

Jan. 2, 1934.

G. H. HALTON

1,942,284

ELECTRIC INSULATOR

Filed May 24, 1932

2 Sheets-Sheet 1

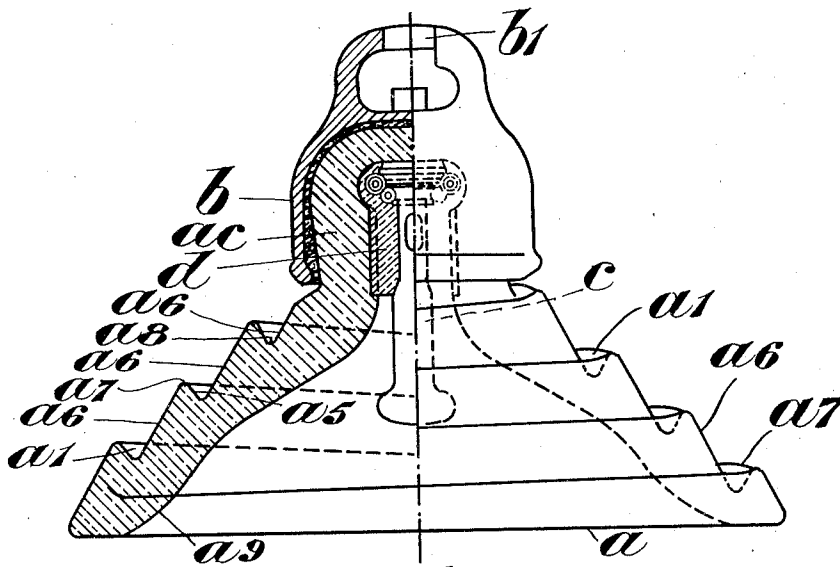


Fig. 1.

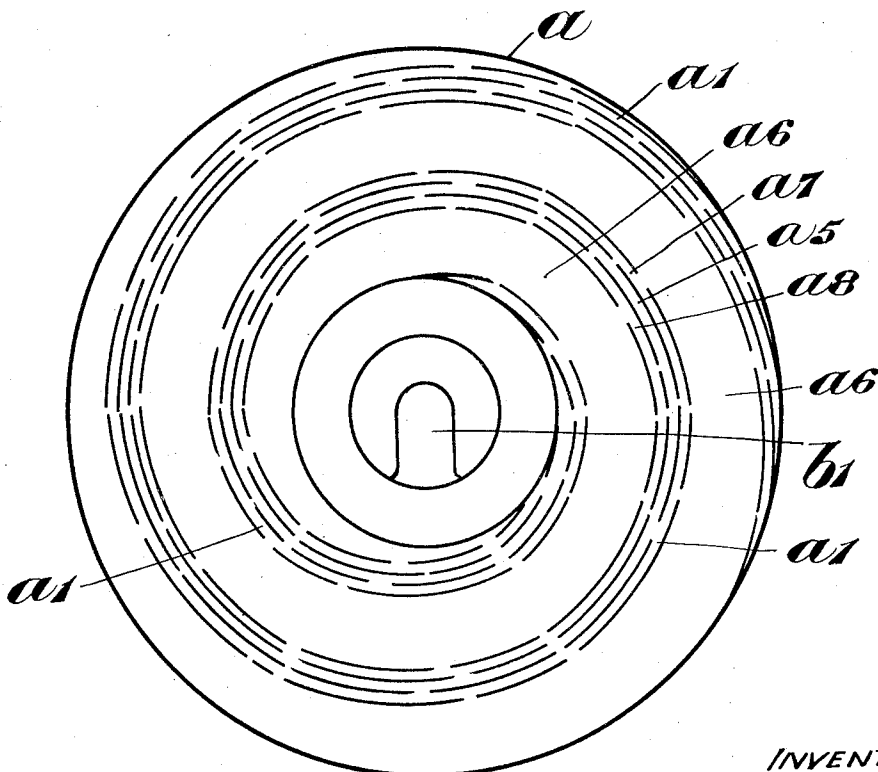


Fig. 2. INVENTOR
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By *Robert Rook*
ATTORNEYS

