Oct. 29, 1935. E. A. MACK 2,019,149

SERVICE DROP CONNECTER AND SYSTEM

Filed Oct. 26, 1934

Fig. 1.

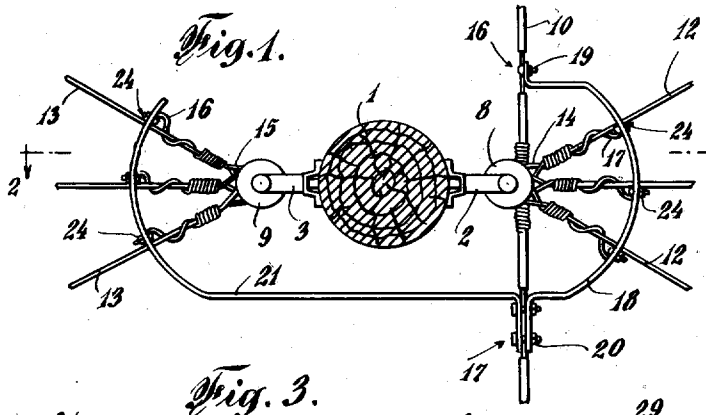


Fig. 5.

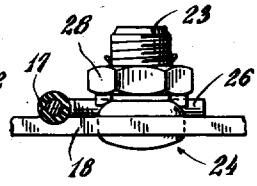


Fig. 3.

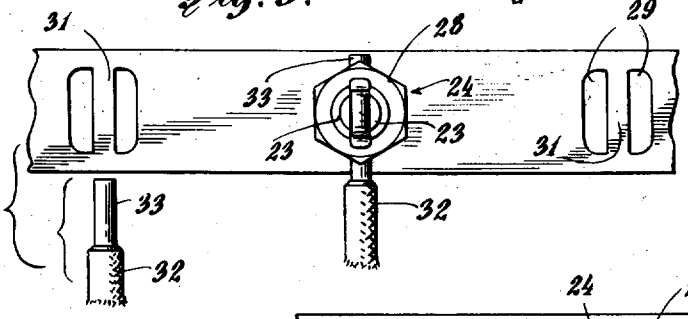


Fig. 6.

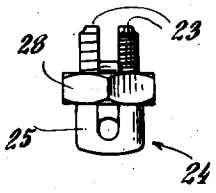


Fig. 4.

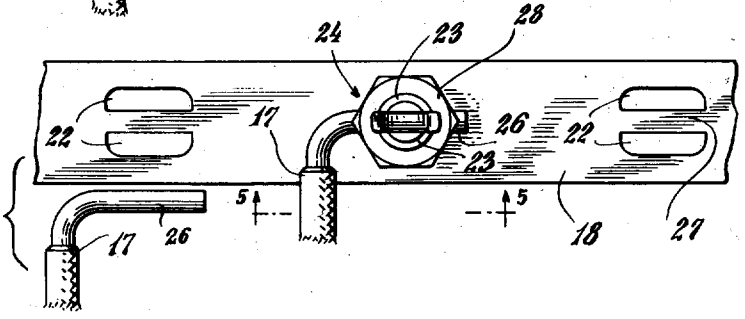
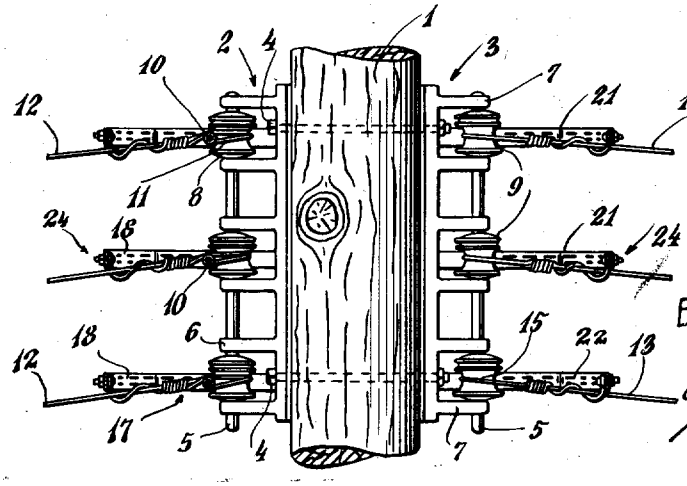


Fig. 2.



