

[54] **DEVICE FOR THE ELECTRIC CONNECTION BETWEEN A DISPLAY DEVICE OF AN ELECTRONIC TIMEPIECE AND THE CIRCUIT CONTROLLING THE SAID DISPLAY DEVICE**

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[56]

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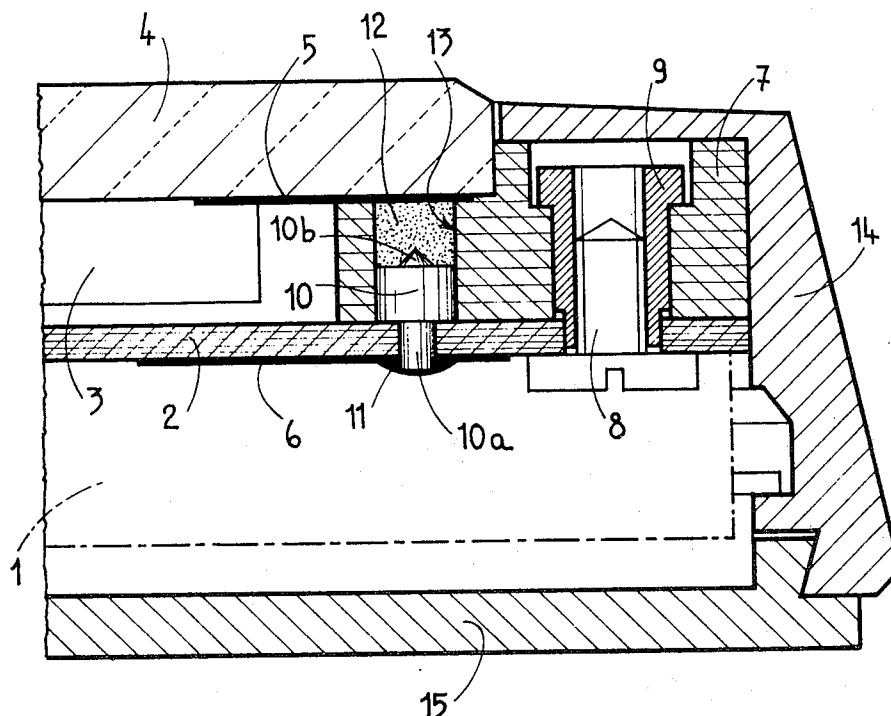
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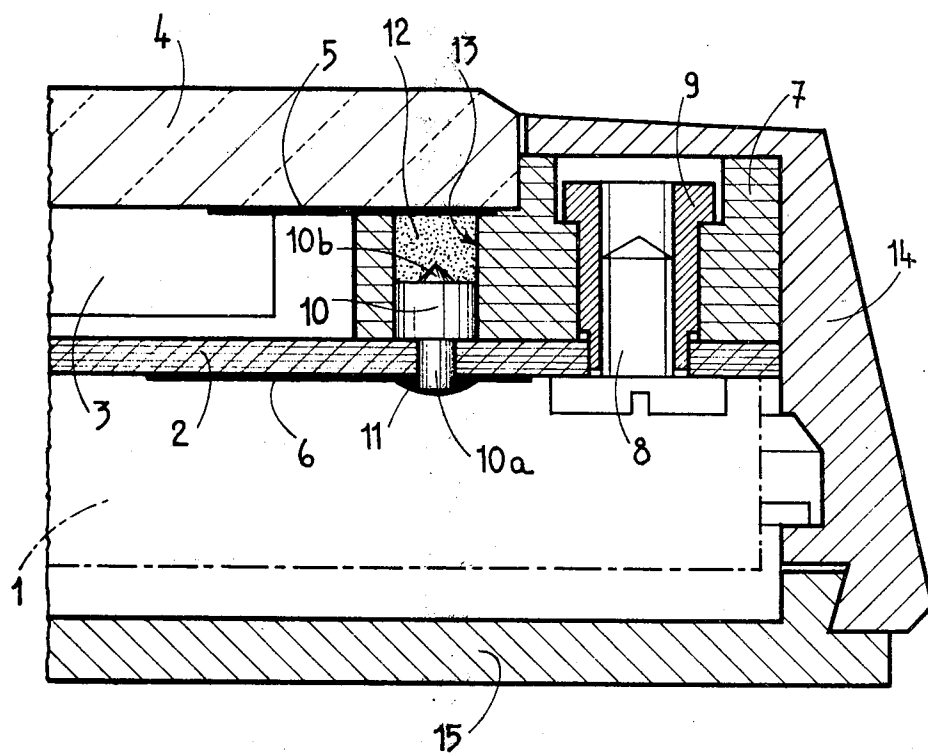
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ABSTRACT

The present invention relates to a device for the electric connection between a display device of an electronic timepiece and the circuit controlling the said display device by means of a conductive elastomeric connector.

