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D E C I S I O N
of 16 June 2004

Case Number: T 0444/01 - 3.4.3

Application Number: 91110707.6

Publication Number: 0520080

IPC: H05K 13/02

Language of the proceedings: EN

Title of invention:
IC card connector

Patentee:
MOLEX INCORPORATED

Opponent:
AMPHENOL - TUCHEL ELECTRONICS GMBH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - main request (yes)"
"Distinguishing feature - not a design feature void of
technical effect"

Decisions cited:
-

Catchword:
-



Case Number: T 0444/01 - 3.4.3

D E C I S I O N
of the Technical Board of Appeal 3.4.3
of 16 June 2004

Appellant: MOLEX INCORPORATED
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Respondent: AMPHENOL - TUCHEL ELECTRONICS GMBH
(Opponent) D-74064 Heilbronn (DE)

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 22 February 2001
revoking European patent No. 0520080 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: R. K. Shukla
Members: G. L. Eliasson
P. Mühlens

Summary of Facts and Submissions

I. This appeal lies against the decision of the opposition division dated 22 February 2001 revoking European patent No. 0 520 080. The ground for revocation was that the patent in suit did not meet the requirement of inventive step having regard to the prior art documents

D1: DE-A-38 22 848;

D2: DE-C-36 42 424; and

D3: US-A-4 820 186.

II. The appellant (patent proprietor) lodged an appeal on 18 April 2001 paying the appeal fee the same day. A statement of the grounds of appeal was filed on 19 June 2001 with new claims forming the basis of a main request and an auxiliary request.

III. In response to a communication of the Board accompanying summons to oral proceedings, the appellant filed new claims with the letter dated 7 May 2004.

IV. At the oral proceedings held on 16 June 2004, the parties made the following requests:

The appellant requested that the decision under appeal be set aside and that patent No. 0 520 080 be maintained on the basis of one of the following requests:

Main request:

Claim 1 of the main request as filed with the letter dated 7 May 2004,
Claims 3, 4, 5, 6, 9, 11, and 12 of the patent specification (adapted in number),

Description column 1, lines 1 to 13 as filed with the letter dated 1 April 1998 replacing column 1, lines 1 to 13 of the patent specification,
column 1, line 14 to column 5, line 35 of the patent specification,

Drawings Figures 1 to 5 of the patent specification;

Auxiliary request:

Claim 1 of the auxiliary request as filed with the letter dated 7 May 2004,
Claims 4, 5, 6, 9, 11, and 12 of the patent specification (adapted in number),

Description column 1, lines 1 to 13 as filed with the letter dated 1 April 1998, replacing column 1, lines 1 to 13 of the patent specification,
column 1, line 14 to column 5, line 35 of the patent specification,

Drawings Figures 1 to 5 of the patent specification.

The respondent (opponent) requested that the appeal be dismissed.

V. Claim 1 according to the main request has the following wording:

"1. An IC card connector (10) for connecting an IC card (16) having a terminal array in an IC card reader system comprising:

a base member (12) wherein a plurality of electrically conductive contacts (36) are arranged, the contacts (36) having sides which are exposed for engaging the terminal array of the IC card; and

a cover (14) mounted on the base member (12) for movement toward and away from the contacts (36), the cover having a body (44) and receptacle means (52, 54) including a pair of side flanges (52) which are spaced slightly from the body of the cover (14) for securing the IC card (16) thereon for movement therewith, said side flanges (52) each forming an L-shaped structure in cross-section and being adapted to be located at opposite edges of said IC card (16), when said IC card (16) is fully inserted into said receptacle means (52, 54),

whereby closing of the cover (14) onto the base member (12) effects engagement of the IC card terminal array with the contacts (36) in the base member,

characterized in that

the base member (12) is provided as a unitarily molded component of dielectric material and has hinge means (22, 24) for mounting the cover (14) to the base member (12) which includes a generally flat base portion (18) having a raised area (20) defining a top surface, and mounting means (30) on the underside of the base portion for mounting the base member (12) onto a printed circuit board (40) which has circuit traces;

in that each of said contacts (36) includes a generally horizontal leg (36a) terminating at one end in a foot (36b) which is engageable with said circuit traces on the circuit board (40), the contacts (36) also having each a mounting portion (36d) and a bent-over resilient leg (36c) which projects upwardly beyond the top surface of the raised area (20) of the base member,

said cover (14) is a one-piece component fabricated of either stamped and formed sheet metal material or molded dielectric material and, opposite to said contacts (36), has an opening and can be closed downwardly onto the raised area (20) so that the resilient legs (36c) of the contacts extend in the opening when the cover is closed,

and in that said side flanges (52) and a similar rear flange (54) project toward the middle of the body (44) of the cover (14) to define said receptacle means where the opening in the cover (14) is arranged, for holding said IC card (16) over said opening and above the top of the body (44) of the cover (14)."

