April 8, 1924. 1,489,690

A. O. AUSTIN

INSULATOR AND METHOD OF ASSEMBLING THE SAME

Filed Dec. 3, 1919

Fig. 1.

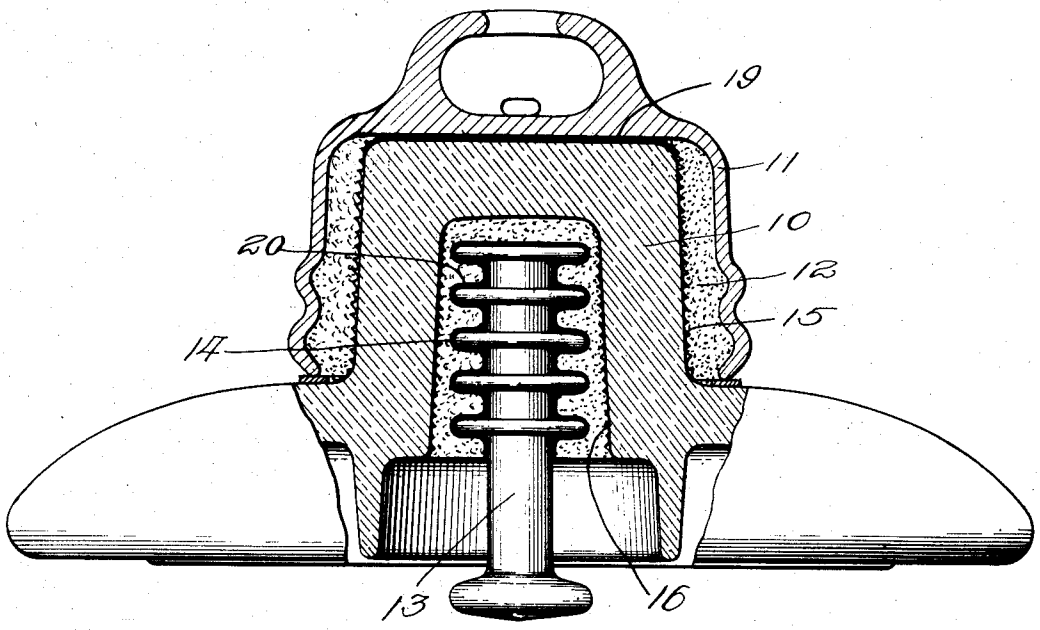
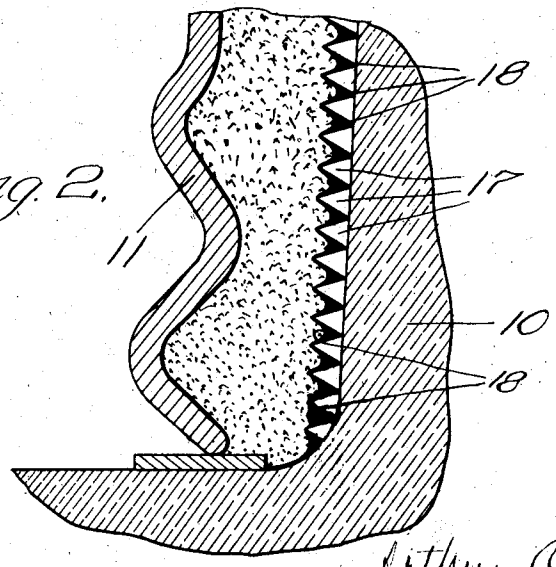


Fig. 2.



Witness:
R. L. Farrington

Inventor,
Arthur O. Austin
By Brown & Wise
Attys.

Patented Apr. 8, 1924. 1,489,690

UNITED STATES PATENT OFFICE.

ARTHUR O. AUSTIN, OF BARBERTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE OHIO BRASS COMPANY, OF MANSFIELD, OHIO, A CORPORATION OF NEW JERSEY.

INSULATOR AND METHOD OF ASSEMBLING THE SAME.

Application filed December 3, 1919. Serial No. 342,194.

