

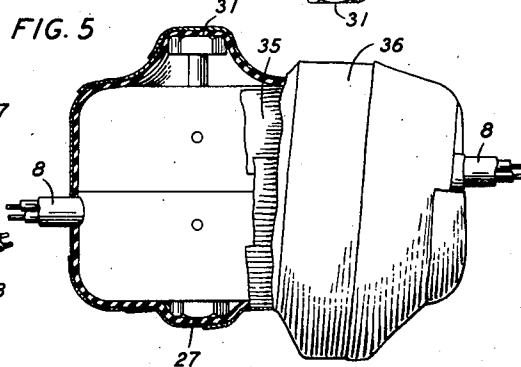
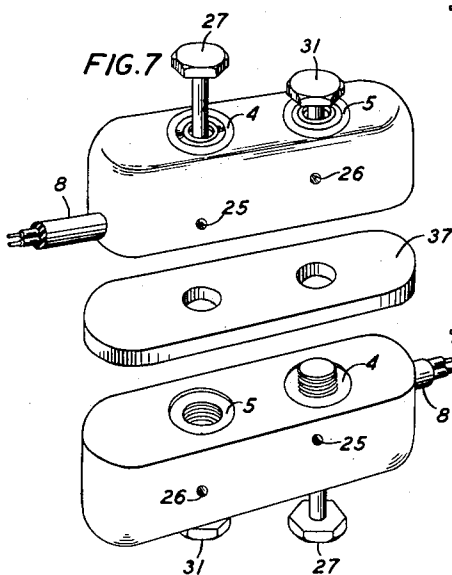
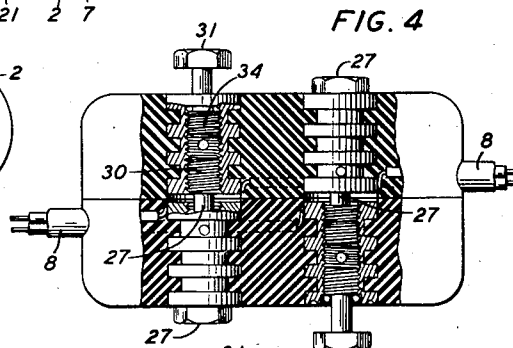
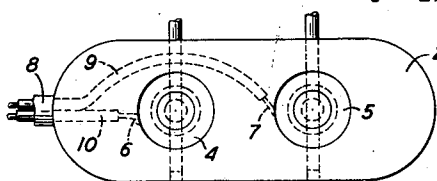
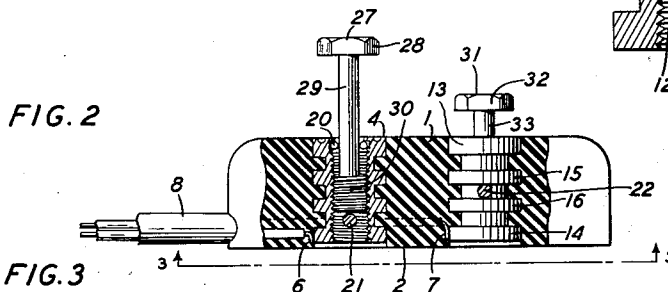
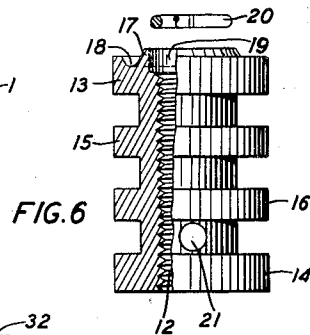
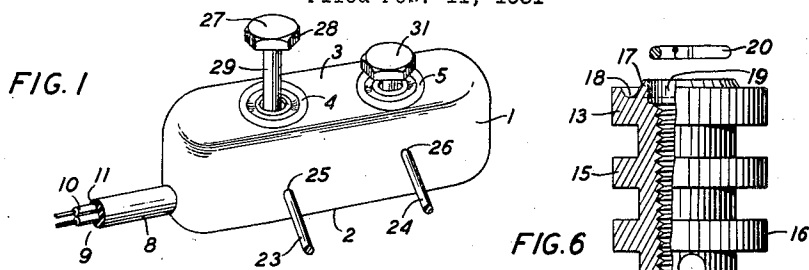
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TERMINAL

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TERMINAL

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5 Claims. (Cl. 173—273)

This invention relates to electrical terminals and more particularly to electrical terminals for use in connection with emergency cables and the like.

