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- 1 -

Electric cable gripping device

This invention relates to a device for gripping an electric cable.

Cable gripping devices are commonly employed in electric plugs, sockets, appliances and other members for clamping a power supply cable adjacent the cable entry opening so that any tension in the cable is not transmitted to the terminal connections and tend to pull the cable conductors away from the terminals to which they are connected.

The present invention seeks to provide a cable gripping device which is of simple construction, is convenient to apply to a cable and will grip the cable firmly. A cable gripping device according to a first aspect of the invention comprises a channel shaped gripping member integrally moulded from resilient plastics material and including opposed substantially parallel limbs for receiving and gripping the cable therebetween, the limbs being spaced apart by a distance slightly less than the diameter of the cable whereby to enable the member to be pushed onto the cable with the limbs being deflected resiliently apart upon insertion of the cable therebetween, and a socket for receiving the gripping member and including abutment means to prevent displacement of the gripping member relative to the socket in a direction longitudinally of the gripped cable due to tension in the cable, the socket having side walls for holding the limbs substantially parallel to grip the cable firmly therebetween when the gripping member is inserted therein, the walls converging inwardly from the socket mouth for engaging and gradually pressing together the free ends of the limbs of the gripping member inwardly as the gripping member is pushed into the socket.

- 2 -

This construction has the advantage that the limbs are moved automatically into their substantially parallel gripping positions as the gripping member is inserted into the socket. The side walls preferably include parallel portions at their inner ends for retaining the gripping member in the socket.

According to a second aspect of the invention there is provided a cable gripping device for an electric plug, socket or other appliance, comprising a channel-shaped gripping member integrally moulded from resilient plastics material and including opposed substantially parallel limbs for receiving and gripping the cable therebetween, the limbs being spaced apart by a distance slightly less than the diameter of the cable whereby to enable the member to be pushed onto the cable with the limbs being deflected resiliently apart upon insertion of the cable therebetween, a part for interconnecting the free ends of the limbs for holding the limbs of the gripping member substantially parallel to grip the cable firmly therebetween, and a socket for receiving the gripping member and including abutment means to prevent displacement of the gripping member relative to the socket in a direction longitudinally of the gripped cable.

The part interconnecting the free ends of the limbs may be a separate clip or may be a gate element connected by an integral hinge to one limb and arranged to engage the free end of the other limb.

With a device in accordance with the invention, the gripping member may be easily fitted in the required position on a cable and due to its own resilience will be retained on the cable until its limbs are forced together to grip the cable tightly. In this way assembly of the device is facilitated.

The limbs of the gripping member may be provided with projections, preferably longitudinal splines, on their

(9)

- 2a -

inner surfaces for biting into the cable to improve the grip thereon.

A full understanding of the invention will be had from the following detailed description of some
5 embodiments, reference being made to the accompanying drawings, in which:-

Figure 1 is a perspective view illustrating the two parts of a first device according to the invention;

Figure 2 shows the gripping member applied to
10 a cable;

- 3 -

Figure 3 shows the device assembled in gripping engagement with the cable;

Figure 4 is an end view showing a gripping member fitted to a cable;

5 Figure 5 is a similar view to Figure 4 showing the gripping member fitted with a retainer clip; and

Figure 6 is a side view of the assembly shown in Figure 5.

The cable gripping device illustrated in Figures 1
10 to 3 comprises a gripping member 10 of channel shape including a pair of opposed parallel legs 11 connected by an upper end wall 12. The legs have longitudinal splines 13 running down their confronting surfaces and the bottom wall includes a tongue 14 on its inner face.
15 The channel is of constant width X between the opposed splines, which width is slightly less than the diameter of the cable to be gripped. The member 10 is moulded from the resilient plastic material, e.g. nylon, so that pushing the cable C into the member through the
20 channel mouth is permitted due to the legs deflecting resiliently apart as seen in Figure 2.

The gripping member 10 cooperates with a second part or member 20 having a socket 21 shaped and dimensioned to receive member 10 as described below. The
25 socket has opposed side walls 22, 23 including parallel inner portions 24 spaced apart by a distance substantially equal to the outer width Y of member 10, and outer portions 25 which diverge in the direction towards the socket mouth so that the distance Z separating the
30 walls 22, 23 at the mouth of the socket is great enough to receive the legs of member 10 opened apart by the cable C. The ends of the socket are open to permit passage of the cable as will become clear. The
35 bottom wall has a longitudinal tongue 26 and the outer ends of side walls 22, 23 have opposed lips 27 defining abutment shoulders 28.

21

- 4 -

The depth of socket 21 is substantially equal to the height of member 10. It is not essential for the side walls 22,23 to be smooth and the surface portions 24, 25 could be defined by a series of spaced ribs running
5 down each side wall.

