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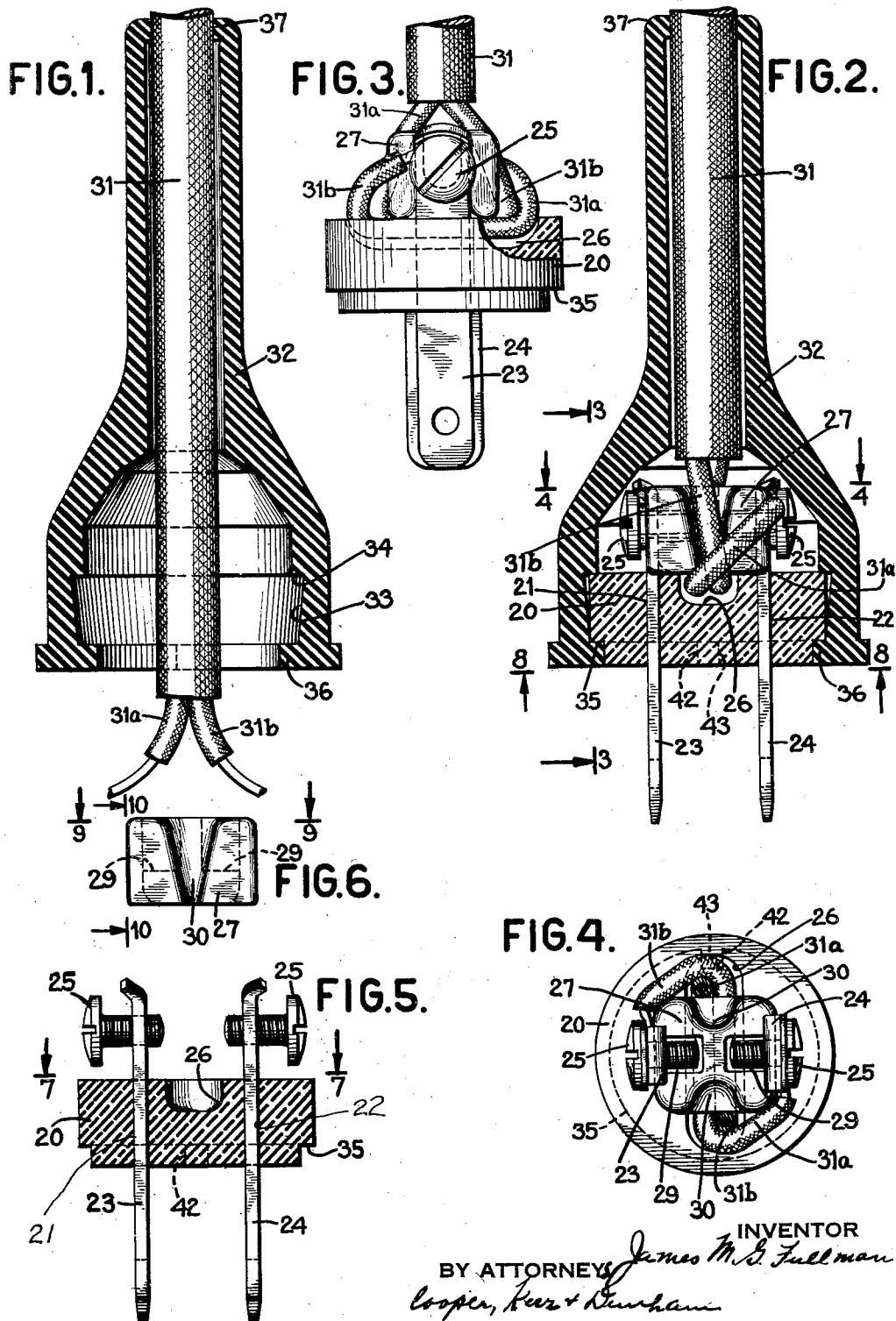
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1,929,920

TERMINAL DEVICE WITH CORD FASTENER

Filed Dec. 31, 1930

3 Sheets-Sheet 1



Oct. 10, 1933.

