

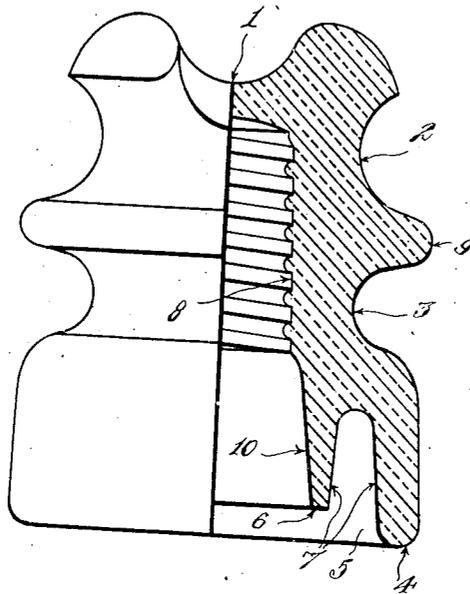
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INSULATOR

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INSULATOR

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5 Claims. (Cl. 174-174)

My invention relates to improvements in insulators and particularly to insulators of the pin-type design which are used to insulate electric power lines included in the last stages of the network used to supply power to the consumer; for example, a high-tension transmission line of 132,000 volts is brought from a generating station to a switching station, where the voltage is transformed down to 26,400, and then the power is carried to a substation from which it is again transformed down to 4,150, which voltage supplies the network going to the consumer, where it is again transformed down to 440-220 or 110, and it is in this range, below the substation, where my improved type of insulator is to be used.

The principal object of my invention is to provide a device of the above-indicated character that is universally adaptable both structurally and electrically for use in the three major forms of electric power line construction. These major forms are, first, top-groove construction; second, side-groove construction; third, street-light loop construction.

Another object of my invention is to provide a universal type of insulator which will take the place of a plurality of insulators now used for the forms of service above mentioned, thereby reducing the types of insulators required to be carried in stock, thus reducing the investment in insulators and the space required in the stock rooms.

A further object is to provide an insulator for the service mentioned which is stronger, both mechanically and electrically, than insulators of the prior art.

My invention is particularly advantageous during emergency calls, where it is usually impossible to predetermine the type of line construction at fault.

In general, the object of my invention is to provide an insulator that will be simple and durable in construction, economical to manufacture, and effective in its operation.

These and other objects will be understood by one skilled in the use of such devices. I accomplish the foregoing objects by the construction illustrated in the drawing forming a part hereof.

In the drawing, which is part in elevation and part in section, I have shown the insulator as a one-piece construction and formed of appropriate dielectric material, preferably glass or porcelain. The device is represented as consisting of a general cylindrical body, with its top transversely grooved at 1 for the reception of a line conductor, and peripherally grooved at 2 for the reception

of a line conductor or for the accommodation of the usual tie wire for holding down a conductor in groove 1 in the conventional manner; and peripherally grooved at 3 for the reception of a line conductor. The lower edge of the body is formed with an annular groove 5 defining a main or outer skirt 4 and a petticoat 6. The under-carriage surfaces 7 and 10 approach a vertical plane and serve to discourage the condensation of moisture from forming a definite beading in these areas. This is a material improvement over the usual "umbrella" construction which tends to hold moisture such as occasioned by fog.

A very important feature of this invention is the position of the pin cavity 8 in reference to the positions of the conductor grooves 2 and 3. The use of these conductor grooves singularly or in combination for their respective purposes, places the assembled insulating unit under cantilever stress. Due to the nature of the insulating materials generally used, preferably glass or porcelain, the major component stress on the insulation should be compression. It is therefore important that the section of insulating material between the pin cavity 8 and the bottom of the side-groove cavities 2 and 3 be of a solid mass of insulation, and that with the insulator conventionally screwed on its assembly pin, the pin will back up this solid mass of insulation. This will insure sufficient and uniform mechanical strength.

Another feature in this invention is that the extreme diameter of the protruding peripheral rib or conductor separator 9, and the bottom outside diameter of the defined main or outer skirt 4, are the same. This feature permits contact area at the bottom of the insulator and also at a midway point of the insulator when these insulators are placed adjacent to one another in the storage shelves. This distributed contact area will limit the possibility of impact breakage, which of itself is quite an item of expense in prior-art insulators used for the purpose herein set forth.

Specifically, the major forms of use, to which reference has been made, are now described in detail. The top groove construction as illustrated, or groove 1, is used to support a conductor when said conductor is in a straight or reasonably straight line. The size of this groove is made to accommodate conductor sizes up to and including No. 4/0 rubber-covered or weather-proofed cable, and will allow the conductor to seat in the bottom of the groove cavity. In this case, groove 2, as illustrated, is used for the tie wire to securely tie the conductor in groove 1 in place, and thus

prevent the conductor from becoming dislodged from the insulator.

