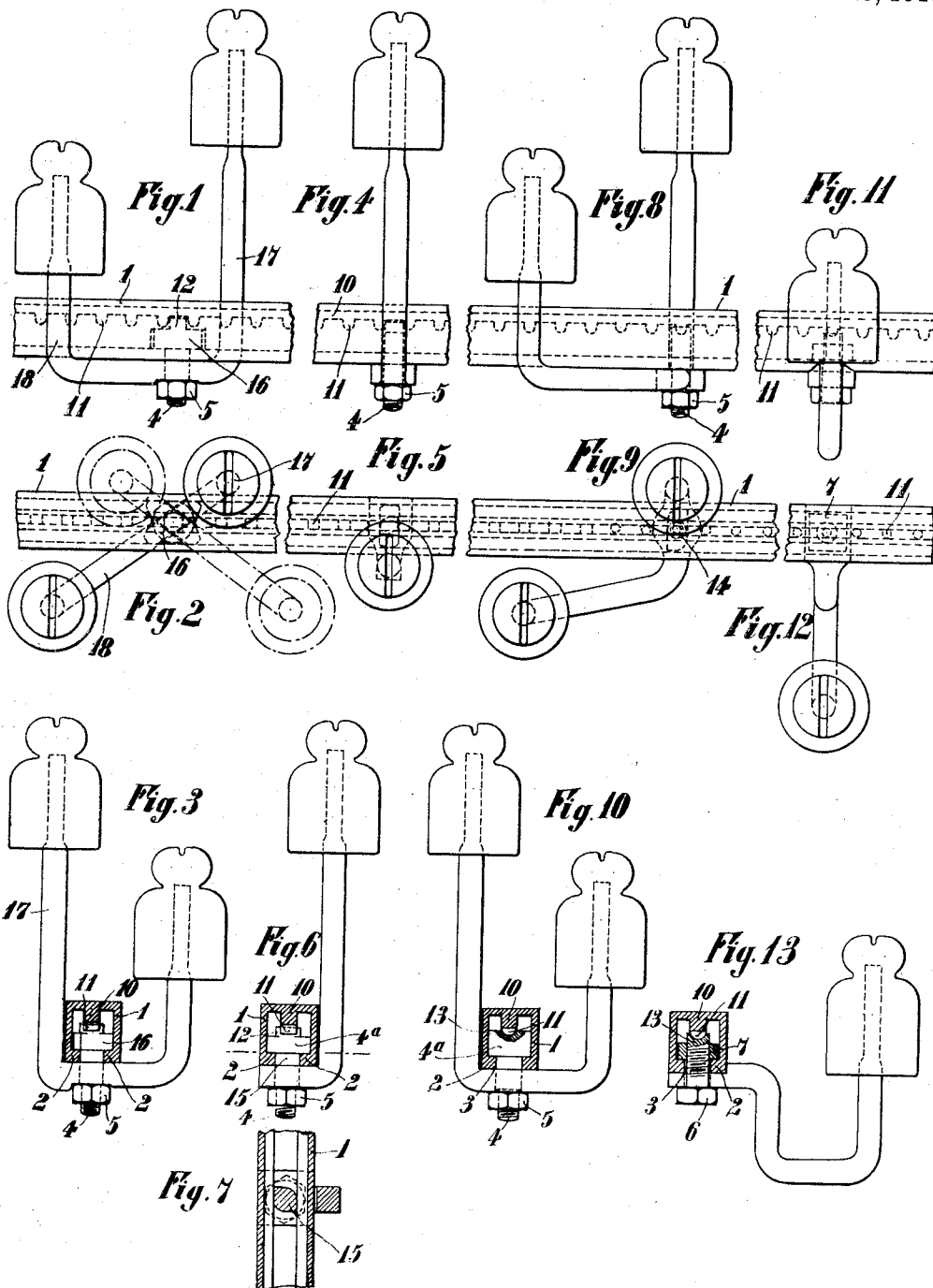


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 FITTINGS FOR SUPPORTING ELECTRIC CONDUCTORS.
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To all whom it may concern:

Be it known that I, THEODOR BUCHHOLZ, a citizen of the German Empire, residing at Kalk, near Cologne, in the Province of Rhenish Prussia, and Kingdom of Prussia, Germany, have invented certain new and useful Improvements in and Relating to Fittings for Supporting Electric Conductors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention has for its object the provision of new fittings for supporting electric conductors in the open and particularly such fittings for telegraph and telephone wires, profile-rods being used as supporting arms for the insulator supports.

