May 8, 1928.

1,668,617

C. O. VERMILLION

ELECTRICAL CONDENSER

Filed Oct. 24, 1925

2 Sheets-Sheet 1

Fig. 1

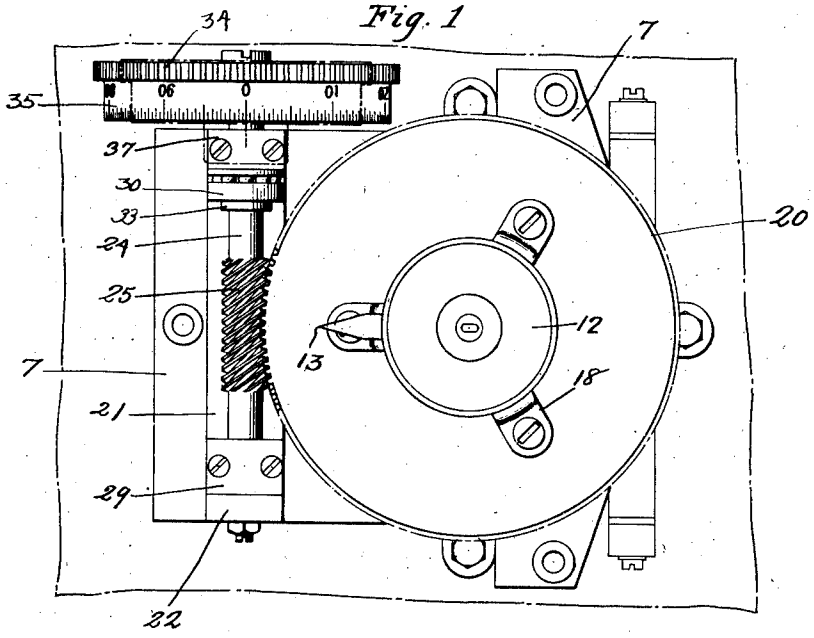


Fig. 2

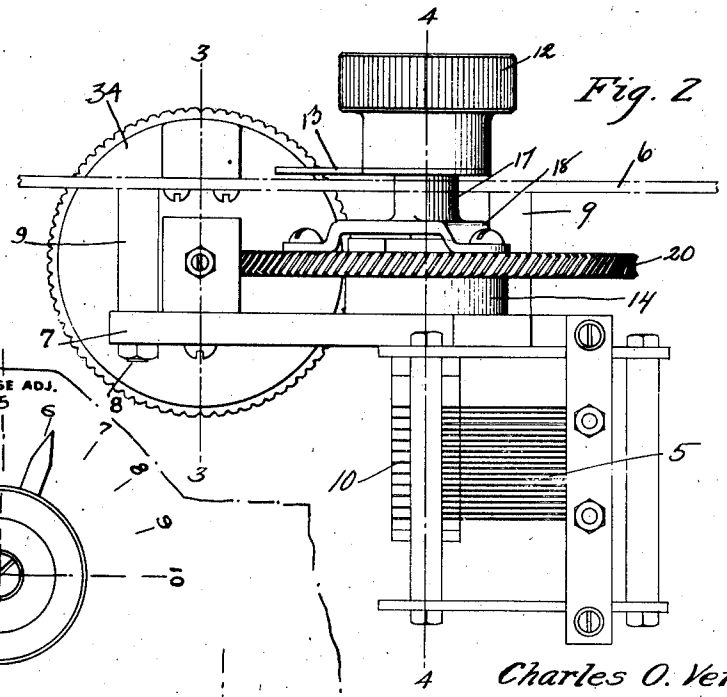
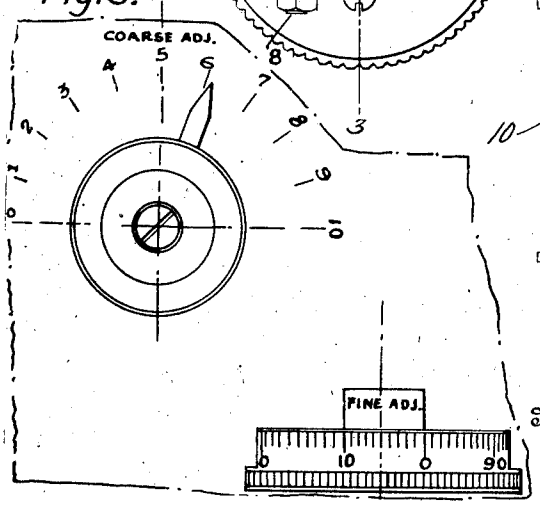


Fig. 5.