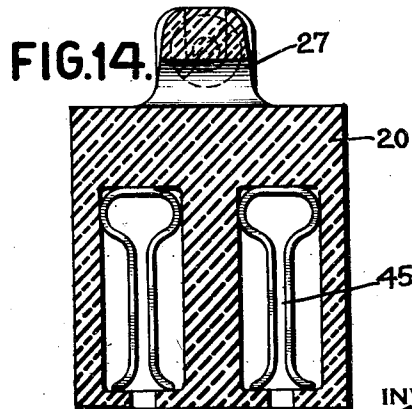
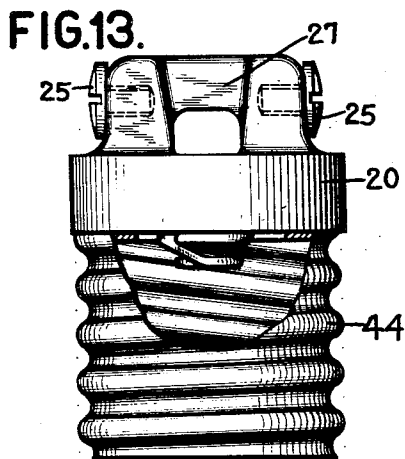
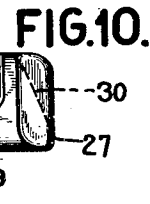
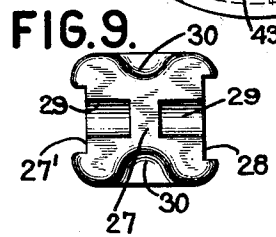
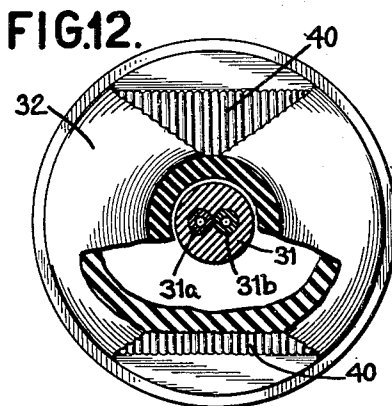
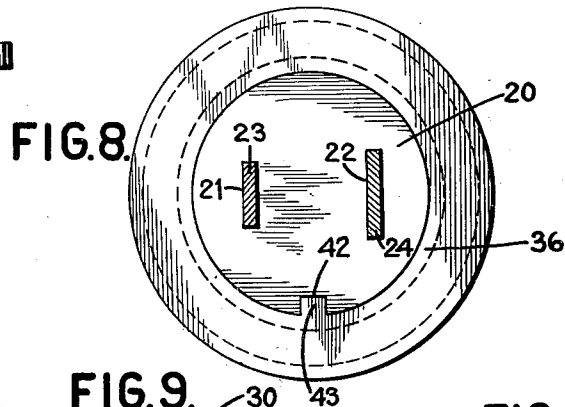
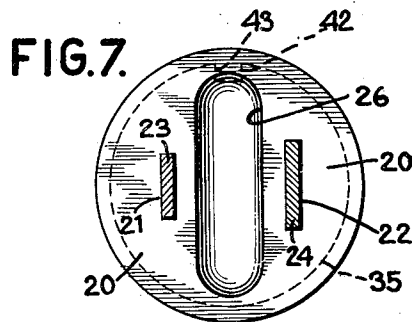
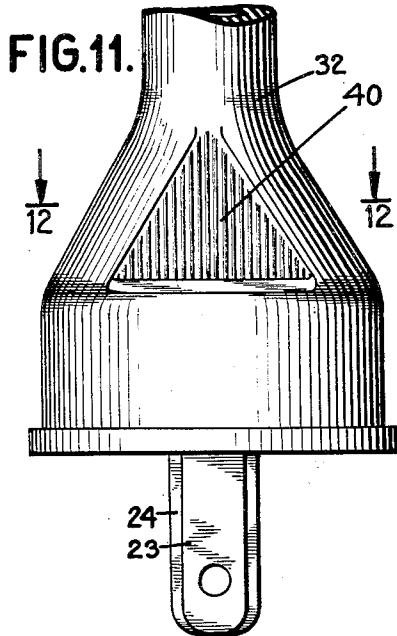
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TERMINAL DEVICE WITH CORD FASTENER

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3 Sheets-Sheet 2



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TERMINAL DEVICE WITH CORD FASTENER

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3 Sheets-Sheet 3

FIG.15.

