Dec. 1, 1925. 1,563,758

J. F. LINDBERG

CONDENSER

Filed July 5, 1922

Fig. 1.

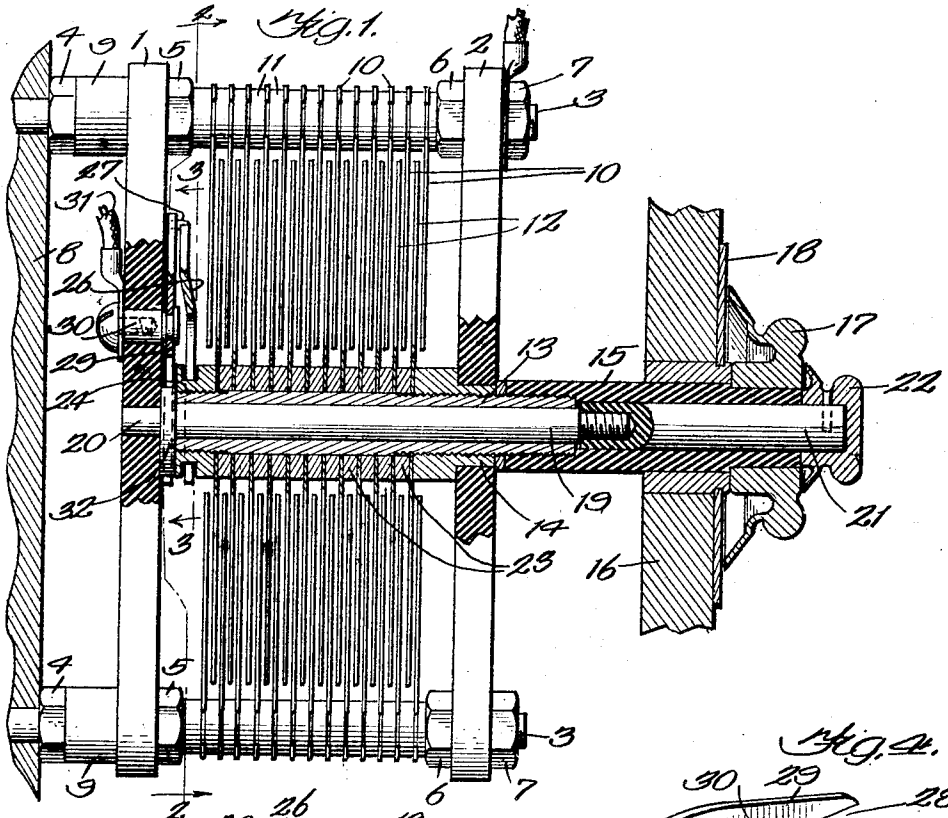


Fig. 2.

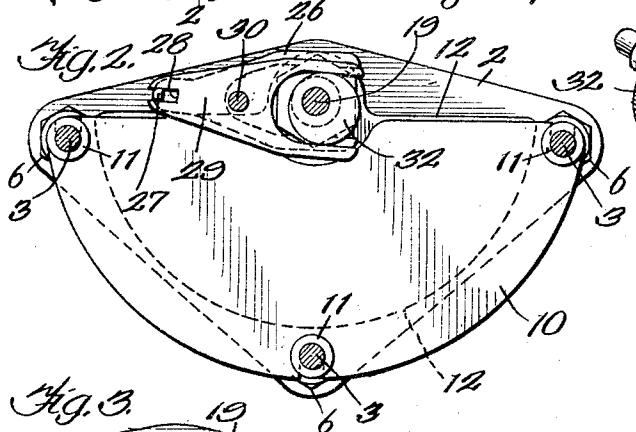


Fig. 4.

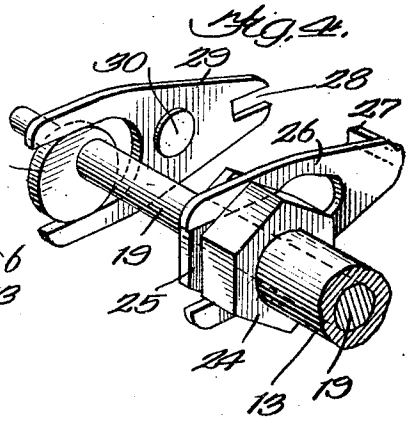
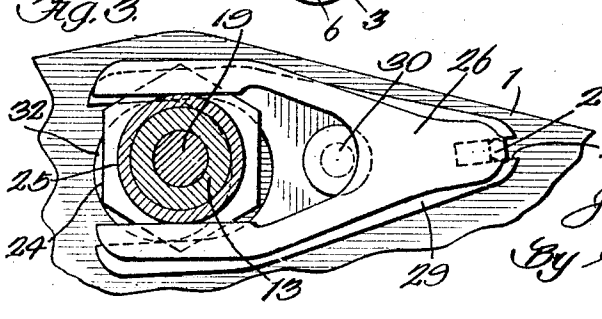


Fig. 3.



