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(54) Facial contact for a connector for accessory for a mobile telephone

(57) The contact comprises a conductor element (1A) which comprises at one of its ends an active area (2) intended for establishing electrical connection with the corresponding contact of the base of the mobile telephone, and at the other end a linkup area (3) intended to be linked up to a conductor for transmitting signals, data or power.

Between the fixing area (4) and the active area (2) there is an area (5) where the conductor element (1A, 1B, 1C, 1D) exhibits a curvature such that it can deflect elastically when a load (F) is applied to the active area (2).

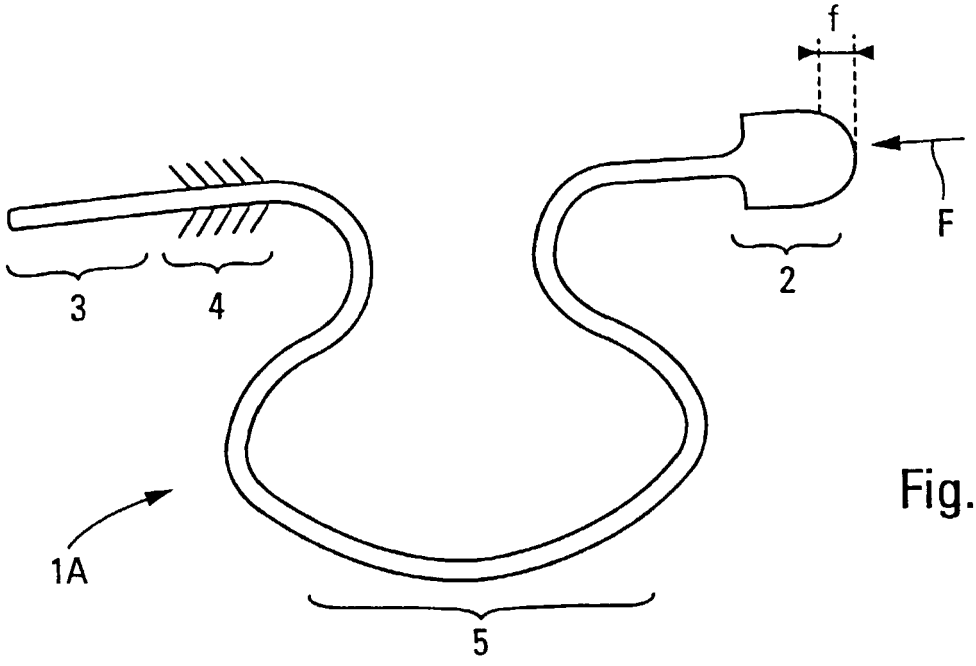

Fig. 1

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Description

[0001] The present invention relates to a contact for connecting an accessory to a mobile telephone.

[0002] Generally, with accessories for a mobile telephone two kinds of contacts are used to effect electrical connection to the telephone: the "sliding" contact and the "facial" contact.

[0003] The invention relates to a facial contact for a connector for accessories for a mobile telephone making it possible to ensure the transmission of signals, data or the power supply.

[0004] With this kind of contact, the recognised advantages are the following: guidance need not be accurate, cleaning is easy, the base of the telephone (receiving the accessory) as well as the accessory itself are simple, the number of manipulations without impairing the electrical connection is high.

[0005] Given the miniaturisation and the data of usage, but in a non-exhaustive manner, the following characteristics are to be complied with: the spacing between contacts is around 1 mm, the space required for a contact is of the order of 4 mm, the number of possible cycles must be greater than 20,000 and lastly the contact must be designed so as to make it possible to ensure an elastic function permitting a deflection (to restore flatness, etc.) of from 1 to 1.5 mm when applying a force (load) of the order of 70 g per contact. The most important technical problem relates to this elastic function.

[0006] The prior art of facial contacts for a connector for accessory for a mobile telephone may be illustrated by patent application EP-A-0 723 311.

[0007] The aim of the present invention is to create a facial contact for the aforesaid application making it possible to ensure the abovementioned elastic function.