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## SERVICE DROP CONNECTER AND SYSTEM

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Application October 26, 1934, Serial No. 750,105

9 Claims. (Cl. 173—251)

This invention relates to service drop connecters and systems wherein one or more secondary drop connections are made to a main cable supported upon a rack, which in turn is secured to a pole or the like, and particularly to the type wherein an intermediate conductor is interposed between the main cable and the secondary drop connections and is spaced and insulated from the pole.

The main object of the invention is to simplify and greatly facilitate making secondary service drop connections to main line cables carried on pole racks, in order to ensure a minimum loss of time in establishing or removing the secondary drop connections from the circuits of the main line cables.

Another object is to provide a special intermediate conductor which alone is directly connected to a main line cable and to which all the secondary drop connections are conveniently made without soldering or twisting the ends of the latter.

A further object is to give the special intermediate conductor a particularly useful form in order to afford a maximum range of possible drop connections to be made thereto.

Yet another object is to have such an intermediate conductor used together with special split connecting bolts which render it possible to establish and remove any given connection conveniently any number of times without breaking any wire or soldered joint.

Yet another object is to provide a conductor of large cross-sectional area from which taps of smaller or equal cross-sectional area may be taken with split bolt service connecters of a size suitable for use with the tap conductor.

Also another object is to provide a conductor of such cross-section as to resist buckling so that it may be installed with a minimum number of supports.

It is likewise an object of the invention to introduce a solderless connecter system which, when applied in actual practice is neat and balanced in appearance and so readily lending itself to efficient and open design as to render each individual connection distinct and accessible.

Other objects and the various features and advantages inherent in my invention and its uses will appear more fully in detail as this specification proceeds.

Referring now to the accompanying drawing forming part hereof:

Figure 1 is a top plan view of a pole having racks secured thereto for main line cables and service drop connections made according to, and arranged in a system embodying the salient features of the present invention.

Figure 2 is another view of the same with some of the parts in section on line II—II of Figure 1.

Figure 3 is an enlarged fragmentary view of the intermediate conductor or connection strip of Figures 1 and 2, with only one end or pigtail of a secondary drop connection in position.

Figure 4 is a similar view wherein the connection strip is modified in construction.

Figure 5 is a side view of a portion of Figure 4 taken as a partial section on line V—V.

Figure 6 is a view in elevation of the special split bolt connecter alone of the foregoing views.

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

In distributing systems in rural communities and many cities and towns, it is quite usual to run power or lighting main line cables through the territory supported upon racks secured to poles erected for the purpose, and then to make secondary service drop connections at the poles, directly to the main line cables for carrying off current supplies to the individual consumers. Such drop connections according to conventional practice, are made by soldering the ends of the secondary drop connection cables to portions of the main line cables from which the insulation has been removed, the wires being of course first twisted, and after soldering, taped up to insulate and protect the junctions thus made.

However, such common and conventional practice involves several serious disadvantages and drawbacks, among which are, primarily, the amount of time and labor consumed, as well as the difficulty of breaking such connections and thereafter reestablishing the same when cutting off and restoring service. It is also evident that the number of possible connections that can be made to the main cables at any one pole is quite limited, and only a few such connections are at best, unsightly, not to mention that they become increasingly inaccessible in direct ratio to their number. The danger involved to a line-man must also not be overlooked when he is forced to make new connections amid a mazed tangle of old haphazard connections festooned about a pole and its main cables.

In order to entirely eliminate all disadvantages of that class, and particularly with the foregoing objects in view, the present invention has been designed, and also to provide other advantageous features as will appear hereinafter.

Hence, in the practice of my invention, a pole

1 has a pair of racks or brackets, generally indicated at 2 and 3 secured thereto by bolts 4—4, while a pair of rods 5, 5 are passed down through holes in the arms 6, 7 of the racks or brackets and insulating bobbins or spools 8, 9 are mounted on the rods between adjacent pairs of said arms. To the bobbins similar to 8 on rack 2, the main line cables 10, 10 are secured in conventional manner by retaining wires 11, 11, so that the cables are mechanically supported. Of course, in ordinary practice, the service drop connections or secondary cables are also secured to the bobbins by forming a loop about the same to afford proper mechanical support for these cables while the bared ends are connected to the main cables. In the present invention, the same practice is followed insofar as the mechanical support of the main line and secondary cables are concerned.