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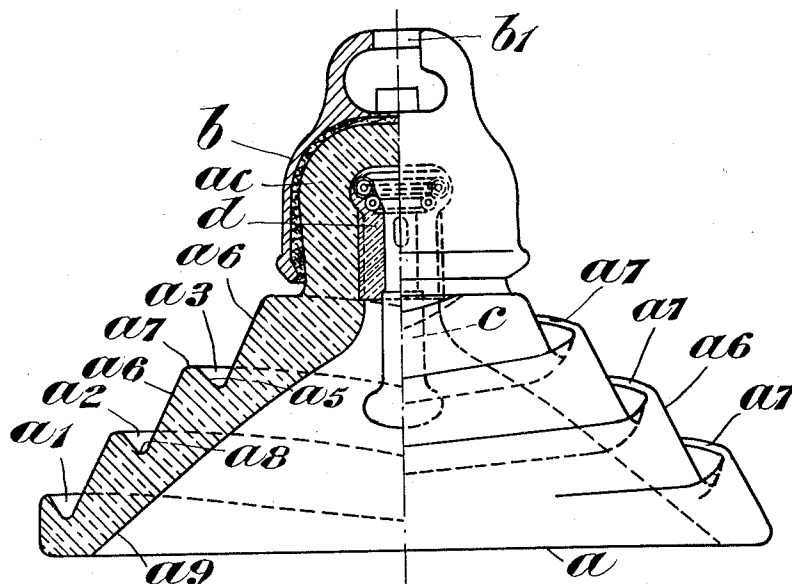


Fig. 3.

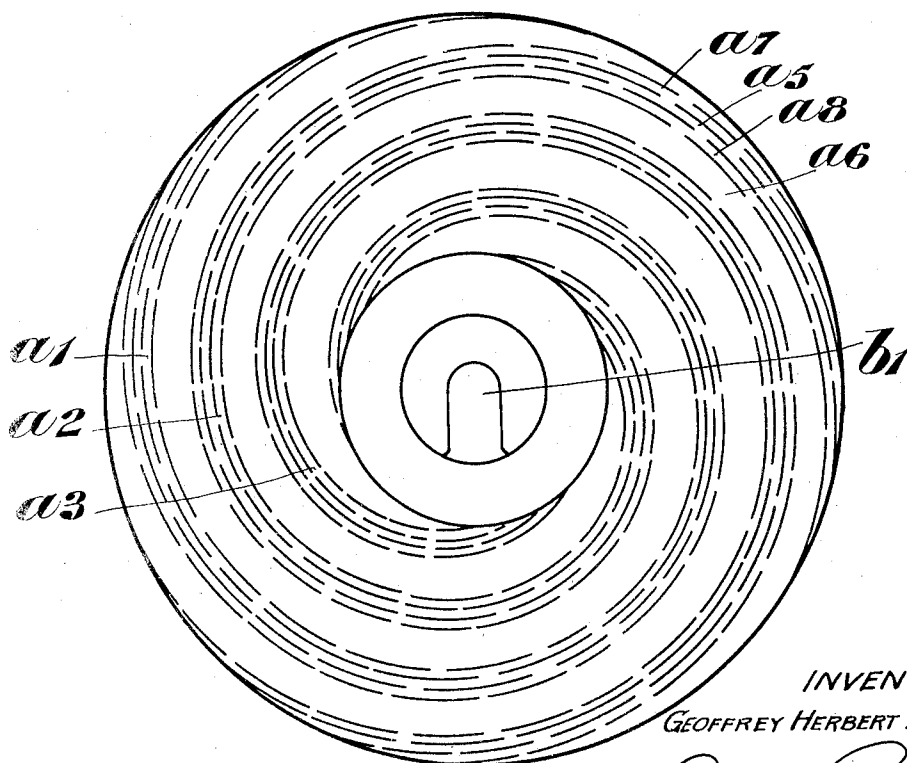


Fig. 4.

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UNITED STATES PATENT OFFICE

1,942,284

ELECTRIC INSULATOR

Geoffrey Herbert Halton, Stourport, England, assignor to Steatite and Porcelain Products Limited, a corporation of Great Britain

Application May 24, 1932, Serial No. 613,305, and in Great Britain May 27, 1931

4 Claims. (Cl. 173—318)

It is the experience of the users of overhead power lines that breakdown of insulators—due to dirt deposits—occurs only at suspension points, when the insulators are vertical, and seldom at tension points when the insulators are horizontal. The accepted explanation of this is that with vertical insulators the main part of the porcelain surface is projectable in a horizontal plane, whereas in the tension position these surfaces are vertical and therefore much more effectively washed by rain and wind.

It is also known that dirt fails to collect at sharp points, particularly if these are vertically directed.

The object of the present invention is to provide a vertical axis insulator having the following characteristics, that is an insulator:—

1. With the maximum vertical surface possible.
2. In which the fullest use is made of such rain or wind as strikes it.
3. Incorporating sharp points directed vertically, without in any way adversely affecting characteristics 1 and 2.

The present invention consists of an electric insulator having on its outer surface one or more inclined or helical groove or grooves extending downwards, characterized in that such grooves are V-shape in cross section with the inner side of the groove extending above the outer one to the outer walls of the groove above it. Such a construction causes the entire exterior surface of the insulator to be exposed to vertical rain fall.