After the gripping member 10 has been pushed onto the cable C as shown in Figure 2, the member 10 is pressed, legs first, into the socket 21. The side wall portions 25 gradually push the legs 11 together
10 causing the splines 13 to grip the cable tightly, until the ends of the legs engage between side wall portions 24 and then abut the bottom wall of the socket as seen in Figure 3. The outer end of the gripping member 10 abuts against the shoulders 28 which prevent
15 the member 10 being pulled out of the socket by tugging on the cable. If required similar abutment shoulders could be provided at the inner end of the socket, for example if there is any risk of the member being displaced inwardly.

20 The clamping member will preferably be held captive within the socket by a member fitted over the socket mouth. For example, in the case of an electric plug the socket may be integral with the plug base and the gripping member retained by a cover fitted permanently
25 to the base. The clamping device is also suitable for electrical plugs having bodies which are moulded in situ over the remaining components after the necessary connections have been completed. In this case the gripping member may be fixed permanently in position by
30 the moulded body.

It is well known that electric cables are manufactured with specified diameters. To enable the device of the invention to be used with cables of different diameters it is necessary to provide only a number
35 of gripping members 10 having the same external width Y,

but with differing internal widths X determined by the respective cable diameters. The same socket 21 can then be used for all the gripping members and cable sizes.

5 The cable gripping member 10 shown in Figure 4 is the same as that of the earlier Figures and the same reference numerals have been used to designate the different features. The limbs are deflected apart by the cable C as seen in Figure 4. Instead of being
10 closed together by pushing the gripping member into a socket with converging side walls, however, the limbs 11 are instead pushed together into substantially parallel positions by means of forces applied in the direction of the arrows in Figure 5, e.g. by means of a suitable
15 jig (not shown) and a U-shaped metal clip 30 is fitted over their free ends. The clip 30 maintains the limbs substantially parallel with the cable gripped securely between them on removing the gripping member from the jig. To complete assembly of the gripping device, the
20 gripping member is inserted into a socket of generally similar form to the socket 21 of Figure 1, but it will be appreciated that the side walls of the socket do not need to converge since they are not required to push together the limbs 11.

25 In place of the metal clip 30, the member 10 could include a gate connected by an integral hinge to the end of one limb and adapted to hook over the free end of the other limb for holding the limbs together with the gripping cable between them.

30 The cable gripping device of the invention is simple, cheap to make, and is easy to fit to a cable. The gripping member and socket can both be moulded without difficulty. Modifications to the device are possible and will occur to those skilled in the art.

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CLAIMS

1. A cable gripping device for an electric plug, socket or other appliance, comprising a channel shaped gripping member integrally moulded from resilient plastics material and including opposed substantially parallel limbs 5 for receiving and gripping the cable therebetween, the limbs being spaced apart by a distance slightly less than the diameter of the cable whereby to enable the member to be pushed onto the cable with the limbs being deflected resiliently apart upon insertion of the cable therebetween, 10 and a socket for receiving the gripping member and including abutment means to prevent displacement of the gripping member relative to the socket in a direction longitudinally of the gripped cable due to tension in the cable, the socket having side walls for holding the limbs substantially parallel to 15 grip the cable firmly therebetween when the gripping member is inserted therein, the walls converging inwardly from the socket mouth for engaging and gradually pressing together the free ends of the limbs of the gripping member inwardly as the gripping member is pushed into the socket.
- 20 2. A cable gripping member according to claim 1, wherein the side walls of the socket comprise parallel surface portions at the inner ends thereof.
3. A cable gripping device for an electric plug, socket or other appliance, comprising a channel-shaped 25 gripping member integrally moulded from resilient plastics material and including opposed substantially parallel limbs for receiving and gripping the cable therebetween, the limbs being spaced apart by a distance slightly less than the diameter of the cable whereby to enable the member to be 30 pushed onto the cable with the limbs being deflected resilient-



ly apart upon insertion of the cable therebetween, a part for interconnecting the free ends of the limbs for holding the limbs of the gripping member substantially parallel to grip the cable firmly therebetween, and a socket for
5 receiving the gripping member and including abutment means to prevent displacement of the gripping member relative to the socket in a direction longitudinally of the gripped cable.

4. A cable gripping device according to claim 3,
10 wherein said part is a separate clip fitted to the gripping member.

5. A cable gripping device according to claim 3,
wherein said part is a gate connected by an integral hinge to one limb and arranged to engage the free end of the
15 other limb.

6. A cable gripping device according to any preceding claim, wherein the opposed limbs of the gripping member have projections on the confronting surfaces thereof to bite into and grip the cable.

20 7. A cable gripping device according to claim 6, wherein the projections are splines extending longitudinally of the limbs.

8. A cable gripping device according to any preceding claim, wherein the abutment means comprises shoulders
25 on the opposite side walls of the socket and against which an end of the gripping member abuts.

9. A cable gripping device according to any preceding claim, wherein the gripping member is retained in the socket by a part fitted over the socket mouth.





- 7a -

10. A cable gripping device according to claim 9, wherein the socket is formed in a first body part and the part retaining the gripping member is a second body part fixed permanently to the first part.

5 11. A cable gripping device substantially as herein described with reference to Figures 1 to 3, or Figures 4 to 6 of the accompanying drawings.



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