VI. The appellant (patent proprietor) presented essentially the following arguments in support of his requests:

- (a) Claim 1 (according to both requests) specifies that the base member has a raised area and that the contacts extend beyond the top surface of the raised area. This allows for a compact assembly, since the raised area is encompassed by the frame around the opening of the cover 14 so that the main body of the cover "disappears" around the raised area 20. Thus, the thickness of the closed connector is only determined by the total thickness of the base member 20 plus the thickness of the flanges 52, 54. Although this feature is only disclosed in Figures 1 to 3 of the patent in suit, it is obvious to the skilled person reading the patent specification that the raised area should also extend into the opening of the cover, since any other alternative would not make sense.

- (b) The prior art does not suggest the arrangement of the present invention with a base member having a raised area which extends into the opening of the cover when closing the cover. Instead, the documents D2 and D3 teach to insert the IC card in a slot. Document D1 does not even disclose a base member, as required in the IC card connector of the present invention.

VIII. The respondent (opponent) presented essentially the following arguments:

- (a) Document D3 which is considered the closest prior art, discloses an IC card connector having a cover 15 into which a chip card 8 is to be inserted (cf. Figure 3). The opening 15d on the bottom face of the cover can be regarded as defined by side flanges and a rear flange which hold the IC card below the cover. The cover can be made of either moulded dielectric material or of metal (cf. column 3, lines 15 to 17; column 5, lines 14 to 19).

The base member of the IC card connector of the claimed invention is provided with a "raised area". However, as the claim does not specify in relation to what the area in question is raised, the upper surface of the base member 11 in the device of document D3 which is above the lower surface of the base member can be regarded as the raised area as defined in claim 1 of the patent in suit. The base member is made of a unitarily moulded component of dielectric material, as in the claimed device (cf. column 3, lines 4 to 6).

It furthermore appears from Figure 3 that the contacts 12 provided in the base member 11 for contacting the IC card terminal array each have a horizontal leg, a mounting portion, a foot engageable with circuit traces on a circuit board, and a bent-over resilient leg 12a as specified in claim 1 of the patent in suit.

Therefore, the subject matter of claim 1 according to both requests differs from the device of document D3 only in that the flanges on the cover hold the IC card above the top of the body of the cover, whereas in the known device, the IC card is held below the body of the cover.

- (b) Contrary to the patent proprietor's arguments (cf. item VI(a) above), it is immaterial to the total thickness of the assembly whether the flanges are above or below the body of the cover, since the cover is made of stamped sheet metal. Therefore, the thickness of the flanges is the same as that of the body of the cover. Consequently, the feature of having the flanges below the body of the cover does not contribute to solving the problem of reducing the thickness of the cover and the size of the assembly, and this feature is to be regarded as a mere design feature which could be selected without the involvement of inventive skills.

- (c) Contrary to the patent proprietor's submission, the invention as claimed does not reduce the total thickness of the IC card connector, since the wording of the claim does not specify that when the cover is closed onto the base member, the raised area of the base member *extends into the opening* in the cover.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is therefore admissible.
2. The Board is satisfied that claim 1 according to the main request meets the requirements of Articles 84 and 123(2) and (3) EPC. This was also not contested by the opponent.
3. *Inventive step - Main request*
 - 3.1 It is common ground that document D3 represents the closest prior art. It discloses an IC card connector having a base member 11, which has a plurality of contacts 12 for engaging the terminal array of an IC card. The base member 11 furthermore has hinge means 13, 14 for mounting a cover 15 on the base member (cf. Figures 1 to 3; column 3, lines 4 to 68). The IC card 8 is inserted in a slot 15a formed in the cover. When the cover is closed, the terminal array 9 of the IC card is brought in contact with bent-over resilient portions 12 of the contacts 12 of the base member through an opening 15d in the cover (cf. Figure 1). The bent-over resilient legs 12a of the contacts 12 extend over the upper surface of the base member. The contacts 12 furthermore each have a mounting portion and a horizontal leg terminating in a portion for engaging the connectors to circuit traces on a circuit board onto which the IC card connector is to be connected (cf. Figure 3). The base member 11 and the cover 15 can be made of a synthetic resin, i.e. of a moulded dielectric material (cf. column 3, lines 4 to 6 and 15 to 17).

3.1.1 The opponent argued that document D3 in addition to the above features also discloses side flanges and a rear flange in the cover for holding the IC card. The flanges are formed by the material of the cover surrounding the opening 15d in the cover (cf. item VII(a) above).

The Board is however not able to follow this argument, since the IC card 8 in the device of document D3 is held in a slot ("concave formed holding portion") 15a formed in the cover 15 (cf. column 3, lines 15 to 19).

3.1.2 The opponent furthermore argued that the base member 11 of the device of document D3 also includes a "raised area", since the upper surface of the base member is "raised" above its bottom surface (cf. item VII(a) above).

The Board cannot accept this argument that the flat upper surface of the base member of document D3 would fall under the term "a generally flat base portion having a raised area" as specified in claim 1, since in the Board's view, it is clear from the wording of the claim that the term "raised area" implies that an area of the base member is raised in relation to the rest of the base member.

