April 27, 1943. M. PERELES 2,317,799

LINE INSULATORS

Filed April 14, 1941 2 Sheets-Sheet 1

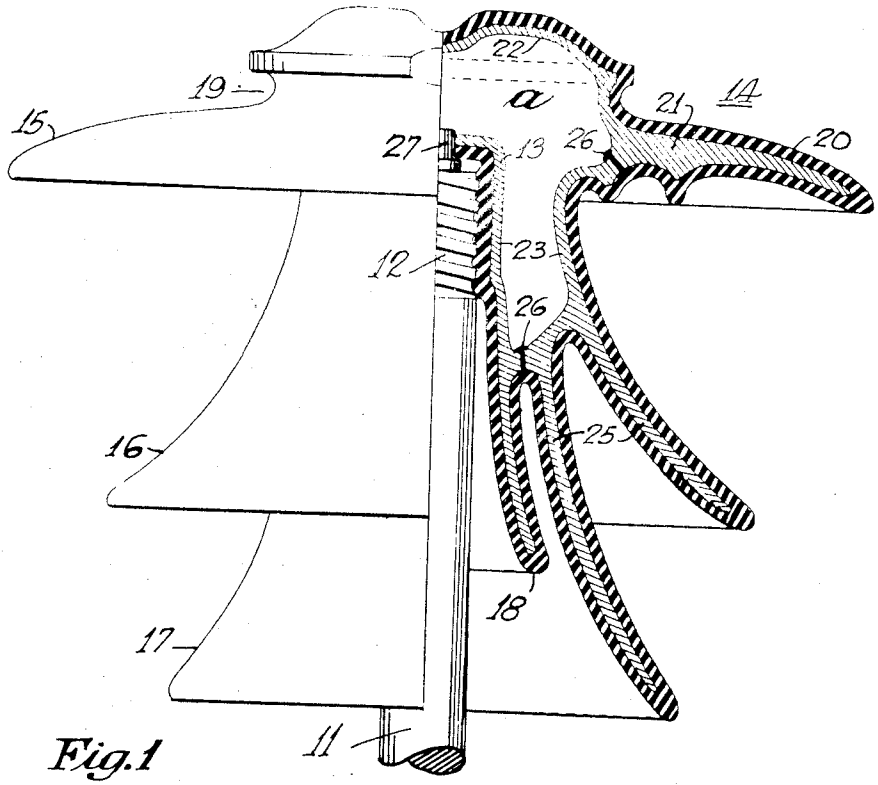


Fig. 1

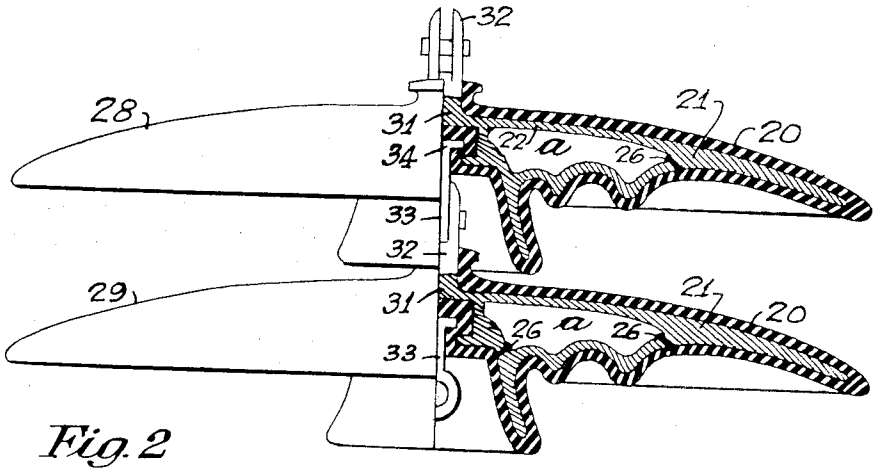


Fig. 2

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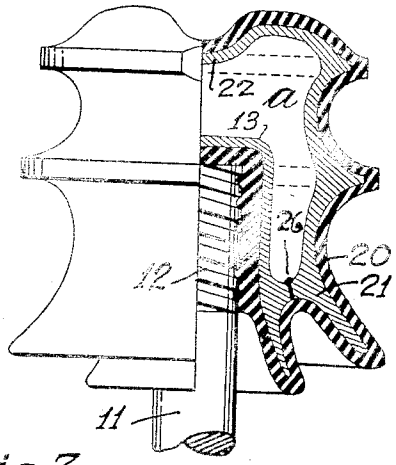


Fig. 3

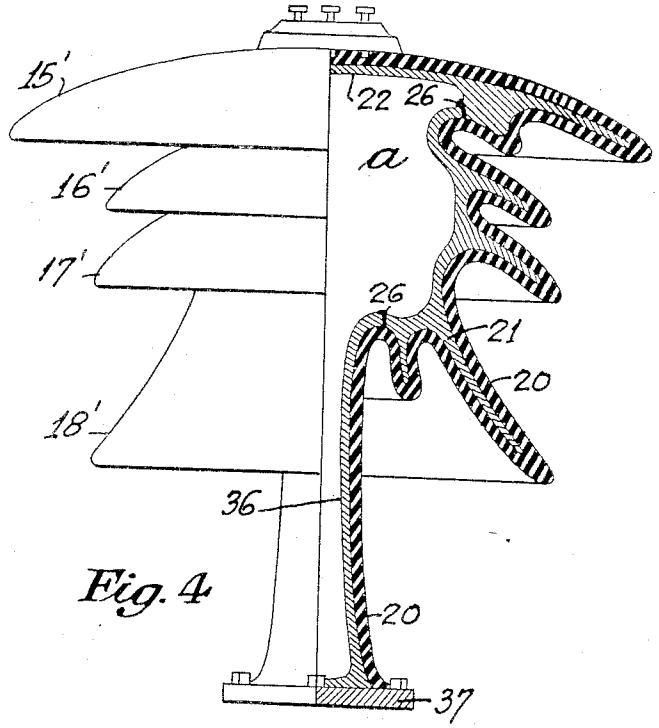


Fig. 4

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UNITED STATES PATENT OFFICE

2,317,799

LINE INSULATOR

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Application April 14, 1941, Serial No. 388,395