To all whom it may concern:

Be it known that I, ARTHUR O. AUSTIN, a citizen of the United States, residing at Barberton, in the county of Summit and State of Ohio, have invented a certain new and useful Insulator and Methods of Assembling the Same, of which the following is a specification.

This invention has for its object the provision of a method of assembling insulator parts which shall be an improvement over methods previously used and which shall produce insulators which shall be of improved construction and operation.

The invention is exemplified in the steps of the process described in the following specification and illustrated in the accompanying drawing, and it is more particularly pointed out in the appended claims.

In the drawing—

Fig. 1 is a sectional view illustrating one form of insulator which may be assembled by the method comprised in the present invention; and

Fig. 2 is a fragmentary diagrammatic illustration of a portion of the insulator shown in Fig. 1, but on a larger scale.

In my prior Patent No. 1,284,975, granted November 19, 1918, I have illustrated an insulator in which the metallic and dielectric parts are secured to one another by cement and in which one or more of the surfaces to which the cement is applied is covered with a multiplicity of projections which are firmly attached to the insulator part, and the surface thus covered is also covered by a coating of yielding or resilient material such as paraffine.

In Fig. 1 of the drawing the numeral 10 designates a dielectric member which is secured to a metallic cap 11 by means of interposed cement 12. The dielectric member 10 is provided with an interior opening in which a pin 13 is secured by cement 14. The surfaces 15 and 16 of the dielectric member 10 which are engaged by the cement 12 and 14, respectively, are provided with a multiplicity of projections spaced over the surface and secured thereto preferably in a manner similar to that described in my prior patent referred to above. The projections may, however, be formed by knurling, ribbing or other suitable means. These projections are diagrammatically shown in Fig. 2 and are designated by the numeral 17. According to the present invention the surface which carries the projections 17, prior to the assembling of the parts, has applied thereto a coating shown at 18 in Fig. 2 of the drawing. This coating is composed of a material, such as glue or paste, which, when in a liquid or semi-liquid form, may be spread upon the surface carrying the projections 17, and which will be drawn by capillary attraction toward the bases of the projections 17, so that the greater part of the coating will cover the base portions of these projections, leaving the points comparatively free of the material. After the coating has thus been applied it is permitted to dry, and the material is of such nature that during the drying process it will shrink or decrease in volume, so that the layer of material is thinner when dry than it is when wet. If moisture is again applied to the coating it will be absorbed by the material, causing the coating to swell, and these results will occur as often as the material is moistened and dried.

In assembling the insulator parts, the coating 18, as previously stated, is applied while in a moist condition and then is permitted to dry. The parts thus coated may be stored for any period that may be convenient to await assembling with the other parts of the insulator. When it is desired to assemble an insulator, the part 10 with the dry coating of material 18 is placed in position in relation to the metallic parts 11 and 13, and the cement 12 and 14 put in place to hold the parts of the insulator together. Before the cement has had time to set the moisture contained in the cement will be partially absorbed by the coating 18, which will cause the material of the coating to swell so that it will occupy a greater space that it occupies when in a dry condition. After the cement has become hard and dry, the moisture from the coating 18 will again be absorbed by the cement, so that as the coating gradually dries out, it will shrink, thus providing clearance between the cement and the insulator body 10. Where the insulator body is covered with projections 17, this clearance will evidently be greatest at the bases of these projections, while the points of the projections will continue to be firmly imbedded in the cement.

This will relieve the cement at the base of the points and cause the bearing between the member 10 and the cement to be principally taken by the points of the projections. The projections 17, as explained in my prior patent referred to above, act as struts to form a resilient joint between the parts of the insulator, and this resiliency is augmented by the method of assembling described above, which relieves the bearing at the bases of the projections.

Although the process is particularly efficient in assembling insulator parts having their surfaces provided with projections, as described, it will be understood that the process is not confined to the connection of such surfaces, but that any two surfaces may be joined in a similar way, and the shrinking of the material with which a surface is coated will provide clearance adjacent that surface and relieve the pressure brought to bear upon it. In this way the pressure between the assembled parts may be regulated so that it will be relieved at any desired position or portion of the connected surfaces. The part or parts of the surface which it is desired to relieve is first coated with a material which will shrink in drying, and after the parts have been connected and the material permitted to dry, it is evident that the portions thus treated will be relieved of pressure.

