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2,266,560

DEVICE FOR INTERLOCKING SEPARABLE ELECTRICAL CONNECTORS

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Fig. 1

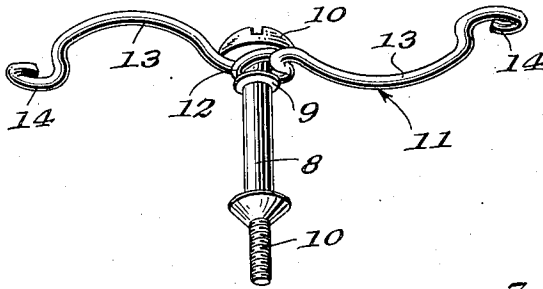


Fig. 2

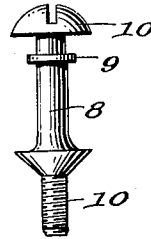


Fig. 3

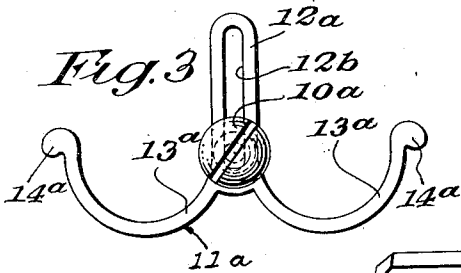


Fig. 4

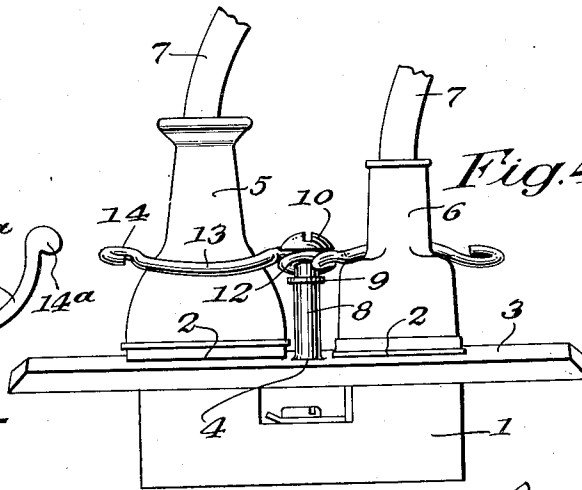


Fig. 5

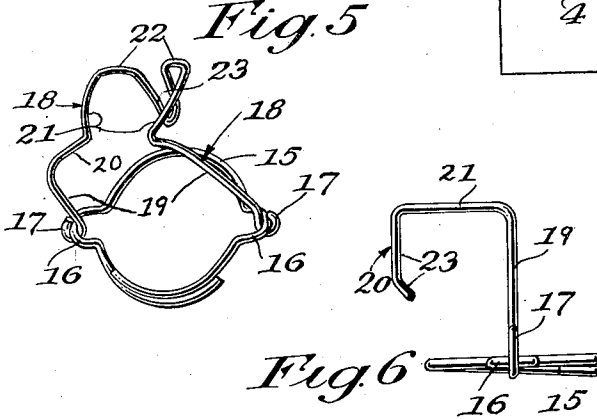


Fig. 6

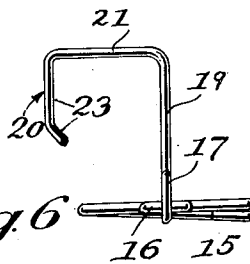


Fig. 7

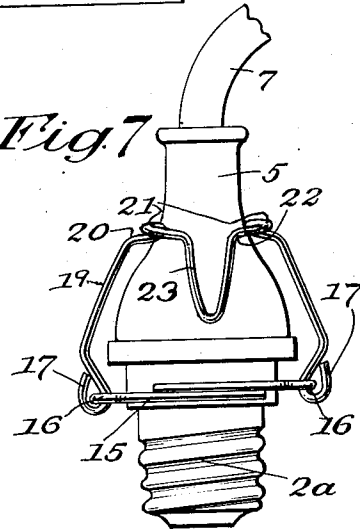
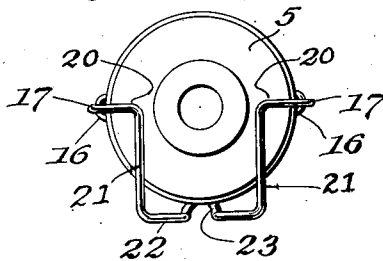


Fig. 8



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UNITED STATES PATENT OFFICE

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DEVICE FOR INTERLOCKING SEPARABLE
ELECTRICAL CONNECTORS

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7 Claims. (Cl. 173-330)

My present invention relates to novel devices to interlock separable electrical connectors.