In the preferred construction, the grooves are made helical and of V-shape cross section, and close enough together to form a pointed ridge between them giving the maximum vertical or upright surface to the exterior of the insulator so as to ensure draining and self-cleaning.

Two modifications of the insulator are illustrated by the accompanying drawings, wherein Figure 1 is a sectional elevation and Figure 2 a plan of the insulator when made with one helical groove, while Figures 3 and 4 are corresponding views of a modification thereof having three helical grooves.

In these drawings *a* is the insulator proper *a1*, *a2* and *a3* the grooves in the outer surface thereof, *ac* is the top or cap receiving portion of the insulator, *b* the insulator cap, *b1* the cap recess, *c* the insulator pin and *d* the material for securing the pin *d* in the cap *ac*. The upper portion of the insulator may be substituted by any other known means for effecting the same purpose.

In Figures 1 and 2 there is only one helical groove *a1*, while in Figures 3 and 4 three such grooves *a1*, *a2*, and *a3* are provided.

Each of the helical grooves *a1*, *a2*, *a3*, is arranged to extend from the uppermost exposed portion of a conical insulator *a* to its lower edge, and is formed with inclined sides *a5*, *a6* of which

the inner one *a6* extends up to form with the outer side of the groove above it—forming the adjacent turn of the helical groove—a sharp or pointed ridge-like member *a7* extending in a curved path to the lower edge of the insulator.

By so constructing the insulators such rain as falls thereon first washes the long upwardly inclined surfaces *a6* and then runs therefrom down to the bottom *a8* of the narrow groove *a1*, and down along such groove and off the lower edge of the insulator thereby cleaning in its passage the outer surface of the insulator. Dirt will not readily collect on the junction between one of the long vertical surfaces and the groove above it which forms the sharp point ridge *a7*. Thus at each and every axial vertical section, the whole of that surface commonly known as the upper leakage surface is kept clean, some portions of it by means of one of the three characteristics stated above and other portions of it by others of the said characteristics. Moreover, such upper leakage path is much longer than that in the common designs of insulator of the same overall length. Further by this widened base design the undersurface *a9* is much more protected than in the common designs or insulators of the same overall length. Further, during dry seasons, when there is no rain to clean the surfaces, this design of insulator has a number of vertically directed points or ridges, and in addition a long well-protected undersurface.

As the main portion of the insulator is practically conical the ratio of this surface in plan to that in elevation may be fixed at any desired amount by varying the inclination of its sides.

It is readily seen that this construction is not limited to overhead line insulators but is equally applicable to many types of insulator, for instance, a bushing insulator or switchgear insulator which is in service exposed to wind or rain or both.

What I claim and desire to secure by Letters Patent is:—

1. An electric insulator for use with its longitudinal axis normally in a vertical position, said insulator having on its outer surface a helical groove extending downwardly to form a continuous drain channel, the outer surface of the insulator increasing in peripheral dimension progressively from top to bottom and the groove being substantially V-shaped in cross section with the inner side of the groove extending above the outer side to the outer wall of the portion of the groove above it, whereby the whole of the outer surface of the insulator is exposed directly to vertical rain fall.

2. An electric insulator for use with its longitudinal axis normally in a vertical position, said insulator having on its outer surface a plurality

of helical grooves extending downwardly to form continuous drain channels, the outer surface of the insulator increasing in peripheral dimension progressively from top to bottom, and each groove being substantially V-shaped in cross section with its inner side extending above its outer side to the outer wall of the portion of the adjacent groove above it, whereby the whole of the outer surface of the insulator is exposed directly to vertical rain fall.

3. An electric insulator for use with its longitudinal axis normally in a vertical position, said insulator having on its outer surface a helical groove extending downwardly to form a continuous drain channel, the outer surface of the insulator increasing in peripheral dimension progressively from top to bottom, and the groove being substantially V-shaped in cross section with the inner side of the groove extending above the outer side to the outer wall of the portion of the groove above it, the separate turns of the helical groove being arranged substantially close together to form a pointed ridge between

them and thereby dispose the sides of said ridge at such angles as to provide the exterior of the insulator with a maximum surface in vertical projection to insure draining and self-cleaning.

4. An electric insulator for use with its longitudinal axis normally in a vertical position, said insulator having on its outer surface a plurality of helical grooves extending downwardly to form continuous drain channels, the outer surface of the insulator increasing in peripheral dimension progressively from top to bottom and each groove being substantially V-shaped in cross section with its inner side extending above its outer side to the outer wall of the portion of the adjacent groove above it, the separate turns of the grooves being arranged substantially close together to form pointed ridges between them and thereby dispose the sides of the ridges at such angles as to provide the exterior of the insulator with a maximum surface in vertical projection to insure draining and self-cleaning.

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