Dec. 8, 1931. E. E. ATWOOD 1,835,688

ELECTRICAL CONNECTION

Filed July 7, 1930 2 Sheets-Sheet 1

Fig. 1.

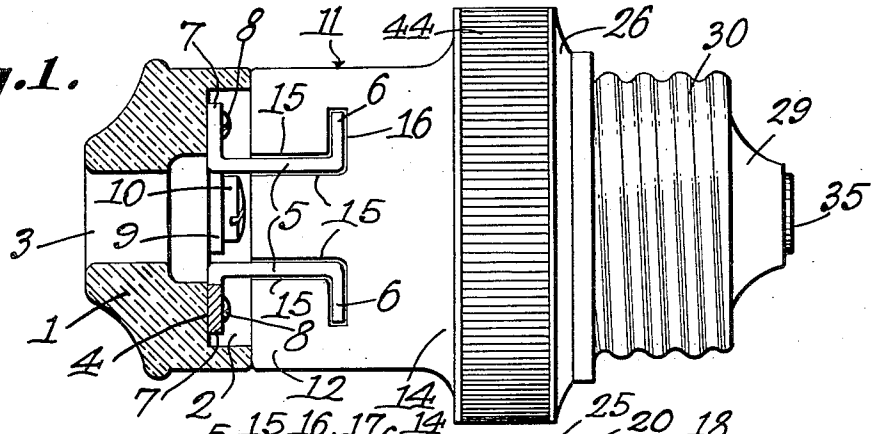


Fig. 2.

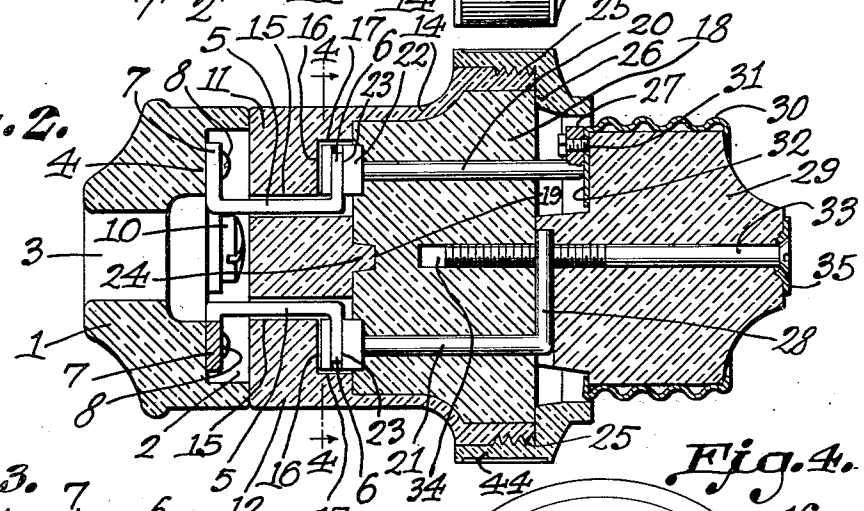


Fig. 3.

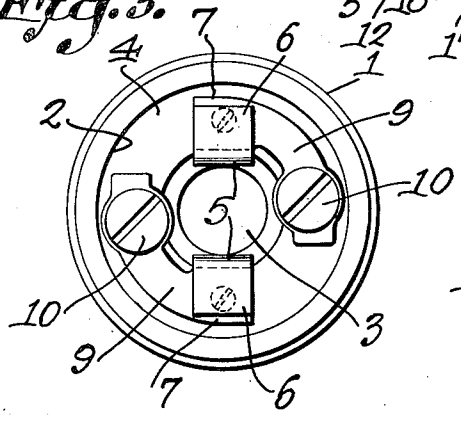


Fig. 4.

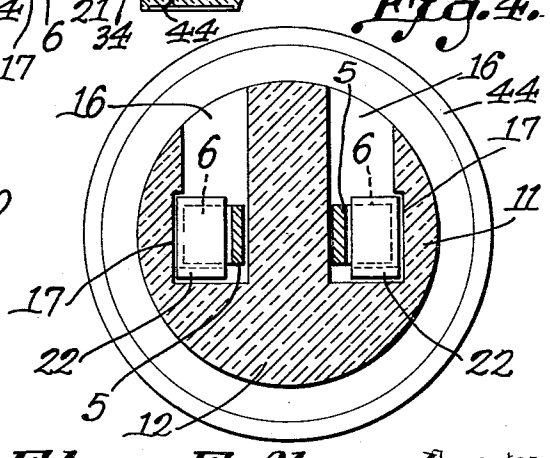
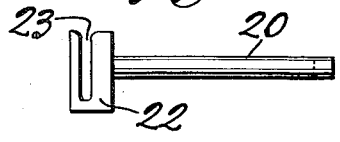


Fig. 5.



