Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JEFF LAURUHN
and DARYL J. NELSON

Appeal No. 2002-0572
Application No. 09/302,584

HEARD: February 19, 2003

Before ABRAMS, STAAB, and NASE, Administrative Patent Judges.

STAAB, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision in an appeal from the examiner's rejection of twice rejected claims 11-16. Claims 21-26 have been allowed. Claims 27-32, the only other claims currently pending, have been withdrawn from consideration as not being readable on the elected invention.

The present invention pertains to a printed circuit card having a plurality of keyways along the connective edge of the card that are arranged to allow the card to be

used with different connectors. A further understanding of the invention can be derived from a reading of independent claim 11, which reads as follows:[1]

11. An [sic, A] printed circuit card comprising:

a connective edge;

a first connective region adjacent to the connective edge, said first connective region having a first end and an opposing second end, said first and second ends being perpendicular to the connective edge;

a first plurality of conductive pads adjacent to the connective edge in the first connective region;

a second connective region adjacent to the connective edge, said second connective region having a third end and an opposing fourth end, said third and fourth ends being perpendicular to the connective edge, said third end being adjacent to the second end;

a second plurality of conductive pads adjacent to the connective edge in the second connective region;

a non-conductive region adjacent to the connective edge, said non-conductive region having a fifth end and an opposing sixth end, said fifth and sixth ends being perpendicular to the connective edge, said fifth end being adjacent to the fourth end;

a polarized keyway defined by the second end and the third end, the polarized keyway arranged to align the first and second pluralities of conductive pads with contacts in a first connector;

a non-polarized keyway defined by the fourth end and the fifth end, said non-polarized keyway at a predetermined location with reference to the polarized keyway,

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[1]Claim 11 as reproduced in the appendix to appellants' supplemental main brief is incorrect in that it does not reflect the changes made to claim 11 in the amendment submitted May 17, 2000 (Paper No. 6).

the non-polarized keyway arranged to align the first and second pluralities of conductive pads with contacts in a second connector.

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

Goshorn	3,491,267	Jan. 20, 1970
Andrews, Jr. (Andrews)	4,869,672	Sep. 26, 1989

Claims 11-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Goshorn in view of Andrews.[2]

Reference is made to appellants' main and reply briefs (Paper Nos. 13 and 16) and to the examiner's answer (Paper No. 14) for the respective positions of appellants and the examiner regarding the merits of this rejection.

Discussion

At the outset, we note that appellants' main brief states on page 6 that the rejected claims stand or fall together. Therefore, in accordance with 37 CFR § 1.192(c)(7), we have selected claim 11, the sole independent claim on appeal, as the representative claim to decide this appeal, with claims 12-16 standing or falling therewith.

Goshorn, the examiner's primary reference, discloses (see Figure 1) a printed circuit board 10 comprising a connective edge 16 having first and second connective regions separated by a centrally located notch. The connective edge also includes

[2]The rejection of claims 21-26 under 35 U.S.C. § 112, second paragraph, made in the office action dated May 14, 2001 (Paper No. 12) has been expressly withdrawn by the examiner (see page 2 of the answer). In addition, it is clear from the context of the answer that the 35 U.S.C. § 103(a) rejection of claims 21-26 made in the office action dated May 14, 2001 has also been withdrawn.

additional notches outboard of the first and second connective regions, and non-connective regions outboard of the additional notches. Referring to the marked up copy of Figure 1 of Goshorn attached to the examiner's answer, the examiner has labeled the connective regions E1 and E2, the right hand non-connective region E3, the centrally located notch between the connective regions E4, and the right hand additional notch E5. The specification of Goshorn is silent as to the function of the notches.

The examiner considers (answer, page 4) that Goshorn substantially discloses the structure of the claimed invention, but does not specifically disclose that the notches E4 and E5 function as polarizing and non-polarizing keyways, as called for by the last two paragraphs of claim 11. To cure this shortcoming, the examiner turns to Andrews.

Andrews pertains to a dual purpose card edge connector 10 which can accept a printed circuit card 12 having closely spaced conductive pads or another printed circuit card 16 having less closely spaced conductive pads. More particularly, Andrews explains that

> . . . contact portions on contact elements disposed in an insulating housing are alternatively located at two different levels to cooperate with positioning members [34] in the card receiving slot [22] so that a circuit card not having edge notches [i.e., card 16] is positioned on the positioning members [34] and the conductive pads are engaged by the contact portions at the upper level while a circuit card having edge notches [i.e., card 12 having notches 74] slide [sic, slides] past the positioning members [34] and the conductive pads thereon is [sic, are] engaged by the contact portions at both levels. [Abstract.]

