July 28, 1925. 1,547,412

R. CROCKER

VARIABLE CONDENSER

Filed May 8, 1922

Fig. 1.

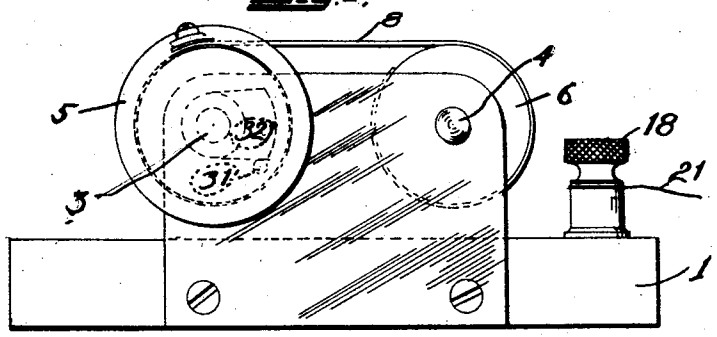


Fig. 2

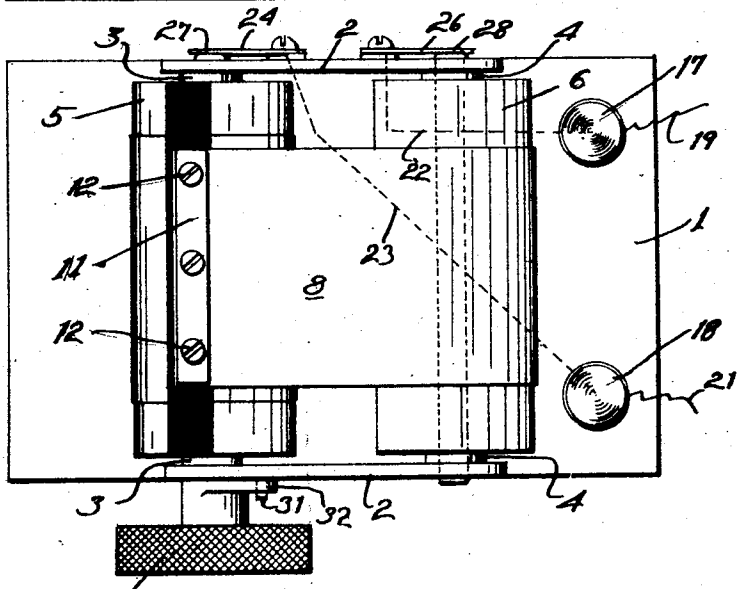


Fig. 3

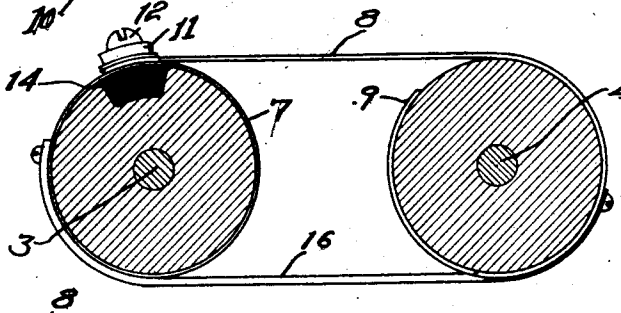
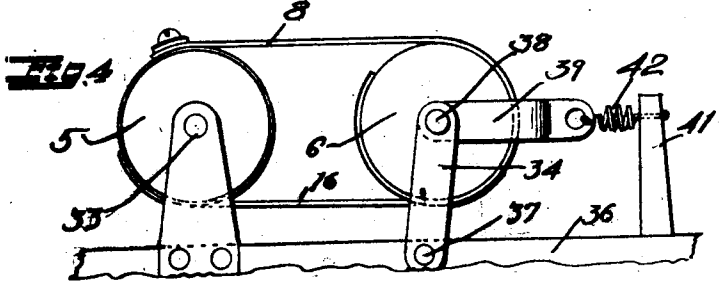


Fig. 4



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UNITED STATES PATENT OFFICE.

ROY CROCKER, OF WINLOCK, WASHINGTON.

VARIABLE CONDENSER.

Application filed May 8, 1922. Serial No. 559,276.

