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Datasheet for the decision of 14 November 2007

Case Number: T 0855/05 - 3.5.02

Application Number: 03251856.5

Publication Number: 1351344

IPC: H01R 13/627

Language of the proceedings: EN

Title of invention:
Snap-fit connector

Patentee:
Tyco Electronics AMP K.K.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54

Keyword:
"Novelty (yes)"
"Remittal for further prosecution (yes)"

Decisions cited:
-

Catchword:
see point 3.11 of the reasons

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0855/05 - 3.5.02

D E C I S I O N
of the Technical Board of Appeal 3.5.02
of 14 November 2007

Appellant: Tyco Electronics AMP K.K.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 22 February 2005 refusing European application No. 03251856.5 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: M. Ruggiu
Members: G. Flyng
H. Preglau

Summary of Facts and Submissions

I. The applicant appealed against the decision of the examining division refusing the European patent application no. 03 251 856.5.

II. In the contested decision, the examining division found that the subject-matter of claim 1 was not new (Articles 52 and 54 EPC) in view of the prior art disclosed in the document:

D1: US-B-6 179 643.

Paragraph II.1 of the reasons for the decision referred to the grounds given in the preceding communication of 25 May 2004. In paragraph 2.2 of that communication attention was directed to column 1, line 35 to column 2, line 14 and figure 8 of document D1.

In paragraph II.2 of the reasons for the decision, an analysis was made of the disclosure of document D1. In that analysis, the reference numerals cited in parentheses corresponded to the reference numerals mentioned in column 1, line 35 to column 2, line 14 and figure 8 of document D1.

III. Together with the statement of grounds of appeal dated 23 June 2005 the appellant filed an amended claim 1 (the sole claim).

IV. Claim 1 reads as follows (referencing letters added by the board):

(a) "A plurality of connectors (A) each comprising:

(b) female and male housings (20, 10) that mate with each other; and

(c) electrical contacts (21) that are accommodated in each of the female and male housings (20, 10);

(d) the numbers of poles or electrical contacts (21) being different for different connectors,

(e) locking parts (26) being disposed in the female housings (20),

(f) locking arms (13) being disposed in the male housings (10),

(g) locking projections (14) which engage with the locking parts (26) when the female and male housings (20, 10) are mated being disposed on the locking arms (13), and

(h) initial sliding contact surfaces (14a) which contact the locking parts (26) in an initial stage of mating of the female and male housings (20, 10) being formed on front ends of the locking projections (14) with respect to a mating direction (a) at an inclination with respect to this mating direction (a),

(i) characterised in that the locking arms (13) extend rearwardly from base parts (13a) thereof rising from the front ends of the male housings (10) with respect to the mating direction,

(j) and in that an angle (Z°) formed between a direction (b) perpendicular to the mating direction (a) and the initial sliding contact surfaces (14a) decreases as the number of poles or electrical contacts (21) increases in the plurality of connectors in which the numbers of poles or electrical contacts (21) are different."

V. The appellant's arguments may be summarised as follows:

In document D1 it was the initial sliding contact surfaces (56A) of the projections on the female housings which changed with the number of electrical contacts and not initial sliding contact surfaces on the locking projections (55A) mounted on the male housings. There was no disclosure in Dl of the angle of the latter being changed with changes in the numbers of electrical contacts. Document Dl did not disclose a plurality of connectors in which an angle formed between a direction perpendicular to the mating direction of the connector housings and the initial sliding contact surfaces, which were the initial sliding contact surfaces of locking projections mounted on the male housings, decreased as the number of poles or electrical contacts increased in the plurality of connectors. Accordingly, the subject matter of claim 1 was not derivable directly or unambiguously from Dl, either explicitly or implicitly.

Further, document D1 did not disclose the newly added feature **(i).**

VI. The appellant requested that the application be granted on the basis of the amended claim 1. He further requested that the appeal fee be reimbursed and that oral proceedings be appointed should the appeal board be minded to dismiss the appeal.

VII. Together with a summons to oral proceedings dated 25 September 2007 the board issued a communication advising the appellant that they tended to agree that the amended claim 1 was novel over document D1. The

board indicated that the oral proceedings could be cancelled if the appellant agreed with the remittal of the case to the department of first instance for further prosecution, in particular for examination of the question of inventive step, and withdrew the request for reimbursement of the appeal fee, as for the latter the board could see no procedural violation during the procedure before the examining division.

VIII. In a letter dated 11 October 2007 the appellant withdrew the request for reimbursement of the appeal fee and agreed with the remittal of the application to the department of first instance for further prosecution.

IX. In a communication dated 14 November 2007 the board advised that the oral proceedings were cancelled.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

Present claim 1 differs from claim 1 as originally filed in that the feature **(i)** has been added. A basis for this feature can be found in the last sentence of the last paragraph of page 10 of the application as filed. Thus, the amendments to claim 1 do not contravene Article 123(2) EPC.

3. *Novelty with respect to Document D1*

3.1 The invention described in document D1 "*relates to a connector lock mechanism having a mechanism for urging the male and female connectors in respective disengaging directions away from each other when the two connectors, each having the connection terminals received therein, are in a half-fitted condition*" (column 1, lines 10 to 15).