3.1.3 The device of claim 1 according to the main request thus differs from that of document D3 in that (i) the IC card is held to the cover by a pair of side flanges and an rear flange on the top of the body of the cover, whereas in the device of document D3, the IC card is held in a slot 15a formed in the cover; and (ii) the base member has a raised area from which the bent-over

resilient legs of the contacts extend, whereas in the device of document D3, the upper surface of the base member is flat.

3.2 Document D1 discloses an IC card connector for a mobile telephone where the IC card is inserted in a cover 23 having L-shaped flanges 27, 28 on its inner side (when closed) (cf. Figures 1 and 4 and accompanying text). The cover forms part of the body 10, 19 of the telephone. When the cover is closed, the IC connectors are brought in contact with resilient connectors 37 which are mounted on the rear side of a printed circuit board 35.

3.2.1 The claimed device thus differs from that of document D1 *inter alia* in that the flanges hold the IC card above the top of the body of the cover, whereas in the device of document D1, the IC card is held below the bottom of the body of the cover. Furthermore, document D1 does not disclose the claimed construction where the electrically conductive contacts extend through the base member, since in the device of document D1, the contacts 37 are mounted directly on the printed circuit board 35.

3.3 Document D2 discloses an IC card connector where the IC card 2 is inserted in a slot formed in a cover 1. The cover has an opening 10 exposing the IC connectors 6 on the inner side of the cover. When the cover is closed, connectors 14 in a base member 3 of the IC card connector connect with the IC connectors 6 of the IC card.

3.3.1 Thus, document D2 does not disclose flanges on the cover for holding the IC card above the top of the body of the cover.

3.4 In view of the closest prior art represented by document D3, the technical problem addressed by the patent in suit relates to simplifying the IC card connector structure.

3.5 The patent proprietor argued that the claimed structure has the advantage that it allows for reducing the overall height of the device, since the raised area is encompassed by the frame around the opening of the cover 14 so that the main body of the cover "disappears" around the raised area 20. Thus, the thickness of the closed connector is only determined by the combined thicknesses of the base member 20, the IC card 16, and the flanges 52, 54 (cf. item VI(a) above).

The Board notes however that claim 1 does not specify that "the raised area 20 is encompassed by the frame around the opening of the cover 14" which is necessary for reducing the overall height of the device. Furthermore, the patent in suit does not unambiguously disclose such a feature. Therefore, the problem of height reduction cannot be considered when assessing inventive step.

3.6 The opponent contended that an arrangement whereby the IC card is held over the body of the cover as in claimed device, or is held below the body of the cover as disclosed in document D1, is a mere design feature without any technical effect, which as such could be

introduced without employing inventive skills (cf. item VII(b) above).

The Board cannot follow the above argument that the feature of holding the IC card above or below the body of the cover is void of any technical effect, since it is immediately apparent that when the IC card is held above the opening of the cover, the upper surface of the IC card will be exposed, whereas in case the IC card is held below the body of the cover, its upper surface will be at least partially covered. Furthermore, the above feature also has an effect on how the IC card is inserted in the card connector, and therefore affects the handling of the IC card. Also the shape of the base member has to be modified in accordance with whether the IC card is to be held above or below the body of the cover.

It is also noted that in document D1, which is the only prior art document disclosing flanges for holding the IC card in a mobile telephone housing, the question whether the IC card is to be held above or below the cover cannot be considered a mere "design feature", since in the mobile telephone housing described in document D1, the only alternative that makes sense is to hold the IC card below the cover so that it is within the housing (cf. D1, Figures 1 and 4). The claimed arrangement of holding the IC card above the top surface of the cover would in the device of document D1 result in an impractical arrangement whereby the IC card would be arranged on the outside of the telephone.

- 3.7 From the above, it follows that the claimed feature of placing the flanges above the top surface of the body of the cover is neither disclosed nor suggested in any of the available prior art documents. The only document which discloses flanges for holding an IC card is document D1. The use of flanges as in document D1 in the device of document D3 would therefore result in a device where the IC card is held below the bottom surface of the cover, which is also required in the IC card connector of document D3.
- 3.8 For the above reasons, in the Board's judgement, the subject matter of claim 1 according to the main request involves an inventive step within the meaning of Article 56 EPC.
4. Thus the patent in suit according to the appellant's main request meets the requirements of the EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent in amended form in the following version:

Claim 1 of the main request filed with the letter dated 7 May 2004,

Claims 3, 4, 5, 6, 9, 11, and 12 of the patent specification (adapted in number),

Description column 1, lines 1 to 13 as filed with letter dated 1 April 1998 replacing column 1, lines 1 to 13 of the patent specification,
column 1, line 14 to column 5, line 35 of the patent specification,

Drawings Figures 1 to 5 of the patent specification.

The Registrar:

The Chairman:

D. Meyfarth

R. K. Shukla