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Fig. 3

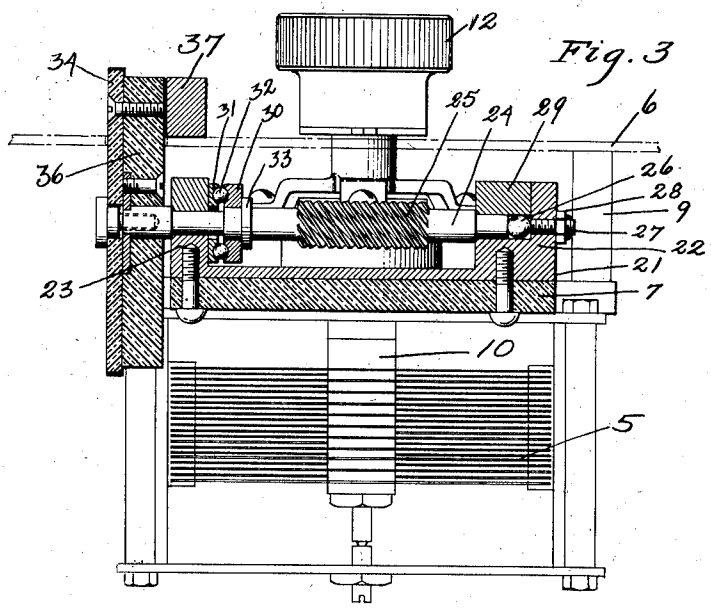
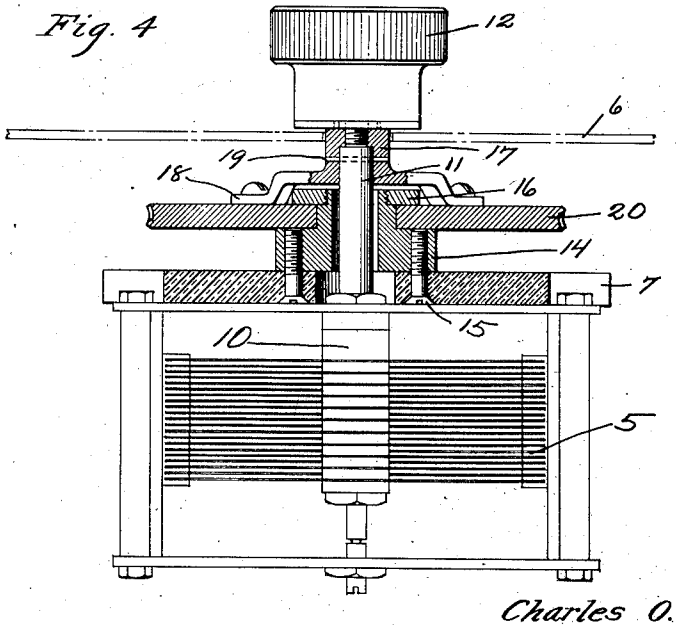


Fig. 4



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UNITED STATES PATENT OFFICE.

CHARLES O. VERMILLION, OF WASHINGTON, DISTRICT OF COLUMBIA.

ELECTRICAL CONDENSER.

Application filed October 24, 1925. Serial No. 64,679.

My invention relates broadly to electrical condensers and more particularly to condensers of the variable type.

An object of my invention is to provide a variable condenser having both main and fine adjustments.

Another object of my invention is to provide a non-self-locking mechanism through which fine adjustment of the movable plate assembly may be had.

With the above and other objects in view the invention consists of the construction, combination and arrangement of parts as will be hereinafter more fully described.

Reference is to be had to the accompanying drawings forming part of this specification, and in which like reference characters indicate corresponding parts throughout the several views, and in which

Figure 1 is a plan view of a condenser, showing the fine adjustment control mechanism,

Figure 2 is a side view showing the main adjustment control mechanism,

Figure 3 is a section on the line 3—3 of Figure 2, and

Figure 4 is a section on the line 4—4 of Figure 2.

