

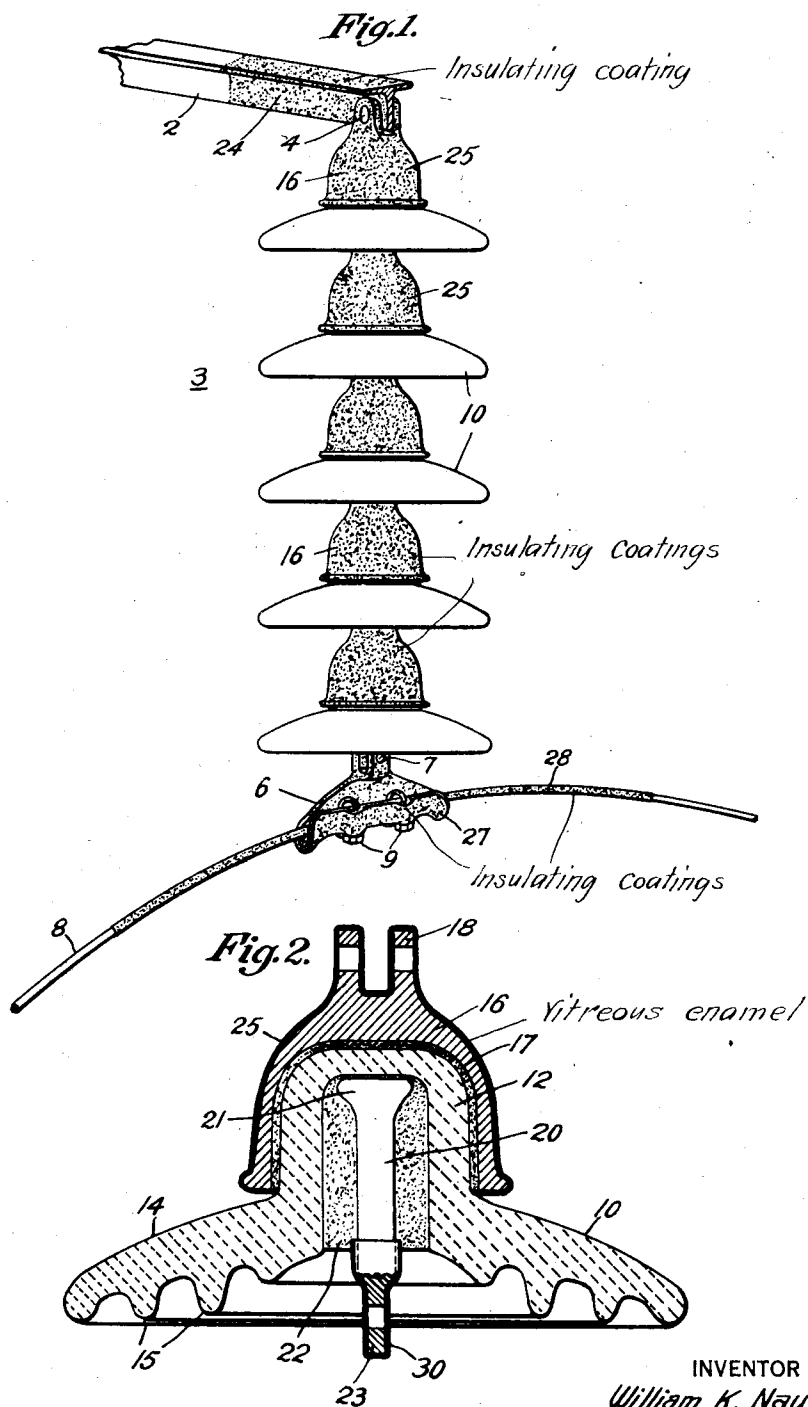
Aug. 20, 1929.

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1,725,097

INSULATOR STRUCTURE

Filed June 16, 1927



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INSULATOR STRUCTURE

Application filed June 16, 1927. Serial No. 199,173.

My invention relates to insulators and particularly to insulators and adjacent metal parts thereof that are subjected to relatively high voltages.

5 In insulators for operation in connection with high voltages, such as transmission-line insulators, every precaution as to construction, mounting and operation is necessary by reason of the importance of maintaining service and the dangers and losses sometimes attending the breakdown of the insulators.

Flashover is a common type of insulator failure that is caused by lightning surges and other phenomena which are not all thoroughly understood, among which is the failure of the insulator by flashover during bright sunlight conditions.

15 It is thought that electron emission from the metal parts in the strong electrostatic insulator field, whether that emission be caused by sunlight or by the field as charged from the line, may cause a critical condition at, or near which, many flashovers which ordinarily occur, other than those caused by strong surges, might readily be prevented.