The object of this invention is to provide means for quickly and securely interposing an emergency cable or cables in a transmission line which has become severed or rendered ineffective for transmission purposes.

10 Features of this invention reside in a body member of insulating material which incorporates with insulation of a cable and has accommodations for ends of an open wire line, in terminal members which are molded into the
15 body member and in bolt members by which two emergency terminals may be clamped together and which may also be used to secure the ends of open wire lines to the terminal members within the insulating body member.

20 Other features including means for securely holding the terminal members within the insulating body and means for preventing accidental dislodgement of the bolts from the terminal members are further disclosed and referred to
25 in this specification.

In the drawing, Fig. 1 is a view in perspective of a terminal of this invention; Fig. 2 is a side elevational view partly in section of the terminal of Fig. 1; Fig. 3 is a plan view of the terminal taken in the direction of the arrows shown
30 in Fig. 2; Fig. 4 is a side elevational view partly in section showing two terminals clamped together; Fig. 5 is a side elevational view partly in section of the clamped terminals as shown in Fig. 4 and with tape wrapping applied thereto; Fig. 6 is a side elevational view partly in section of a terminal member and a retaining ring for a bolt member; Fig. 7 is a view in perspective of
35 a modification of the invention showing two terminals and a gasket which may be interposed between them.

It is common practice when a break or other defect occurs in a transmission line for a repair crew to temporarily by-pass the portion of the line wherein the unstandard condition prevails with a section of line in condition for carrying on the normal transmission. The interposed or temporary portion of the line must be attached
40 securely to the permanent line and the interposing of the temporary line must be done as quickly as possible to avoid any undue impairment in the service. When service has again been reestablished by interposition of the temporary or emergency line, the emergency line
45 remains in service until such time as the un-

serviceable portion of the permanent line has been replaced by a new permanent portion of line or restored to serviceable condition.

Sometimes in storm conditions comparatively long stretches of transmission line are rendered unserviceable, such for instance, as when pole lines are down or wires are severed due to incrustations of ice on the wires, or in flood conditions wire lines may be submerged and transmission service interfered with. Under conditions such for instance, as above mentioned, emergency lines may have to lie in snow or water and still be capable of maintaining transmission. Emergency cables suitably insulated and protected by comparatively heavy rubber coverings, therefore, are now furnished repair crews. These emergency cables are of suitable length to facilitate their transportation and handling by the repair men.

In the present invention a terminal for an emergency cable is provided which facilitates the connecting of the cable to permanent lines. This terminal is adaptable for connecting to a like terminal of another emergency cable where more than one cable length is required.

Referring to the drawing, 1 is a molded body member of comparatively soft rubber composition or the like having a lower flat face portion 2 and an upper flat face portion 3. Molded into the body member 1 are spaced terminal members 4 and 5 to which have been attached, prior to the molding-in operation, conductors 6 and 7 respectively, of a cable 8. The individual conductors 6 and 7 of the cable 8 are covered with insulation as shown at 9 and 10, which may, for instance, be rubber or other suitable insulating material. Over the insulated conductors 6 and 7 and combining them into a cable is an insulating covering 11, which preferably is of rubber or rubber composition. When the terminal members 4 and 5 with their attached portions of the conductors 6 and 7 are molded into the rubber composition body member 1, the insulation of the cable both on the individual conductors 6 and 7 and the insulating covering 11 which combines the conductors 6 and 7 into a cable vulcanizes with and becomes a part of the molded body member 1. By the molding into the body member 1 of the terminal members 4 and 5, the terminal members are secured within the body member and by the vulcanization of the insulating coverings of the individual conductors and the vulcanization of the insulating covering 11 of the cable with the material of the body member 1, the emergency
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terminal is securely attached to the emergency cable.

The terminal members 4 and 5 are exactly the same with the exception of the location of a transverse aperture which will be referred to later. Each terminal member as shown in Fig. 6 is a metal cylinder longitudinally bored and threaded at 12, having end flanges 13 and 14 and intermediate flanges 15 and 16. The end flange 13 has a boss portion 17 around which is an annular groove 18. The boss portion 17 is counterbored at 19 to receive a ring member 20, the purpose of which will be later explained. The end flanges 13 and 14 and the spaced intermediate flanges 15 and 16 provide good holding surfaces for the molded insulating material forming the body member 1, and prevent longitudinal dislodgment of the terminal member from the body member.