3.2 In its description of the related art, document D1 describes a known connector lock mechanism 50 which is shown in FIG. 8 (column 1, line 36 to column 2 line 14).

3.3 D1 states that this connector lock mechanism is also disclosed in Unexamined Japanese Patent Publication No. Hei. 10-41014 (column 1, lines 37 and 38).

3.4 In figure 8, "*male connection terminals 52 are received in a female connector 51, and female connection terminals 54 are received in a male connector 53*" (column 1, lines 39 to 41). The male and female connectors may be locked together in a fitted condition (column 1, lines 42 to 45). Thus, D1 discloses features **(b)** and **(c)** of present claim 1.

3.5 An engagement projection 56 is formed on the female connector 51 (column 1, lines 42 and 43). This corresponds to the locking parts disposed in the female housings as set out in feature **(e)** of present claim 1.

3.6 An elastic retaining piece portion 55 is formed on the male connector 53 (column 1, lines 41 and 42). This corresponds to the locking arms (13) disposed in the

male housings as set out in feature **(f)** of present claim 1.

3.7 The elastic retaining piece portion 55 (i.e. locking arm) has a distal end 55A which slides down an abruptly-slanting surface 56B of the engagement projection 56 (i.e. locking part) when the two connectors 51 and 53 are completely fitted together (column 1, lines 55 to 61). The distal end 55A corresponds to the locking projections set out in feature **(g)** of present claim 1.

3.8 The engagement projection 56 has a triangular cross-section defined by a gently-slanting surface 56A and the abruptly-slanting surface 56B. In column 2, lines 8 to 14 of D1, it is explained that "*when the number of connection terminals increases, a large disengaging force is required, and when the angle of inclination of the gently-slanting surface 56A is increased, there have been encountered problems that the connector becomes bulky in size and that the burden on the elastic retaining piece portion 55 increases*". Thus, document D1 seems to suggest providing a plurality of connectors having different numbers of electrical contacts as set out in features **(a)** and **(d)** of present claim 1.

3.9 Comparing the gently-slanting surface 56A to the initial sliding contact surfaces set out in feature **(h)** of present claim 1, it can be seen that whilst the gently-slanting surface 56A would act as an initial sliding contact surface as claimed, it is formed on the front end (with respect to the mating direction) of the engagement portion 56 (i.e. locking part) and not on

the front end of the locking projection (i.e. the distal end 55A of the elastic retaining piece portion 55) as claimed. Furthermore, whilst the distal end 55A of the elastic retaining piece portion 55 as shown in figure 8 does have an inclined surface at its front end in the mating direction, this inclined surface could not constitute an initial sliding contact surface because the angle of inclination of the surface is to steep to allow it to contact with the engagement projection 56 (locking part). The decision under appeal makes specific reference to these differences between claim 1 and the disclosure of D1. In paragraph II.3 of the reasons for the decision it is stated that the applicant pointed out that in D1 the connector.... "*is designed with the angle on the locking part of the female connector and the Application with the angle on the locking arm of the male connector*". The examining division's reply to this is that "*the effect of disengagement is provided by an angle between the locking part of a first connector and the locking arm of a second connector and the skilled person would design either way*". The board considers that such speculation as to how the skilled person could possibly vary the design of the connector does not demonstrate that the claimed arrangement, with angled initial sliding contact surfaces on locking projections mounted on the male housings, is derivable directly and unambiguously from document D1, either explicitly or implicitly. Thus, document D1 is not regarded as disclosing feature **(h)**.

3.10 From figure 8 of document D1 it can be seen that the elastic retaining piece portion 55 (locking arm) does not rise from a part which is the front end of the male

connector 53, and extends forwards in the mating direction. Thus, the feature **(i)** of claim 1 is not disclosed in document D1.

3.11 According to feature **(j)** of present claim 1, "an angle (Z°) formed between a direction (b) perpendicular to the mating direction (a) and the initial sliding contact surfaces (14a) decreases as the number of poles or electrical contacts (21) increases". In other words, the inclination of the initial sliding contact surfaces (14a) with respect to the mating direction increases as the number of poles or electrical contacts (21) increases. Comparing this with the disclosure of D1 it can be seen that from the passage at column 2, lines 4 to 14, of document D1, the skilled person is taught that the angle of inclination of the gently-slanting surface 56A could be increased to provide the larger disengaging force that would be required if the number of connection terminals were to be increased. However, as explained above, the gently-slanting surface 56A of D1 is not disposed on the locking arm and thus does not constitute an initial sliding contact surface as set out in present claim 1. Thus, at least part of feature **(j)** of claim 1 is not disclosed in document D1.

3.12 Summarising, document D1 does not disclose the features **(h)**, **(i)** and at least part of **(j)** of claim 1. The board concludes that the subject-matter of claim 1 is new within the meaning of Article 54 EPC.

4. It is apparent from the file of the application, and in particular from the decision under appeal, that examination of the application has not yet been completed. Therefore, the board makes use of its power

under Article 111(1) EPC to remit the case to the department of first instance for further prosecution, in particular for examination of inventive step on the basis of the amended claim 1.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution.

The Registrar: The Chairman:

U. Bultmann M. Ruggiu