April 8, 1941. G. T. DE BARBIERI 2,237,588

LINE CONNECTOR

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Fig. 1.

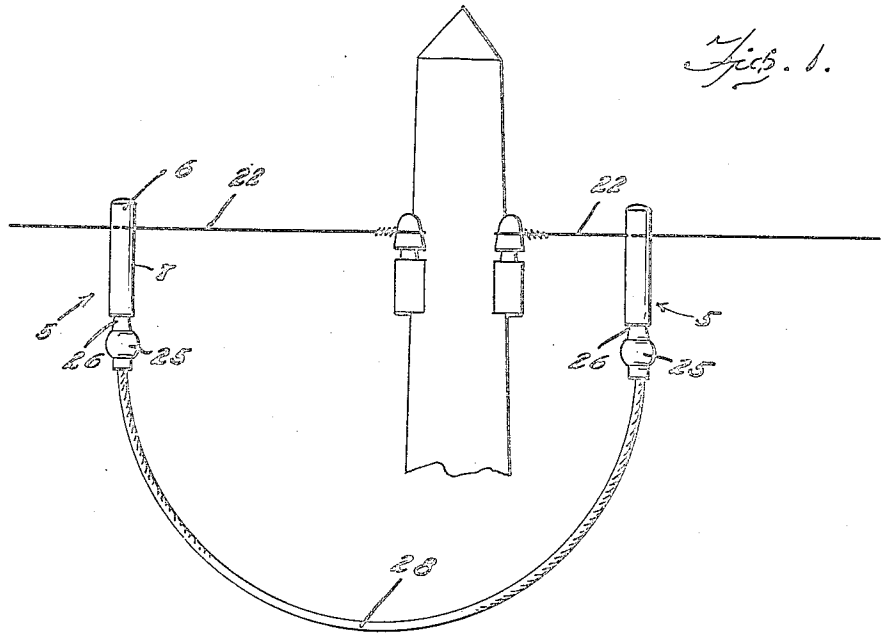


Fig. 5.

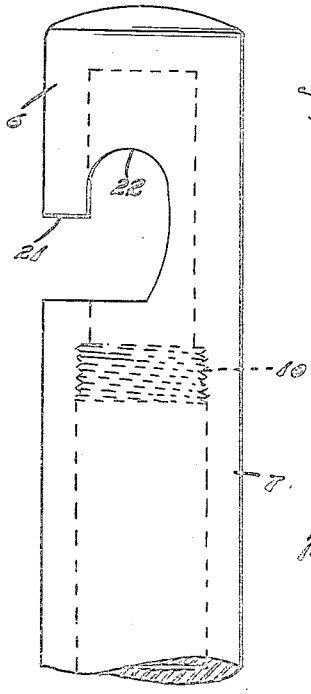


Fig. 3.

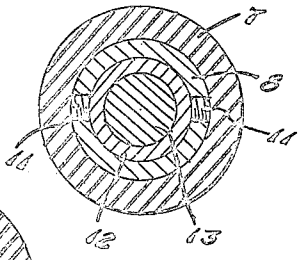
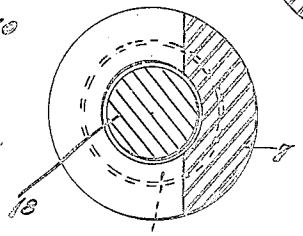


Fig. 4.



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Fig. 2.

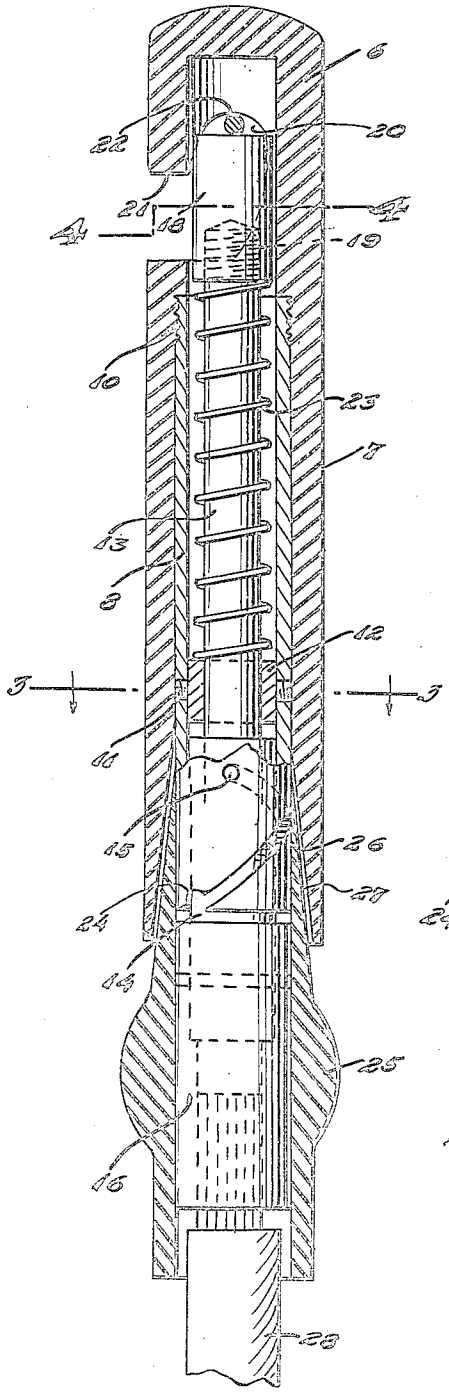


Fig. 6.

