

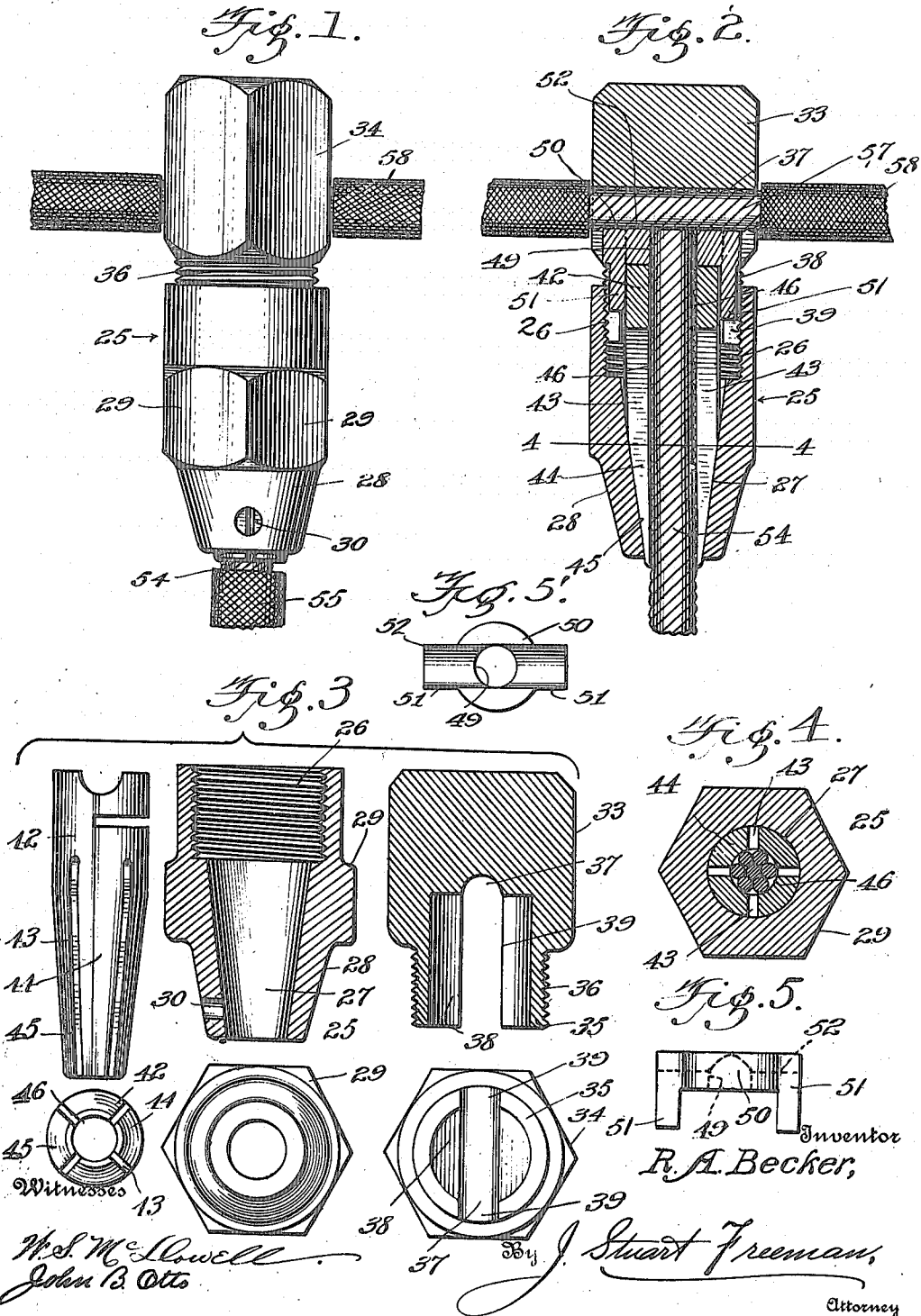
R. A. BECKER.
CONNECTOR.

