C. E. EVELETH.

INSULATOR FOR HIGH TENSION TRANSMISSION LINES.

APPLICATION FILED SEPT. 3, 1908.

917,031. Patented Apr. 6, 1909.

Fig. 1.

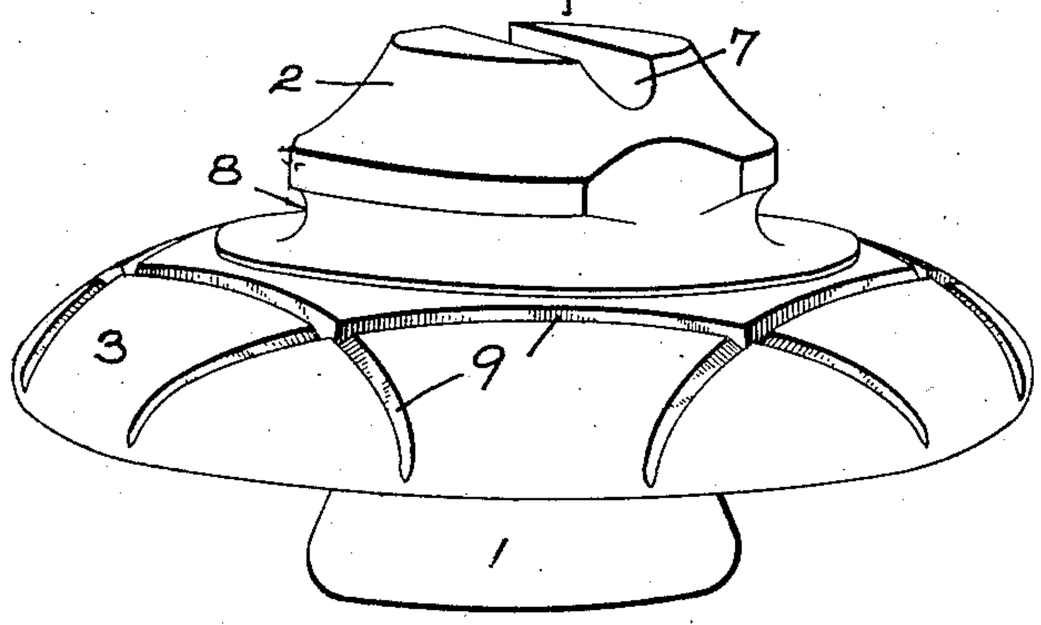


Fig. 2.

