S. S. SONNEBORN.

SECTIONAL PIN INSULATOR.

APPLICATION FILED JUNE 27, 1917.

1,290,673. Patented Jan. 7, 1919.

Fig. 1.

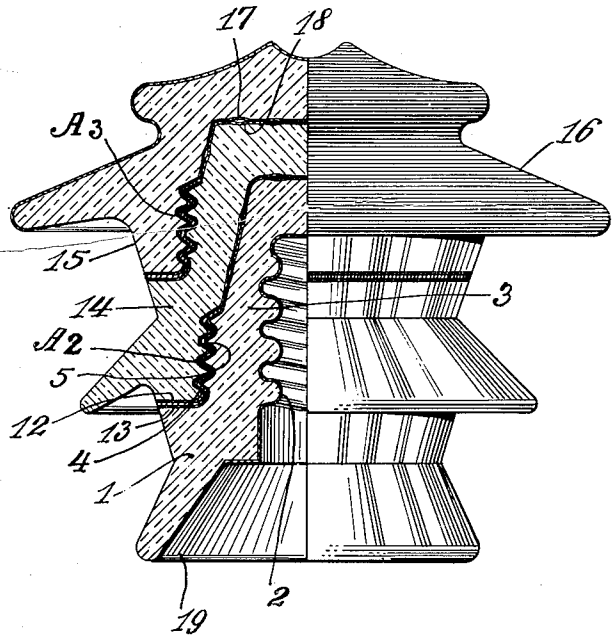


Fig. 3.

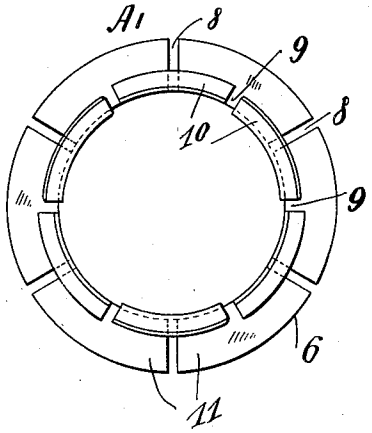


Fig. 2.

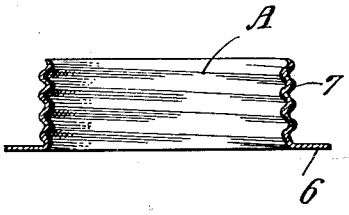
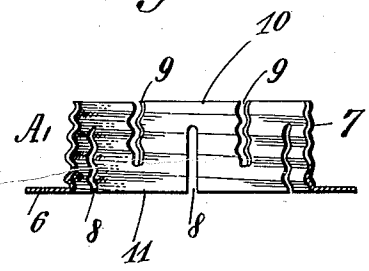


Fig. 4.



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SECTIONAL-PIN INSULATOR.

1,290,673. Specification of Letters Patent. Patented Jan. 7, 1919.

Application filed June 27, 1917. Serial No. 177,179.

To all whom it may concern:

Be it known that I, SOL S. SONNEBORN, a citizen of the United States, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Sectional-Pin Insulators, set forth in the following specification.

This invention relates to high potential insulators. The general object of the invention is to increase the dielectric strength of an insulator without the provision of an excessive amount of insulating material. To this end the insulator is constructed in the nature of a condenser so that its dielectric strength against puncture shall be approximately proportional to the combined minimum thickness of its insulating wall.

More specifically the object of the invention is to cheapen and improve the manufacture and maintenance of a high potential insulator of the condenser type. One advantage of the invention lies in the fact that anyone of the plurality of sections of which the insulator is made up may be separately renewable in case of breakage without the need of renewing the entire insulator.

The above and further features of the invention are specified in the following claims, which are directed to the invention in any of its possible embodiments, of which illustrative embodiments are shown in the accompanying drawings which form a part hereof, in which like characters designate corresponding parts in the several figures and in which Figure 1 is an elevation of an embodiment of the insulator with one-half shown in vertical section; Fig. 2 is a vertical section of one form of connecting ring; Fig. 3 is a plan view of a modified connecting ring; and Fig. 4 is a vertical section of the connecting ring shown in Fig. 3.

