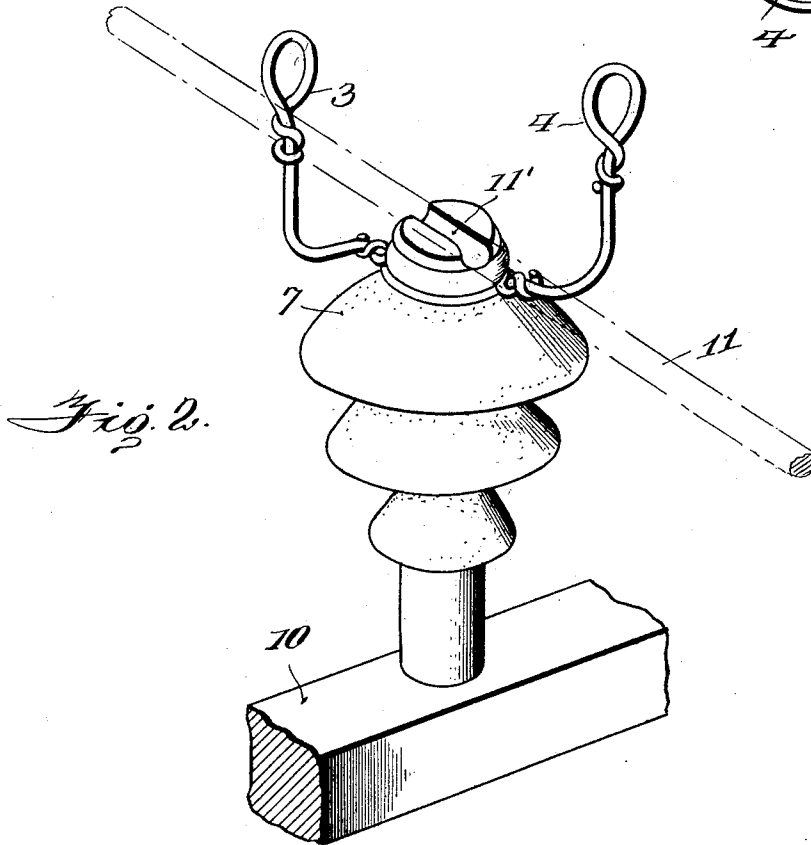
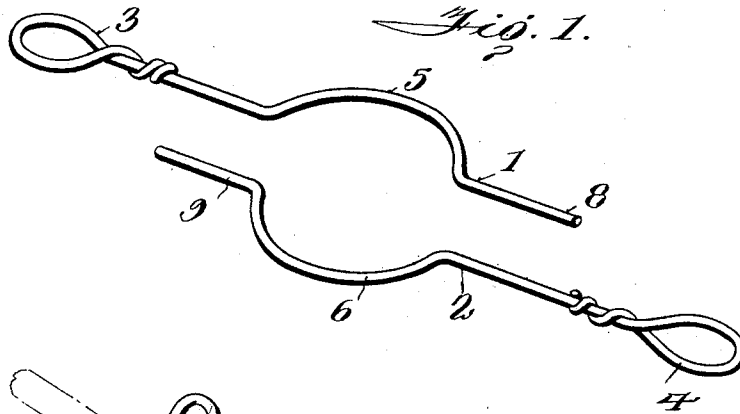


1,061,823.

Patented May 13, 1913.

