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**Datasheet for the decision  
of 24 July 2007**

**Case Number:** T 0350/06 - 3.5.02

**Application Number:** 01128536.8

**Publication Number:** 1317029

**IPC:** H01R 24/06

**Language of the proceedings:** EN

**Title of invention:**

Plug

**Applicant:**

SMK Corporation

**Opponent:**

-

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 56, 82, 113(1)

EPC R. 29(2)(a), 30, 67

**Keyword:**

"Inventive step - after amendment (yes)"

"Reimbursement of one further search fee (yes)"

"Refund of the appeal fee - (no)"

**Decisions cited:**

-

**Catchword:**

see point 16 of the reasons



Case Number: T 0350/06 - 3.5.02

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.02  
of 24 July 2007

**Appellant:** SMK Corporation  
5-5, Togoshi 6-chome  
Shinagawa-ku  
Tokyo 142-8511 (JP)

**Representative:** Sajda, Wolf E.  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 7 October 2005  
refusing European application No. 01128536.8  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** M. Ruggiu  
**Members:** J.-M. Cannard  
P. Mühlens

## Summary of Facts and Submissions

- I. The appellant contests the decision of the examining division to refuse European patent application No. 01 128 536.8. The reason given for the refusal was that the subject-matter of the claims filed with the letter of 13 December 2004 did not involve an inventive step in the sense of Article 56 EPC. The appellant also contests the decision of the examining division not to refund a further search fee that had been paid for the originally filed claims 8 to 10.
- II. The following documents of the state of the art, which have been considered in the first instance proceedings, :
- D1: GB-A-2 158 655,
- D2a: US-A-4 764 129,
- D2b: US-A-2001/0041476,
- D3: GB-A-2 282 494,
- D4: WO87/01244, and
- D5: FR-A-1 599 853,
- remain relevant to the present decision.
- III. Oral proceedings before the Board were held on 24 July 2007.

The appellant requested that the decision under appeal be set aside and that a patent be granted in the following version:

Claims: 1 to 9 received during the oral proceedings of 24 July 2007.

Description: pages 12 to 15 and 17 to 26 as originally filed, pages 1 to 5, 5a, 8 to 11, 16 and 27 filed with the letter of 9 July 2007, and page 6 received during the oral proceedings of 24 July 2007.

Drawings: figures 1 to 13 as originally filed.

Furthermore, the appellant requested that one further search fee and the appeal fee be refunded.

IV. Independent claims 1, 6 and 7 filed during the oral proceedings of 24 July 2007 read as follows:

Claim 1:

"A plug (1) for connecting a pair of lead wires (5, 7) comprising a first lead wire (5) and a second lead wire (7) to an apparatus, comprising:

- a plug housing (15) configured so as to be insertable into and withdrawable from a connection recess (139) provided on the apparatus side;
- a pair of plug-side contact terminals (25) disposed inside the plug housing (15) which are adapted to be contacted by a pair of apparatus-side terminals (131) corresponding to the first and second lead wires (5, 7);

and

- connecting means (33, 39; 11, 13) for connecting the pair of plug-side contact terminals (25) to the first and second lead wires (5, 7), respectively,

- wherein the plug (1) is adapted to be inserted into a socket (127) provided in an amplifier or a speaker and constituting the connection recess (139); and

- wherein the plug (1) comprises reverse insertion preventive means (19) for providing the plug housing (15) with an asymmetric profile so that it is adapted to be inserted into and withdrawn from a corresponding asymmetrically-configured connection recess (139) only in a predetermined position,

characterized in that the connecting means (33, 39; 11, 13) are clamp means detachably attached to the first or second lead wire (5, 7),

and in that the clamp means comprise

- a plate spring (33; 13) which is integrally formed with the plug-side contact terminal (25) and

- a rotary lever (39) which is rotatably supported by the plug housing (15) and is adapted to press the plate spring (33) so that the first or second lead wire (5, 7) inserted into the plug housing (15) is clamped between the plate spring (33) and an inner wall of the plug housing (15) or

- a rotary lever (11) which is rotatably supported by the plug housing (15) and which allows the first or second lead wire (5, 7), inserted into the plug housing (15), to be gripped and clamped between the plate spring (13) and the rotary lever (11) supported by the plug housing (15)."