To all whom it may concern:

Be it known that I, ROY CROCKER, a citizen of the United States, and a resident of Winlock, county of Lewis, and State of Washington, have invented a new and useful Variable Condenser, of which the following is a specification.

The present invention relates to improvements in variable condensers and while adapted to be used for general purposes is designed particularly for use in connection with radio receiving sets. The principal object of the present invention is to provide a variable condenser of simple design, practically indestructible, with a fixed dielectric and with means associated therewith which hold a sheet of conductive material forming one of the plates of the condenser under continuous tension.

With these objects in view I have illustrated the preferred form of my invention in the accompanying drawing, in which Figure 1 shows a side elevation of my condenser; Figure 2 a top plan view of the same; Figure 3 a vertical cross section through the principal working part of the same, and Figure 4 a side elevation of a modified form. While I have shown only the preferred form of the invention, it should be understood that various changes or modifications may be made within the scope of the claim hereto attached without departing from the spirit of the invention.

The base (1), which may be made of wood or any other suitable material, is provided with two standards (2) of insulating material disposed in spaced relation to each other and furnishing bearings for the shafts (3) and (4) of two rolls (5) and (6) disposed in parallel relation to each other. Both rolls and their shafts are made of conducting material and the roll (5) is covered peripherally with a sheet (7) of mica or any other suitable dielectric material.

A wide flexible sheet (8) of conducting material is secured to both rolls so that it may be wound from one roll on the other or vice versa by turning one of the rolls by means of the knob (10). The latter sheet is preferably soldered to the metallic roll (6), as shown at (9) so as to make a good metallic connection with the same and is secured to the roll (5) by means of a plate (11) placed on the sheet, and screws (12) penetrating the plate and the sheet and extending into a strip (14) of insulating material embedded in the roll so that the sheet is insulated from the latter roll.

To prevent buckling of the sheet (8) and to maintain the same under tension, I provide a second elastic band (16) between the two rolls, the tension of the elastic sheet opposing any tendency of the metallic sheet to buckle.

The condenser is connected into a circuit by means of the two binding posts (17) and (18) to which the lead wires (19) and (21) may be secured and from which the wires (22) and (23) lead to the plates (24) and (26) making metallic connection with the two shafts (3) and (4) respectively, as shown at (27) and (28).

Since only one fixed sheet of dielectric is provided around the roll (5) it is not desired that the latter roll be free to make more than one revolution, and means for limiting the rotary motion of this roll are therefore provided in the stop (31) secured to one of the standards (2) and a radial projection (32) extending from the shaft (3) and striking the stop on a left hand as well as on a right hand turn.

The operation of the device thus far described will be readily understood. The conducting roll (5) furnishes one plate of the condenser and the flexible sheet (8) furnishes the other plate, with the mica acting as a dielectric. Since the capacity of a condenser is proportional to the area of the dielectric interposed between two plates, the capacity of this condenser will vary according to the length of the flexible sheet (8) wound on the dielectric or on the roll (5). The elastic band (16) serves to maintain the flexible sheet (8) under constant tension and the stop (31) prevents the roll (5) from being turned too far which might cause the over-stretching of the same.

Any suitable material such as glass, sulphur, or enamel, may be used for a dielectric and the fact that the dielectric is permanently and fixedly secured to the roll (5) will prevent creepage or slipping between the same and the plates. The device may be adapted to be used with high or low voltage by changing the thickness of the dielectric.

In Figure 4 is shown a slightly modified form in which the roll (5) is mounted in

stationary bearings (33) while the roll (6) is journaled in upright members (34) pivotally secured to the base (36), as shown at (37). The shaft (38) of the latter roll is engaged by a forked member (39), the free end of which is connected to a stationary standard (41) by means of a spring (42), which latter tends to pull the shaft (38) away from the roll (5) and to thus co-operate with the band (16), which in this case need not be made of elastic material in securing proper tension for the conducting sheet (8).

I claim:

A variable condenser comprising two conducting rolls of substantially equal diameter mounted in spaced and parallel relation, a dielectric peripheral cover for one of the rolls, a flexible conducting sheet secured to both rolls to bridge corresponding points thereof and adapted to be wound and unwound from the roll covered by the dielectric and an elastic band bridging the rolls in opposing relation to the sheet for maintaining the latter under tension.

ROY CROCKER.