2 SHEETS-SHEET 1.



Witnesses

Helgeott Murray,
Frank G. Brunton

Inventor

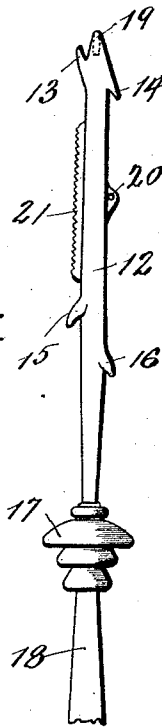
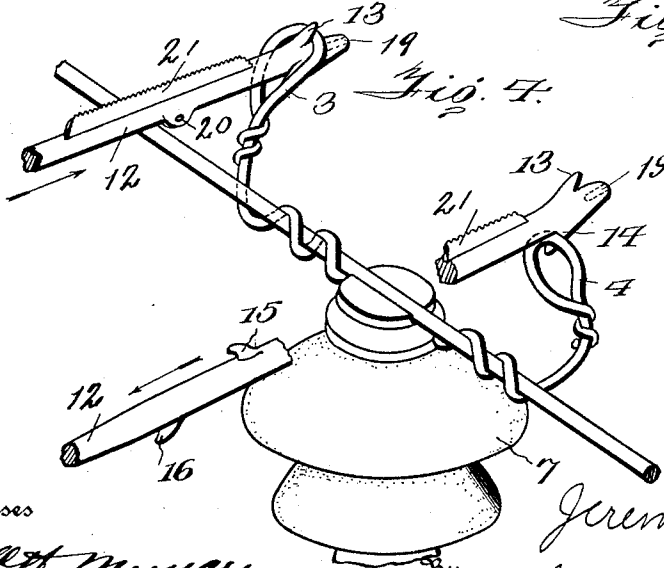
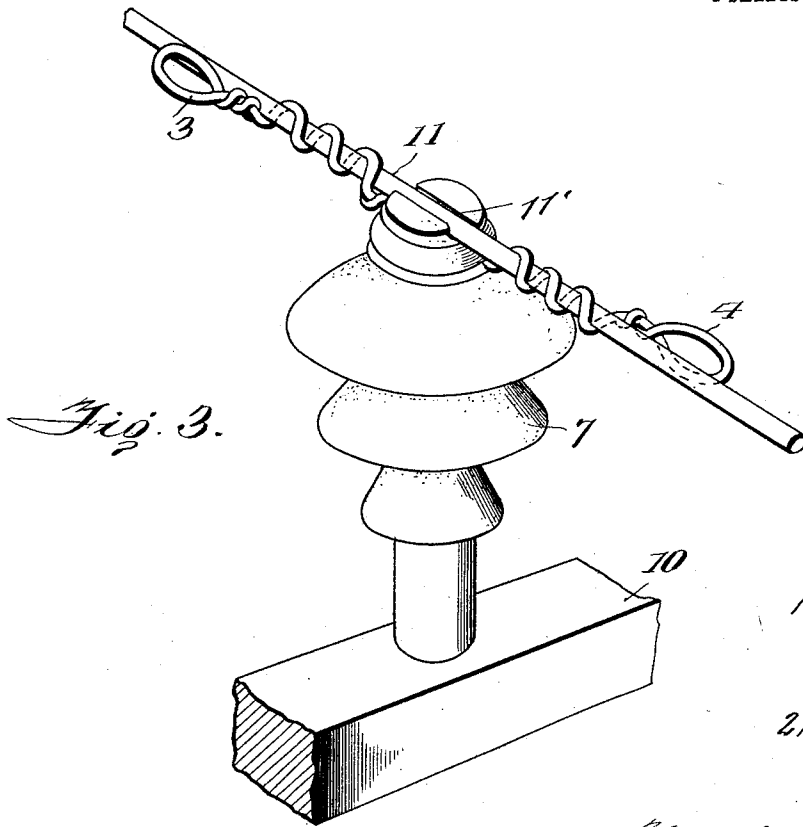
Jeremiah Cronin,

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1,061,823.

Patented May 13, 1913.

2 SHEETS—SHEET 2.



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TIE-WIRE FOR HIGH-VOLTAGE CIRCUITS.

1,061,823.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed May 13, 1912. Serial No. 697,098.

To all whom it may concern:

Be it known that I, JEREMIAH CRONIN, a citizen of the United States, residing at Wapakoneta, in the county of Auglaize and State of Ohio, have invented certain new and useful Improvements in Tie-Wires for High-Voltage Circuits, of which the following is a specification.

This invention relates more especially to an improved tie-wire arrangement, for use on high potential circuits.

It is well known by those familiar with the practical side of high potential work, that under the present practice of tying power conductors to the line insulators, the danger to the workmen, due to the high potential carried, is so great as to render change of any of the tie-wires or insulators while power is on the circuit, prohibitive. A modern three phase high potential transmission line usually carries anywhere from ten thousand to thirty-five thousand volts. In view of the dangers involved in handling the wires in such circuit, if the repair or change to be made is slight and is not necessary to be made immediately, it is postponed until sometime, generally at night, or in the early morning, when power is off the circuit, or if the change or repair requires immediate attention, it is necessary to shut down the circuit, that is, to cut the power off the circuit until the desired repair or change is made.

The object of the present invention is to provide a tie-wire arrangement whereby these changes or repairs may be made with perfect safety to the workmen, while power is on the circuit, and therefore without any interruption to traffic, or other operation dependent on the circuit.

