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**D E C I S I O N**  
**of 28 September 1994**

**Case Number:** T 0404/93 - 3.5.2

**Application Number:** 88908517.1

**Publication Number:** 0393058 (WO 89/03129)

**IPC:** H01R 13/18

**Language of the proceedings:** EN

**Title of invention:**  
Electrical receptacle terminal

**Applicant:**  
AMP Incorporated

**Opponent:**  
-

**Headword:**  
-

**Relevant legal norms:**  
EPC Art. 56, 158(1) and (2), 54(3)  
EPC R. 104b(1)(b)(ii)

**Keyword:**  
"Inventive step - yes, after amendment"  
"Earlier PCT application - designation fees paid for only some Contracting States in European phase - Art. 54(3) EPC not citable for the other Contracting States"

**Decisions cited:**

**Catchword:**



Case Number: T 0404/93 - 3.5.2

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.2  
of 28 September 1994

**Appellant:**

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**Representative:**

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**Decision under appeal:**

Decision of the Examining Division of the  
European Patent Office dated 7 December 1992  
refusing European patent application  
No. 88 908 517.1 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** E. Persson  
**Members:** W. J. L. Wheeler  
M. R. J. Villemin

### Summary of Facts and Submissions

I. The Appellant contests the decision of the Examining Division to refuse application No. 88 908 517.1 (European phase of PCT/US88/02846). The reason given for the refusal was that the subject-matter of Claim 1 then on file did not involve an inventive step, having regard to the prior art known from:

D1: EP-A-0 196 367

D2: DE-A-3 540 869

D3: US-A-4 537 462

D4: US-A-4 583 812.

II. On 31 August 1994 the Appellant filed new Claims 1 to 3 to replace all the previous claims and requested an amendment to page 1 of the description. It was explained that the claims were for the Contracting States IT, NL and SE only, because the Appellant had become aware of WO 89/01247, which was part of the state of the art by virtue of Article 54(3) EPC in respect of the Contracting States DE, FR and GB.

III. Claim 1 reads as follows:

"A stamped and formed electrical terminal comprising a receptacle portion (2), a wire connecting portion (4) and a backing spring portion (6), the receptacle portion comprising a channel shaped body (8) having a base (10) and a pair of side walls (12) upstanding from opposite edges of the base (10), a pair of cantilever contact springs (14) projecting in juxtaposed relationship, each from a respective side wall (12) at one end of the body (8), each contact spring (14) having a bowed contact surface (16) proximate to its free end (18), said contact surfaces (16) being bowed towards each other to

receive a male contact element (20) between them, the wire connecting portion (4) extending from the other end of the body (8), the backing spring portion (6) comprising a backing spring support (22) secured to the body and from which project a pair of cantilever backing springs (24) resiliently restraining movement of the contact springs (14) away from each other, each backing spring (24) having a free end portion (26) engaging the respective contact spring (14) wherein the backing spring support (22) is also channel shaped and receives the body (8) of the receptacle portion (2), said support (22) having a base (30) superposed with the base (10) of the body (8) and side walls (32) each of which is substantially parallel to a side wall (12) of the body (8), a flange (34) projecting from the free longitudinal edge (46) of each side wall (32) of the backing spring support (22) and over the free edge (38) of a respective side wall (12) of the body (8) from which free edge (38) upstands a raised portion (40) adjacent to said flange (34); characterised in that the backing spring support (22) fully receives said body (8), the free end portion (26) of each backing spring (24) projecting substantially normally thereof and having a free end (28) engaging the respective contact spring (14) at a position opposite to its contact surface (16); and by a pair of flanges (34) projecting in spaced relationship from the free longitudinal edge (36) of each side wall (32) of the backing spring support (22), each flange (34) being folded back over said free edge (38) in gripping relationship with said side wall (12), each raised portion being a lug (40) upstanding between the flanges (34) of the respective pair of flanges (34)."

Claims 2 and 3 are dependent on Claim 1.

IV. It is implicit that the Appellant seeks the grant of a European patent for the Contracting States IT, NL and SE only, in the following version:

Claims 1 to 3, as filed 31 August 1994;

Description: pages 1 to 5, as originally filed, but with the following amendment to page 1: delete lines 27 to 36 and substitute "The present invention consists in an electrical terminal as defined in claim 1. EP-A-0 196 367 discloses a terminal according to the preamble of claim 1.";

Drawings: sheet 1/1 as originally filed.

#### **Reasons for the Decision**

1. The appeal is admissible.
2. The present claims are fully supported by the drawings and pages 3 to 5 of the description, so that no objection arises under Article 123(2) EPC.
3. The Appellant has limited the present application to the Contracting States IT, NL and SE, in view of the earlier PCT application WO 89/01247, published after the filing date of the present application. The Board notes that WO 89/01247 as published mentions the Contracting States IT, NL and SE, among others, as being designated for a European patent. However, when that application entered the European phase, designation fees were not paid for IT, NL and SE, so that WO 89/01247 does not belong to the prior art according to Article 54(3) EPC for IT, NL and SE (c.f. Article 158, paragraphs (1) and (2) EPC and Rule 104b(1)(b)(ii) EPC).

