

July 20, 1937.

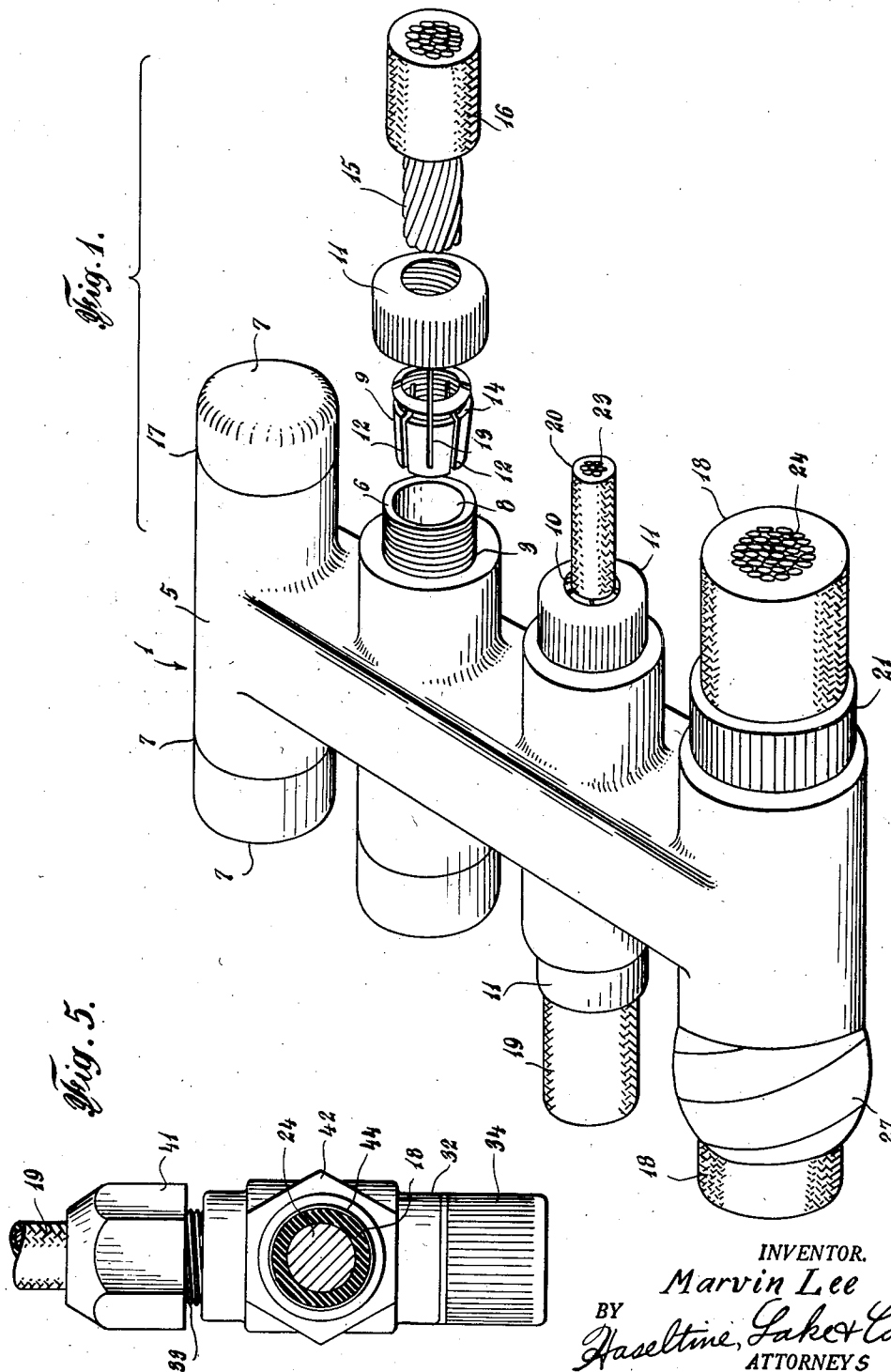
M. LEE

2,087,384

CABLE CONNECTER

Filed July 9, 1935

5 Sheets-Sheet 1



July 20, 1937.

