Aug. 2, 1938. A. E. CALDWELL 2,125,485

ELECTRICAL CONNECTER

Filed Feb. 28, 1936

Fig. 1.

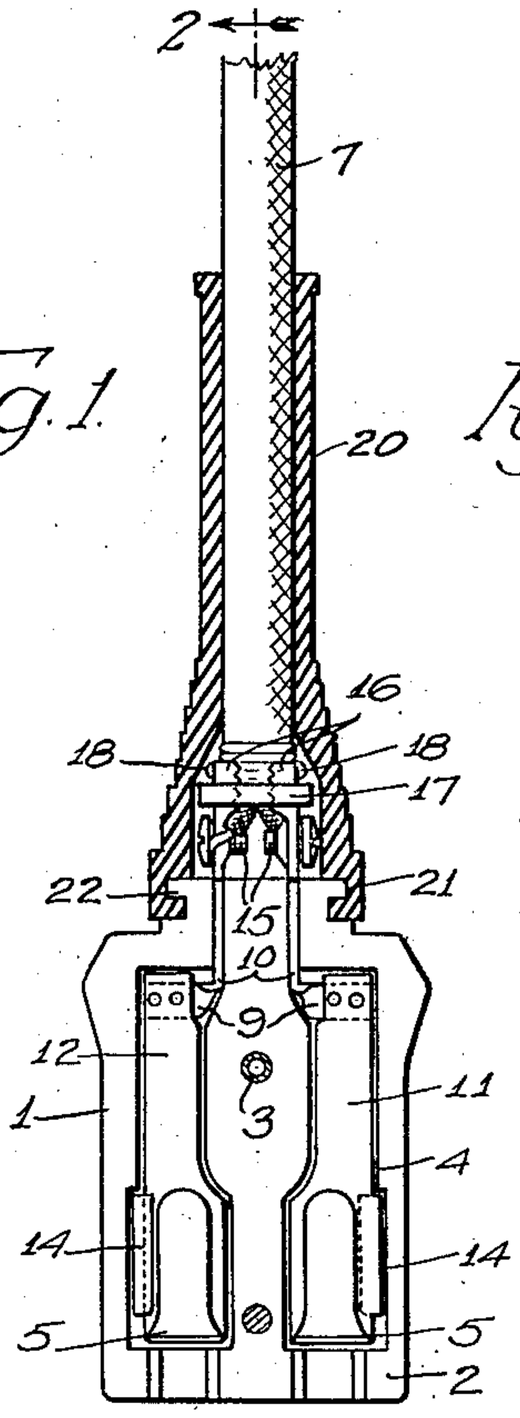


Fig. 2.

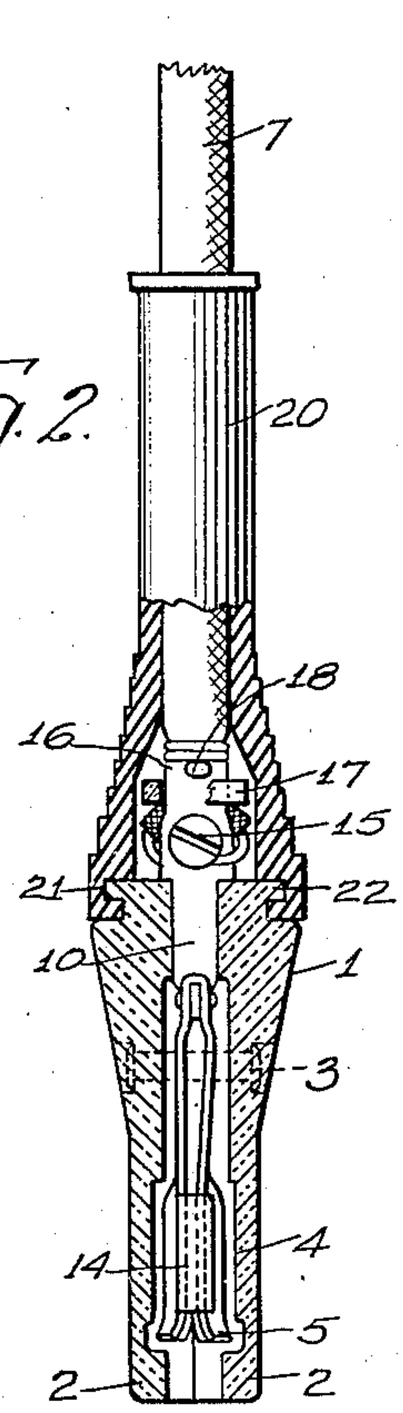


Fig. 3.

