June 18, 1929. H. D'OLIER, JR 1,717,877

ELECTRICAL CONNECTER

Filed June 23, 1926

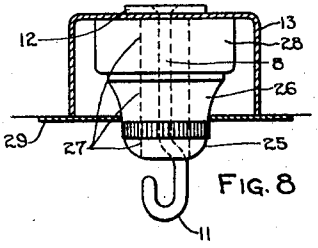


FIG. 8

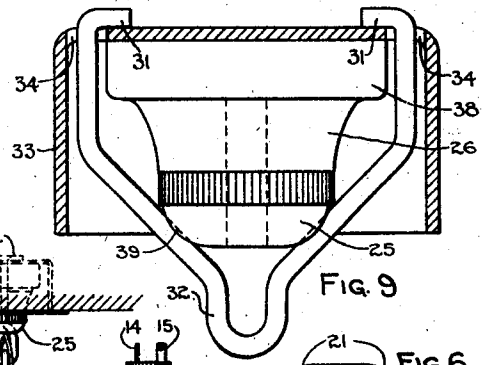


FIG. 9

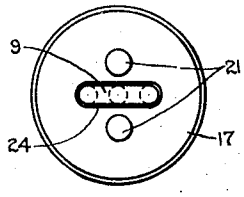


FIG. 4

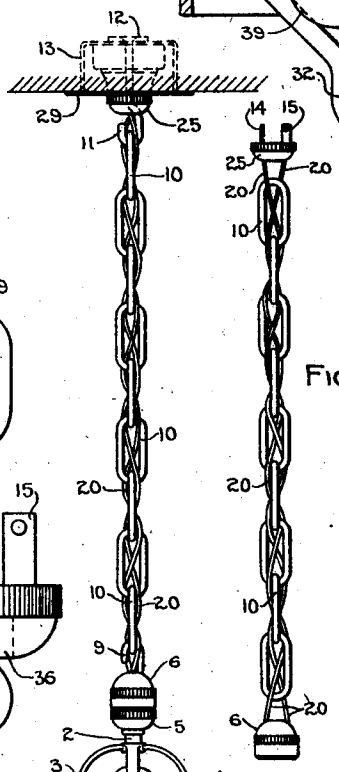


FIG. 2

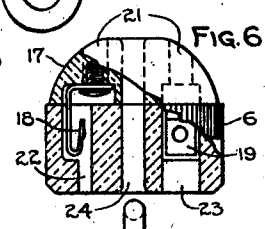


FIG. 6

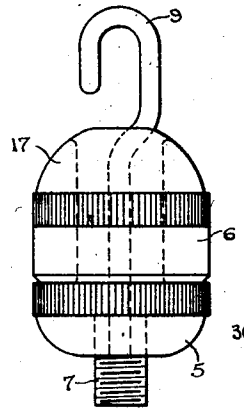


FIG. 3

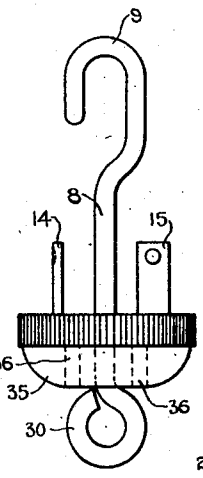


FIG. 7

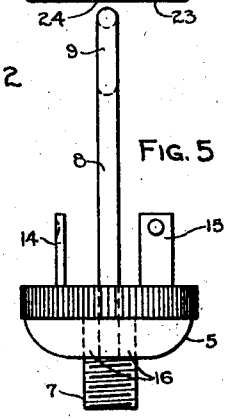


FIG. 5

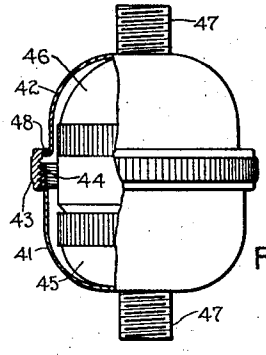


FIG. 10

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UNITED STATES PATENT OFFICE.

HENRY D'OLIER, JR., OF BRIDGEPORT, CONNECTICUT.

ELECTRICAL CONNECTER.

Application filed June 23, 1926. Serial No. 117,898.

This invention relates to electrical connecters, by which term I designate generically devices adapted to be interposed in an electrical circuit and comprising a couple of connecter members each including a part formed of insulating material and having a contact terminal or terminals adapted respectively to be connected electrically with suitable electrical conductors, the terminals being also adapted to co-operate for completion of the electrical connection of the conductors when the aforesaid connecter members are coupled. A desirable form of such a connecter in very general use for electric lighting and general household utility circuits permits the electrical connection to be broken by simply pulling the members apart without disconnection of the conductors from their respective contact terminals, and usually one member is formed as a plug having projecting contact terminals, the other member being formed as a receptacle with its terminals enclosed and protected to avoid short circuits, this member being the one designed for connection to conductors leading from the source of electrical current.