APPLICATION FILED NOV. 27, 1916.

1,267,959.

Patented May 28, 1918.

2 SHEETS—SHEET 1.



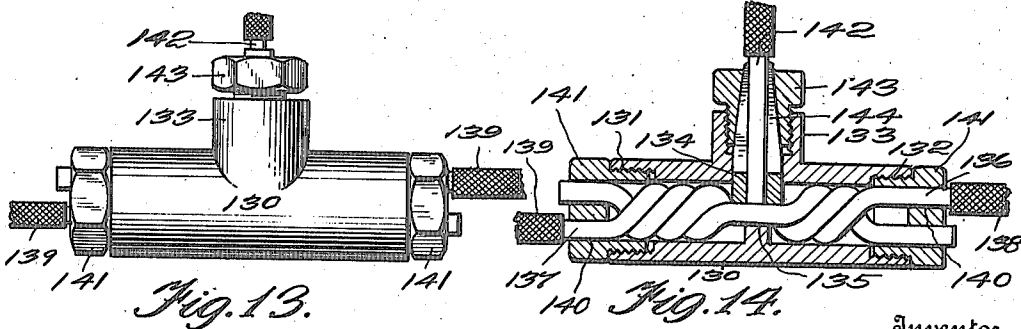
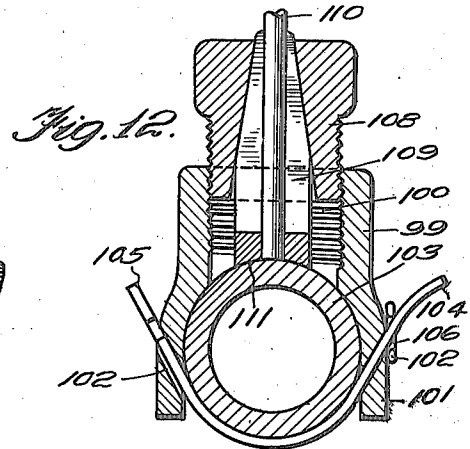
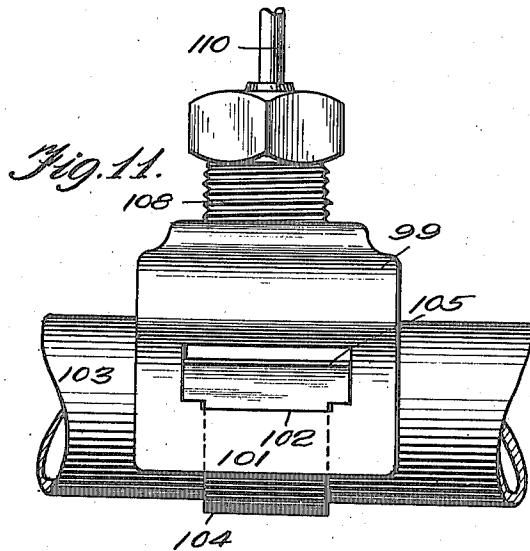
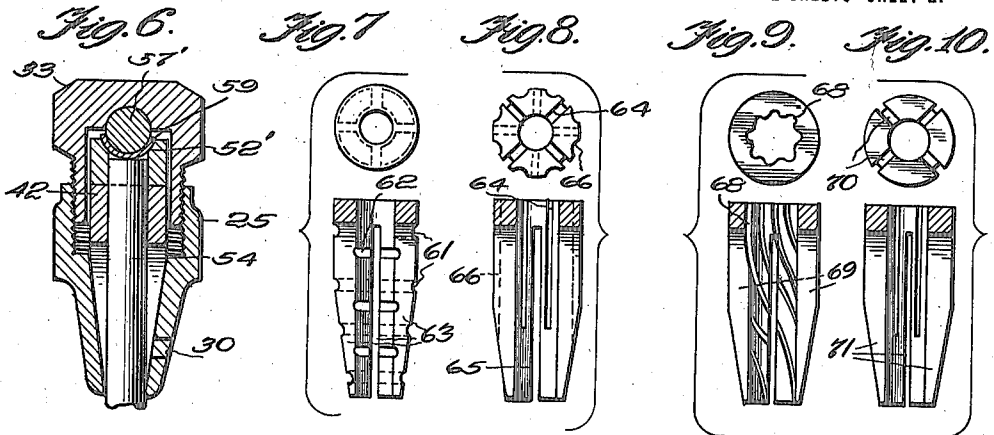
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2 SHEETS—SHEET 2.