Claim 6:

"A plug (1) for connecting a pair of lead wires (5, 7) comprising a first lead wire (5) and a second lead wire (7) to an apparatus, comprising:

- a plug housing (15) configured so as to be insertable into and withdrawable from a connection recess (139) provided on the apparatus side;
- a pair of plug-side contact terminals (25) disposed inside the plug housing (15) which are adapted to be contacted by a pair of apparatus-side terminals (131) corresponding to the first and second lead wires (5, 7);

and

- connecting means (55, 59) for connecting the pair of plug-side contact terminals (25) to the first and second lead wires (5, 7), respectively,
- wherein the plug (1) is adapted to be inserted into a socket (127) provided in an amplifier or a speaker and constituting the connection recess (139); and
- wherein the plug (1) comprises reverse insertion preventive means (19) for providing the plug housing (15) with an asymmetric profile so that it is adapted to be inserted into and withdrawn from a corresponding asymmetrically-configured connection recess (139) only in a predetermined position,

characterized in that the connecting means (55, 59) are clamp means detachably attached to the first or second lead wire (5, 7),

and in that the clamp means comprise a plate spring (59, 67) which is integrally formed with the plug-side contact terminal (25) and

wherein in the clamp means the plate spring (59, 67) is provided with a contact plate (57) both of which are

formed integrally with the plug-side contact-terminal (25);  
wherein the plate spring (59, 67) is arranged opposite to the contact plate (57), the plate spring (59, 67) being loaded with a force that tends to move it toward the contact plate (57) so that the first or second lead wire (5, 7) are gripped and clamped between the contact plate (57) and the plate spring (59, 67); and  
wherein a push button (55) is provided for achieving unclamping by pressing the plate spring (59, 67) in a direction reverse to a force-loading direction."

Claim 7:

"A plug (1) for connecting a pair of lead wires (5, 7) comprising a first lead wire (5) and a second lead wire (7) to an apparatus, comprising:  
- a plug housing (15) configured so as to be insertable into and withdrawable from a connection recess (139) provided on the apparatus side;  
- a pair of plug-side contact terminals (25) disposed inside the plug housing (15) which are adapted to be contacted by a pair of apparatus-side terminals (131) corresponding to the first and second lead wires (5, 7);  
and  
- connecting means (75, 71, 81) for connecting the pair of plug-side contact terminals (25) to the first and second lead wires (5, 7), respectively,  
- wherein the plug (1) is adapted to be inserted into a socket (127) provided in an amplifier or a speaker and constituting the connection recess (139); and  
- wherein the plug (1) comprises reverse insertion preventive means (19) for providing the plug housing (15) with an asymmetric profile so that it is adapted to be

inserted into and withdrawn from a corresponding asymmetrically-configured connection recess (139) only in a predetermined position, characterized in that the connecting means (75, 71, 81) are clamp means detachably attached to the first or second lead wire (5, 7),

and in that the clamp means comprise:

- a contact plate (71) formed integrally with the plug-side contact terminal (25);
- a pressing member (75) which is arranged opposite to the contact plate (71) and allows the first or second lead wire (5, 7) to be gripped and clamped between the contact plate (71) and the pressing member (75);
- elastic means (81) for loading the pressing member (75) with a force that tends to move it toward the contact plate (71); and
- a push button (77) adapted to achieve unclamping by pressing the pressing member (75) in a direction reverse to a force-loading direction."

Claims 2 to 5 are dependent on claim 1 and claims 8 and 9 are dependent on claim 7.

V. Claim 1 as originally filed reads as follows:

"A plug (1) for connecting a pair of lead wires (5, 7) comprising a first lead wire (5) and a second lead wire (7) to an apparatus, comprising:

- a plug housing (15) configured so as to be insertable into and withdrawable from a connection recess (139) provided on an apparatus side;
- a pair of plug-side contact terminals (25) disposed inside the plug housing (15), the plug-side contact



terminals (25) being adapted to be contacted by a pair of apparatus-side terminals (131) corresponding to the first and second lead wires (5, 7);

- reverse insertion preventive means (141, 143) for providing the plug housing (15) with an asymmetrical profile so that it is adapted to be inserted into and withdrawn from a corresponding asymmetrically-configured connection recess (139) only in a predetermined position; and

- connecting means (33, 39; 11, 13; 55, 59; 75, 81) for connecting the pair of plug-side contact terminals (25) to the first and second lead wires (5, 7), respectively,

- the connecting means (33, 39; 11, 13; 55, 59; 75, 81) being clamp means detachably attached to the first or second lead wire (5, 7)."

Claims 2 to 10 as originally filed are dependent on claim 1.

VI. The arguments of the appellant can be summarised as follows:

Present claims 1, 6 and 7 addressed the objections raised in an annex to the summons to oral proceedings and during a phone conversation on 6 July 2007.