Thus, the secondary or service drop connections 12, 13 are brought to the insulating spools 8 and 9 and looped about the same as at 14 and 15, while the ends or pigtails similar to 16 and 17 are not in any case connected directly to the main line cable but connected to an intermediate conductor which in turn is connected to the main line cable 10 instead. This main cable preferably has two places freed from insulation as indicated at 16 and 17 and to these bare portions are clamped or bolted by bolts 19 and 20 without soldering the ends of a service drop connecter strip 18 of copper or other good electrical conductor. At 17 the bolt 20 also may clamp the end of another similar drop connecter strip 21 to the other side of the main line cable in order to increase the capacity of the main cable for supplying service from the same pole. Both of the connecter strips may, for practical purposes, be considered a single conducting strip or bus bar to which service drop connections such as 12 and 13 may be quickly and conveniently made as will now be explained.

One form which such a connecter strip may have is shown in fragmentary form in Figure 4 in plan view and as seen from the side or rather the near edge in Figure 5, and discloses spaced pairs of parallel slots which are also arranged in the longitudinal direction of the strip. Into any one of these spaced pairs of slots may be inserted the prongs 23 of a split or bifurcated connecter bolt generally indicated at 24, the head or yoke portion 25 uniting the two prongs and being adapted to envelop the bare end 26 of a drop connection 12 or 13 and holding the same in contact with the central rib 27 between the slots upon the strip, or else fitting directly up against said rib as in Figure 5 while the cable end 26 lies upon the rib between prongs 23. The end or pigtail of the secondary cable 12 is thus intended to be in either case in intimate contact with the rib forming part of the strip 18 which is thus an intermediate conductor between said cable and the main line cable 10.

In order to positively hold the cable end 26 against the rib, the split bolt is provided with a nut 28 which is screwed on the prongs 23, as the latter are threaded for this purpose. If the cable end is located beneath rib 27 and enveloped by the yoke 25, the nut is obviously screwed down on the strip, but if the end overlies the rib as illustrated, the nut is screwed down on said end, so that in either case the cable end is clamped against the rib and makes intimate electrical contact therewith. It may be mentioned that the cable end 17 terminating in the bare pigtail 26 in Figures 4 and 5 is bent at approximately a right angle to the cable 12 proper and therefore readily remains in place while the connection is being made to the strip or intermediate conductor. The connection is made without solder and is quickly and easily made, and as easily broken with a minimum loss of time.

The strip may also be made as illustrated in Figure 3, where the parallel slots 29 in strip 30 are disposed transversely of the strip, with a rib 31 between. The cable 32 has a straight bare end 33 in this case, which fits into the space between the prongs of the bolt and is held by this bolt as before against the rib. In this form, the rib 31, due to the position thereof and particularly the transverse position of slots 29 introduces a certain degree of mechanical weakness into the strip 30 and to some extent reduces the current carrying capacity of a given length of strip. These features are not exhibited to any degree by the position of rib 27 in strip 18, because said rib is parallel with the sides of the strip and takes an active part in carrying the current which may be passed through said strip 18, and hence the latter is the preferred form.

It is evident that strip portion 18 could be used alone without portion 21, and that rack 2 could be secured to a wall or the like, and all service drop connections made solely to strip 18. The two together partly surround the pole, while strip 18 partly surrounds insulating spool 8, but in either case, additional service drop connections are merely duplications of the connections already described, and hence, the longer the strip used, the more pairs of slots are present, and as a result, the greater the number of split bolts that can be attached and the service drop connections that can be made. The connections do not crowd each other and are both balanced in appearance and extremely accessible for replacements by heavier cables, discontinuation of service or restoration of the same. At all events, the strip to which the connections are made is the only conductor connected directly to the main line cable, and it is then merely a question of capacity of the strip for connections made thereto as determined by its length.

The strip which is made in one or more sections and forms the heart of the present invention, is thus an intermediate conductor, and could be made in other forms, for it could be simply a cable or other form of conductor to which service drop connections could be made in other ways than as shown, as they could be clamped by means of split bolts such as indicated or soldered instead.

The invention is especially useful where replacement or reconstruction work is contemplated. After the strips have been installed and increasing loads at some later period require replacement of main secondaries with larger conductors, this work can be accomplished at reduced labor costs over old methods for the reason that only the strips need be connected to the main line cables, leaving service drops undisturbed. By means of temporary jumpers, secondaries can easily be replaced with no interruptions to customers. In reconstruction work old service drops can generally be cut close enough to main secondaries to provide sufficient wire length for connection to the strips.

