Oct. 28, 1930. W. F. HARVEY 1,779,811

METHOD OF MANUFACTURING INSULATORS

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Fig. 1

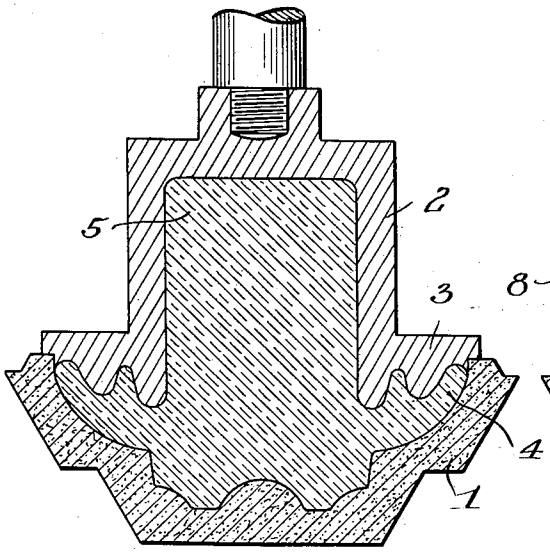


Fig. 2

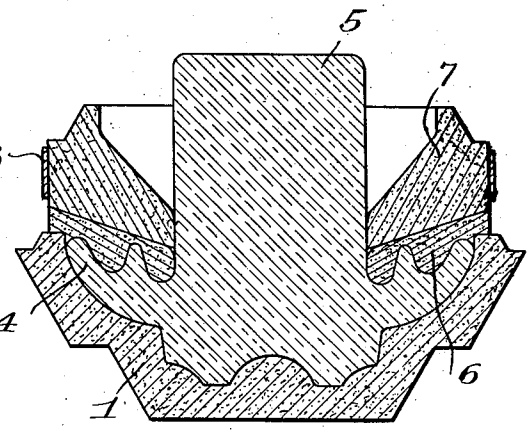


Fig. 3

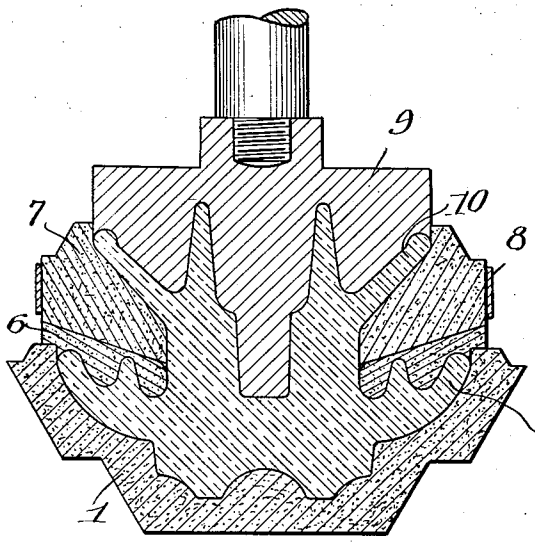
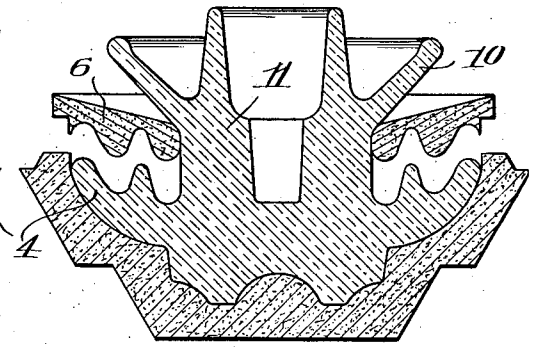


