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J. F. HEALY

2,636,918

CORD CLAMP FOR ELECTRICAL DEVICES

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Fig. 1.

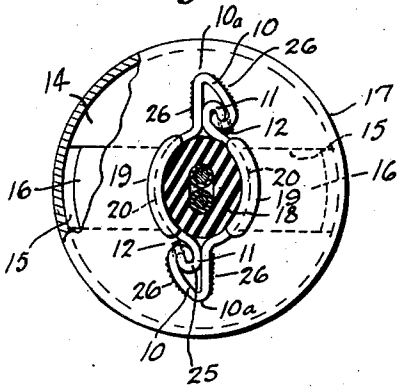


Fig. 2.

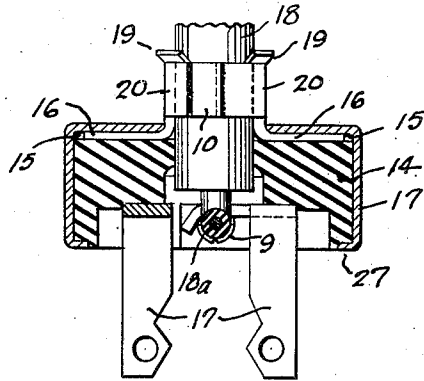


Fig. 3.

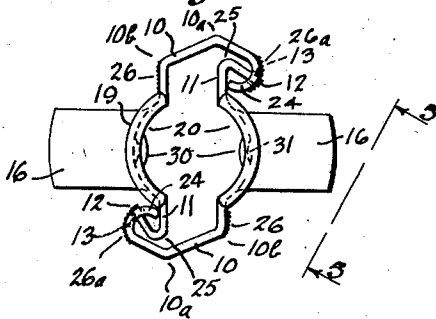


Fig. 4.

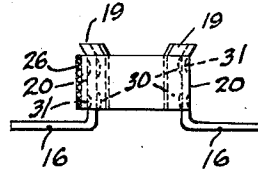


Fig. 5.

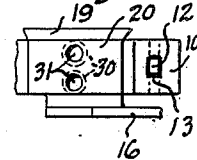


Fig. 7.

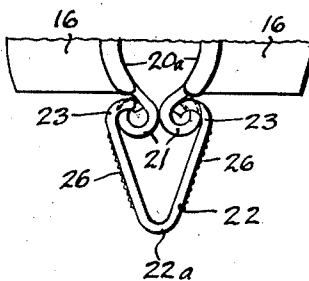
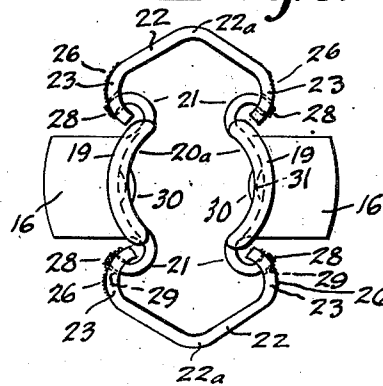


Fig. 6.



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CORD CLAMP FOR ELECTRICAL DEVICES

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9 Claims. (Cl. 173-322)

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This invention relates to electrical devices which are connected to flexible electric cords or cables such as are used in operating portable electrical devices and the like, and has for an object to provide an improved clamping structure for securing the device to the cord or cable so as to take the strain of any pull on the cord and to greatly reduce or entirely eliminate strain at the binding posts and thereby prevent the cord leads from breaking loose at point of binding post connection, and particularly to such a cord clamp or grip which may be set by pressing opposite sides together by means of a pair of pliers, and does not require the use of screws or similar fasteners.

More specifically, this invention relates to an improvement over the type of device described in United States Patent No. 1,679,723, issued August 7, 1928, to Harvey Hubbell (Louie E. Hubbell, Executrix).

