preambles of claims 1 and 16 recite a "tray for storing a semiconductor integrated circuit device" and the bodies of the claims recite how the device is intended to fit into the tray. The "semiconductor integrated circuit device" is not part of the claimed tray, but is an "intended use" for the tray. That is, the claims are directed to a tray, not the tray in combination with the semiconductor device.

The "intended use" of a machine is not germane to the issue of patentability of the machine itself. *In re Casey*, 370 F.2d 576, 580, 152 USPQ 235, 238 (CCPA 1967). A statement of intended use does not qualify or distinguish the structural apparatus claimed over the reference. *In re Sinex*, 309 F.2d 488, 492, 135 USPQ 302, 305 (CCPA 1962). There is an extensive body of precedent on the question of whether a statement in a claim of purpose or intended use constitutes a limitation for purposes of patentability. *See generally Kropa v. Robie*, 187 F.2d 150, 155-59, 88 USPQ 478, 483-87 (CCPA 1951) and the authority cited therein, and cases compiled in 2 Chisum, *Patents* § 8.06[1][d] (2006). Such statements often, although not necessarily, appear in the claims preamble. *In re Stencel*, 828 F.2d 751, 754, 4 USPQ2d 1071, 1073 (Fed. Cir. 1987). However, the structure must be capable of performing the intended use.

The issue is whether Brahmhatt's structure in Figure 17 is capable of performing the "intended use" of storing a semiconductor integrated circuit device as claimed.

The inclined surface leading into the pocket in Figure 17 corresponds to a "first wall surface" and is *capable of* supporting an edge of the package of an integrated circuit device. Of course, the surface is not capable of supporting the edge of a package unless a package exists that is larger than the package 12 shown in Figure 17. We take Official Notice of the facts that integrated circuit packages come in different sizes and that trays are designed for a certain package size.³ The tray in Figure 17 can be for a small package, where the inclined surface is capable of supporting a larger package. Brahmhatt expressly describes the use of an inclined surface to support the edge of a package.

The vertical wall surface above the upper edge of the inclined wall guide-in surface corresponds to a "second wall surface" and is *capable of* limiting the horizontal movement of the device in the same way as the

³ A traverse of a finding of Official Notice requires more than just a statement that the fact is not in a reference. A "traverse" is "[a] formal denial of a factual allegation in the opposing party's pleading," *Black's Law Dictionary* (7th ed. 1999). That is, a traverse is similar to answering the factual allegations in a complaint in a civil action. *Cf.* Fed. R. Civ. P. 8(b) ("A party shall . . . admit or deny the averments upon which the adverse party relies. If a party is without knowledge or information sufficient to form a belief as to the truth of an averment, the party shall so state and this has the effect of a denial."). An applicant or patent owner may traverse a finding of Official Notice by simply averring that "those of ordinary skill in the art were not aware of [the fact]" or that "applicant [or patent owner] is without any knowledge or information as to whether those of ordinary skill in the art were aware of [the fact]." This avoids putting the Office to the task of proving a fact which is well known.

surface 28 in the '595 patent. As discussed in Issue (3), the limitation of "a second wall surface disposed around a circumference of the semiconductor integrated circuit device so as to limit horizontal movement of the semiconductor integrated circuit device" does not define how much, or under what conditions the second wall surface limits horizontal movement.

The term "surface" has a broad meaning in the '595 patent and may include several distinct surfaces, e.g., the "upper surface" of the tray ('595 patent, col. 3, ll. 36-43) includes all the surfaces of the storage portions on the top of the tray, including the claimed "bottom surface," "first wall surface," and "second wall surface." Accordingly, the claimed "bottom" surface may be considered to include and extend from the bottommost horizontal surface to the lower edge of the inclined surface as shown in the Requester's figure.

Brahmbhatt's structure is capable of storing a semiconductor integrated circuit device as claimed. Claims 1 and 16 are anticipated.

Brahmbhatt recognizes that the surface of the tray should not come into contact with the solder balls of the integrated circuit package (col. 1, ll. 55-65). Therefore, the inclined guide-in surface in Figure 17 leading to the seating surface would necessarily be angled to prevent the surface from coming into contact with the ball terminals as the package is being inserted and would not contact the ball terminals of a package sitting on the inclined surface as recited in claim 2. The angles of the inclined surface and the vertical surface in Figure 17 anticipate the limitations of claims 9-11.