In order to more fully describe my said invention, reference will be had to the accompanying drawings, wherein—

Figure 1 represents a perspective view of the two members of my improved tie-wire, before they are placed on the insulator; Fig. 2 is a perspective view of a high tension petticoat insulator with my improved tie-wire thereon, showing the latter with its ends directed upward, just before being twisted around the power wire; Fig. 3 is a view similar to Fig. 4, except that in Fig. 3 the tie-wire is shown twisted around the power wire, and in the position that it normally occupies; Fig. 4 indicates the tie-wire

in process of being twisted around the power wire, and Fig. 5 is a side elevation of an improved form of tool, which I have devised for twisting these tie-wires, as indicated in Fig. 4.

In the form shown in the accompanying drawings, my improved tie-wire comprises two members 1 and 2, one end of each of which is bent back and twisted upon itself to form loops 3 and 4 respectively. The body of each of these members is bowed or curved outwardly, as at 5 and 6, to fit the neck of a high potential petticoat insulator, such for example as 7. The curved portions 5 and 6 of these wire members are then placed on opposite sides of the insulator neck, and the relatively short straight ends 8 and 9 are then twisted respectively around the members 2 and 1, as shown. Each of the members therefore, has the free loop end extending in opposite directions from each other, beyond the twisted connection by which the said members are held around the neck of the insulator.

We will assume the case for example, where it is desired to substitute a new insulator for an old one on a line while the current is on. It is assumed that the old insulator has been removed, and that the conductor to be connected to the new insulator is raised above its normal position, with relation to the cross-arm 10, which supports the insulator. My improved tie-wire is placed on the insulator as described, and its looped ends bent upward substantially as shown in Fig. 2, the insulator placed on the cross-arm, and the high potential wire 11 is then lowered into the slot or groove 11', in the top of the insulator, the said wire 11 passing downward between the upturned ends of my improved tie-wire, which latter act as guides. Then, preferably by means of an improved form of tool which I have devised for this purpose, these looped ends of the tie-wire are twisted around the power wire 11, to the final form shown in Fig. 3. This tool comprises in the form shown, a metal stem 12 on which are formed a plurality of spurs 13, 14, 15, and 16, the said stem being carried by an insulator 17, preferably of the high potential petticoat type to which is connected a suitable rod or handle 18, which may be of wood, or any other desired material. From Fig. 4, the use of this tool will be obvious, the spurs slanting away from

the insulator being used for the purpose of pushing the loops away from the operator, while the spurs slanting in the direction of the operator are for the purpose of pulling the loops toward the operator. By a succession of such movements, the looped extensions of the tie-wires may be readily wrapped around the power wire, without the slightest danger to the person using the said tool. The holes 19 and 20 in the stem of this tool, are provided for the purpose of untwisting the free ends of the old tie-wires which are not looped. The saw 21 indicated as forming a part of this tool, is for the purpose of sawing off a limb of a tree or other object which may interfere with the manipulation of the tool. The spurs 15 and 16 located nearer the handle of the tool than the spurs 13 and 14, are for the same purpose as the latter spurs, but are placed near the operator simply for the purpose of permitting him to more readily manipulate the tie-wires when these are relatively close to him. The tool herein shown for manipulating my improved form of tie-wire, however, forms no part of the present invention, being the subject of a separate application, and so far as the present invention is concerned any other means which may take the place of this tool may be employed, for doing its work. The above described tool, however, has been used with perfect safety on transmission lines carrying as high as thirty-three thousand volts, and has been found most satisfactory.

Having thus fully described my invention, what I claim is:

1. A tie-wire for holding a line wire of an electric circuit or an insulator, comprising two wire members, each being formed with a curved body portion, a loop end, and

a straight end, as and for the purpose set forth.

2. A two-piece tie-wire for holding a line wire of an electric circuit on an insulator, and comprising two wire members, each having a loop formed at one end and the other end of each wire wrapped around the body of the other wire, the two said wires adapted to pass around opposite sides of the insulator.

3. The combination with an insulator, of a two-part tie-wire comprising two wires, each passing partly around said insulator on opposite sides thereof, said wires having each an end wrapped around the body of the other wire on opposite sides of said insulator, each wire having a portion extending beyond the said connection of the two wires, and adapted to be wrapped around the conductor to be supported by said insulator.

4. The combination with a high voltage insulator, of a two-part tie-wire comprising two wires, each passing partly around the said insulator on opposite sides thereof, said wires having each an end wrapped around the body of the other body on opposite sides of said insulator, each wire having a portion extending beyond the said connection of the two wires, and adapted to be wrapped around the conductor to be supported by said insulator, the portions of said wires wrapped around said line wire being looped at their ends for the purposes set forth.

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

JEREMIAH CRONIN.

Witnesses:

R. B. ANDERSON,
E. C. RIDDLE.

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