

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

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(2) is not binding precedent of the Board.

Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte RAINER A. SCHRAIVOGEL and GUIDO PLANGGER

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Appeal No. 94-3349  
Application 07/757,085<sup>1</sup>

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ON BRIEF

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Before JERRY SMITH, BARRETT and CRAWFORD, Administrative Patent Judges.

CRAWFORD, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 9, 10, 33, 34 and 36-40. Claims 2, 4-8, 12, 13, 15, 16, 18-20, 22-25 and 41-45 have been found

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<sup>1</sup> Application for patent filed September 10, 1991.

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allowable. Claims 1, 3, 11, 14, 17, 21, 26-32 and 35 have been canceled.

Appellants' claimed subject matter is an inter-connection structure for electrically connecting a conductor pattern on a substrate to an additional member. Claims 9 and 33 are illustrative of the subject matter on appeal:

9. A display device comprising an electro-optical medium provided between two supporting bodies provided with drive electrodes, said drive electrodes on one of the supporting bodies extending as far as beyond the surface area defined by the electro-optical medium, characterized in that the drive electrodes are connected in an electrically conducting manner to a semiconductor substrate by means of an interconnection structure having patterned strip-shaped contact elevations on at least a part of its central surface for contacting a conductor pattern provided on said semiconductor substrate in an electrically conductive manner, each of said strip-shaped contact elevations having a length which is at least 4 times its width.

33. An interconnection structure for connecting a conductor pattern provided on a substrate in an electrically conducting manner to an additional member, characterized in that the interconnection structure has patterned strip-shaped contact elevations on at least a part of its central surface for contacting said conductor pattern to said additional member in an electrically conducting manner, each of said strip-shaped contact elevations having a length which is at least 4 times its width.

#### THE REFERENCES

The following references were relied on by the examiner.

Kubo et al. (Kubo)	4,826,297	May 2, 1989
Blonder et al. (Blonder)	0,352,020	Jan. 24, 1990

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(European Patent)

#### THE REJECTIONS

Claims 9, 10, 33, 34 and 36-40 stand rejected under 35 U.S.C. § 103 as unpatentable over Blonder and Kubo.

Rather than reiterate the entire arguments of the appellants and the examiner in support of their respective positions, reference is made to appellants' brief (Paper No. 21) and reply brief (Paper No. 23), and the examiner's answer (Paper No. 22) for the full exposition thereof.

#### OPINION

In reaching our conclusions on the issues raised in this appeal, we have carefully considered appellants' specification and claims, the applied references, and the respective viewpoints advanced by the appellants and the examiner. As a consequence of our review, we have made the determination that the claimed subject matter would have been obvious within the meaning of 35 U.S.C. § 103. Our reasons for this determination follow.

The rejection before us is based upon lack of patentability under 35 U.S.C. § 103. Our current reviewing court, the Court of Appeals for the Federal Circuit and its predecessor, the Court of Customs and Patent Appeals, have

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provided us with the following guidance for evaluating this issue: The question under 35 U.S.C. § 103 is not merely what the references expressly teach, but what they would have suggested to one of ordinary skill in the art at the time the invention was made. See Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989) and In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). While there must be some suggestion or motivation for one of ordinary skill in the art to combine the teachings of the references, it is not necessary that such be found within the four corners of the references themselves; a conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference. See In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). Further, in an obviousness assessment, skill is presumed on the part of the artisan rather than the lack thereof. In re Sovish, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985). Insofar as the references themselves are concerned, we are bound to consider the disclosure of each for what it fairly teaches one of ordinary skill in the art, including not only the specific teachings, but also inferences which one of ordinary skill in the art would reasonably have been

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expected to draw therefrom. See In re Boe, 355 F.2d 961, 965, 148 USPQ 507, 510 (CCPA 1966); and In re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

Claims 9, 10, 34 and 36-40 stand or fall together while claim 33 is considered by appellants to be separately patentable (brief at page 3).

Claim 33

We find that Blonder discloses, as depicted in Figures 1 and 2, V-shaped grooves for connecting a conductor pattern on a substrate 101 in an electrically conducting manner to an additional member 10 (Col. 2, lines 28-51). Blonder also discloses that instead of grooves, texturing of the surface of chip pad 24 can be obtained by forming columns, pyramids or other protrusions and that vertical sidewalls rather than V grooves may be used (Col. 9, lines 37-42 and 51-54). Blonder teaches that the grooves or protrusions produce a mechanically reliable cold-welded room-temperature bond between the chip pad 24 and the carrier pad 10 (Col. 6, lines 8-15).

In one embodiment, the grooves may form a nested L's pattern when viewed from the top as depicted in Figure 5. Each L pattern is formed by two grooves at right angles to one another. Blonder further discloses that the distance between adjacent L's

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is 2 micrometers and that the width of two elongated mask openings which define the two grooves which form the L's is 1 micrometer (Col. 6, lines 29-33). With reference to Figure 5, since the above stated dimensions indicate that the width of the grooves which form the L's is 1 micrometer and the distance between the adjacent L's is 2 micrometers, the length of the groove which forms the bottom of the L, the shortest groove, is 4 micrometers. Moreover, the four-to-one ratio of length to width is apparent by inspection. As Blonder also discloses that these grooves can be protrusions and that the sidewalls can be vertical, Blonder discloses strip shaped elevations.

Appellants argue that Blonder does not disclose strip-shaped elevations which have a length which is at least four times the width. As stated above, Blonder does disclose that the grooves which form the two grooves of the L's depicted in Figure 5 may be replaced by protrusions which may have vertical sidewalls. Further, in view of the disclosure in Blonder that the width of the grooves is 1 micrometer and that the L's are 2 micrometers apart, Blonder clearly discloses that the length of the shortest groove or protrusion is at least four times its width. As such we do not find this argument persuasive.

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Appellants also argue that Blonder does not disclose elevations but grooves. This argument is likewise not persuasive because as noted above Blonder discloses that the grooves could be replaced with protrusions. In addition, in our view, the top of each L-shaped groove 44 may be considered a protrusion.

Claims 9, 10, 34 and 36-40

We find that Kubo discloses, as depicted in Figure 1, a display device having an electro-optical medium ie. liquid crystal 11 between two supporting bodies 4 and 9 (Col. 1, lines 22-23). The supporting bodies 4 and 9 are provided with drive electrodes 9, 10, (Col. 1, lines 25-26). The drive electrode 9 is electrically connected to wiring 12 which extends beyond the liquid crystal cell so as to electrically connect to a semiconductor substrate 6 through solder 5 (Col. 1, lines 32-36).

The examiner stated:

It would have been obvious to one of ordinary skill in the liquid crystal art to have substituted the "L" shaped textured landing pads of figure 5 of Blonder et al. for the landings in the device of Kubo et al. to allow for improved cold bonding.  
[Examiner's Answer at page 5]

We agree with the reasoning of the examiner and thus, we will sustain the rejection as to claims 9, 10, 34 and 36-40.

Appellants argue that there is no suggestion in Kubo or Blonder to employ an interconnection structure as disclosed in

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Blonder to connect the electrodes in Kubo. We disagree. As both Blonder and Kubo teach structures in which a chip is electrically connected to another member, it would have been obvious to use the grooves or protrusions disclosed in Blonder in the Kubo device to obtain a reliable cold-welded bond and to overcome the problems associated with solder bonds (Col. 2, lines 8-34).

In view of the foregoing, the decision of the examiner rejecting claims 9, 10, 33, 34 and 36-40 under 35 U.S.C. § 103 is affirmed.

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

AFFIRMED

JERRY SMITH	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
LEE E. BARRETT	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
	)	
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