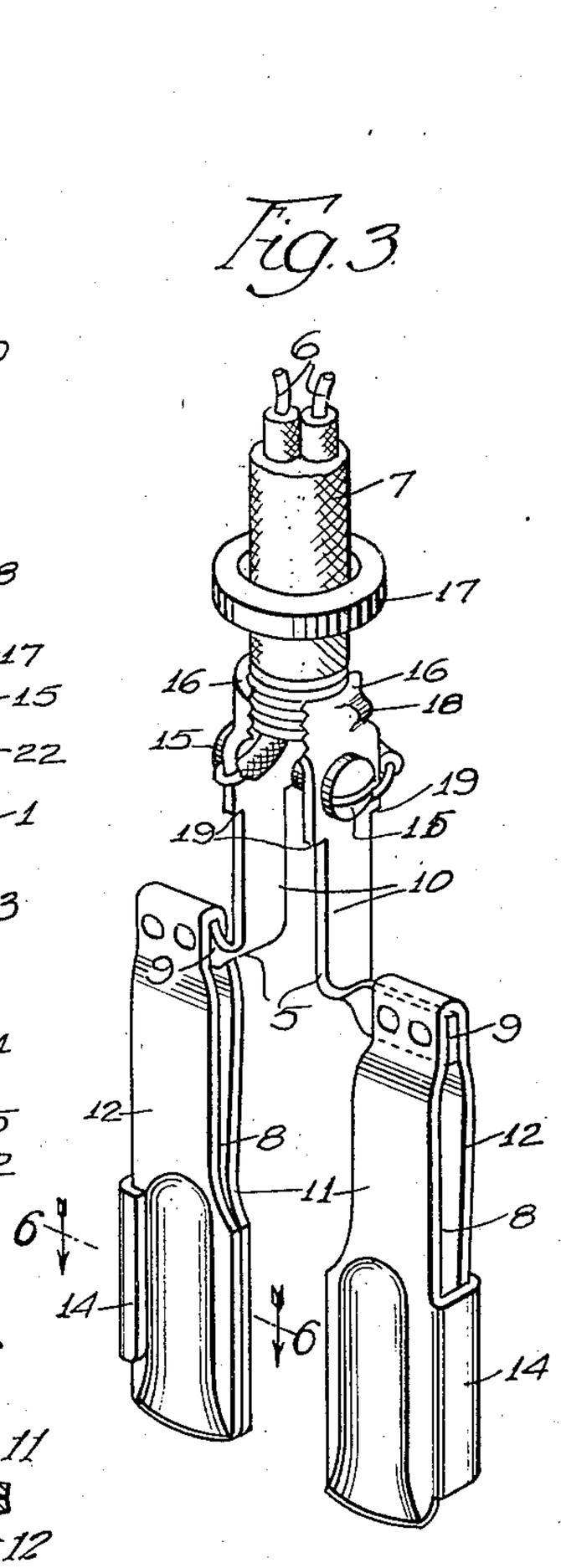


Fig. 4

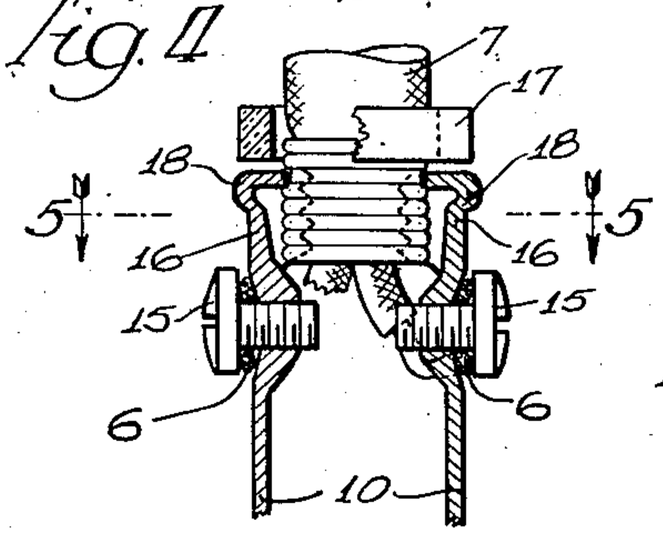


Fig. 5.

