

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte KABUL S. SENGUPTA, AZAR ASSADI, and ALAN B. ALLEY

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Appeal No. 2002-1048  
Application No. 09/172,734

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ON BRIEF

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Before GARRIS, FLEMING, and GROSS, Administrative Patent Judges.  
GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the final rejection of claims 1 and 3-20 which are all of the claims remaining in the application.

The subject matter on appeal relates to an imaging system comprising an image sensor having a color filter array attached to a circuit board via a mass reflow process. The appealed subject matter also relates to a method of attaching an image

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sensor having a color filter array to a circuit board via a mass reflow process. This subject matter is adequately represented by independent claim 1 which reads as follows:

1. An imaging system comprising:

an image sensor having a color filter array, the image sensor attached to a circuit board via a mass reflow process, the image sensor for capturing image data and providing the image data at an output.

The references set forth below are relied upon by the examiner as evidence of obviousness:

Denda	4,893,171	Jan. 9, 1990
Etchells et al. (Etchells)	5,536,908	Jul. 16, 1996
Brossart	5,550,087	Aug. 27, 1996

Claims 1, 3-6 and 8-13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Etchells in view of Denda, and claims 7 and 14-20 stand correspondingly rejected over these references and further in view of Brossart.

Rather than reiterate the respective positions advocated by the appellants and by the examiner concerning the above noted rejections, we refer to the brief and the reply brief and to the answer for a complete exposition thereof.

OPINION

For the reasons which follow, neither of these rejections can be sustained.

According to the examiner, "since Etchells . . . teaches the special composition which allows the mounted circuits to be bonded without destroying the elements, it would have been obvious to include this new and improved method of bonding as taught by Etchells . . . for circuits such as a color image sensor without ruining its intended purpose" and "[t]herefore, it would have been obvious to one having ordinary skill in the art to modify Etchells . . . with Denda . . . by using the mass reflow process with circuits otherwise not used such as a color image sensor for bonding at higher temperatures" (answer, pages 4-5). The examiner's position is not well taken.

Etchells teaches that "the solder in the present invention also has a reflow temperature, approximately 250° C., that is low enough to allow the manufacturing of printed circuits without exposing the electronic components to the extremely high temperatures associated with reflow processes containing solders that have high melting point temperatures" (col. 4, lines 42-48). Apparently, the examiner believes this teaching would have suggested using patentee's solder in a mass reflow process for

attaching to a circuit board a color image sensor of the type taught by Denda. Such a belief is not supported by the teachings of these references. More specifically, these references contain no teaching or suggestion that Denda's color image sensor would be among the electronic components which Etchells teaches may be safely exposed to his 250° C reflow temperature. To the contrary, as properly argued by the appellants in their brief and reply brief, the teachings of Denda militate against such a belief.

This is because Denda explicitly discloses that the solder bonding technique for a semiconductor element is inappropriate for color image sensors because "devices, such as color image sensors including a color filter, include elements which are less heat resistant than the semiconductor devices" (column 1, lines 18-21) and accordingly that, in die bonding a color image sensor, "a solder which needs an elevated temperature cannot be used since the color filter used is not heat-resistant" (column 1, lines 27-29). It is for this reason that, in bonding a color image sensor, "a low-temperature bonding agent which is relatively flexible and strong at low temperatures is used" (column 1, lines 38-40). Indeed, patentee further discloses that "[t]he low-temperature bonding agents generally used are an epoxy

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or a urethane bonding agent curable at room temperature" (column 1, lines 41-43; emphasis added). We are convinced that the aforequoted teachings of Denda would have led an artisan to believe that the 250°C reflow temperature of Etchells' solder, while appropriate for certain electronic components such as semiconductor devices, would be entirely too high for a color image sensor since the latter is not heat-resistant and is generally bonded using agents curable at room temperature.

Obviousness under Section 103 requires a suggestion for the modification in question as well as a reasonable expectation that the modification would be successful. See In re O'Farrell, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). For the reasons discussed above, Etchells and Denda would not have suggested the modification proposed by the examiner and would not have provided an artisan with a reasonable expectation that the modification would be successful. On the contrary, the teachings of Denda would have led an artisan to expect that the examiner's proposed modification would be unsuccessful.

Under these circumstances, we cannot sustain the examiner's Section 103 rejection of claims 1, 3-6 and 8-13 as being unpatentable over Etchells in view of Denda. Because the

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Brossart reference does not supply the aforementioned deficiencies of Etchells and Denda, we also cannot sustain the Section 103 rejection of claims 7 and 14-20 as being unpatentable over Etchells in view of Denda and further in view of Brossart.

The decision of the examiner is reversed.

REVERSED

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BRADLEY R. GARRIS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
MICHAEL R. FLEMING	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
ANITA PELLMAN GROSS	)	
Administrative Patent Judge	)	

BRG:hh

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