

Sept. 15, 1936.

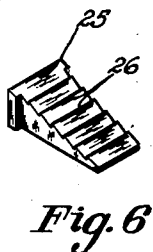
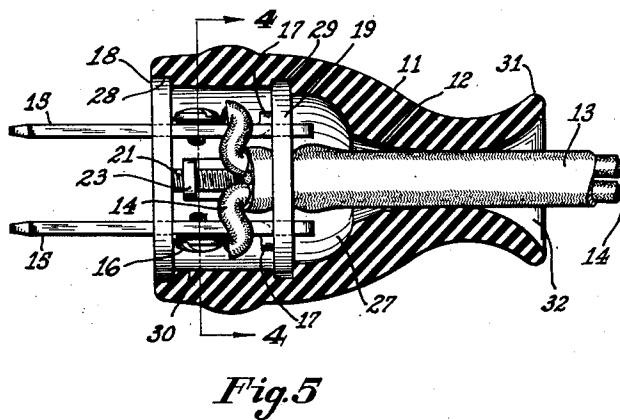
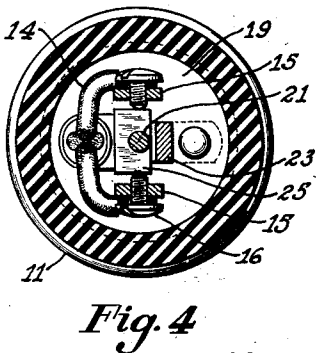
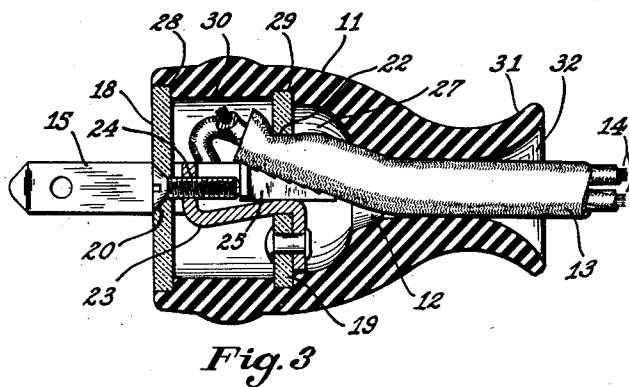
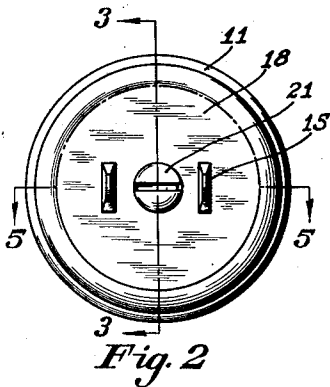
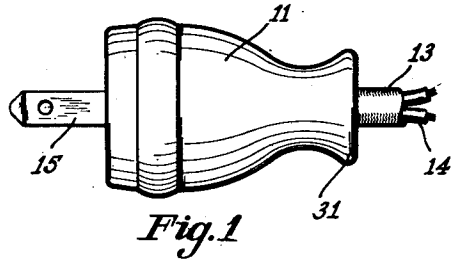
H. B. WHITE