1,267,959.



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CONNECTOR.

1,267,959.

Specification of Letters Patent.

Patented May 28, 1918.

Application filed November 27, 1916. Serial No. 133,633.

To all whom it may concern:

Be it known that I, ROBERT A. BECKER, a citizen of the United States, residing at Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Connectors, of which the following is a specification.

This invention relates to connectors and particularly to that class employed in electrical construction, and in which a branch or tap line is firmly gripped by said connector, and either said line, or the gripping member, made to directly engage the main line, or other electrical conducting member.

Heretofore, when it was desired to tap a cable acting as an electric conductor, the insulation was scraped away for a considerable distance and a long, bared end of a second cable was wound about, or spliced to the main cable, after which the two were united permanently by solder, and if insulated, covered with tape, which resulted in a rough, uneven and unsightly piece of work.

By this method an unnecessarily long section of branch cable was practically wasted, while an unnecessarily large section of the main cable had to be bared. Furthermore, the latter was generally so mutilated that, if the tap were intended to be but temporary, a removal of the same left the main cable often quite weakened and cut up, to say nothing of the immense amount of insulating necessary to be done after attaching the tap, or removing the same.

In the present invention the object is to provide an inexpensive device of such construction that, to a very short bared section of a main cable can be rigidly secured a short bared end of a branch line. Furthermore, this attachment can be made as permanent and solid as required by the Underwriters and as heretofore attained by soldering, and at the same time so readily separable or detachable that the removal of the branch line will not materially affect the appearance, condition or strength of the main line conductor.

Another object is to provide in such a device a construction whereby the end of the tap, or branch line, is securely held in firm, binding relation with the main cable.

Another object is to provide a T, embodying the invention and wherein the ends of two conductors are twisted and securely

joined, while in binding contact against them is secured a gripping member encircling the end of a third conductor comprising the tap line.

Another object of the invention is to provide in such a device a grip for the tap line that will tend to increase its force with any pull on the latter; to provide a device that insures a large, solid bearing surface between it and the main cable; to provide means in such a device adapted to permit a ready examination by the inspector of the condition of the cable connection within the device; and to provide other details and advantages as hereinafter described.

In the drawings Figure 1 is a side elevation of the invention in its preferred form with insulator casing or jacket removed; Fig. 2 is a vertical, diametrical section of the same; Fig. 3 is a view showing the diametrical section and bottom end view of each of the three principal component parts of the device separated from each other; Fig. 4 is a section on the line 4—4 of Fig. 2; Fig. 5 is a detail view of the bushing; Fig. 5' is a plan view of the same; Fig. 6 is a section at right angles to Fig. 2 and showing a slightly modified construction; Figs. 7, 8, 9 and 10 show different forms of cable gripping members; Fig. 11 is an elevation and Fig. 12 a diametrical section of the invention embodied in a pipe ground connection; Fig. 13 is an elevation and Fig. 14 a diametrical section of a T, cable connection simultaneously uniting the two ends of a main cable and joining thereto a branch line or tap.

Referring to Figs. 1 to 5, inclusive, of the drawings, the invention in its preferred embodiment comprises a hollow member 25, internally threaded at 26 and provided throughout a part of its length with a tapered bore 27, while its external surface is tapered at 28, and at 29 is polygonal in cross section, to present a suitable surface for the engagement of a wrench therewith, the smaller end portion 28 also being pierced by an aperture 30, through which it is possible for an inspector to examine the extent of the cooperation of the parts within.