In the device described in said patent the clamping portion operates by means of tightening a pair of screws to compress a pair of clamping elements. The patented device requires the threading of screw holes and also consumes the time and effort of the electrician when clamping the cord to the device. In the device described and claimed in this application, screw holes and screws are entirely eliminated. Thus it can be seen that this invention provides substantial saving of time, effort and cost in both the manufacture and use of the device.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawing forming a part of this specification. It is, however, to be understood the invention is not limited to the specific details of construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In this drawing:

Fig. 1 is a top plan view partly in section showing my invention as applied to a plug cap, parts being broken away to more clearly show the construction;

Fig. 2 is a side elevation thereof partly in section;

Fig. 3 is a top plan view of the clamp member removed;

Fig. 4 is a side elevation thereof;

Fig. 5 is a side view looking substantially as indicated by line 5-5 of Fig. 3;

Fig. 6 is a top plan view of another embodiment of my invention in open or loose position; and

Fig. 7 is a partial top plan of the embodiment shown in Fig. 6 in closed or clamped position.

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Although I have shown my improved clamp as applied to a plug cap it will, of course, be understood that it is not limited to this use, but may be employed with other electrical devices which are connected to a conducting cable or cord in substantially the same manner.

In the construction shown at Figs. 1 and 2, a circular insulating member 14 is provided with a hole through its center to receive an electrical cord 18, carrying on the under side thereof blade contacts 17 connected with binding posts having binding screws 9 for connection of lead wires 13a from electrical cord 18 in the usual manner, and on the top side of said insulating member opposite the blade and binding post side is provided a pair of aligned recesses 15 to receive the feet 16 of the clamping ears 20. A pair of clamping elements shown at Figs. 3 and 4 comprise a pair of mutually engaging members, each having a clamping ear 23 curved inwardly or concave to receive an electrical cord and flared outwardly at the top, as shown at 19, to prevent cutting of the cord by sharp edges. An integrally connected pair of fingers extends laterally, one from each edge of each of said clamping ears, one of the pair of fingers 10 being longer than the other finger 11. The longer finger 10 is bent inwardly toward the clamping device and is formed with an inwardly curved hook 24. It is also bent at an angle at an intermediate point 10a. An aperture 13 is provided in the side of extended finger 10 at a position on the arc formed by the hook 24 at the end of said finger 10. The shorter finger 11 integrally connected with and extending laterally from the opposite edge of the clamping ear 20 is bent outwardly also to form a hook 25. The finger 11 may be provided with a lug 12 at its free end of less width than the finger and about the same length as opening 13. Each clamping ear member 20 is integrally connected with a foot member 16 extending outwardly from the curve and at right angles to the clamping surfaces of the ears 20.

In assembling the pair of clamping elements, the inward curves of the ears 20 are placed opposite each other with end lug 12 of short finger 11 of one clamping ear extending into aperture 13 of the long finger 10 of the opposite clamping ear.

There are provided a gripping surface 26 and 26a for pliers or other tools on the exterior of the fingers 10 and 11, and this may be knurled, serrated, corrugated or otherwise roughened to give a good grip to pliers and other tools to prevent slipping of such tools.

The feet 16 of the clamping elements are re-

tained in recesses 15 of the insulating member 14 by a metal shell or casing 17 which in the present construction encloses the body member 14. It will be apparent from Fig. 2 that the feet 16 are located between the end wall of the shell or casing 17 and the bottom of the recesses 15 in the top of the insulating member 14, and are therefore held against separation from the insulating member 14 by this shell or casing, but are allowed to move toward and from the cable in tightening and loosening the clamping elements. A convenient means of securing the shell casing to the body member is to bend its free end 27 over the opposite end of the body member 14, as shown in Fig. 2. This shell also provides a protective armor for the insulating member to protect it against injury.

In operation, the gripper edges 26 and 26a of opposing fingers 10 and 11 are compressed together by pliers or other tools and the fingers bent and tightly formed, thereby securely and rigidly clamping the cord, as in Fig. 1. In this operation the finger 10 bends outwardly about the bend 10b and folds inwardly about the fold 10a, and the hooked end 25 of finger 11 is folded inwardly about the free end of finger 10, the parts being thus folded to about the position shown in Fig. 1. It is, therefore, clear that an electrician can clamp the cord or cable securely with a pair of pliers in a fraction of the time required by the screw method used in the patented device. Once the fingers are bent to clamping position the clamp holds the cord or cable rigidly secure without the danger of clamping screws becoming loose or disengaged. The clamping device thus described takes the strain of a pull on the cord, relieving strain at the binding posts.

