

C. LANZ.
GROUND ROD.
APPLICATION FILED MAR. 1, 1911.

1,035,020.

Patented Aug. 6, 1912.

FIG. 1.

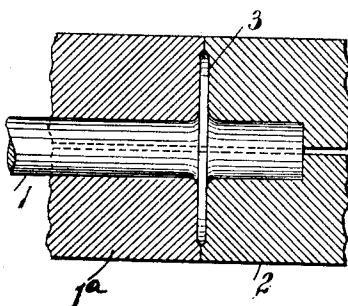


FIG. 2.

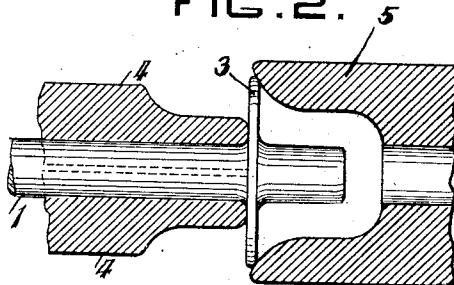


FIG. 3.

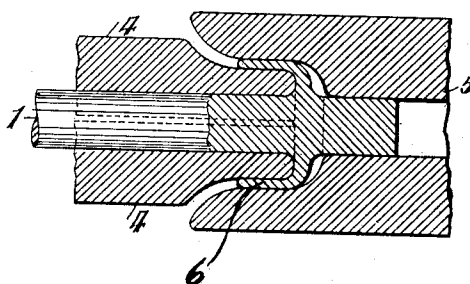


FIG. 4.

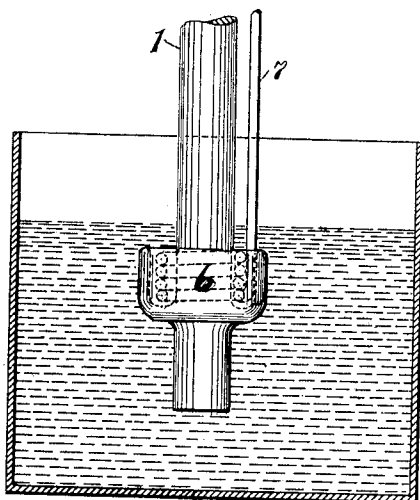
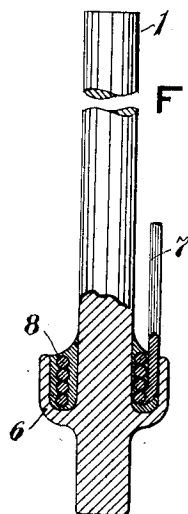


FIG. 5.



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GROUND-ROD.

1,035,020.

Specification of Letters Patent.

Patented Aug. 6, 1912.

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To all whom it may concern:

Be it known that I, CHARLES LANZ, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ground-Rods, of which the following is a specification.

This invention relates to a ground connection or rod for telephone, telegraph, and other electrical wires, and the method of making the same.

The object of the present invention is to provide a better rod, and particularly one having a more perfect connection between the wire and the rod than with prior articles of the same kind.

In my Patent No. 837,693, granted December 4, 1906, I described and claimed a ground rod or connection and method of making the same consisting in placing on the rod adjacent to the wire coil a collar or disk for holding and containing spelter, and then dipping the rod into spelter and allowing the latter to run down into or over the coil and collar or disk. In the commercial manufacture of that rod it has been found that it is not practicable to obtain a close fit of the disk or collar on the rod. Commercial rods are seldom circular, and on account of cost it is not possible to true them up. Consequently the disk or collar does not have a tight fit entirely around the rod. The molten spelter is very thin, practically as thin as water, and therefore runs out or escapes through the crack that exists at least part way around the rod between the rod and the disk. The spelter also begins to cool on the outer surface and remains molten at the rod for some time, due to the stored heat in the rod, and therefore runs out as described even if the exterior seems to be quite firm. The result is that the exterior appearance gives no indication of a defect inside, when as a matter of fact the spelter may have run out quite completely between the coil and the rod just where it should be in order to most effectively serve its intended purposes, that is, to provide a good electrical connection between the coiled wire and the rod. The present invention is intended to overcome this by providing a commercial way of providing the rod with the disk or collar so that there is no opening or crack between the two.