In the insulator shown, not only the surfaces that are sanded and cemented are coated but the surface 19 which is opposite the inner face of the end cap may also have a coating of the same nature to relieve stresses set up between the cap and dielectric member at this place. The portion of the pin 13 which is imbedded in the cement 14 may be dipped or coated in any desired manner as shown at 20 with the material described to secure a proper disposition or relief of the stresses transmitted by the pin.

It will be understood that the invention is not confined to any particular form or type of insulator, the one shown being used merely by way of illustration. The invention is particularly advantageous in pin type insulators and in the relieving of the contact surfaces of metal parts.

I claim:—

1. The method of assembling insulators comprising the steps of applying material which shrinks in drying to one of the parts to be assembled, assembling the parts and subsequently permitting said material to dry after the parts are assembled to relieve the pressure on the portion to which said material is applied.

2. The method of assembling insulators comprising the steps of applying a coating of material which shrinks in drying to a surface of an insulator part, positioning said surface against a second part to be connected with said first part, and permitting said material to dry and shrink to provide clearance between the parts of said insulator having material interposed therebetween.

3. The method of assembling insulators comprising the steps of applying a coating of material which shrinks when dried to a surface of an insulator part, permitting said coating to dry and again moistening said coating with a liquid which will be absorbed thereby at the time said part is assembled in an insulator.

4. The method of assembling insulators comprising the steps of coating a surface of a part of an insulator with a material which shrinks in drying and connecting the surface thus treated with a part to be secured thereto by means of cement having moisture therein which will be absorbed by said coating material at the time that the cement is applied to said insulator parts.

5. The method of assembling insulator parts comprising the steps of coating a surface of an insulator part with a material which shrinks in drying, permitting said material to dry and shrink, securing the surface thus treated to an insulator part to be secured thereto by means of a cement having moisture therein at the time it is applied to said insulator parts and permitting said cement to set and said coating to dry and shrink to relieve the surface treated with said coating.

6. The method of assembling insulator parts comprising the steps of applying material which shrinks when drying to a surface having projections thereon, connecting said surface with a part of an insulator to be secured thereto by cement and permitting said coating to dry and shrink to provide clearance at the bases of said projections.

7. The method of assembling insulator parts comprising the steps of applying while moist a coating of material which shrinks in drying to a surface of an insulator part having projections distributed thereupon, permitting material of said coating to accumulate about the bases of said projections by capillary action and to dry in the position thus assumed, connecting the surface thus prepared with a part of an insulator to be secured thereto by means of a cement having moisture therein so that the moisture of said cement will produce a swelling of said coating prior to the setting of said cement and permitting the material of said coating to dry and shrink when said cement has set to produce clearance between said cement and the surface having said projections thereon at the bases of said projections.

8. The method of securing two members together comprising the steps of applying material which swells upon the absorption of moisture and shrinks on drying to a sur-

face having projections thereon and connecting said surface to the surface of a member to be secured thereto by interposing a holding material between said surfaces so that it has contact with said projections limited by said shrinking and swelling material.

9. The method of securing two members together one of which is vitreous and has projections on the surface thereof which comprises the steps of applying material which swells when moist and shrinks when dry to said surface to limit connection with said vitreous member to said projections.

10. The method of connecting two members together which consists of interposing between said members a holding material and a material which will absorb moisture from said holding material and expand when so moistened.

11. The method of securing two members together which comprises the steps of interposing between said members a moist cement which hardens upon drying and material which will absorb moisture from said cement and expand from the moisture thus absorbed.

12. The method of securing two members together comprising the steps of interposing between said members a moist cement which will harden upon drying and coating material which will absorb moisture from said cement and expand from the moisture thus absorbed and which will subsequently contract when it becomes dry.