Such a connecter constitutes a compact device, easily applied to use by an unskilled purchaser, but connecters of this type are not furnished with means to sustain any load or pull heavy enough to overcome the frictional resistance of the contact terminals, and an important object of this invention is to provide an electrical connecter, of the type described, with mechanical connecting means adequate to sustain any desirable load or stress, but not dependent upon the electrical conductors, nor interfering unduly with the rapid making or breaking of the electrical connection when desirable, the mechanical connection preferably being equally operable by unskilled purchasers, without the use of tools, and being preferably of simple and compact structure.

The above objects, and others, are fully illustrated and described in the accompanying drawings and specification and are pointed out in the claims.

In the drawings,

Fig. 1 is a view in elevation of an electric lighting installation in the construction of which a plurality of my improved connecters are embodied.

Fig. 2 shows separately the chain supporting-member with electrical conductors and attached connecter parts of Fig. 1.

Fig. 3 shows separately, on an enlarged scale, a connecter embodying my improvements.

Fig. 4 is a plan view of the same.

Fig. 5 shows the plug member of the connecter separately.

Fig. 6 shows the receptacle member of the connecter separately, and partly broken away, to reveal interior construction.

Fig. 7 is a view similar to Fig. 5 but taken at right angles thereto, with a modified form of mechanical connection.

Figure 8 shows an enlarged detail of the upper section of Figure 1.

Fig. 9 shows another modification.

Fig. 10 shows still another modification.

In the now preferred embodiment illustrated in Figs. 1 to 6 inclusive, the reference character L designates generally an electric lighting unit comprising a lamp socket 1 depending from a stem 2 which carries a shade holder 3 and shade or globe 4, these parts being desirably of well-known or any suitable construction, the stem 2 being tubular and having its upper end threaded interiorly in the instance selected for illustration.

In pursuance of an important feature of my invention, I have provided an electrical connecter comprising separable members 5 and 6 which may be termed respectively the plug member and the receptacle member for the sake of brevity, these terms not being used with any narrow technical limitation however.

The plug member is shown with a part 5 of insulating material; also a tubular threaded stud 7 adapted to screw into the member 2 of the lighting unit, and a post 8 moulded into the centre of the insulation 5, having a hook 9 by which it may be hung on a chain 10 which in turn is adapted to hang upon a hook 11 anchored at 12 upon a ceiling outlet box 13, extending up centrally through the bottom of the box, as shown at the top of Figure 1 and in enlarged detail in Figure 8.

The electrical connecter member 5 is further provided with electrical contact terminals 14 and 15 adapted to be connected with insulated conductors extending down through channels indicated by dotted lines 16, and thence the conductors pass through the tubular stud 7 and stem 2 to the lamp socket 1, in well-known fashion, not shown in detail.

Referring to the receptacle member of the

electrical connecter, shown in Fig. 6, this comprises parts 6 and 17 of insulating material secured together in usual manner by screws or other fastening means, not shown, and is provided with contact terminals 18 and 19 adapted to be connected electrically with the insulated conductors 20 as indicated in Figs. 1 and 2, the latter passing through channels 21 (see Fig. 4) and being interwoven with the chain 10, in the instance illustrated.

The member 6 has recesses 22 and 23 within which are nested the terminals 18 and 19, in protected position, adapted for cooperative engagement with the plug contact terminals 14 and 15, when the member 5 is coupled with the member 6, the latter having a central channel 24 through which the post 8 and hook 9 may pass until the hook is in position to hang on the chain 10 as in Fig. 1, in which position the connecter members 5 and 6 are coupled electrically.

Fig. 3 shows the complete connecter, as it may be desirably furnished for sale, and it will be readily seen that its installation requires no skill beyond that of the purchaser and user, no electrician being necessary.

In further pursuance of the invention, and to illustrate the adaptability of my improvements in providing electrical connecters with mechanical supporting means suited to the various requirements of such installations as the typical one selected for illustration, I have shown the upper end of the chain 10 and conductors 20 as having at 25 a plug connecter member which is the counterpart of the member 5 except that it has a central channel 27 (see Fig. 8) adapted to permit the member 25 to fit over the hook 11 which serves as the hanger to support the entire installation.

The contact terminals 14 and 15 of the plug member 25 enter a socket member 26 carried by a base 28, both being of well-known form, except for the channel 27, mounted in the ceiling box 13, these parts having central channels 27, in continuation of that already described, to pass the hook 11. The ceiling box may accordingly be of the well-known flush type in which the receptacle portion 26 extends out to about the level of the cover plate 29, so that when the uppermost link of the chain 10 has been removed from the hook 11, the chain 10 and conductors 20, together with the connecter-member 25, may be pulled away readily to break the electrical connection, by simply pulling downward on the chain and conductors which brings away the connecter-member 25 leaving the connecter receptacle member 26 in place surrounding the post 8 of the hanger.

If desired, the lighting unit L may be removed from the chain after the chain has been disconnected as above described, by the simple operation of unhooking the hook 9 from the lowermost link of the chain and pulling downward on the connecter-member 5 in which is mounted the corresponding post 8 with its hook 9, this operation drawing the post and hook downward through the central channel 24 of the receptacle member 6.

