July 15, 1924. 1,501,543

L. A. HAMMARLUND

VARIABLE CONDENSER

Filed Nov. 28, 1922 2 Sheets-Sheet 1

Fig. 1.

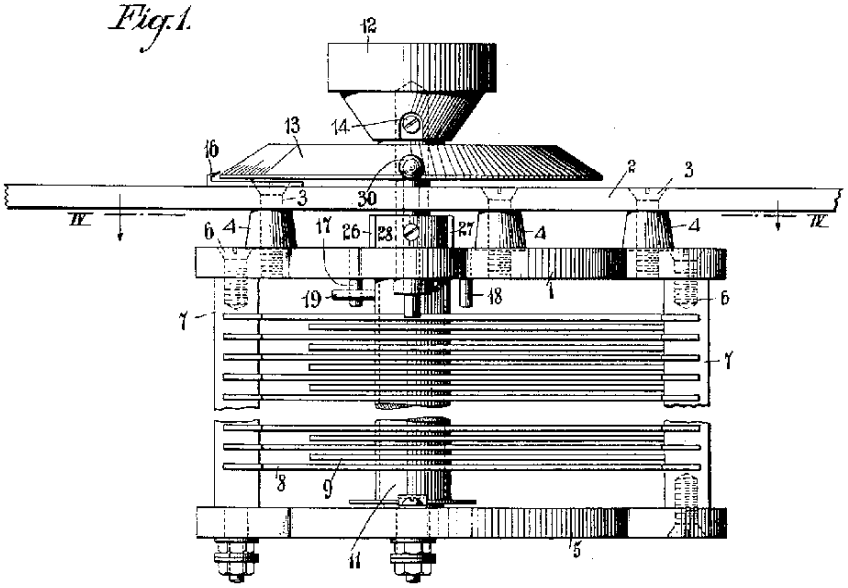

Fig. 2.

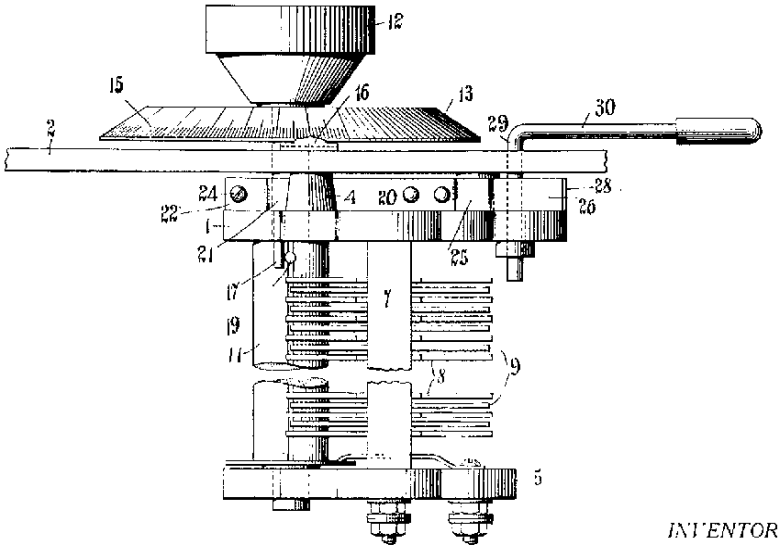

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Fig. 3.