The new fittings differ principally from older ones by profile-rods of such a shape being employed as arms for the insulator supports and also when suitable as substitutes for the well-known tubular poles that the parts which are to be connected with said profile-rods, that is, the insulator supports and like fittings and also the members used for connecting the fittings together, can be inserted with their attachment-heads preferably of oblong shape, in the following description called hammer head, at any desired part of the profile-bars through a slot into the interior of the same, and can be secured in said rods by turning them so that their heads engage under overlapping parts of said rods, and by bolting them or tightening them, without it being necessary to make holes in or similarly weaken these parts. The most important advantages of such fittings as compared with known forms are the following: By employing simple profile-arms the insulator supports can be fixed at any desired part of the arms and the latter can likewise be fitted at any desired part of the solid or tubular poles in the shortest time possible and without preparatory work. As the arms are not weakened by holes or the like they are considerably stronger and so are more able to withstand the tension of the wires, or for a given strength they may be made thinner than arms as used hitherto. By employing these new fittings work can be performed in considerably shorter time,

as the manipulation and erection of the various parts are considerably simpler and as double or multiple supports with one common attachment device can be provided. Also when conductors are to be erected subsequently this can be effected more conveniently when the new fittings are employed from the start than is possible with ordinary fittings. Further, when employing the above-mentioned profile-rods instead of the hitherto customary tubular poles or standards the cross-arms can be fixed more conveniently and also more reliably as can also the stays or struttings on these standards, the collar-bands which have hitherto been customary being dispensed with. Lastly, the inner surfaces of such poles or standards can be painted in order to prevent their rusting which could not of course be done in the case of the tubular poles used hitherto.

In order that the invention may be clearly understood reference is made to the accompanying drawings in which several embodiments are shown by way of example.

Figure 1 represents in front elevation a support for electric conductors embodying my invention and the hollow bar to which it is attached; Fig. 2, a plan view of the same, indicating a different position of the support by dotted lines; Fig. 3 represents a transverse section through said profile-bar, showing the support in elevation; Figs. 4, 5 and 6 represent a modification and correspond respectively to Figs. 1, 2 and 3. Fig. 7 represents a detail longitudinal section of a part of the said bar broken away, the stem of the support and stem of the bolt shown in Fig. 6 being shown in transverse section and the head of the bolt in dotted lines; Figs. 8, 9 and 10 represent another modification and correspond respectively to Figs. 1, 2 3 or 4, 5, 6. Figs. 11, 12 and 13 represent still another modification and correspond respectively to Figs. 1, 2, 3, 4, 5, 6 or 8, 9, 10.

In Figs. 1 to 13 an arm is represented which is arranged in accordance with the present invention and on which insulator supports are fixed said arm being supposed to be a cross-arm of a frame and the insulator supports being screwed or bolted on to it. This arm 1 has for example a trough-shaped cross-section in which the fillets or

edges 2 which are bent together toward the center form between themselves a longitudinal slot 3 through which suitable attachment parts of insulator supports and other parts of the frame can be introduced at any desired place into the interior of the arm. According to the forms shown in Figs. 1 to 9 a bolt 4 with an oblong-head is used for attaching the insulator supports to the above-described arm; these supports may be formed as single supports or as double supports as required. This bolt 4 is inserted with its flat head 4^a at a suitable place through the slot 3 into the interior of the arm 1 and is then pushed under the overlapping edges 2 by turning it, whereupon the insulator support with a flat bored part is placed on the bolt and is then pressed against the open side of the arm by a nut 5 which is screwed down on the bolt. In the form according to Figs. 11 to 13 the support is attached by a bolt 6, the nut 7 of which is situated inside the arm under the edges 2 so that the latter are clamped between the nut and the support when the bolt is screwed up and the desired completion of the cross-section is effected.

