Jan. 6, 1948. J. W. CHANNELL 2,434,102

DISTRIBUTING TERMINAL

Filed Feb. 12, 1944 2 Sheets-Sheet 1

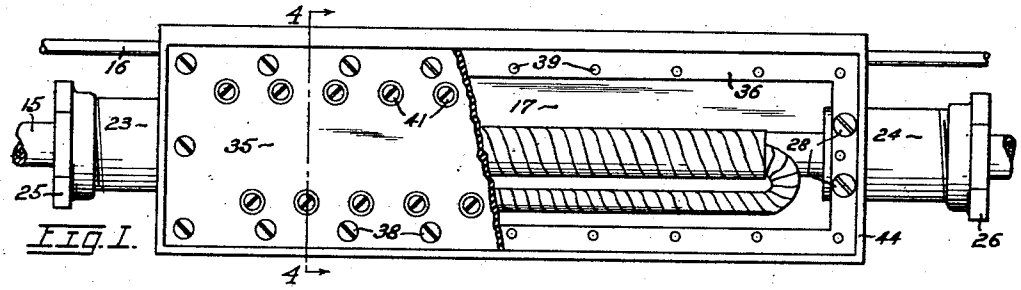

Fig. 1.

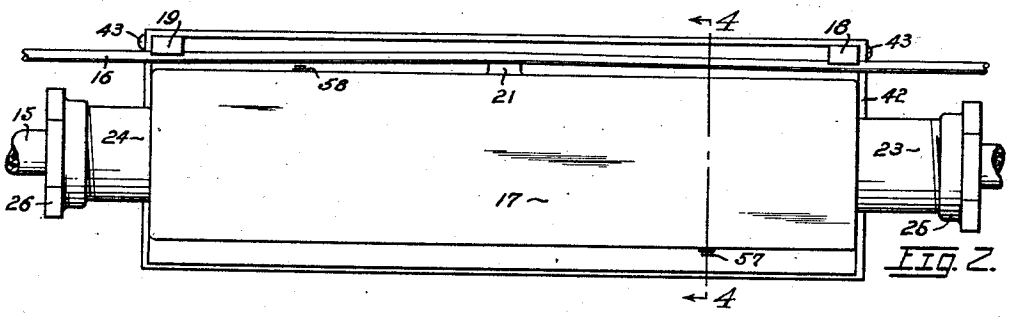

Fig. 2.

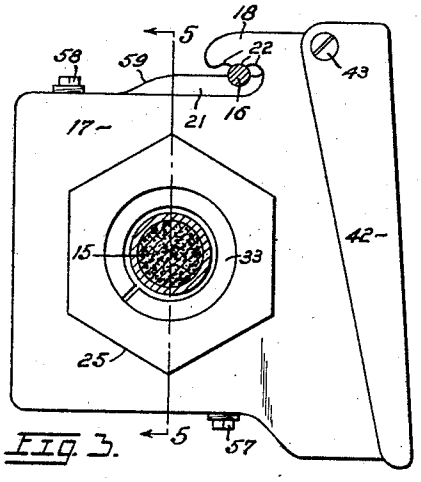

Fig. 3.

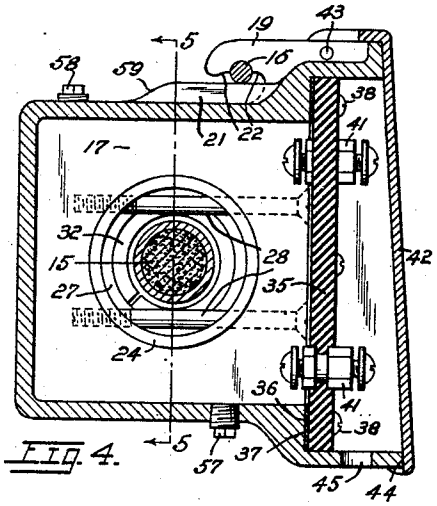

Fig. 4.

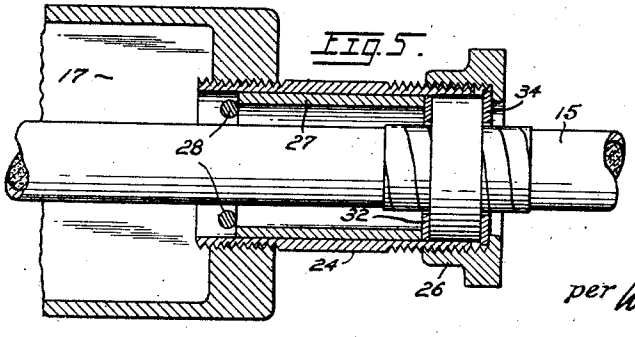

Fig. 5.

