

Mica Condensers for Radio Work

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The use of mica as a dielectric for condensers for high voltage work has increased greatly in the past few years. In particular the commercial development of these types of condensers has been carried on by the Dubilier Condenser Company, Inc., of New York, by the Wireless Speciality Apparatus Company also of New York, and by the Dubilier Condenser Company of London. Condensers manufactured by these firms have been used extensively during the war for radio work by many of the Allied Governments as well as by commercial wireless companies.

In a recent infringement suit brought by the Dubilier Condenser Company, Inc., against the Wireless Speciality Apparatus Company (who manufacture condensers under the trade name of "Faradon") a final decree has been handed down by His Honour Augustus N. Hand, U.S. District Judge for the Southern District of New York, on October 4th, 1920, holding:—

"That said Letters Patent Nos. 1,229,914 and 1,229,915 are good and valid in law as to the second, third, fourth, fifth, seventh, eighth, ninth, twelfth, fourteenth, and fifteenth claims of Letters Patent No. 1,229,914 and as to the first, eighth, twelfth, sixteenth and seventeenth claims of Letters Patent No. 1,229,915.

That the defendant Wireless Speciality Apparatus Company has infringed upon each and all of said claims, of said Letters Patent Nos. 1,229,914, and 1,229,915 by manufacturing, selling and using, or causing to be manufactured, sold or used, condensers embodying or employing the inventions of said claims of said Letters Patent.

That the fourth claim of Letters Patent No. 1,229,915 is invalid in law, being anticipated by the prior use of the subject-matter thereof by the United States Navy, and National Electrical Supply Company of Washington, D.C., and that the bill be dismissed as to said claim of said patent."

The patents in question deal respectively with means for boxing up the complete condenser in a metallic case, and for the method of constructing high voltage condensers. The claims referred to in the judgment cover in effect the following leading features:—A condenser so constructed that one of its terminals is formed by the metallic containing case while the other is arranged so as to compress the condenser into the case. These terminals should preferably be of relatively small mass and relatively large surface to enable them to conduct away any heat from the interior of the condenser case. The second terminal may be mounted in or through an insulating lid or closure for the containing case, and it is then enabled to serve not only as

