March 13, 1951 G. C. SALMONS 2,545,048

POLE BUTT GROUND PLATE

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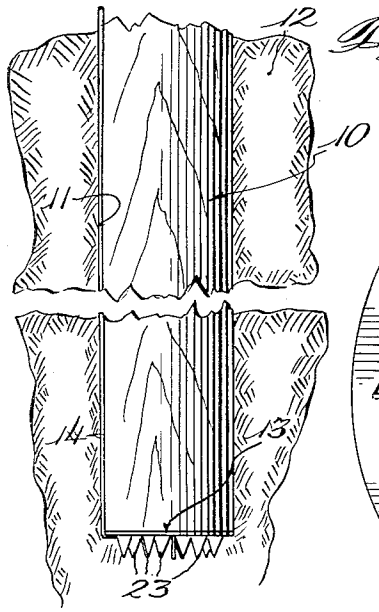


Fig. 1.

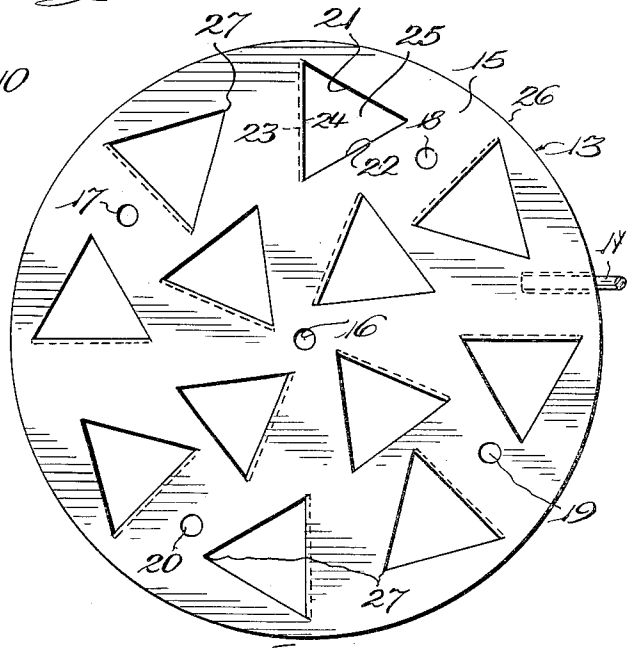


Fig. 2.

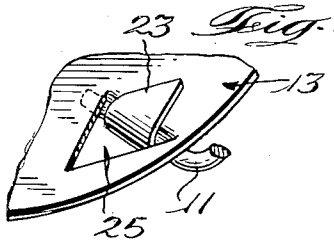


Fig. 5.

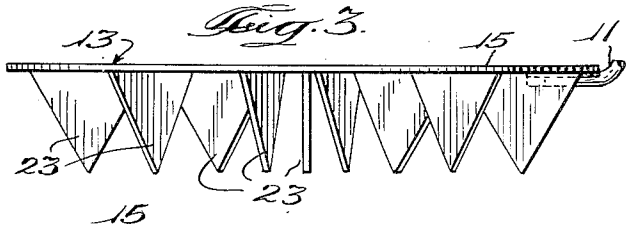


Fig. 3.

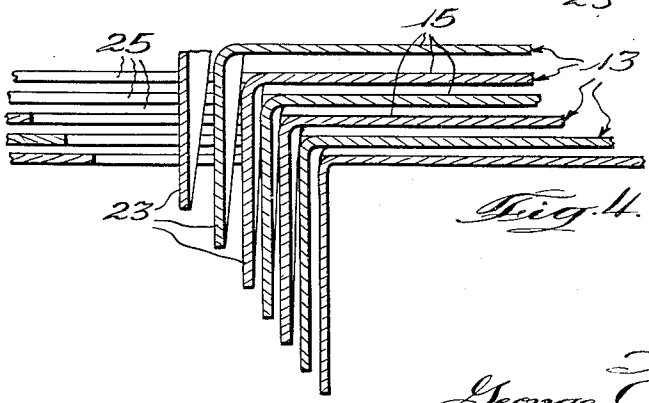


Fig. 4.

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Fig. 6.