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DISTRIBUTING TERMINAL

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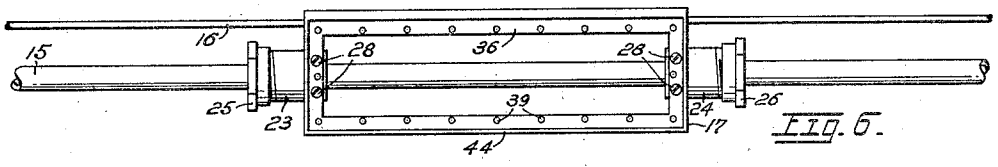
Fig. 6.

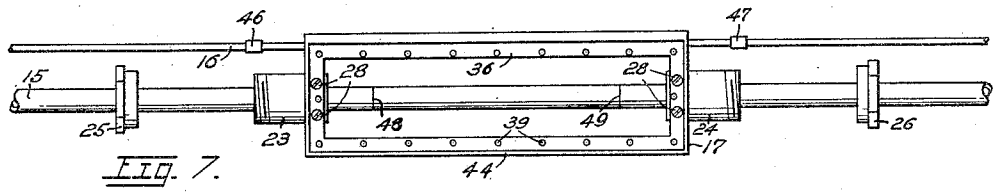

Fig. 7.

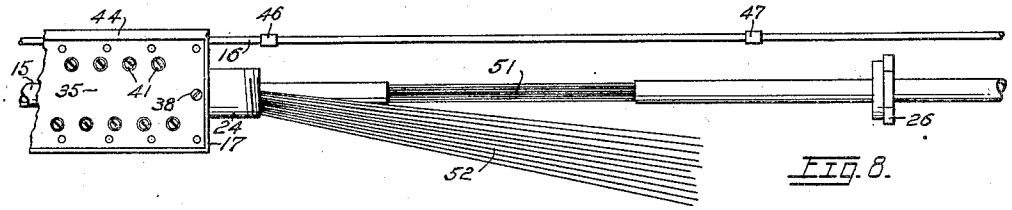

Fig. 8.

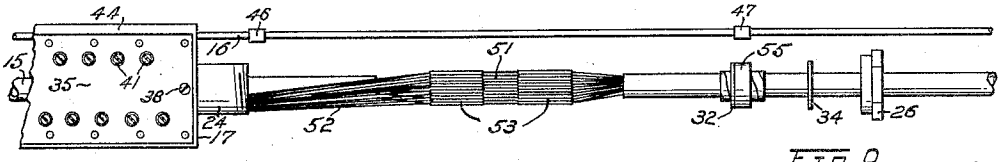

Fig. 9.

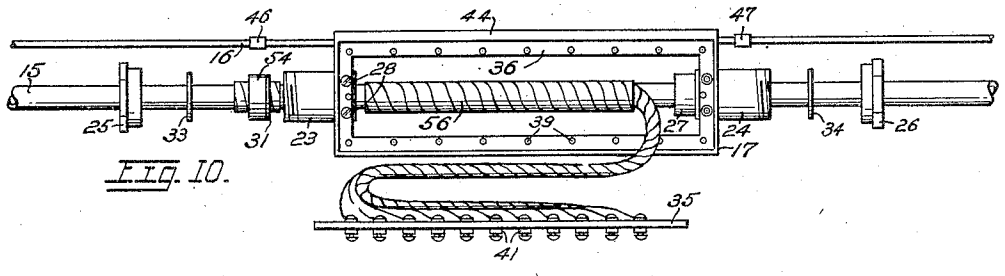

Fig. 10.

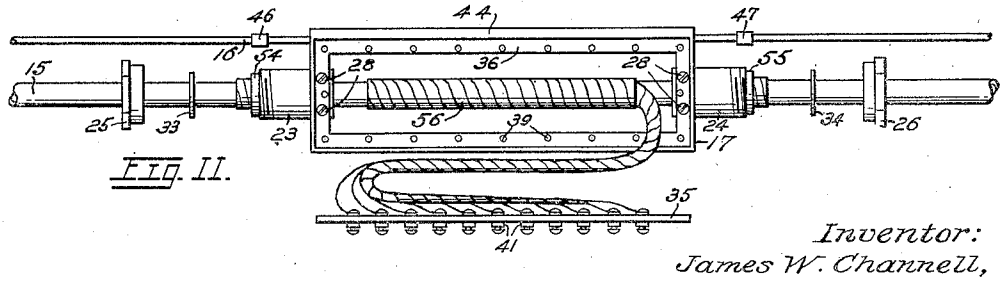

Fig. 11.

