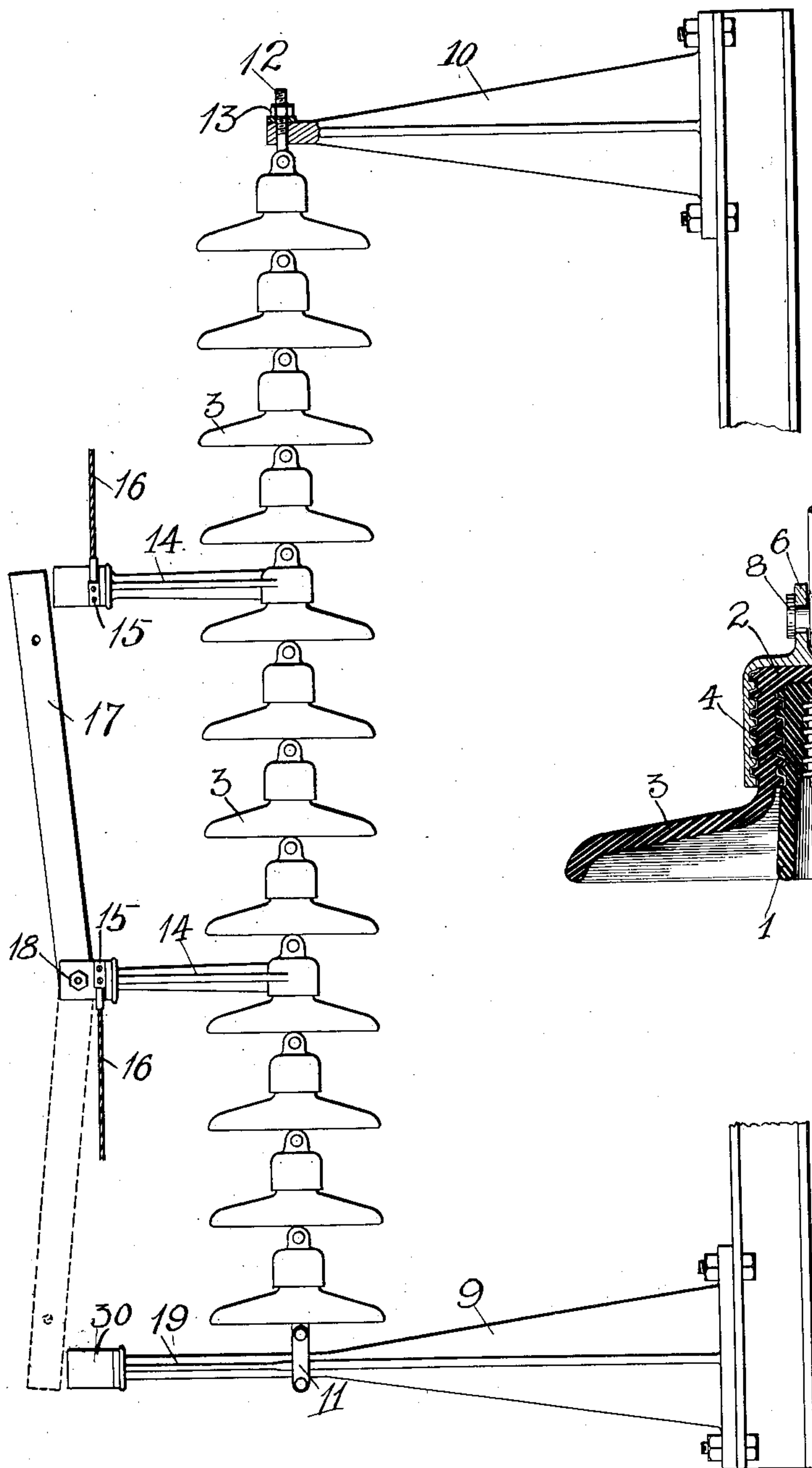


W. T. GODDARD.  
HIGH VOLTAGE SWITCH.  
APPLICATION FILED OCT. 25, 1909.

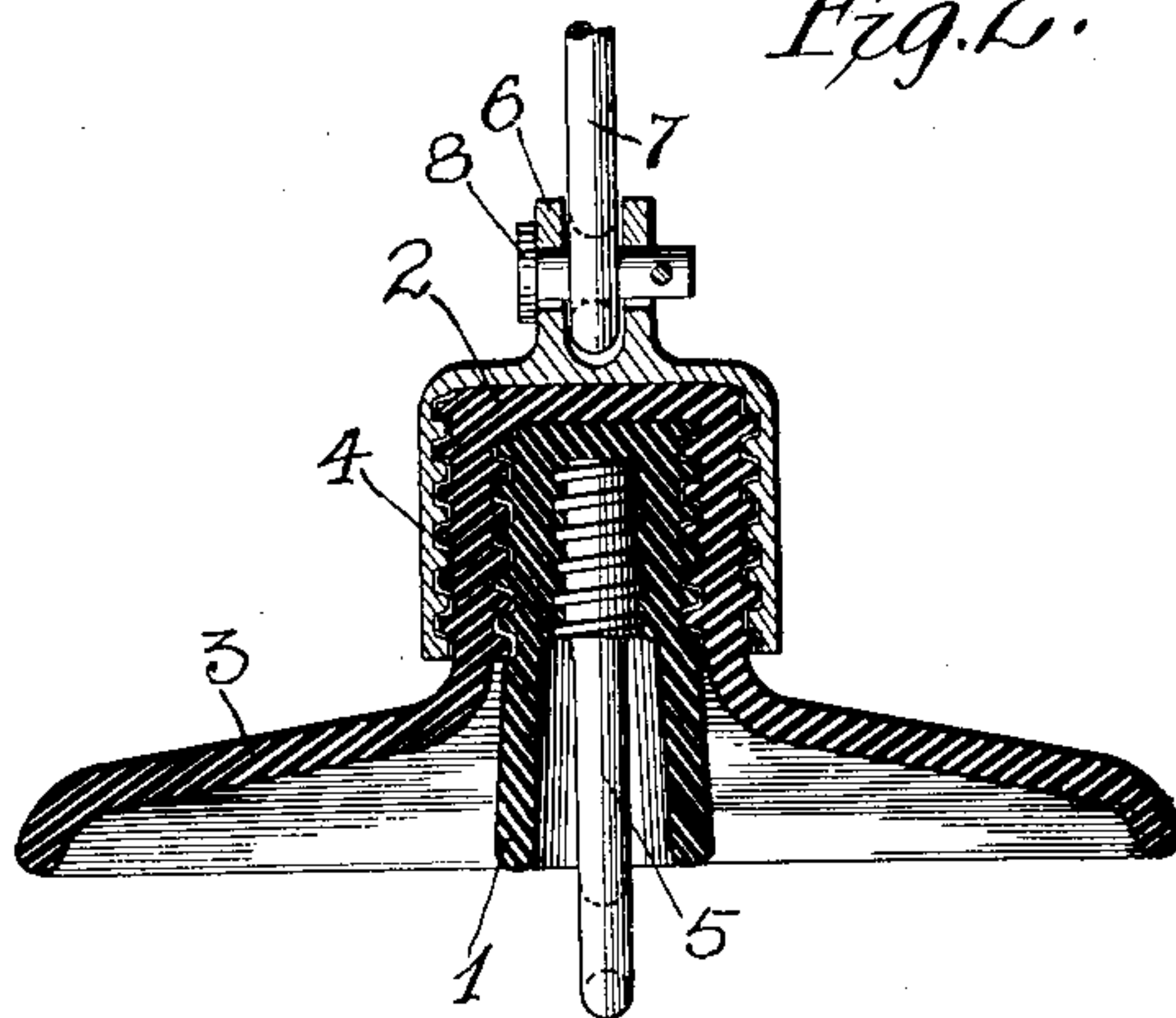
959,929.

Patented May 31, 1910.

*Fig. 1.*



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

WALTER T. GODDARD, OF VICTOR, NEW YORK, ASSIGNOR TO LOCKE INSULATOR MANUFACTURING COMPANY, OF VICTOR, NEW YORK, A CORPORATION OF NEW YORK.

## HIGH-VOLTAGE SWITCH.

959,929.

Specification of Letters Patent.

Patented May 31, 1910.

Original application filed June 12, 1908, Serial No. 438,055. Divided and this application filed October 25, 1909. Serial No. 524,470.

*To all whom it may concern:*

Be it known that I, WALTER T. GODDARD, of Victor, in the county of Ontario and State of New York, have invented certain new and useful Improvements in High-Voltage Switches; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

The present invention relates to high voltage switches and it has for an object to provide a construction in which the insulating support is so formed that it may be made to agree with the voltage of the lines connected to the switch.

To these and other ends the invention consists in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a side view of a switch constructed in accordance with this invention, and Fig. 2 is a side view of one of the insulating units, partly in longitudinal section.

In the present embodiment a sectional insulator is provided composed of a plurality of units, each of which may embody one or more pieces of insulating material. In this instance a tapered cup-shaped section 1 is secured by screw threads or other means within a reduced extension 2 that projects from a concave convex section 3, the latter serving as an annular flange to increase the arcing distance