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B. B. MINNIUM
ELECTRIC CAPACITOR

2,430,433

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Fig. 1

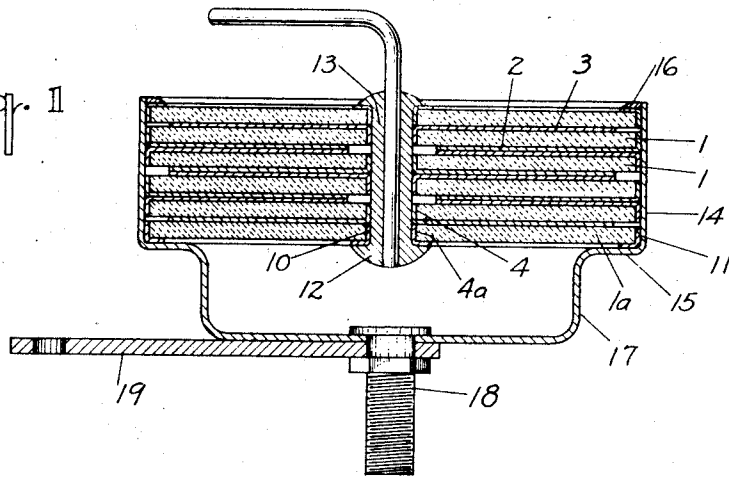


Fig. 2

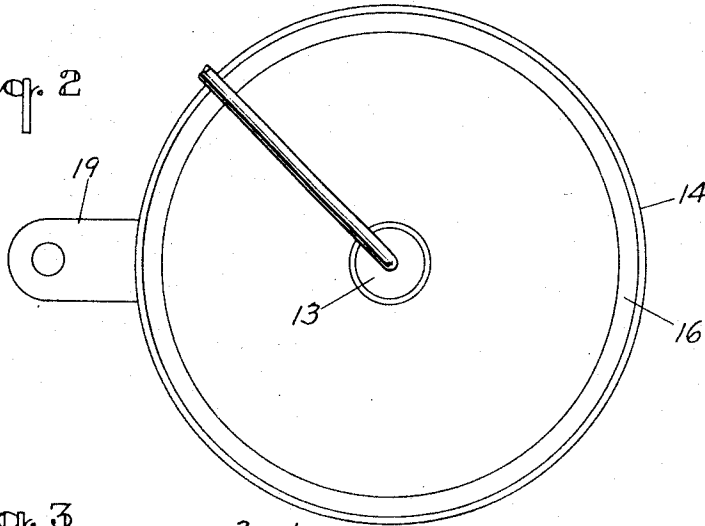


Fig. 3

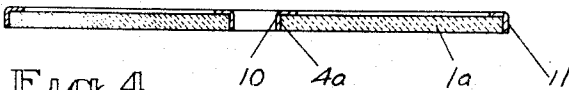
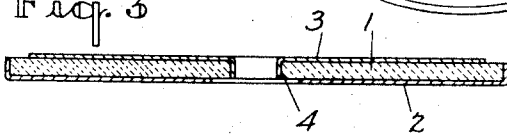


Fig. 4

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UNITED STATES PATENT OFFICE

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ELECTRIC CAPACITOR

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2 Claims. (Cl. 175-41)

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My present invention has for its object to provide a capacitor especially adapted for use with high frequency currents occurring in radio apparatus whereby the self-inductance of the usual relatively long leads and the relatively long path across the plates generally existing in condensers is eliminated.

A further object of my invention is to provide an arrangement of elements comprising the conductors and dielectric members which are so formed that units of various capacities may be readily assembled, and which will occupy a minimum space in conjunction with the apparatus with which it is associated.

Another object of my invention is exemplified in the manner in which I form the conductors on the plates of insulating material to make a compact whole which is finally sealed, against influences such as changes of temperature and humidity, by their enclosure in a cup member which forms one terminal for a circuit connection which is in contact with all of the conductors.

To these and other ends my invention embodies further improvements and elements of construction, all of which will be more fully described, the novel features thereof being set forth in the appended claims.

