

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MOHAMMAD YUNUS

Appeal 2008-5350
Application 10/138,392
Technology Center 2800

Decided: January 15, 2009

Before JOSEPH F. RUGGIERO, JOHN A. JEFFERY, and
CARLA M. KRIVAK, *Administrative Patent Judges*.

KRIVAK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from a final rejection of claims 12-15 and 18. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF CASE

Appellant's claimed invention is a method for assembling a flip-chip ball grid array (FCBGA) device that reduces the number of process steps and heat cycles (Spec. 5:15-18).

Independent claim 12, reproduced below, is representative of the subject matter on appeal.

12. A method for assembly of a FCBGA package including the following steps in sequence:

providing a carrier pallet having a plurality of recesses which mirror external contacts of a device under assembly,

positioning a solder ball in each active contact site,

aligning and positioning a chip carrier substrate to said solder balls,

aligning a chip having flip chip contacts to pads on the opposite surface of said chip carrier,

subjecting the carrier pallet, chip carrier substrate, and chip to a thermal process whereby all solder contacts are connected, and

removing the connected chip carrier substrate, chip, and solder contacts from the carrier pallet,

moving said carrier pallet,

wherein the step of providing a carrier pallet comprises providing a carrier pallet comprising a total surface not wettable by solder, and

wherein the total surface not wettable by solder is an aluminum surface.

REFERENCES

George	US 5,829,668	Nov. 3, 1998
Chapman	US 6,059,172	May 9, 2000
Adriance	US 6,484,927 B1	Nov. 26, 2002 (filed Nov. 5, 1999)

The Examiner rejected claims 12-15 under 35 U.S.C. § 103(a) based upon the teachings of Adriance and George.

The Examiner rejected claim 18 under 35 U.S.C. § 103(a) based upon the teachings of Adriance, George, and Chapman.

Appellant contends neither Adriance nor George teaches or suggests the “total surface of the carrier pallet not wettable by solder being an aluminum surface” (Br. 6).

ISSUE

Did the Examiner err in combining the method of Adriance with the method of George, which the Examiner finds teaches a platen formed of a solder-nonwettable composition such as aluminum, to obtain Appellant’s claimed invention?

FINDINGS OF FACT

1. Adriance teaches attaching a conductive material to a substrate and attaching a semiconductor chip to a substrate (Abstract) and facilitating the attachment of solder to conductive pads on the substrate (col. 2, ll. 30-31). During a reflowing process, solder balls 46 form package bumps 34 and pre-formed solder bumps 32 form solder joints 36 (Fig. 17; col. 11, ll. 63-67). A heating device simultaneously heats a pallet, conductive materials, semiconductor substrate, and semiconductor chip (col. 3, ll. 6-8).

The pallet is preferably fabricated from “any of a number of nonconductive, nonwettable-to-solder materials...” (col. 6, ll. 1-4).

2. George teaches forming solder bumps on bond pads (col. 1, ll. 14-16). A platen, having depressions for receiving solder paste, is formed of a solder-nonwettable composition such as aluminum (col. 2, ll. 8-12).

3. George teaches removing a substrate from the platen (col. 3, ll. 55-57; Fig. 3).

PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). If the Examiner’s burden is met, the burden then shifts to the Appellant to overcome the *prima facie* case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

ANALYSIS

The Examiner rejected claims 12-15 and 18 under 35 U.S.C. §103 (a). Appellant addressed all the claims together (Br. 6-7). We address the rejection with respect to representative independent claim 12.

Appellant agrees with the Examiner that Adriance does not disclose the “total surface of the carrier pallet not wettable by solder being an aluminum surface” (Br. 6). Appellant asserts George also does not teach this feature (*id.*). Rather, George teaches element 82 “is [sic] not form the total surface” (Br. 6). Further, George does not teach a moveable carrier pallet. The only issue is whether George teaches a pallet made from a non-wettable solder material such as aluminum.

The Examiner finds that although Adriance teaches the carrier pallet is preferably made of a non-wettable-to solder material, it does not specifically teach aluminum as the material (Ans. 6). However, George teaches aluminum is a well known alternate non-wettable-to solder material used in the art to form carrier pallets (Ans. 6; FF 2). Appellant’s contention that George does “not form the total surface” (Br. 6) is unfounded. Adriance teaches a carrier pallet that is completely made of a non-wettable to solder material and George teaches a carrier pallet that is completely made of a non-wettable to solder material, which includes aluminum (George, col. 2, ll. 10-12; Ans. 7). Thus, forming the carrier pallet comprising a total surface not wettable by solder of Adriance, with George’s teaching that a non wettable solder material such as aluminum can be used to form carrier pallets, would have been obvious to one having skill in the art at the time of Appellant’s invention.

Appellant’s assertion that George does not relate to a moveable carrier pallet is also unfounded. As noted by the Examiner, both Adriance and George show a carrier pallet moved or displaced from the surface of the semiconductor device (Ans. 7; FF 3). Further, George was merely cited for

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the material the platen/pallet comprises and not the method for forming solder bumps.

The Examiner has therefore provided a *prima facie* case of obviousness with respect to claim 12, and therefore claims 13-15, which depend therefrom.

With respect to claim 18, Appellant has provided no arguments with respect to Chapman. Thus, for the reasons set forth above with respect to claims 12-15, claim 18 is also obvious over the combination of Adriance and George and Chapman.

CONCLUSION

The Examiner did not err by finding the non wettable solder material, such as aluminum, taught by George can be used to form the carrier layer of Adriance, in rejecting claims 12-15 and 18 under 35 U.S.C. § 103(a).

DECISION

The Examiner's decision rejecting claims 12-15 and 18 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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gvw

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