of the unit. The units may be united in any suitable manner, but it is preferred to employ metallic connecting devices each formed of two members 4 and 5. The member 4 may be in the form of a cap secured to the extension 2 by screw threads or other suitable means and having a pair of ways 6 between which an eye 7 on the member 5 is fitted and secured by the spring or bolt 8. The contacting faces of the eye and the ear are machined in such a manner that a lateral movement in but one plane is permitted, and that, the plane of the force acting by reason of the weight of the conductor. The member 5 is secured to the proximate unit and, for this purpose, may be in the form of a bolt screw threaded or

otherwise formed to engage within the section 1. This insulator is preferably supported at both ends so that it will not swing and for this purpose are provided two supports 9 and 10 which the insulator connects, one end of the insulator being provided with two links 11 connected at their outer ends and arranged on opposite sides of the support 9, and the other ends of the insulator being connected to the support 10 by the tension applying device, comprising in this instance a bolt 12 passing through a perforation in the said support and engaged by a nut 13. Of course, the tension applying device may be of any other suitable construction and arranged in a different position, it being only necessary that it can place the insulator under tension independently of the parts supported thereby. If the insulator be placed under a tension of 2000 pounds, no movement thereof will take place under ordinary conditions, yet, a force acting transversely to the longitudinal axis sufficient to break the insulator if it were made integral, will cause the insulator to yield or flex.