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2,434,102

UNITED STATES PATENT OFFICE

2,434,102

DISTRIBUTING TERMINAL

James W. Channell, San Marino, Calif.

Application February 12, 1944, Serial No. 522,167

1 Claim. (Cl. 174—77)

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The herein disclosed invention relates to distributing terminals for smoothly sheathed electric cables, and it is particularly adapted for use with lead-covered telephone cables. It involves substantial improvements upon the terminal construction illustrated and described in United States Patent No. 2,318,755, issued to me on May 11, 1943; and its objects, generally stated, are to secure additional utilities over said construction, without sacrificing any of the advantages inherent therein.

More specifically, the objects of the present invention include; first, to provide improved means for supporting terminals of the class set forth in said patent; second, to furnish better facilities for packing joints between cable sheaths and such terminals; third, to devise a packed joint for cable terminals, wherein use may be made of impervious adhesive tape as the packing medium; fourth, to make it feasible to build up packings of impervious adhesive tape on cable sheaths in the open, and then to install such terminals thereover; and, fifth, to accomplish all of the stated objects, and such others as are incidental thereto, by means of simple and relatively inexpensive construction.

My objects are attained in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a distributing terminal embodying the present invention, together with portions of its co-operative environment; the terminal cover having been removed, and the underlying connection plate having been partially broken away, to show parts therebeneath;

Figure 2 is a rear elevation of said construction and environment;

Figure 3 is an elevation of the left-hand end of the terminal, on a somewhat enlarged scale;

Figure 4 is a cross-section of the terminal, taken on the plane 4—4 of Figs. 1 and 2, and looking in the direction indicated by the arrows, the view being drawn on the same scale as that of Fig. 3;

Figure 5 is a fragmentary longitudinal axial section of the right-hand end of said construction, taken on the plane 5—5 of Figs. 3 and 4, and on the same enlarged scale;

Figure 6 is a diagrammatic elevation of the shell of such a terminal, shown supported by a cable strand and with a lead-covered telephone cable pulled therethrough. It illustrates the first series of steps to be taken in making installations of the kind herein described;

Figure 7 is a similar illustration of the second group of acts required in the installation procedure;

Figure 8 illustrates the third set of installation jobs to be performed;

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Figure 9 indicates the fourth lot of necessary procedural actions;

Figure 10 shows the fifth grouping of things to be done in making such installations; and

Figure 11 represents the sixth and last succession of performances required to complete the installation process.

The several views are not strictly pictorial, and they are to be considered as more or less diagrammatic. Similar reference numerals refer to similar things throughout the several views.

For such installations as I have selected for the purposes of this disclosure, I contemplate locating a terminal shell, such as the body part of my improved terminal, at each point where a branch connection is to be made; and pulling the transmission cable through all of such shells at the time of its original installation. Distributing connections may then be made at each of the terminal locations, at any subsequent time. It is entirely feasible, of course, to install my terminals after the cable has been put in place; but such installations require cutting the entire cable, and then splicing every cable conductor, whether a branch is to be connected thereto or not.

In the drawings, I have indicated a lead-covered aerial telephone cable at 15, and a strand for supporting the same at 16. The shell or body of my terminal is an open sided, integral, and box-like structure 17. It is provided with spaced and rearwardly extending horizontal arms 18 and 19, at the top and the respective ends; whereby it may be hung upon, and be supported by, stand 16. A rearwardly extending intermediate ridge 21, at the top of the shell, serves to deflect strand 16 slightly, between arms 18 and 19 and, in that way, the shell is securely positioned on the strand against accidental displacement. Additional security is obtained by means of circular cross-notches 22, for engaging the strand, at the bottoms of arms 18 and 19.

Nipples 23 and 24 are screwed co-axially into and through the respective ends of shell 17, and gland nuts 25 and 26 are adapted for screwing upon the outer ends of those nipples respectively. Within each of the nipples, is a shorter and slidable sleeve, as at 27. Normally these sleeves are limited as to movement toward the interior of the shell, by means of a pair of screws 28, against which the sleeves are adapted to seat.

Radially-split washers 31 and 32 fit snugly within the respective nipples, and are adapted to seat against the outer ends of the corresponding slidable sleeves. Another pair of radially-split washers 33 and 34, of the same internal diameter as the first said pair, but of larger external diameter, are adapted to be contained within the respective gland nuts, and to seat against the inner faces thereof.