Portable electrical equipment, such as radios, lamps, motors, and the like have required the increased use of cords which are detachably connected into the circuit by the use of conventional readily separable, mated plugs and sockets. The sockets may be mounted in the baseboard, floor, or wall, or they may be carried by an extension cord. By the use of such extension cords and separable connections, electrical equipment may be conveniently located where desired either for temporary or relatively permanent use.

The use of connectors has been attended by one objectionable feature. Since the conventional plugs and sockets must be readily separable, it frequently results that the connectors are accidentally disconnected. The connection may, of course, be re-established, but the difficulty and inconvenience in so doing may be considerable due to the location of the connector relative to furniture and the like and due to the lack of light.

This objectionable feature has been recognized for a long time and attempts have been made to minimize its consequence by making the connectors easier to unite. Attempts have also been made to provide devices by which the connector members may be interlocked as by separate latches carried by the socket engageable with a specially formed plug. These devices have been unsatisfactory in that special plug and socket constructions were required and a too limited interlocking contact was contemplated by the separate latches.

In accordance with my invention, I provide devices adapted to be used in interlocking connector parts of any standard construction whether or not the socket is fixed, carried by a cord, or of the type threaded into a socket. My devices include two members, one of which may be readily and quickly attached to one connector part, generally the socket, and the other of which is pivotally connected to the first member and adapted to be easily brought into position to engage the other connector part, generally the plug, to lock the connector parts against accidental disengagement.

Among the general advantages of my invention may be noted the simplicity of the construction and installation of the devices and their general adaptability to all standard separable connectors.

In the drawing I have shown embodiments of my invention from which the novel features

and advantages of my invention will be readily apparent.

In the drawing:

Fig. 1 is a view of one form of my invention.

Fig. 2 shows the pivot employed in the device shown in Fig. 1.

Fig. 3 is a plan view of a modification of the device shown in Fig. 1.

Fig. 4 shows the device of Fig. 1 in position to interlock the connector parts.

Fig. 5 is a view of another form of my invention.

Fig. 6 shows the device of Fig. 5 in side view.

Fig. 7 is a view showing the device of Fig. 5 installed to interlock a separable connector of a different type, and

Fig. 8 is a plan view of Fig. 7.

In Fig. 4, I have indicated at 1 a typical electric fixture adapted to be mounted permanently in the wall or floor of a building. Such a standard fixture includes one or more sockets indicated at 2 in the fixture 1, and a cover plate 3 having apertures to permit access to the sockets 2 and an aperture 4 disposed between the sockets 2 in alignment with their centers to receive a clamping screw to hold the cover plate 3 to the fixture or socket base 1. At 5 and 6 I have shown two typical plugs by which the cord or like electric cable 7 may be connected into the circuit. It will be noted that while the plugs 5 and 6 are conventional, they differ slightly in shape.

With the type of fixture shown in Fig. 4, I preferably employ the plug engaging member shown in Figs. 1 and 4 to which I have given the general reference numeral 11 or the plug engaging member shown in Fig. 3 to which I have given the general reference numeral 11^a.

The member 11 is formed with an eye or like aperture 12 intermediate the oppositely disposed substantially U-shaped plug engaging portions 13. The ends of the member 11 are formed as wings 14 for manual engagement in turning the member 11 into or out of a position wherein one or both of the plugs may be removed from the socket 2.

The member 11^a shown in Fig. 3 is generally similar to the member 11. The member 11^a is formed with a pair of substantially U-shaped plug engaging portions 13^a between which I form a slot 12^b. The ends of the member 11^a are formed as wings 14^a.

While the members 11, 11^a may be attached to the fixture 1 in any desired way, I prefer that the support for the members 11, 11^a replace the screw ordinarily employed to lock the cover plate 3 to the fixture 1.

