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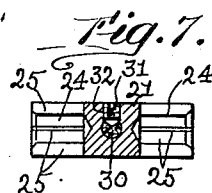
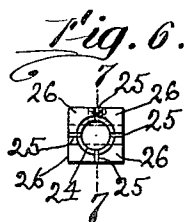
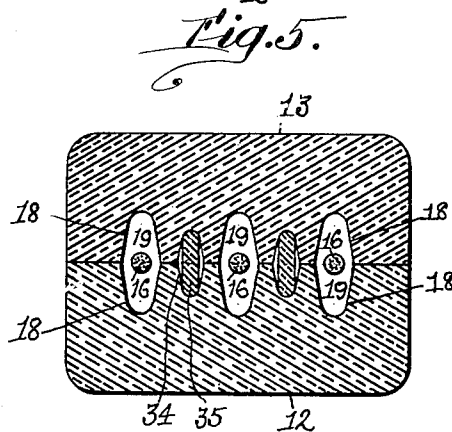
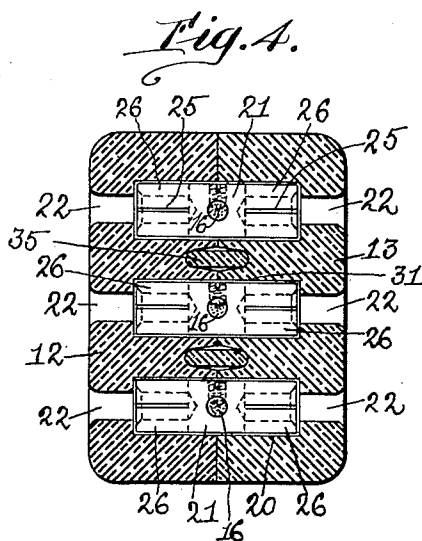
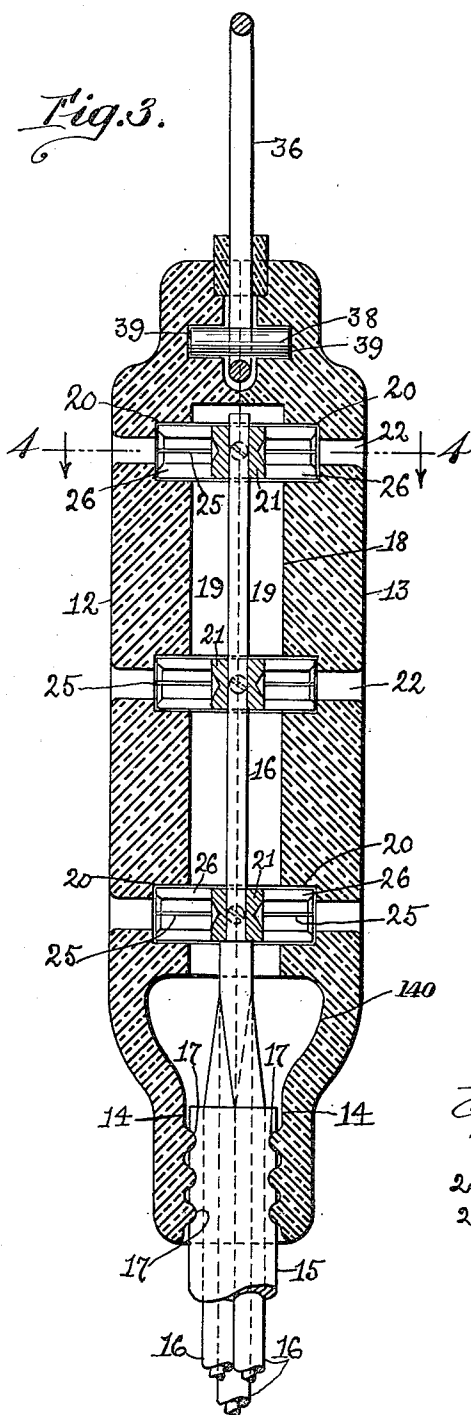
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ELECTRICAL CONNECTING DEVICE

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2 Sheets-Sheet 2



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ELECTRICAL CONNECTING DEVICE

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4 Claims. (Cl. 173—334)

This invention relates to electrical connecting devices, and more particularly to electrical devices for connecting a plurality of branch lines to a main feed line and especially to a feed line cable composed of flexible conductors or wires.

One object of the present invention is to provide a novel and improved electrical connecting device particularly adapted for use where it is desired to provide a plurality of temporary outlets to a main feed line.

A further object of the present invention is to provide a novel and improved construction of electrical connecting device which is adapted to provide a maximum number of outlets and to insure maximum electrical contacts at all times.

A still further object of the present invention is to provide a portable compact electrical connecting device adapted to withstand rough usage and to be readily assembled and disassembled in the field when adjustment and replacement of parts is necessary.