4. The closest prior art is known from EP-A-0 196 367 (D1), which discloses an electrical terminal according to the preamble of the present Claim 1.
  
5. The electrical terminal according to Claim 1 differs from this prior art in that:
  - (a) the backing spring support (22) fully receives the channel shaped body (8), whereas according to D1 the backing spring support (17) receives only about one third of the channel shaped body (4);
  
  - (b) the free end portion (26) of each backing spring (24) projects substantially normally thereof and has a free end (28) engaging the respective contact spring (14) at a position opposite to its contact surface (16), whereas according to D1 the free end portion of each backing spring (26) lies in the plane of the backing spring and engages the respective contact spring (7) at a position short of its contact surface; and
  
  - (c) there are a pair of flanges (34) projecting in spaced relationship from the free longitudinal edge (36) of each side wall (32) of the backing spring support (22), each flange (34) is folded back over the free edge (38) of the respective side wall (12) of the channel shaped body (8) in gripping relationship with said side wall (12), and each raised portion is a lug (40) standing up from the free edge (38) between the flanges (34) of the respective pair of flanges (34). According to D1 there is only one flange projecting from each side wall (17a) of the backing spring support (17), which flange is merely folded across the respective side wall (6) of the channel shaped body (4) and each raised portion is a step (10) at the point

where the respective contact spring (7) starts to extend from the side wall (17a). Longitudinal movement between the backing spring support (17) and the body (4) is restrained in one direction by the steps (10) and in the opposite direction by an outwardly pressed tongue (12) in the base (5) of the body (4).

6. The terminal according to Claim 1 of the present application and the prior art terminal disclosed in D1 can both be easily assembled, but the backing spring portion of the terminal according to Claim 1 of the present application is more securely fixed to the receptacle portion (2) so that the free ends of the backing springs are more reliably maintained in full surface to surface engagement with the contact springs. Furthermore, the backing springs act on the contact springs at positions opposite their contact surfaces to provide a more positive backing than is achieved by the terminal according to D1. The Board agrees with the Appellant that all the characterising features of Claim 1 cooperate to provide effective preloading of the contact springs.
  
7. D2 discloses an electrical terminal comprising a receptacle portion and a backing spring portion (2). The free end portions of the backing springs (23) project substantially normally thereof, but they engage the contact springs at positions short of their contact surfaces. Furthermore, the side walls of the body of the receptacle portion do not have any free longitudinal edges. One of the contact springs (10) projects from the base (6) of the body and the other (9a, 9b) is formed in two halves projecting from respective top wall halves of the body. The arrangement of the body and the contact

springs and the manner in which the backing spring support is secured to the body differ considerably from the arrangement specified in Claim 1.

8. D3 and D4 disclose electrical terminals comprising a receptacle portion and backing spring portion in which the backing springs engage the contact springs at positions opposite their contact surfaces, but not with free ends projecting substantially normally of the backing springs as specified in Claim 1.
9. Thus, none of the cited documents D1 to D4 discloses backing springs conforming to feature (b) set out in paragraph 5 above.
10. Regarding feature (a), in the terminals disclosed in the cited documents D1, D3 and D4, in which the body of the receptacle portion is channel shaped, the backing spring support only embraces a relatively small fraction of the length of the body, which would be insufficient to allow the provision of a pair of flanges on the each side wall of the backing spring support and a lug on each edge of the body conforming to feature (c) set out in paragraph 5 above. Indeed, considerable modification of the receptacle portions and the backing spring supports, for which there is not the slightest hint in the cited documents, would be necessary before feature (c) could be provided on any of the cited prior art terminals.
11. In the opinion of the Board, such considerable modifications cannot fairly be dismissed as mere workshop improvements or a matter of normal design according to the circumstances. Rather, they should be seen as involving an inventive step.

12. The Board therefore concludes that the subject-matter of the present Claim 1 involves an inventive step within the meaning of Article 56 EPC. The same applies to the subject-matter of Claims 2 and 3, which are properly dependent on Claim 1.
13. The requested amendment to page 1 of the description is to adapt the description to the present Claim 1 and to mention the prior art document D1. In the opinion of the Board, the application meets the requirements of the EPC.
14. However, the Board has noticed an obvious clerical error in Claim 1, namely the reference numeral (46) in the first occurrence of the phrase "the free longitudinal edge (46) of each side wall (32)" should be replaced by (36).

## 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 grant a patent for the Contracting States IT, NL and SE only (see paragraph 3 above), on the basis of:

Claims 1 to 3, as filed on 31 August 1994, with correction of the obvious clerical error in Claim 1 (see paragraph 14 above);

Description: pages 1 to 5 as originally filed, subject to the following amendment on page 1:

delete lines 27 to 36 and substitute "The present invention consists in an electrical terminal as defined in claim 1. EP-A-0 196 367 discloses a terminal according to the preamble of claim 1.";

Drawings: sheet 1/1 as originally filed.

The Registrar:

The Chairman:

M. Kiehl

E. Persson