[0008] The invention is thus concerned with a facial contact for a connector for accessory for a mobile telephone comprising a conductor element which comprises at one of its ends an active area intended for establishing electrical connection with the contact of the base of the mobile telephone, and at the other end a linkup area intended to be linked up to a conductor for transmitting signals, data or for supplying power, this linkup area being preceded by a fixing area into which the conductor element is fastened inside an electrically insulating element.

[0009] According to the invention, this facial contact is characterized in that between the fixing area and the active area there is an area where the conductor element exhibits a curvature such that it can deflect elastically when a load is applied to the active area.

[0010] By virtue of this elastic area, when the connector for accessory comprising such contacts is introduced into the base of the mobile telephone, the conductor element of each contact undergoes a deflection which makes it possible to compensate for any defects such as a defect in flatness whilst very significantly reducing the risk of the rapid wearing of the contacts.

[0011] Preferably, the conductor is blanked out from a flat sheet of conducting metal.

[0012] The contacts according to the invention may thus be manufactured in bulk under perfectly reproducible and inexpensive conditions.

[0013] Likewise preferably, the said elastic area exhibiting a curvature is situated in the plane of blanking of the conductor element.

[0014] Other features and advantages of the invention will become clearer from the description below.

[0015] In the appended drawings given by way of non-limiting examples:

- Figure 1 is a plan view of a first version of the facial contact according to the invention;
- Figure 2 is a plan view of a second version of the facial contact;
- Figure 3 is a plan view of a third version of the facial contact;
- Figure 4 is a plan view of a fourth version of the facial contact;
- Figure 5 is a sectional view through the plane V-V of Figure 4;
- Figure 6 is a plan view of a fifth version of the facial contact.

[0016] In the examples represented in Figures 1 to 4, the facial contact for a connector for accessory for a mobile telephone comprises a conductor element 1A, 1B, 1C, 1D which comprises at one of its ends an active area 2 intended for establishing electrical connection with the corresponding contact of the base of the mobile telephone, and at the other end a linkup area 3 intended to be linked up to a conductor for transmitting signals, data or power.

[0017] The linkup area 3 is preceded by a fixing area 4 into which the conductor element 1A, 1B, 1C, 1D is fastened inside an electrically insulating element.

[0018] In accordance with the invention, between the fixing area 4 and the active area 2 there is an area 5 where the conductor element 1A, 1B, 1C, 1D exhibits a curvature such that it can deflect elastically when a load F is applied to the active area 2.

[0019] Preferably, the conductor element 1A, 1B, 1C, 1D is blanked out from a flat sheet of conducting metal, exhibiting for example a thickness of 0.2 mm.

[0020] In all the examples represented, the elastic area 5 exhibiting a curvature is situated in the plane of blanking of the conductor element 1A, 1B, 1C, 1D.

[0021] In the examples, Figures 1 to 3, the two opposite ends 2, 3 of the conductor element 1A, 1B, 1C, 1D are substantially aligned.

[0022] In the example of Figure 1, the curvature of the elastic area 5 exhibits the form of an Omega (Ω).

[0023] In the variant of Figure 2, the curvature exhibits the form of an S linked to the fixing area 4 by a straight

part 6 forming an angle with the fixing area 4.

[0024] In the variant of Figure 3, the curvature of the elastic area 5 exhibits the form of an arc of a circle.

[0025] In the exemplary embodiment of Figure 4, the active area 2 consists of a flat element 7 exhibiting a slender fore part 7a and a broad rear part 7b. The fixing area 4 consists of a flat element 8 carrying means such as blanked-out apertures for fastening the fixing area 4 to an electrically insulating element.

[0026] The flat element 8 is extended rearwards by a tab 10 constituting the linkup area 3.

[0027] The flat elements 7 and 8 constituting the active area 2 and the fixing area 8 are joined by two curved branches 11 situated in the plane of the two flat elements 7 and 8.

[0028] As shown by Figure 4, the curvature of each branch 11 exhibits a convexity which is directed towards the other branch.

[0029] Figure 5 shows moreover that the transverse cross-section of each branch 11 may, in accordance with another variant be in the form of an arc of a circle.