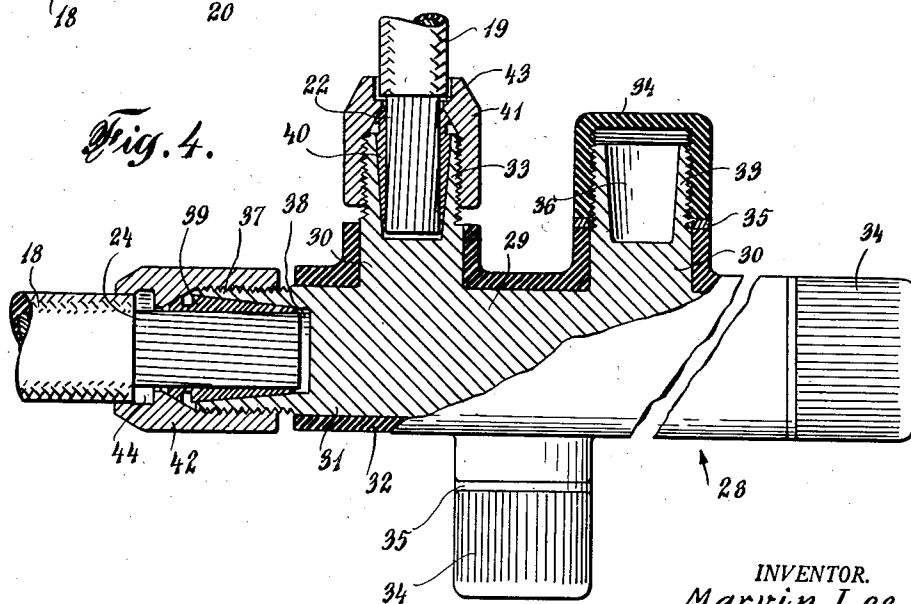
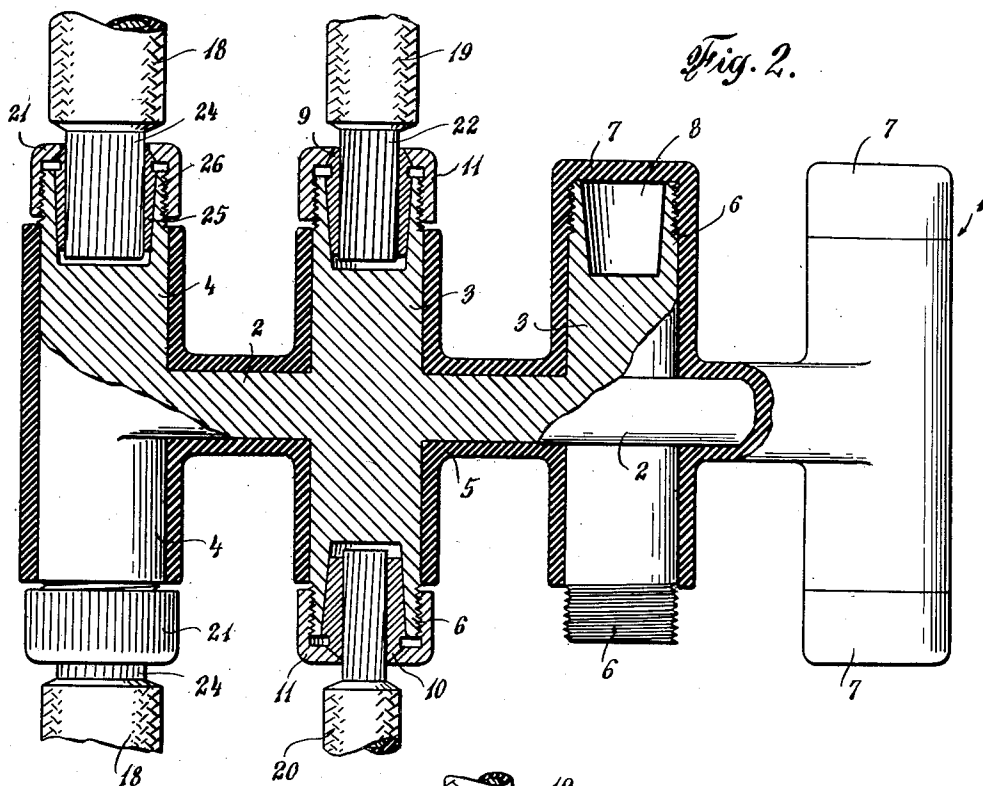
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CABLE CONNECTER

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5 Sheets-Sheet 2



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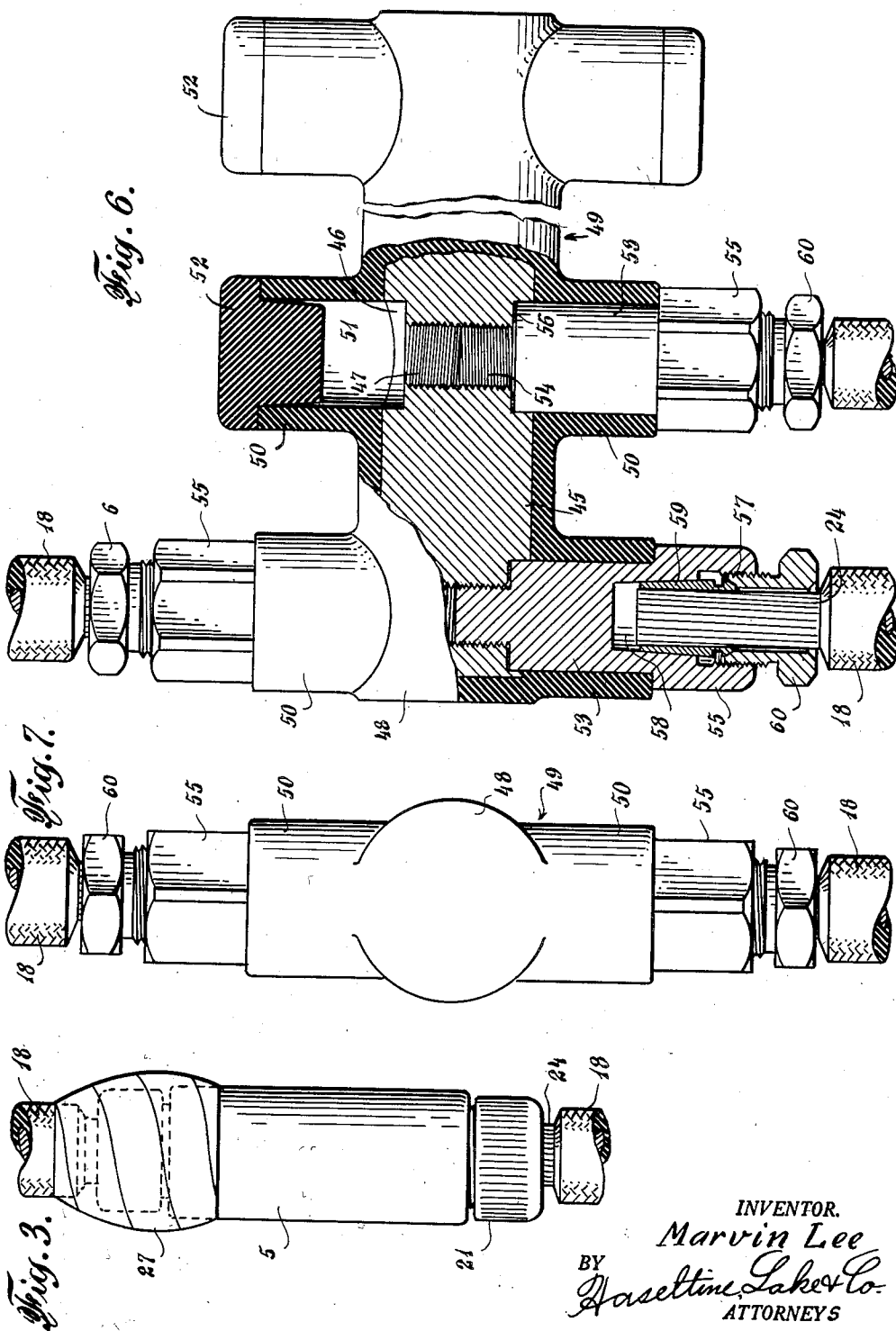
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CABLE CONNECTER