13. The method of securing two members together, one of said members being vitreous and having fine projections thereon, comprising the steps of interposing between said members a coating of material in contact with said projections which will absorb moisture and expand, inserting moist cement between said members, permitting said coating material to absorb moisture from said cement and expand to limit the engagement of said cement to said projections and subsequently permitting the cement to harden and the coating material to dry and contract.

14. The process of connecting two members together, one of said members being vitreous and one of said members having small projections thereon, said process comprising the steps of applying a coating of material which will expand when moist and contract when dry to the surface having the projections thereon and interposing moist cement which hardens when it becomes dry between said members, permitting said coating material to absorb moisture from said cement so that it will expand and limit the bearing of said cement to said projections and permitting said cement to harden and said coating material to become dry and contract.

15. The method of assembling insulator parts which consists of applying material which shrinks when drying to a surface of one part having projections thereon, fitting said part in a nested relation with another part, connecting said parts by cement and permitting said coating to dry and shrink to provide clearance at the base of said projections.

16. The method of assembling insulators comprising the steps of applying material which shrinks in drying to a part having projections thereon, assembling said part in nested relation with another part, and subsequently premitting said material to dry to relieve the pressure on the portion to which said material is applied.

17. The method of securing two members together, one of said members being of vitreous material and having fine projections thereon; comprising the steps of interposing between said members a coating of material in contact with said projections which will absorb moisture and expand, nesting said members together, inserting moist cement between said members, permitting said coating material to absorb moisture from said cement and expand to limit the engagement of said cement to said projections, and subsequently permitting the cement to harden and the coating material to dry and contract.

18. An insulator comprising a dielectric member, an attaching member, connecting material between said members, and a moisture absorbent for restricting the contact of said connecting material with said dielectric member.

19. A joint for connecting two parts of an insulator or like object, comprising connecting material interposed between two parts, and shrinking material for restricting said connecting material to render said joint porous at places.

20. A joint for connecting two parts of an insulator or like object, comprising connecting material interposed between two parts, and a moisture absorbent which shrinks in drying for restricting said connecting material to render said joint porous at places.

21. A joint for connecting two parts of an insulator or like object, one of said parts having projections on the connecting surface thereof, said joint comprising connecting material interposed between said parts, and a moisture absorbent which shrinks in drying disposed upon said surface to restrict the contact of said connecting material with the part having said projections on its surface.

22. A joint for connecting two parts of an insulator or like object, connecting material interposed between the parts, means on the connecting surface of one of said

parts to inter-engage said parts together and a water absorbent coating on said connecting surface which will swell upon absorbing moisture and shrink in drying out, said coating restricting the contact of said connecting material with the adjacent parts, thereby relieving stress between the parts.

23. An insulator part having a surface to receive a connecting material for joining the part to another part and a coating of moisture absorbing material on the connecting surface of the part which will swell upon absorbing moisture and shrink in drying out, thereby relieving stress between said parts.

24. An insulator part having a surface to receive a connecting material for joining the part to another part and a coating on the connecting surface which will swell when it comes in contact with the connecting material and which will later shrink, thereby relieving stress between the parts when united.

25. In combination, a pair of members arranged to be secured together, one of said members having a surface thereof covered with relatively small projections, and a coating material which shrinks after assembly applied to said surface for restricting the bearing on said surface to said projections.

26. In combination, a pair of members to be secured together, one of said members having a surface thereof provided with relatively small projections, a coating of material which expands when moist and shrinks when dry applied to said surface, and connecting material interposed between said surface and the cooperating surface of the other member.

27. In an insulator, a dielectric member and a holding member secured thereto, said dielectric member having the securing surface thereof provided with relatively small projections, a coating of material which shrinks in setting applied to said surface, and cement interposed between said surface and said holding member and having its contact with said projection restricted by said shrinking material while the bearing at the bases of said projections is relieved by the presence of spaces of reduced pressure due to the shrinking of said coating material.

In testimony whereof I have signed my name to this specification on this 31st day of October A. D. 1919.

ARTHUR O. AUSTIN.