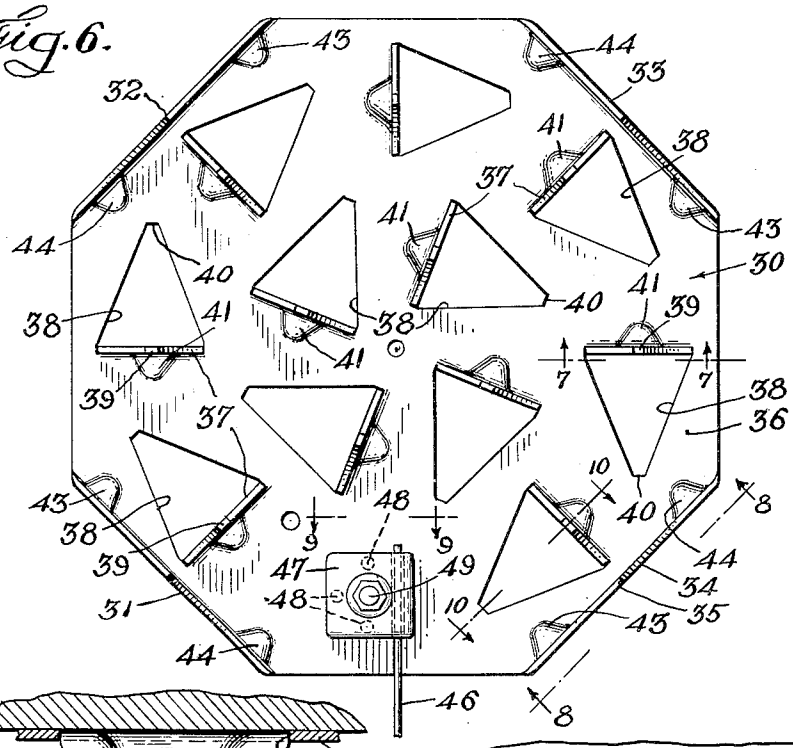


Fig. 7.

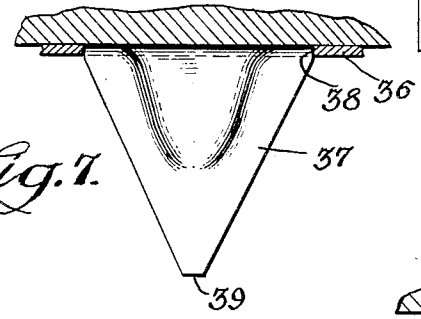


Fig. 8.

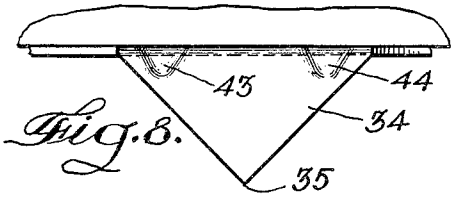


Fig. 9.

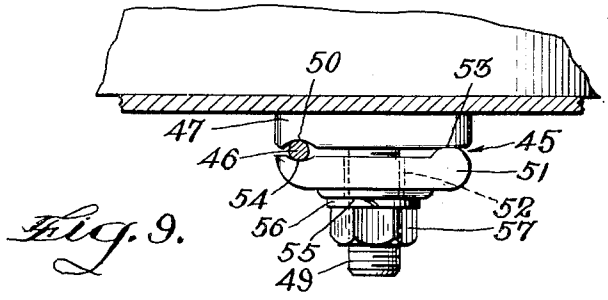
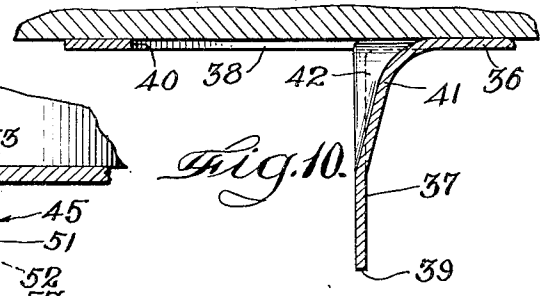


Fig. 10.



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UNITED STATES PATENT OFFICE

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POLE BUTT GROUND PLATE

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Application October 29, 1948, Serial No. 57,241

2 Claims. (Cl. 174—6)

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The present invention relates to pole butt ground plates, and is particularly concerned with the provision of an improved ground plate which is adapted to be used on the butt end of a telephone pole or a transmission line pole for effecting a better connection to ground.

One of the objects of the invention is the provision of an improved ground plate for pole butts which has an extended area in contact with the ground.

Another object of the invention is the provision of an improved ground plate for pole butts which, when secured to the butt of the pole, assists in holding the pole against lateral shifting in the hole so that the pole may be centrally placed and the hole filled and packed with dirt on all sides, and the butt of the pole will not shift because the points of the ground plate are embedded in the earth beneath the butt of the pole.

Another object of the invention is the provision of an improved ground plate for pole butts which is simple, capable of economical manufacture, so constructed that the plates nest together conveniently for packing and shipment, and adapted to have a greater area of the plate in contact with the ground than the devices of the prior art.

Another object of the invention is the provision of an improved ground plate for pole butts, which may be constructed out of sheet steel without any substantial waste of the material, because a square pattern may be used and the corners may be turned upward at right angles to form additional prongs.