2,054,612

ELECTRICAL CONNECTER

Filed April 22, 1933

2 Sheets-Sheet 1



INVENTOR

Harry B. White

BY

Harry S. Demaree

ATTORNEY

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H. B. WHITE

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2 Sheets-Sheet 2

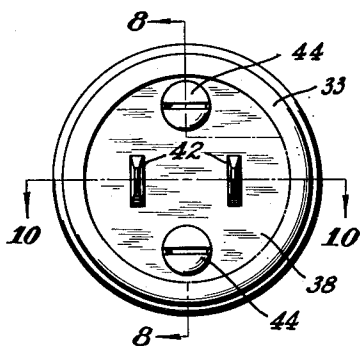


Fig. 7

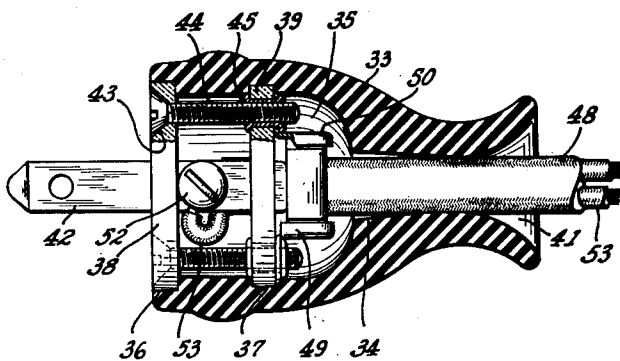


Fig. 8

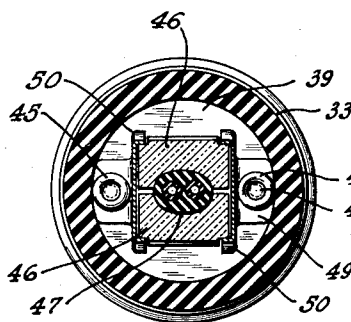


Fig. 9

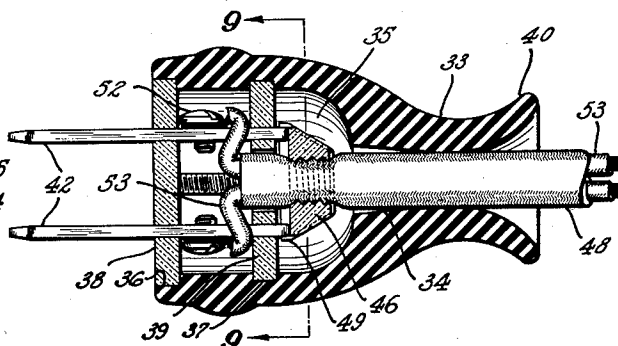


Fig. 10

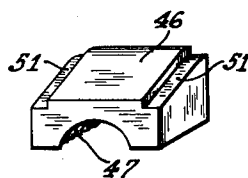


Fig. 11

INVENTOR

Harry B. White

BY

Harry S. Dumas

ATTORNEY

UNITED STATES PATENT OFFICE

2,054,612

ELECTRICAL CONNECTER

Harry B. White, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio, a corporation of Ohio

Application April 22, 1933, Serial No. 667,396

7 Claims. (Cl. 173-361)

This invention relates to electrical connecting devices, and more particularly to a terminal fitting for a conductor cable and having a contact blade or blades protruding therefrom for ready connection with a fixed outlet, such fittings being sometimes referred to as electrical attachment plugs.

Since devices of this kind are usually attached to a conductor cable of considerable length they are frequently dropped upon the floor and are apt to be broken not only by impact with hard objects but also by being subjected to heavy compression strains. At the same time the conductor cable is frequently subjected to considerable tension while the connecting device is held fixed, so that it is desirable that such strain be transmitted to the device by means other than through the screws or other means by which the electrical conductors of the cable are connected to the contacts of the device, to avoid any tendency to loosen the electrical connection and to insure that the tension will be imposed on the entire cable rather than on the wires, or a single wire thereof.

One of the objects of the invention is to provide a terminal fitting of the type which will be durable and will efficiently withstand the strains incident to use. A further object is to provide such a fitting which will not be adversely affected by the heating of the contact or contacts by reason of the arcing when used with an outlet which has broken or damaged contacts, as frequently occurs. A still further object is to provide such a durable fitting which is provided with efficient, simple and economically manufactured means for anchoring the cable thereto for transmission of tension strains. Still further objects are to provide such a fitting so formed that the internal parts may be assembled and connected to the cable and inserted as a unit in the outer portion thereof; to provide a fitting such that a single operated means will serve both to secure the parts together and to operate the cable anchoring means; and to provide such a fitting in which the electrical connections are enclosed and protected.

Still further objects of the invention and novel features of construction will be apparent from the following specification which describes two embodiments of the invention illustrated in the accompanying drawings, in which:

Fig. 1 is a view in side elevation of a fitting embodying the invention;

Fig. 2 is an enlarged view in front elevation of the structure shown in Fig. 1;

Fig. 3 is an enlarged view in vertical longitudinal section, taken on line 3-3 of Fig. 2;

Fig. 4 is an enlarged view in transverse section, taken on line 4-4 of Fig. 5;

Fig. 5 is an enlarged view in horizontal longitudinal section, taken on line 5-5 of Fig. 2;

Fig. 6 is an enlarged view in perspective of the cable-anchoring wedge shown in Figs. 3 and 4;

Fig. 7 is an enlarged view in front elevation, similar to Fig. 2, but showing a modified structure;

Fig. 8 is an enlarged view in vertical longitudinal section, taken on line 8-8 of Fig. 7;

Fig. 9 is an enlarged view in transverse section, taken on line 9-9 of Fig. 10;

Fig. 10 is an enlarged view in horizontal longitudinal section, taken on line 10-10 of Fig. 7; and

Fig. 11 is an enlarged view in perspective of one of the cable-anchoring wedges shown in Figs. 8, 9 and 10.

