

UNITED STATES PATENT OFFICE

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CABLE TERMINAL

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This invention relates to cable terminals and, more particularly, to cable terminals of the protective type adapted to be suspended from an aerial cable.

One object of this invention is the provision in a single unitary structure of a distribution cable terminal having incorporated therein means for protecting the individual lines from high voltages impressed thereon.

A further object of the invention is the provision, in a cable terminal, of a terminal block of molded insulating material having embedded therein binding post terminals and protector units connected thereto, and to prevent the leakage of gas therethrough.

A still further object of the invention is the provision of a terminal block of molded insulating material having embedded therein binding posts and protector units connected thereto, the protector units comprising a single unitary structure having both an air gap arrester for light voltage discharges to ground and a fusible means for grounding the individual circuit in the event of a sustained high voltage impressed on the line.

The cable terminal of my invention is intended for mounting directly on the cable sheath in the manner shown in my Patent 2,285,034 granted June 2, 1942, and contemplates the same weather-proof housing structure as disclosed in that patent, but includes in place of the usual binding post chamber, a block of molded insulating material having molded therein a cable stub, protectors comprising combined air gap arresters and fusible means, and binding posts.

Connections are made to the conductors in the cable by means of a cable stub which is molded in the terminal block and has its individual conductors connected to a conducting strap which is also mounted in the block and has its ends connected to one side of the protector unit which comprises an air gap arrester and fusible means and to the binding post. The other sides of the combined air gap arresters and fusible protector units are connected together by a metal strap to provide a common ground connection, which is also molded in the terminal block, and is connected to ground through the sheath of the cable stud, the metal housing, and the sheath of the main cable.

The drop wires from the subscriber's premises are attached to the binding posts on the face of the block and pass out through the bottom of the housing through suitable insulating grommets.

The cable terminal is intended to be fastened to the cable shown by flexible metal bands which surround the cable sheath and are clamped to the terminal housing by suitable clamps, thereby maintaining the housing of the terminal at ground potential.

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Referring now to the drawing:

Fig. 1 is an elevational view of the terminal of this invention mounted on a fragment of a cable and supporting strand, with a portion of the housing cover broken away to disclose the molded terminal block, the combined air gap arresters and fusible protector units, the binding posts, and a pair of subscriber's wires connected to the binding posts;

Fig. 2 is a front elevational view of the molded terminal block shown in Fig. 1 with the grounding strap shown in dotted lines connected to one side of the combined air gap arresters and fusible protector units and with insulating protective caps positioned over the unused binding posts;

Fig. 3 is a sectional view taken on line 3-3 of Fig. 1 and discloses the structure of the combined air gap arrester and fusible protector unit and the relative position of the stub cable, the binding post and the conductor strap which connects one side of the combined air gap arrester and fusible protector unit with the binding post; and

Fig. 4 is a schematic showing the circuit connection to the cable stub, combined air gap arrester and fusible protector unit, and binding post.

As shown in Fig. 1, the cable terminal of this invention comprises a sheet metal housing or casing 10 having a suitable cover 11, secured to the cable 12 by the metal straps 13 and 14. The straps 13 and 14 encircle the cable 12 and have their end portions secured between the bosses 15 and 16 located on the top of the housing 10. The cable 12 is suspended from the messenger strand 17 by hangers 18 and 19. The drop wires 20 and 21 are connected to the binding posts 22 molded in the terminal block 23, and are brought out through the bottom of the housing 10 through suitable insulating grommets, not shown. The block 23 advantageously is of a polyester casting resin known commercially as Selectron.

Located in the interior of the housing 10 and secured therein by screws 24, is a single unitary molded terminal block 23 which has molded therein the stub cable connection 25, binding posts 22, and the combined air gap arresters and fusible protector units 26. The idle binding posts on the block 23 are protected from accidental contact by suitable insulating caps 27 which are removed when connections to the respective binding posts are to be made.

As shown in Fig. 2 and more in detail in Fig. 3, there is molded in the terminal block 23 a plurality of combined air gap arresters and fusible protector units 26, one for each binding post 22. The protector units 26 have their shells connected together by a common grounding strap 28 molded in the block which in turn is connected to ground through the screw 24, the housing 10, and the sheath of the cable 12.