A plug or male member 33, polygonal on its outer surface 34 to provide for a wrench, is reduced in size at 35 and externally threaded at 36 to engage the internal threads 26 of the member 25. Said plug is pierced

transversely by an aperture 37 opening downwardly into an enlarged, substantially cylindrical opening 38, in turn opening at its diametrically opposite sides in longitudinally extending apertures 39 in alinement with, and of the same width as, the aperture 37.

A cable gripping plug is shown in one form in Fig. 3 as comprising a body portion 42, slotted or split at 43 to provide separate fingers 44, tapered upon their outer sides 45 and themselves surrounding a continuation of the bore 46, of said portion. In Fig. 5 is shown a bushing comprising a cylindrical body portion 50, apertured at 49 and having integral, oppositely extending and longitudinally projecting ears 51, while a substantially semi-cylindrical groove 52 crosses the upper face of said body portion and is disposed centrally of, and in alinement with, said ears.

In the use of this device, a short section 54 of the end of a tap or branch conductor 55, is bared and inserted inwardly through the smaller end of the member 28, after which a gripping member is slipped over the end of said conductor and allowed to slide down into the tapered portion 27 of the bore of the member 28. A bushing 50 is then placed on the member 42 and surrounding the extreme end portion of said conductor, with the ears 51 of the former projecting downwardly and on diametrically opposite sides of the said gripping member. Finally, after a relatively short portion 57 of the main or through cable 58 is bared, the member 33 is slipped over the former until the same lies in the slot 37, the ears 51 enter and substantially fill the apertures 39, and the reduced portion 35 enters the bore 26, whereupon the member 25 is screwed upon the member 33, until the gripping fingers 44, forced into the bore 27, between its tapering sides and the surface of the conductor 54, contract about and firmly hold said conductor, any longitudinally outward pull on the latter operating to increase the gripping power of the fingers thereon.

As this operation takes place, it is also readily obvious that any tendency of the reduced portion 35 of the member 33 to contract is prevented by the ears 51 filling the apertures 39. Also, a large surface contact between the device and the conductor 57 is insured, as a result of the sides of the grooves 37 and 52 in the respective members 33 and 50 uniting, to form a substantially continuous bearing surface circumferentially of and against said conductor. This large area of contact, together with that existing between the fingers 44 and the conductor 54 prevents any heating thereof by heavy currents. After being assembled, the projection of the ends of the fingers 44 from the bore 27 together with the aperture 30 permits an in-

spector to readily observe at a glance the extent of the cooperation of the members within the device.

In the form shown in Fig. 6, the recess or groove 52' is enlarged and a substantially semi-cylindrical metallic member 59 is provided, and this same member then firmly engages the surface of the conductor 57'. The advantage of this form lies in the fact that the contacting surfaces are increased, as the member 59 engages the conductor even where the central bore 49 of the member 50 exists. Otherwise, this form is to all intents and purposes like that above described.

At the top of sheet 2 of the drawings are shown several forms which the gripping member may assume. Fig. 7 shows one similar to that above described, except that the parallel peripheral grooves 61 and 62 encircle the outside and inside surfaces transversely of the slots 63. In Fig. 8 slots 64 and 65 are cut inwardly from the opposite ends of the member, while longitudinal grooves 66 extend between said slots on the outer surface. Fig. 9 has spirally extending internal grooves 68 crossing the slots 69, while in Fig. 10 there is shown a simple combination of slots 70 and 71 extending inwardly from the opposite ends.

In these forms, generally speaking, the slots create suppleness or flexibility and make it possible for the fingers to contract, while the grooves tend to increase the opposition of the gripping member once secured from slipping longitudinally within or upon the bore 27 and conductor 54, respectively. While the gripping members may be made of any suitable metal, soft copper or brass is very efficient, since they make it possible for that part to bend or dent and more or less regularly conform to the surfaces of the neighboring elements.

