

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHARLES DAVID FIESELMAN, RICHARD JOSEPH NOREIKA,
and JOSEPH DONALD POOLE

Appeal No. 2003-0272
Application No. 09/478,497

HEARD: June 12, 2003

Before RUGGIERO, GROSS, and BLANKENSHIP, Administrative Patent Judges.
BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 7-10, which are all the claims remaining in the application.

We reverse.

BACKGROUND

The invention relates to a technique for measuring the quality of an electronic assembly soldering process. A printed circuit board test vehicle is provided, which has structure for receiving surface mounted replicas of integrated circuit packages. Claim 7 is reproduced below.

7. A method of testing an electronic assembly manufacturing process comprising:

preparing a circuit board test vehicle for said manufacturing process, said circuit board having at least one interleaved circuit pattern having first and second ends which terminate in first and second holes in said circuit board;

attaching a replica component to circuit pads which extend about the edge of said circuit pattern through said manufacturing process; and

measuring the resistance between said first and second ends of said circuit pattern following said attachment of said replica component.

The examiner relies on the following references:

Peterson et al. (Peterson)	5,552,567	Sep. 3, 1996
Bardsley et al. (Bardsley)	5,754,410	May 19, 1998 (filed Sep. 11, 1996)

Claims 7-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Peterson and Bardsley.

An earlier rejection under 35 U.S.C. § 112 has been expressly withdrawn by the examiner.

We refer to the Final Rejection (Paper No. 7) and the Examiner's Answer (Paper No. 14) for a statement of the examiner's position and to the Brief (Paper No. 13) and

the Reply Brief (Paper No. 16) for appellants' position with respect to the claims which stand rejected.

OPINION

The 35 U.S.C. § 103 rejection of claims 7-10 (Answer at 3-4) asserts that the combined teachings of Peterson and Bardsley show prima facie obviousness of the claimed subject matter as a whole. The examiner finds that Peterson discloses the "essential elements" of the claimed invention, but fails to disclose attaching a replica component to circuit pads which extend about the edge of the circuit pattern. The rejection turns to Bardsley for disclosure of attaching a "replica component" (Fig. 3; 34) to circuit pads (Fig. 3; 54).

Appellants argue (Brief at 7) that the Bardsley reference is directed to a process for chip in-place testing, having no relationship to using replica components in measuring the effects of a manufacturing process on a circuit board. The examiner responds (Answer at 6) that the term "replica component" could represent nothing more than a commercially available, off-the-shelf electronic component. In addition, the examiner appears to advance an additional theory in arguments on pages 7 through 10 of the Answer. The "wave soldering" taught by Peterson, with reference to column 1, lines 9 through 20, is deemed to read on the claimed "attaching a replica component to circuit pads." Appellants respond (Reply Brief at 4), in turn, that the meaning of the

term “replica component” could not reasonably be interpreted to mean a commercially available, off-the-shelf electronic component.

However, the disposition of the instant case does not turn on the breadth of the recitation “replica component.” We agree with appellants’ position, as advanced at the oral hearing, that even if the term “replica component” failed to distinguish over off-the-shelf components, there is no evidence of motivation in the record before us for making the proposed combination.

With respect to the “wave soldering” argument of the Answer, we acknowledge that the text at column 6 of Peterson does not expressly teach that components are not attached to test printed circuit board 40 at the wave soldering station in the manufacturing line depicted in Figure 4. Peterson does make clear (col. 6, ll. 23-27) that components, not shown, are attached to terminals on off-the-shelf printed circuit boards 50.

However, the test vehicles disclosed by Peterson do not have circuit pads extending about the edge of the circuit pattern for receiving components. As shown in Figures 1 and 3, the parallel electrical conductors 14 (Fig. 1) terminate in conductor headers 16, 18, 20, 26, and 28, which connect with terminal bars 22 and 30. Peterson col. 4, ll. 50-65. We thus find that Peterson does not disclose or suggest attaching a component to circuit pads on a circuit board test vehicle.

The circuit pads (54; Fig. 3) to which the components are attached in Bardsley are part of multi-chip module (MCM) 32, which includes chips 34, 36 and substrate 38.

Appeal No. 2003-0272
Application No. 09/478,497

Pads 54 are electrically connected to nets that, in the prior art (Fig. 2), connected chips through the substrate but which were not accessible by test equipment. The pads 54 are positioned on the bottom surface 44 of substrate 38 to allow testing of all leads of the chips in the MCM. Bardsley col. 5, l. 23 - col. 6, l. 16. After testing, an MCM may be plugged into a conventional socket on a circuit board, with no electrical connection between the pads 54 and the socket. Col. 6, ll. 17-31.

The test apparatus of Bardsley (Figs. 8 and 9) comprises a test fixture 130 that includes a circuit board 132 and socket 134. Pads 128 in the MCM 124 attach to surfaces 137 of pins 136 for testing of the chips 125. Col. 8, ll. 12-33.

We thus find that the circuit pads described by Bardsley are not pertinent to the circuit board test vehicles disclosed by Peterson. The references are directed to the disparate problems of testing chips and connections within an MCM, and ensuring acceptable quality of printed circuit boards in a manufacturing process, respectively.

We are therefore in ultimate agreement with appellants that the objective teachings of the references would not have suggested all the requirements of instant independent claim 7. We do not sustain the section 103 rejection of claims 7-10.

Appeal No. 2003-0272
Application No. 09/478,497

CONCLUSION

The rejection of claims 7-10 under 35 U.S.C. § 103 is reversed.

REVERSED

JOSEPH F. RUGGIERO
Administrative Patent Judge

ANITA PELLMAN GROSS
Administrative Patent Judge

HOWARD B. BLANKENSHIP
Administrative Patent Judge

)
)
)
)
)
) BOARD OF PATENT
) APPEALS
) AND
) INTERFERENCES
)
)
)
)
)

Appeal No. 2003-0272
Application No. 09/478,497

POLLOCK VANDE SANDE & AMERNICK RLLP
SUITE 800
1990 M STREET NW
WASHINGTON , DC 20036-6229