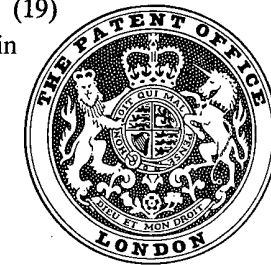


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## (54) CABLE RETAINERS

(71) We, ITW FASTEX ITALIA S.p.A., an Italian company, of Strada Settimo 344, Turin, Italy, do hereby declare the invention, for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to the retention of cables, particularly the wiring of electrical appliances, by cable retainers which are of extremely simple construction but are nonetheless extremely effective.

According to the present invention, a cable retainer comprises a head separate by a pair of resilient arms from an elongate stem of rectangular cross-section whose major sides face one another in spiral; the arms diverging with increasing distance from the stem; the head including shoulder means which lies closer to the stem than a plane including the free ends of the arms when the arms are in their unstressed condition; and the cable retainer being formed in one piece of a plastics material.

Preferably, the head is capable of fastening with a snap action to an apertured workpiece, and the shoulder means is defined by the free ends of a pair of barbs diverging with decreasing distance from the stem.

A cable retainer according to the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a front elevation of the cable retainer; and,

Figure 2 is a side elevation of the cable retainer of Figure 1.

As is clear from the accompanying drawings, a cable retainer according to the present invention has been designated with the reference numeral 10.

The cable retainer is formed in one piece of a plastics material, preferably nylon, and

comprises a head 11 having a pair of barbs 12 and 13 which diverge with decreasing distance from an elongate stem 14. The stem is of rectangular cross-section with its major sides facing one another in a spiral. The spiral winding defines a gap 15 for receiving one or more cables (not shown) to be threaded therearound into a central space 16, the or each cable then being effectively incapable of involuntary release from the cable retainer. A pair of resilient arms 17 and 18 separate the head 11 from the stem 14, and diverge from one another towards the head i.e. with increasing distance from the stem. The free ends of the arms 17 and 18 lie in a plane L, whereas the free ends (constituting shoulder means) of the barbs 12 and 13 lie closer to the stem 14 in a plane L' - the planes L and L' being separated by a distance h.

In use, the cable retainer 10 is applied to an apertured workpiece (not shown), the dimensions of the aperture being such that the head is capable of fastening with a snap action. That is to say, the dimensions of the aperture must be such that during insertion of the head through the aperture, the barbs 12 and 13 are compressed towards each other, and the arms 17 and 18 are spread further apart than in their initial unstressed condition. When the free ends of the barbs 12 and 13 emerge from the aperture, they spring outwards and are maintained pressed against one face of the apertured workpiece by the resilient deformation of the pair of arms 17 and 18 pressed against the opposed face of the workpiece. The cable retainer is thus fixed in position so that the stem can receive one or more cables in the manner discussed above.

It will be appreciated that the head shown in the accompanying drawings may be replaced by other forms of snap fastener, provided that the head still includes shoulder means which lies closer to the stem than

a plane including the free ends of the arms, when the arms are in their unstressed condition.

5 Indeed, the head may also be replaced by a rigid block of polygonal outline for insertion through an aperture of corresponding outline before being rotated through a part of a turn, the rigid block then being prevented from direct withdrawal through the  
10 aperture because of its abutting engagement with the adjacent face of the workpiece.

WHAT WE CLAIM IS:-

1. A cable retainer comprising a head separated by a pair of resilient arms from an  
15 elongate stem of rectangular cross-section whose major sides face one another in a spiral; the arms diverging with increasing distance from the stem; the head including shoulder means which lies closer to the stem  
20 than a plane including the free ends of the arms when the arms are in their unstressed condition; and the cable retainer being formed in one piece of a plastics material.

2. A cable retainer according to claim 1,  
25 in which the shoulder means is defined by the free ends of a pair of barbs diverging with decreasing distance from the stem.

3. A cable retainer according to claim 1 and substantially as hereinbefore described  
30 with reference to the accompanying drawings.

4. A cable retainer according to any preceding claim which has been fastened  
35 with a snap action to an apertured workpiece so that the shoulder means is maintained pressed against one face of said workpiece by a resilient deformation of the pair of arms pressed against the opposed  
40 face of said workpiece.

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