DUBILIER MICA CONDENSERS

PATENT APPLIED FOR

Fig. 1. STANDARD HIGH TENSION UNIT FOR WIRELESS EQUIPMENTS

In spite of the urgent want for Condensers, which has been experienced by the industry, up to the present time, electrical capacity, especially for high potentials, has been maintained in two original types, the cylinder or Leyden jar, and the plane plate type.

Many serious difficulties have been experienced in the design of this apparatus, which consists of metal surfaces separated by insulated layers. The capacity of a condenser is known to be proportional to the dielectric constant, therefore to reduce the dimensions as much as possible, for a given distance, the dielectric constant should be as high as practical. It should also have a very high specific resistance, low dielectric loss and a high dielectric strength.

The loss in a condenser increases as the square of the voltage. It therefore becomes a serious problem when capacities for high pressures and high frequencies are desired. The losses must be kept within a certain limit to prevent serious heating. As a certain amount of heat is unavoidable, it is necessary that the dielectric should be able to stand a certain rise of temperature without any harmful results, and as a high dielectric strength is necessary, only those dielectrics can be used which are very homogeneous in character.

There are other requirements to be complied with in the manufacture of industrial condensers. No water or air must be allowed to find its way near the dielectric substance, since even small traces thereof are liable

greatly to reduce the strength and efficiency, in fact even the contact of perspiring hands with the dielectric may expose the condenser to breakdown.

Special care must also be taken to avoid any discharge at the edges, particularly in the case of the plate shaped condenser, from one metal surface armature to the other. Though many partial solutions of the problem have been suggested, it was only after long, continual experiments and experience extending through several years, that a satisfactory method of manufacture has been worked out, and employed in the Dubilier Condenser.

Glass, ebonite, paper, mica and other compounds are the materials most commonly used at present.

While being unexcelled, especially on account of its high dielectric strength, mica is an expensive material to use in large units when making up condensers in the ordinary way.

Ebonite has a comparatively small dielectric constant and cannot withstand any high temperatures, moreover, it is difficult to obtain thin layers that are suitable for construction. While glass has been greatly used for high tension condensers, it is not practical where large capacities are desired. It has an excellent dielectric strength, but the constant varies for different frequencies.

Fig. 2. SPECIAL HIGH TENSION UNIT

We have devised a process, which allows condensers for even the highest voltage to be produced, having the desirable characteristics of small volume, light weight, high efficiency and very strong mechanically. They offer much greater resistance against shock, and by reason of their particular construction, excel Leyden Jars and other condensers in regard to their electrical characteristics and efficiency.

The insulation resistance is extremely high, and consequently these condensers lose their charge very slowly, even on standing in the open air. It can be raised to a temperature of over 100 degrees centigrade, without producing any appreciable mechanical or electrical alteration. This feature is particularly desirable in case of alternating current operation. The losses due to brush discharge and leakage, especially common in high tension condensers, are greatly eliminated by our process. These condensers are made with a large safety factor.

Standard units for wireless service are designed to operate at potentials up to 20,000 but special units can be supplied for higher voltages.

These condensers are especially adaptable where space and weight are important, such as portable wireless stations, aeroplane and ship installations, and laboratories. They are suitable for protective devices on high tension transmission lines, across the alternators of wireless installations, for phase shifting and resonance circuits.

For five years many thousands of Dubilier Condensers have been supplied to almost every government in the world, and are now successfully being used in their radio installations.

A standard Dubilier Condenser of .002 MFD. when compared with a copper plated Leyden jar of the same capacity and under the same conditions, showed about 1/5 the losses.

After being subjected to very severe tests, the British, French, Colonial and other foreign governments have repeatedly ordered large quantities for their wireless equipment.

Mica Condensers are the most reliable standard capacities, and the Bureau of Standards, in their Bulletin No. 4, Volume 6, state, "One may be reasonably sure that with good Mica Condensers the difference of the A. C. and D. C. values of the capacity at any one frequency will be less than 1/10 of 1%, and that the capacity of a Mica Condenser with A. C. of infinite frequency is the same as the capacity with D. C., when the time of discharge is infinitely short." The dielectric constant is practicalty the same for all frequencies, a very desirable feature for condensers used with High Frequency Apparatus "

They are made in standard units of .002 MFD. capacity for high potentials, and .25 MFD. capacity for low potentials, but we are fully equipped to build any special condenser for any desired capacity, size or shape and for any potential up to 1,000,000 volts.

We will gladly submit samples and prices upon receipt of specifications.

It is interesting to note that by our method of constructien, the prices do not increase for special capacity, size or shape.

STANDARD UNITS IN METAL CONTAINERS

Capacity M. F....	002	004	008	.1	1.
Voltage.....	20,000	20.000	20.000	1000	1000
Dimensions	4"x5¾"x1¾"	4"x5¾"x2¼"	4"x5¾"x4¼"	3"x3"x1"	3"x3"x1¼"
Price. Type A.....	$5.00	$9.00	$15.00	$6.00	$20.00
Price, Type P.....	ON APPLICATION				

Type P is a more expensive type used for scientific and commercial service.

SPECIAL CONDENSERS

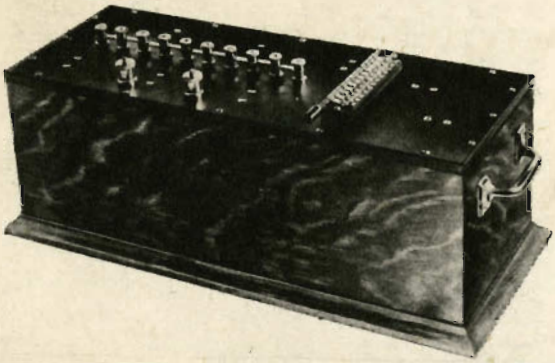

Fig 3. SPECIAL ADJUSTABLE CONDENSER 10 MFD. FOR LABORATORY SERVICE

The condenser shown on this page is especially suitable for laboratory use. where any capacity can be obtained from 1 10 MFD. up to 10 MFD., making a total range of 100 different divisions. in steps of 1 10 MFD. each. It is mounted in an oak box. outside dimensions 20"x7½"x8" high overall. complete with the posts and and switches on a bakelite top. so that the complete condenser and switch can be removed as one unit. without any loose connections. It is especially suitable for tuning circuits of audible frequencies.

PRICE ON APPLICATION