The nesting sections of this insulator may be formed of any suitable insulating material, vitrified, such as porcelain, or moldable, such as electrose, although it is to be understood that the design has particular advantage for construction out of vitrified material. The insulator is shown built up out of three nesting sections, although the number of sections may be practically whatever desired within the limits of the structural strength of the material of which they are made. The bottom section 1 has an internal screw-threaded pin cavity 2 and a top portion 3, substantially frusto-conical in shape, a portion of which, preferably the lower portion, having screw threads 4 formed circumferentially about it.

The section to nest upon the section 1 has a cavity the contour of which fits as exactly as possible upon the under section and has internal screw-threads 5, loosely mating with the screw-threads 4 of the under section. This looseness between the two threads 4 and 5 should be considerable and at least greater than the maximum structural irregularities incident to insulator construction. The union between these two threaded portions is effected through the medium of a filler ring A, which in the embodiment of Fig. 2, is a spun sheet-metal structure having a horizontal flange 6 and a collar 7, corrugated into screw-threads. In the embodiment shown in Figs. 3 and 4, a ring A_1 is identical with that of Fig. 2, except for the provision of alternating slots 8, extending through the flange 6 and upwardly into the collar 7, and slots 9 extending from the top of the collar 7 downwardly between the slots 8. By the provision of these slots 8 and 9, the ring is made up out of a plurality of highly resilient lips 10 and 11. One of the rings A or A_1 is screwed over the threads 4 and due to this resilience adapts itself to the irregularities of the structure. A superposed section is then screwed home over the ring 7, which yields to the irregularities of the screw threads 5. In this way the union is solely from porcelain to metal and not from porcelain to porcelain. The flange 6 fits between the ledges 12 and 13, completing the separation of the two nesting porcelain parts.

The interlocking construction between the intermediate section 14 and the top or conductor section 15 is substantially identical with that between the pin section 1 and the intermediate section 14, similar rings A_2 and A_3 being employed in both cases.

In order to give a condenser action to the sectional insulator, the entire upper surface of the conductor section 15 is provided with a covering 16 of conducting material such as metallic paint or a closely fitting covering of spun sheet-metal or a metallic coating applied and fired into the porcelain in accordance with the practice in ceramics. In addition, every mating surface of every section is likewise provided with a similar metallic covering so that when two sections are nested together these two metal coverings,

as for example 17 for the conductor section 15 and 18 for the intermediate section 14, contact at many points. By these two-fold coverings, which are substantially in electric connection throughout their extent, mechanical injuries which might affect one covering will probably be bridged by the other covering which, at that locality, is intact. In this way a substantially continuous metallic partition is insured. The pin cavity and preferably the entire inner cavity of the pin section 1 is likewise provided with a similar metallic coating 19.

What is claimed and what is desired to be secured by United States Letters Patent is:—

1. A high-potential insulator of the condenser type comprising a plurality of nesting sections of insulating material having nesting surfaces; a nesting surface of one or more of said sections having an adherent covering of conducting material; overlapping portions of adjacent nesting sections being provided with loosely mating screw threads; and a filler ring of resilient sheet material threaded to fit said screw threads on said sections of insulating material and permit the same to be screwed together safely despite irregularities in said threads.

2. A high-potential insulator comprising a plurality of separable sections of insulating material nesting one upon and within another; overlapping parts of adjacent sections being provided with integrally formed loosely mating screw threads; and a single detachable sheet metal filler ring for averaging the inequalities in said threads and causing said loosely mating threads to cooperate through it as a medium.

3. A high-potential insulator of the pin type and having condenser qualities comprising a plurality of nesting separable sections of insulating material, a pin section having a pin cavity and a conductor-section; one or both of the nesting surfaces of said sections being provided with a covering of conducting material; meeting faces of adjacent sections having coöperating threads involving both said sections of insulating material and each of their said coverings of conducting material; a covering of conducting material for the walls of said pin cavity; and a covering of conducting material for the top surface of said conductor section.

4. An insulator comprising a plurality of separable nesting sections of vitreous insulating material mutually provided externally for a lower section and internally for an upper section with coupling irregularities coöperating upon relative rotation of said nesting sections; and a metallic plating formed on one or both of the nesting surfaces of adjacent sections and coating the said coupling irregularities.

In witness whereof I have signed my name to this specification, this 12th day of June, 1917.

SOL. S. SONNEBORN.