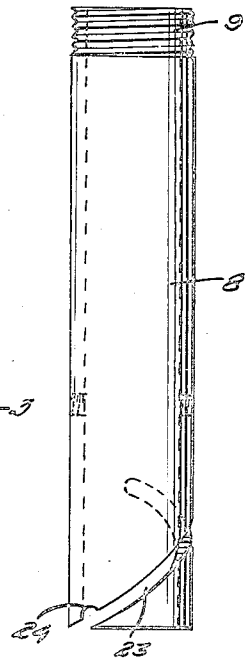
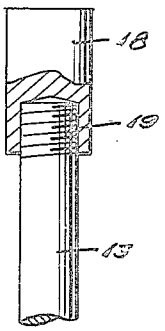


Fig. 7.



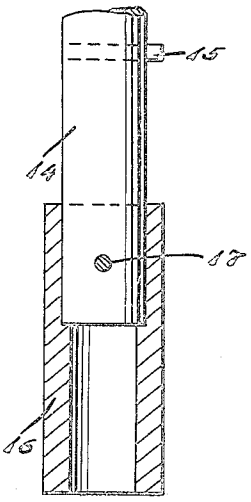


Fig. 8.

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UNITED STATES PATENT OFFICE

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LINE CONNECTOR

George T. De Barbieri, North Adams, Mass.

Application September 19, 1940, Serial No. 357,462

2 Claims. (Cl. 173—273)

This invention relates to devices for use while making repairs on electrical equipment in a live circuit without discontinuing service to the customers served by the circuit; and among the objects of the invention is, generally, to improve upon such types of connectors as are now known and used for this purpose.

The invention together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is an elevational view illustrating somewhat diagrammatically the application of the invention.

Figure 2 is a longitudinal sectional view through the connector, with certain parts being shown in elevation.

Figure 3 is a transverse sectional view taken substantially on the line 3—3 of Figure 2.

Figure 4 is a transverse sectional view illustrating certain details of construction hereinafter more fully referred to.

Figure 5 is a side elevational view of the upper portion of a head forming part of the invention.

Figure 6 is an elevational view of a cylinder fitted within the cylindrical portion of the head shown in Figure 5.

Figure 7 is a fragmentary detail view partly in section and partly in elevation of a plunger head and plunger rod with which said head is associated.

Figure 8 is a view partly in section and partly in elevation of a pair of plunger rod sections forming part of the invention.

Referring more in detail to the drawings it will be seen that the invention contemplates the use of two connector elements 5—5, and a detailed description of one connector element will teach the construction of the other.

In the preferred embodiment thereof each connector element 5 embodies a head 6 formed on one end of a cylindrical body 7, said body 7 and integral head 6 being preferably formed of suitable insulating material, preferably fibre capable of being machined and strong enough to withstand the action of the plunger part of the device against the wire in the head 6 incidental to the use of the device.

Fitted within the cylindrical body 7 is a cylinder 8 of suitable material, and said cylinder at one end thereof is provided with threads 9 to complement threads 10 provided in the body 7 whereby the cylinder 8 is detachably secured within said body 7.

Suitably anchored in the cylinder 8 adjacent the lower end thereof through the medium of set screws, or other fastening elements 11, is a guide bushing 12 through which works the section 13 of a plunger assembly.

The plunger assembly just referred to includes, in addition to section 13, a cylindrical section 14 which in one end is provided with a socket that receives one end of the plunger section 13, said end of the plunger section 13 being secured within the socket of the plunger section 14 through the medium of a transverse pin 15.

Also the plunger section 14 serves to connect the plunger section 13 with a second plunger section 16, the latter being provided at one end thereof with a socket in which is received an end of the plunger section 14, and which end of the plunger section 14 is secured in the plunger section 16 through the medium of a transverse pin 17.

The free end of the plunger rod section 13 is threaded for the threaded reception of a line contact head 18, said head being provided with a threaded socket which receives the threaded end of the plunger rod section 13 as shown in Figure 7 and indicated generally at 19.

The head 6 is provided with a slot 20 and a lateral or side opening 21 for accommodating the live conductor 22 as shown.

The plunger head 18 is normally urged upwardly into the slot of the head 6 through the medium of a coil spring 23 that, as clearly shown in Figure 2, is disposed about the plunger rod section 13 and at one end impinges against the guide bushing 12 and at an opposite end impinges against the plunger head 18.

For retracting the plunger head 18 the barrel or cylinder 8 is provided at the end thereof remote from the threaded end 9 with a spiral slot 23 and the connecting pin 15 that serves to connect the plunger rod sections 13 and 14 has an end projecting outwardly beyond the plunger rod section 14 and working in the slot 23 as shown in Figure 2.