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Although Brahmbhatt discloses second storage portions on a surface opposite to the first surface, as recited in claims 5-8, this is not expressly shown in Figure 17. Therefore, claims 5-8 are not rejected as anticipated.

We briefly comment on why the Examiner did not adopt the Requester's proposed anticipation rejection. The Examiner found that the vertical wall surface, which the Requester found to correspond to the "second wall surface," was not "inclined . . . with respect to the horizontal." *See* Action Closing Prosecution 7. This is wrong because a vertical surface is inclined at an angle of 90° with respect to the horizontal. A vertical surface is not inclined with respect to a *vertical* surface. Thus, the Examiner's rationale is not persuasive.

Obviousness

Brahmbhatt - claims 1, 2, 5-11, and 16

Claims 1, 2, 9-11, and 16 are unpatentable for obviousness for the reasons stated in the anticipation rejection because anticipation is the epitome of obviousness. *See In re Paulsen*, 30 F.3d 1475, 1481, 31 USPQ2d 1671, 1675 (Fed. Cir. 1994). Claims 1, 2, 5-11, and 16 are also unpatentable for obviousness for the following additional reasons.

Brahmbhatt discloses a semiconductor tray having inclined wall surfaces to support an integrated circuit package along its lower peripheral edges to prevent contact between the tray and the solder ball terminals and also to center the package within the pocket. For this reason, Patent Owners

canceled claims 12-15 of the '595 patent, which do not recite a second wall surface extending upward from the upper edge of the first wall surface. The claims on appeal recite a second wall surface for limiting horizontal movement which extends upward from the inclined first wall surface.

The obviousness issue can be approached in two different ways.

(1)

First, consider that Figure 17 of Brahmbhatt teaches a second wall surface for limiting horizontal movement of a component, but does not teach an inclined first wall surface for supporting a component edge.

Figure 17 of Brahmbhatt discloses a prior art pocket structure having a vertical surface leading to an angled guide-in surface which extends to a vertical surface 82 ("second wall surface") which constrains the side surface 13 of the component 12. *See* col. 6, ll. 35-38. A horizontal ledge ("first wall surface") supports the peripheral bottom surface of the component package. The difference between Figure 17 and the subject matter of claims 1 and 16 is that Figure 17 does not have "said first wall surface being inclined at an angle so as to support an edge of the package of the semiconductor integrated circuit device. "

A rejection must articulate the reasons why one of ordinary skill in the art would have been motivated to select the references and to combine or modify them to render the claimed invention obvious. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006). Motivation may be found expressly or implicitly in the references. *Id.* at 987-88,

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78 USPQ2d at 1336. "[T]he 'motivation-suggestion-teaching' test asks not merely what the references disclose, but whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the inventor, would have been led to make the combination recited in the claims." *Id.* at 988, 78 USPQ2d at 1337. Motivation to combine references "may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

Brahmbhatt discloses that conventional prior art pockets that support a BGA integrated circuit package along the peripheral bottom surface of the package have the problem that they allow possible contact with the solder ball terminals. *See* col. 1, ll. 61-65. Brahmbhatt discloses that the solution to the problem is to use an inclined surface to support the edge of the package. *See* col. 3, ll. 8-12.

The level of ordinary skill in the art is best evidenced by the references. *See In re GPAC Inc.*, 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (the Board did not err in adopting the approach that the level of skill in the art was best determined by the references of record). Here, Brahmbhatt evidences that a person of ordinary skill in the art is an ordinary designer of semiconductor trays. One of ordinary skill in the semiconductor tray art, reading Brahmbhatt, would have been informed of

both the problem of horizontal peripheral bottom supports and Brahmbhatt's solution of an inclined surface peripheral lower edge support.

One of ordinary skill in the semiconductor tray art would have been motivated to substitute an inclined support surface for the horizontal support surface in the pocket of prior art Figure 17 in Brahmbhatt to support the package along the edge to overcome the known problem with the prior art as taught by Brahmbhatt. The teaching-suggestion-motivation for the modification is found in the express teachings of Brahmbhatt itself.

Figure 17 of Brahmbhatt, as modified to include an inclined first wall surface, teaches claims 2 and 9-11. It would have been obvious to one skilled in the art to provide second storage portions on the opposite surface from the storage portions in Figure 17, as recited in claims 5-8, in view of the express teachings of Brahmbhatt, which has second storage portions.