20 In any event, it is one of my objects to improve the operation of high-voltage insulators by increasing the flashover-voltage values thereof.

Another object of my invention is to protect a metal member of an insulator against weather effects in a manner different from usual practice.

35 Another object of my invention is to provide an insulator that shall be simple and durable in construction, economical to manufacture and effective in its operation.

40 With such objects in view, as well as other advantages which may be incident to the utilization of the improvement, the invention consists in the parts and combinations thereof hereinafter set forth and claimed, with the understanding that the several necessary elements constituting the same may be varied in proportion, arrangement and texture without departing from the nature and scope of the invention.

50 Figure 1, of the accompanying drawings, is a perspective view of a portion of a transmission-line main support, an insulator and a conductor embodying my invention, and

Fig. 2 is an enlarged view, partially in

section and partially in side elevation, of an insulator unit shown in Fig. 1.

55 As shown in Fig. 1, the device comprises, in general, a main supporting element 2, an insulator 3 secured to the element 2, as by a bolt 4, and a clamp 6 secured to the lower end 3, as by a bolt 7, and supporting a conductor 8. The conductor 8 is secured in a position in the clamp 6 as by a U-bolt and nut device 9.

60 The element 2 is a metal bar of substantially T-shape in cross-section and may constitute a portion of a transmission-tower or pole, cross arm, or other main supporting structure.

65 The insulator 3 is of a usual suspension type comprising a plurality of flexibly connected units 10 that are similar to each other. Fig. 2 shows an enlarged view of one of these units.

Referring to Fig. 2, the unit 10 comprises an insulating or dielectric member having a recessed head portion 12, a lower main petticoat portion 14 and under surface corrugations 15. A metal cap 16 is secured in position over the head portion 12, as by a body of cement 17, and is provided with a clevis portion 18, in a usual and well known manner.

75 A metal pin has a shank portion 20 and an enlarged head portion 21 secured in the head portion 12, as by a body of cement 22, and a normally exposed outer end or eye-portion 23.

80 In all of the above mentioned and described structure, the parts are of usual and well known construction.

85 In accordance with my invention, all of the metal parts of the structure, within a certain distance of the strong electrostatic field of the insulator, are coated with insulating material, as indicated by a shaded area 24 on the element 2, coatings 25 on the cap 16, a coating 27 on the clamp 6 and a coating 28 on the conductor 8.

90 The coatings 24 and 28 on the element 2 and the conductor 8, respectively, extend for certain distances away from the adjacent ends of the insulator 3 and may be of any suitable material, such as asphaltum.

95 As indicated in Fig. 2, the coating 25 is preferably constructed of vitreous enamel as are also, a coating 30 on the eye or exposed

portion of the pin 23 and the coating 27 on the clamp 23. Other suitable coatings, such as moulded hard rubber, synthetic resin compounds and varnished cloth may be employed.

5 In the above described structure, in which all of the metal parts, including the bolts 4, 7 and 9, are coated with insulating material, the voltage value at which flashover occurs 10 is increased. I have determined this fact by actual test of a series of the units 10 having the coatings 25 on the caps 12, as shown.

Whether this result is obtained in accordance with the above mentioned theories is 15 immaterial, it being a fact that an insulator so constructed shows appreciably improved characteristics over a similar insulator having exposed metal surfaces.

Further, since vitreous enamel is hard and 20 durable, the metal parts coated therewith, or with a similar substance, are protected against weather effects substantially as well as though they were galvanized.

While I have shown and described a particular form of my invention, changes may 25 be effected therein without departing from the spirit and scope thereof as set forth in the appended claims.

I claim as my invention:

30 1. In combination, a main metallic support, an insulator structure supported there-

by including dielectric and metallic members and a conductor supported by the insulator, said main support and said conductor having insulating coverings thereon for a distance 35 from the insulator and the metal members of the insulator having insulating coverings thereon.

2. In combination, a main metallic support, a conductor and an insulator structure 40 including a dielectric member and metallic end members for mounting the dielectric member between the support and the conductor, all of the metal parts being entirely covered with insulating material within a 45 certain distance from the dielectric member.

3. In combination, in a high-voltage suspension insulator of the cap-and-pin type, a body of inorganic dielectric material having a head portion of inverted substantially 50 cup-shape and an annular surface-creepage petticoat adjacent to its lower open end, a tension terminal pin secured in position in said head portion, a metal tension terminal cap secured in position over said head portion 55 and a coating of vitreous enamel entirely covering the normally exposed surfaces of said tension terminal cap.

In testimony whereof, I have hereunto subscribed my name this 7th day of June 1927.

WILLIAM K. NAYLOR.