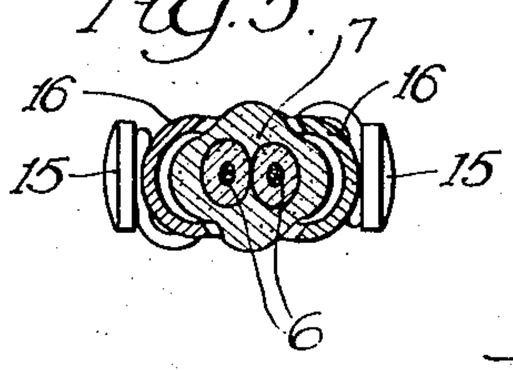
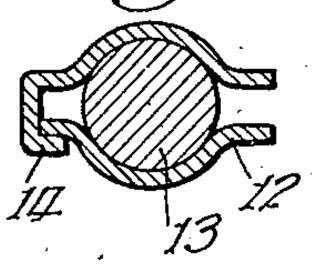


Fig. 6

Fig. 7.



Inventor

Albert E. Caldwell,

Fisher, Clapp, Soans & Pond

Attys.

Patented Aug. 2, 1938 2,125,485

UNITED STATES PATENT OFFICE

2,125,485

ELECTRICAL CONNECTER

Albert E. Caldwell, Lockport, Ill., assignor to George D. Ladd, Lockport, Ill.

Application February 28, 1936, Serial No. 66,260

3 Claims. (Cl. 173—322)

My invention relates to electrical terminals and particularly to plug connecters such as are used for connecting conductor cords to electrical appliances.

Devices of this type usually comprise a body portion of insulating material having mounted therein a plurality of socket type contacts. The body portion ordinarily consists of two complementary half sections, and the conductors or electrical cord with which the connecter is used are connected to the contacts within the body by suitable screws or the like.

Under the requirements of the insurance underwriters for connecters of the above described type, an approved plug must be capable of sustaining a weight of twenty pounds applied across the contacts and the associated cord, for a period of five minutes, without permitting separation of the cord and the contacts, when the screws for fastening the cord conductors to the contacts have been backed off one-half turn. The principal object of the present invention is to provide a connecter capable of passing this test.

Another object of my invention is to provide a contact structure for connecters of this type which shall be so arranged that electrical connection to the cord conductors can be made without opening or taking apart the body member.

A further object of my invention is to provide an improved contact structure of this type, which shall include means for relieving the electrical connection between the cord conductors and the contact elements of the connecter from stress during the use of the connecter.

An illustrative embodiment of this invention is shown in the accompanying drawing, wherein:—

Fig. 1 is an axial section, partly in elevation, of a connecter plug to which this invention is applied.

Fig. 2 is a section partly in elevation taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged, perspective view of the contact elements and cord connecting means forming a part of the connecter illustrated in Figs. 1 and 2.

Fig. 4 is a fragmentary view showing the cord clamping portion of the contact elements.

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 4, illustrating the action of the cord clamping means forming a part of the contact structure.

Fig. 6 is a transverse section of one of the contact sockets, the view being taken on the line 6—6 of Fig. 3.

Fig. 7 is a view similar to Fig. 6 but showing a terminal pin seated in the socket.

Referring to the drawing, the connecter of my invention includes a suitable body or grip portion 1 comprising two complementary members 2 which may be of molded insulated material and which may be permanently secured together by a rivet 3 or by any other suitable means. Formed in the inner faces of the members 2, are recesses 4 forming seats for a pair of improved contact elements 5, which are adapted to be connected to the conductor wires 6 of the usual electrical cord 7.

