

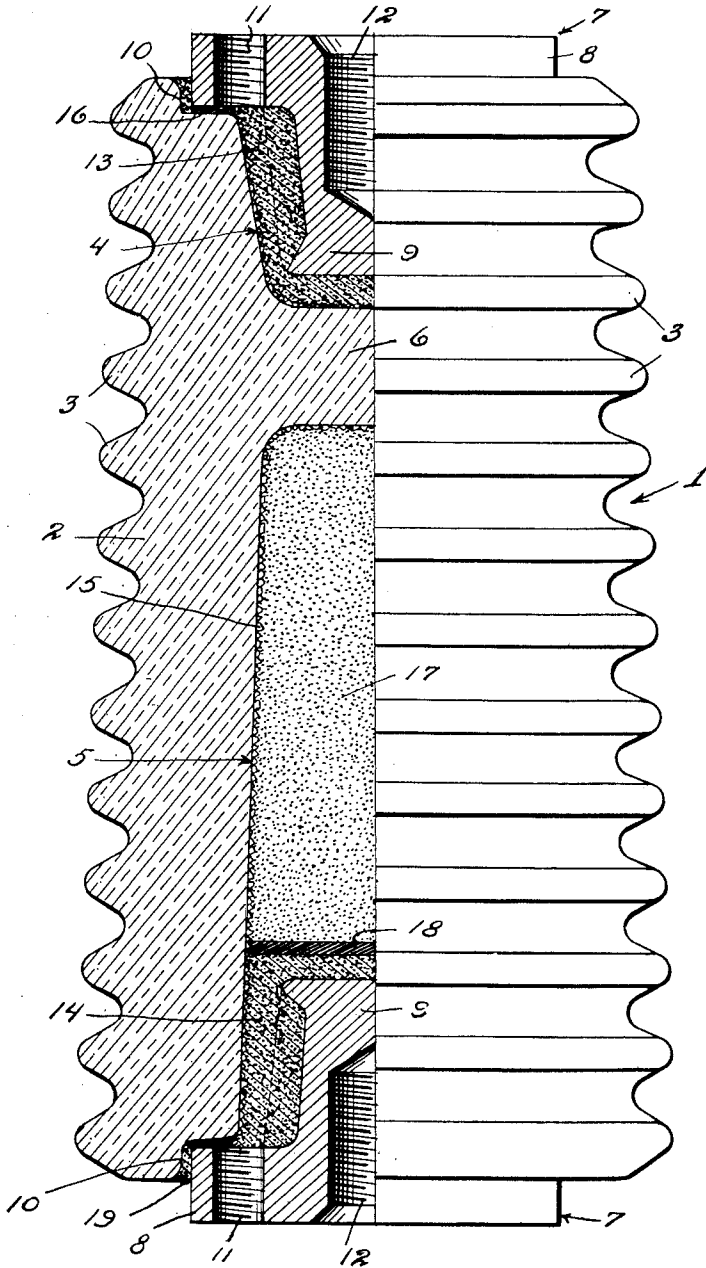
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HIGH TENSION INSULATOR

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1,958,435

HIGH TENSION INSULATOR

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1 Claim. (Cl. 173—318)

The invention relates to insulators for supporting high tension conductors and has for its general object the provision of an insulator construction wherein the flashover value will be increased.

It is well known that it is a common practice to make post, pedestal and other types of insulators either entirely hollow or with cavities into which extend and within which are cemented or otherwise suitably secured metallic fittings for making connection with supports, clamps, switch elements, bus bars, etc. Very frequently there is a large unoccupied space or air chamber within the body. The reason for this is that in the manufacture of large size insulators in particular it is not practical to make them solid, the reason being that large masses of porcelain clay do not dry out uniformly and are very likely to warp during the preliminary drying operation and crack or at least develop severe terminal stresses upon firing. A hollow construction avoids these drawbacks. There are, however, disadvantages in the existence of the hollow spaces, one being that as the result of sweating there may be a certain amount of moisture on the wall of the spaces or chambers. Furthermore the air within such spaces does not possess as high an insulating value as the porcelain. During the course of the long period of experimentation, I have discovered that by filling any and all such hollows or vacant spaces with dried sand the efficiency of the insulator, particularly with regard to the flash-over feature, can be greatly improved.