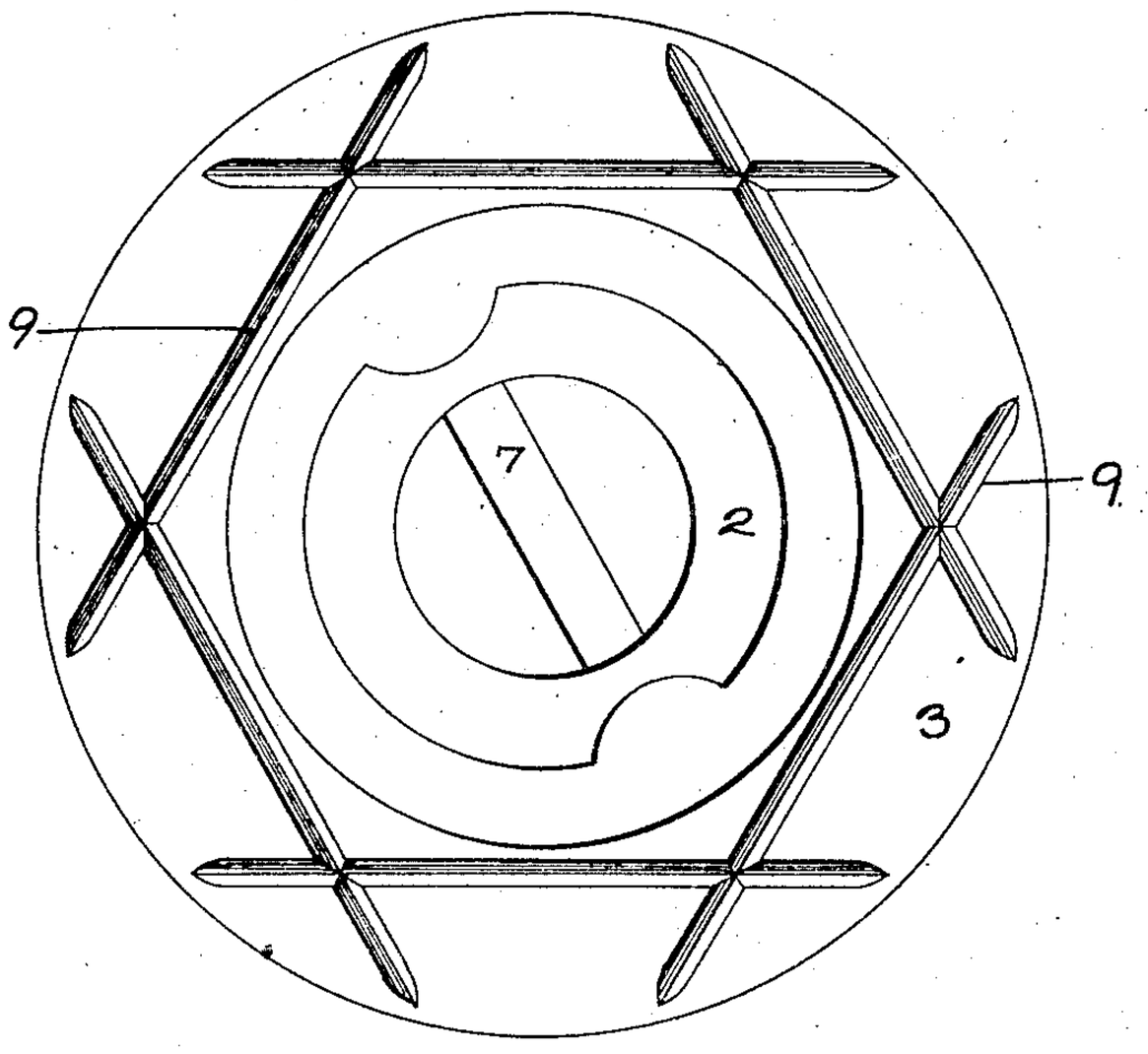
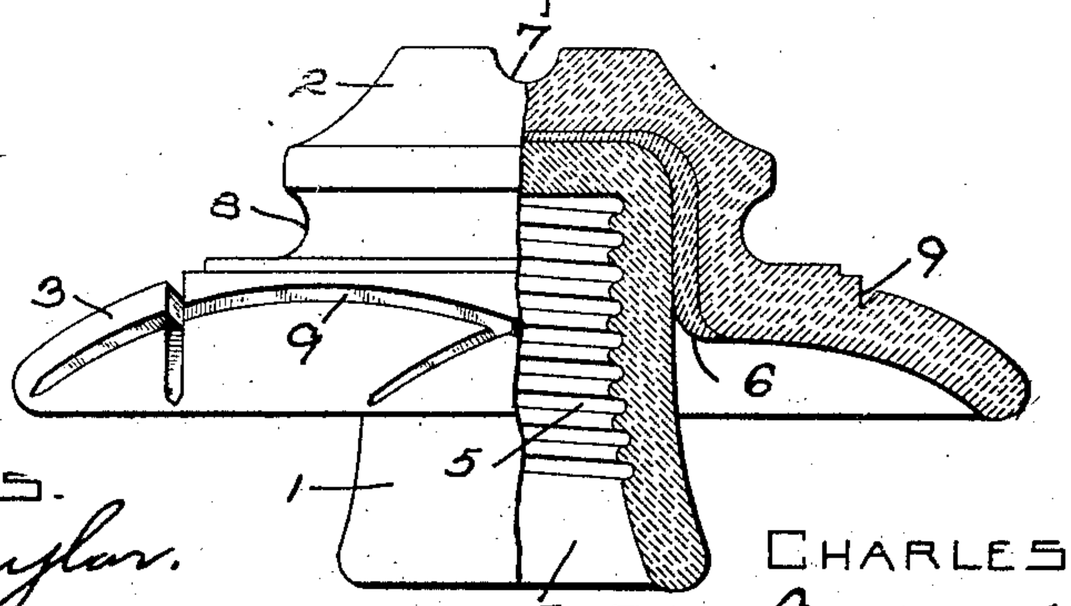


Fig. 3.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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INSULATOR FOR HIGH-TENSION TRANSMISSION-LINES.

No. 917,031. Specification of Letters Patent. Patented April 6, 1909.

Application filed September 3, 1908. Serial No. 451,491.