In the drawings:

Fig. 1 is an enlarged cross sectional view of a capacitor illustrating an embodiment of my invention.

Fig. 2 is a plan view thereof.

Fig. 3 is a detail sectional view of one section of the capacitor illustrating the method of applying a conductor to a dielectric.

Fig. 4 is a similar view of an end unit.

Similar reference numerals in the several figures indicate similar parts.

In carrying out my invention I utilize thin sheets of insulating substance, such as ceramic material, indicated by 1, which form the dielectric plates and, by the process of electroplating, lay thereon the conductors or plates 2 and 3 on their opposite sides. The plates 1 are made in the form of discs which have central perforations 4.

The plate 2 on one side of each disc extends over and around the periphery of the disc 1 and has an opening at its center somewhat larger than the aperture 4. The complementary conductor 3 on the other face of the disc is formed of lesser diameter than the disc but extends within the area of the aperture 4. From this formation of the conductors it will be seen that any

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selected number of discs may be stacked one upon the other with only the plates on their contiguous faces in electrical contact.

At both ends of the pile I place one of the covering units shown in Fig. 4, comprising a disc 1a having a central perforation 4a. On this disc a central contact 10 is formed which extends into the central opening and also overlaps a small surrounding area on one face of the disc. Likewise surrounding the rim of this face of the disc and the edge thereof is another electrical conducting band 11. With these covering plates in position, a conductor 12 which may ultimately form one terminal of a circuit, is inserted into the well formed by the registered openings in the several plates of the pile. It is secured therein by solder 13 which also serves to unite the several units of the pile by uniting all of those conducting elements which extend into the disc openings.

The several parts having been thus assembled are nested into a metallic cup shaped member having an annular side wall 14 at the bottom of which is a rim 15 against which the bottom or inner covering unit 1a rests with its rim 11 in electrical engagement therewith. At the opposite end of the pile the outer covering unit is arranged with its metallic margin against the rim 14 and in position to permit the whole pile to be sealed by the application of solder, as indicated at 16.

I provide a convenient arrangement for the second terminal of the unit by forcing on the cup 14, within the rim 15, a crown 17 which may have a central perforation through which a headed and screw threaded stud 18 extends to form a means of attachment for a circuit connection 19.

What I claim as new is:

1. In an electric capacitor, a pile of ceramic plates having central openings and metallized to provide separate conductors on the opposite faces of the plates, the conductors on one of the opposite faces of the plates extending short of the central openings and over the rims of the plates, the conductors on the other of the opposite faces of the plates extending into the central openings and outwardly therefrom for a distance less than the diameter of the plates, a circuit terminal formed by uniting the conductors on said other faces by solder in the well formed by the superimposed plates, and a second terminal electrically connected to the metallized rims of the plates comprising a cup surrounding the rims of the plates and an end plate having

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an annular conductor adjacent the cup and sealed thereto by a bead of solder.

2. In an electric capacitor, a pile of ceramic plates having central openings and metallized to provide separate conductors on the opposite faces of the plates, the conductors on one of the opposite faces of the plates extending short of the central openings and over the rims of the plates, the conductors on the other of the opposite faces of the plates extending into the central openings and outwardly therefrom for a distance less than the diameter of the plates, a circuit terminal formed by uniting the conductors on said other faces by solder in the well formed by the superimposed plates, a second terminal electrically connected to the metallized rims of the plates comprising a cup surrounding the rims of the plates and an end plate having an annular conductor adjacent the cup and sealed thereto by a bead of solder, a central opening in the end plate registering with the

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openings in the other plates, and another annular conductor around the central opening in the end plate united to the solder in the well.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,754,268	Dubiller	Apr. 15, 1930
2,157,715	Meggenhoffen	May 9, 1939
1,982,411	Bailey	Nov. 27, 1934

FOREIGN PATENTS

Number	Country	Date
216,901	Great Britain	July 2, 1925
440,948	Great Britain	Jan. 6, 1936
500,167	Great Britain	Feb. 3, 1939
463,679	Great Britain	Apr. 5, 1937