It is with the above facts in view that I have devised the present invention which has for its specific object the provision of an insulator in which the air spaces which are ordinarily present are filled with dried sand or its equivalent to bring about the advantageous features mentioned.

A still more specific object is to provide an insulator of the post, pedestal or pillar type having counter-part fittings at the ends and having its interior filled with dried sand from which moisture is excluded by special means provided for the purpose.

An additional object is to provide an insulator construction having these characteristics and yet which will cost no more to produce than the ordinary variety.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and

illustrated in the accompanying drawing in which:

The figure is a view partly in side elevation and partly in longitudinal section through an insulator embodying my invention.

Referring more particularly to the drawing it will be observed that I have shown a post or pedestal insulator indicated generally by the numeral 1 and including a porcelain body 2 which may be slightly tapered throughout its length and which is here disclosed as formed with a series of spaced ridges or corrugations 3 for the purpose of increasing the leakage path. This porcelain body is formed at its ends with inwardly tapering recesses 4 and 5 here shown as separated by a partition wall 6 integral with the body. For this particular type of insulator I provide metallic fittings 7 for the ends and for convenience and cheapness these fittings may be counterpart as shown, each including a circular or disk portion 8 and a reduced and preferably longitudinally ribbed extension 9. The two ends of the porcelain body are formed with counterbores or recesses 10 for the reception of the disk portions 8 of the fittings, the extensions 9 being received within the recesses 4 and 5. These fittings are here represented as provided with a plurality of threaded holes 11 and recesses 12 for the reception of screws or bolts for mounting purposes or for the attachment of switch elements, bus bars, clamps or the like thereto. These metal fittings are held in place by being embedded in masses 13 and 14 of cement, the former being shown as entirely filling the recess 4 and the latter as filling only the entrance to the recess 5. As the reduced extensions 9 are customarily formed each with a peripheral series of longitudinally extending grooves or their equivalent and as the walls of the recesses are sanded or otherwise roughened as indicated at 15 there will be adequate holding action which will prevent any rotatable or longitudinal movement of the metal end members with respect to the porcelain. To exclude moisture from the cement I may utilize rubber or other suitable gaskets 16 interposed between the circular heads 8 and the bottoms of the counterbores 10.

In accordance with my invention the space within the recess 5 unoccupied by the reduced extension 9 of the lower fitting, and the cement embedding the same, is filled with dried sand indicated at 17, it being preferable to provide a gasket or washer 18 of suitable material, for instance rubber, treated cardboard or the like, against the mass of sand prior to the insertion

and cementing of the lower fitting in place. Any space between the heads 8 of the fittings and the side walls of the recesses 10 is intended to be filled with cement 19 or, if preferred, some sealing compound such as hot asphalt or the like.

Sand is used as the filling material as it has about the same coefficient of expansion as does porcelain, and has therefore an advantage over some of the compounds which might be used in order to endeavor to accomplish the same electrical purpose. The compounds have a very much greater coefficient of expansion than does the porcelain, and their use might result in mechanical failure of the piece. Due to the dielectric constant of the sand being higher than that of air, the voltage distribution within the insulator is changed. This change in distribution also affects the external voltage field and results in a higher flash-over for the insulator and also reduces the electrical stress inside the piece.

While I have shown and described a certain definite insulator embodying the invention, it should be understood that the disclosure is mere-

ly an exemplification of the important feature involved and that the right is reserved to make all such changes and modifications as will not depart from the spirit of the invention or the scope of the claim hereunto appended.

Having thus described the invention, I claim:

An insulator comprising a porcelain body provided at its ends with recesses separated by a partition portion integral with the body, counterpart metallic end members having disk portions and reduced longitudinal extensions, the body having counterbores at the entrances to said recesses, the counterbores receiving said disk portions with said reduced extensions received within the recesses, and masses of cement embedding said reduced extensions and securing the same within the recesses, one recess having a relatively large portion unoccupied by the associated reduced extension and cement, said unoccupied portion being filled with dried granular material, and a sealing gasket between the granular material and the adjacent mass of cement.

KENT ALLEN HAWLEY.

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30	105
35	110
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70	145
75	150