Fig. 4



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Fig. 5

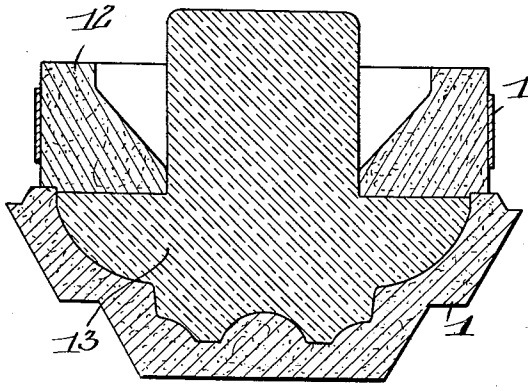


Fig. 6

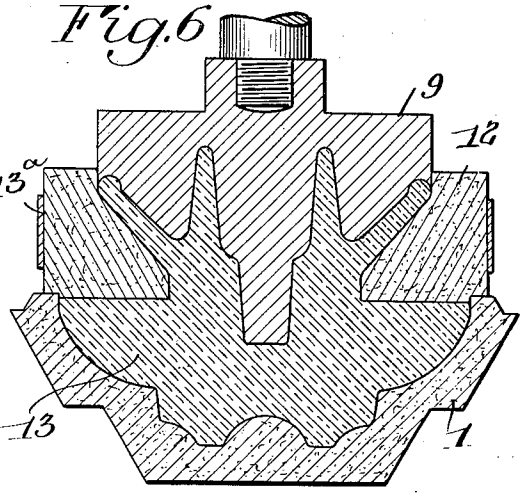


Fig. 7

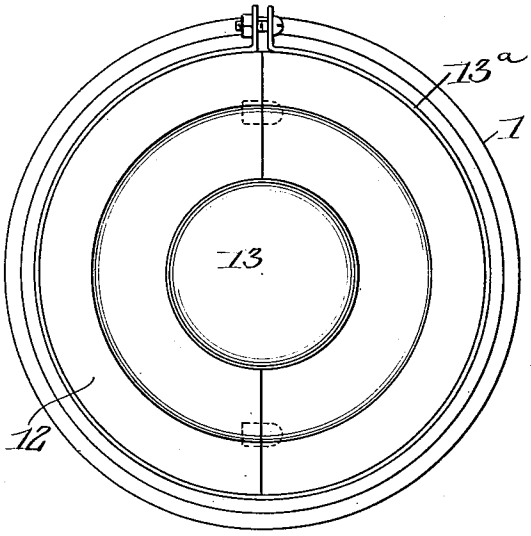


Fig. 8

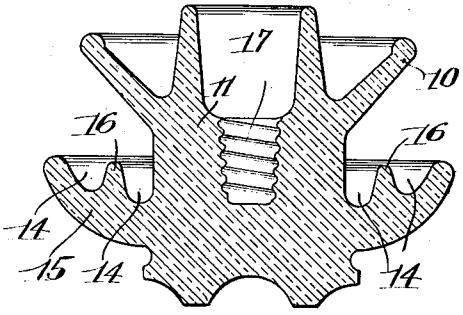


Fig. 9

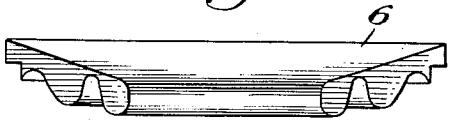
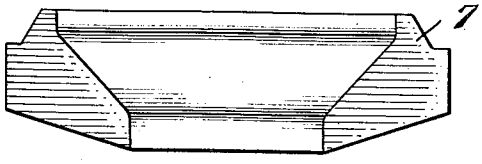


Fig. 10



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UNITED STATES PATENT OFFICE

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METHOD OF MANUFACTURING INSULATORS

Application filed January 3, 1928, Serial No. 244,200. Renewed March 25, 1930.

My invention relates to the method of manufacturing insulators, and has to do more particularly with porcelain insulators of the type having a multiplicity of skirts or laterally projecting flanges extending away from the longitudinal or body portion, the principal object of the invention being to manufacture such an insulator as an integral structure from a single mass of clay or such material as may be used.