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Dec. 8, 1931. E. E. ATWOOD 1,835,688

ELECTRICAL CONNECTION

Filed July 7, 1930 2 Sheets-Sheet 2

Fig. 6.

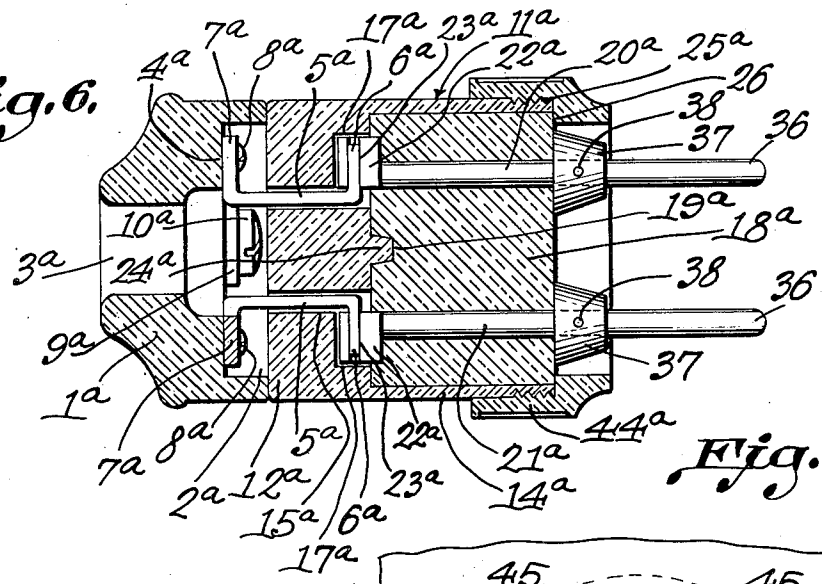


Fig. 8.

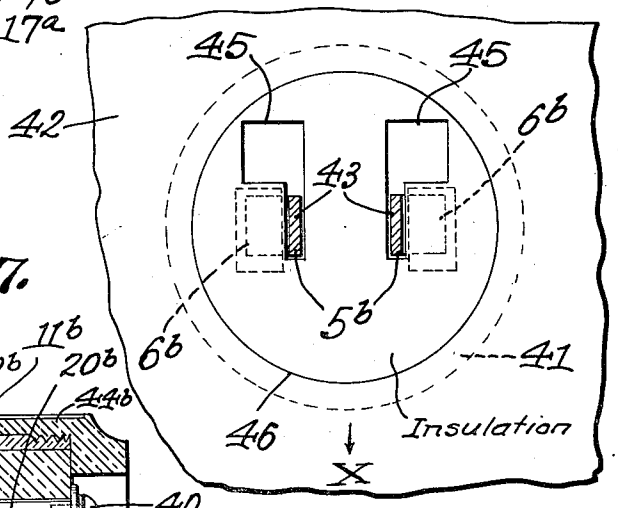
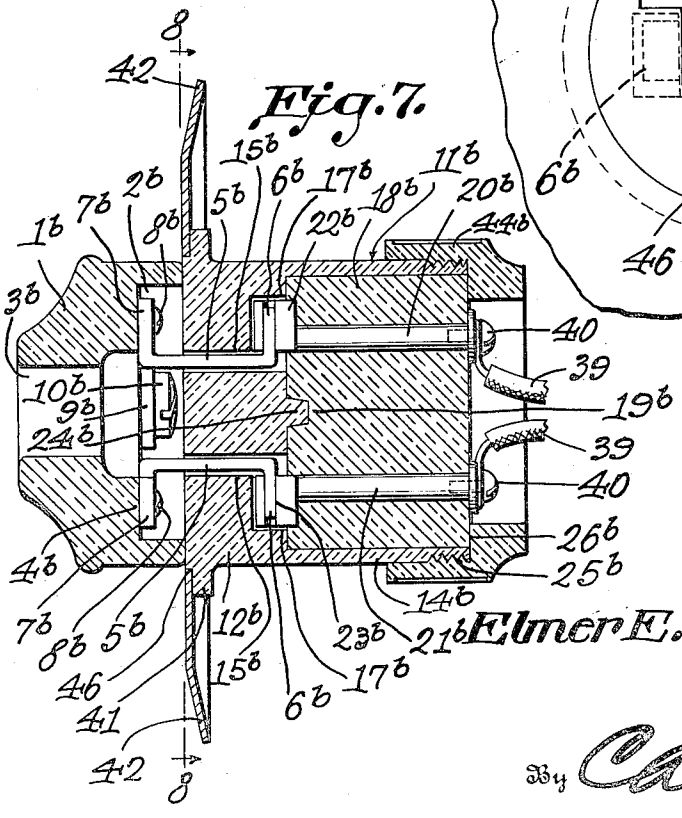


