Patented Jan. 31, 1928. 1,657,922

UNITED STATES PATENT OFFICE.

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METHOD OF ASSEMBLING INSULATORS.

No Drawing. Application filed June 7, 1923. Serial No. 644,059.

This invention relates to insulators and more particularly to a method of assembling the same.

The principal object of the invention, generally considered, is to provide an improved method of assembling multi-part insulators where at least one of the parts of the insulator comprises a frangible insulating element preferably formed of porcelain.

Another object of the invention is to provide a method of connecting the parts of a multi-part insulator by means of a cementitious compound, the method being adapted to compensate for the differences in expansion between the dielectric and the cement.

A still further object of the invention is to provide a method of assembling multi-part insulators in which a cementitious compound is used as the connecting medium, the said method comprising a coating step and a heating step whereby the parts are so arranged as to fully compensate for the thermal changes to which the assembled unit is subjected in service.

There are other objects of the invention as will be hereinafter pointed out, the novel features being set forth in the appended claims.

Before describing the improved method it is believed it will lead to a better understanding of the invention to briefly review prior processes and methods of assembling insulator units. Owing to the fact that ordinary porcelain cement has four times the expansion coefficient of porcelain bulk per bulk, it has heretofore been difficult to provide a multi-part insulator with means to compensate for this difference in expansion, and various expedients have been tried, such as an elastic coating interposed between the cement and the adjacent surface of the porcelain, subjecting the assembled unit to a temperature substantially equal to the maximum to which it will be subjected during the setting of the compound, the use of metallic connecting elements as a substitute for cement, the sloping of the surfaces to permit the sliding of one element upon the other, and the use of compressible gaskets to compensate for the difference in the expansion of the different elements.

The above mentioned expedients have not, however, fully compensated for the differences in the expansion of the various units due to thermal changes to which the insulators are subjected. In addition to the thermal changes there is another difficulty encountered when cement is used as the connecting medium. This difficulty is that cement continually increases in bulk or volume when subjected to moisture. Although the increase is very slight it is continuous for a long period of years and consequently this increase in volume of the connecting medium, together with the difference in expansion between the cement and porcelain, reduces the life of multi-part insulators to a comparatively short term of years when in fact, owing to the character of the material, the life of these insulators should be almost infinite.

In carrying out my method I coat or cover the surface or surfaces of the dielectric, which surfaces are to be connected, with a substantially non-compressible substance having a very much greater coefficient of expansion than either porcelain or cement. I then assemble the units of the insulator in the usual manner, preferably using Portland cement as the connecting medium. The assembled units are then subjected to a moist heat, preferably by placing the same in a steam bath such as is described in the patent to Lapp, No. 1,170,287, and permitting the units to remain in this steam bath until the cement has set.

The temperature of the steam bath causes the expansion of the coating and consequently forces the cementitious compound away from adjacent surfaces to which the coating is applied and the cement is thus held spaced from the surfaces until the same has set or taken a definite form. After the parts are removed from the steam bath and allowed to cool it will be found that there is a considerable looseness or play between the assembled parts due to the contraction of the expansive coating and it will be evident that this looseness or play will be amply sufficient to compensate both for thermal changes and for the increase in bulk or volume of the cement. Preferably the exposed portions of the cement are then treated with a waterproofing compound so as to seal the interior of the cavity and to prevent the entrance of moisture between the coated surfaces and the cement by capillary attraction.

The herein described method may be ad-

vantageously employed in connection with suspension insulators such, for instance, as are illustrated in the above noted patent to Lapp, or may be employed with the multiple unit pin type insulators such, for instance, as are illustrated in my prior Reissue Patent No. 14,888.

I have found that the expansible coating may be conveniently formed of a special metal alloy having a high expansion coefficient and that this metal alloy may be conveniently applied as a coating to the surfaces of the units by the well known Schoop metal spray process. Certain of the asphalt base paints are substantially non-compressible and possess a very high expansion coefficient and are therefore suitable for use in carrying out my herein described method.

Having now described my invention what I claim and desire to secure by Letters Patent is:—

1. The method of connecting the parts of a multi-part insulator which consists in applying to the surfaces to be connected a readily expansible non-compressible coating whose expansion coefficient is greater than the expansion coefficient of the adjacent parts, interposing between said parts a cementitious compound, and subsequently subjecting said assembled parts to a relatively high temperature until the cementitious compound has set.

2. The method of connecting parts of a multi-part insulator which consists in applying to the surfaces to be connected a readily expansible non-compressible substance having a higher expansible coefficient than Portland cement, placing liquid Portland cement between said surfaces, and subsequently subjecting said surfaces and the cement to moisture and a relatively high temperature until the cement has set.

3. The method of connecting the parts of a multi-part insulator, which consists in coating the adjacent surfaces of said parts with a metallic alloy, interposing between adjacent surfaces of said parts a cementitious compound, and finally subjecting said parts to a steam bath until said cementitious compound has set.

4. The method of connecting the parts of a multi-part insulator, which consists in coating the surfaces to be connected with a metallic alloy having a high expansion coefficient, interposing between said surfaces a cementitious compound, subjecting said parts to moisure and a relatively high temperature until the cement has set, and finally coating the exposed parts of said cementitious compound with a water-proofing material.

5. In the method of assembling multi-part insulators by cementing the nested parts together, the step of forcing the plastic cement away from certain of the surfaces of the sections and maintaining said relation until setting of the cement.

6. The method of assembling multi-part insulators embodying nested sections, comprising applying cement between the nested sections and causing movement of the plastic cement away from certain surfaces of the sections whereby to form spaces permitting play upon setting of the cement.

7. The method of assembling multi-part insulators of the type including nested sections, comprising applying to the surfaces of the sections a readily expansible non-compressible and non-fluid material having a much higher co-efficient of expansion than the material of the sections and than cement, applying cement between the sections, expanding said material to force the cement, while plastic, away from said surfaces, and permitting the cement to set whereby upon contraction of said material spaces will be left between said surfaces and the cement to compensate for subsequent expansion of the sections and the cement in service.

8. In a method of assembling insulators including a plurality of sections arranged in nested relation, and comprising the step of introducing cementitious material between the sections to effect securing, the subsequent step of forcing the cementitious material out of contact with the adjacent surfaces of the sections and maintaining such condition during setting of the cement.

In testimony whereof I affix my signature.

WALTER T. GODDARD.