The latter remains attached to the chain 10 with its conductors 20, so that after completion of the operation the chain 10 with conductors 20 and connecter-members 6 and 25 are isolated, as shown in Fig. 2, and the lighting unit L is also isolated, comprising the lamp socket 1 with its stem 2, shade support 3 and shade 4, and also the connecter-plug 5.

The lighting unit may then be cleaned or repaired, and returned to the position illustrated in Fig. 1, simply by inserting the hook 9 into the channel 24 and plugging together the connecter-members 5 and 6, which reestablish the electrical connection at that point, the hook 9 being inserted in the lower link of the chain 10; and the upper link of the chain 10 is then hung in place upon the hook 11, the connecter member 25 being plugged into the receptacle 26, which reestablishes the electrical connection at the outlet box, all as shown in Fig. 1.

It is, of course, unnecessary to remove the chain 10 and conductors 20, if it is simply desired to remove the lighting unit, as will be readily understood from the above description of the operation of the device.

I wish it to be understood also that I contemplate the use of different forms of mechanical connection, and in Fig. 7 I have shown at 30 an eye, taking the place of the threaded stud 7 shown at the same region in Fig. 3, this eye being adapted to receive a hook or open link serving for mechanical connection of the connecter-member with any device to which it may be desired to connect the same. The connecter-member 35 shown in Fig. 7 has electrical contact terminals 14 and 15, like those shown and described with reference to Fig. 5, and from these contact terminals suitable insulated conductors may be led through channels 36 like those already described with reference to the numeral 16 in Fig. 5.

The channel 24 is oblong. Such contour of the channel serves two novel purposes. One is to provide ample space for the channels 21, and the contact terminals 18 and 19—Figure 6, without requiring a receptacle member of large proportions. A further novel purpose of the oblong contour of the channel 24 is to embrace hook 9 as the connecter members 5 and 6 are brought together to make the electrical connection, and thereby prevent relative rotation between the connecter members and to direct the contact terminals 14 and 15 into registry with re-

cesses 21 and 23, Figure 6, and into contact with terminals 18 and 19. This construction is shown also in Figure 4.

I claim:

1. In an electrical connecter for lighting fixture units, a pair of connecter members one of which has electrical contacts for plugging engagement with the other, one of said connecter members having a bore extending axially therethrough and the other connecter member having a suspending member carried thereby and projecting from one end thereof for engagement through said bore and having a part on said suspending member adapted to be readily engaged with and disengaged from an overhead support, and means carried by and projecting from the opposite end of the said other connecter member adapted to have a lighting fixture unit supported thereby.

2. In an electrical connecter for lighting fixture units, a pair of connecter members one of which has electrical contacts for plugging engagement with the other, one of said connecter members having a bore extending axially therethrough and the other connecter member having a unitary suspending member extending therethrough and carried thereby, one end of the suspending member being adapted to extend through said bore of said first named connecter member and above the latter and being formed to be readily engaged with and disengaged from an overhead support, the opposite end of said suspending member extending beyond said first named connecter member and being formed to engage and support a lighting fixture unit.

3. In an electrical connecter for lighting fixture units, a pair of connecter members one of which has electrical contacts for plugging engagement with the other, one of said connecter members having a bore extending axially therethrough, a suspension member carried by the other connecter member and having a part formed for connection with an overhead support, the bore of the first named connecter member being of such cross-sectional form to permit said part of the suspension member to be freely slid through the bore and to engage said part so as to prevent relative turning of the connecter members thereby to maintain registry of the contacts during movement into plugging engagement with each other and means on the said other connecter member to engage and support a lighting fixture unit.

4. In an electrical connecter for lighting fixture units, a pair of superposed connecter members one of which has electrical contacts for plugging engagement with the other, one of said members having a bore, a suspension means secured to the other member and being slidable through said bore, means on said suspension means extending beyond the member having the bore and formed for connection with an overhead support so as to support the member having said suspension means secured thereto from said overhead support, and means to support a lighting fixture unit from said last named member.

5. In an electrical connecter for lighting fixture units, a pair of superposed connecter members one of which has electrical contacts for plugging engagement with the other, one of said members having a bore, suspension means secured to the other member and being slidable through said bore, said bore and element being of such cross-sectional form so as to permit of free sliding movement of the suspension means while preventing relative turning of the members, means on said suspension means extending beyond the member having the bore and formed for connection with an overhead support, and means to support a lighting fixture unit from said last named member.

6. In an electrical connecter for lighting fixture units, a pair of superposed connecter members one of which has electrical contacts for plugging engagement with the other, one of said members having a bore, a suspension element secured at one end portion to the other member and being slidable through the bore of the first named member, means on the other end portion of said element projecting beyond said other member and formed for engagement with an overhead support, and means to support a lighting fixture unit from the first named end of said suspension element.

In testimony whereof, I have signed this specification.

HENRY D'OLIER, JR.