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5 Sheets-Sheet 3



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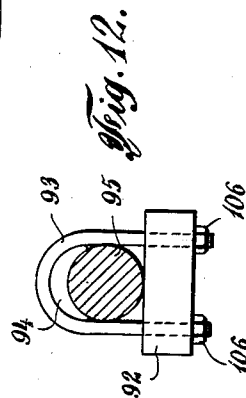
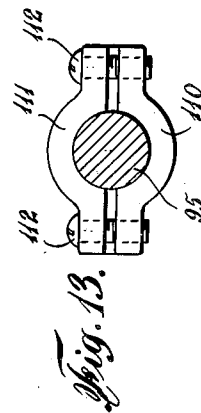
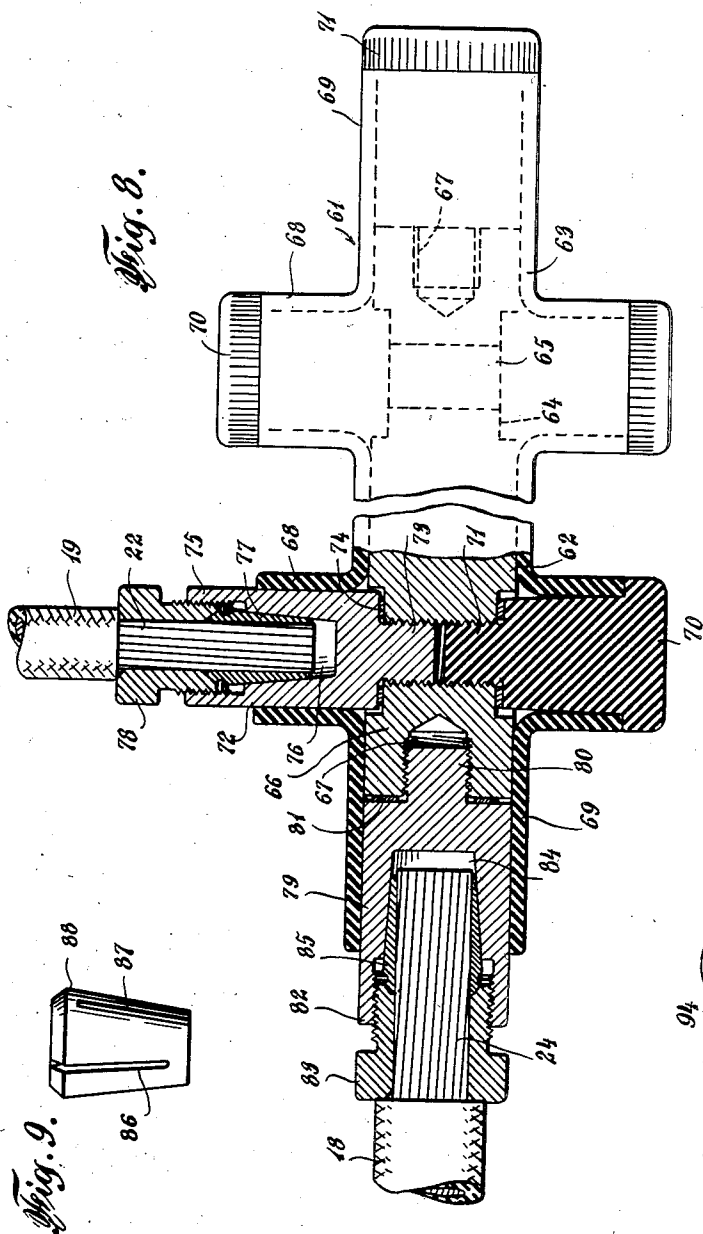
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CABLE CONNECTER