2 Claims. (Cl. 174—210)

This invention relates to line insulators such as are used for insulating electric transmission lines and electric telegraph systems, and it has for an object to provide a reinforced insulator that is relatively light and strong and that may be made in various shapes to conform to standard practice. Another object of the invention is to provide an insulator comprising a metallic shell which is coated with a vitrified insulation which adheres to the shell. Other objects of the invention will appear from the following specifications and the accompanying drawings, in which:

Fig. 1 is an elevation in half section of a petticoat type of high tension insulator constructed according to this invention;

Fig. 2 is an elevation in half section of a strain type of insulator;

Fig. 3 is a vertical elevation in half section of another form of line insulator, and

Fig. 4 is an elevation in half section of another form of insulator in common use.

In order to increase the strength of insulators of this type they are constructed of a metallic shell, preferably of steel, which is formed to the contour of the insulator and is then coated with a vitreous insulation applied in a plastic state. Where the insulator is relatively small the metallic core may be made solid, but in the larger insulators, where weight has to be considered, they are made hollow and are preferably made in sections which are welded together.

In U. S. Patents 1,394,973, October 25, 1921; 1,795,200, March 3, 1931 and 2,032,239, February 25, 1936, is described an insulating material which has the basic materials of pulverized glass and mica or asbestos which is reduced to the plastic state by the application of pressure and heat. It is found that this material, which is commercially known as "Mycalex" has the property of adhering to metals in the plastic state; it has a high dielectric strength, can be machined, does not warp and is not affected by oil or water; moreover, when united with a metal, such as steel, it adheres to the metal surface and follows the expansion and contraction of the metal in ordinary use, without fracture or cracking. These properties adapt it for coating the metallic shell of an insulator and the combination provides an insulator of unusual strength and lightness.

In the drawings, 11 is the central stud supporting the insulator 14 and is usually attached thereto by the screw 12, screwed into the central socket of the insulator, indicated at 13. The insulator in Fig. 1 is of the petticoat type, having the skirts 15, 16, 17 and 18 with a groove at 19 in which the electric conductor is sometimes supported.

The body of this insulator comprises the metallic shell 23 enclosing the space indicated by *a* with the ribs 21 and 25 developed therefrom to the contour of each of the skirts 15, 16, 17 and 18. In the manufacture of a hollow structure of this kind the steel shell may be forged in parts and welded together as indicated at 26, making a frame upon which the insulating plastic is secured. In addition to making the frame lighter by the hollow space *a*, the metallic walls of the reinforcing member are substantially uniform in thickness and dissipate the heat uniformly when the plastic is applied.

The plastic is indicated by 20 and covers the entire outer surface of the reinforcing metallic shell to whatever depth is deemed desirable for the insulation required. For this purpose the device is vitrefied in a press which may be subject to a pressure of one and a half tons, or thereabouts, per square inch and to a temperature of 620 degrees centigrade, or thereabouts. This reduces the "Mycalex" to a plastic condition and causes it to adhere to the surface of the reinforcing member, apparently in the manner of a fusion between the metal surface and the insulation. This makes a solid construction which may be machined and drilled if necessary, the same as if it were a solid body.

In the construction as indicated in Fig. 1, there may be conditions in which the hollow chamber *a* would collapse under the pressure that is used to apply the vitrefied coating. In order to avoid this, a plug is provided at 27 which may be screwed into the head 13 or otherwise suitably secured therein. Through this plug aperture a fluid may be inserted in the chamber *a* to resist the pressure during the application of the coating.

When the reinforcing shell is made of steel that is liable to corrode, the interior walls of the chamber *a* should be treated in some suitable manner with a non-corrosive agent to prevent rusting.

The strain insulator in Fig. 2 comprises the sections 28 and 29 which are coupled in the center by the coupling members 32 and 33. The coupling member 32 is developed at 31 from the reinforcing frame 22, thereby continuing this frame into the coupler. The coupler 33 is secured by a head insulated by the coating 20.

The insulator in Fig. 3 is constructed similar to Fig. 1 and differs therefrom mainly in the shape.

The insulator in Fig. 4 is of the petticoat type having the skirts 15', 16', 17' and 18', which are reinforced by the metallic frame at 21 and 22 and are coated with Mycalex at 20. The metallic frame is developed into the hollow stem 36 which is secured to the base at 37, thereby providing an integral connection between the metallic reinforcing member and the support for the insulator.

Having thus described my invention, I claim:

1. A reinforced insulator for electric conductors comprising an integral metallic shell enclosing a space in the centre of the insulator, a hollow stem for securing the insulator to its support, a removable plug connecting the hollow stem with the space, said metallic shell being enclosed in an insulator plastic.

2. A reinforced insulator for electric conductors, comprising an integral metallic shell enclosing a space in the body of the insulator, a hollow stem for securing the insulator to its support, means connecting said hollow stem with the space, said metallic shell being enclosed in an insulating plastic and the walls of the space in the body being coated with a non-corrosive coating.

MAURICE PERELES.