In Fig. 6 I show another embodiment of the same invention in which the clamping ears 20a are formed with an outwardly bent hook 21 integrally connected and extending from each end of said ears. The hooks 21 engage inwardly curved hooks 23 of a pair of substantially U-shaped link members 22 by extending their extremities through an aperture 28 provided at each end of the U-shaped link member 22. The curved ends 23 of member 22 are provided with apertures 29 corresponding to apertures 13 of the first form, and the free ends of hooks 21 are provided with lugs 30 (corresponding to lugs 12 of the first form) to seat in the openings 29 to prevent the elements from separating. The embodiment in Fig. 6 is provided with integrally connected feet 16, tool gripping surfaces 26, inwardly or concavely curved clamping ears 20a formed to receive an electric cord or cable, the top of said ears being likewise flared outwardly as at 19 from the cord receiving curve so as to prevent cutting of the cord by sharp metallic edges, as provided for and shown in the first mentioned embodiment of this invention. The plug cap, Figs. 1 and 2, or other electrical devices may be combined with and receive and use either embodiment of the clamping device.

Although both embodiments provide for sliding feet to engage in sliding recesses, other means for connecting the clamping feet to the insulating member may be used, or the feet may be rigidly connected to the insulating portion and the ears allowed to bend slightly when the fingers are squeezed together. The feet need not necessarily be at right angles to the clamping ears, but may be in direct extension thereof into the cord receiving aperture of the insulating member and various means of connection with the insulating

member may be used and either sliding or rigid connecting means may be employed. The clamping ears 20 and 20a of both forms may be provided with means on their inner or concave surfaces for increasing their grip on the cord, such, for example, as rounded raised portions or bumps 30. These may be formed by bumping inwardly with a tool on the opposite or outer side to form the depressions 31.

In operation, the embodiment shown at Fig. 6 is used similarly to the other form of clamp shown in Fig. 3, by simply gripping the roughened tool gripping surfaces 26 of the U-shaped links between a pair of pliers or other tool, bending the U-shaped link members 22 to bring hooks 21 closer together, thus rigidly clamping the cord or cable contained between the clamp ears 20. Fig. 7 illustrates the shape of the elements in bent and closed position. The lugs 12 and openings 13 may or may not be used with the form of device shown in Figs. 1 to 5, but should be used with the form of Figs. 6 and 7 to secure the links 22 to the clamping members 22a.

Having thus set forth the nature of my invention, I claim:

1. An electric cord clamping device for use in combination with electric devices comprising a pair of clamping ears curved inwardly to receive and grip an electric cord, an integrally formed hook at each end of each clamping ear, angularly shaped linking means for engaging the hooks at the opposite sides of the ears and squeezing toward each other the hooks of one clamping ear with the opposing hooks of the opposite clamping ear whereby an electrical cord placed through the pair of clamping ears may be rigidly clamped between said ears and held in rigid connection by the tight compression and engagement of the opposing hooks with the linking means, and means for connecting the clamping ears to an electrical device so that an electric cord may be attached to the binding posts of said electric device and prevent pull on the cord from straining the binding post connections.

2. An electrical cord clamping device for use with an electrical device comprising an insulating member provided with an electrical cord receiving aperture, and a pair of binding posts, said cord clamping device comprising a pair of fingers laterally connected with each clamping ear, means for connecting the pair of clamping ears with the insulating member, whereby an electric cord connected with the binding posts may be extended through the cord receiving aperture of the insulating member and between the clamping ears, said clamping ears being connected by opposing pairs of fingers having inclined curved portions extending one within the other and the outer surfaces of an opposed pair of fingers having spaced surfaces which may be clamped between the jaws of a pair of pliers or similar tool to force the fingers of a pair together and interlock them together to draw the ears toward each other and clamp them on opposite sides of the cord.

3. A cord clamping member for electrical devices comprising a pair of inwardly curved clamping ears at each end of which is formed a short outwardly curved hook, a sliding foot member connected with each clamping ear and extending outwardly at right angles to the plane of the electric cord passage between said clamping ears, a pair of U-shaped links formed with a small inwardly curved hook and an aperture in each

side at each extremity, means for holding the feet of said cord clamping member against separation from the electrical device with sufficient freedom to permit said clamping ears to move toward and from a cord between them, the outwardly curved hooks of the clamping ears extended through the apertures in the sides at the extremities of the U-shaped links, said U-links having spaced outer surfaces to engage between a pair of jaws whereby the sides of said links may be squeezed and compressed together with a pair of pliers or similar tool so as to draw the clamping ears tightly together and clamp the electric cord in rigid position.