Figure 5 is a panel view of the mounted condenser showing the calibrated scales and dials.

Referring more particularly to the drawings the plate assembly, both movable and fixed, is indicated in its entirety by 5, and as this assembly may be of any conventional construction, and as it does not form a part of my invention, a detailed description is not considered necessary. The condenser as a unit is mounted on a panel 6, and is further supported by a plate 7, of any suitable insulating material, which is itself connected to the panel 6 by bolts 8 and spacers 9. The movable plate assembly is attached to a spindle or shaft 10, a reduced portion 11 of which extends through the plate 7 and panel 6 and carries an operating knob or handle 12 and pointer 13, that cooperates with a scale (not shown) on the panel. A bearing member 14 is secured to the plate 7 by any desirable fastening elements, such as screws 15, and is provided with a plurality of reduced extensions, the smallest of which is threaded to receive a lock nut 16. A hub member 17, having a plurality of arms 18, is made fast to the shaft 10 in any desirable manner, such as a cross pin 19. The hub 17 carries a worm wheel 20 that is secured to the hub arms by suitable fastening means, and that rotates on the bearing 14.

Main adjustment of the movable plates is had through the knob 12 and shaft 10 to which those plates are attached.

Fine adjustment of the movable plates is obtained through a mechanism coacting with the worm wheel 20 that may be described as follows:

A shaft supporting member 21, having pillow blocks 22 and 23, is secured to the plate 7 at right angles to and offset from the shaft 10, and supports a shaft 24, a portion of which is provided with a worm 25 that engages with the worm wheel 20. To reduce friction I employ a ball bearing 26, that is held in proper adjusted position to take up end play of the shaft by a screw 27 and lock nut 28. A removable section 29 permits replacement of the ball bearing, if for any reason such is necessary or required. Ball races 30 and 31 and ball bearings 32 take up the end thrust of the shaft against the block 23 and a collar 33, integral with the shaft prevents separation of the ball races. The shaft extends through the block 23 and carries an operating wheel 34 to which is secured a scale 35 mounted on a suitable support 36. The desired position on the scale is indicated by a mark on a block 37, more clearly seen in Figure 1, mounted on the panel 6.

After the desired condenser setting is obtained through the main adjustment knob 12, more critical adjustment is secured by the wheel 34 that imparts movement to the shaft 24 and through the worm 25 to the worm wheel 20 which is fixedly secured to the movable plate shaft 10.

It will be understood that the above description and accompanying drawings comprehend only the general and preferred embodiment of my invention and that various minor changes in details of construction, proportion and arrangement of parts may be made within the scope of the appended claims and without sacrificing any of the advantages of my invention.

Having described my invention what I claim is:

1. In a control mechanism comprising in combination a main adjustment secured to a main spindle, indicating means for said adjustment rotatable with said spindle, a fine adjustment gearing associating said fine

and main adjustments and indicating means for said fine adjustments rotatable in a plane perpendicular to that of said first named indicating means.

2. In a control mechanism comprising a main rotating shaft, means rigidly affixed to the main shaft for imparting rotary motion thereto, and means disposed at right angles thereto, and in permanent engagement with said means for imparting a more critical movement to the shaft, each of said means being rotatable by the other means and each calibrated to permit the second means to indicate a portion of one unit of calibration of the first calibrated means.

3. In a control mechanism comprising a main rotating shaft, a worm wheel rigidly affixed to the main shaft for imparting rotary motion thereto, and means disposed at right angles thereto and in permanent engagement with said worm wheel for imparting a more critical movement to the main shaft, said means mounted in ball bearing races, the shaft and said means each rotatable by means of the other, and calibrated means upon the shaft and the said means, each calibrated means constituting a calibration of the other calibrated means.

4. In a control mechanism comprising a main rotating shaft, a worm wheel rigidly affixed to the main shaft for imparting rotary motion thereto, a second shaft mounted in ball bearing races at right angles to the main shaft, a reversible worm gear mounted upon the second shaft in permanent engagement with the worm wheel upon the main shaft, each shaft being rotatable by means of the other shaft, means for adjusting the end play in the second shaft, and calibrated means upon each shaft, each calibrated means constituting a calibration of the other calibrated means.

CHARLES O. VERMILLION.