Feb. 1, 1927. 1,616,093

F. W. STEIN

VARIABLE CONDENSER FOR RADIOCIRCUITS

Filed May 2, 1924

Fig. 1.

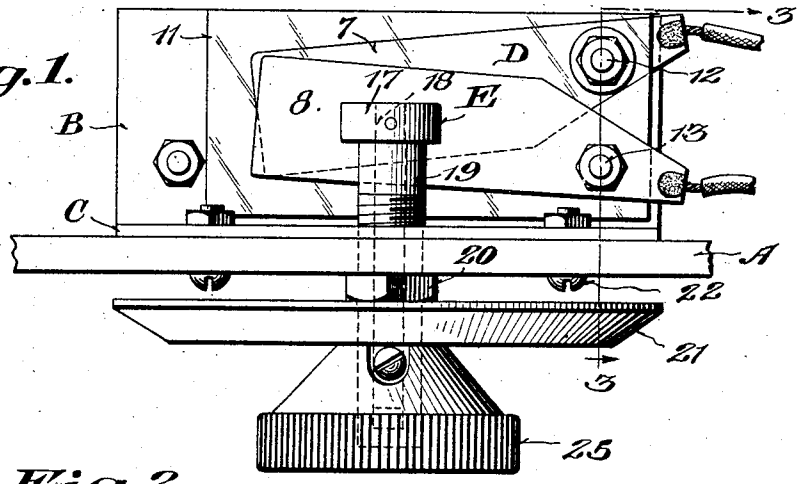


Fig. 2.

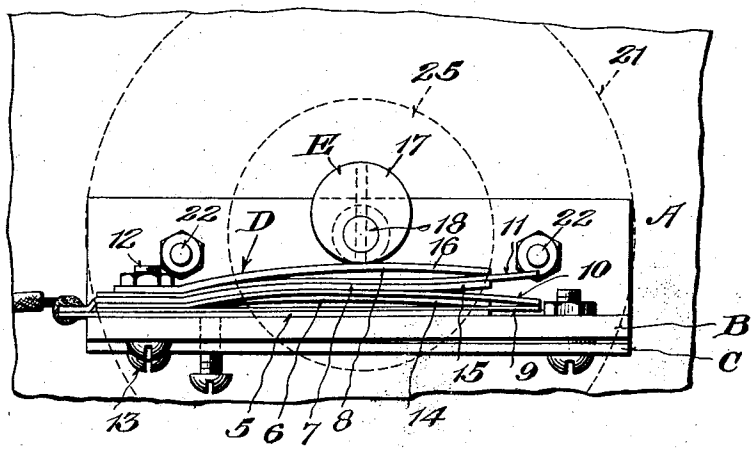
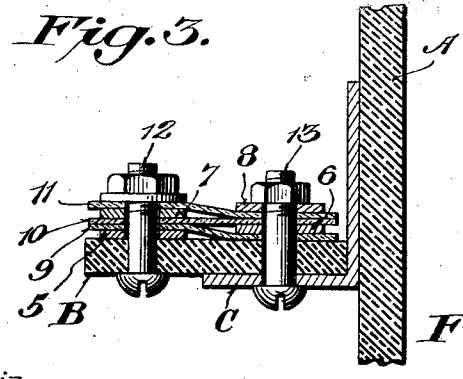


Fig. 3.



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Patented Feb. 1, 1927. 1,616,093

UNITED STATES PATENT OFFICE.

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VARIABLE CONDENSER FOR RADIOCIRCUITS.

Application filed May 2, 1924. Serial No. 710,603.

This invention relates to electrical condensers and more particularly to the type adapted for use in connection with radio apparatus.

As a general object the present invention has in view the provision of a condenser that is thoroughly practical and efficient in operation and which can be economically manufactured in various sizes and in various capacities. In that connection it is proposed to provide a construction that gives ideal results with oscillating electrical circuits, and which because of the relatively small plates and parts, reduces loss to a minimum.

As a more specific object the invention contemplates a condenser in which a plurality of superimposed plates are employed whereby a maximum capacity may be obtained through the medium of contact plates having relatively small surface areas, thus creating a condenser which will have maximum capacity but which will occupy very little space.

Another object of the invention is to provide a condenser with a plurality of spring metal plates and securing the latter at one end to respective terminals and to provide a hand controlled means for minutely and positively varying the space between said conductor plates in order to variably control the capacity of the condenser.