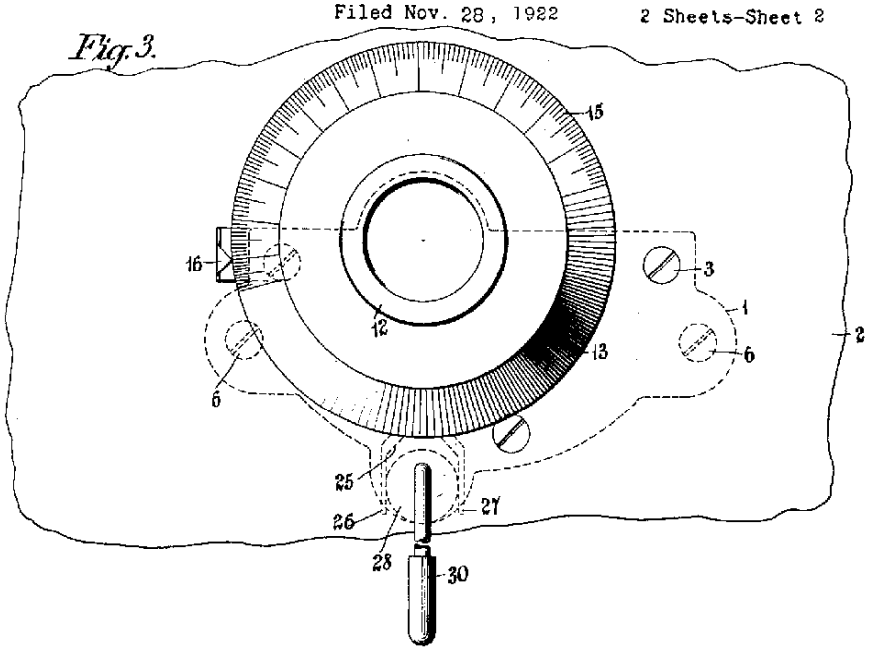
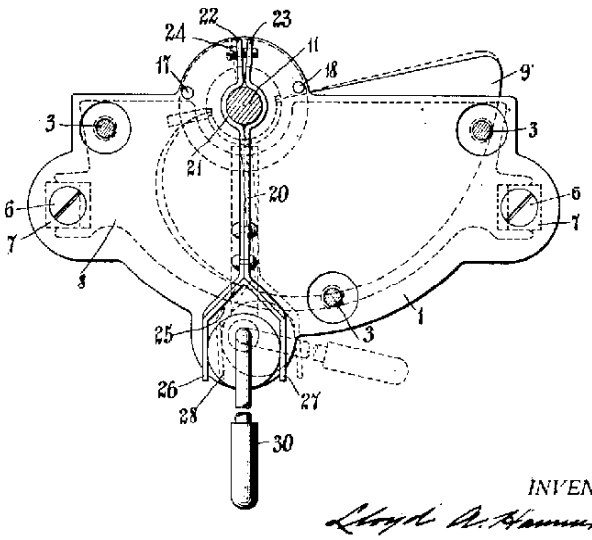


Fig. 4.



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by Bonnell & Ward

ATTORNEYS

Patented July 15, 1924. 1,501,543

UNITED STATES PATENT OFFICE.

LLOYD A. HAMMARLUND, OF NEW YORK, N. Y., ASSIGNOR TO HAMMARLUND MFG. COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

VARIABLE CONDENSER.

Application filed November 28, 1922. Serial No. 603,733.

To all whom it may concern:

Be it known that I, LLOYD A. HAMMARLUND, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Variable Condensers, of which the following is a specification.

In variable condensers for radio use, it has been practically impossible in many instances to bring the condenser into nearer than an approximate adjustment, for the result desired.

The object of my invention is to provide not only the usual primary means for bringing the condenser into approximate adjustment, but also to provide a secondary means for bringing the condenser into a more accurate adjustment to the minutest degree, which is so especially desirable in radio work.

The object of my invention is further to provide a secondary means working through the primary means for accomplishing this accurate adjustment, sufficient friction being obtained to maintain the condenser in its accurate adjustment under all ordinary conditions.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Fig. 1 represents a front view of a variable condenser of well known and approved form, with my invention applied thereto.

Fig. 2 represents a side view of the same.

Fig. 3 represents a top plan.

Fig. 4 represents a section taken in the plane of the line IV—IV of Fig. 1, looking in the direction of the arrows.

The outer member 1 of the condenser frame is shown as secured to and spaced from the panel 2 by the screws 3 and spacing blocks 4. The inner member 5 of the condenser frame is shown as secured to and spaced from the outer member 1 by the posts 6 and 7, to which posts the stationary plates 8 of the condenser are permanently secured in their spaced relationship.

The movable plates 9 of the condenser are secured to the condenser adjusting rock shaft 11, which shaft is shown as extending through the panel 2 where it is provided with the usual knob 12 and dial 13. A set screw 14 may be used for fixing the combined knob and dial on the rock shaft with the dial scale 15 in proper position with respect to the movable plates 9 of the condenser and the fixed pointer 16, which, in the present instance is shown as secured to the panel 2 by one of the screws 3.

This rock shaft 11, together with the knob, dial scale and pointer serve as the primary means for bringing the condenser into its approximate adjustment.