Figs. 11 and 12 illustrate the invention as applied to a coupling for grounding a conductor to a pipe or other suitable object. The member 99 is provided with a central, internally threaded aperture 100, opening also downwardly and bounded on two sides by substantially parallel ears 101, each being provided with similar, diagonally extending slots or apertures 102. To secure this member to a pipe 103, or other suitable ground, the former is made to straddle the latter, after which a thin metallic strip 104, having a head 105, is passed through one of the slots 102, around the grounded member 103, and then drawn taut through the other of said slots, after which a suitable pin 106 is inserted into one of a series of holes in said strip, to prevent the latter from loosening its hold upon the ground.

Into the threaded aperture 100 of the member 99 is screwed a member 108, which surrounds a gripping member 109, through which passes a wire or cable 110, the inner

end of said gripping member bearing directly against the grounded member and shaped at 111 to conform to the latter. Such a device obviously eliminates the necessity of wrapping a conductor about a pipe or the like, which is especially objectionable when the former is of relatively large size and carrying a heavy current. And, while being a permanent coupling, it is also possible to remove the same at will by unscrewing said member 108 from within said member 99.

In Figs. 13 and 14 the application of the invention in another form is shown. A cylindrical member 130, internally threaded at its opposite ends 131 and 132, is provided upon one side with an integral, laterally extending, cylindrical portion 133, internally threaded and opening through an aperture 134 into the cylinder 130. Opposite to said aperture and integral with the inner wall of the cylinder is a shoulder 135.

In assembling, the bared ends 136 and 137 of two cables 138 and 139 are passed through holes 140 in two similar threaded plugs 141 and through the cylinder 130, a portion of each of said cables resting upon the shoulder 135. The bared end of a branch cable 142 is then passed through a plug 143 and gripping member 144, said cable and member passing through the aperture 134 until they bear against the conductors 138 and 139 on the opposite side to the said shoulder.

By then screwing the plug 143 into the portion 133, said cable 142, gripping member 144 and ends 136 and 137 of the main cables are firmly secured in binding contact. The two plugs 141 are then screwed into place as shown, thus twisting said bared ends together to form a firm, uniformly contacting union between them. In this manner a connector is provided which solidly unites the two ends of a pair of electrical conductors and simultaneously joins thereto a third, or branch, conductor of the same or differing size.

From the foregoing description, it is obvious that the present invention may be readily adapted to meet many needs of the art of electrical construction, and its interpretation should therefore be as broad as the state of the art permits, the claims being intended to anticipate broadly the foregoing and many other applications of the invention.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States is:

1. A connector comprising a member re-

cessed and provided with threads at one end, the walls of said recess being oppositely slotted and adapted to receive a conductor therethrough, a second member secured to said first member in threaded engagement and provided with a tapered bore through which passes a second conductor, a split contractible member surrounding said second conductor within said bore, and a bushing also adapted to surround said second conductor and adapted to compress said first conductor against said first member as the engagement between said first and second members is increased, and said split member sliding in said bore contracts, said bushing having oppositely extending ears lying within said slots to prevent a collapsing of said walls.

2. A connector comprising a member recessed and provided with threads at one end, the walls of said recess being oppositely slotted and adapted to receive a conductor therethrough, a second member secured to first member in threaded engagement and provided with a tapered bore through which passes a second conductor, a split contractible member surrounding said second conductor within said bore, and a bushing also adapted to surround said second conductor and adapted to compress said first conductor against said first member as the engagement between said first and second members is increased, and said split member sliding in said bore contracts.

3. A connector comprising a member axially recessed and provided with threads at one end, the walls of said recess being diametrically slotted and adapted to receive a conductor passing therethrough, a second member secured to said first member in threaded engagement and provided with an axial tapered bore through which passes a second conductor, and a split contractible member surrounding said second conductor within said bore, and adapted to compress said first conductor against said first member as the engagement between said first and second members is increased, and as said split member moving longitudinally in said tapered bore contracts.

In testimony whereof I have affixed my signature in presence of two witnesses.

ROBERT A. BECKER.

Witnesses:

LAWRENCE E. SHEERWOOD,
ANNALS W. DAYLEY.