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(54) Blanked-out and bowed facial contact for a connector for accessories for a mobile telephone

(57) The contact comprises a conductor element (1) 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 elastic area (5) where the conductor element (1) exhibits a curvature such that it can deflect elastically when a load (F) is applied to the active area (2). The conductor element (1) is blanked out from a plane sheet of conducting metal and the elastic area (5) is made by bowing.

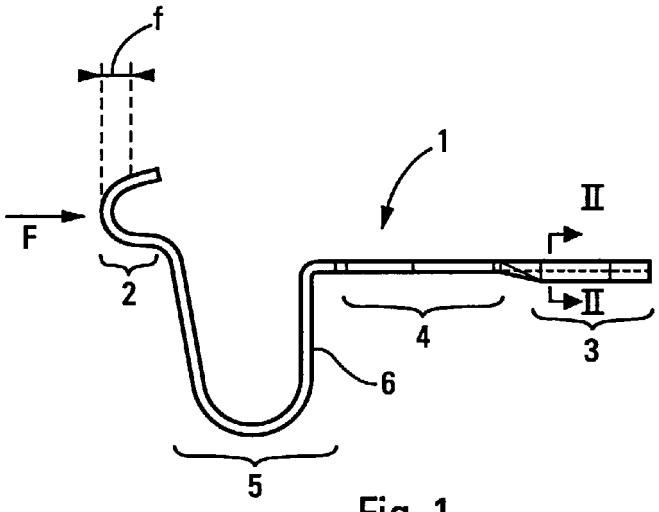

Fig. 1

EP 0 971 447 A1

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] This document discloses a connector for an accessory intended to effect electrical connection with the input/output connector of a mobile telephone. The elastic contacts are protected by a shroud made of insulating material with a central window which allows the end of the contacts to protrude. The contact is guided inside this window and therefore requires great accuracy in relation to the sides of the contact and of the cavity of the shroud which receives the contacts in order to operate without blockage. Furthermore, given the shape and the position of the contact and therefore its apparent stiffness, it is difficult to control its elasticity.

[0008] The aim of the present invention is to create a facial contact for the aforesaid application making it possible to have total control over and thus to ensure the abovementioned elastic function.

[0009] 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.

[0010] According to the invention, this facial contact is characterized in that between the fixing area and the active area there is an elastic area where the conductor element exhibits a curvature such that it can deflect elastically when a load is applied to the active area, this conductor element being blanked out from a plane sheet of conducting metal, the said elastic area being made by bowing.

[0011] 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.

[0012] The making of the conductor element by flat-blanking from a plane sheet of conducting metal followed by bowing, allows mass production under perfectly reproducible and inexpensive conditions.

[0013] Preferably, the bowed elastic area has the form of a U whose branch adjacent to the fixing area is substantially perpendicular to the latter.

[0014] Other features and advantages of the invention will become further apparent in the description below.

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

- Figure 1 is a side view of a facial contact according to the invention;
- Figure 2 is a sectional view through the plane II-II of Figure 1;
- Figure 3 is a top view of the facial contact.

[0016] In the example represented in Figures 1 to 3, the facial contact for a connector for accessory for a mobile telephone comprises a conductor element 1 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 1 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 elastic area 5 where the conductor element 1 exhibits a curvature such that it can deflect elastically by a deflection f when a load F is applied to the active area 2.

[0019] The conductor element 1 is blanked out flat from a plane sheet of conducting metal, having for example a thickness of 0.2 mm. The elastic area 5 is subsequently made by bowing along the width of the blanked-out element.

[0020] As indicated in Figure 1, the bowed elastic area 5 exhibits the form of a U. The branch 6 of the U adjacent to the fixing area 4 is substantially perpendicular to the latter.

[0021] Moreover, the linkup 3 and fixing 4 areas are substantially aligned. The transverse cross section of the linkup area 3 may be in the form of an arc of a circle (see Figure 2).

[0022] In Figure 1 it may also be seen that the active area 2 consists of a bowed area whose convexity is directed away from the linkup 3 and fixing 4 areas.

[0023] By virtue of the elastic area 5 of the contact just described, when it is inserted into the connection base of the mobile telephone, it may deflect by a deflection f. This deflection f lies between 1 and 1.5 mm when applying a force F of the order of 70 g per contact.

[0024] This possibility of the deflecting of the contacts makes it possible to compensate for any defects such as a defect in flatness.