Heretofore, the practice in manufacturing porcelain insulators of the general type mentioned has been to make two or more units separately, and produce the finished insulator by nesting and cementing together such separate units which necessitates sanding or otherwise roughening the cement receiving surfaces, and it is a purpose of this invention to produce an insulator of this same form without the necessity of securing together separate units by cement or otherwise.

A further object of the invention is to provide means for making a one-piece multiple skirted insulator from porcelain by what is commonly known as the wet process, whereby the complete insulator is made from the same mass of moist clay and is there after baked as an entirety, thus giving a uniform texture and character to every part of the insulator, a result which is not possible where the insulator is made by cementing together independent porcelain sections which have been previously baked and which may be made from different masses of clay.

An additional object of the invention is to afford a one-piece porcelain insulator which is cheaper to manufacture than types of insulators now in use, and which has greater efficiency both mechanically and electrically than old forms of insulators.

Another purpose of the invention is to afford mechanism and a method of procedure for constructing such an insulator in a quick, practical, and economical manner.

To these and other ends, the invention comprehends the structure and method that will appear clearly from the following description when read in conjunction with the accompanying drawings, the novel features being pointed out in the claims following the specification.

In the drawings:

Figure 1 is a sectional view illustrating an initial step or plunging operation in producing an insulator according to the invention;

Figure 2 is a similar view illustrating the second step, using a preferred means of accomplishment;

Figure 3 is a similar view illustrating the next step or second plunging operation in the process;

Figure 4 is a similar view showing the completed insulator and one portion of the sectional mold about to be removed;

Figure 5 is a view similar to Figure 2 showing a modification of the process;

Figure 6 is a view showing the second plunging operation with the structure according to Figure 5;

Figure 7 is a plan view of the parts shown in Figure 5;

Figure 8 is a sectional view of an insulator constructed according to the invention;

Figure 9 is a perspective view of one of the lower mold sections shown in Figures 2 to 4, and

Figure 10 is a similar view of one of the upper mold sections shown in Figures 2 and 3.

The invention may be carried out in a variety of ways, and with different materials, but is more especially adapted to form insulators from clay by the commonly known wet process method, the herein disclosed structure and procedure indicating, by way of example, certain preferred ways of accomplishing this.

In manufacturing a porcelain insulator by the "wet process", a mass of wet clay is forced into a mold of plaster Paris or the like, through the instrumentality of a rotating metal plunger or die to which heat is applied in any suitable manner, the simultaneous rotation and pressure of the plunger serving to impart its form to the mass of clay, which is thereafter hardened by firing. In applying this to the present invention, a bottom mold 1 is employed which is suitably formed to shape the end or head of the insulator. A mass of wet clay is placed within the

mold 1 and a plunger is then forced against the clay, said plunger comprising a hollow and preferably cylindrical portion 2 and a lateral or flange portion 3.

As the plunger is pressed against the mass of clay, the flange portion 3 shapes the outer part of the clay body to form the skirt portion 4 of the insulator, while the main body of the wet clay is forced upwardly into the hollow portion 2 of the plunger, leaving a central mass of clay 5 when the plunger has reached its lowermost position, as shown in Figure 1. It will be seen that this much of the operation serves to complete the first skirt portion 4 of the insulator, and leaves a remaining body of wet clay ready to be pressed to form a second skirt portion, which operation takes place immediatelv after the first operation just described.

While forming a second skirt portion from the body of clay 5, it is necessary to arrange a mold over the skirt portion 4 after the plunger has been removed. This is preferably accomplished by a sectional mold 6 shaped to conform to the grooved skirt portion 4, and a sectional mold 7 preferably with inclined bottom surfaces engaging correspondingly inclined top surfaces on the mold 6. The mold sections 7 can be held in operative position by suitable means such as a band 8, as shown in Figure 2, and when the mold sections are thus arranged, the parts are ready to receive a second plunger 9, see Figure 3, which descends against the central mass of clay 5 and forces it out against the mold sections 7, causing the body of clay 5 to assume the shape illustrated in Figures 3 and 4.