In the construction shown in Figs. 1 to 6 the fitting comprises an outer tubular cover 11, preferably moulded of soft rubber, having an opening 12 to receive and closely fit a conductor cable 13, such cable usually containing two insulated wires 14 embedded in rubber to form a cable of circular cross section. Contact blades 15, having screws 16, for electrically connecting the wires 14 to the blades, and struck up portions 17, which act as abutments, are mounted in a front disc 18 and a rear disc 19, such discs being preferably formed of bakelite or similar material.

The front disc 18 is provided with a centrally positioned opening 20 to receive a screw 21, the head of which is preferably countersunk so as to be flush with the outer face of the disc, and the rear disc 19 is formed with a central opening 22, a bracket 23 of Z shape being riveted, or otherwise secured, to the disc and passing through the opening 22, the forward end of such bracket 23 being bent laterally and formed with an opening 24 which is threaded to receive the screw 21, so that the screw will serve to draw the discs together. A wedge 25, preferably formed with serrations 26 on one face for engagement with the cable 13, is received in the opening 22 between the bracket 23 and the cable, its base being so positioned as to be engaged by the end of the screw 21.

The cover 11 is formed with an enlarged recess 27 at its forward end to receive and house the discs 18 and 19, a channel 28 being provided to receive the front disc 18 and a circumferential groove 29 being provided to receive the rear disc 19, so that between said channel and said groove the cover has an integral inwardly protruding

portion 30 positioned between said discs so as to be clamped by said discs as they are drawn together by the screw 21. The thickness of the wall of the rear portion of the cover 11 is preferably diminished rearwardly and is flared outwardly at 31 to form a widened or bell-shaped mouth 32, so that angular tension applied to the cover by the cable will tend to bend the rear portion of the cover, and sharp bending of the cable will be avoided by reason of the curved inner surface of the mouth 32.

In assembling the parts, it will be evident that the cable 13 will be passed through the cover 11 and the rear disc 19, the wires 14 being bared and secured to the contact blades 15 by the screws 16. The rear ends of the contact blades are then inserted in the openings therefor in the disc 19, the wedge 25 being inserted to clamp the cable in such position that no endwise strain will be transmitted by the wires to the contact screws 16. The front disc 18 is then placed upon the contact blades, the abutments 17 engaging the disc 19 and the screws 16 being almost in engagement with the front disc 18, and the screw 21 is engaged with the base of the wedge 25. The parts are then inserted as a unit in the cover 11 which is distorted sufficiently to permit entry of the rear disc 19 into the circumferential groove 29, and the screw 21 is tightened to force the wedge into more closely gripping engagement with the cable 13 and to force the disc 18 into its seat in the channel 28 and clamp the interposed portion of the cover between the discs.

In the modification shown in Figs. 7 to 11, two oppositely positioned wedges are utilized and are engaged, and forced rearwardly, by the rear ends of the contact blades. As shown, a cover 33, preferably of soft rubber, is formed with a cable-receiving opening 34 enlarged at its forward end to provide a recess 35, a marginal channel 36 and a circumferential groove 37 being provided to receive, respectively, a front disc 38 and a rear disc 39, which are preferably stamped from a sheet of insulating material such as bakelite, or the like. As in the modification shown in Figs. 1 to 6, the thickness of the wall of the rear portion of the cover 33 is preferably diminished rearwardly and is flared outwardly at 40 to form a widened mouth 41, to avoid sharp bending of the cable.