The arm 1 has within its projections 11 at regular intervals on a longitudinal rib 10 between which the hammer-headed bolts engage (Figs. 1, 3 and 6) with extension 12, for example, which is provided on their heads, or the projections 11 engage in a corresponding notch 13 in the bolt head (Fig. 10) or in the bolt itself (Fig. 13), so that the insulator supports, as well as other parts which are to be attached to the arms, are secured from displacement on the arms. The purpose of the arrangement of the projections on a rib is to provide a space inside the arm which is not taken up by the bolts.

Now in order that the hammer-headed bolts 4 may be brought with certainty into the correct position when securing the supports by means of the same, and in order that they may not be loosened by turning the bolt backward in the arm, in the form according to Figs. 8, 9 and 10 the head of the bolt is so formed, that it cannot be turned quite 90° in the utmost after it is inserted in the arm 1, namely the bolt has an oval part 14 (Fig. 9) on to which is pushed the support which has a corresponding hole in its part which is adjacent to the arm. In this manner a part of the support, in the present example a limb of the double support, goes directly against the one vertical side of the arm, so that after the support has been pushed on to the bolt, and after the nut has been screwed up, neither the support with the bolt nor the latter in the support can be turned. In this manner the support is prevented with certainty from becoming loose or falling out of the arm. At the same time the result is also

produced by these means that the bolt must be turned to the correct position before the support is pushed on, because otherwise the required position with regard to the arm cannot be given to the same.

In the form according to Figs. 4, 5, 6 and 7 the head of the bolt which is to be inserted in the arm is so formed that it permits of itself being completely rotated in the arm. On the contrary, however, the bolt-shank at the part 15 which is not provided with screw-threads is of such a shape that the bolt-shank itself between the edges 2 in the slot 3 prevents a rotation of or exceeding 90° after insertion in the arm; this is most clearly seen in Fig. 7. The support with a correspondingly shaped hole is pushed on to this non-circular part of the bolt and is held by the nut. The support itself lies against the arm in the case also, so that it on its part does not permit its being turned backward together with the screw-bolt. In this case also the bolt must be first turned into the correct position after it is inserted in the arm before the support can be pushed on to the bolt in the required position relatively to the arm *i. e.* the support will not be able to take up its correct position if the bolt is not previously pushed with its hammer-head under the projecting edges of the arm. These means therefore insure with certainty that the connection of the supports with the arm is always made properly. In consequence of the employment of a nut which is within the arm but not revoluble therein, in the form according to Figs. 11 to 13 such a safety device is not required.

In the arrangement for attaching supports as represented applied to a double support in Figs. 8 to 10 with means for locking the supports in their fixed position, each support can only take up one quite definite position. If the two arms of the support are of different lengths, in order to give the two insulators different heights, two kinds of supports might have to be used in order to be able to set the longer arm to the right of the point of attachment at one time and to the left at another according to the requirements of each case. A construction is represented in Figs. 1 to 3 by means of which this defect is avoided, one and the same support being capable of being set in two different positions. In this case the hammer-headed bolt 4 which is used for the attachment has a head 16 which is somewhat longer than corresponds to the width of the space in the arm so that when turned it strikes against the sides of the arm in the one or other direction and is in a slanting position with regard to these. Hereby the same effect is obtained as when the head is of same length as the width of the hollow upon inside the arm and only two corners rounded off. The support which is pro-

vided with a corresponding hole is placed on an oval part of the screw-bolt so that one of its two limbs, *i. e.* 17 in the example illustrated, lies against the corresponding side of the arm. After attachment by means of the nut 5 the hammer-head prevents its rotation in the one direction and the support itself prevents rotation in the other direction. If after loosening the connection the hammer-headed bolt is changed from the position shown in full lines (Fig. 2) into that indicated by dotted lines, after refastening the support it is prevented from rotating in the new position but its two limbs 17, 18 have however exchanged their position with regard to the arm. Of course in both cases the support could also be so reversed that the longer limb is in front of the arm instead of behind it as shown in the drawing.