Variations may be resorted to within the scope of my invention, and parts may also be used without others.

Having now fully described my invention, I claim,

1. In a service drop connecter system wherein

a main line cable is supported in insulated manner upon a rack secured to a fixed support and one or more secondary conductors are secured and supported upon said rack and adapted to be fed by said main line cable, an intermediate conductor in the form of a bent strip of metal directly supported by said main line cable and having two distinct portions thereof connected to said main line cable at two spaced positions upon the latter, there being electrically parallel connections established between said secondary conductors and spaced portions of said bent strip intermediate the two portions of the same which are connected to the main line cable.

2. A system according to claim 1, wherein the intermediate conductor made in the form of a strip of metal is perforated by spaced slots, while the ends of the secondary conductors are clamped into intimate electrical contact with said strip by means of connecting bolts fitted into said slots in order to establish the connections of the secondary conductors with said strip.

3. A system according to claim 1, wherein the intermediate conductor made in the form of a strip of metal is of uniform width throughout its length and the portions connected to the main line cable are the ends of said strip and arched convexly about the rack to increase its capacity for connections thereto, while the ends of the secondary conductors are clamped to said intermediate conductor to establish the connections of said conductors thereto.

4. A system according to claim 1 wherein the intermediate conductor comprises a second metal strip in addition to the first strip, which first strip and second metal strip are joined at a common connection thereof with the main line cable and to which strips the ends of the secondary conductors are clamped to establish the connections thereof with said strips.

5. A system according to claim 1 wherein the intermediate conductor comprises a second metal strip in addition to the first strip, which first strip and second metal strip are joined at a common connection thereof with the main line cable, the second strip being convexly bent as well as the first strip so that both strips will at least partly surround the fixed support and increase their capacity for connections, while to the sides of said convexly bent strips the ends of the secondary conductors are clamped to establish the connections thereof with said strips.

6. A system according to claim 1, wherein the intermediate conductor made in the form of a strip of metal has the ends thereof forming the portions connected to the main line cable and by being bent is arched convexly about the rack to increase its capacity for connections thereto, which arched strip is perforated by spaced pairs of slots, while the ends of the secondary conductors are clamped into intimate electrical contact with said strip by means of split connecting bolts fitted into said slots in order to establish the connections of the secondary conductors with said strip.

7. A system according to claim 1 wherein the intermediate conductor comprises a second metal strip in addition to the first strip which first strip and second metal strip are joined at a common connection thereof with the main line cable, the second strip being convexly bent as well as the first strip so that both strips will at least partly surround the fixed support and increase their capacity for connections and being also perforated by spaced slots, while the ends of the secondary conductors are clamped into intimate electrical contact with the curved sides of said strips by means of connecting bolts fitted into said slots straddling the ends of the secondary conductors in order to establish the connections of the secondary conductors with said strips, there being a second rack upon said support to carry one or more of said secondary conductors while said conductors carried by said second rack serve to support the second metal strip in addition to the support given the same by the main line cable at the joint between the two strips.

8. A system according to claim 1 wherein the intermediate conductor made in the form of a flat strip of metal has the ends thereof forming the portions connected to the main line cable and by being bent is arched convexly about the rack to increase its capacity for connections thereto, which arched strip is perforated through its flat sides by spaced pairs of slots, while the ends of the secondary conductors are clamped into intimate electrical contact with said strip by means of split connecting bolts having the prongs thereof straddling said ends of the secondary conductors and fitted into said pairs of slots in order to establish the connections of the secondary conductors with said strip.

9. A system according to claim 1 wherein the intermediate conductor comprises a second metal strip in addition to the first strip, which first strip and second metal strip are joined at a common connection thereof with the main line cable, the second strip being convexly bent as well as the first strip so that both strips will at least partly surround the fixed support and increase their capacity for connections and also perforated by pairs of spaced slots, while the ends of the secondary conductors are clamped into intimate electrical contact with said strips by means of split connecting bolts fitted into said pairs of slots in order to establish the connections of the secondary conductors with said strips, there being a second rack upon said support to carry one or more of said secondary conductors while said conductors carried by said second rack serve to support the second metal strip in addition to the support given the same by the main line cable at the joint between the two strips.

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