J. A. WOTTON.

PROCESS OF MANUFACTURING ELECTRIC CONDENSERS.

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INVENTOR

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By

Mason & Yount

Attorneys
To all whom it may concern:

Be it known that I, JAMES A. WOTTON, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia,

have invented certain new and useful Improvements in the Process of Manufacturing Electric Condensers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to improvements in the manufacture of electric condensers; and the object in view is the saving of time and the reduction of expense in the production thereof.

The process consists in certain novel operations for the production of electric condensers, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a longitudinal vertical section through the condenser-plates and dielectric as the same are being wound upon the core, the containing-trough being also shown in section. Fig. 2 represents a top plan view of the same elements. Fig. 3 represents a condenser being subjected to heated paraffin or other wax. Fig. 4 represents the same under pressure. Fig. 5 represents a completed condenser.

Heretofore it has been common to employ a waxed paper as the dielectric, heating the condenser during the process of manufacture for driving off the moisture, a small amount of which paraffin or other waxed paper usually contains, and then inclining the condenser in hermetically-sealed receptacles for preventing entrance of moisture; but I find that the waxed paper is itself comparatively expensive and the heating process additionally expensive. To obviate this expense is one of the objects of the present process; and another object in view is a great saving of time effected by the omission of the said heating process. In order to attain these objects, as seen in the accompanying drawings, I place a sheet of plain unwaxed paper, as 7, in a suitable trough 2 of slightly-greater width than the width of sheet 7 and then place one of the conductor or condenser plates, as 1, which has been previously cut to the size desired for forming the complete condenser, being of slightly less width than sheet 7, into the trough 2. A suitable number of sheets of paper, as 3, of similar nature to sheet 7, are placed longitudinally in trough 2 with the under sheet contacting with the upper face of plate 1 and said sheet 3, preferably of the same width as sheet 7, all of said sheets being of a width relative to that of the trough, such as to move easily longitudinally thereof. It would of course be possible only to employ one sheet 3; but I prefer to use at least two of such sheets, and more, if desired. The sheets of paper 3 may be, of course, of any preferred and proper texture and are cut to the required size and shape before being placed in the trough 2. Next a second conductor-plate, as 4, is placed within trough 2 on top of the upper one of sheets 3, the said plate 4 being of the same dimensions as plate 1, both plates being preferably of tin-foil or other suitable conducting material. A sheet of paper, as 8, similar in size, shape, and texture to sheets 3 and 7, is placed on top of plate 4. A core 5 is next arranged transversely of the said plates and sheets, and they are rolled thereupon and bound securely in place by any suitable thread, as 6, being wound about the same. The core 5 may be of any suitable non-conducting material which is capable of withstand ing a high degree of heat without softening. It will be apparent that the trough 2 is only employed to retain the parts in their relative positions while being assembled and wound or rolled upon the core 5 and that the process herein claimed may be readily carried out without the employment of such trough. It might be further observed that the thread 6 is only employed for retaining the plates and sheets in their rolled condition during the succeeding step of the process, and any other suitable retaining means may be substituted therefor as desired.

It will of course be further apparent that the plates 1 and 4 and the sheets 3, 7, and 8 may without in the least departing from the present process be folded in any preferred and well-known manner, as is common in the art.
The terminals having been inserted in any well-known manner before the thread 6 has been secured, the incomplete condenser is ready for the next step in the process. A bath of paraffin or other suitable wax is provided and heated to a comparatively high degree—say 250° Fahrenheit—and maintained at this temperature until all of the moisture has been driven out of the paraffin. The said condenser is now immersed in the paraffin or other wax, as indicated in Fig. 3 of the drawings. This bath is maintained at the high temperature during the entire time the condenser is within the same, whereby all of the moisture is boiled out of sheets 3, 7, and 8 and most of the air is expelled therefrom. After the condenser has been in the bath for the desired length of time—say for forty minutes—varying as may be found necessary for the best results relative to the particular texture of sheet 3 and other features of any particular condenser the same is removed and placed within any suitable press of any suitable and preferred type, one being illustrated in Fig. 4 of the drawings. The condenser is allowed to cool while under pressure and is after cooling removed from the press and incased within a suitable can or receptacle and is then ready for use.

It is a well-known fact that paper impregnated with paraffin usually retains more or less moisture, and if such paper be used as the dielectric the same must be baked to remove the moisture; but by my improved process it will be seen that I am enabled to take the paper just as it comes from the paper mills and at one and the same time impregnate it with a suitable wax and drive off all moisture and the greater portion of the air contained thereby.

By my improved process I find it possible to produce an electric condenser in just one-fifth of the time formerly required when the baking process was employed.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The process of manufacturing electrical condensers, comprising, arranging a sheet of plain paper of a given size between two condenser-plates of predetermined size, similar sheets of paper at the outside of said condenser-plates, rolling the same together and subjecting the whole to a bath of molten wax from which has been driven all moisture, substantially as described.

2. The process of manufacturing an electric condenser, consisting in maintaining a bath of insulating material at a high degree of temperature for sufficient time to drive off all 60 moisture, then immersing the sheets of the electric condenser within said bath and retaining the same therein for a considerable length of time, the bath being maintained at the said high degree of temperature, substantially as described.

3. The process of manufacturing electric condensers consisting in immersing the finally-positioned sheets of plain paper forming the dielectric of a condenser in a bath of molten insulating material from which has been driven all moisture, substantially as described.

4. The process of manufacturing electric condensers, consisting in maintaining a bath of insulating material at a high degree of temperature until all moisture has been driven therefrom and then immersing the finally-positioned sheets of an electric condenser within said bath, substantially as described.

5. The process of impregnating the insulating sheets of an electric condenser with paraffin or other wax, after such paraffin has been maintained at a high degree of temperature until all the moisture has been driven therefrom, substantially as described.

6. The process of impregnating the insulating sheets of an electric condenser with paraffin or other wax, after such sheets have been given their final position relative to the conductor-plates of said condenser, said paraffin having been first subjected to a high degree of temperature for a sufficient time to drive off all moisture, substantially as described.

7. The process of impregnating insulating sheets of an electric condenser with paraffin or other wax, said paraffin having been first raised to a temperature of approximately 130° centigrade, and maintained at said temperature for about an hour for driving off moisture, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JAMES A. WOTTEN.

Witnesses:

GEO. F. SCHOFEN,
C. LYNDON.