The internal portion of the combined air gap arrester and fusible protector unit 26, that is, that portion which comprises the air gap arrester element of the block, is connected to the rear of the binding posts 22 by a conducting strap 29 which is molded in the block 23 and has connected thereto a conductor 30 of the stub cable 25.

One form of protector unit which has been found particularly advantageous for use in the molded cable terminal block is the combined air gap arrester and fusible protector unit 26 shown in detail in Fig. 3 and schematically in Fig. 4. It comprises a metal cylindrical housing or shell 31 having at its lower end an insulating sleeve member 32 positioned on the interior thereof. Located in the central bore of the sleeve 32 is a metal insert 33, which has connected to the bottom portion thereof one end of the metal strap 29. The other end of the strap 29 is connected to the rear of the binding posts 22, as heretofore described, and has an extending portion 34 to which the conductor 30 from the stub cable 25 is connected.

Located on the interior of the shell 31 and in threaded engagement therewith is a metal cup member 35, which has positioned therein an insulating bushing 36. The bushing 36 is somewhat shorter than the cup 35 and has centrally located therein and fixedly secured by means of a suitable cement a cylindrical carbon block 37, which extends beyond the bottom portion of the sleeve 32 and is in contact with the head 38 of a pin 39 which is slidably mounted in the bore of the metal insert 33. A coil spring 40, positioned around the insert 33 and in engagement with the bottom portion thereof, bears against the under side of the head 38 to hold the top of the insulating bushing 36 in contact with the carbon disc 41, which, as shown, is in spaced relation with the top of the carbon block insert 37 to provide an air-gap therebetween.

Positioned between the top of the disc 41 and the inside end wall of the cup 35 is a slug or disc 42 of fusible material, which, due to the pressure of the spring 40, is held in firm engagement with the wall, thereby providing a path to ground through the shell 31 via the strip 28 as shown in the schematic Fig. 4, in the event of a momentary lightning discharge or a sustained high voltage impressed thereon which will hereinafter be described in detail.

As shown in Fig. 4, which is a schematic showing of one side of a subscriber's line, the normal talking circuit is over the subscriber's line SL through the binding posts 22, over the strap 29 to the cable stub 25, and over the conductor 30.

In the event of a momentary lightning discharge impressed on the line SL, it will be discharged to ground through the cup 35, the spring 40, the pin 39, carbon block 37, over the gap to the disc 41, through the fusible slug 42 to the shell 31 and thence to ground.

When a high sustained current is impressed on the subscriber's line SL, the circuit follows the same path but due to the high current being sustained, it causes the slug 42 to melt, thereby permitting the head 38 of the pin 39 to engage the lower edge of the shell 31, under the influence of the spring 40 and completing the circuit to ground.

While there has been shown and described the preferred embodiment of my invention, it is to be understood that various changes and modifications may be made therein without departing from the spirit of the invention.

What is claimed is:

1. A cable terminal comprising a housing, a cover for said housing, a panel of molded insulating material mounted on the interior of said housing and having embedded therein a cable stub connection, comprising a plurality of conductors, and a plurality of combined air gap arresters and fusible protector units and binding posts, the inner ends of said protector units and said binding posts terminating in said panel and connected together by conducting means embedded in said panel, and the conductors from said cable stub connected to said conducting means.

2. A protected cable terminal comprising a housing having an opening along one side thereof, a removable cover over said opening, a block of molded insulating material mounted in the interior of said housing and having embedded therein a cable stub comprising a plurality of insulated conductors, a plurality of protector units having inner and outer electrodes and comprising metallic shells containing air gap arresters and fusible means, embedded in said block, said shells terminating in said block and connected together and to said terminal housing by a conductor embedded in said block, said shells forming the outer electrodes of said protectors, and a plurality of binding posts embedded in and terminating in said block, said binding posts connected by embedded conducting means to the inner electrodes of said protector units and to the conductors in said cable stub.

3. A protected cable terminal comprising a metallic housing having an opening along one side thereof, a removable cover over said opening, a block of molded insulating material mounted on the interior of said housing and having embedded therein a cable stub comprising a plurality of insulated conductors, a plurality of protector units having inner and outer electrodes insulated from each other embedded in said block terminating therein, one electrode of each of said protector units connected together and to the housing of said terminal by a conductor embedded in said block, a plurality of binding posts embedded in and terminating in said block, said binding posts connected by embedded conducting means to the other electrodes of said protector units and to the conductors in said cable stub.

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