[0030] In the variant of Figure 6, the active area 5 of the contact 1E exhibits a succession of curvatures 5a, 5b, 5c, 5d, 5e which are directed alternately in opposite directions. Moreover, in this variant the end of the active part 2 is rounded.

[0031] By virtue of the elastic area 5 of the contacts just described, when they are inserted into the connection base of the mobile telephone, they may deflect by a deflection f. Preferably, this deflection f must lie between 1 and 1.5 mm when applying a force F of the order of 70 g per contact.

[0032] This possibility of the deflecting of the contacts makes it possible to compensate for any defects such as a defect in flatness.

[0033] It is also possible to achieve a number of insertion and disconnection cycles of the contacts of greater than 20,000.

[0034] Moreover, the contacts according to the variants described all exhibit a self-cleaning function on account of a slight vertical movement relative to and over the corresponding contact of the base of the mobile telephone. However, the variant according to Figure 6 exhibits a very significantly improved self-cleaning function.

[0035] Of course, the invention is not limited to the example just described and numerous modifications may be made to it without departing from the scope of the invention.

Claims

1. Facial contact for a connector for accessory for a mobile telephone comprising a conductor element (1A, 1B, 1C, 1D, 1E) which comprises at one of its ends an active area (2) intended for establishing electrical connection with the corresponding contact of the base of the mobile telephone, and at the other end a linkup area (3) intended to be linked up to a conductor for transmitting signals, data or for supplying power, this linkup area (3) being preceded by a fixing area (4) into which the conductor element (1A, 1B, 1C, 1D, 1E) is fastened inside an electrically insulating element, characterized in that between the fixing area (4) and the active area (2) there is an area (5) where the conductor element (1A, 1B, 1C, 1D, 1E) exhibits a curvature such that it can deflect elastically when a load (F) is applied to the active area (2) and in that the active area (2) consists of a flat element (7) exhibiting a slender fore part (7a) and a broad rear part (7b), the fixing area (4) consisting of a flat element (8) carrying means (9) for fastening it to the electrically insulating element, this flat element (8) being extended rearwards by a tab (10) constituting the linkup area (3) the flat elements (7, 8) constituting the active area and the fixing area being joined by two curved branches (11) situated in the plane of the two flat elements (7, 8).

2. Facial contact according to Claim 1, characterized in that the conductor element (1A, 1B, 1C, 1D, 1E) is blanked out from a flat sheet of conducting metal.

3. Facial contact according to Claim 2, characterized in that the said elastic area (5) exhibiting a curvature is situated in the plane of blanking of the conductor element.

4. Facial contact according to one of Claims 1 to 3, characterized in that the two opposite ends of the conductor element (1A, 1B, 1C) are substantially aligned.

5. Facial contact according to Claim 1, characterized in that the curvature of each branch (11) exhibits a convexity which is directed towards the other branch.

6. Facial contact according to one of Claims 1 or 2, characterized in that the transverse cross-section of each branch (11) is in the form of an arc of an circle.