The terminal is provided with a connection plate

35, of suitable insulating material. This is adapted to seat upon a marginal shelf-like surface 36, within and back of the mouth of the shell. Ordinarily a gasket 37 is interposed (Fig. 4). The connection plate is held in place by means of screws 38, which engage tapped holes 39. Terminal studs 41 extend through the connection plate, and are supported thereby. They have suitable wire-attaching means at each end, and their outer ends preferably extend forwardly of the plate. If said plate is molded of plastic material, the terminal studs may be suitably shaped and embedded therein, as in Fig. 4.

A cover 42, hinged at the top as at 43, is adapted to enclose the outer face of the connection plate and the terminal studs. The cover may seat against the forward peripheral rim 44 of shell 17; and the plane of the rim-seating surface be given a downward and forward slope, in order to hold the cover thereagainst by gravity. Spaced holes 45, through the bottom flange of rim 44 (Fig. 4), serve to position such branch wires as may come into the terminal.

When branch wire connections are to be made to the cable conductors by the aid of the terminal described, the first series of steps to be taken in making the installation, comprises; determining the exact position to place the terminal with respect to the cable; and placing the previously provided shell in that position (Fig. 6).

The second group of acts required in the installation procedure, includes; backing off gland nuts 25 and 26; placing tape markers 46 and 47 upon strand 16, opposite the position on cable 15 where packings are to be applied; and marking the cable sheath, as at 48 and 49, where it is to be opened for making the splices (Fig. 7).

The third set of installation jobs to be performed, consists of; sliding shell 17 to the left; cutting away the cable sheath between marks 48 and 49, to expose conductors 51; inserting the inner ends of the required branch wires 52 (which previously have had their outer ends connected to the inner extremities of the respective terminal studs 41) into shell 17, and then threading said inner ends outwardly through nipple 24; and attaching connection plate 35 temporarily, as at its ends, by a couple of the screws 38 (Fig. 8).

The fourth lot of necessary procedural actions comprehends; splicing the branch wires to the cable conductors, as at 53; building up a packing 55 of impervious adhesive tape on the cable sheath, opposite marker 47 and of such shape and dimensions as to adapt it for use in the right-hand terminal joint; and springing split washers 32 and 34 over the cable sheath, in the respective positions indicated (Fig. 9).

The fifth grouping of things to be done in making such installations, includes; taping the mass of splices as a whole, as at 56; removing connection plate 35 from its temporary position; removing the two screws 28 that normally retain slidable sleeve 27 in its position; sliding shell 17 to the right, over and beyond packing 55; building up another and similar packing 54 on the cable sheath, opposite marker 46; and springing split washers 31 and 33 over the cable sheath, in the respective positions indicated (Fig. 10).

The sixth and last succession of performances required to complete the installation process, consists of; moving shell 17 to its final position, where each of the packings 54 and 55 is partly within the respective nipples 23 and 24, and extends outwardly therefrom the same amount as the other; moving sleeve 27 to its normal position within nipple 24, and replacing the two retaining screws for holding it there; attaching connection plate 35 in its final position, with gasket 37 beneath it, by means of screws 38; tightening up gland nuts 25 and 26 upon the outer ends of their respective nipples; leading the required number of incoming wires into the terminal through holes 45, and attaching them to the outer extremities of respective terminal studs 41; and putting on the hinged cover 42, to protect the outer face of the connection plate (Figs. 2, 5 and 11).

It is to be noted that shell 17 may be tapped and plugged if desired, as at 57 and 58 (Figs. 2, 3 and 4); to permit of pressure testing, introduction of gas, or filling the shell with insulating material.

It usually is desirable to locate supporting arms 18 and 19 with consideration for the probable location of the resultant center of gravity of the terminal with respect to its vertical axis, when it is suspended with its incoming wires attached. Otherwise it may tip at an undesirable angle after installation.

It also is desirable to have a sloping portion 59 at the rear end of ridge 21 (Figs. 3 and 4), in order to deflect strand 16 gradually when the terminal is placed. This is especially true when the strand is heavy or stiff, or when its tension is great.

It will be obvious that the installation procedure may be reversed as to hand, since the right-hand and left-hand facilities provided are entirely similar. It will also be apparent that many equivalents exist for the several parts of the disclosed construction, and that such may be found or be developed by skilled persons, in the light of this disclosure. Such departures within the scope of the appended claim, are contemplated by me for use when they appear to be desirable.

I claim:

A distributing terminal comprising; a box-like shell having an open side; a branch-wire connection board constituting a closure for said side; co-axial nipples screwed through opposed walls of the shell; gland nuts at the outer extremities of the nipples; sleeves within the nipples which are slidable therein and withdrawable toward said shell; removable stops at the inner ends of the sleeves, to retain them within the nipples; and split washers adapted to constitute packing seats, abutting against the outer ends of said sleeves.

JAMES W. CHANNELL.

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