Fig. 7.



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Patented Dec. 8, 1931

1,835,688

UNITED STATES PATENT OFFICE

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ELECTRICAL CONNECTION

Application filed July 7, 1930. Serial No. 466,302.

Electrical connections of the common separable sort are provided with parallel prongs, adapted to be inserted into openings supplied for their reception. It is a matter of common knowledge that such connections pull apart, especially if the conductor is of some length, and it is necessary for the operator to go some distance to the connection and reunite its parts by inserting the prongs again into the openings.

One object of this invention is to provide a device of the class described, the constituent parts of which, although detachably connected, will not pull apart. Another object of the invention is to provide novel means for holding the parts of the device together and for adapting it to many standard constructions.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the present invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise embodiment of the invention herein disclosed, within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings:

Figure 1 shows in side elevation, a device constructed in accordance with the invention, parts being in section;

Figure 2 is a longitudinal section;

Figure 3 is an end view of the strip;

Figure 4 is a cross section on the line 4—4 of Figure 2;

Figure 5 is an elevation showing one of the conducting members by which the separable connection is afforded;

Figure 6 is a longitudinal section showing a modification;

Figure 7 is a longitudinal section showing another modification;

Figure 8 is a section on the line 8—8 of Figure 7.

Referring, first, to Figures 1 to 5, there is shown a device including an insulating tip 1 provided in its inner end with a recess 2, and supplied in its outer end with a bore 3 communicating with the recess 2, the recess forming an internal transverse shoulder 4. Parallel conducting prongs 5, shown in outline in Figure 1, project beyond the inner end of the tip 1 and are supplied in their inner ends with oppositely projecting rectangular fingers 6. At their inner ends, the prongs 5 have oppositely projecting bases 7 attached by securing elements 8 to the shoulder 4. The bases 7 of the prongs 5 are provided with curved extensions 9 (Figure 3) extending along the shoulder 4. Binding screws 10 are threaded into the extensions 9 and are adapted to hold conductors (not shown) extended into the recess 2 through the bore 3.

The body of the device is marked by the numeral 11 and is made of insulating material. It includes a base 12 of considerable thickness and a hollow end 14. A tongue 24 extends across the base 12 and projects into the hollow end 14. The base 12 has longitudinal slots 15 extended outwardly to the outer surface of the body 11 and inwardly to a point near the longitudinal axis of the body 11, as disclosed in Figure 4. The slots 15 have extensions 16 disposed at right angles to the axis of the body 11 and extended outwardly through the outer surface of the body 11. In the inner end of the base 12 there are recesses 17 which communicate with the extensions 16 of the slots 15.

The numeral 18 marks a core, made of insulating material and located within the hollow end 14 of the body 11, in abutment with the base 12 of the body. At its inner end, the core 18 has a groove 19 which receives the tongue 24 on the base 12 of the body 11, relative rotation between the core 18 and the body therefore being prevented.

Parallel conducting rods 20 and 21 are located in the core 18. At their inner ends, the conducting rods 20 and 21 have transverse heads 22 seated in the end of the core 18 and received in the recesses 17 of the base 12 of the body 11. The transverse heads 22 have transverse slots 23. The numeral 44 designates a retaining ring threaded on the

hollow end 14 of the body 11, as shown at 25, and provided with an end wall 26 which engages the adjacent end of the core 18, to hold the core 18 removably in place in the hollow end 14 of the body 11. The conducting member 21 has an inwardly extended end 28 and the conducting member 20 has an outwardly extended end 27, the ends 27 and 28 being parallel and at right angles, respectively, to the conducting rods 20 and 21.