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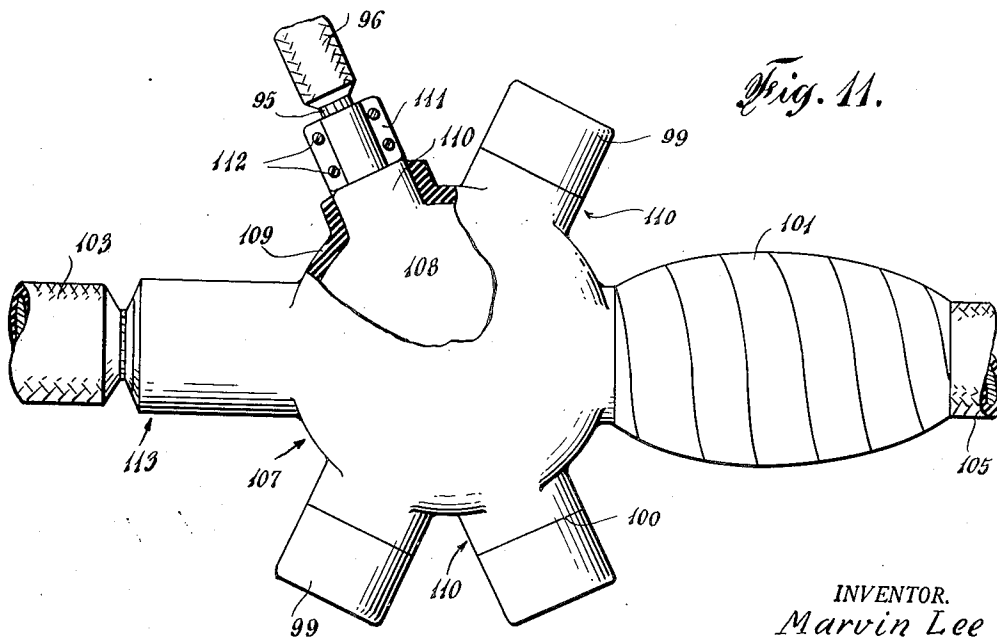
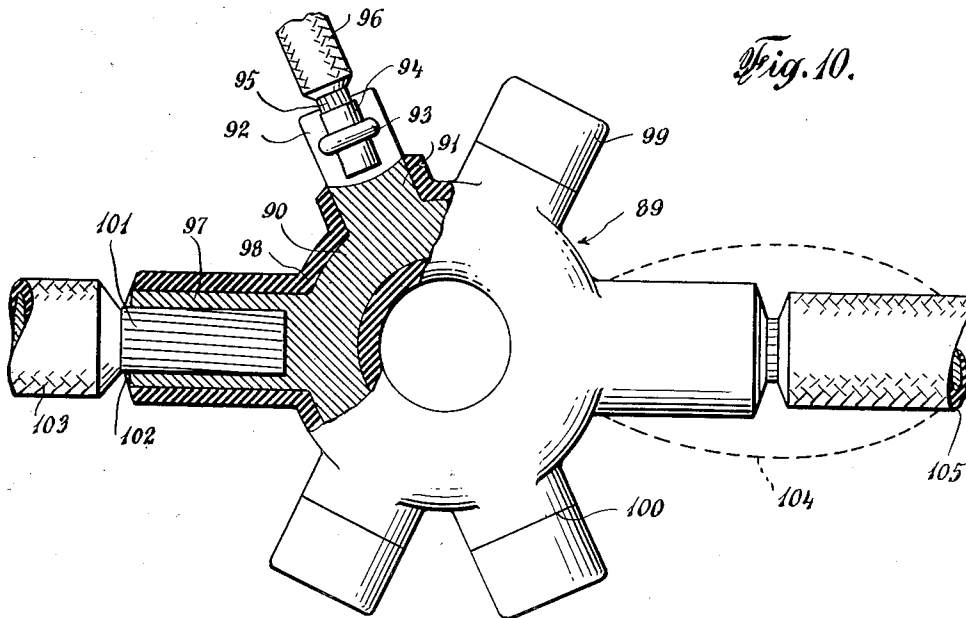
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CABLE CONNECTER

Filed July 9, 1935

5 Sheets-Sheet 5



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2,087,384

CABLE CONNECTER

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Application July 9, 1935, Serial No. 30,425

4 Claims. (Cl. 173—268)

The present invention relates to a cable connector of the type adapted for use with insulated cables and which has a fully insulated body portion as well as branch portions to which connections may be made and the resulting junctions subsequently insulated.

The main object of my invention is to provide a cable connector device of the character indicated which renders it possible to connect insulated cables by the simple expedient of removing a small amount of insulation and then, after placing the one or more cable ends in position in the device, tightening up clamping nuts by means of a wrench or pair of pliers, or connections can be made by means of pressure devices, by soldering, brazing or by any other means known in the art.

Another object is to provide such a cable connector which is not only well insulated electrically upon the body and branch portions thereof, but capable of withstanding mechanical abuse while retaining its insulation wholly intact.

A further object is to provide a cable connector of this type to which various numbers and different sizes of cables can be quickly connected or disconnected and changed, and from which all cable ends can be speedily removed and the connector device returned to stock for future use or removed to a different location.

Yet another object is to have a cable connector of a size and form which inherently embodies such a generous current carrying capacity as to preclude any disruption or melting of any portion thereof from the effects of sudden and heavy current surges and short circuits which are possible in underground cable networks and systems.

It is, withal, an object of my invention to provide a connecting device for insulated cables which is itself easy to manufacture, reasonable in cost, highly efficient in design, extremely useful and labor saving and thus economical in practice and very compact and accessible in structure.

Further objects and the various advantages inherent in the structure, design and principles of my invention will appear more fully in detail as this specification proceeds.

In the accompanying drawings forming part hereof,

Fig. 1 is a perspective view of a cable connector made according to the present invention and embodying the main principles thereof.

Fig. 2 is a plan view of the same with portions in section to disclose the interior construction and relations of parts.

Fig. 3 is an end view of the same cable connector.

Fig. 4 is a plan view of a modification shown partly in section and having a portion omitted

to avoid needless repetition of similar structural details.

Fig. 5 is an end view of the cable connector of Fig. 4.

Fig. 6 is another modification, partly in section and having part of the structure omitted to condense the view.

Fig. 7 is an end view of the connector of Fig. 6.

Fig. 8 shows a further modification partly in section of the cable connector and its appurtenances, and intermediate portion being omitted as in the other modifications.

Fig. 9 illustrates a simplified form of conical sleeve adapted for use with the device of the foregoing views.

Fig. 10 illustrates a different form of connector, the main body having the form of a toroid or ring.

Fig. 11 is a modification of the connector of Fig. 10.

Fig. 12 is a fragmentary view of a clamped cable connection for one of the arms or branches of the connector.