The foregoing insulator is not claimed *per se* as it forms the subject matter of an application filed by me on June 12, 1908, Serial No. 438,055, of which this is a divisional. This type of insulator is particularly adapted to support the terminals of high voltage switches where the matter of building porcelain insulators of the conventional type becomes a great problem and the cost excessive when used upon lines carrying over 60,000 volts, the insulator being liable to run to extreme diameters which also means that the device will consume a great deal of space in all directions when installed. In the present instance both of the terminals of the switch are arranged on the insulator which then forms a terminal carrier, having for this purpose arms 14 branched from two caps 4 and carrying spring clips 15 to which the conductors are connected.

It will be noted that the same number of units is arranged between the terminals as is arranged between each terminal and its proximate support, thus causing the arcing distance between the two terminals to be the same as the arcing distance between each terminal and its proximate support. With



this construction the arcing distance between two terminals and between the terminals and the support may be made to agree with the voltage of lines connected to the terminals. It will be further noted that an insulating terminal carrier is provided which is entirely surrounded by flanges between the two terminals, and also between a terminal and its nearest support. The tension on the insulator prevents the shifting of the terminals relatively to each other, thus insuring that the switch blade or contactor 17 which is pivoted at 18 to one of the terminals will always engage the other terminal in a proper manner.

In order to ground the terminal which is connected directly to the apparatus to be operated, so that the apparatus can be operated with safety I provide an earth connection preferably in the form of an extension 19 on one of the supports, the extension being provided with a clip 30 at its free end to receive the switch blade 17.

I claim as my invention:

1. The combination with a pair of supports, of a terminal, and an insulator between the supports carrying the terminal and having insulating flanges about it on both sides of the terminal.

2. The combination with a pair of supports, of a terminal, an insulator between the supports carrying the terminal and comprising a plurality of insulator units, devices for uniting proximate ends of the units, and means for placing said insulator under tension independently of the conductor connected to the terminal.

3. The combination with a pair of terminals, of an insulating carrier for the terminals, having an insulating flange about it between the terminals.

4. The combination with a pair of supports, and terminals, of an insulating terminal-carrier connecting the supports and having an insulating flange between the terminals, and an insulating flange between each terminal and its proximate support.

5. The combination with an insulator supported at opposite ends, having a plurality of insulating flanges about it and comprising a plurality of units, of terminals insulated from each other by said insulator and having insulating flanges of the latter located between them.

6. The combination with an insulator supported at opposite ends and comprising a plurality of insulating units, and devices for uniting proximate ends of the units, of a terminal arranged intermediately of the ends of the insulator, and a device for applying tension to the insulator.

7. The combination of a terminal-carrier

comprising insulating units, and metallic devices connecting the insulating units, with terminals on said carrier insulated from each other, and a tension applying device for the carrier.

8. The combination with a plurality of insulator units, arranged end to end, of arms branched from said units and carrying terminals, and a tension applying device connected to the units.

9. The combination with a pair of supports, of a terminal-carrier connecting the supports and comprising flanged insulating units and metallic connections between said units, arms branched from said metallic connections and carrying terminals, and a tension applying device for the carrier.

10. The combination with the terminals of a carrier therefor comprising insulating portions having surrounding flanges, rods each secured at one end to an insulating portion and having an eye at its other end and caps fitting on the insulating portions and having ears secured to the eyes of the bolt, and arms branched from the caps and carrying the terminals.

11. The combination with a pair of supports, of an insulating terminal carrier connecting said supports and comprising insulating portions and metallic portions connecting them, arms branching from the metallic portions carrying terminals, and a tension applying device for the insulating terminal-carrier.

12. The combination with a pair of supports, of a section insulator connecting the supports, and a pair of terminals carried by the insulator and each having the arcing distance between it and its proximate support equal to the arcing distance between the two terminals.

13. The combination with a pair of supports, and a pair of terminals, of an insulator connecting the supports, carrying the terminals and formed of insulator units, the same number of units being arranged between the terminals as are arranged between a terminal and its proximate support.

14. The combination with a pair of supports, one of which has an extension, a pair of terminals, of a terminal carrier connecting the supports and having flanges about it between the terminals and between the latter and the supports, and a connector pivoted to one of the terminals and adapted to be thrown into contact with the extension and with the other terminal.

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Witnesses:

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