[0025] It is thus possible to achieve a number of insertion and disconnection cycles of the contacts of greater than 20,000.

[0026] Additionally, the facial contact according to the invention exhibits a self-cleaning effect which makes it possible to maintain the contact resistance at an optimal value.

[0027] 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 (1) 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 (1) is fastened inside an electrically insulating element, characterized in that between the fixing area (4) and the active area (2) there is an elastic area (5) where the conductor element (1) exhibits a curvature such that it can deflect elastically when a load (F) is applied to the active area (2), this conductor element (1) being blanked out from a plane sheet of conducting metal, the said elastic area (5) being made subsequently by bowing.

2. Facial contact according to Claim 1, characterized in that the bowed elastic area (5) has the form of a U whose branch (6) adjacent to the fixing area (4) is substantially perpendicular to the latter.

3. Facial contact according to one of Claims 1 or 2, characterized in that the linkup (3) and fixing (4) areas are substantially aligned.

4. Facial contact according to one of Claims 1 to 3, characterized in that the active area (2) consists of a bowed area whose convexity is directed away from the linkup (3) and fixing (4) areas.

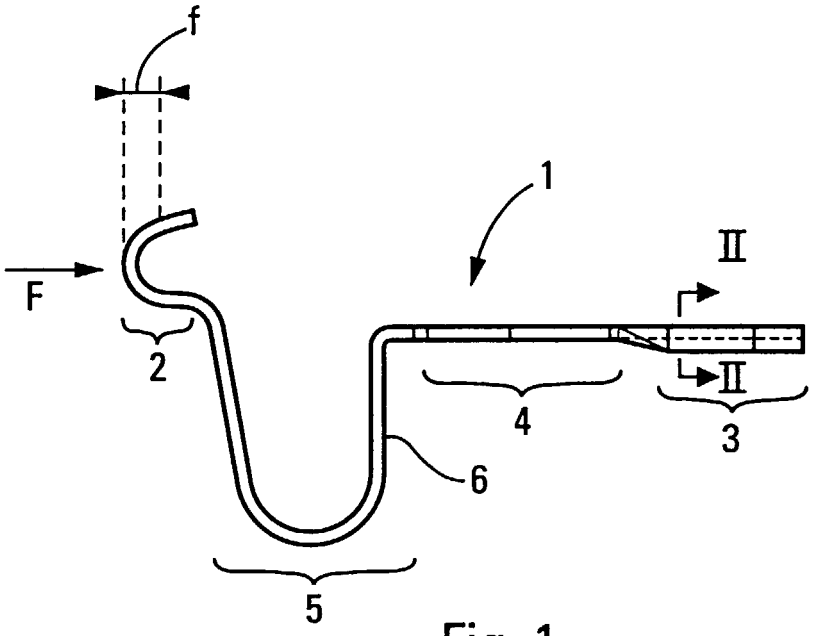

Fig. 1

Fig. 2

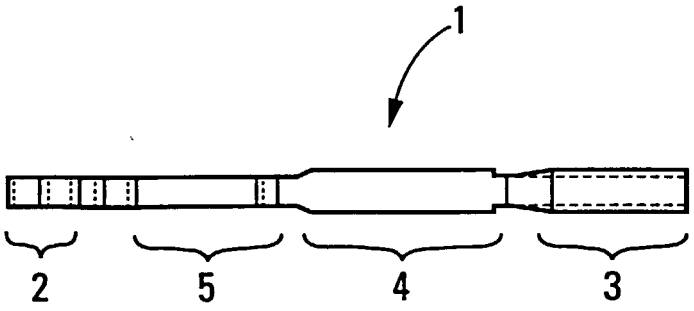

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 3552

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)
X	US 5 546 280 A (HASEBE HIRONOBU ET AL) 13 August 1996 (1996-08-13)	1	H01R13/24
A	* column 8, line 55 - column 10, line 40; figures 5A-5D *	2-4	
X	WO 96 02913 A (BERG TECH INC) 1 February 1996 (1996-02-01)	1	
A	* page 11, line 1 - page 12, line 2; figure 4 *	3	
X,D	EP 0 723 311 A (SIEMENS AG) 24 July 1996 (1996-07-24)	1	
A	* column 5, line 8 - column 7, line 23 *	2,4	

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
THE HAGUE	27 September 1999	Salojärvi, K

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 99 11 3552

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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27-09-1999

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