The terminal member 4 is transversely bored at 21 as shown in Fig. 6, the boring being at the lower portion of the terminal member and between the end flange 14 and the intermediate flange 16.

The terminal member 5 is transversely bored at 22 as shown in Fig. 2. This boring is located in about the center of the terminal member between the intermediate flanges 15 and 16.

The transverse borings 21 and 22 above mentioned, are provided for the reception of open wires where the emergency cable is to be connected to open wire lines. The open wire lines 23 and 24 enter apertures 25 and 26 in the side of the emergency terminal and extend inward to the terminal members 4 and 5 respectively, to which they may be attached by means as will be later explained.

The terminal members 4 and 5 when molded into the body member 1 do not extend quite to the lower flat face portion 2 of the body member, but are set a little above the flat surface as shown in Fig. 2 with the outer face of the lower flange 14 not quite flush with the flat surface 2.

Within the terminal member 4 is a bolt member 27 comprising a head portion 28, a comparatively long shank portion 29, and an externally threaded lower end portion 30. This comparatively long bolt member 27 serves as a means for securing an open wire line 23 to the terminal member 4. This comparatively long bolt member 27 also serves in cases where one emergency terminal is to be connected to another as a means for clamping the terminals together.

In the terminal member 5 is a comparatively short bolt member 31 comprising a head portion 32, a comparatively short shank portion 33, and an externally threaded lower end portion 34.

Each bolt member 27 and 31 when turned into the respective terminal members 4 and 5 is prevented from being withdrawn from the terminal member by a locking ring 20. The locking ring 20 is a split spring ring and is slightly smaller than the threaded end portion of the bolt member. After the bolt member has been turned into its terminal member the locking ring 20 is sprung about the shank of the bolt member and set down within the counterbored portion 19 of the boss 17. The top portion of the boss 17 is then spun over the ring 20 so that the ring is locked within the counterbored portion 19 and withdrawal of the bolt member from the terminal member is prevented.

When an emergency cable is to be connected to open wire lines the ends of the open wire lines are inserted in the apertures 25 and 26 in the

body member 1 and extended through these apertures into the aligned apertures 21 and 22 respectively, of the terminal members 4 and 5. The ends of the wires are extended across the longitudinal borings 12 of the terminal members 4 and 5 and the bolt members 27 and 31 are then turned down within the terminal members 4 and 5 until they come into engagement with the ends of the open wire lines. The ends of the open wire lines are thereby secured to the terminal members 4 and 5 and brought into electrical connection with the conductors 6 and 7 of the emergency cable. The other end of the emergency cable which is equipped with a like emergency terminal is then connected to the open wire lines at a distant point so that the defective area in the open wire lines is by-passed by the emergency cable.

To prevent the access of moisture to the terminal members and the bolt members the emergency terminal is wrapped with a suitable moisture-proof adhesive tape, the tape wrapping extending over the terminal members and the bolt members and completely enclosing the emergency terminal.

Where the section of line to be by-passed by an emergency cable is greater than the length of a single cable, two emergency cables may be connected by means of the emergency terminals. To make such a connection, emergency terminals of two cables are brought with their flat surfaces 2 in face-to-face relationship as shown in Fig. 4, with the molded-in terminal member 4 of one emergency cable terminal aligned with the molded-in terminal member 5 of the other emergency cable terminal. The long bolt members 27 are then turned down to full traverse within the molded-in terminal members 4 and into the lower ends of the aligned molded-in terminal members 5 of the other emergency terminal. When the long bolt members 27 are turned down to full traverse and into engagement with the threaded portions of the corresponding molded-in terminal members 5, the two emergency terminals are securely clamped together and the two flat surfaces 2 of the clamped emergency terminals are squeezed together so that a water tight connection between the two emergency terminals is established. With the lower ends of the terminal members 4 and 5 not extending to the flat surface 2 of the emergency terminal, sufficient space is allowed between the aligned terminal members for the squeezing together of the emergency terminals to such an extent as to form the water tight connection above referred to. While the aligned portions of the terminal members 4 and 5 are not brought into physical contact, electrical connections between the aligned terminal members are established by the long bolt members 27.

After two emergency terminals have been clamped together by the long bolt members 27, the clamped emergency terminals are covered with a serving of moisture-proof insulating tape as shown in Fig. 5, which may be, for instance, a two-layer serving. One serving 35 is wrapped around the emergency terminals longitudinally and the other serving 36 is wrapped around the emergency terminals transversely of the first serving and over the bolt members 27 and 31, thus completely enclosing the emergency terminals and the bolt members.

