May 31, 1927. 1,630,885

J. R. BARNHART

VARIABLE CONDENSER

Filed April 9, 1924

Fig. 1

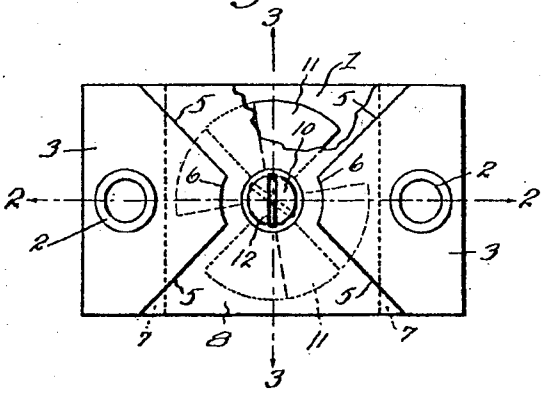


Fig. 2

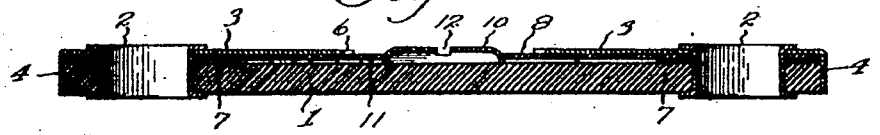
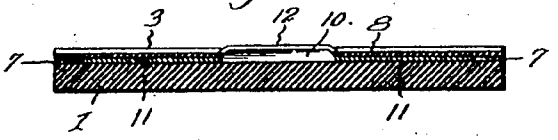


Fig. 3



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VARIABLE CONDENSER.

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This invention relates to variable condensers for use in radio circuits and has for its primary object to provide a particularly efficient form of variable condenser which shall be simple in construction and inexpensive to manufacture.

Another object is to provide a condenser of the aforesaid character which may be made in small sizes and relatively small capacity values so that they may be used for various purposes in radio circuits, as for example grid condensers or neutralizing condensers.

A still further object is to provide a condenser which shall be light in weight so as to be readily supported by the connecting wires and which may be easily adjusted for the desired capacity value, the elements constituting the condenser being so arranged that the desired adjustment is maintained even when the device is subjected to severe shocks.

With these and other objects in view, the invention consists in the various novel features of construction and arrangement or combination, all of which will be fully described hereinafter and pointed out in the appended claims.

In the accompanying drawing forming part of this application, Fig. 1 is a top plan view, with parts broken away, of a condenser constructed in accordance with my invention; and Figs. 2 and 3 are respectively enlarged longitudinal and transverse sectional views taken on the lines 2—2 and 3—3 of Fig. 1.

Describing the various parts by reference characters, 1 denotes the base which is shown as rectangular in shape and which is made from bakelite, hard rubber, or other suitable insulating material. Secured adjacent each end of the base by means of an eyelet 2 is a metal conductor plate 3 having a downturned portion 4 which is adapted to engage the end of the base to prevent rotation of said plates about their respective eyelets. These conductor plates project toward, but are separated from, each other, as shown in Fig. 1, and each plate is formed with converging sides 5 which terminate in an arcuate shaped end 6.

Located between the base 1 and each metal plate is a spacing strip 7 and a sheet of dielectric material 8. The spacing strips 7 may be formed from any suitable material and serve to space the sheet of dielectric material 8 a slight distance from the base 1, as shown in Fig. 2. The sheet of dielectric material may be formed from mica or other suitable material and is preferably of the same size as the base 1 and is provided with an aperture at substantially the midpoint thereof. A rotatable conductor element is interposed between the base and the dielectric sheet 8. This element is preferably made from sheet metal and is formed with an embossed hub portion 10 and oppositely extending vanes 11. The hub 10 is adapted to project up through the aperture in the dielectric 8, as shown in Fig. 2, and a slot 12 is formed therein to facilitate the adjustment of the device.

In use, the condenser may be connected in the circuit by soldering the connecting wires directly to the metal plates 3, or by establishing a connection with screws or bolts (not shown) inserted through eyelets 2, or in any other suitable manner. The capacity of the condenser may be varied by rotating the hub 10 of the movable conductor element, it being understood that maximum capacity is obtained when the vanes 11 are directly beneath the plates 3 and that minimum capacity is obtained when the vanes are midway between the end plates, as shown in Fig. 1 in dotted and full lines. The position of the rotatable element indicated in dash lines in this figure indicates an adjustment substantially midway between minimum and maximum capacity.

The device is relatively small and compact and is readily connected in the circuit and is light enough to be supported by the connecting wires. The capacity may be easily varied by inserting the blade of a screw driver in the slotted hub 12 and the light tension in the dielectric sheet 8 on the movable element is sufficient to retain the desired adjustment even against severe shocks.

Having thus described my invention, what I claim is:—

1. A variable condenser of the character set forth comprising a base of insulating material, a spacing element located adjacent each end of said base, a sheet of dielectric material positioned on said elements, a conductor plate located adjacent each end of said base, an eyelet securing each conductor plate and spacing element and di-

electric sheet to said base, said dielectric sheet being provided with an aperture intermediate said conductor plates, and a conductor element interposed between said base and dielectric sheet and having a portion projecting through the aperture in said dielectric, said conductor element being rotatable about the axis of such projecting portion to vary the position of said element with respect to said conductor plates.

2. A variable condenser of the character set forth comprising a base of insulating material, a sheet of dielectric material mounted on said base, spaced conductor plates on said base and overlapping said dielectric material, said dielectric material being provided with an aperture intermediate said plates, and a conductor element interposed between said dielectric sheet and base and having an embossed portion projecting through said aperture, said conductor element being rotatable about the axis of said embossed portion to vary the position thereof with respect to said conductor plates.

3. A variable condenser of the character set forth comprising a base of insulating material, a sheet of dielectric material secured to and spaced from said base and having an aperture in the central portion thereof, a pair of spaced conductor plates secured to said base and overlapping said dielectric sheet, a conductor element journaled intermediate said plates and having oppositely disposed vanes projecting between said base and dielectric sheet and having an embossed portion projecting through said aperture in said dielectric sheet, said conductor element being rotatable about the axis of said embossed portion to vary the position of said vanes with respect to said plates.

4. A variable condenser of the character set forth comprising a base of insulating material, a sheet of dielectric material mounted on said base, spaced conductor plates secured to said base and overlying said dielectric sheet, means for fastening said plates and dielectric sheet to said base, said sheet of dielectric material having an aperture therein, a conductor element rotatably mounted on said base and having a portion thereof projecting through said aperture whereby said conductor element may be rotated to vary the capacity of said condenser.

5. A variable condenser of the character set forth comprising a base of insulating material, spacing strips on said base and a sheet of dielectric material mounted on said spacing strips, spaced conductor plates secured to said base and overlapping said dielectric sheet, said dielectric sheet having an aperture therein intermediate said conductor plates, a conductor element interposed between said dielectric sheet and base, said conductor element having a part projecting through said aperture and adapted to be rotated to vary the position thereof with respect to said conductor plates.

6. A variable condenser of the character set forth comprising a base of insulating material, a sheet of dielectric material secured to said base, a pair of spaced conductor plates secured to said base and overlapping said dielectric sheet, said dielectric sheet having an opening therein intermediate said conductor plates, a rotatable conductor element journaled in said opening and having oppositely disposed vanes thereon projecting between said dielectric sheet and base, said vanes adapted to be frictionally held between said dielectric sheet and base when set in a predetermined position.

In testimony whereof, I hereunto affix my signature.

JOB R. BARNHART.