The numeral 29 marks a butt block made of insulating material. A threaded conducting shell 30 is secured about the butt block 29. The end 27 of the conducting rod 20 is attached by a securing element 31 to the end wall 32 of the shell 30. A screw rod 33 is mounted in the butt block 29 and forms the central terminal of the connector. The screw rod 33 is threaded into the end 28 of the conducting rod 21, and extends into a recess 34 and in the core 18. The usual washer 35 is held against the outer end of the butt block 29 by the head of the screw 33.

In practical operation, the tip 1 is assembled with the body 11 by passing the parallel prongs 5 inwardly through the slots 15, and because the rectangular fingers 6 of the prongs 5 are located in the extensions 16 of the slots 15, and, more particularly in the slots 23 of the transverse heads 22 of the conducting rods 20 and 21, the tip 1 cannot be detached from the body 11 by a pull parallel to the axis of the device, or by a pull in any other direction saving one at right angles to the axis. It is practically impossible, therefore, for the tip 1 to be detached from the body 11 accidentally.

The circuits through the connector comprise one of the prongs 5, its end or finger 6, one of the heads 22, the conducting rod 20, the end 27 of the conducting rod 20, and the shell 31. The other line for the current to pass through the device comprises the opposite prong 5, its finger 6, the head 22 of the conductor 21, the end 28 of the rod 21, and the central electrode or screw 33.

In Figure 6 of the drawings, parts hereinbefore described have been designated by numerals previously used, with the suffix "*a*". In this form of the invention, the butt block 29 is dispensed with, and the ends 36 of the conducting rods 20*a* and 21*a* form terminals by which the connection can be plugged into a machine or other electrical appliance. Collars 37 are secured at 38 on the ends 36 of the conducting rods 20*a* and 21*a* and abut against the outer end of the core 18*a* to hold the rods 20*a* and 21*a* in place.

In Figures 7 and 8, parts hereinbefore described have been designated by numerals previously used, with the suffix "*b*". In this form of the invention, the butt block 29 and associated parts are omitted, the conductors 39 being held by securing elements 40 on the ends of the conducting rods 20*b* and 21*b*. The body 11*b* has an outstanding flange 41 that abuts against the rear surface of a wall plate 42, the wall plate 42 having an opening 46 through which the forward end of the body 11*b* projects. In the wall plate 42 there are slots 43 having enlargements 45. The enlargements 45 are for the reception of the lateral fingers 6*b* of the prongs 5*b*, and by moving the tip 1*b* in the direction of the arrow X in Figure 8, the prongs 5*b* enter the slots 43, and the slots 15*b* of the body 11*b* in a way which will be understood readily from what has been stated hereinbefore in connection with the form shown in Figures 1 to 5.

The device is adaptable not only to the forms shown, but to many others which will suggest themselves to a manufacturer, and the construction is such that the tip of the connection cannot be detached from the body of the connection, saving by deliberate action on the part of the operator.

Having thus described the invention, what is claimed is:—

1. A connector of the class described, comprising a body, a core in the body, a ring threaded on the body and provided with an end wall overlapping the core to hold the core in the body, conducting members carried by the core, the body being provided in its side with angular slots giving access to the conducting members, and a tip having angular prongs received in the slots and engaging the conducting members.

2. A connector of the class described, comprising a body, a core in the body, the core and the body being supplied with interengaged elements which coact to prevent relative rotation between the core and the body, means on the body and engaging the core to hold the core in the body and to hold said elements interengaged, conducting members carried by the core, the body being provided in its side with angular slots giving access to the conducting members, and a tip having angular prongs received in the slots and engaging the conducting members.

3. A connector of the class described, comprising a body, a butt block, a shell on the butt block, an approximately central terminal in the butt block, a core in the body, means for holding the core in the body, conducting members in the core, one conducting member being connected to the shell, and the other conducting member being connected to the terminal, the body being provided in its side with angular slots giving access to the conducting members, and a tip having angular prongs received in the slots and engaging the conducting members.

4. A connector of the class described, comprising a body having conducting members, the body being provided in its side with angular slots having lateral extensions, a

wall plate having slots registering with the ends of the slots of the body, the slots of the wall plate having enlargements, and a tip having prongs provided with lateral fingers, the fingers being insertable through the enlargements of the slots of the wall plate when the tip is moved longitudinally, the fingers entering the slots of the wall plate and of the body when the tip is moved transversely, the fingers entering the lateral extensions of the slots in the body and engaging the conducting members when the tip is moved transversely.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

ELMER E. ATWOOD.