Fig. 13 is a further form of cable connection having similar functions to that of Fig. 12.

Throughout the views, the same reference numerals indicate the same or like parts.

The making of safe and proper underground connections of service cables to feeder cables has always been a laborious, hazardous and time consuming operation, requiring skill and experience, and forming a considerable item of expense in the laying and maintenance of power lines and rendering service from the same. Herebefore, when connecting multiple service taps or cables to an underground feeder cable, various methods and means have been resorted to in practice. Such methods and means have for the most part formed mere expedients, some of which may be mentioned as follows.

One method has been to attach and solder each tap or service cable to the feeder cable after which the soldered joint was wrapped with several layers of insulating tape and friction tape.

Another expedient has been to use a gasketed metal junction box equipped with cable lugs for the copper portion of the feeder cable and wiping nipples for making wiped joints between the lead sheaths of the cables and the junction box.

Another method has been to employ an insulated so-called "crab splice", which consists of a group of joined short lengths of cable to the ends of which the feeder cable and the taps or service cables are connected by means of soldered cable sleeves.

In the past, cables were universally of the lead sheath type, often necessitating the use of lead sleeves at points where connections were made and always involving more or less soldering.

Lately the old types of cables are being displaced by non-leaded types such as, for example, the parkway type, the latter having an exterior fabric insulation over rubber and the like and being lighter and more easy to handle than a lead sheath cable. With the parkway cable it is now usual to use non-leaded service cables which are soldered thereto and insulated in well known manner.

Each of the methods is, as already indicated, expensive, tedious and hazardous, always involving the use of gasoline furnaces and other soldering equipment in cramped underground locations where explosive gases frequently accumulate and where it is sometimes impossible to work with proper freedom because the cables and their peculiar locations are frequently well nigh inaccessible.

Whenever wrapping with tape is required in order to provide the insulation, the foregoing methods not only occupy much time, skill and material, particularly the T-connections but especially with reference to such connections, as well as some others, experience has proven that it is difficult to prevent voids in the taping which are highly undesirable.

In view of the difficulties heretofore encountered in practice, including those just mentioned as well as with the foregoing objects in view, it is now proposed that by means of the present invention it will be possible to join tap or service cables with feeder cables in underground locations by an exceedingly simple method of forming joints in which only a wrench or a pair of pliers will form the tools required for making the connections and which joints will merely require to be directly taped over upon very limited areas in a speedy and efficient manner.

Hence, in the practice of my invention a typical cable connector embodying the same is indicated at Fig. 1, consisting of a main body portion 2 of metal such as copper, bronze or any suitable electrically conductive alloy and a plurality of integral branches or arms 3, 3', 4, 5, etc. over which a protective insulating envelope or form 5 is fitted or coated, which envelope may be made of hard or soft rubber, gutta percha, a phenol condensation product or vinylite resin derivative, or any other plastic or non-plastic hard or soft insulating body which is now used or may be discovered to be efficient for the purpose of insulating the metal body and its arms.

When the cable connector is manufactured and brought out upon the market for use it is intended that the exteriorly threaded ends 6 of the arms are to be covered by caps similar to 7 of insulating material continuous with the envelope 5 so that the connector is wholly protected from exposure to the air or any atmospheric influences for a reason which will presently appear. When it is desired to use the device and make a connection thereto, naturally the threaded end of each arm to which a connection is to be made should have the insulating cap 7 removed therefrom. For this purpose, at approximately the inner end of the thread upon end 6 of each arm is an exterior line or mark 17 which may be a slight rib or indentation or any other kind of indication for the purpose of locating the exact point at which a knife may be brought down through the insulation to the metal of the arm, after which it will be easily possible to remove the cap thus severed from the main portion of the form or envelope 5.

As already intimated, the ends of the arms may

be threaded, while interiorly said arms are formed into taper cups as indicated at 8 adapted to receive conical expansion and compression sleeves such as shown at 9 and 10, while the exteriorly threaded portions of the ends of the arms are adapted to receive interiorly threaded sleeve adjusting nuts 11, 11'. Said threaded adjusting nuts are adapted to engage against the outer ends of the tapered sleeves so as to force the same home into the tapered cups in the ends of the arms, and in order to allow for compression of the sleeves in accordance with the positions into which they may be forced by the threaded adjusting nuts, the mentioned sleeves are preferably partly slotted from their opposite ends as indicated at 12, 12', 13, while adjacent to the outer end of each sleeve, a reduced portion or recess 14 is formed in order to render the outer end resiliently compressible in a manner corresponding to the smaller inner end of the sleeve.

The main purpose of each tapered cup and corresponding conical sleeve, as well as adjusting nut, is to provide a connection between the end 15 of a cable 16, which may be of the lead sheath type or of the parkway type, which is indicated in Fig. 1 in partly disassembled form in the upper right portion of the view. The end 15 of the cable is first freed from its insulation, and after being scraped clean is passed through the adjustment nut 11 and into tapered sleeve 9 and then the sleeve, together with the cable, is pushed into tapered cup 8 in threaded end 6 of arm 3 and the adjusting nut engaged upon the threaded end 6 and screwed up upon the same until the conical sleeve about cable end 15 binds in the tapered cup 8 and upon said end 15 of the cable, with a resulting great resistance to further turning of the adjusting nut. At this juncture a pair of pliers or a Stillson wrench may be used to give the adjusting nut one or more extra turns until it is virtually impossible to screw the same in further upon threaded portion 6, when it will be found that the cable is so securely held and locked within the sleeve and taper cup that it will be impossible to pull the same free from the connector.

