Sept. 27, 1927. 1,643,659

F. F. HILLIX

CONNECTER FOR ELECTRIC CONDUCTORS

Filed April 20, 1923

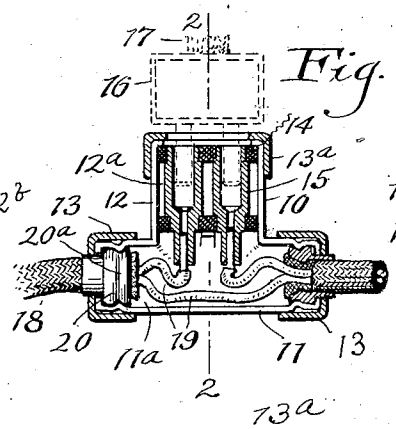



Fig. 1.

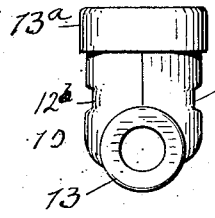



Fig. 3.

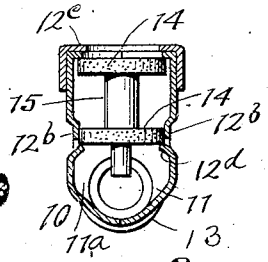



Fig. 2.

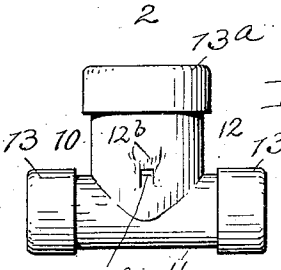



Fig. 4.

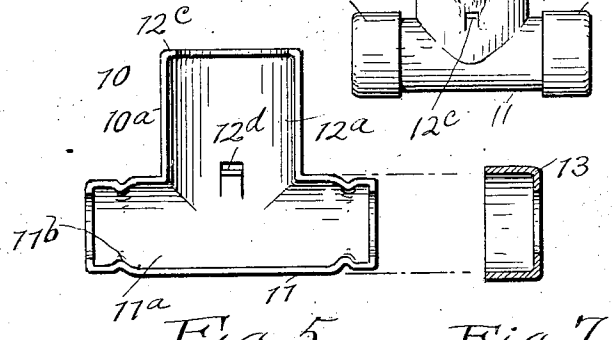



Fig. 5.



Fig. 7.

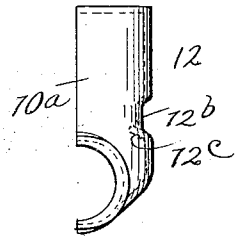



Fig. 6.

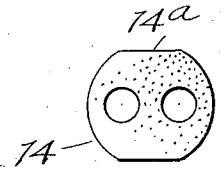



Fig. 8.

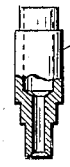



Fig. 9.

Inventor

Foster F. Hillix

By Thurston Kivet & Hudson

Attorneys

Patented Sept. 27, 1927.

1,643,659

# UNITED STATES PATENT OFFICE.

FOSTER F. HILLIX, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WHITE SEWING MACHINE CORPORATION, OF CLEVELAND, OHIO, A CORPORATION OF DELAWARE.

## CONNECTER FOR ELECTRIC CONDUCTORS.

Application filed April 20, 1923. Serial No. 633,428.

This invention relates to a connecter for electric conductors and particularly to what may be termed a series tap connecter by which one part such as a rheostat may be connected in series with another part such as a motor by tapping into one of a pair of conductors employed to supply current to the motor.

The chief object of the invention is to provide a connecter of this type which is very effective for the purpose stated, and which can be produced inexpensively.

The invention may be briefly summarized as consisting in certain novel details of construction, and combinations and arrangements of parts.

In the accompanying sheets of drawings wherein I have shown the preferred embodiment of the invention, Fig. 1 is a sectional view through the connecter showing the two conductors connected in place and showing by dotted lines the male member of the connecter which cooperates with the part forming the present invention; Fig. 2 is a transverse sectional view substantially along the line 2—2 of Fig. 1; Fig. 3 is an end view; Fig. 4 is a side view; Figs. 5 and 6 are respectively an inside face view and an edge view of one-half of the connecter body or casing; Fig. 7 is a sectional view through a flanged sleeve which is fitted onto the ends of the two halves of the casing; Fig. 8 is a face view of one of the insulating disks which carry the two contacts; and Fig. 9 is a side view of one of the contacts partly broken away.

Referring now to the drawings, the connecter involving my invention preferably includes a T-shaped body or casing 10 provided at one end with a head 11 containing a straight across or through passageway $11^a$ to accommodate a pair of conductors or an insulated cable containing a pair of conductors and having at right angles thereto an extension 12 with a passageway $12^a$ which connects with the passageway $11^a$, and adapted to accommodate a pair of contact members to which the ends of one of the two conductors are designed to be connected.

The casing 10 preferably consists of two complementary or counterpart T-shaped halves $10^a$, such as shown in Figs. 5 and 6, stamped from sheet metal, each of these halves having semi-cylindrical portions forming halves of the passageways $11^a$ and $12^a$. In the assembled connecter the two halves of the casing when placed edge to edge are designed to be held together by flanged holding rings or sleeves, two of which, designated 13, are designed to be fitted onto the ends of the head 11, and a third, designated $13^a$, designed to be fitted onto the end of the extension 12. These rings fit friction tight on the parts and hold the two halves of the casing in assembled relation, but they can be forced off so as to permit the casing to be opened to give access to the interior.