The side-groove construction utilizes groove 2 and is used to support the conductor when said conductor terminates at a horizontal angle from the vertical axis of the insulator. It is proper power line construction to allow the conductor to rest in that portion of groove 2 which is outside the angle made by the conductor in reference to the vertical axis of the insulator. With the customary side-groove tie, this construction limits the possibility of the conductor becoming dislodged from the insulator. The size of groove 2 is made to accommodate conductor sizes up to and including No. 4/0 rubber-covered or weather-proofed cable, and will allow the conductor to seat in the bottom of the groove cavity.

The street-light loop construction utilizes the combination of grooves 2 and 3 which are used to support the severed conductor by looping one severed end of the conductor around the peripheral groove 2, and by looping the other severed end of the conductor around the peripheral groove 3. The two free ends of the severed conductor are then connected to the street-light fixture. The size of groove 3 is made to accommodate conductor sizes up to and including No. 4 rubber-covered or weather-proofed wire, and will allow the conductor to seat in the bottom of the groove cavity.

From the foregoing description and a study of the drawing, it will be apparent that I have provided an insulator possessing numerous advantages not found in prior-art devices of this type.

I claim:

1. An insulator of the pin-type for use in distribution of electric power comprising a body completely of suitable dielectric material having a pin cavity, the body having a transverse top groove and an annular side groove similar to the top groove to receive, under one condition of installation, the same size electrical conductor as the top groove, or a tie wire under a second condition of installation, the body further having a second annular side groove spaced below the first-mentioned side groove and of a size to receive a smaller conductor of the size usually used for street-light loops, the said side grooves being divided and formed in part by a continuous rib the body also having an annular groove in its bottom edge and extending upwardly, dividing the bottom edge into an outer skirt and a petticoat.

2. An insulator of the pin type for use in distribution of electric power comprising a body completely of suitable dielectric material having a pin cavity, the body having a transverse top groove and an annular side groove similar to the top groove to receive, under one condition of installation, the same size electrical conductor as the top groove, or a tie wire under a second condition of installation, the body further having a second annular side groove spaced below the first-mentioned side groove and of a size to receive a smaller conductor of the size usually used for street-light loops, the said side grooves being divided and formed in part by a continuous rib the body also having an annular groove in its bottom edge and extending upwardly, dividing the bottom edge into an outer skirt and a petti-

coat, the side walls of this latter groove approaching a vertical plane to reduce condensation to a minimum.

3. An insulator of the pin type for use in distribution of electric power comprising a body completely of suitable dielectric material having a pin cavity, the body having a transverse top groove and an annular upper side groove adjacent the top groove and similar to the top groove to receive, under one condition of installation, the same size electrical conductor as the top groove, or a tie wire under a second condition of installation, the body further having a second annular side groove spaced below the first-mentioned side groove and of a size to receive a smaller conductor of the size usually used for street-light loops, the upper side groove also being adapted to receive another similar loop conductor for cooperative action with the conductor in the second-mentioned side groove, the body also having an annular groove in its bottom edge and extending upwardly, dividing the bottom edge into an outer skirt and a petticoat, the two annular side grooves being separated by a continuous peripheral rib having a diameter substantially the same as that of the skirt.

4. An insulator of the pin type for use in distribution of electric power comprising a body completely of suitable dielectric material having a pin cavity, the body having a transverse top groove and an annular upper side groove similar to the top groove and merging therewith to receive, under one condition of installation, the same size electrical conductor as the top groove with a tie-wire, or a tie wire alone under a second condition of installation, the body further having a second annular side groove spaced below the first-mentioned side groove and of a size to receive a smaller conductor of the size usually used for street-light loops, the upper side groove also being adapted to receive another similar loop conductor for cooperative action with the conductor in the second-mentioned side groove, the body also having an annular groove in its bottom edge and extending upwardly, dividing the bottom edge into an outer skirt and a petticoat, the depth of the side annular grooves being approximately the same, and the section of insulating material between the pin cavity and the bottoms of said grooves being a solid mass backed by the pin when the insulator is assembled thereon as and for the purpose described.

5. A universal pin-type insulator for the service described, comprising a body completely of suitable insulating material having a cavity for a pin and also having a top transverse groove and a pair of annular side grooves separated by a continuous circular rib, the upper of the side grooves being similar to the top groove to receive conductors varying in size up to and including the size that fits the top groove, while the lower of the side grooves is shaped to take a conductor suitable for loop distribution purposes in cooperation with another conductor feeding supply current to the loop and positioned in the upper side groove, the body also having a vertically positioned groove forming a skirt and a petticoat, the walls of this latter groove approaching a vertical plane to reduce condensation to a minimum.

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