The usual arrangement according to the first form of the invention is shown in Figs. 1, 2 and 3 with typical connections made and in the process of being made in the manner just described, the cable portions 18, 19 being a current supplying feeder cable, while the smaller cables 16, 19 and 20 are individual taps or service cables leading to local buildings or street lights. Of course, those arms or branches which are not required to be used at the time the connector is installed are untouched and remain in reserve for future connections if and when it is desired to expand the service and distribution of current, the caps 7, 7' remaining unsevered in place upon the threaded ends of such unused arms and continuing to wholly enclose and thus insulate the same effectively while incidentally protecting them from air, gases, dampness or even accumulations of water containing various impurities such as sewage, acids or salts, etc., which sometimes are found to have seeped into the man-holes or underground locations where the cables are connected.

Due to the fact that the core 23 of cable 20 is smaller than cores 15 and 22 of cables 16 and 19 respectively, a correspondingly heavier sleeve 10 is used rather than the lighter sleeve 9, for example, so that while the exterior conical dimensions of these sleeves may be the same, their

internal diameters are selected to correspond with the particular size of cable to be connected to the device. Alternatively, it is also practical to have larger sleeves such as 25 to fit tapered cups similar to 26, which may be larger than cups 6 previously described inasmuch as arms 4, 4, adapted for connection to feeder cables 18, 18 are preferably of greater transverse dimensions than arms 3, 3 used for service connections. In such a larger sleeve 25, the internal diameter is, of course, properly adjusted to the size of the conducting core 24 of the feeder cable 18 in each case, and as different sizes of feeder cables may be encountered in practice, even the larger type of conical sleeves may have different internal diameters to correspond, although the exterior adjusting nuts 21 for securing the sleeves may be the same.

The main metal body or core 2 of the connector is given a sufficient cross section to enable the same to carry at least as much current as the largest feeder cable without heating, and when the various cables have been connected in the manner thus far shown and described, the connections are not only mechanically strong and secure but also efficient and ample electrically, so that dangerous heating will not occur, even upon short circuit. Nevertheless, it is immediately apparent that in the case of each cable, the core thereof is practically concealed within the sleeve and connector arm to which it is connected and the initially exposed threaded end also concealed and protected by a sleeve adjusting nut 11 or 21, as the case may be, which is of such dimensions as to substantially cover the entire thread upon which it may be screwed.

The result is that at each connection practically the only metal exposed is the sleeve adjusting nut interposed between the insulation of the cable involved and the insulating form or envelope upon the connector arm to which it is connected, the area of the metal thus exposed being very limited and not only symmetrical, but the adjusting nut is also of a diameter which is intermediate that of the insulation upon the connector arm and that of the cable. Hence, it is but a simple matter to apply insulation tape upon the exposed adjusting nut, allowing the tape to overlap upon the insulation at both ends, and then wind friction tape over the first tape so as to result in a fully taped connection as indicated at 27 in Figs. 1 and 3. Instead of taping the connection, a rubber sheath may be used if desired, the same having, of course, been drawn in upon the cable before the end thereof was inserted into the connector.

In the form of connector just described the cables were all disposed in the same plane and either in line or running in parallel directions. Another form of connector embodying the same general principles is shown in Figs. 4 and 5 generally indicated by 28 and having a conductive metal core or body 29 with branches or arms 30, 30, etc., which are staggered from the opposite sides, while the ends are also formed to serve as connecting means as at 31, the metal core in this case being covered by a molded insulating form or body 32, which is preferably of a phenol condensation product or ebonite etc. In this form of connector the insulation does not extend further than the beginning of the threaded portions upon ends 33, 33 of the arms 30, 30, etc., and upon said threaded ends knurled caps similar to 34, also made of a phenol condensation product, ebonite or the like are screwed,

while in each case a waterproof insulating gasket of rubber or other suitable material may be interposed as at 35 between the cap and the insulation upon the arm 30 so that the interior tapered cup 36, as well as the exterior thread itself of the end 33 of each arm will be fully protected against any type of exposure and possible leakage of current or short circuit. The same construction holds true for each of ends 31 of the connector except that the threaded end 37 may be larger in cross section than arms 30 so that the conical cup 38 may be larger than the conical cups 36. In this form of connector the feeder cable 18 may have its core 24 extending into slotted conical sleeve 39, which fits into conical cup 38 as in the case of conical sleeve 25 in the conical cup of threaded end 26 of the first connector.

The service cable 19 has its core 22 extending into slotted conical sleeve 40, which is in every respect similar to conical sleeve 9 before described and fits in one of the cups 36 in arm 30, while an adjusting nut 41 is screwed in threaded end 33 of said arm so as to retain sleeve 40 in compressed condition in the conical cup. The larger sleeve 39 of conical cup 38 of connector end 31 preferably has a larger adjusting nut 42 which retains said sleeve in its cup and thereby also retains core 24 of feeder cable 18 in place.

It is, of course, evident that when it is desired to connect a cable to the arms or the ends of connector 28 it is but necessary to first remove the insulating cap 34 in each case, as well as the insulating gasket 35 when the threaded end 33 and its interior conical cup 36 will be immediately exposed to view, and it will then merely be necessary to strip sufficient insulation from the end of the cable to be connected and the core thus exposed scraped clean and inserted first through an adjusting nut 41 and then into a sleeve similar to 40 and said sleeve and cable core inserted into a conical cup 36 and the adjusting nut screwed in upon threaded end 33. It is, of course, understood that in any case the adjusting nut may be initially screwed by hand until the cable is fast in preliminary manner when it is but necessary to screw the nut home by means of a wrench or a pair of properly shaped pliers. In order to afford a better grip for the pliers or the wrench the adjusting nut may be hexagonal or square as particularly shown in Fig. 5 at 41 and 42 and in order to protect the end of the insulation of the cables in each case the adjusting nuts may be provided with end recesses 43, 44 respectively. After taping or covering the joint thus made with tape or a rubber sheath or the like the joint will be finished and insulated and ready for service.