Suitable means are provided for limiting the turning movement of the rock shaft 11, which carries the movable plates 9 of the condenser, such means being herein shown as oppositely disposed pins 17, 18, projecting inwardly from the outer member 1, which pins are positioned to act as stops for a lateral pin 19, projecting from the rock shaft 11.

The secondary means for correcting to the minutest degree the approximate adjustment, whether above or below the accurate adjustment, is constructed and arranged as follows:

A laterally disposed arm 20 is located adjacent to the outer member 1 of the condenser frame, the inner end of which arm is provided with a clamp 21, embracing the rock shaft 11, the branches 22, 23 of which clamp are engaged by a screw 24 to draw the clamp into the required frictional engagement with the rock shaft 11. The outer end of this arm is provided with a yoke 25, the branches 26, 27 of which engage the opposite sides of an eccentric cam 28, fixed to a second rock shaft 29, mounted in the outer member 1 of the frame, which rock shaft is provided with a handle 30 by means of which the cam 28 may be moved in either direction to rock the arm 20 and thereby the rock shaft 11 because of the frictional engagement between the arm clamp 21 and said rock shaft 11. It will be understood that this frictional engagement is not sufficient to prevent the turning of the rock shaft 11 by the knob independently of the arm 20, but is sufficient to hold the rock shaft in its approximately adjusted position; it being understood that the cam 28 holds the arm 20 against movement when the rock shaft 11 is being turned by the primary means.

When it is desired to adjust the condenser, the knob is turned, as is usual, to bring the condenser into its approximate adjustment, it being remembered that the rock shaft 11

turns in the clamp 21 of the arm 20. After this approximate adjustment has been obtained, an extremely accurate adjustment of the condenser may be obtained by manipulating the cam operating handle 30 to move the cam and rock the arm, and thereby the rock shaft 11 either way, to bring the adjustment slightly up or down, as the case may require.

It will be seen that a secondary means has been provided for bringing a condenser of usual construction, into extremely accurate adjustment, without materially increasing the cost or complication of the same. It will also be noticed that this secondary adjustment may be manipulated from a point outside of the immediate sphere of electrical influence.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, hence I do not wish to be limited to the particular embodiment herein shown and described, but

What I claim is:—

1. In an electric current controlling instrument, primary means including a rock shaft for bringing the instrument into an approximate adjustment, and secondary means including a swinging arm pivoted on and frictionally engaging the rock shaft and a cam operable to swing said arm for turning said rock shaft, to bring the instrument into a more accurate adjustment.

2. In an electric current controlling instrument, primary means including a rock shaft for bringing the instrument into an approximate adjustment, and secondary means including a swinging arm pivoted on and frictionally engaging the rock shaft, a cam engaging said arm and a handle for moving the cam to swing the arm for turning the rock shaft, to bring the instrument into a more accurate adjustment.

3. In an electric current controlling instrument, primary means including a rock shaft for bringing the instrument into an approximate adjustment, and secondary means including a swinging arm having its inner end provided with a clamp frictionally embracing said rock shaft and its outer end provided with a yoke, a cam located in said yoke, and a handle for moving the cam to swing said arm for turning said rock shaft, to bring the instrument into a more accurate adjustment.

4. In a variable condenser, the spaced stationary and movable plates, primary means including the usual knob, dial and movable plate carrying rock shaft for bringing the condenser into an approximate adjustment, and secondary means including a swinging arm pivoted on and frictionally engaging the rock shaft, and a cam operable to swing said arm for turning said rock shaft, to bring the condenser into a more accurate adjustment.

5. In a variable condenser, the spaced stationary and movable plates, primary means including the usual knob, dial and movable plate carrying rock shaft for bringing the condenser into an approximate adjustment, and secondary means including a swinging arm pivoted on and frictionally engaging the rock shaft, a cam engaging said arm, and a handle for moving the cam to swing said arm for turning said rock shaft, to bring the condenser into a more accurate adjustment.

6. In a variable condenser, the spaced stationary and movable plates, primary means including the usual knob, dial and movable plate carrying rock shaft for bringing the condenser into an approximate adjustment, and secondary means including a swinging arm, having its inner end provided with a clamp, frictionally embracing said rock shaft and its outer end provided with a yoke, a cam located in said yoke, and a handle for moving the cam to swing said arm for turning said rock shaft, to bring the condenser into a more accurate adjustment.

In testimony that I claim the foregoing as my invention, I have signed my name this 22nd day of May, 1922.

LLOYD A. HAMMARLUND.