(2)

Second, consider that Figures 11, 12, 14, and 15 of Brahmbhatt teach an inclined first wall surface for supporting the edge of a component, but do not teach a second wall surface for limiting horizontal movement.

Brahmbhatt, Figures 11, 12, 14, and 15, discloses tray embodiments having inclined wall surfaces 80 (corresponding to a "first wall surface") parallel to the side surfaces 13 of the component 12 and supporting the peripheral lower edges of the component 12. The differences between this embodiment and the claimed subject matter are that the embodiments do not disclose: (1) a "second wall surface disposed around a circumference of the

semiconductor integrated circuit device so as to limit horizontal movement of the semiconductor integrated circuit device," as recited in claims 1 and 16; (2) "said second wall surface extending upward from an upper edge of said first wall surface, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal," as recited in claim 1; and (3) "said second wall surface extending from said first wall surface in a direction away from said first surface of said main body, wherein said second wall surface is inclined at an angle larger than the angle of said first wall surface, with respect to the horizontal," as recited in claim 16.

Brahmbhatt discloses that it was known that "earlier trays utilize vertical side walls of other structures with vertical engagement surfaces which constrain the lateral movement of the component in the pocket" (col. 1, l. 66, to col. 2, l. 1). Figure 17 of Brahmbhatt discloses a prior art pocket structure having a vertical surface leading to an angled guide-in surface which extends to a vertical engagement surface 82 and then to a horizontal ledge. The vertical surface 82 constrains horizontal movement of the side surface 13 of the component 12. *See* col. 6, ll. 35-38. The horizontal ledge supports the peripheral bottom surface of the component package. Brahmbhatt discloses that an advantage of using an inclined support surface with an "angled guide-in surface portion extending all the way to the seating surface" (col. 3, ll. 20-22), instead of an "inclined surface leading into a pocket with vertical sidewalls as shown in FIG. 17" (col. 6,

ll. 9-10), is to form a thinner tray (col. 6, ll. 35-40):

Referring to the prior art of FIG. 17, the embodiments above significantly do not have the vertical surface 82 which confronts and constrains the side surface 13 of the component 12. This allows a thinner tray thickness facilitating higher stacking densities, less material in the molded tray, and simpler and easier molding.

And, the summary of the invention states (col. 3, ll. 20-26):

Another advantage of the invention is that the angled guide-in surface portion extending all the way to the seating surface allows a thinner tray as compared to configurations with a guide-in surface extending to vertical surfaces which confront the components side surfaces. The thinner tray allows greater stacking densities and uses less material for the tray.

Thus, the inclined guide-in surface portion 80 in Figures 11, 12, 14, and 15, was considered an improvement over the inclined guide-in surface extending to a pocket with vertical sidewalls 82 in Figure 17 due to its lower height.

Figures 15 and 17 are reproduced below with the surfaces emphasized.

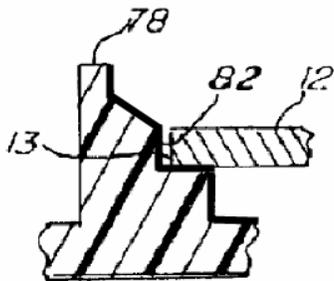


Fig. 17.

PRIOR ART

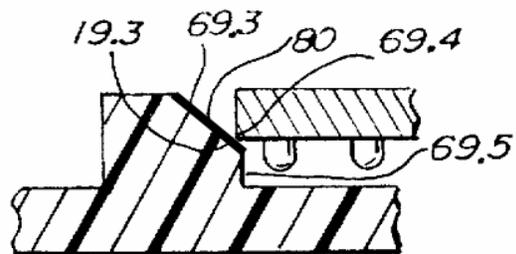


Fig. 15.

A reference must be evaluated for all it fairly suggests to one of ordinary skill in the art. *See In re Lemelson*, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968) ("The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain."). All disclosures of the prior art, including unpreferred embodiments, must be considered. *See In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976).