Also of interest is that Andrews discloses that the connector includes polarizing keying walls 36 that cooperate with keying notches 76 of the card to ensure that the card can only be inserted into the connector slot in one way.

The test for obviousness is not whether the features of the secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 435, 208 USPQ 871, 881 (CCPA 1981).

In the present case, the combined teachings of Goshorn and Andrews provide ample support for the examiner's conclusion (answer, page 4) that it would have been obvious to one of ordinary skill in the art to modify the notches of Goshorn to provide a polarizing function to ensure that the card can be connected to a mating connector in only one way. Although the examiner has not set forth precisely how Goshorn is to be modified for this purpose, it is clear to us that in applying the teachings of Andrews, a polarizing function for the notches of Goshorn may be accomplished by simply offsetting the centrally located notch E4 to one side. The requisite suggestion for this modification is found in the showing in Figure 7 of Andrews of a medial keying notch 76

which is offset relative to the center of the card, and the inferences[3] one of ordinary skill in the art would have reasonably drawn from the disclosure of Andrews that this offset arrangement ensures that the card can only be connected to a mating connector in one orientation.

As so modified in view of Andrews, the Goshorn printed circuit card accounts for all of the limitations of claim 11. In this regard, we observe that claim 11 is directed to a printed circuit card *per se* and not the combination of a printed circuit card and a family of connectors. As we see it, the offset notch E4 of the modified Goshorn card would correspond to the claimed polarized keyway and the additional notch E5 would correspond to the claimed non-polarized keyway because these notches would be fully capable of functioning in the manner called for in the claim for the polarized and non-polarized keyways[4] when the modified Goshorn card is mated with appropriately configured first and second connectors.

Appellants' arguments have been considered but are not persuasive that the examiner erred in rejecting claim 11 as being unpatentable over Goshorn in view of Andrews. It is acknowledged that Andrews does not teach a relationship between a

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[3]In considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

[4]Claim 11 states that the polarized keyway is "arranged to align the first and second pluralities of conductive pads with contacts in a first connector" and that the non-polarized keyway is "arranged to align the first and second pluralities of conductive pads with contacts in a second connector."

polarized keyway and a non-polarized keyway as claimed. However, Andrews does teach a polarized keyway (medial keyway 76), suggesting that notch E4 be offset. The term "non-polarized keyway" and the functions attributed thereto in the last paragraph of claim 11 do not, in our view, dictate any structural requirement that the notch E5 of the modified Goshorn card would not also possess. More specifically, the notch E5 would be located at a "predetermined location" relative to the modified (offset) notch E4, as broadly claimed in claim 11. This is fairly taught by Andrews in that the layout of the keying notches 76 must be "predetermined" to the degree necessary to provide a polarizing function. We simply do not agree with appellants' argument at the top of page 4 of the reply brief to the effect that the terminology employed by appellants in the last two paragraphs of claim 11 dictates a dimensional and/or positional tolerance for the keyways that is not taught by the references. Further, as previously noted, the notch E5 of the modified Goshorn card would be fully capable of aligning the first and second pluralities of conductive pads with contacts of an appropriately configured second (unclaimed) connector. For the reasons explained above, we also do not agree with appellants' argument that there is no motivation for combining the references in the proposed manner.

In light of the foregoing, the combined teachings of Goshorn and Andrews justify the examiner's conclusion that the differences between the subject matter recited in

claim 11 and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

Accordingly, we shall sustain the standing 35 U.S.C. § 103(a) rejection of claim 11 as being unpatentable over Goshorn in view of Andrews.

We also shall sustain the standing 35 U.S.C. § 103(a) rejection of dependent claims 12-16 as being unpatentable over Goshorn in view of Andrews since appellants have stated that the appealed claims stand or fall as a group.

Summary

The decision of the examiner to reject claims 11-16 is affirmed.

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

AFFIRMED

NEAL E. ABRAMS Administrative Patent Judge	)))))) BOARD OF PATENT
LAWRENCE J. STAAB Administrative Patent Judge	) APPEALS) AND) INTERFERENCES
JEFFREY V. NASE Administrative Patent Judge	))))

LJS/yrt

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