4. In a device of the character described, a conductor cord clamp for electrical devices comprising a pair of cord clamping elements having clamping ears formed with outwardly curved hooks, a pair of removable links of suitable size and comprising angularly arranged side portions provided with inwardly curved end portions removably engaging the outwardly curved hooks of the clamping ears, and feet extending at an angle to said clamping portion adapted to be slidably connected with the electrical device and the outer surfaces of said curved end portions providing spaced surfaces which may be clamped between a pair of pressure jaws to force said curved end portions toward each other to interlock with the hooks on said ears and draw the ears toward each other to clamp the ears on the cord.

5. In a cord clamp for an electrical device having binding posts for attaching to lead wires of an electric cord, a clamping element of the character described comprising a pair of cord clamping ears, said ears formed at each edge with an outwardly curved hook, a pair of substantially U-shaped connecting links provided with an aperture at each free end, means for mounting said clamping element on the device, the outer surfaces of the end portions of a link providing spaced clamping surfaces to be gripped between the jaws of a pair of pliers or the like to force said end portions and connected hooks toward each other to clamp and retain the ears on the cord.

6. A cord clamp for securing electric conductor cords with its leads connected to securing means of an electric device, said clamp comprising a pair of clamping ears curved inwardly to receive and grip the cord, a pair of laterally extending opposed fingers integral with and extending laterally from the clamping ears, one of said fingers being longer than the other and comprising a substantially straight portion adjacent the attached ear and extending outwardly therefrom, a second portion connected to the outer end and inclined outwardly and laterally to the first portion toward the opposed finger, and a third portion at the outer end of the second portion and inclined inwardly and provided with an inwardly and backwardly curved end portion provided with an opening, the shorter finger comprising a substantially straight outwardly extending portion adjacent its attached ear and a laterally and inwardly bent end portion at the inner side of the curved portion of the first finger and provided with a lug in the opening of the other finger, said first substantially straight portion of the first finger and the outer portion of its curved end forming spaced gripping surfaces which may be clamped between a pair of jaws and pressed to-

ward each other to bend and lock the fingers together and clamp the ears about the cord.

7. A clamp for a cord containing conductor wires leading to an electrical device, comprising a pair of curved ears to clamp opposite sides of the cord, a pair of opposed fingers extending outwardly from the opposite edges of the ears, one pair of fingers comprising a longer finger including a substantially straight portion extending outwardly from its connected ear and an inclined portion at its outer end inclined toward the other ear and including an inwardly and backwardly curved end portion provided with an opening, the longer finger comprising a substantially straight portion extending outwardly from its connected ear and a laterally and inwardly inclined portion within the curved end portion of the other finger and provided with a lug in the opening in the other finger, and the outer surfaces of said straight and curved portions of the first finger providing spaced clamping surfaces which may be clamped between a pair of pressure jaws to force said surfaces toward each other and fold the end portions of the two fingers together to clamp and lock the ears on the cord.

8. In a cord clamp for electrical devices, a pair of clamping elements comprising a pair of opposing clamping ears and movable toward each other to clamp between them a conductor cord leading to an electrical device, said ears being each provided on its outer edges with a laterally and inwardly curved hook provided with an opening, and a connecting link for the pair of hooks at each side of the clamp comprising a member including angularly arranged side portions each provided with a curved end portion to interlock with one of the hooks and provided with a lug seated in the opening in this hook, and the outer surfaces of the curved end portions of the link providing spaced clamping surfaces to be clamped between a pair of pressure jaws to force said curved end portions and interlocked hooks toward each other to clamp the ears on the cord.

9. A cord clamp for electrical devices comprising a pair of ears to be located and clamped on opposite sides of a conductor cord connected to the device, and clamping means for clamping said ears on the cord comprising an outwardly and laterally extending member on a side edge of one ear forming a hook at its outer portion, an angularly shaped connecting member connected with the other ear and provided with a curved end portion interlocked with the hook, and the outer surfaces of the connecting member providing a pair of spaced clamping surfaces to be engaged and clamped between a pair of pressure jaws to force the opposite sides of said angularly shaped member toward each other to draw the jaws laterally and clamp them about the cord.

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