A. PRUESSMAN.

CONDENSER.

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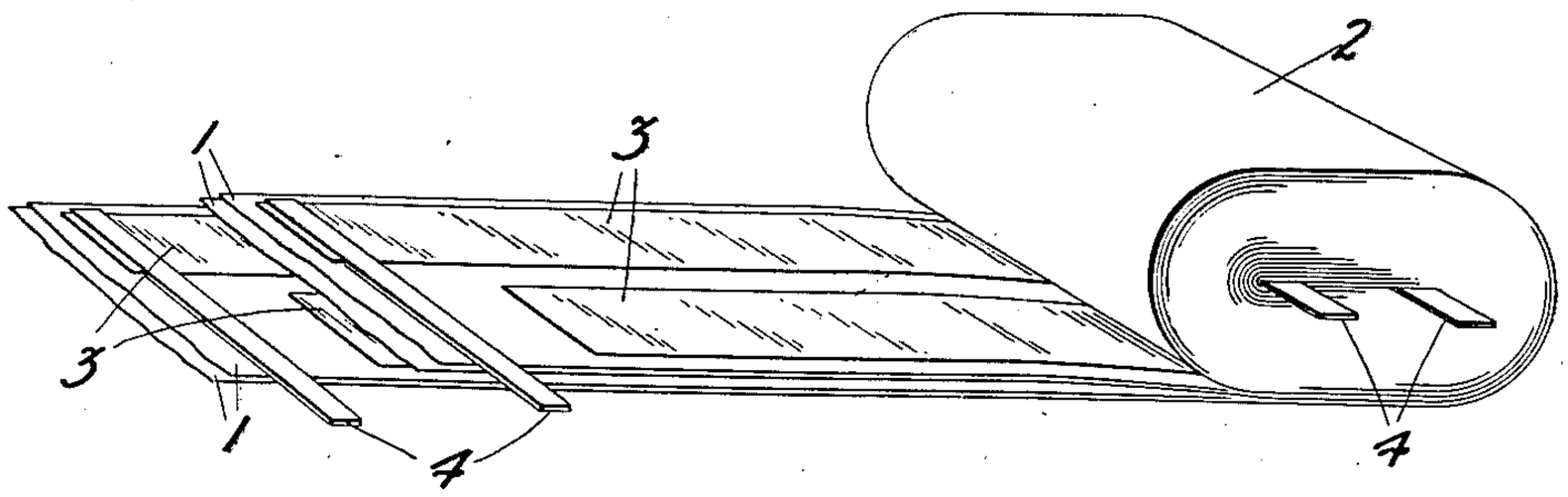
1,298,396.

Patented Mar. 25, 1919.



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UNITED STATES PATENT OFFICE.

ALBERT PRUESSMAN, OF BERWYN, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CONDENSER.

1,298,396. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed December 18, 1916. Serial No. 137,602.

To all whom it may concern:

Be it known that I, ALBERT PRUESSMAN, a citizen of the United States, residing at Berwyn, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Condensers, of which the following is a full, clear, concise, and exact description.

This invention relates to condensers, and in particular to condensers of the multiple type.

There is a considerable demand in the telephone field for condensers which are very closely balanced in capacity with respect to each other, these condensers being required particularly for use on composite lines used for the simultaneous sending of telephone and telegraph messages. Also in various other circuits it is required that the condensers used be of the same capacity within very close limits, in order to avoid objectionable cross-talk and to insure the proper functioning of the circuit as designed.

Heretofore, in order to meet the demand for balanced condensers, it has been the general practice to resort to a process of selection, the individual condensers being accurately tested and assigned to different groups, depending upon the measured capacities of the units. Such a process is not only unsatisfactory and expensive, but it does not provide for errors resulting from temperature corrections as made under commercial manufacturing conditions; neither does it make allowance for the different rate at which condensers made under slightly different conditions may vary in capacity when subjected to severe service conditions.

The object of this invention is primarily to produce a condenser of the balanced type which will eliminate the trouble now experienced, necessitating the selection of condensers and placing them in groups, each group containing condensers held within close capacity limits.

A further object is to produce a multiple-unit condenser, the units of which are not only of the same capacity when first made, but the materials and manufacturing processes of which are the same for each unit, thereby assuring that capacity changes due to changes in temperature or other causes will be the same for each unit.

To accomplish these objects this invention provides a multiple condenser in which a common container is employed for the condenser units required to be closely balanced, and in which the insulating sheets between the foils are also common to each condenser unit. This result is satisfactorily brought about by winding double units, consisting of wide strips of insulating material and strips of foil, each somewhat less than half the width of the insulating material, two of these strips of foil being placed on either side of one of the strips of insulated material, and terminals being provided for each strip of conducting foil.

Under certain conditions it is found desirable to mount two or more of these double units within a single container, and select the individual units to be connected in multiple, so as to give the closest balance.

This invention will be better understood by reference to the drawing, which is a perspective view illustrating the strips of foil and insulating material assembled into the form of an elliptical cylinder. Two layers of insulating material, each consisting preferably of one or more sheets of thin paper 1, are rolled with alternate layers of tin foil into the form of an elliptical cylinder 2, each layer of foil consisting of two separate strips 3, placed a short distance apart and located so that the edges are in alinement with the edges of the opposing strips of foil in the other layer. Terminals 4, consisting of strips of conducting material, preferably of copper, are connected to the strips of foil during the winding process, one terminal being provided for each strip of foil.

After the alternate layers of foil and insulating paper have been wound, the resulting cylinder is treated in the standard manner and placed within a metal container. A preferred way of treating this cylinder is to first dip it in melted paraffin wax or equivalent material, and then subject it to slight pressure while it is allowed to cool and set. It is then dipped into a molten insulating compound which solidifies at ordinary temperatures. As a result of this dipping process, the unit is protected by a layer of insulating compound. It is then placed in a metal container, the bottom of which has already been covered to a slight

depth by a pouring of the insulating compound, and an additional pouring of compound is made extending over the terminal strips 4, thereby completely surrounding the condenser unit with insulating compound.

With this construction it will be noted that the variations resulting from differences in the insulating paper and in the manufacturing processes are eliminated, and it is not necessary to consider the inconsistencies due to temperature corrections, since the units to be balanced are placed in a common container.

What is claimed is:

1. A multiple condenser comprising a cylindrical structure having a plurality of independent parallel convolutions of conducting material separated by convolutions of a dielectric common to a plurality of other conducting convolutions to form a plurality of independent similar balanced condenser units.

2. A multiple condenser comprising a cylindrical structure having a plurality of independent parallel convolutions of conducting material of equal length separated by convolutions of a dielectric common to a plurality of other conducting convolutions of equal length to form a plurality of independent similar balanced condenser units.

3. The method of forming a multiple condenser which consists in placing a plurality of electrically distinct conducting sheets of equal width and length in alinement with a plurality of other electrically distinct conducting sheets of equal length and width but separated therefrom by a layer of non-conducting material and then winding said sheets into a unitary structure, thereby forming a plurality of independent balanced condenser units having identically the same characteristics.

In witness whereof, I hereunto subscribe my name this 12th day of Dec. A. D., 1916.

ALBERT PRUESSMAN.