In the form shown, each of the contact elements 5 comprises a socket member 8 riveted or otherwise rigidly secured to an offset arm 9 of a tang 10. The socket member 8 may be made of a single flat strip of metal which is doubled over the arm 9 to which it is riveted so as to form a pair of substantially parallel spaced sections 11 and 12, the free ends of which are convexed outwardly to form the socket for one of the terminal pins 13 of the appliance (not shown) in connection with which the connecter is used. Formed on the section 11 adjacent the convexed portion, is a lug 14 which is bent around the adjacent edge of the section 12 so as to serve as a hinge. The members 8 are made of resilient metal and their sections normally assume the positions shown in Figs. 3 and 6. When the terminal pins are inserted, these sections 11 and 12 are spread apart or opened to the position shown in Fig. 7.

With this improved form of socket member, there is no necessity for a yieldable connection between the body sections 2 and therefore the body may be permanently sealed, as by the rivet 3.

The outer ends of the contact tangs 10 are provided with screws 15 for attachment to the conductor wires 6. In order to relieve these wires and screws from stress during use, the contact elements are clamped to the cord 7 by a pair of complementary serrated jaws 16 which are formed on the tangs 10 adjacent the screws. These jaws are adapted to embrace the cord and are held in effective engagement with the cord by a retaining ring 17 of insulating material which is secured against accidental displacement by a pair of outwardly projecting lugs 18 formed on the jaws. In attaching the connecter to the cord, the jaws 16 are pressed inwardly by a suitable tool and the retaining ring is then slipped over the lugs 18.

In order to facilitate the attachment of the cord to the contact elements, the latter are of sufficient length to position the screws 15 and jaws 16 wholly outside of the body member.

Shoulders 19 on the tanks 10 engage the end of the body 1.

The outwardly projecting portions of the contact elements are protected by an insulating sleeve 20 which has an annular recess 21 formed in its inner wall for receiving an annular peripheral flange 22 formed on the body member.

The method of assembly of this improved connecter is believed to be obvious from the foregoing description. With this improved construction any stress transmitted by the cord will be borne by the jaws 16 and will not impair the electrical connection between the screws 15 and the conductor wires.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that details of the construction shown may be altered without departing from the spirit of my invention as defined by the following claims:—

I claim:

1. An electrical connecter for use in connection with a multi-conductor cord having an outer insulating covering common to said conductors, said connecter comprising a body, insulatingly spaced contacts in said body, the number of contacts corresponding to the number of said conductors and each of said conductors being electrically connected to one of said contacts, a jaw carried by each of said contacts, said jaws being arranged to grip the insulating covering of said cord in spaced apart relation around the surface thereof, and ring means disposed around said insulating covering, said ring means being axially slidable over the said jaws to clampingly retain the jaws in gripping engagement with said covering and mechanically support the contacts in relation to said cord.

2. An electrical connecter for use in connection with a multi-conductor cord having an outer insulating covering common to said conductors, said connecter comprising a body, insulatingly spaced contacts in said body, the number of contacts corresponding to the number of said conductors and each of said conductors being electrically connected to one of said contacts, a jaw carried by each of said contacts, said jaws being arranged to grip the insulating covering of said cord in spaced apart relation around the surface of said covering, and a ring of insulating material disposed around said insulating covering, said ring being axially slidable over the said jaws to clampingly retain the jaws in gripping engagement with said covering and mechanically support the contacts in relation to said cord.

3. An electrical connecter for use in connection with a multi-conductor cord having an outer insulating covering common to said conductors, said connecter comprising a body, insulatingly spaced contacts in said body, the number of contacts corresponding to the number of said conductors and each of said conductors being electrically connected to one of said contacts, a jaw carried by each of said contacts, said jaws being arranged to grip the insulating covering of said cord in spaced apart relation around the surface of said covering, a ring surrounding said insulating covering, said ring being axially movable in one direction to embrace said jaws and retain them in gripping relation with the insulating covering, and detent means carried by said jaws for retaining the ring against axial movement in the opposite direction.

ALBERT E. CALDWELL.