A still further object of the invention is to provide a condenser of the character described in which the hand controlled means includes a cam which cooperates with the upper-most conductor plate whereby upon movement of the cam about an arc of 180° the capacity of the condenser will be varied from minimum to maximum or vice versa.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

Figure 1 is a top plan view of the invention.

Fig. 2 is a side elevation.

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 1.

Like reference characters designate corresponding parts throughout the several figures of the drawings.

In carrying out the objects of my invention I provide a main panel A which is normally vertically disposed and a supporting base B which is horizontally disposed, the latter being supported on the former by means of a bracket C. The panels A and B are made of any suitable insulating material such as bakelite for instance. Mounted on the supporting bracket B is a condenser designated generally at D, the capacity of which may be readily varied from minimum to maximum by a hand controlled means E.

The said condenser D consists of a plurality of superimposed elongated spring metal conductor plates which in this instance I have indicated as being four in number and numbered respectively 5, 6, 7 and 8. Interposed between said conductor plates are dielectric strips or members 9, 10 and 11 which may be of mica or other suitable material. These plates and dielectrics are mounted on the supporting panel B and are secured at one end thereto by terminals 12 and 13 respectively, the terminal 12 having connection with the conductor plates 5 and 7 only whereas the terminal 13 has connection with the plates 6 and 8 only. The bottom condenser plate 5 is flat throughout its length and lies against the supporting panel B. The condenser plate 6 is arched upwardly as indicated at 14. The free end portion of the conductor plate 7 is curved upwardly as indicated at 15, and the condenser plate 8 is arched upwardly as indicated at 16. Thus the condenser plates are normally spaced apart but are capable of being moved towards one another by the application of the hand controlled means E.

The hand controlled means E comprise a cam 17 which in this instance is specifically shown as an eccentric mounted on a shaft 18. The cam 17 is disposed at a point substantially midway between the ends of the condenser plates, that is, between the fixed ends and the free ends thereof. The shaft 18 is journaled in the main panel A and consequently the longitudinal axis of said shaft lies in a plane at right angles to the longitudinal axis of the condenser D. The shaft 18 is in turn journaled in a sleeve 19 which is carried by the main panel A and this sleeve has a threaded engagement with the bracket C. The outer end of the sleeve 19 is provided with a head 20 which also serves as a spacing element for a disk 21 fixed to the shaft 18 so as to space that disk a distance removed from the main panel to provide sufficient clearance for the bolts

22—22 which connect the bracket C to said main panel. The disk 21 is in effect a dial and carries a graduated scale on its periphery which is adapted to cooperate with a fixed point marked on the main panel. Inasmuch as the cam 17 is in the nature of an eccentric it will be readily apparent that to adjust the condenser D from minimum to maximum capacity or vice versa it is only necessary to oscillate the cam through an arc of 180°, and consequently the scale on the dial 21 occupies 180° and is divided into divisions numbering from zero to 100. Fixed to the outer end of the shaft 18 is a piece 25 having a knurled edge by means of which the cam 17 may be readily oscillated.

From the foregoing it will be observed that the condenser comprises three or more superimposed spring metal condenser plates which are alternately connected at one end to respective terminals and which are normally spaced apart; that dielectrics are arranged intermediate said plates; that the hand controlled means may be oscillated about an arc of 180° to positively move the plates towards one another and thereby variably increase the capacity of the condenser from minimum to maximum; and that upon reverse oscillation of the hand controlling means the inherent spring in the plates will cause the latter to automatically become separated and thereby automatically decrease the capacity of the condenser in proportion to the amount the cam 17 is oscillated.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:—

1. A variable condenser for radio apparatus, a plurality of superposed metallic condenser plates having dielectric members therebetween and secured at one end to an insulating base, and a cam having its axis arranged parallel to the insulating base and adapted to move said condenser plates together.

2. A variable condenser for radio apparatus, a plurality of curved spring metal plates arranged in superposed relation and having dielectric members therebetween, fastenings for connecting corresponding ends of alternate plates to an insulated base leaving the opposite ends of the spring plates free, and a cam having its axis arranged parallel to the axis of the insulating base and adapted to compress said plates.

In testimony whereof I hereunto affix my signature.

FRED WILLIAM STEIN.