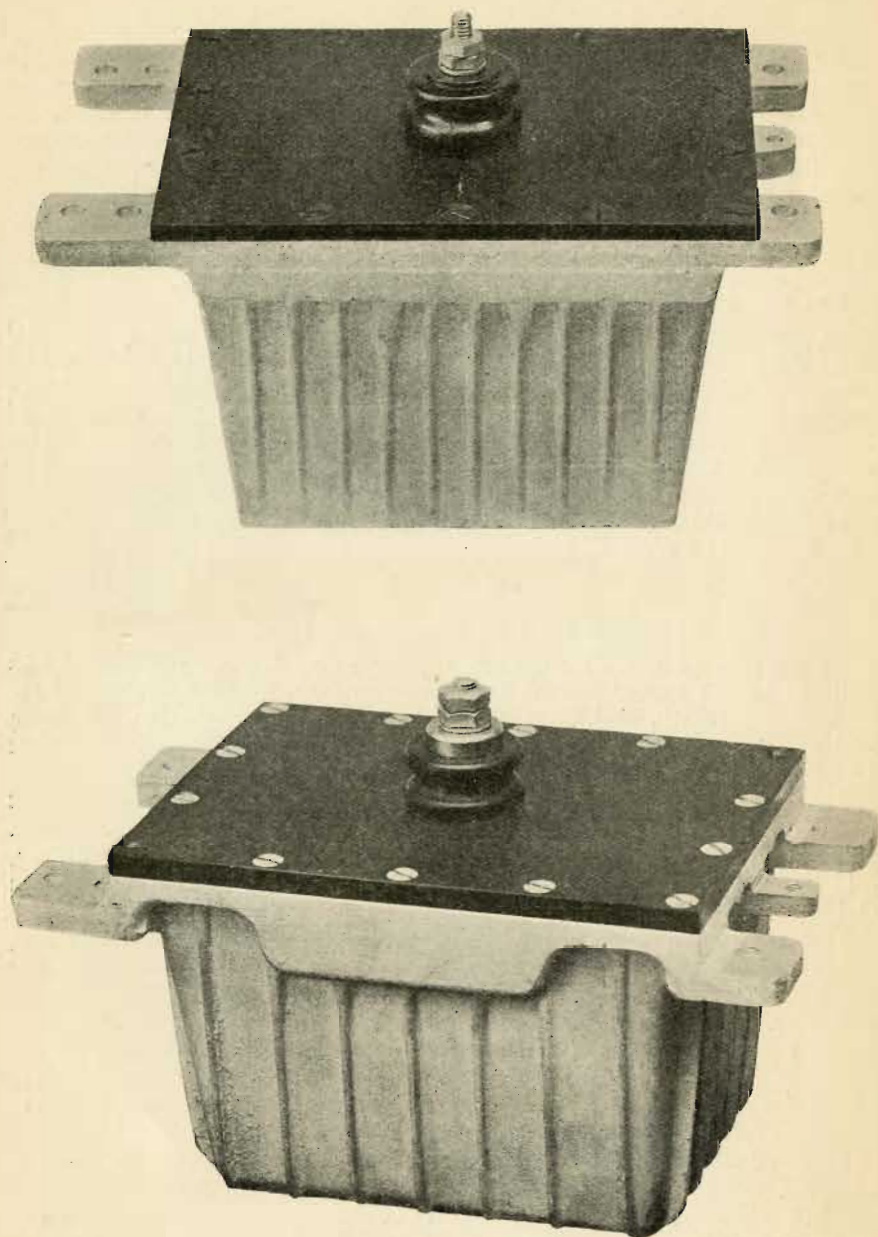


FIG. 1.—OUTSIDE VIEW OF TWO PATTERNS OF DUBILIER MICA CONDENSER, SHOWING METALLIC CASE WITH INCLINED SIDES AND INSULATED TERMINAL IN LID.

an electrical connection to the condenser but also for compressing the condenser and preventing its expansion or vibration when in use, as well as for conducting away the heat.

In order to provide greater insulation from the case at the high potential end of the condenser—*i.e.*, the end connected to the insulated terminal in the lid—the use of a case having inclined sides is covered by the claims that have been upheld. The condenser unit is disposed centrally within the casing with its elements parallel to the bottom, the sides of the case sloping outwards so as to obtain a greater spacing between the condenser sections and the case at the upper end of the unit.

As regards the construction of mica condensers for high voltage circuits, the claims of U.S. Patent 1,229,915 which have been upheld cover a high tension condenser unit consisting of sections connected in series for dividing the potential among them, each section comprising conducting plates and intervening sheets of insulation constituting the dielectric, the said sheets

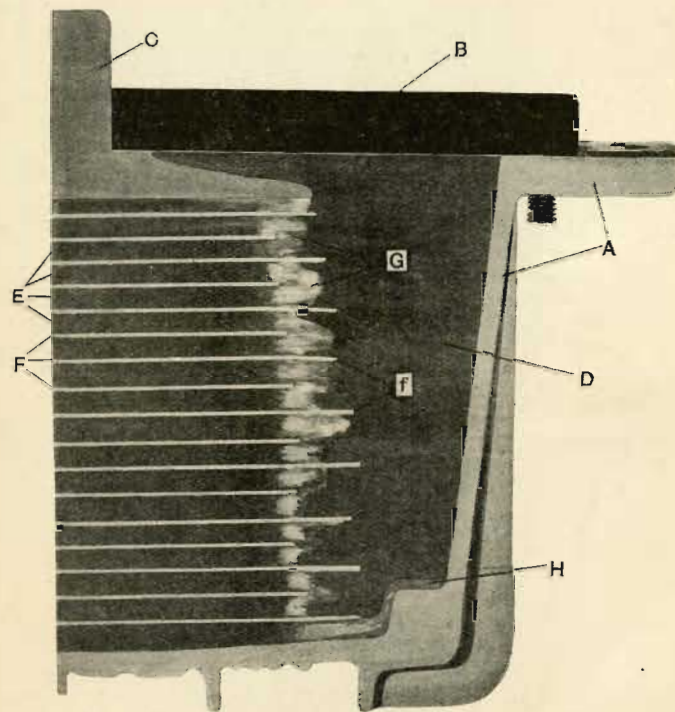


FIG. 2.—CROSS SECTIONAL VIEW OF MICA CONDENSER IN CONTAINING CASE SAWN THROUGH CENTRALLY.

A = Metal case with inclined sides. B = Insulating lid. C = Terminal in lid provided with enlarged lower surface for compressing the condenser. D = Insulating filling compound. E = Condenser sections which are connected in series to form the complete unit. F = Mica insulating barriers. G = Soldered connections between condenser sections. H = Connection between lowest section and case.

having a layer of insulating adhesive between them and the conductor plates and being arranged to overlap the edges of the conductor plates. Between adjacent sections extra insulating plates are customarily inserted so as to have their ends projecting alternately in opposite directions beyond the condenser sections so that the terminals of the sections can be joined together in pairs between the projecting ends of the insulating plates. This last feature of construction is one, however, that has not been upheld in the infringement suit on account of prior use. The fourth claim of Patent 1,229,915 which has been held to be invalid for this reason reads as follows :—

“A condenser unit comprising sections, and insulating plates between the sections, said plates being arranged to have their ends projecting alternately in opposite directions, whereby the terminals of the sections can be joined together in pairs at both ends of said plates, the projecting ends of the plates intervening between the sections having their terminals so connected and adjacent sections.”

In order to render clearer the features of this type of condenser construction the general appearance of two condensers built in accordance with these specifications is shown in Fig. 1, while in Fig. 2 is an interesting illustration of a condenser which has been sawn through centrally, perpendicularly to the condenser plates, in order to show the internal arrangements. The reference letters placed on this illustration indicate the parts mentioned above. The insulating barriers between the condenser sections, each of which consists of a complete small condenser comprising interleaved sheets of mica and metal foil, may be seen at F, the alternately projecting ends, which separate the soldered connections G between condenser sections, being indicated at f.