In a modification of this invention shown in Fig. 7, a gasket 37 suitably apertured to allow

the passage therethrough of the long bolt members 27 of the emergency terminals has been provided. This gasket may be interposed between two emergency terminals which are to be clamped together. When the emergency terminals are clamped together by the long bolt members 27, the gasket 37 may be compressed to such an extent as to form a moisture-proof connection between the flat surfaces 2 of the emergency terminals.

It will be obvious that an emergency cable equipped with terminals of this invention may without any undue delay be securely connected to transmission lines, and that as many emergency cables, as needed, may be connected together by the clamping together of their emergency terminals to extend the emergency cable any distance required to by-pass a section of transmission line which is not in operating condition. With the points of connection wrapped with moisture-proof insulating tape and the emergency cable enclosed in moisture-proof insulating material, the emergency line comprising the emergency cable or cables may, while permanent repairs are being made to the permanent transmission line, lie in snow or water and still be operative to continue the transmission service while the permanent line is being repaired.

While in this specification a particular structure is described, it is clear that various modifications may be made in the structure without departing from the spirit of this invention.

What is claimed is:

1. A terminal comprising an insulated cable, a molded insulating body member attached to the insulating material on the cable, tubular conducting terminal members attached to conductors of the cable and molded into said insulating body member, and bolt members supported in said tubular conducting terminal members, said tubular conducting terminal members and said body member being transversely apertured to receive open wire lines, a second insulated cable and a terminal which are a duplicate of the insulated cable and terminal first mentioned, said bolt members serving in one instance as means for connecting open wire lines to said tubular conducting terminal members and one of said bolt members in another instance serving to clamp the terminal of said insulated cable to the terminal of said second insulated cable.

2. A terminal comprising an insulated cable, a body member of insulating material molded onto an end of said cable, hollow conducting terminal members molded into said body member and attached to conductors of said cable, and bolts secured within said hollow conducting terminal members, said hollow conducting terminal members and said body member being transversely apertured to receive open wire lines, a second cable and a terminal therefore which are a duplicate of the first mentioned terminal and cable, said bolts serving in one instance to attach open wire lines to said hollow conducting terminal members, the bolt in one of said hollow conducting terminal members being of sufficient length to extend through its associ-

ated hollow conducting terminal member and into a hollow conducting terminal member of the terminal of said second cable so that the first mentioned cable may be connected to said second cable.

3. A terminal comprising an insulated cable, a molded body member of insulating material attached to said cable, a plurality of hollow conducting terminal members molded into said body member and attached to conductors of said cable, said hollow conducting terminal members and said body member being transversely apertured to receive open wire lines a first bolt member supported in one of said hollow conducting terminal members and a second bolt member supported in another of said hollow conducting terminal members, a second insulated cable including a terminal like that of said first mentioned cable, said first bolt member being of sufficient length to extend from its associated hollow conducting terminal member and threadedly engage a hollow conducting terminal member of the terminal of said second insulated cable so that in one instance the terminals of the two insulated cables may be clamped together, and said first and second bolt members serving in another instance to secure open wire lines to the hollow conducting terminal members of said insulated cable.

4. A terminal comprising an insulated cable, an insulating body member molded on to the cable, a tubular conducting terminal member molded into said body member and attached to a conductor in the cable, said body member and molded-in tubular conducting terminal member being transversely apertured to receive an open wire conductor, and a bolt engaging said tubular conducting terminal member and the open wire conductor to secure the open wire conductor to said tubular conducting terminal member.

5. A terminal comprising an insulated emergency cable, an elongated body of insulating material molded on to said cable, internally threaded conducting terminal members embedded in said body and attached to conductors in said cable, a second emergency cable like the first mentioned including a terminal having an elongated body of insulating material and internally threaded conducting terminal members molded into the body of insulating material, said bodies of insulating material and said internally threaded conducting terminal members being transversely apertured to receive open wire lines, bolt members threadedly secured within said internally threaded conducting terminal members to secure the open wire lines to the internally threaded conducting terminal members, one at least of said bolt members being long enough to project through its associated internally threaded conducting terminal member and thread into another like internally threaded conducting terminal member of the terminal of the other emergency cable to clamp the terminals of the emergency cables together when the two emergency cables are to be connected.

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