To all whom it may concern:

Be it known that I, CHARLES E. EVELETH, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Insulators for High-Tension Transmission-Lines, of which the following is a specification.

This invention relates to insulators for overhead conductors carrying electric currents of high potential, and it is especially intended for use in electric railway installations which employ a catenary system of suspension for the working conductor. The ordinary glass or porcelain insulator elevated on a pole or cross-arm is conspicuous by its size and color and seems to exert a great attraction upon would-be marksmen, who find a peculiar pleasure in throwing stones and other missiles at such insulators and in shooting at them with sling-shots, air-guns and firearms of various sorts. An insulator generally breaks close to or at the neck, so that it is liable to become loose and fall, and in any event the removal of all or a portion of the shell or petticoat close to the neck reduces the leakage surface to a dangerous degree. Breakage of insulators, therefore, not only causes expense to the company operating the line, but it is a source of danger to individuals and apparatus, owing to the liability of short circuits and grounds, which are serious matters on lines carrying several thousand volts.

The object of my invention is to reduce as far as possible the danger from this wanton destruction of insulators, and I accomplish this result by so constructing the insulators that if they are struck by a stone, bullet or other missile they will give way only in such parts as can be spared without diminishing their holding and supporting capacity, and without dangerously reducing their leakage surface. In other words, I provide each insulator with one or more weakened lines, along which breakage may occur, and I so locate these lines as to limit the breakage to the outer portions of the insulator, so that its central portion which supports the wire may remain intact. I find by experiment that these breakage lines are most effective if they are located in the petticoat of the insulator and coincide more or less closely with chords of segments of said petticoat.

In the accompanying drawing, Figure 1 is a perspective view of an insulator made in accordance with my invention; Fig. 2 is a top plan view of the same, and Fig. 3 is a side elevation, partly in section.

The insulator shown comprises two parts, a central shell 1, and a combined head 2 and flaring petticoat 3. The shell contains a socket 4, preferably provided with internal screw-threads or grooves 5, to enable said shell to be secured upon the upper end of the customary pin support.

The head or cap is fastened by cement 6 upon the upper end of the shell. It has a transverse groove 7 for the line wire, messenger cable or the like, and a circumferential groove 8 around its neck for the fastening wire or clamp.

The petticoat is provided with a plurality of grooves 9, preferably in one surface only and that the upper surface, and preferably coinciding more or less with the chords of segments of the periphery of said petticoat. The segments thus defined by said weakening grooves preferably overlap at their ends, so that the chordal grooves 9 intersect at their ends, as shown. The grooves are illustrated as being straight, but they are not necessarily so, as is evident.

I find by experiment that when a petticoat is struck by a missile, it tends to break on a straight line following more or less closely the chord of the segment which is broken out and generally running close to or across the neck. Hence, by arranging the weakening grooves in the manner shown, this natural tendency to break on chordal lines is taken advantage of to confine the lost portion to a comparatively small area and locate the break at a distance from the neck. The number of breakage lines is immaterial, but I prefer about half a dozen, as shown in Fig. 2.

It will be seen that an insulator of this kind may have the outer portion of its petticoat entirely removed without impairing the cap or the central shell, and therefore without releasing the wire or cable which it supports. Moreover, enough of the petticoat will be left to afford a fairly good leakage surface. Inasmuch as it requires several distinct and separate blows to break off the entire rim portion of the petticoat, such an event is not liable to occur before the injury is discovered

by a lineman and the damaged insulator replaced by a whole one.

The invention has been illustrated in its application to an insulator having a separate inner shell and a single petticoat portion, but it is evidently capable of use with a great variety of insulators involving a different number of parts and other constructions.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. An insulator having a petticoat provided with weakening grooves.

2. An insulator having a petticoat provided with transverse grooves.

3. An insulator having a petticoat provided with weakening grooves defining segments of its periphery.

4. An insulator having a petticoat provided with breakage grooves located in chords of segments of its periphery.

5. An insulator having a petticoat provided with weakening grooves defining segments of its periphery and intersecting at their ends.

6. An insulator provided with a petticoat having weakening grooves located along natural lines of breakage.

7. An insulator having its petticoat weakened at a point removed from its neck.

In witness whereof, I have hereunto set my hand this 2nd day of September, 1908.

CHARLES E. EVELETH.

Witnesses:

BENJAMIN B. HULL,

MARGARET E. WOOLLEY.