Still another object is the provision of an improved ground plate of the class described, the prongs of which are suitably re-enforced against bending out of their normal position and which is provided with an improved form of connector for securing the ground wire in such manner that the ground wire will never become loose, since the spring which is employed will take up any slack and will also keep the nut from becoming loose.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the two sheets of drawings accompanying the specification,

Fig. 1 is a side elevational view of the butt end of a transmission line pole provided with a ground plate embodying my invention;

Fig. 2 is a top plan view of the ground plate;

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Fig. 3 is a side elevational view of the ground plate;

Fig. 4 is a fragmentary sectional view showing how the ground plates may be nested together because of the shape and arrangement of the prongs;

Fig. 5 is a fragmentary view in perspective, showing one way of securing the ground wire to the plate, utilizing one of the prongs for this purpose;

Fig. 6 is a bottom plan view of another modification which is so constructed that there is less waste of material;

Fig. 7 is an enlarged fragmentary sectional view taken on the plane of the line 7—7, looking in the direction of the arrows, but with the prong inverted relative to Figure 6;

Fig. 8 is a fragmentary sectional view taken on the plane of the line 8—8 of Figure 6, looking in the direction of the arrows, showing how one of the corners of a rectangular plate may be used for a prong;

Fig. 9 is an enlarged fragmentary elevational view of the connector for the ground wire, taken on the plane of the line 9—9 of Figure 6, looking in the direction of the arrows; and

Fig. 10 is an enlarged fragmentary sectional view taken on the plane of the line 10—10 of Figure 6, looking in the direction of the arrows.

Referring to Fig. 1, 10 indicates the butt end of a transmission line or telephone pole disposed in its hole in the earth 12 and provided with a ground plate 13 embodying my invention, and having a ground wire 11. The ground plate 13 preferably comprises a circular piece of sheet metal, such as galvanized steel plate or a copper alloy plate of a suitable thickness, such as, for example, No. 12 gauge.

The ground wire may consist of a bare copper wire 11 brazed to the plate adjacent one edge thereof, as shown in Fig. 2, the wire being of suitable size, such as, for example, a No. 6.

The plate 13 has a flat body 15 provided with a plurality of symmetrically located nail holes 16 to 20, by means of which it is secured to the butt of the pole 10. The flat body 15 is provided with a plurality of angular cuts, such as, for example, it is sheared at 21, 22; and the resulting prong 23 is bent down along the line 24 at right angles to the body 15.

The two shear cuts 21, 22 are preferably at an angle of sixty degrees, and the cuts are equal in length to each other and to the base of the prong 23 so that the aperture 25 is an equilateral triangle; and the prong 23 is likewise equilateral

and triangular. Any number of prongs may be thus formed; but the location and arrangement of the prongs is preferably symmetrical, all of the prongs being equally spaced from each other and at the same angle so that no matter how the ground plate is rotated, the prongs of one plate may be received in the holes of another plate for nesting.

For this purpose I prefer to locate the lines of bend 24 on radial lines extending from the center hole 16 to the periphery 26; and I locate the apices 27 of the triangular holes in the same circle.

I prefer to make the prongs of substantial size; and I prefer to arrange them in two circles, there being an inner circle of four prongs in the example selected to illustrate the invention. The lines of bend or bases of the prongs may be located forty-five degrees apart in the outer circle of prongs and ninety degrees apart in the inner circle of prongs.

When one plate is put on top of another, it will be found that the prongs of the upper plate extend into the holes of the lower plate; and this is true, even though a multiplicity of plates are placed one on top of the other, as illustrated in Fig. 4.

Since the prongs 23 are engaged on both sides by the earth, they have a greater area of the plate in engagement with the earth, and therefore provide a better ground for the same amount of metal than a plate which does not have such prongs. The sharp edges formed by shear cuts and the points of the prongs may be slightly rounded in order to protect the workers and their clothing, which might otherwise be cut or damaged by such sharp edges and points.

Various ways of attaching the ground wire may be employed; and in Fig. 5 one way is illustrated, in which the ground wire 11 extends along the bottom of the plate across the hole 25; and the prong 23 has been bent backward around the ground wire and bent through the aperture 25 until it is wrapped around the ground wire and engaged against the top of the plate. In addition to this clamping arrangement, the wire may also be brazed to the prong or plate.

Referring to Figure 6 and to Figure 10, these are views showing a preferred modification which has the advantage of less waste of material than is encountered when the ground plates are made of circular shape. The ground plate 30 is made of a rectangular pattern, preferably square, so that there will be no waste in cutting the square blanks from the steel sheet.