4 Claims, 1 Drawing Figure





DEVICE FOR THE ELECTRIC CONNECTION BETWEEN A DISPLAY DEVICE OF AN ELECTRONIC TIMEPIECE AND THE CIRCUIT CONTROLLING THE SAID DISPLAY DEVICE

SUMMARY OF THE INVENTION

This device is characterized by the fact that it comprises at least one plug made of an electro-conductive elastomer and at least a metallic stud carried by the support of the said circuit, engaged in a cavity of a mounting member in which is also located the said plug, with which the said stud is in contact, the plug being itself in contact with a stud of connection of input of the display device against which it bears resiliently.

The drawing shows, by way of example, one embodiment of the object of the invention.

The sole FIGURE is an elevational diagrammatic view, with partial section, of a portion of a wristwatch.

The watch represented comprises an oscillator 1, diagrammatically represented, electrically connected to the integrated circuit controlling the display cell by the intermediary of a printed circuit the board of which is designated by 2. The display is obtained by means of a passive display device, or of an electrochromic display device, or a display device using liquid crystals, for instance, comprising a cell 3, diagrammatically represented, and a glass 4 the inner face of which is metallized, that makes it conductive, and which is provided with an input connection stud 5 intended to be connected to a track 6 of the printed circuit.

The display device is secured, by means of its glass 4, to a mounting member 7 constituted by a ring made of plastic material on which the glass 4 is secured by sticking. As a modification, the display device could be secured removably to its mounting piece. This latter is itself secured to a plate 2 of the circuit by means of a screw 8 screwed in a threaded sleeve 9.

The electric connection between the connecting stud 5 of the display device and the track 6 of the printed circuit is obtained on the one hand by means of a metallic stud 10 carried by the plate 2 of the circuit, and which is provided with a pin 10a welded at 11 to the track 6, and on the other hand by a plug 12 made of a conductive elastomer, such as the product developed by the US firm CHOMERICS. The stud 10 as well as the plug 12 made of an elastomer are both located in an open hole 13 provided in the portion of the ring 7 constituting distance piece between the plate 2 of the circuit and the glass 4 of the display device. The stud of connection 5 of this display device is situated oppo-

site one of the ends of this open hole 13 and is in contact with the plug 12 made of elastomer. The face of the stud 10 which is in contact with the plug 12 is provided with a conical protrusion 10b improving the electric connection between the stud and the plug.

Owing to the present arrangement, during the mounting, the glass 4 of the display device being already stuck on the ring 7 constituting its mounting member, when the screw 8 is tightened, the stud 10 compresses resiliently the plug 12 thus ensuring the electric connection between the track 6 and the input connecting stud 5 of the display device. The contact is so better as it is ensured on a greater surface; moreover, this connection can be taken apart, that permits an easy replacement of the display cell.

It is to be noted that the glass 4 of the display device constitutes the glass of the casing of the watch, which comprises moreover a bezel 14 and a bottom 15.

What we claim is:

1. Apparatus for providing an electrical connection between a display device of an electronic timepiece and a circuit controlling the display device, said apparatus comprising:
 - A. a printed circuit board including a support member therefor,
 - B. an insulating mounting member comprising a bore,
 - C. a solid metallic stud carried by the circuit board support member including a pointed protrusion on the axial face of the stud, the stud positioned in the bore,
 - D. a plug of electrically conductive elastomeric material arranged within said bore, and
 - E. said protrusion of the metallic stud being constructed and adapted to engage said elastomeric plug, whereby good electric contact is assured without significant pressure.
2. Apparatus as claimed in claim 1, in which said mounting member is made of plastic material and includes means for supporting the display device and the circuit board, said circuit being an integrated circuit, the mounting member constituting a distance part between the display device and the board of the circuit.
3. Apparatus as claimed in claim 1, in which the display device is removably secured to the said mounting member.
4. Apparatus as claimed in claim 1, in which the display device is permanently secured to the said mounting member.

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