UNITED STATES PATENT OFFICE.

BYRON MACPHERSON, OF ROXBURY, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MICA CONDENSER COMPANY LTD., OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CONDENSER AND METHOD OF MAKING SAME.

1,341,336. Specification of Letters Patent. Patented May 25, 1920.

No Drawing. Application filed November 19, 1919. Serial No. 339,241.

To all whom it may concern:

Be it known that I, BYRON MACPHERSON, a citizen of the United States, and resident of Roxbury, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Condensers and Methods of Making Same, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present invention relates to electrical condensers and more particularly to an improved electrical condenser and method of manufacturing the same for use in high potential work.

To facilitate the manufacturing of electrical condensers of the plate or sheet type, it is necessary to depart from the conventional method of making the pile of mica and foil, paper and foil, etc., impregnating said pile after making in a bath of wax or other insulating material, or of making a roll of insulating material and a roll of foil. Such condensers may be satisfactory for use in telephone systems and the like, but cannot be made to work satisfactorily in high potential service, because of the inherently weak structure of the insulation interposed between the foil sheets, and because of the impossibility of insuring intimate contact between the insulation and the foil sheets.

I obviate the difficulties enumerated above by using the best possible dielectric between the sheets of foil, mica, and treat the mica in such a way that all minute perforations that may exist are permanently sealed and which treatment insures an intimate contact between the mica and foil, then by building the stack in such a way that each sheet of foil is tested as it is placed in position, the testing being such that it is impossible to build a stack any way but correctly, and finally testing the completed stack or condenser to heal or reheal any short circuit that may exist.

The object of my invention therefore, is an improved electrical condenser and method of manufacturing the same.

In carrying out my invention, I take a plurality of sheets of mica of suitable dimensions as regards length, width and thickness, coat or rather, entirely cover the sheets with varnish, or other suitable insulating material, the varnish filling up and permanently sealing all perforations in the sheets, then drying the varnished sheets so as to enable the operator to readily handle the same. The operator now builds up the condenser stack by first taking a sheet of mica, placing a sheet of foil thereon so as to extend over one end thereof, then placing a second sheet of mica on and in alinement with the first said sheet, then placing a second sheet of foil on the second sheet of mica so as to extend over the end thereof remote from the end of the first mica sheet over which the first foil sheet extends. This series of operations is continued until the stack is of the required size, or height. As each foil sheet is placed in position, a test is made for short circuits and to insure that each foil sheet is placed correctly in the stack.

When the stack is completed, it may be placed in an inclosing box before being tested, or it may be tested before being put in a box, the test consisting in subjecting the completed stack to the action of an intermittent or alternating current, the potential being gradually increased from start to finish of the test to a point in excess of that employed in service. During the test, all short circuits developed are healed, with the assurance that they will not reappear after the condenser has gone into use.

The above described steps of my improved method may be successfully carried out without the use of machinery, but for economic reasons, I prefer to practice the various steps mechanically, and reference is here made to my copending applications Serial No. 339,242, filed November 19, 1919, disclosing an apparatus for conditioning mica sheets, Serial No. 339,244 filed November 19, 1919, disclosing an apparatus for building up a stack or pile of alternate mica and conducting sheets, and Serial No. 339,243 filed November 19, 1919, disclosing an apparatus for testing and healing or rehealing any defect in a condenser stack due to short circuits therein. The structures disclosed in these applications, while facilitating the practice of my present invention, are not

essential to the successful practice thereof, and I do not wish to be limited by the disclosure in said applications.

My invention is further described and defined in the form of a claim as follows:

The improved method of making electrical condensers, which consists in building a self-supporting stack of sheets of dielectric and foil, electrically testing each sheet of foil individually as it is placed in position in the stack, for short circuits and for correctness of position, healing any electrical defect in the stack, and finally completing the condenser structure.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

BYRON MACPHERSON.

Witnesses:
AUBREY R. GOODWIN,
JAMES R. HODDER.