The front disc 38 and the rear disc 39 are formed with openings closely fitting the contact blades 42, and the forward disc has countersunk openings 43 to receive screws 44 which are threaded in tubular rivets 45 in the rear disc. Wedges 46, having serrated inner grooves 47 for engagement with a cable 48, are guided in brackets 49 which are secured to the rear of the rear disc 39 by the tubular rivets 45, the brackets having flanges 50 thereon which are preferably received in marginal grooves 51 in the wedges 46, so that sharp protruding edges are avoided. The bases of the wedges 46 are engaged by the rear ends of the contact blades 42, and screws 52 are provided on the contact blades for electrical connection of the wires 53 of the cable thereto, such screws acting as abutments engaged by the rear face of the front disc 38, so that as the discs are drawn together the contact blades will be forced rearwardly and will operate the wedges toward each other into clamping engagement with the cable, the discs being likewise clamped upon the interposed portion of the cover 33.

The assembly of this modified structure is substantially the same as that of the modification

shown in Figs. 1 to 6, as described heretofore, and in either construction it will be apparent that the cable will be securely anchored to the fitting so that no tension will be applied by the wires to the contact blades. It will likewise be evident that either structure will be rugged and durable, being particularly resistant to impact and to crushing strains, and that either structure comprises few parts, can be economically manufactured, and can be readily attached to or detached from the cable.

It will be understood that, while two specific embodiments of the invention have been shown and described, various other modifications of detail may be made within the scope of the invention, which is defined in the following claims.

I claim:

1. A terminal contact fitting for an insulated conductor cable, comprising a cover having a cable-receiving opening extending therethrough and enlarged to form a recess at one end, a pair of spaced members of insulating material positioned within said recess, said cover having a portion thereof positioned between said members, a contact extending through one of said members, the other of said members having a cable-receiving opening therein, and means for forcing said members toward each other into clamping engagement with the interposed portion of said cover.

2. A terminal contact fitting for an insulated conductor cable, comprising a cover having a recess therein and a cable-receiving opening communicating with said recess, said cover having a portion projecting inwardly into said recess, a pair of spaced members of insulating material, a contact member extending through one of said members, the other of said members having an opening therein and cable-clamping means associated therewith, and means for forcing said members toward each other into clamping engagement with the interposed portion of said cover and simultaneously forcing said cable-clamping means into clamping position.

3. A terminal contact fitting for an insulated conductor cable, comprising a cover having a recess therein and a cable-receiving opening communicating with said recess, an electrical contact element, a pair of members of insulating material within said recess, said contact extending through and supported by one of said members, the other of said members having a cable-receiving opening therein, a wedge movable relative to said other of said members to vary the effective area of the cable-receiving opening therein, and means cooperating with said other of said members for operating said wedge to a position in which it decreases the area of the effective opening in said other of said members.

4. A terminal contact fitting for an insulated conductor cable, comprising a cover having a recess therein and a cable-receiving opening communicating with said recess, an electrical contact element, a member of insulating material supporting said contact and positioned within said recess, a second member positioned within said recess and having a cable-receiving opening therein, a wedge positioned in said opening in said second member, and a screw holding said members in assembled relation and operatively associated with said wedge to force it through said opening.

5. A terminal contact fitting for an insulated conductor cable, comprising a cover having a recess therein and a cable-receiving opening com-

communicating with said recess, a pair of discs of insulating material positioned in said recess, electrical contact elements supported in said discs, one of said discs having a cable receiving opening therein and an arm mounted thereon and having a portion in line with said opening, a screw passing through the other of said discs and having threaded engagement with said arm, and a wedge positioned in the opening in said first disc and operatively engaged by said screw.

6. A terminal contact fitting for an insulated conductor cable, comprising a cover having a recess therein and a cable-receiving opening communicating with said recess, a forward member of insulating material closing the end of said recess and a rear member of insulating material within said recess and having a cable-receiving opening therein, contact elements mounted in said members, a pair of wedges mounted on said rear member for movement across the opening therein, said contacts having abutments in engagement with the rear face of

said front member and having their rear ends operatively engaging said wedges, and means for forcing said members toward each other.

7. A terminal contact fitting for an insulated conductor cable, comprising a cover having a recess therein and a cable-receiving opening communicating with said recess, a member of insulating material closing the end of said recess, a second member positioned within said recess and having a cable-receiving opening therein, contact elements extending through said members and each having an abutment engaged by said first member, a pair of wedges slidably mounted for rearward movement on said second member adjacent the opening therein, the bases of said wedges being engaged by said contacts, said cover having a portion thereof between said members, and means for forcing said members toward each other to clamp said portion of said cover between them and to force said wedges rearwardly.

HARRY B. WHITE.