Again, we find that Brahmbhatt evidences the level of ordinary skill in the art and evidences that a person of ordinary skill in the art is an ordinary designer of semiconductor trays. One of ordinary skill in the semiconductor tray art would have appreciated from Figure 17 of Brahmbhatt, if not from personal experience, that it was known to use vertical engagement surfaces to constrain the lateral (horizontal) movement of the component in the pocket. One skilled in the art also would have appreciated the prior art arrangement of a guide-in surface leading to a vertical engagement wall 82 in Figure 17 could be used if the advantage of a thinner tray thickness was not needed. Accordingly, one of ordinary skill in the semiconductor tray art would have been motivated to modify the inclined "first wall surfaces" in Figures 11, 12, 14, and 15 by adding a vertical "second wall surface . . . to limit horizontal movement of the semiconductor integrated circuit device," to further restrain movement of the component and to provide the guide-in surface and vertical wall 82 of Figure 17 if the advantages of a thinner tray

were not needed. The vertical surface would be located above the seating location as shown by Figure 17. The teaching-suggestion-motivation for the modification is found in the express teachings of Brahmbhatt.

It is noted that Figures 14 and 15 show the inclined surface raised above the horizontal bottom surface of the tray. As discussed in the new anticipation ground of rejection, the claimed "bottom surface" may be considered to extend up to the lower edge of the inclined surface. In addition, however, it would have been obvious to extend the inclined surface in Figures 14 and 15 down to the horizontal bottom surface in view of the ridge 69.1 in Figure 7. The teaching-suggestion- motivation is found in the express teachings of Brahmbhatt.

Brahmbhatt, as modified, teaches claims 2 and 5-11.

Brahmbhatt and Murphy - claims 3 and 4

Brahmbhatt discloses storage pockets which are formed by discrete component engagement means 76 (e.g., Fig. 12). The differences between Brahmbhatt and the subject matter of claims 3 and 4 are that Brahmbhatt does not disclose that the "first storage portions" are defined by pairs of intersecting ridges, as recited in claim 3, or that each ridge "defining said first storage portions has a wall surface for serving as said first wall surface," as recited in claim 4.

Murphy is directed to a tray for semiconductor integrated circuit devices and, thus, is within the inventors' field of endeavor and within the scope of the prior art. *See In re Deminski*, 796 F.2d 436, 442,

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230 USPQ 313, 315 (Fed. Cir. 1986) (the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned); *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1535, 218 USPQ 871, 876 (Fed. Cir. 1983) ("The scope of the prior art has been defined as that 'reasonably pertinent to the particular problem with which the inventor was involved'").

Murphy discloses a pocket storage area 420 formed by transverse beams 412, 413, 416, and 417. A pocket has four corner supports 422, each with an upstanding wall section 430 with first and second positioning fingers 431 and 432 having inner vertical surfaces 433 and 434 adapted to be proximate an edge of the integrated circuit package 401. The tops of the fingers have chamfered surfaces 437 and 438. The package 401 is supported on its bottom surface by platforms 444 on the top of pedestals 440, 441, 442, and 443, and by upstanding ribs 450 and 451. As the integrated circuit package 401 is loaded into a pocket storage area, the chamfered edges 431 and 432 of the fingers and the finger surfaces 433 and 434 align the package 401 with the pocket. *See* Figs. 4 and 5; col. 5, l. 1 to col. 6, l. 17.

Murphy does not expressly teach why transverse beams (intersecting ridges or ribs) are used to define the pocket storage areas. It is not required that the prior art teach why something was done to establish motivation, but only that it has been done, because patents often leave out descriptions of things that are well known. *See Paperless Accounting, Inc. v. Bay Area Rapid Transit System*, 804 F.2d 659, 664, 231 USPQ 649, 652 (Fed. Cir.

1986) ("A patent applicant need not include in the specification that which is already known to and available to the public."). Nevertheless, we find that persons of ordinary skill in the art had sufficient skill to appreciate that the purpose of longitudinal and transverse ridges is to provide rigidity to the tray and that rigidity was desirable for handling purposes.⁴

One of ordinary skill in the art of semiconductor trays would have been motivated to modify Brahmbhatt to include longitudinal and transverse ridges to define the storage pockets because Murphy teaches that it was known to use ridges to define pocket storage areas in semiconductor trays. The teaching-suggestion-motivation is found in Murphy. One of ordinary skill in the art would also have been motivated to modify Brahmbhatt to include ridges because one of ordinary skill in the art would have appreciated that the ridges are desirable to increase the stiffness of the tray. This teaching-suggestion-motivation is found in the level of ordinary skill in the art of one analyzing the Murphy patent.