Generally stated, the invention consists in providing the rod with an integral collar

or disk, preferably by an upsetting operation, and also forming said collar or disk into a deep cup which envelops the wire coil, so that the spelter has no opportunity to escape after dipping.

In the accompanying drawing Figure 1 is a diagrammatic view illustrating the first step in the formation of the rod; Figs. 2 and 3 are similar views illustrating the second step thereof; Fig. 4 is a side view showing the rod with the cup thereon and the wire in place during dipping; and Fig. 5 is a longitudinal sectional view through the finished joint.

In the drawing the ground rod is shown at 1 and this may be of any suitable shape, cross sectional size and length. This rod in the preferred method of manufacture is upset in a suitable upsetting machine, such as used for heading bolts, and comprising gripping dies 1^a and an upsetting die 2, to form thereon a disk or collar 3 which preferably is thrown out as wide as possible. The rod is then grasped in another pair of gripping dies 4 and is passed into, or has passed over the same, a bell shaped die 5 which turns the edge of the disk or collar substantially parallel with the rod so as to form a comparatively deep and substantially cylindrical cup 6. This completes the operation on the rod.

The wire is shown at 7 and this has one end formed into a coil 8 by any suitable well-known process, such as coiling on a rotating mandrel, as shown in my prior patent above referred to. The coil 8 of the wire is slipped over the rod until it is down in the cup 6, as shown in Fig. 4. The cup preferably is of such depth that it envelops the coil for substantially its entire length.

The rod and connected wire are first dipped into a soldering fluid or flux and then dipped into the soldering bath, such as spelter or tinner's solder, as shown in Fig. 4, by merely dipping it endwise thereinto and allowing it to remain until the rod and wire are heated to about the same degree as the soldering bath and then drawing it out and holding the rod in a vertical position until the spelter or solder becomes hardened enough to keep it from running out of the cup when the rod is placed horizontally. The rods are placed in racks holding 25 to 50 rods which are all dipped and withdrawn at the same time. It is not necessary to completely immerse it unless

it is desired to galvanize the entire rod, which generally is not desired by the users. The effect of dipping is to fill the cup with the molten spelter, much like dipping it up
5 with a small dipper. The spelter in the cup obviously cannot escape except by running over the edge of the cup. The result is that the cup itself is entirely filled and all of the space in the cup between its walls
10 and the rod which is not occupied by the coil is completely filled with the spelter or solder so that when it cools an absolutely solid mass is formed closely adhering to the rod and cup and without a void at any
15 point or points.

With the process of manufacture described it is not necessary to coil the wire so tightly that it has a close fit on the rod, but the coil can be quite loose on the rod
20 to facilitate assembling. The upsetting operations whereby the disk and cup are formed, are simple and inexpensive, being practically the same as bolt head operations. No assembling of the disk and rod is neces-
25 sary and the assembling of the rod and coil is very easy and rapid because of the possibility of having a loose fit of the coil on the rod. The dipping operation is inexpensive since it may be accomplished by placing
30 a number of rods in a rack and dipping all at one operation. They remain in the tank only long enough for the rods and coils to heat to substantially the temperature of the bath. The electric joint formed by this
35 process is practically perfect. The integral collar or cup also protects the coil from glancing blows of the tool used in driving the rod. Such blows cannot injure the cup

or collar or move it out of place, whereas, with a separate disk the strain of such blows
40 comes entirely upon the spelter, and as this is not very strong, the disk is liable to be moved, the spelter ruptured and the electric joint broken. By having the cup or collar
45 integral with the rod, liability of injuring the electric joint from such causes is prevented. In the claims the word "integral" is used in the sense of continuity with the rod in the finished form.

What I claim is:

1. A ground connection comprising a rod provided with a collar integral therewith and concave on one side, a wire coil on said rod adjacent to the concave side of said collar, and spelter or solder covering said
55 coil and securing the same to said collar and rod.

2. A ground connection comprising a rod provided with a cup-shaped collar integral therewith, a coil on the rod and extending
60 into said cup-shaped collar, and spelter or solder filling said cup and securing the coil to the rod and collar.

3. A ground connection comprising a rod, a wire coil on said rod, a cup integral with
65 the rod and of such depth as to inclose the coil, said coil being inclosed in the cup, and spelter or solder filling said cup and securing the coil to the rod and collar.

In testimony whereof, I have hereunto set
70 my hand.

CHARLES LANZ.

Witnesses:

F. W. WINTER,
MARY E. CAHOON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."