Another object of the present invention is to provide a device of the character described in which provision is made for insuring the alignment of and maximum electrical connection between the contacts of the electrical connecting device and the plug contacts of the branch line, and for enabling the plug contacts of the branch line to be connected on both sides of the connecting device at the same time.

With these general objects in view and such others as may hereinafter appear, the invention consists in the electrical connecting device hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the present invention, Fig. 1 is a front elevation of an electrical connecting device embodying the present invention; Fig. 2 is a side elevation of the device shown in Fig. 1; Fig. 3 is a longitudinal sectional view taken on the line 3—3 of Fig. 2; Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 3; Fig. 5 is a cross-sectional view on the line 5—5 of Fig. 2; Fig. 6 is an end view of one of the receptacle contact members to be described; and Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6.

Referring now to the drawings which illustrate the present invention as embodied in a three-pole connecting device, and particularly to Figs. 1, 2 and 3, 10 represents a receptacle or casing composed of cooperating case forming members 12, 13 which may be molded or otherwise constructed of any of the well known insulating materials, such as hard rubber, phenol products, or the like.

One end of each of the cooperating case members 12, 13 is constructed so that when they are secured together to form the casing 10 of the connecting device, as will be described, a passage 14 is provided through which may be passed a cable 15 of the main feed line comprising the flexible wires 16. In practice it is preferred to construct the walls forming the passage 14 with corrugations or projecting portions 17 on the inner surface thereof, as shown in Fig. 3, in order that upon assembly of the device the cable 15 will be firmly clamped in position and in fixed relation to the casing, so that the cable 15 will not pull out of the casing or disturb the electrical connections within the same even when subjected to rough usage occurring in ship-building and other construction work. The inner surfaces of each of the case forming members 12, 13 are provided with substantially parallel channels or grooves 18, as illustrated in Fig. 5, which cooperate to form an enclosed passage or chamber 19 for each of the separate wires 16 of the cable 15. It is preferred to make the cooperating grooves 18 large enough to allow for some snaking or bending of the flexible wires 16 for the purpose which will be hereinafter referred to. The members 12, 13 at the cable inlet end are provided with a relatively wide chamber 140 in which the wires 16 of the cable may be separated to be entered into the grooves or channels 18 of one of the members when the device is assembled.

At suitable intervals along the length of each of the conductor containing passages or chambers 19, provision is made for receiving plug and socket contact members. Accordingly, as shown in Figs. 3 and 4, each of the case members 12, 13 is provided with cooperating recesses 20 adapted to receive a receptacle contact member 21 which will be hereinafter referred to as the socket member, and said recesses 20 have extended from them suitable openings 22 which form a passage to the outside faces of the case members and through which the plug contact members 23 of a branch line 123 may be inserted to make contact with the socket contact members 21, which latter are connected to the conducting wires 16, as will be described. In order to insure that the plug members 23 of a branch line and the socket contact members 21 will make a maximum electrical connection, provision is made for allowing a slight relative movement between the socket contact member 21 and the containing casing 10, so that alignment of the socket contact member with the plug entrance passage 22 is assured. Accordingly, the recess 20 in which

the socket contact member 21 is located is constructed slightly larger than the said member, thus allowing movement of the socket member with respect to the plug passageway 22. As the socket contact member is attached to a conducting wire 16, and the conducting wire is slightly snaked or bent so as to allow relative movement of the socket contact member, it is preferred to make the socket contact member 21 and its containing recess 20 angular in cross-section and preferably square, so that while slight relative movement between the socket contact member and the casing is permitted, twisting and straining of the connection between the wire 16 and the socket contact member 21 is substantially eliminated. As illustrated in Figs. 6 and 7, the socket contact members 21 are made from a piece of solid stock, which is angular in cross-section and of a length sufficient to enable its ends to extend into the angular recesses 20 in the members 12, 13 of the insulating casing. The ends of the solid piece of stock are provided with sockets 24 preferably circular in cross-section and having its walls provided with slots 25, preferably four in number, which provide each socket with yielding wall sections 26, which are capable of yielding sufficiently to enable a solid plug contact member to be used and yet obtain the desired maximum electrical contact between said plug member and the socket contact member. So also the yielding wall sections 26 of the socket 24 are bodily movable transversely with relation to the passage 22 in the casing, to compensate for slight errors in the spacing of the passages 22 in the casing, if such occur. The central body portion of the contact member between the socketed ends is initially solid and to enable the contact member to be removably mounted on the conductor or wire 16, said solid body portion is provided with a bore or passage 30 through which the wire 16 is passed, and said contact member is secured in fixed relation to the wire 16 by a screw 31 in a threaded opening 32 in the said body portion substantially at right angles to the passage 30 and communicating therewith.