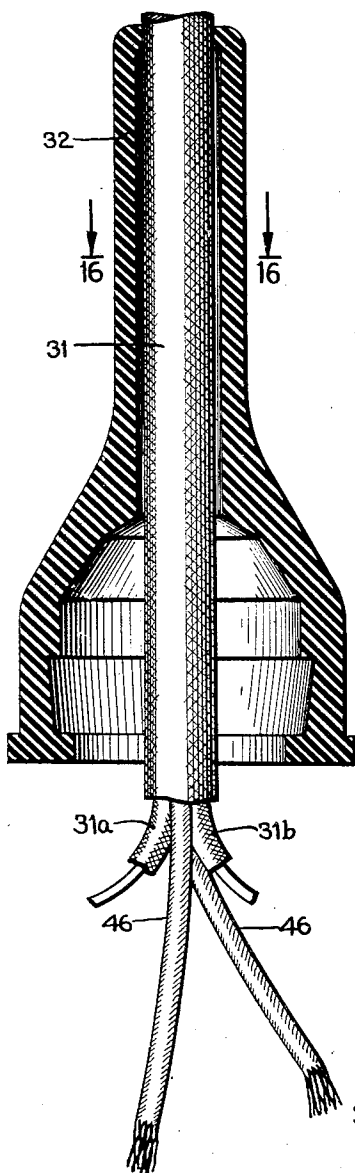


FIG.17.

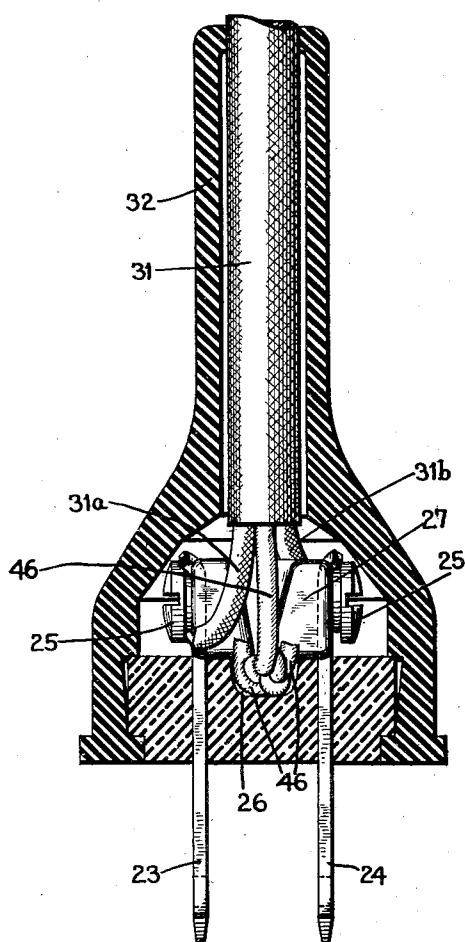
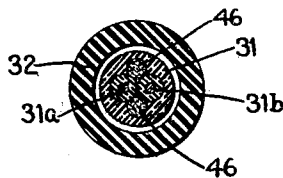


FIG.16.



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TERMINAL DEVICE WITH CORD
FASTENER

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8 Claims. (Cl. 173—322)

This invention relates to electric cord terminals for lamps, plug receptacles and also to terminal devices containing plug prongs adapted for insertion in receptacle bodies.

The invention has for its object provision of construction which overcomes the weaknesses and objectionable features of devices of this sort heretofore on the market. The electrical plug terminals now on the market comprise two classes. One type of device is made of rigid material which is subject to breakage and such devices are so constructed that the wires bend abruptly at the top of the terminal causing breakage of the wire strands. The other type is made of rubber or other flexible material, either molded on the cord, in which case it cannot be removed and must be factory assembled, or it comprises a part separate from the cord in which case the strain of pulling the plug from the receptacle is imparted directly to the connection of the wires to the plug prongs. With both types of devices the plug prongs are generally set in a flexible material and therefore are not held in a fixed parallel relationship.