In the two figures of the connector already described, the arms to which the connections are made are integral with the main body portion of the connector but this is, of course, not always necessary as it is possible, as even shown in Fig. 6, to have the metallic core or body 45, counterbored and tapped as indicated at 46 and 47 respectively, while said core is exteriorly protected by an insulating form 48 which may be of molded rubber or the like. Instead of providing this form of connector which is generally indicated at 49 with any arms projecting from the core 45 the insulation 48 is built up into tubular projections as at 50, 50, whose inner hollow portions 51 register with the counterbored portions 46 of the core and are, of course, concentric with the tapped holes 47. Each of the tubular insulation projections 50 is closed by a rubber plug similar to 52, 52, which may be held in place by tap or by

any other desired means so as to protect the counterbored and threaded interior portions in core 45. When it is desired to make cable connections to this form of connector the rubber plug 52 is in each case removed from the tubular insulation projection 50 and a special metallic connecting arm 53 having a threaded inner end 54 screwed into a tapped hole 47 by means of a wrench or pliers applied to the exterior square or hexagonal portion 55.

In order to render the contact between the connecting arm 53 and the bottom of the counterbored portion 46 of core 45 most secure a lock washer 56 is interposed between the main body portion of the arm and the bottom of the mentioned counterbored portion. In this form of arm the outer end thereof is interiorly threaded as at 57, while within said threaded portion a conical cup 58 formed and adapted to receive a slotted conical sleeve 59 in a manner which is analogous to the introduction of the conical sleeves in the cups of the rigid integral arms previously described. In the present case the main connection between the arm 53 and metal core 45 is the threaded inner end 54 of the arm, part of the current being, of course, also passed through the lock washer 56 which may be of any known form so as to prevent unscrewing of the arm 53. In order to secure the cable core 24 in sleeve 59 and also in conical cup 58, an exteriorly threaded adjusting nut 60 is passed in upon the cable core 24 and then the core inserted into conical sleeve 59, after which the sleeve cable core may be inserted into cup 53 of the connecting arm and adjusting nut 60 screwed into threaded portion 57 by means of a wrench or pliers fitted upon its square or hexagonal exterior. The exposed hexagonal or square portion 55 of the connecting arm as well as adjusting nut 60 are finally covered as before by means of taping or a rubber sheath, etc., and the connection is quite finished ready for service.

A further form of the connector which combines features of the preceding forms is shown generally indicated at 81 in Fig. 8, wherein the main core 82 which is of copper, bronze or any conducting metal or alloy is protected by an insulating envelope or form 83 preferably of soft rubber or the like and has not only the counterbored and threaded portions 84 and 85 which resemble counterbored and tapped portions 46 and 47 respectively of the connector shown in Fig. 6 but also has the ends 86 drilled and tapped as indicated at 87, while the insulation is provided with hollow tubular projections 88, 89 at the proper locations for connecting arms to be inserted, and at the ends with tubular extensions 89, 89. The tubular projections 88 are initially fitted by composition plugs similar to 70, which are provided with inner threaded ends 71 screwed into the tapped holes 65, while the tubular end extensions 89 are similarly closed by plugs as at 71, screwed into the tapped holes 67 at each end.

When a connection is to be made to the present form of connector, the plug 70 is unscrewed and a special connecting arm 72 provided with an inner threaded end 73 is screwed into the tapped hole 65, a lock washer 74 of metal being interposed between the main body portion of arm 72 and the bottom of the counterbored portion of core 82. The arm is, of course, screwed in tightly with the aid of a wrench or pliers so that it will be securely locked in place by means of the threaded end thereof and the lock washer. The end 75 of the connecting arm is interiorly thread-

ed as before and within said threaded end the arm is provided with a conical cup 76 into which a slotted conical sleeve 77 will fit when the core 22 of the service cable 19 is inserted therein after an exteriorly threaded adjusting nut 78 has first been placed in position upon said cable core. When the adjusting nut is screwed down into threaded end 75 of arm 72, service cable 19 is, of course, well connected to metal core 62 through connecting arm 72.

At either end 66 of the connector a special feeder cable arm 79 provided with an inner threaded end 80 is screwed into tapped hole 67, while a lock washer 81 is interposed between the main body portion of arm 79 and the end 66 proper of the connector core. The interiorly threaded outer end 82 of arm 79 is adapted to receive the threaded portion of a sleeve adjusting nut 83, through which the core 24 of feeder cable 18 may be passed, while the arm is formed into a conical cup 84 for receiving a slotted conical sleeve 85 upon said cable core. When the adjusting nut is screwed into the threaded end 82 of the arm so that sleeve 86 binds within cup 84 upon cable core 24 the connection is, of course, mechanically completed. Taping or covering the exposed metal portions of the connecting arms and adjusting nuts by means of tape or rubber sleeves or the like will naturally finish the connections for service.

While the slotted conical sleeves have been shown provided with exterior channels or reduced portions immediately within their larger ends this, of course, is not intended to form a limitation herein nor is it necessary to have as many opposed spaced slots or cuts extending inwardly from the ends of the sleeve as shown, for example, in Fig. 1, for merely two slots or perhaps three or four slots such as indicated at 86 and 87 upon a conical sleeve 88 may be sufficient in some cases, the exterior channel being wholly omitted. Other forms of the sleeve may also be used, in fact, any similar structure already known in the art, which includes even split sleeves, etc.