Claim 4 recites that each ridge "has a wall surface for serving as said first wall surface." This is a broad limitation that does not specify the exact relationship between the first wall surface and the ridge. If Brahmbhatt is modified to have ridges, each ridge would have to have a wall surface to support the component. In any case, it would have been obvious to integrate

⁴ Patent owners may traverse this finding by an appropriate statement as discussed in footnote 3. Of course, this would only negate the finding of the reasons for transverse ridges, not the teaching of ridges in Murphy.

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any ridges with the component engagement members 76 in Brahmbhatt because these members define the boundaries of the pocket.

CONCLUSION

The anticipation rejection of claims 1, 2, 5-11, and 16 under 35 U.S.C. § 102(b) is *reversed*.

The obviousness rejections of claims 3 and 4 under 35 U.S.C. § 103(a) are *reversed*.

The indefiniteness rejection of claim 16 under 35 U.S.C. § 112, second paragraph, is *affirmed*.

The rejection of claim 16 under 35 U.S.C. § 314(a) for broadening of the scope of the '595 patent is *reversed*.

New grounds of rejection are entered pursuant to 37 C.F.R. § 41.77(b). 37 C.F.R. § 41.77(b) provides that "[a]ny decision which includes a new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 C.F.R. § 41.77(b) also provides that the patent owner, within ONE MONTH 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 the appeal as to the rejected claims:

(1) *Reopen prosecution*. The owner may file a response requesting reopening of prosecution before the examiner. Such a response must be either an amendment of the claims so rejected or new evidence relating to the claims so rejected or both.

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(2) *Request rehearing*. The owner may request that the proceeding be reheard under § 41.79 by the Board upon the same record. The request for rehearing must address any new ground of rejection and state with particularity the points believed to have been misapprehended or overlooked in entering the new ground of rejection and also state all other grounds upon which rehearing is sought.

The time period for response may not be extended.

AFFIRMED-IN-PART -- 37 C.F.R. § 41.77(b)

LEB/lp

MARTIN, *Administrative Patent Judge*, concurring.

I concur in the majority opinion in all respects except that I would reverse the rejection for anticipation by Brahmbhatt for somewhat different reasons.

I would begin by determining whether Brahmbhatt's surface 68, on which the Examiner and Requester would have us read the claimed first and second wall surfaces, includes portions satisfying the requirements of Claims 1 and 16 that (a) the first wall surface be inclined at first angle with respect to the horizontal and (b) the second wall surface extend from the first wall surface and be inclined at an angle larger than the angle of the first wall surface with respect to the horizontal. I agree with the majority that the foregoing claim limitations (1) require that the first and second surfaces be in contact, (2) do not imply that either wall surface is flat or even approximately flat, and (3) require a identifiable physical transition between the two wall surfaces which need not be abrupt. I would hold that the physical transition requirement is not satisfied by dividing surface 68 into two surfaces by the slanted line shown in Requester's annotated Figure 7 (Requester's Br. 15), because that line does not correspond to an identifiable physical transition between two parts of surface 68.

On the other hand, all of the above conditions are satisfied when the first wall surface is read onto the slightly rounded ridge 69.1 (col. 5, ll. 39-40) and the second wall surface is read onto the remainder of the surface 68, a reading addressed by the majority. Under these circumstances, an

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identifiable physical transition exists where the rounded ridge 69.1 meets the remainder of surface 68. Furthermore, this ridge supports an edge of an integrated circuit device, as required of the first wall surface by Claims 1 and 16. However, I agree with the majority that two limitations relating to the second wall surface are not satisfied. The first is the requirement of Claim 1 that the second wall surface “extend upward from an upper edge of said first wall surface.” Instead, the second wall surface extends sideways from the first wall surface (i.e., rounded ridge 69.1). The second limitation that is not satisfied is the requirement of Claims 1 and 16 that the second wall surface limit horizontal movement of the integrated circuit device. Surface 68 has not been shown to inherently perform this function and the assertions of inherency by the Examiner and Requester are based on reading too much into the dimensions in the drawings. *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 Chitayat*, 56 CCPA 1343, 408 F.2d 475, 161 USPQ 224 (1969).”); *Breen v. Cobb*, 487 F.2d 558, 559, 179 USPQ 733, 734 (CCPA 1973) (“The skilled artisan, if he noted the amount of offset in any of the drawings at all, would regard the showing as accidental or arbitrary.”).

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