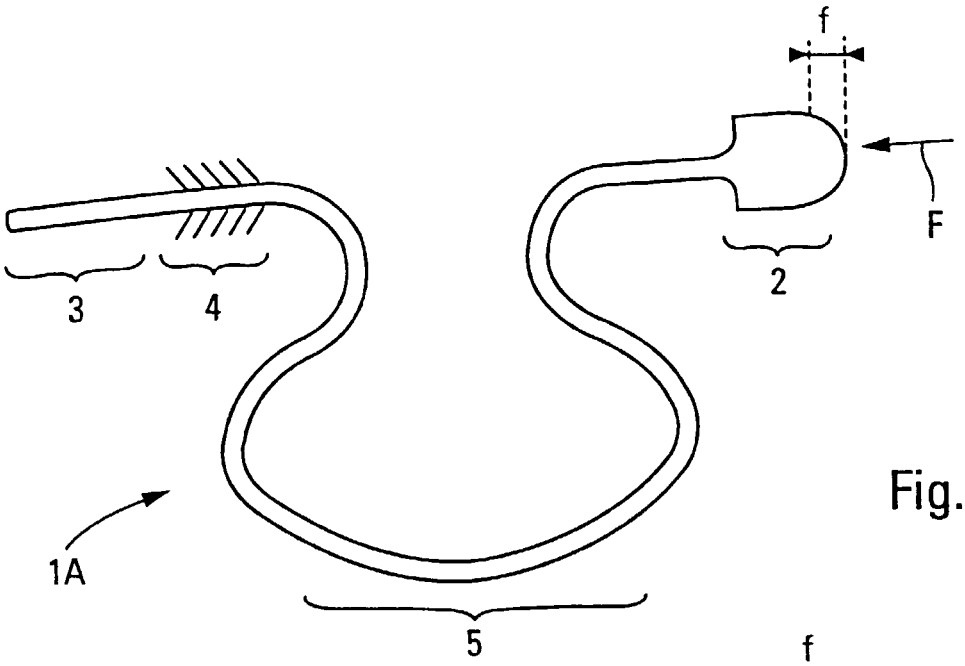

Fig. 1

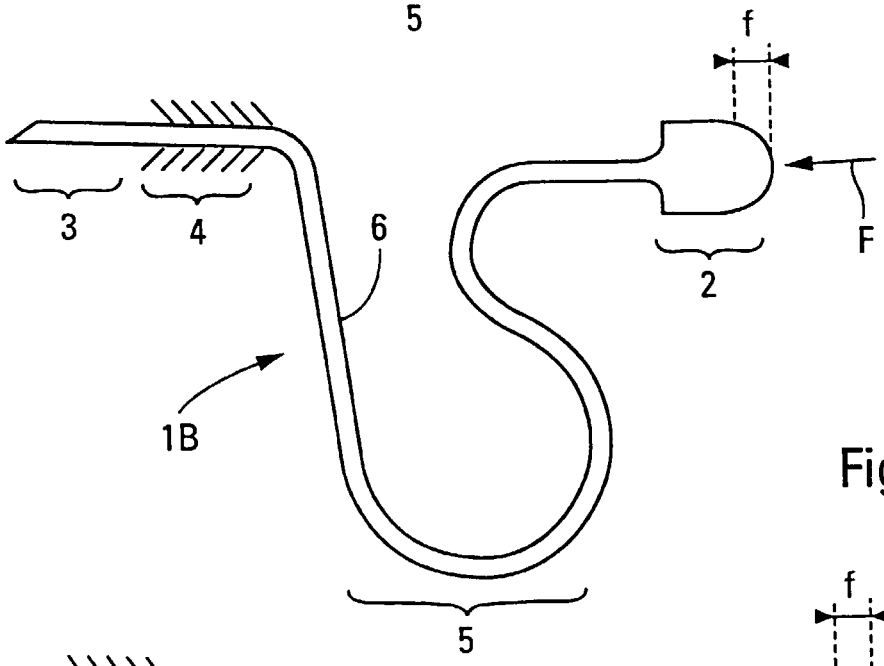

Fig. 2

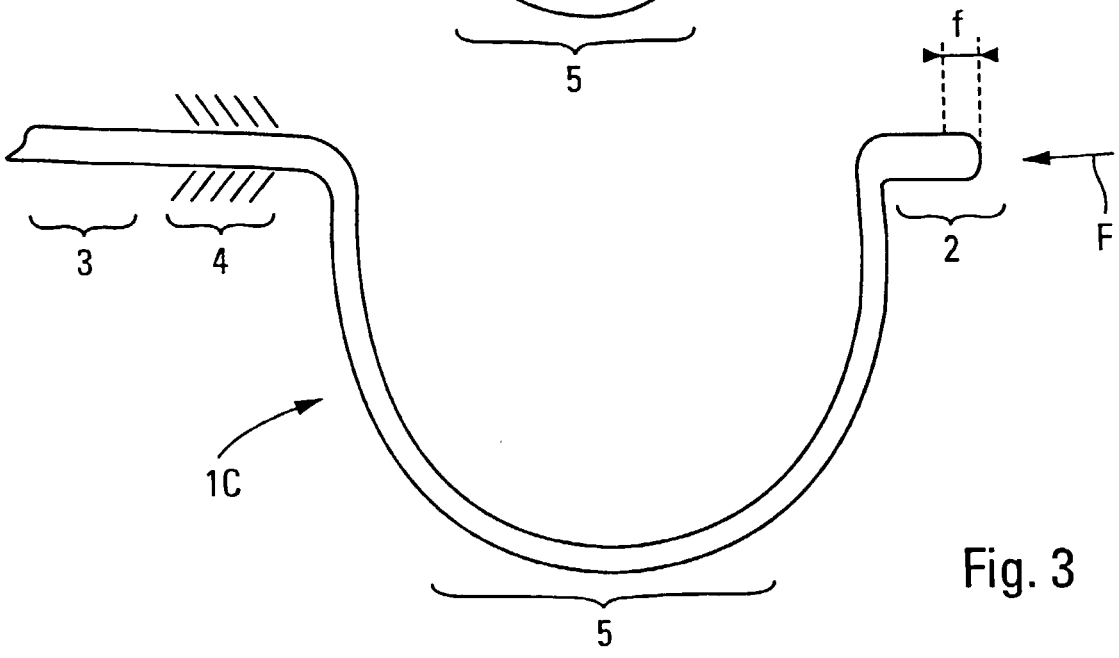

Fig. 3

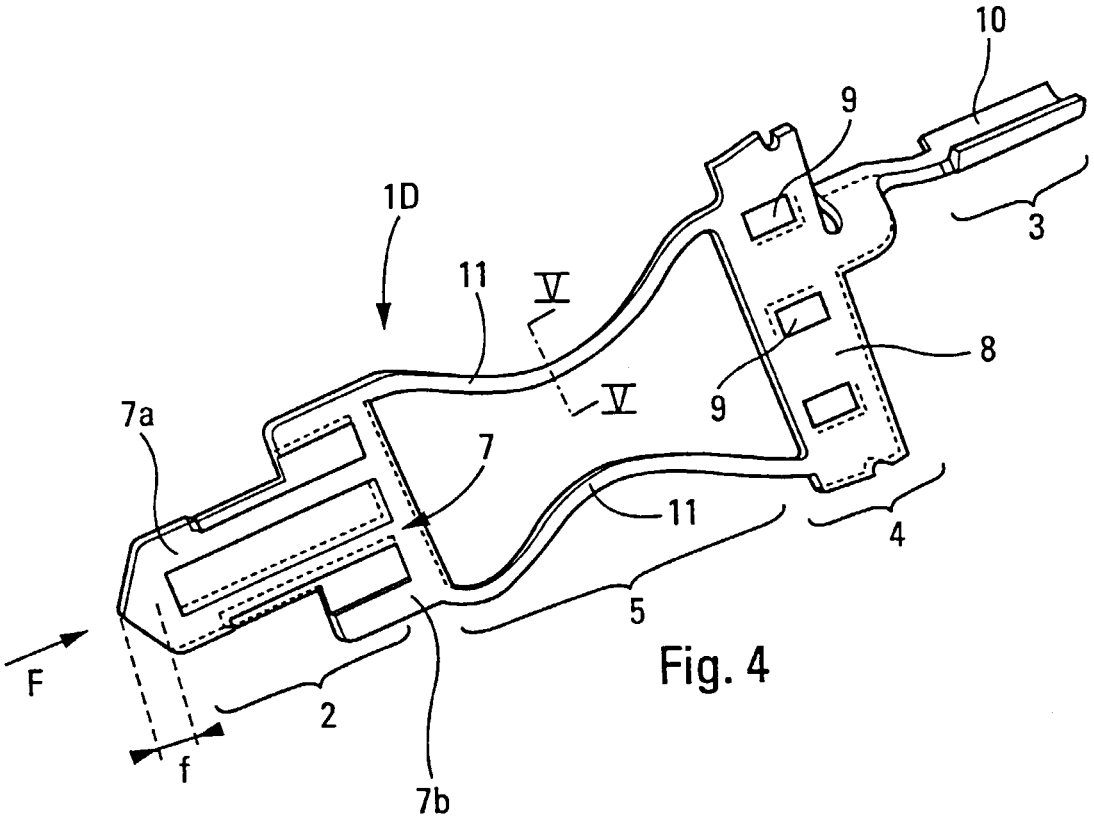

Fig. 4

Fig. 5

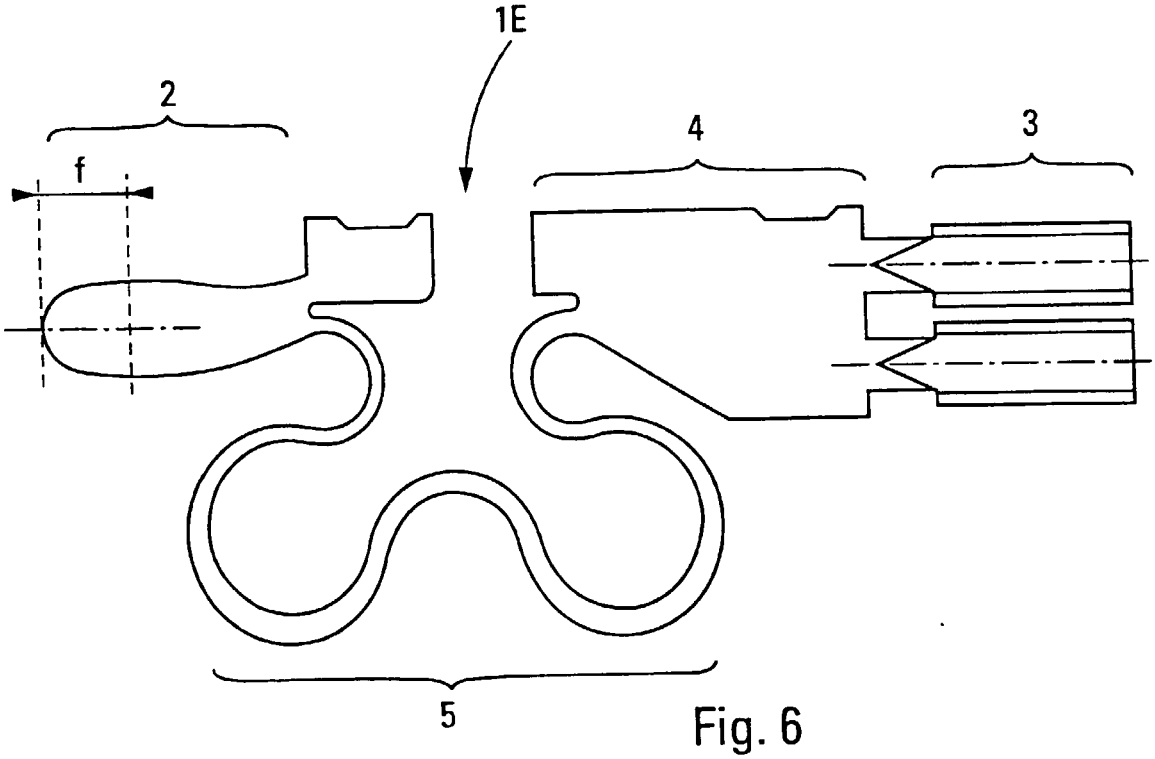

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 1957

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	WO 93 20675 A (MINNESOTA MINING & MFG) 14 October 1993 (1993-10-14) * page 4, line 14 - line 28 * * figures 1-3 * ---	1-6	H01R13/24
A	EP 0 718 918 A (CONNECTOR SYSTEMS TECH NV) 26 June 1996 (1996-06-26) * column 8, line 8 - line 38 * * figures 13A-B * ---	1-6	
A	WO 96 02913 A (BERG TECH INC) 1 February 1996 (1996-02-01) * page 11, line 1 - page 12, line 35 * * figures 4,5,7 * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	11 October 1999	Stirn, J-P

CATEGORY OF CITED DOCUMENTS

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