As is seen in Figs. 1 to 3 and 8 to 10 double supports, *i. e.* supports by means of which two insulators can be held on the arm by one single attachment, can be formed in the simplest manner in accordance with the present invention and they permit means of attachment to be used which are just as simple. The double support consists substantially of a metal rod bent U-shaped which is provided on one limb or on the bridge with a flat place applied against the arm, a hole for the attachment bolt being made in the flattened part.

The insulator arms I may be arranged in very different ways. In Figs. 1 to 13 their open side is turned downward. They may also be arranged on the frame so that their open sides are turned upward or also to the one side or to the other. The first mentioned arrangement however with the open side pointed downward is the most preferable. In order to be able to determine with ease the position for attaching the supports and the like at proper distances to the right and left of the place of attachment of the arm, marks are preferably placed on the backs of these arms at suitable intervals which may be small projections or depressions and which show the workman the positions at which he must set the fittings or attachment pieces in the arm. On account of simplicity this arrangement is not represented in the drawing.

What I claim as my invention and desire to secure by Letters Patent is:

1. Fittings for supporting electric conductors in the open, comprising in combination a hollow profile-bar having a longitudinal opening extending along one side, a bolt having an attachment-head substantially of oblong shape arranged inside said bar and in contact with the internal surfaces of the portions of the bar at the sides of said opening and also having a shank one portion of which is non-circular in cross-section and the end portion of which is provided with a

screw-thread and extends through the opening in the bar, a double insulator support having two limbs placed outside the bar with one of its limbs in contact with one of the sides of the bar adjacent to the side having the opening, said double insulator support having the hole of the same non-circular cross-sectional shape as that of the non-circular portion of the shank through which hole said non-circular portion of the shank extends, and a nut on said shank.

2. Fittings for supporting electric conductors in the open, comprising in combination a hollow profile-bar having an opening extending along one side and a plurality of projections on its inside surface, a member having an attachment-head arranged inside said bar and in contact with the internal surfaces of the portions of the bar at the sides of said opening, said head being adapted to engage with said projections and means for clamping said head against said surfaces.

3. Fittings for supporting electric conductors in the open, comprising in combination a hollow profile-bar having an opening extending along one side and a plurality of projections on its inside surface, a member having an attachment head arranged inside said bar and in contact with the internal surfaces of the portions of the bar at the sides of said opening, said head having a recess adapted to engage over one of said projections, and means for clamping said head against said surfaces.

4. Fittings for supporting electric conductors in the open, comprising in combination a hollow profile-bar having an opening along one side, and a longitudinal rib provided with a plurality of projections on its inside surface, a member having an attachment head arranged inside said bar and in contact with the internal surface of the portions of the bar at the sides of said opening, said head being adapted to engage with said projections, and means for clamping said head against said surfaces.

5. Fittings for supporting electric conductors in the open, comprising in combination a hollow profile-bar having an opening and a U-shaped double limbed insulator support having an insulator on the end of each limb said support having a flat part in contact with the outer surface of the bar and provided with an attachment-head arranged inside said bar and in contact with the internal surfaces of the portions of the bar at the sides of said opening and means for clamping said head against said surfaces.

6. Fittings for supporting electric conductors in the open, comprising in combination a hollow profile-bar having a longitudinal opening extending along one side and a U-shaped double-limbed insulator support having an insulator on the end of each limb said support having a flat part in contact

with the outer surface of the bar and provided with an attachment-head arranged inside said bar and in contact with the internal surface of the portions of the bar at
5 the sides of said opening and means for clamping said head against said surfaces.

In testimony whereof, I have signed my

name to this specification in the presence of two subscribing witnesses.

THEODOR BUCHHOLZ.

Witnesses:

BESSIE F. DUNLAP,
LOUIS VANDORN.