Within the extension 12 of the casing is the contact part of the connecter. The latter includes an insulating contact carrier which in this instance consists of two disks 14 of insulating material which carry two contacts 15 having portions tightly fitted in the disks and holding them in spaced relation. The contacts 15 are in this instance female contact members adapted to receive with a sliding fit the contacts of a plug or co-operating connecter member 16 into which is extended a cable such as 17, carrying the two conductors designed to be connected to the part which is to be tapped into the circuit formed by the two main conductors extending through the head of the connecter. The plug 16 forms no part of the present invention and need not be shown in detail.

Suitable means is provided for preventing the contact part of the connector from turning in the extension 12, and this is preferably done by giving one or both of the insulating disks 14 flattened portions $14^a$, and by depressing the casing as shown at $12^b$ to form a pair of shoulders against which the flattened portions of the disk or disks bear.

Furthermore, it is obviously desirable that the contact part of the connecter be held from endwise movements in the extension 12. Movement in an outward direction is in this instance prevented by providing an inturned lip $12^c$ on the free end of the extension 12 as

clearly shown in Figs. 1 and 2, and movement in an inward direction is prevented in this case by punching inward short tongues $12^a$ designed to bear against the innermost disk 14, as shown in Figs. 1 and 2, the tongues $10^a$ being shown also in Figs. 4, 5 and 6.

A cable which contains the conductors forming the circuit into which the connecter is to be tapped and which is designed to be extended through the head end 11 of the connecter, is shown at 18, the two individual conductors being shown at 19. One of the two conductors 19 extends in unbroken continuity through the head of the connecter, but the other is cut after the insulating covering of a portion of the cable is removed, and the ends of the cut conductor are secured to the contact members 15 as by soldering.

It is very desirable that the cable be held from endwise movement in the head end of the connecter and that the strain be taken off the contacts and the two ends of the conductor leading thereto. To accomplish this result I prefer to employ in connection with the connecter a pair of cord locks which are applied and fastened to the cable on opposite sides of the point where the covering thereof is removed to expose the conductors, and bear against the ends of the head 11 of the connecter, as shown in Fig. 1. I prefer to employ for this purpose a cord lock such as constitutes the subject matter of my companion application Serial No. 607,287, wherein I have shown and described a cord lock consisting of a deformable or compressible metallic sleeve adapted to surround a cable or insulated conductor, and containing a sleeve of compressible insulating material, the whole being so arranged that by slipping the cord lock onto the cable and deforming or contracting it by pressing it inwardly with a suitable tool the insulating sleeve within is caused to very tightly grip the cable and prevent the lock from moving endwise thereon.

In Fig. 1 I have shown a cord lock such as referred to, the metallic sleeves having enlarged portions bearing against the inturned lips at the ends of the extension 11 and having a portion crimped inwardly as shown at $20^a$. This forms an annular depression in the metallic sleeve of the cord lock, and I may if desired take advantage of this in the prevention of inward movement of the cord lock by giving the ends of the extension 11 inward depressions as shown at $11^a$, and adapted to extend into the depressed parts $20^a$ of the metal sleeve. Thus it will be seen that by using these cord locks in the manner stated, the cable 18 is prevented from being pulled outward or pushed inward with respect to the head end of the connecter.

To apply a connecter involving my invention to a cable, a portion of the covering of the cable is removed so as to expose the conductors, one of which is cut and the ends freed of the rubber insulation. The ends are then soldered to the contacts of the connecter and the cord locks are applied. Then the contact portion of the connecter is laid into one of the halves of the casing while at the same time the cable with the cord locks are laid in the head end of said half of the casing. Then the companion half of the casing is applied, and the locking sleeves are then placed on the ends of the two halves of the casing so as to lock all parts in assembled relation.

This connecter can be produced inexpensively and it can be applied readily to a cable, and when it is applied the electrical connection is extremely durable, there being no liability of accidental separation of any of the mechanically or electrically connected parts.

While I have shown the preferred embodiment of the invention I do not desire to be confined to the exact details shown, but aim in my claims to cover all modifications which do not involve a departure from the spirit and scope of my invention.

Having described my invention, I claim:

1. A series connecter comprising a stamped two-counterpart T-shaped casing adapted to accommodate a two-wire electric cable, one of said wires being continuous and the other being severed within said casing, a contact member secured within said casing and adapted to receive the severed ends of said wire, cord locks positioned in said casing adjacent opposite ends, and sleeves slidably fitted over the ends of said casing to simultaneously secure the casing together and maintain said cord locks in position.

2. A series connecter comprising a two-counterpart casing having a tubular head and a lateral tubular extension, said head being adapted to accommodate a two-wire cable, one of said wires extending continuously through said head while the other of said wires is severed within said casing, a contact member secured within said lateral extension and adapted to receive the severed ends of said wire, a sleeve forcibly fitted onto the end of said extension to maintain the latter in assembled relation, cord locks cooperating with the ends of said head and said cable, and sleeves forcibly fitted onto the ends of said head for maintaining the latter in assembled relation and simultaneously securing said cord locks against movement.

3. In combination with a two-wire conductor cable, a series connecter comprising a two-part cooperating casing having a por-

tion through which said wires extend, a contact member secured within said casing one of said wires within said casing being severed and electrically connected with said contact member, cord locks carried by said cable and positioned within said casing, and sleeves adapted to slidably engage the ends of said casing to maintain the casing, cord locks and contact member in assembled relation.

In testimony whereof, I hereunto affix my signature.

FOSTER F. HILLIX.