The prior art on file had not been correctly appreciated by the examining division when assessing novelty, inventive step and unity of invention. The payment of additional search fees was not justified from the beginning of the procedure because the subject-matter of the only independent claim 1 of the originally filed set of claims was novel and involved an inventive step in view of the prior art cited in the partial European

search report under Rule 46(1) EPC. The decision under appeal was wrong where it refused to order reimbursement of the further search fee paid for the originally filed claims 8 to 10.

Considerable violations of law had been made in the course of the examination proceedings. The examining division clearly and wilfully ignored the established case law when assessing patentability and unity of invention. The request for reimbursement of the further search fees was ignored several times by the examining division and the applicant was forced to start the appeal proceedings in order to claim their justified rights, in particular the reimbursement of a further search fee.

In the oral proceedings before the examining division, the division always gave the impression that the claims were allowable before interrupting the oral proceedings for deliberation. After the deliberation, the examining division asked whether the representative had another request. The representative replied with "not yet" to this question. The division then announced its decision, without giving the applicant an opportunity to file an auxiliary request. The minutes of the oral proceedings, which read "The chairman communicated that the examining division does not follow the arguments of the representative. The chairman asked the representative whether he has a new request. The representative denied.", were wrong in this respect because the division asked its question before indicating that they did not follow the arguments of the representative.

## Reasons for the Decision

1. The appeal is admissible.

### *Current request - Admissibility of the amendments*

2. The Board is satisfied that the claims and the description according to the current request meet the requirements of Article 84 EPC and do not contravene Article 123(2) EPC.
  - 2.1 This applies in particular to the first alternative recited in claim 1, which comprises all the features recited in the originally filed claims 1 and 3; to the second alternative recited in claim 1, which comprises all the features recited in originally filed claims 1 and 5 and is based on the second embodiment described in the original application with reference to figures 5 and 8; to independent claim 6, which comprises all the features recited in originally filed claims 1 and 8, and is based on the third embodiment described in the original application with reference to figures 9A and 9B; and to independent claim 7, which comprises all the features recited in originally filed claims 1 and 9. Furthermore, the additional feature "wherein the plug (1) is adapted to be inserted into a socket (127) provided in an amplifier or a speaker and constituting the connection recess (139)" incorporated in all the current independent claims is disclosed in the originally filed description (see paragraph [0019] of the published application).

- 2.2 Dependent claims 2 and 3, 4 and 5, and 8 and 9 are based on originally filed dependent claims 2 and 4, 6 and 7, and 2 and 10, respectively.
- 2.3 The description has been adapted to the amended claims, to remove inconsistencies and mention the prior art known from D2b.

*Current request - Novelty - Inventive step*

3. The subject-matter of the current independent claims 1, 6, and 7 is novel and involves an inventive step having regard to the cited prior art.
4. Claims 1, 6 and 7, which have in common all the features comprised in their preambles, are correctly delimited against the undisputed closest prior art document D2b, which does not disclose the features recited in the characterising part of these claims. The subject-matter of claims 1, 6 and 7 is therefore novel.
5. Claims 1, 6 and 7 also have in common the first feature in their characterising part, according to which the connecting means "are clamp means detachably attached to the first or second lead wire", and all comprise clamp means which have a plate (plate spring or contact plate) "integrally formed with the plug-side contact terminal" and movable means (lever or button) that elastically cooperate so as to maintain the first or second wire clamped against the plate and to achieve unclamping. The plug according to said claims differs from the plug disclosed in D2b in these respects.

6. In the prior art in which the end portions of speaker cables were wound to (or pinched in through-holes of) the output terminals of an electronic apparatus, it was difficult to correctly connect a plurality of cables on the back surface of amplifiers and avoid that the adjacent skinned portions of the cables be brought into contact with each other, causing short-circuits (see the published application, paragraphs [0002] to [0006]; D2b, paragraphs [0011] to [0027]). The connector shown in D2b provides a solution to these problems; however, the plug-side contact terminals are soldered to the first and second lead wires or subject to caulking (published application, paragraph [0008]; paragraphs [0095] and [0096] of D2b) so that a prior art connector of the type shown in D2b lacks versatility, for instance because it is not possible to replace the lead wires attached to such a connector (published application, paragraph [0012]). Thus, starting from D2b and having regard to the effects provided by the plug set out in the independent claims, the objective technical problem addressed by the invention can be seen as increasing the versatility with respect to the prior art connector while retaining its convenience.