One object of the present invention resides in the provision of a construction in which means is provided for locking the individual insulated conductors or filler cords of cable in such a way that the strain in pulling the terminal from the receptacle or other device will be removed from the point where the wires of the conductors are attached to the terminals of the device, for example the plug prongs, and placed directly upon the relatively stronger insulated conductors or upon the separate filler cords of the cables depending upon whether the cable does not have or has filler cords.

Another object of the present invention resides in the provision of an improved construction of terminal device in which provision is made for removing the strain from the point of connection of the wires with the terminals of the terminal device and for taking up such strain upon a terminal relief device which cooperates with the cords of the cable. Such cords may be the insulated conductors or the filler cords of the cable and provision is made for relieving the strain by disposing a strain relief block in such a way with respect to the cooperating cords that the strain is relieved before the point of connection of the wires to the terminal elements is reached.

A further object of the present invention resides in the provision of an improved terminal device such as a plug or the like with an im-

proved strain relief means associated therewith.

A further object of the present invention resides in the provision of an improved strain relief device adapted to alternatively receive the insulated conductors of the cable or filler cords of the cable.

A further object of the present invention resides in the provision of a strain relief device in which means is provided for relieving strain by crossing one insulated conductor over the other. By such crossing of the insulated conductors, provisions are afforded for crowding both of said insulated conductors against an engaging edge of the strain relief device.

A further object of the present invention resides in the provision of a construction in which means are provided permitting the tying of cotton filler strands of the cable to the terminal assembly in such a way that the strain in pulling the terminal away from the cooperating terminal receptacle or other device will be on the cotton filler cords of the cable in place of reaching the points where the wires of the conductors are attached to the terminals of the device.

A further object of the present invention resides in the provision of a construction which will be simple, inexpensive to manufacture and which will be more satisfactory in use than present devices of this general class.

Further and other objects of the present invention will be hereinafter set forth in the accompanying specification and claims and shown in the drawings, which by way of illustration show what I now consider to be preferred embodiments of my invention.

In the drawings:

Figure 1 is a sectional view of the flexible protecting sheath with a cable introduced therein;

Fig. 2 is a sectional view similar to Fig. 1 but with the plug terminal element introduced into the end of the flexible sheath and with the wires of the cable connected to the plug;

Fig. 3 is a detail sectional view with the plug terminal device, the flexible sheath being removed and the view being taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a detail view taken substantially on line 4—4 of Fig. 2 but with the flexible sheath removed;

Fig. 5 is a detail cross-sectional view of the plug terminal body portion, the prongs assembled therein, but with the strain relief block removed;

Fig. 6 is an elevational view of the strain re-

lief block removed and disassociated from the terminal body;

Fig. 7 is a detail view taken substantially on line 7—7 of Fig. 5, and looking in the direction of the arrows;

Fig. 8 is a detail view taken substantially on line 8—8 of Fig. 2 and looking in the direction of the arrows;

Fig. 9 is a top view of the strain relief block, the view being taken substantially on lines 9—9 of Fig. 6;

Fig. 10 is a side view of the strain relief block, the view being taken looking in the direction of the arrow marked 10 in Fig. 6;

Fig. 11 is an exterior part elevational view of the plug connector assembled in its flexible sheath;

Fig. 12 is a detail sectional view taken on line 12—12 of Fig. 11;

Fig. 13 is a view of a modified construction wherein the strain relief block is made integral with the body portion of the terminal and in this view the terminal element is shown as a lamp connector; and

Fig. 14 is a view of my improved cord connector of the type shown in Fig. 13 associated with a plug receptacle element;

Fig. 15 is a view similar to Fig. 1 except that the associated cable is shown as provided with filler cords;

Fig. 16 is a sectional view taken on line 16—16 of Fig. 15; and

Fig. 17 is a view similar to Fig. 2 but with the filler cords (shown in Fig. 15) utilized to take up the strain by connection with the strain relief device.

