

Jan. 24, 1933.

H. P. CHANDLER

1,895,022

INSULATED CASING

Filed Dec. 22, 1930

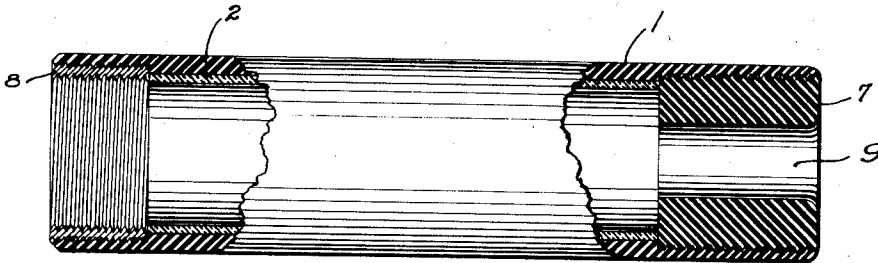


FIG. 1.

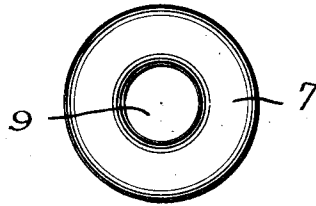


FIG. 2.

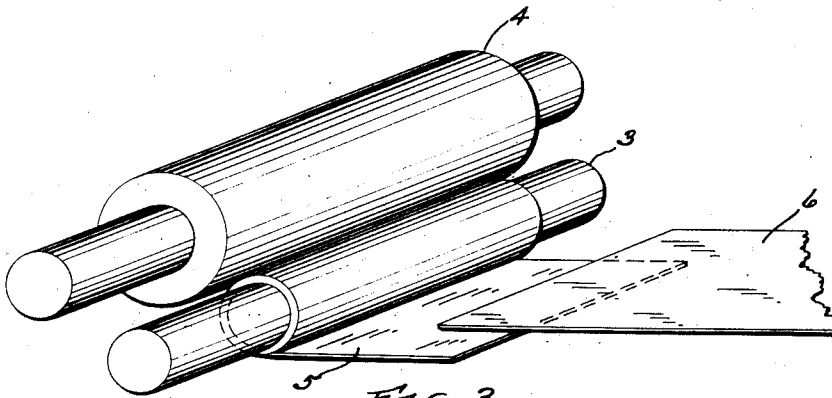


FIG. 3.

WITNESS:

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INSULATED CASING

Application filed December 22, 1930. Serial No. 504,055.

My invention relates to insulated enclosing cases for withstanding arc discharges.

It is the object of my invention to provide a casing of insulating material which will be weather proof without and resist charring or carbonizing within due to arc formation within the casing.

The casing may be used for various purposes, one of which is that in connection with a current tap as shown in my co-pending case Serial No. 400,368 filed October 17, 1929 now Patent 1,822,883.

My invention resides in the new and novel construction, combination and relation of parts herein set forth and the steps involved in the construction and arrangement of said parts.

In the drawing Fig. 1 shows a plan view of my casing in partial section with special end inserts.

Fig. 2 is a view of the right hand end of Fig. 1.

Fig. 3 illustrates a manner in which the tube may be produced.

In the preferred form of my invention I have a tube comprising an outer casing 1 of weather proof material which may be formed by rolling up a strip of paper of proper length which has been impregnated with a phenol condensation product such as sold under the trade name of "Bakelite" and an inner tube 2 which consists of a strip of asbestos paper of proper length wound upon itself and previously impregnated with a non-charring binding material such as silicate of soda. These two tubes may be assembled one within the other with a binder between to hold them in fixed relation.

The outer tubing, that is the tubing formed of bakelized fibre may be threaded at each end to receive such parts as the insulating plug 7 and the metal bushing 8. It is evident of course that other parts than those specifically shown as 7 and 8 may be used. The plug 7 has an opening 9 therethrough to receive a cable.

I find that the members 7 and 8 may be quite permanently secured in position by placing upon the co-operating threads of both parts a coating of the synthetic resin in solu-

tion and then heating the same to polymerize the resin or apply other synthetic resins which may be subject to polymerization.

A tube thus constructed may be used for many purposes where it is desirable to enclose an arcing device.

It is well known that the phenol condensation products such as bakelite char or carbonize quite readily under the electric arc and thereby become conductors, but such products are highly water proof and withstand weather exposure extremely well.

It is well known that asbestos is highly resistant to charring or carbonizing and likewise silicate of soda and these two combined make an excellent lining to protect the outer tube from the arc using a phenolic condensation product or other synthetic resin as a binder.