7. A plug which comprises in combination the features set out in the preamble of claims 1, 6 and 7 and the clamp means detachably attached to the lead wires which are specified in the characterising part of said claims, is not rendered obvious by the cited prior art documents, taken alone or in combination:

7.1 The teaching of D2b shows plugs for connecting speakers to an electronic apparatus. The plugs of D2b are configured to be insertable into, and withdrawable from,

sockets and are permanently connected to the wires (e.g. via a soldering process), as a solution to the problems caused by skinned ends of lead wires wound around screw bases (or pinched in through-holes) of an electronic apparatus. Thus the teaching of D2b leads away from connecting means using wires detachably attached to electrical terminals which were considered to have a lot of disadvantages. Therefore, there would be no obvious reason for the skilled person starting from D2b to consider combining the insertable plugs disclosed in D2b with connecting means for detachably attaching the wires, as the prior art screw bases or through-holes.

7.2 The teachings of documents D1, D2a, D3, D4 and D5 do not give the skilled person any good reason for overcoming this prejudice against connecting means for detachably attaching wires to speakers or amplifiers, or any hint for combining the plugs disclosed in D2b with the connecting devices disclosed in said prior art documents.

7.2.1 D1 shows plugs with two or three prongs (figures 1 to 8; 10 and 11) which are visibly intended for connection with the mains, and refers to a socket for connecting with a bulb (figure 9; page 2, lines 56 to 69). The plugs shown in D1, even if they comprise clamp means detachably attached to first and second lead wires, are not configured to be insertable into, and withdrawable from, a connection recess provided on an amplifier or a speaker, as recited in claim 1. Thus, the skilled person concerned with a plug for connecting a pair of lead wires to an amplifier or a speaker and starting from D2b would have no good reasons for considering the prior art disclosed in D1.

7.2.2 D2a (figure 6; column 1, lines 5 to 23) discloses connector assemblies comprising a plug and a socket for use in telecommunication and computer related fields. The plug shown in D2a is provided with an asymmetrical profile and configured to be insertable into and withdrawable from a corresponding socket. However, this plug does not comprise connecting means which "are clamp means detachably attached to the first or second lead wire".

7.2.3 D3 shows a plug which is provided with clamping means detachably attached to wires. However, D3 relates to a mains plug having three pins for attaching a three-wire cord so that electrical appliances can be easily and speedily attached to a plug conforming to the standard applicable in a particular country (D3, page 1, first paragraph; page 3, first paragraph). Moreover, the housing of the plug of D3 is not configured to be insertable into, or withdrawable from, a connection recess provided as socket in an amplifier or a speaker (figures 1 to 4). Accordingly, it is unlikely that the skilled person aware of D2b and facing the objective technical problem addressed by the invention would consider the detachable mains plug of D3 which is not foreseen for the same use as the plug shown in D2b.

7.3 Neither D4, nor D5 relates to a plug which is configured to be insertable into, and withdrawable from, a socket provided on an amplifier or a speaker. D4 discloses connector elements which simply have a lead wire-inserting port in at least one of their side-walls and D5 only discloses a connecting post for detachably connecting a wire.

*Current request - Unity of invention*

8. In view of the foregoing, the inventions specified in the independent claims 1, 6 and 7 involve the special technical features identified in previous paragraph 5 which define the contribution which each of the claimed invention considered as a whole makes over the prior art (Rule 30 EPC). Accordingly, the inventions specified in claims 1, 6 and 7 are linked so to form a single general inventive concept and the requirement of unity of invention according to Article 82 EPC is fulfilled.

9. Hence, in the Board's judgement, the subject-matter of the present claims is considered to be novel and to involve an inventive step within the meaning of Articles 54 and 56 EPC and to satisfy the requirement of unity of invention pursuant to Article 82 EPC. As is apparent from the discussion above, the independent claims 1, 6 and 7 involve a plurality of inter-related products (Rule 29(2)(a) EPC). The application as amended thus meets the requirements of the EPC.

*Refund of one further search fee*

10. The Board is not convinced that the subject matter of the originally filed claim 1 is obvious having regard only to the prior art cited in the partial European search report, i.e. D1 and D2a.

11. D1 (see figures 1 to 8) discloses, *inter alia*, a plug (100, 200) for fixing the first and second wires (62) of an electric cord to an apparatus. Said plug comprises the following features of originally filed claim 1:



- a pair of plug-side contact terminals (5) which are adapted to be contacted by a pair of apparatus-side terminals corresponding to first and second wires,
- connecting means (8) for connecting the pair of plug-side contact terminals to the first and second wires, which are clamp means detachably attached to first and second wires (62).

11.1 However, the plug of D1 does not comprise at least the following features of originally filed claim 1:

- plug housing configured so as to be insertable into and withdrawable from a connection recess provided on an apparatus side, and
- reverse insertion preventive means for providing the plug housing with an asymmetrical profile so that it is adapted to be inserted into and withdrawn from a corresponding asymmetrically-configured connection recess only in a predetermined position, as recited in the preamble of claim 1.