The plunger 9 is then withdrawn and the band 8 removed, permitting the mold sections 7 to be withdrawn laterally from the position shown in Figure 3, after which the mold sections 6 can be lifted as shown in Figure 4, and then withdrawn laterally from the insulator. By the operation just described, the second skirt portion 10 is formed, extending laterally from the central body portion 11 of the insulator and spaced along the same from the first formed skirt portion 4. In this fashion it is possible to construct an insulator with two or more lateral flanges or skirt portions all from one mass of clay, giving a completed insulator structure of similar texture throughout and uniform mechanical and electrical characteristics. It will be understood, of course, that the described operation can be repeated with additional sectional molds to form three or more skirts or flange portions in larger insulators where this may be desirable.

In Figures 5 and 6, a modified form of mold is illustrated as shown at 12. In this case, the first plunger or die has a flat bottom surface, forming the clay mass into the shape illustrated at 13 in Figure 5, instead of the form shown in Figure 1. The mold sections 12 would then be provided with corresponding flat bottom surfaces and after the second plunger operation, the insulator would have the form illustrated in Figure 6. With this arrangement, after the plunger is withdrawn from the insulator, the bottom mold 1 is dropped away and the mold sections 12 can then be readily removed by a lateral motion after the retaining band 13^a is separated from the mold sections. When the insulator is thus formed, the grooves 14 are cut into the skirt portion 15, see Figure 8, to form the petticoat 16 by grooving the clay while wet.

While I have described alternative ways of forming the grooves in the skirt, as illustrated in Figures 1 to 4 and in Figures 5 and 6, other convenient methods and devices can be adopted without changing the general scheme of successively forming two or more skirts or laterally extending flanges from a single mass of wet clay. In Figure 8, the interior of the insulator is shown threaded as at 17, as usual in this type of insulator, the threading operation being preferably performed after the general shape of the insulator is completed, as illustrated in Figures 4 and 6.

While the invention has been described with reference to certain particular adaptations and methods, it is not confined to the precise disclosures herein set forth, and this application is intended to cover any other embodiments or methods which will accomplish the described purposes and come within the scope of the following claims.

I claim:

1. The method of making a one-piece insulator consisting in forming a multiplicity of skirts or lateral flanges by successive pressure operations on a wet mass of material, such pressure being applied endwise of the insulator and crosswise of the skirts.

2. The method of making a one-piece insulator consisting in first pressing a wet mass of material in a mold forming an initial skirt or lateral flange, then positioning a mold over said skirt, and finally pressing the remainder of the wet mass against the last mentioned mold to form a second skirt.

3. The method of making a one-piece insulator consisting in first pressing a wet mass of material in a mold forming an initial skirt or lateral flange and an outwardly extending central portion, and thereafter pressing said central portion to form a second skirt above the first mentioned skirt.

4. The method of making a one-piece insulator consisting in first subjecting a wet mass of material in a mold to the action of a plunger having a hollow portion with a lateral flange portion at its forward end, said plunger acting to form in said wet material a skirt portion and to force the central

part of the wet mass rearwardly into said hollow portion of the plunger, and thereafter subjecting said central part of the wet mass to the action of a second plunger to form a second skirt on the insulator.

5. The method of making a one-piece insulator consisting in first subjecting a wet mass of material in a mold to the action of a plunger having a hollow portion with a lateral flange portion at its forward end, said plunger acting to form in said wet material a skirt portion and to force the central part of the wet mass rearwardly into said hollow portion of the plunger, positioning a mold over said skirt portion, and thereafter subjecting said central part of the wet mass to the action of a second plunger to force the clay against the last named mold and form a second skirt on the insulator.

6. The method of making a one-piece wet process insulator consisting in first forming one portion of the insulator by pressing it into a mold, retaining the mass in said mold and protecting the opposite side of said formed portion by a sectional mold while subsequently forming another part of the insulator integral with the first mentioned part by applying pressure toward said sectional mold and the first named portion.

In witness whereof, I have hereunto signed my name.

WILLIAM F. HARVEY.