The corners of the square pattern are turned up to form prongs 31—34, which are provided with a right-angle apex 35, and are shown in Figure 8. The body 36 of the plate is again formed with a multiplicity of prongs 37, punched out of the body and forming apertures 38. These prongs 37 are in the general form of an isosceles triangle, the sides of which are longer than the base thereby making the prongs more pointed than in Figure 2; and the tip of each prong 37 is cut off providing a flat end 39 and leaving a short flat side 40 extending across the apex of the apertures 38. Thus the prongs will be less sharp, having a blunt end, and there will be less chance of damage to the person and clothing of workers.

Each of the prongs 37 is preferably formed at its base, where it joins with the body 36, with an integral pressed rib 41, the rib projecting into the corner between the body 36 and prong 37, and having a hollow groove 42 on the side toward the

aperture 38. The pressed ribs 41 re-enforce the prongs 37 and positively prevent their being bent out of their normal position, which is at right angles to the body 36, except by the use of considerable force.

The corner prongs 31—34 are also preferably provided with a pair of these pressed ribs 43, 44, these being located adjacent the outer corners of the prongs 31—34 at the juncture of the prongs with the body 36.

The prongs and apertures are preferably arranged in two circles, with their apices extending in the same direction and located in the two circles, exactly as described with respect to Figure 2.

Referring to Figures 9 and 6, one of the prongs may be omitted to provide space for a connector assembly 45 for the ground wire 46. This connector assembly may consist of a substantially rectangular base 47, which may be spot-welded to the body 36, at a plurality of points 48. The base 47 of the connector has an outwardly projecting threaded stud 49, and it is also preferably provided with a transverse groove 50 on one side for receiving the ground wire 46.

The clamping member 51 comprises a substantially rectangular body, having an enlarged aperture 52 for passing the threaded stud 49. At one side clamping member 51 is provided with a partially cylindrical surface 53, engaging the base 47 and providing a limited amount of pivotal movement. At its other side clamping member 51 is provided with a transverse groove 54, opposing the groove 50 for receiving the ground wire 46.

The grooves 54 and 50 may be partially cylindrical and are adapted to receive different sizes of ground wires. On its opposite side the clamping member 51 has a plane annular surface 55 for engagement with a spring lock-washer 56, which in turn is engaged by a nut 57. When the nut 57 is driven home then the spring lock-washer 56 may be compressed until it is all in the same plane and in a rigid condition.

The clamping member 51 pivots on the cylindrical surface 53, and its grooves 50 and 54 act as jaws for clamping the ground wire 46.

The operation of my ground plate is substantially the same as the ground plates of the prior art, in that it is secured to the bottom of the pole 10. A plurality of ordinary wire nails may be driven through the apertures 16—29 into the pole butt before the pole is lowered into its hole. The ground wire is, of course, also attached at this time and secured by staples to the side of the pole.

When the pole is inserted in the hole and centered therein, the weight of the pole rests upon the ground plate, providing a tight contact with the earth beneath it; and the prongs 23 are driven into the earth, increasing the area of contact, since the earth engages each prong on both sides.

The prongs will keep the pole butt from shifting in the hole while the fill is being replaced; and a very efficient connection to ground is provided by the plate and prongs.

Although the ground plates have projecting prongs, they have been so arranged that they nest in the holes of the adjacent plates; and therefore the ground plates may be conveniently packed for shipping and may be stored in small spaces.

While I have illustrated a preferred embodiment of my invention, many modifications may

be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

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

1. In a pole butt ground plate, the combination of a substantially square sheet metal member, said member having its corner portions bent outwardly at substantially right angles along a line which transforms the square sheet into an octagonal member, the said sheet also having a multiplicity of triangular holes punched out of it forming triangular prongs extending outwardly in the same direction as said corner portions, the said prongs being in the shape of isosceles triangles and having the bends at their bases extending in a radial direction, and the prongs being equally spaced radially, all of said prongs and corner portions having at their bends reenforcing ribs joining the body of the plate and the prong and corner portions, a connector base welded to said plate and having a threaded stud, a nut on said stud and a clamping plate apertured to receive said threaded stud, and having a curved pivot surface at one end and a clamping groove at the other end.

2. In a pole butt ground plate, the combination of a substantially square sheet metal member, said member having its corner portions bent outwardly at substantially right angles along a line which transforms the square sheet into an octagonal member, the said sheet also having a multiplicity of triangular holes punched out of it forming triangular prongs extending outwardly in the same direction as said corner portions, the said prongs being in the shape of isosceles triangles and having the bends at their bases extending in a radial direction, and the prongs being equally spaced radially, a connector base welded to said plate and having a threaded stud, a nut on said stud and a clamping plate apertured to receive said threaded stud, and having a curved pivot surface at one end and a clamping groove at the other end.

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