I have described one way in which the tubes 1 and 2 may be formed and assembled and another way is to provide a machine for rolling one of the tubes upon a mandrel and the second tube upon the first and simultaneously drying the binding material and this arrangement consists of a mandrel 3 placed adjacent to a hot roll 4. The use of hot rolls mounted in frames is quite common and these rolls may be heated by an internal gas flame or steam. Upon the mandrel 3 would be first wound the strip of asbestos 5 which has previously been impregnated or coated or both in a solution of silicate of soda and while still wet the sheet of asbestos is slowly wound upon the mandrel 3 while the heated roll 4 presses against the asbestos strip. The strip 5 has been cut to the proper width and length to give the desired lining 2 as shown in Fig. 1.

Before the strip 5 has been entirely rolled up a second strip 6 of paper or fabric, impregnated or coated or both in a solution of phenol resins or other synthetic resins, is placed with its end in overlapping relation to the end of the strip 5 and the rolling is continued whereby the strip 6 will be rolled upon the asbestos tube. The action of the heat upon the treated strip 6 will tend to dry or cure the same as is well known to those skilled in the art so that when the proper amount of strip 6 has been rolled up the tube

will be practically complete having an inner lining of asbestos treated with silicate of soda and an outer tube treated with a phenolic condensation product or other synthetic resin.

5 The overlapping of the longitudinal edges of strip 5 and the beginning of strip 6 (see Fig. 3) tends to securely lock the two tubes which in addition to the cementing action of the impregnating or coating materials provides a casing in which the two tubes are securely united together.

10 In the manufacture or building up of the parts 1 and 2, after they have been removed from the mandrel 3, they may be further subjected to heat which will drive out all volatile materials and advance the polymerization of the phenol condensation product or other synthetic resin used in the part 1.

15 It is quite evident that the parts 1 and 2 with metallic end closing members may be utilized as a casing for a fusible element the whole constituting what is known as an enclosed fuse.

20 It will be apparent no doubt that the parts 1 and 2 as described may be utilized for many purposes where the objects set forth are desired and that modifications may be made by those skilled in the art and therefore I wish to be limited only by my claims.

30 I claim:—

1. A casing comprising an inner tube of asbestos impregnated with sodium silicate and an outer tube of fibrous material impregnated with a synthetic resin and having its inner surface for a distance back from each end threaded and an internally threaded sleeve secured within one end of the threaded portion by threads on the exterior surface of the sleeve, the inner sleeve ending at the thread and the sleeve butting against the end of the inner sleeve.

2. A casing comprising an inner tube of asbestos treated with silicate of soda and an outer tube of fabric impregnated with a condensation product and having its inner surface for a distance back from each end threaded and the inner tube extending between the threaded portions and threaded members secured within the threaded portions one member being an internally threaded sleeve and the other an insulating plug with a passage therethrough of less diameter than that of the inner tube.

3. A casing having its exterior longitudinal surface free of metallic parts comprising an inner tube of sheet asbestos wound upon itself, an outer tube of waterproofed paper wound upon itself and secured to the inner tube, a metallic sleeve threaded into one end of the outer tube and butting against the end of the inner tube an orificed plug threaded into the other end of the outer tube, the inner surface of the outer tube being threaded for a distance back from each end.

4. A casing comprising an outer tube of

wound-up fabric impregnated with a synthetic resin, an inner tube of wound-up non-carbonizing sheet material the surface of which is treated with silicate of soda before winding, the adjacent longitudinal edges of the said materials forming the tubes overlapping to lock the tubes together and an inner annular metal ferrule at one end of the casing and interlocked with the inner surface of the outer tubing and the inner longitudinal surface of the ferrule provided with a thread.

5. A casing comprising an outer tube of waterproof material having its inner surface lined with a non-carbonizing material and a metallic bushing at one end of the casing secured to the inner surface of the outer tube, and an insulating member associated with the securing means at the other end and having means on its outer surface interlocked with means on the inner surface of the outer tube to detachably hold the insulating member in place.

6. An insulating casing comprising an elongated tubular member of sheet fibrous material impregnated with a waterproofing synthetic resin, a metallic sleeve positioned within the casing at one end and interlocked with the casing to prevent accidental removal of the sleeve, means entirely within the casing to interlock the sleeve and casing and means on the sleeve within the bore to make detachable connections thereto and a closure of insulating material and having a passage therethrough detachably secured to the tube at its other end, the outer longitudinal surface of the tube being free of exposed metallic parts.

In testimony whereof I affix my signature.

HOMER P. CHANDLER.