In Figs. 1-4 I have shown a collar 8 having a flange 9. The collar 8 is preferably interiorly threaded to receive the screw 10 which passes through the eye 12 establishing a pivotal interconnection for the members 11 or through the slot 12^b of the member 11^a establishing a slidable interconnection for the member 11^a. The screw 10 holds the plug engaging member 11 or 11^a against the flange 9 and also serves to lock the cover plate 3 to the fixture 1 into which it is threaded. Such a support is satisfactory as it is quickly and easily assembled and does not tend to work loose during use.

In the form of my invention shown in Figs. 5 to 8 inclusive, I have shown a device for use in interlocking the plug 5 in a socket 2^a which may have a threaded engagement with another fixture or may be considered as carried by another cord. In this form of my invention, the device comprises a ring 15 or the like adapted to fit over the contact portion of the socket 2^a into contact with its insulated base or other portions establishing a flange. The ring 15 has loops 16 adapted to pivotally receive the hook ends 17 of the plug engaging member indicated generally by the reference numeral 18 in Fig. 5.

When the plug engaging member 18 shown in Figs. 5-8 inclusive is made of a single piece of stock, it is shaped to present a U-shaped portion 19 including the hook ends 17. Preferably, the sides of the portion 19 taper inwardly to conform to the general shape of the plug 5.

The base 20 of the U-shaped portion 19 is formed to include a second U-shaped portion 21 at right angles to the portion 19 to receive the upper part of the plug 5. Preferably, the mouth of the second portion 21 is somewhat restricted as shown in Fig. 5.

The base 22 of the second U-shaped portion 21 is preferably formed with a third U-shaped portion 23 disposed to bear downwardly against the lower part of the plug 5.

I have employed the term "U-shaped" in describing plug engaging members in accordance with my invention. It will be appreciated that this term is used in its broadest sense to define the shape of the plug engaging members by which any adequate surface of any conventional plug is contacted to ensure a secure interlock of the plug and socket. Preferably the plug engaging members are of resilient stock.

Devices made in accordance with my invention are inexpensive to manufacture and easy to install and are adapted for use in interlocking the many different plugs in their sockets.

What I therefore claim and desire to secure by Letters Patent is:

1. A device for use in detachably interlocking a plug and a connector having a socket, and a cover plate having an aperture to permit access

to said socket, said device comprising means attaching said plate to said connector laterally of said aperture, and a member pivotally supported by said attaching means a substantial distance above said plate for movement in a plane into and out of contact with said plug, said member including a pair of portions spaced for straddling engagement with said plug.

2. A device for use in detachably interlocking plugs in a connector having a pair of sockets and a cover plate for said connector having apertures to permit access to said sockets, said device comprising means to attach said plate to said connector, said means being disposed between said sockets, and a member supported by said attaching means for movement in a plane into and out of contact with said plugs, said member including a pair of plug straddling portions.

3. A device for use in detachably interlocking plugs in a connector having a pair of sockets and a cover plate for said connector having apertures to permit access to said sockets, said device comprising means to attach said plate to said connector, said means being disposed between said sockets, and a member pivotally supported by said attaching means for movement in a plane into and out of contact with said plugs, said member including a pair of oppositely disposed substantially U-shaped portions, and each of said portions terminating in portions engageable to facilitate movement of said member into and out of interlocking position.

4. The device of claim 2 in which the member is slidably supported by said attaching means.

5. The device of claim 2 in which the plug straddling portions include a common wall slotted to slidably receive the attaching means.

6. A device for use in detachably interlocking plugs in a connector having a pair of sockets and a cover plate for said connector having apertures to permit access to said sockets, said device comprising means to attach said plate to said connector, said means being disposed between said sockets, and a member pivotally supported by said attaching means for movement in a plane into and out of contact with said plugs, said member including oppositely disposed plug engaging portions.

7. A device for use in detachably interlocking plugs in a connector having a pair of sockets, and a cover plate for said connector having apertures to permit access to said sockets, said device comprising a flanged hub having a threaded bore, a screw member in said bore locking said plate to said connector, a plug engaging member, said plug engaging member including a pair of plug engaging portions and having an aperture intermediate said portions to receive said screw and to be held thereby against said hub flange.

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