Referring to Figs. 5, 7 and 8, 20 is the body portion of the terminal element, made of suitable insulating material. As shown, this body portion 20 is provided with slots 21 and 22 through which the plug prongs 23 and 24 pass. It will be noted that prong 23 is relatively narrower than prong 24, this arrangement being provided to prevent reversing of polarity when the plug terminal device is inserted in the co-operating receptacle. Upon the upper ends of the prongs 23 and 24, binding screws 25 are provided (see Fig. 5). These binding screws serve not only for receiving and fastening the wires of conductors, but also serve for holding the strain relief block in position. Between the prongs 23 and 24 the body 20 is provided with a groove 26, (see also Fig. 4). This groove 26 provides a transverse channel for the conductors as will hereinafter be explained. The strain relief block like the body portion 20 is made of suitable insulation material and this strain relief block is generally designated 27, (see Fig. 6). The element 27 is recessed at its sides as shown at 27' and 28 in Fig. 9 to receive the prongs 23 and 24 respectively. Element 27 is also provided with cavities 29 (see Fig. 4) to receive the ends of the binding screw terminals 25 when the block 27 is in assembled relation with respect to the prongs. The block 27 is also provided with the intermediate cord receiving grooves 30 which are disposed upon opposite sides of the block 27. These grooves 30 gradually diminish in size towards the bottom of the block and this configuration of the grooves provides for directing the pair of cords on the opposite sides of the block into or toward a common path.

While according to the embodiment shown in Figs. 5 and 6, I have shown the connector ele-

ment 27 as a separate piece and secured to element 20, it will be understood these parts may be made as one integral piece but the two part construction is preferable to facilitate manufacture. In assembling the previously described terminal on electrical cord, the following procedure is followed:

Cable 31 (see Fig. 1) is inserted through the neck of the flexible sheath 32 (to be hereafter described in further detail) and the ends of the cable are drawn completely down below the bottom of the sheath. The jacket of the cable is then removed and the individual insulated conductors 31a, and 31b are prepared for connection to the prongs of the plug by stripping the insulation therefrom. Both insulated conductors 31a and 31b are passed in opposite directions under the strain relief block 27, space being provided for so passing the insulated conductors by the groove 26 in the block 20 below the strain relief block 27 (see Fig. 2). Insulated conductor 31a is then passed over insulated conductor 31b and around the end of the block 27 and its wire connected to the right hand binding screw terminal 25. Insulated conductor 31b is likewise passed over insulated conductor 31a (see Fig. 4) and its wire connected to the left hand binding screw terminal 25. The bottom of the strain relief block 27 is flat and its marginal edge provides a comparatively sharp edge against which the insulated conductors abut in emerging from the slot 26. By this particular relation of parts, each insulated conductor overlaps the other insulated conductor and clamps it tightly against the sharp lower edge of the block 27. Accordingly, any strain exerted by pulling on the cable 31 will come on the insulated conductors 31a and 31b and be imparted to the block 27 and in this way the strain will be taken up upon the insulated conductors before the binding screw terminal connection to the wires of the conductors is reached.

Referring to Figs. 1, 2 and 15, 16 and 17, the assemblage marked 31 while commonly known in the trade as a cord or lamp cord will be hereinafter referred to as a cable. The term "cable" is used to designate the complete assemblage including the outer jacket, the interior insulated conductors 31a and 31b which have inside of them the current carrying wires proper and the filler cords 46 if such filler cords are used. The term "cord" as used in this specification is to be construed as a generic term defining either a filler cord or an insulated conductor. Contrary to the usual trade practice, such term "cord" will not be used as referring to the assemblage 31 as a whole, but such assemblage will be referred to as a cable in order to avoid confusion in terminology.

While the foregoing assembled steps embody the preferred method of making the assembly of the insulated conductors overlap in order to secure satisfactory and adequate strain relief, I have found that if the insulated conductors are merely threaded through the opening provided for them or laid into the groove 26 and the strain relief part 27 laid thereover, the relatively sharp turn made by the insulated conductors upon emerging from the groove 26 is sufficient to prevent strain upon the cable 31 and the insulated conductors 31a and 31b from being transmitted to the terminal 25 at the point of fastening of the wires thereto.