From the description thus far, it will be observed that an electrical connecting device is provided in which provision is made for receiving the individual wires of a main feed line and for containing the individual wires in separate chambers within an insulating casing, and it will also be seen that provision has been made for providing socket contact members at various points along the length of the wire and for removably mounting the same on said wire. It will also be seen that each socket contact member is adapted to receive and make connections with two plug members from opposite sides of the containing casing, and that provision is made for preventing twisting of the socket contact members while allowing slight bodily movement thereof so that they may be aligned with the plug entrance passageways formed in the containing casing.

In some instances, particularly where relatively high voltages are employed, it is desirable to insure against any possibility of discharge between the conducting wires within the casing, and which might possibly occur at the point where the halves of the casing meet. Accordingly, as shown in the drawings, and particularly in Figs. 4 and 5, it is preferred that each section of the casing be provided with longitudinal grooves or channels 34 which cooperate to form a longitudinal chamber which is positioned be-

tween the chambers 19 in which the wires 16 are located. The chambers 34 are provided with strips or members 35 of insulating material, as clearly shown in Fig. 5, which effectively serve as barriers to prevent any discharge from occurring between the adjacent conducting wires 16 within the insulating casing 10.

In order to contribute to the convenience of using the device, a hook 36 is provided at one end thereof so that it may be hung wherever convenient. As shown in Figs. 2 and 3, the hook 36 is provided at one end with an eye 37 through which a pin 38 may be inserted, and the halves of the case are provided with cooperating recesses 39 adapted to receive said pin and hold the hook in position, when the halves of the casing are secured together, by suitable bolts 40.

From the above description it will be observed that a portable electrical connecting device is provided which may be readily assembled and disassembled when desired, and in which provision is made for allowing for a maximum number of outlets and for insuring a maximum electrical connection between the plug contact member and the socket contact member within an insulating casing. It will also be observed that the device is of such a construction that it will withstand particularly rough usage without impairing its efficiency and that a substantially perfect insulation of all the parts is obtained so that no leakage nor discharge in the device will occur. Furthermore, it will be observed that the socket contact members are adjustable on the conducting wires and are mechanically secured thereto, so that they may be removed from the wires in the field if desired or required.

While the preferred embodiment of the present invention has been herein illustrated and described, it will be understood that the invention may be incorporated in other devices within the scope of the following claims.

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

1. In an electrical connecting device, a casing composed of members detachably secured together and having on their inner surfaces a plurality of longitudinally extended opposing channels forming chambers separated from each other for the reception of individual conductors of a cable, and having opposing recesses extended laterally of said chambers for the reception of contact members affixed to said individual conductors, said recesses being angular in cross section and having passages of smaller area extended to the opposite outside surfaces of said casing, and said contact members being angular in cross-section to fit into said recesses, the members of said casing being provided at one end with means for forming a cable inlet opening and a relatively wide chamber with which said channels communicate and in which the wires of the cable may be separated and spread apart to enter the said channels.

2. In an electrical connecting device of the character described, in combination, a casing having co-operating members secured together, and provided with a cable inlet passage at one end, a plurality of longitudinally extended opposed channels communicating with said cable inlet passage for the reception of the individual conductors of said cable and separated from each other by insulation, a plurality of socket-receiving recesses angular in cross-section and extended laterally from each of said opposed channels and communicating with the outside of said cas-

ing, and a plurality of socket contact members mounted upon each of said conductors and angular in cross-section and extended into opposed socket-receiving recesses, said socket contact members having openings through them through which the conductors of the cables are passed to permit the said socket contact members to be adjustably mounted on said conductors, and means carried by said contact members for securing them to the conductors in their adjusted position thereon.

3. In an electrical connecting device of the character described, in combination, a casing having co-operating members secured together, and provided with a cable inlet passage at one end, a plurality of longitudinally extended opposed channels communicating with said cable inlet passage for the reception of the individual conductors of said cable, a plurality of socket-receiving recesses angular in cross-section and communicating with the outside of said casing through passages of smaller area in cross-section, and a plurality of socket contact members angular in cross-section and mounted to slide on said conductors and extended into opposed socket-re-

ceiving recesses, and means for securing said socket contact members in their adjusted position on said conductors.

4. In an electrical connecting device of the character described, in combination, a casing provided at one end with a cable inlet and within it with a plurality of channels extended lengthwise of the casing and communicating with said cable inlet, said channels being separated from each other by insulation for the reception and insulation of the individual conductors of said cable, a plurality of socket receiving recesses extended laterally from each of said channels to the outside of said casing, said recesses being angular in cross section and disposed at different points in the length of said channels and insulated from each other, a plurality of socket contact members angular in cross section and mounted to slide on each of said conductors and extended into the socket receiving recesses leading from each longitudinal channel, and means for securing said socket contact members in their adjusted position on said conductors.

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