In all the preceding forms of the connector the core thereof has been more or less straight with the branches or arms extending from one or both sides thereof but in Fig. 10 a connector generally indicated at 90 has a toroid form of metal core at 90 having service connection arms similar to 81, extending in various directions from the periphery thereof while at the ends the pair of arms similar to 97 may project in opposite directions for receiving the ends of feeder cables. Each of the service connection arms 91, when cleared of insulation, will have an exposed metal portion 92 through which the ends of the U-bolt 93 may be projected. A keeper 94 is preferably laid upon the cable core 95 of service cable 96 and the nuts 106, 106 tightened so as to clamp down the bolt and keeper upon the cable in order to bring the latter into intimate contact with arm 92. The exposed metal portions may then be insulated as previously indicated for the connectors already described hereinbefore.

The whole connector is, of course, insulated as at 98 with any suitable material selected from the various soft or hard plastic groups and upon the arms 91 may at first extend in the form of caps 99 even over the ends of the latter, while indicating lines 100 locate the most advantageous points at which a knife may be used to sever the insulation from the useful portions of arms 92. The opposite arms similar to 97 for the feeder cables 103 and 105 are, if desired, simply 75

made hollow so as to receive the core 101, for example, which may be soldered into place within the arm so that the solder completely fills the same as at 102. The connections to the feeder cable arms may then be taped and otherwise insulated as indicated at 104 in any manner known in the art.

A somewhat similar form of connector is also illustrated in Fig. 11 generally indicated at 107 and primarily consisting of a core 108 in the form of a disk of metal having feeder cable arms as generally indicated at 113 and a plurality of peripherally disposed service cable connection arms as indicated at 110, 110, while over the entire connector is an envelope or form of insulation 109 extending as in Fig. 10 over the ends of the smaller arms as at 99, 99 and having indicating lines 100 thereon, if so desired. The feeder cables 103 and 105 may be connected as before and each of the connections taped or otherwise insulated as at 101.

However, each of the service connection arms 110 is capable of receiving the core 95 of the service cable 96 and a clamping plate 111 secured to said arm by screws 112 so that the cable core 95 is securely clamped between arm 110 and plate 111. The exposed metal parts may then be taped over and insulated as already described and the connection is complete. Any of the service connection arms that are not required may naturally remain untouched with its insulation 99 in place until the connections are required to be made thereto.

Although in Figs. 10 and 11 the connector has a practically circular periphery, the same could be elliptical or the connector could be semi-circular in form instead of being a disk or could be U-shaped so as to include merely half of the toroid form, the connecting arms being preferably upon the convex portions thereof in any case. Similar modifications are also possible and may be obvious to those skilled in the art.

As may be noted, the cross section of the metallic core in the first form of the connector shown in Figs. 1 to 3 may be more or less rectangular or it may be square as, for example, in that form shown in Figs. 4, 5, 10 and 11, or it may be round or oval as in the forms of connector shown in Figs. 6, 7 and 8. While several modifications of the core and its arms, as well as of the adjusting nuts, and also other known forms of connecting means have been shown, I am, of course, not limited to the specific details disclosed herein as further modifications are naturally possible.

Hence, other modifications and variations of my connector may be resorted to and parts may be used without others. Having now fully described my invention, I claim:

1. A multiple cable connector for conducting current from main to branch conductors, comprising, a metallic bus bar of unitary construction for conducting the current and having a plurality of conductor-terminal attaching means integral therewith for engagement with separable conductor-terminal means in which the conductors are gripped; a molded insulating jacket formed into a one-piece permanent assembly enclosing said bus bar and provided with separably attachable portions of insulation adjacent the conductor terminal attaching means for providing access to the conductor-terminal attaching means, the separably attachable portions remov-

able when the separable conductor-terminal means are attached to the bus bar and replaceable when the separable conductor-terminal means are removed from the bus bar.

2. A multiple cable connector for conducting current from main to branch conductors, comprising, a metallic bus bar of unitary construction for conducting the current and having a plurality of conductor-terminal attaching means integral therewith for engagement with separable conductor-terminal means in which the conductors are gripped; a molded insulating jacket formed into a one-piece permanent assembly completely enclosing said bus bar, except for a single aperture adjacent each conductor-terminal attaching means, through which apertures separably attachable portions of insulation are held in contact with the molded insulating jacket by threaded engagement with the conductor-terminal attaching means, the separably attachable portions removable when the separable conductor terminal means are attached to the bus bar and replaceable when the separable conductor terminal means are removed from the bus bar.

3. A multiple cable connector for conducting current from main to branch conductors, comprising, a metallic bus bar of unitary construction for conducting the current and having a plurality of conductor-terminal attaching means integral therewith; a plurality of separable conductor-terminal means in which the conductors are gripped for engagement with the conductor-terminal attaching means, said separable conductor terminal means comprising wedging conductor-gripping means, extending conductor sockets, each threaded at one end for engagement with the conductor-terminal attaching means integral with the bus bar and threaded at the other end for engagement with a compression nut for compressing the wedging conductor-gripping means into and securing the conductors to the extending conductor sockets; and a molded insulating jacket formed into a one-piece permanent assembly enclosing said bus bar and provided with separably attachable portions of insulation adjacent the conductor terminal attaching means for providing access to the conductor-terminal attaching means, the separably attachable portions removable when the separable conductor-terminal means are attached to the bus bar and replaceable when the separable conductor terminal means are removed from the bus bar.

4. A multiple cable connector for conducting current from main to branch conductors, comprising, a metallic bus bar of unitary construction for conducting the current and having a plurality of internally threaded openings each extending entirely through the bus bar and adapted to engage a separable conductor-terminal means at each end thereof in opposed relationship; a molded insulating jacket formed into a one-piece permanent assembly enclosing said bus bar and provided with separably attachable portions of insulation adjacent the conductor-terminal attaching means for providing access to the conductor terminal attaching means, the separably attachable portions removable when the separable conductor-terminal means are attached to the bus bar and replaceable when the separable conductor-terminal means are removed from the bus bar.

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