Having made the connections in the manner previously described, the cable 31 is pulled

back through the sheath 32 until the body portion 20 is received in the recess 33 of the sheath. It will be understood that the sheath 32 is made of flexible yielding material such as soft vulcanized rubber so that the lower flange of the sheath can be stretched over the body portion 20. The upper shoulder 34 of the sheath prevents the body portion 20 from being pulled upwardly beyond a determined point and the shoulder 35 upon the body portion 20 interengages behind the flange 36 of the sheath and prevents the plug inadvertently coming out of the sheath. As shown the sheath 32 has a portion 37 which fits comparatively snugly on the cable 31 thus sealing the entire terminal assembly. It will be readily understood that assembly or disassembly of the parts in the manner above outlined can readily be effected in the field. To guide the user in introducing the plug into the receptacle preferably the exterior of the sheath is provided with opposite flat surfaces 40 (see Figs. 11 and 12) which flattened portions are in alignment with the prongs 23 and 24. Preferably also the body portion 20 is provided with an aligning notch 42 (see Fig. 8) and the sheath has an interengaging tongue portion 43 to engage the aligning notch.

Fig. 13 shows a somewhat modified construction in which strain relief block 27 is integral with the body portion 20 instead of being separate therefrom as the construction previously described.

It will be appreciated that with the previously described construction the block 27 can be also made integral with the body portion 20 but the separate piece arrangement is preferable for cheapness of manufacture. In Fig. 13 in lieu of showing plug prongs such as 23 and 24 a lamp socket element 44 is provided.

Fig. 14 shows an arrangement similar to Fig. 13 except in lieu of having a lamp receptacle, a plug receptacle having contacts 45 is provided.

Referring now to Figs. 15 to 17 inclusive, in Fig. 15 the cable assemblage 31 is substantially the same as the cable 31 previously described, except that it is provided with filler cords 46. These are usually made of twisted fibrous strands and are generally of cotton and are shown projecting beyond the end of the cable jacket.

Referring to Fig. 17 it will be seen that the filler cords 46 are there shown as looped directly around block 27 and tied and the conductors 31a and 31b are run directly to the binding screw terminals 25. Thus with this construction any pull on the cable 31 is imparted directly to the filler cords 46 and does not affect the connections of the wires of the conductors 31a and 31b at the terminal screws 25, otherwise the steps of assembly are the same as previously described.

What I claim is:

1. A terminal device for electrical wiring devices, including terminal elements with binding screws for securing the wires of conductors thereto, and a cord fastener secured to said terminal elements by said binding screws with

provisions for receiving and clamping cords thereto and removing the strain from the point where the wires of the conductors themselves are secured to the terminal elements.

2. A plug terminal device for electrical wiring uses wherein binding post terminals are carried by the plug prongs and including in combination therewith a cord securing and strain relieving device cooperating with the cords of cables, said device being secured to the plug prongs by the binding post terminals.

3. A terminal device including an insulating body portion, plug prongs extending through said body portion and also upwardly therefrom, binding post terminals upon said upward extensions of the plug prongs, and a cord fastener separate from the body portion but carried by said terminals, for removing strain from the point of fastening of the wires of the conductors to said binding post terminals.

4. A terminal device for electrical conductors comprising an insulating body having metallic plug prongs therein, said body having a groove therein to receive the cords of a cable, an element separate from said body portion and disposed over said groove and forming a cord grip, and means securing said cord grip to said prongs.

5. A terminal device for electrical wiring devices, including terminal elements with provisions for securing conductors thereto, and a cord fastener block secured to said terminal elements with grooves of decreasing size upon the opposite faces thereof for receiving the insulated portions of the conductors and with sharp lower edges for removing the strain thereon prior to the point where the wires of conductors themselves are secured to the terminal elements.

6. A plug terminal device for electrical wiring uses wherein cables with filler cords are used wherein binding post terminals are carried by the plug prongs and including in combination therewith a cord securing and strain relieving device cooperating with the filler cords of said electrical cable, said device comprising a block disposed between and secured to the plug prongs by the binding post terminals.

7. A terminal device for connection to a cable having cords therein, said device including a body portion of insulating material with a recess in the upper face thereof, terminal elements carried thereby, and a strain relief block disposed over the recess and secured to the terminal elements to receive cords and relieve the strain at the connection to the terminals.

8. A terminal device for electrical wiring devices including terminal elements with binding screws for securing conductors of a cable thereto, a strain relief block of insulating material disposed between the terminal elements with cavities therein into which the binding screws project, said strain relief block having grooves upon the opposite faces thereof, which grooves gradually decrease in size towards the bottom of the block, said block further having relatively sharp edges at the terminating point of the grooves adjacent the lower edge of the block for snubbing cords of a cable passed around the block.

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