At the entrance end of the slot 23 the barrel 8 is provided laterally of the slot with a keeper notch 24 in which seats an end of the pin 15 for holding the plunger in a retracted position against the action of coil spring 23.

The plunger rod section 16 forms a core for a handle for the rod, said handle embodying, in addition to the aforementioned core-forming rod section 16, an outer casing 25 that is also formed of a suitable material, preferably of the same material from which the integral cylinder 7 and head 6 are formed.

In connection with the above it will be noted that a salient feature of the present invention is in having the cylinder 7 at the end thereof remote from the head 6 provided with a tapered bore 26, and also having one end of the outer casing 25 of the handle conformably tapered as at 27 to fit within the end 26 of the cylindrical body 7 in a manner shown in Figure 2 in order to maintain said end 26 of the body 7 and said end 27 of the handle 25 in what might be termed overlapping relation at all times to prevent "current leakage" as might result in the giving of a dangerous electric shock to the repairmen.

The two connectors 5—5 are electrically connected together through the medium of a tap conductor 28; the respective opposite ends of the conductor 28 being secured in sockets provided therefor in the respective plunger rod sections 16 and in a conventional manner.

Figure 2 shows the connector 5 in closed position with the live conductor 22 clamped in the head 6. The plunger head 18 is held in intimate contact with the live conductor 22 through the medium of the spring 23.

To disengage the connector from the live conductor 22 the operator grasping the handle 25 rotates the sectional plunger rod in a direction to cause the head 18 to move to a retracted position from across the lateral opening 21 by reason of the working of the pin 15 in the spiral slot 23; the sectional plunger rod being rotated in the direction indicated until the pin 15 engages in the keeper notch 24 to thereby hold the plunger rod and associated head 18 in retracted position.

Obviously with the head 18 in this retracted position the connector may be readily engaged with, or detached from the live conductor wire 22.

It will also be appreciated that the device in actual practice will permit the ready tapping of a conductor, and upon engagement of the head 6 with the live conductor 22 and release of the pin 15 seated in the notch 24 spring 23 will act to immediately shift the head 18 into engagement with the live conductor 22 thus permitting installation of the device in a minimum period of time.

As is also believed to be apparent, the device can be operated with one hand thus enabling the lineman to operate it more easily and at a distance from his body.

In Figure 1 is illustrated one manner of using the device and in said figure it will be seen that the connectors 5—5 are engaged with the live conductor 22 at opposite sides of the point of interruption between the wires 22 thus permitting the circuit to pass from one wire 22 to the other.

Also in having the end 26 of the cylinder body 7 substantially overlapping the end 27 of the handle 25 when the connector is in the closed position shown in Figure 2, as well as by having one end of the handle covering 25 overlapping the joint between the plunger rod section 16 and the end of the tap wire 28 connected therewith, no metal or live wire is exposed, and therefore such arrangement and construction adds to the safety feature of the invention.

It is thought that a clear understanding of the construction, assembly, manner of use, and advantages of an invention of this character will be had without a more detailed description.

Having thus described the invention what is claimed as new is:

1. In a device for transmitting current from one conductor to another, a connector embodying a cylindrical body provided at one end thereof with an intgeral head having a transverse slot for receiving one of the conductors, the other end of said body having a long tapered bore, said integral body and head being formed of insulating material, a barrel detachably secured within said body and extending from a point spaced inwardly from the slot in the body to a point spaced inwardly from that end of the body which has the tapered bore, a guide bushing detachably secured within said barrel, a sectional plunger rod movable longitudinally of said body and barrel through said bushing and provided at one end thereof with a head for clamping said one conductor within said slot, a spring device interposed between said bushing and the head of said plunger rod normally urging said plunger rod in a direction to engage the head thereof with the conductor, said plunger rod having a pin extending laterally therefrom, and said barrel having a spiral slot in that end which is located in the tapered bore in which slot said end of the pin works for causing retraction of said plunger rod incidental to a rotative movement of the latter in one direction relative to said barrel, said barrel at the entrance end to said slot having a keeper notch with which said pin engages for releasably retaining said plunger rod in a retracted position, and a covering of insulating material on the end of the plunger rod remote from said head and serving to provide a manipulating handle, and said insulated handle-forming cover having a tapered end fitting within the tapered bore of said body said tapered end of the cover normally fitting over that end of the barrel which has the spiral slot therein and said cover having its inner end projecting into the tapered bore when the parts are in retracted position.

2. In a connector of the character described, an integral cylindrical body and head at one end thereof, said head and body being formed of insulating material, and said head having a transverse slot for receiving a live conductor, a plunger having a sliding and rotating fit in said body and equipped at one end for engaging the conductor in said slot, a spring device engaged with said plunger rod normally urging the same in a position for engagement with the live conductor, and manipulative means for retracting said plunger against the action of said spring and for releasably holding the plunger in retracted position; said manipulating means embodying a handle-forming cover of insulating material on one end of said plunger rod, said handle-forming cover having a tapered end, and said cylindrical body at the end thereof remote from said head having a tapered bore accommodating the tapered end of said handle-forming cover and said cover having its inner end projecting into the tapered bore when the parts are in projected position.

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