12. The skilled person concerned with a plug which is adapted for connecting a pair of lead wires to an apparatus, and which is configured to be insertable into, and withdrawable from, a connection recess provided on said apparatus, as recited in claim 1, would have no good reasons for starting from the prior art disclosed in D1 which relates to a plug for electrical cords connected to the mains.

13. Assuming for the sake of completeness that the plug disclosed in D1 could be seen as a starting point for

the invention specified in the originally filed claim 1, the technical problem addressed by the invention could be seen as providing means for preventing insertion of the plug in a reverse position. D2a does not discuss a solution to this technical problem.

- 13.1 D2a (figure 6; column 1, lines 5 to 23) discloses connector assemblies comprising a plug and a socket which have four or a larger number of terminals for use in telecommunication and computer related fields. It is true that a plug according to D2a is provided with an asymmetrical profile and configured to be insertable into, and withdrawable from, a corresponding socket. But the aim of D2a is to provide plugs which cannot be inserted into sockets which have a different size or are intended for another purpose. The profile of the plugs shown in D2a are not presented as reverse insertion preventive means allowing a plug be inserted into, and withdrawn from a corresponding asymmetrically-configured socket only in a predetermined position. Therefore, D2a neither concerns connectors for the use foreseen in D1, nor discusses a solution to the technical problem addressed by the invention when starting from D1. Accordingly, the Board is not convinced that it would be obvious to the skilled person starting from D1 to consider the combination of documents D1 and D2a.
14. As appears from the foregoing, the provision of reverse insertion preventive means in the plug set out in the originally filed claim 1 is to be regarded as a special technical feature in the sense of Rule 30 EPC and the features contained in the originally filed dependent claims 2 to 9 are linked by said special technical feature so as to form a single general inventive concept.

Thus, having regard to D1 and D2a only, the originally filed set of claims satisfies the requirement of unity of invention pursuant to Article 82 EPC so that one further search fee has to be refunded.

*Reimbursement of the appeal fee*

15. According to Rule 67 EPC, in case an appeal is deemed to be allowable, a board of appeal shall order the reimbursement of appeal fees, if such reimbursement is equitable by reason of a substantial procedural violation. In the present case, the Board judges that no substantial procedural violation occurred and the request for reimbursement of appeal fees is refused.

15.1 As appears from the foregoing, the examining division might have wrongly assessed the relevant prior art and the invention. According to the constant case law of the Board of Appeal (5th edition 2006, VII.D.15.4.5, page 659), such a wrong assessment is not to be regarded as a substantial procedural violation.

15.2 Moreover, the refusal of the application and the decision not to refund one further search fee were based on grounds and evidence on which the appellant had an opportunity to present comments within the meaning of Article 113(1) EPC.

16. The appellant complains that he should have been given the possibility to file other requests before refusal of the application at the end of the oral proceedings before the examining division and that the minutes of the oral proceedings do not reflect what happened because at the end of said oral proceedings the

representative indicated that he had no other request "yet". As, after receiving the minutes of the oral proceedings, the applicant did not request the examining division, which was competent and could decide on a request relating to the content of the minutes of oral proceedings held before it, to correct said minutes, an incorrect content of the minutes, if any, is not the subject of the present appeal.

Even if the examining division had not given the applicant an opportunity to file other requests before the refusal of the application, it appears that the applicant did not actually file any request at any stage of the oral proceedings before the examining division, but only indicated, according to his own submission, that he might do so at some unspecified time. Filing requests is the responsibility of the parties to the proceedings. Furthermore, the debate can be closed at oral proceedings without prior indication of what the decision will be. Therefore, the Board considers that there is no obligation for an examining division to give an applicant a further opportunity to file requests at oral proceedings if the division intends to refuse the application based on grounds or evidence on which the applicant has already had an opportunity to present its comments. It follows that no substantial procedural violation occurred during the oral proceedings before the examining division.

## 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 in the following version:

Claims: 1 to 9 received during the oral proceedings of 24 July 2007.

Description: pages 12 to 15 and 17 to 26 as originally filed, pages 1 to 5, 5a, 8 to 11, 16 and 27 filed with the letter of 9 July 2007, and page 6 received during the oral proceedings of 24 July 2007.

Drawings: figures 1 to 13 as originally filed.

3. One further search fee shall be refunded.
4. The request for reimbursement of the appeal fee is refused.

The Registrar:

The Chairman:

U. Bultmann

M. Ruggiu