July 19, 1927. 1,636,282

E. R. C. BOELCKE

METHOD OF MANUFACTURING ELECTRIC INSULATORS

Filed Oct. 5, 1925

Fig. 1.

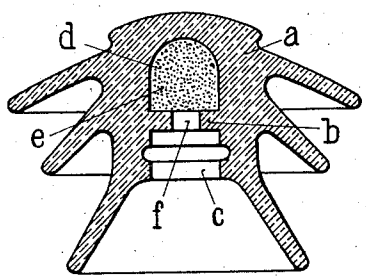


Fig. 2.

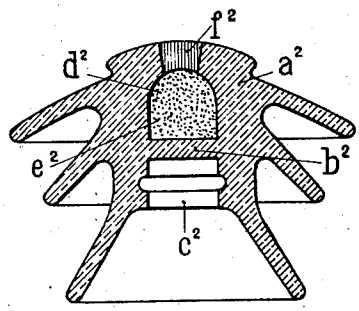


Fig. 3.

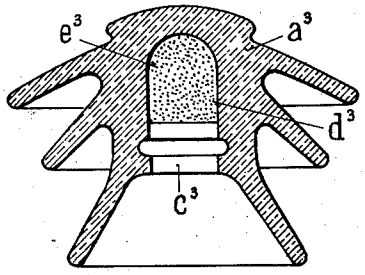


Fig. 4.

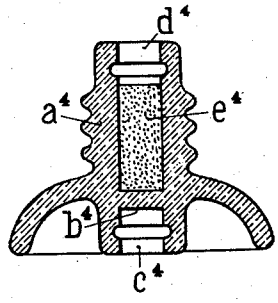
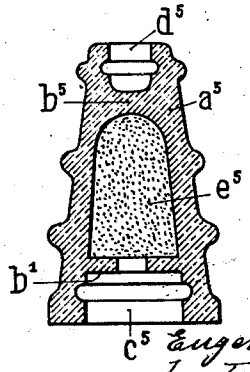


Fig. 5.



INVENTOR

Eugen Reinhold Carl Boelcke

by Franz Reichs

Attorney.

Patented July 19, 1927. 1,636,282

UNITED STATES PATENT OFFICE.

EUGEN REINHOLD CARL BOELCKE, OF CHARLOTTENBURG, GERMANY.

METHOD OF MANUFACTURING ELECTRIC INSULATORS.

Application filed October 5, 1925, Serial No. 60,556, and in Germany December 30, 1924.

My invention relates to improvements in the method of manufacturing electric insulators.

The manufacture of electric insulators presents the difficulty that when baking the porcelain body inner tensions are produced, which cause cracks and other deformations interfering with the insulating capacity. Therefore the porcelain bodies are constructed as far as possible with walls of uniform thickness, which, however, is not always possible in all the parts of the body. For obtaining walls of uniform thickness cavities are provided in the thicker portions of the body. But in this method the air confined within the cavities is expanded by heat when baking the bodies, so that a high pressure is exerted on the walls which pressure forces the walls outwardly and produces objectionable passages and other deformations reducing the strength of the porcelain body and the insulating capacity thereof.

According to the present invention these objections are obviated by filling the cavity or cavities provided within the insulating body with insulating matter having a very small coefficient of shrinkage or expansion, or having a coefficient of expansion equal or substantially equal to the coefficient of expansion of the material of the insulating body. For example the insulating body is provided at its head or in a partition wall with an aperture, and after drying and before baking porcelain powder is filled into the cavity of the body, the powder expelling the air confined within the cavity so that after closing the aperture no internal pressure adapted to deform the walls of the porcelain body can be produced. Instead of the porcelain powder a previously baked solid body of porcelain can be used for filling the cavity. In both cases, when baking the body there is neither sintering nor expansion of the filling body. Further the air has been expelled from the cavity, so that when baking there is no objectionable gas pressure within the insulating body.

In the accompanying drawing Figs. 1 to 3 are sectional elevations showing three examples of the porcelain bodies used as insulators for overhead leads, Fig. 4, is an elevation showing an insulator for insulating bars and Fig. 5, is an elevation showing a supporting insulator adapted to be provided with top and bottom fixtures.

In the example shown in Fig. 1 the insulating body a is provided with a cavity subdivided by a partition b into chambers c and d. The lower chamber c is designed for receiving the fixture for securing the insulator to its support, while the upper chamber d is designed to receive a filling body e, the upper chamber communicating with the lower chamber c through an aperture f made in the partition b. After drying the insulating body the upper chamber d is completely filled with porcelain powder providing the filling body e, as is shown in Fig. 1, whereupon the aperture f is closed by a stopper of porcelain. When baking the body the filling e is entirely indifferent, and in the baked insulator it increases the length of porcelain disposed between the electric lead and the support, and therefore the insulating power of the insulator.

In the modification shown in Fig. 2 the aperture f^2 is made in the head of the insulating body a^2, and the partition b^2 is made solid. When filling the cavity d^2 before baking with porcelain powder e^2 the stopper closing the aperture f^2 is glazed and baked together with the insulating body a^2.

As appears from Fig. 3 the inner partition of the cavity of the insulating body a^3 may be dispensed with, if the filling body e^3 consists of a coherent body or of sintering material. In the first case the filling body is preferably made from a porcelain body which completely fills out the hollow space, and which is connected in a suitable way with the inner wall of the hollow space d^3, or which is held in position by means of a supporting member inserted into the cavity c^3. In the other case the filling material, such as powdered porcelain or the like, can be transformed into a plastic mass by admixing thereto glazing material or plastic porcelain, and pressing the same into the hollow space. In this case when baking the body a filling body is produced which is intimately connected with the wall of the insulating body, and which has the same coefficient of expansion as the insulating body.

In an insulator of the class shown in Fig. 4, which is designed for supporting leads in the form of bars, the cavity of the insulator a^4 is separated by a partition b^4 into two chambers, the lower one c^4 being open at its bottom and the upper one d^4 being open at its top. The upper chamber is provided with the filling body e^4 in the manner just

described, which filling body rests on the partition b^4.

In an insulator of the type shown in Fig. 5 the cavity of the insulating body a^5 is divided by a partition b^5 into separate chambers c^5 and d^5, the lower chamber c^5 and the upper chamber d^5 being adapted to receive respectively the bottom fixture and the top fixture. In this case the upper part of the lower chamber c^5 is filled with the filling body e^5 the said filling body being applied thereto either in the manner described with reference to Fig. 3 or by means of a second partition b.

I claim:

1. The herein described method of manufacturing electric insulators, which consists in moulding the insulator with a cavity, drying the insulator, putting into said cavity insulating matter which does not expand when being baked, and baking the insulator.

2. The herein described method of manufacturing electric insulators, which consists in moulding the insulator with a cavity, drying the insulator, putting into said cavity porcelain, and baking the insulator.

3. The herein described method of manufacturing electric insulators, which consists in moulding the insulator with a cavity, drying the insulator, putting into said cavity a mixture of disintegrated porcelain and a plastic binding medium, and baking the insulator.

4. The herein described method of manufacturing electric insulators, which consists in moulding the insulator with a cavity, drying the insulator, putting into said cavity a body of previously baked porcelain, and baking the insulator.

In testimony whereof I hereunto affix my signature.

EUGEN REINHOLD CARL BOELCKE.