

UNITED STATES PATENT OFFICE

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METHOD OF SEASONING CONDENSERS

No Drawing.

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This invention relates to electric condensers particularly those of the type used in radio communication, and has specific relation to the material employed as the dielectric.

5 The primary object of my invention is to provide a method of treating a condenser in such a manner as to effect a permanent increase in its capacity and to minimize the coefficient of change in capacity with a change
10 in temperature.

It has been discovered that condensers employing fibrous dielectrics, such as paper, after ageing for some time, have a capacity greater than when first manufactured. This
15 is particularly true in the rolled type of paper condenser. Moreover, the change of capacity is found to be greater when two or more layers of paper are used for insulation than when only one layer is employed. This
20 change of capacity takes place even when the condenser is not exposed to air.

It is therefore proposed to incorporate in the process of manufacture of the condenser a method which will prevent this change of
25 capacity with age. Generally, this method is applicable to rolled condensers of circular cross section, that is, they have not been subjected to any forming process after being rolled in the usual manner, and consists in
30 causing the condenser to pass through cycles of temperature changes.

Specifically the process consists in exposing the condenser to temperatures as follows:

- 35 1. Temperatures ranging from 25° to 45° Fahrenheit for three days.
2. Ordinary temperatures for not less than two days.
3. Temperatures ranging from 0 to 5° Fahrenheit.
- 40 4. Ordinary temperatures for not less than two days.
5. Temperatures ranging from 90° to 100° Fahrenheit for forty-eight hours.
6. Ordinary temperatures for not less than
45 two days.
7. Temperatures ranging from 25° to 45° Fahrenheit for three days.
8. Ordinary temperatures for not less than two days.
- 50 9. Temperatures ranging from 112° to

115° for forty-eight hours.

10. Room temperatures for not less than a week before calibrating.

The variations in temperatures over comparatively long periods make minute changes in the shape of the condenser and the relative position of the conducting layers, thus giving it a permanent set. The final raising to a high temperature, namely, 112° to 115° Fahrenheit, softens the dielectric, and by expansion due to heat, causes internal pressure and squeezes all the irregularities out of the dielectric, thus making it a smooth homogeneous sheet.

The condenser may or may not be placed
65 in a covering or container during this seasoning process. No pressure other than atmospheric pressure and no special equipment is necessary except the means for varying the temperature and maintaining it within certain limits. Temperatures as high as the
70 melting point of the dielectric (paraffin, wax, or the like) are not employed in this process.

The results actually obtained by the practical application of this seasoning process are
75 a permanent increase and a minimum coefficient of change in capacity of the condenser with a change in temperature; a more constant and unchanging power factor; and no permanent change in capacity or power factor due to a change in temperature within limits of seasonal changes, ranging approximately
80 from 5° Fahrenheit to 110° Fahrenheit.

Having thus described my invention what I claim is—

1. The method of seasoning or treating a condenser after being rolled in the usual manner, which method consists in exposing said condenser to a cycle of temperature changes said cycle of temperature changes being sufficient to permanently set the electrical capacity of the condenser but insufficient to melt the elements thereof.

2. The method of seasoning or treating a condenser after being rolled in the usual
95 manner, which method consists in exposing said condenser to a cycle of temperature changes, said cycle consisting of alternate periods of ordinary temperatures and periods of variant temperatures substantially differ-
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ing from said ordinary temperatures but insufficient to melt the condenser elements said periods of temperature variations being arranged to cause a permanent fixing of the electrical capacity of the condenser.

3. The method of seasoning or treating a condenser after being rolled in the usual manner, which method consists in exposing said condenser to a cycle of temperature changes, said cycle consisting of alternate periods of ordinary temperatures and periods of temperatures substantially differing from said ordinary temperatures, the last period of said differing temperatures being a temperature considerably in excess in degree to the other temperatures but less than the melting temperature of the condenser elements.

4. The method of effecting an increased and constant capacity in a condenser, which method consists in exposing said condenser to a series of temperature changes which alternately vary from ordinary temperatures to temperatures differing sufficiently from said ordinary temperatures to set the elements of the condenser but insufficient to cause fusion of the elements.

5. The method of seasoning or treating a condenser after having been rolled in the usual manner, which method consists in subjecting said condenser to a cycle of temperature changes, including in sequence temperatures ranging from 25° to 45° Fahrenheit; ordinary temperatures; temperatures ranging from 0 to 5° Fahrenheit; ordinary temperatures; temperatures ranging from 90° to 100° Fahrenheit; ordinary temperatures; temperatures ranging from 25° to 45° Fahrenheit; ordinary temperatures; temperatures ranging from 112° to 115° Fahrenheit; room temperatures.

6. The method of seasoning or treating a condenser after having been rolled in the usual manner, which method consists in subjecting said condenser to a cycle of temperature changes, including in sequence temperatures ranging from 25° to 45° Fahrenheit for three days; ordinary temperatures for not less than two days; temperatures ranging from 0 to 5° Fahrenheit for forty-eight hours; ordinary temperatures for not less than two days; temperatures ranging from 90° to 100° Fahrenheit for forty-eight hours; ordinary temperatures for not less than two days; temperatures ranging from 25° to 45° Fahrenheit for three days; ordinary temperatures for not less than two days; temperatures ranging from 112° to 115° Fahrenheit for forty-eight hours and room temperatures for not less than a week before calibrating.

In testimony whereof I affix my signature.

LEON H. RICHMOND.