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By G. L. Gragg Atty

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UNITED STATES PATENT OFFICE.

JOHN F. LINDBERG, OF CHICAGO, ILLINOIS, ASSIGNOR TO RELIANCE DIE AND STAMPING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CONDENSER.

Application filed July 5, 1922. Serial No. 572,872.

To all whom it may concern:

Be it known that I, JOHN F. LINDBERG, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Condensers, of which the following is a full, clear, concise, and exact description.

My invention relates to those condensers which employ rotatively adjustable sides, and, in one aspect, more particularly to such a condenser in which the adjustable element thereof is provided with two adjusting mechanisms, one for procuring an approximate or coarse adjustment and the other a fine or finishing adjustment of the adjustable condenser element.

In another aspect of the invention mechanism is provided by which the adjustable condenser element may be oscillated when being actuated by a shaft turned in a uniform direction. This feature of my invention is considered novel whether or not there is another adjusting mechanism for the adjustable condenser element.

In carrying out both objects of the invention speed decreasing cam mechanism intervenes between the adjustable condenser element and an operating shaft, this mechanism serving to retard the movement of the adjustable condenser element with respect to the speed of the adjusting shaft, although the invention is not to be thus limited, particularly where the cam mechanism serves to effect the oscillation of the adjustable condenser element.

I will explain my invention more fully by reference to the accompanying drawing in which Fig. 1 is a longitudinal sectional view, partially in elevation, of the preferred embodiment of the invention; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a sectional view on line 3—3 of Fig. 1; and Fig. 4 is a perspective view, somewhat diagrammatic, of co-operating parts of the cam mechanism, some of these parts being in spaced apart relation to clarify the illustration.

Like parts are indicated by similar characters of reference throughout the different figures.

The condenser illustrated includes two mounting plates 1 and 2 of insulating material which are assembled upon threaded metallic rods 3 by means of nuts 4, 5, 6 and 7. These rods are assembled with the mounting board 8, there being distance preserving sleeves 9 that intervene between the nuts 4 and the insulating plate 1. One of the condenser elements is composed of a group of metallic leaves 10 through which the rods 3 pass and which are electrically connected by means of metallic washers 11 which are interposed between and metallically connect the contiguous plates 10. The other condenser element is composed of a group of metallic leaves 12, these leaves being alternated with the leaves of the first group, as illustrated. The condenser element 12 is mounted to be adjustable with respect to the other condenser element, the adjustable group being preferably rotatably supported upon the insulating mounting plates 1 and 2.

The support for the group of leaves 12 which is rotatively mounted in the plates 1 and 2 is inclusive of a rotatable sleeve or hollow shaft that is composed of a metallic section 13 having an enlargement 14 journaled in the plate 2 and a contiguous section 15 of non-conducting material that is rotatively supported in the plate 16 through which the shaft section 15 projects. There is a knob 17 upon the outer end of the shaft section 15, this knob being provided with scale marks upon its periphery, this knob being rotatable in front of a suitably marked plate 18, whereby the extent of rotative movement of the shaft 13, 15 and of the condenser element carried thereby may readily be determined. The metallic shaft section 13 is also journaled upon the plate 1 through the intermediation of a second shaft 19 journaled within the first shaft and having its projecting end 20 directly journaled in the plate 1. The portion of this shaft that is within the metallic section 13 is itself metallic. The inner shaft has a section 21 of insulating material that is in threaded connection with the metallic portion of this shaft and which continues through the bore of the hollow shaft or sleeve sufficiently to project beyond the front of the knob 17, this projecting end of the inner shaft being equipped with a knob 22 that bears suitable scale marks upon its periphery to cooperate with suitable marking upon the knob 17 in defining the extent of the ad-

justment of the inner shaft with respect to the hollow shaft.

The leaves 12 are spaced apart by metallic washers 23 and there is a nut 24 screwed upon the inner end of the hollow shaft 13 for clamping the leaves and washers and the shaft enlargement 14 together. The nut 24 has an annular channel 25 formed therein. This annular channel receives the ends of a forked lever 26, the base end of this lever having a lug 27 thereon which enters the slot 28 in another forked lever 29. The latter forked lever is journaled upon a stud shaft 30 which is carried upon the mounting plate 1 and which also serves as a means for connecting the circuit conductor 31 with the rotatable condenser element 12, the parts intervening between the stud 30 and the condenser element being metallic. The inner end of the shaft 19 carries an eccentric disc or cam 32 which is received between the sides of the forked lever 29 and which serves to oscillate this forked lever upon its shaft 30, the oscillating movement of the lever 29 causing a corresponding oscillating movement of the lever 26 through the intermediation of the engagement between these two levers at 27, 28.

The lever 26 is formed of spring metal, the space between its jaws being sufficiently reduced to enable the forked sides of the lever to have gripping engagement with the base of the annular channel 25. It will be apparent that the knob 22 upon the shaft 19, while being turned in a uniform direction, will cause the oscillation of the lever 26 and the shaft 13 in frictional engagement therewith at 25. This frictional engagement is such that it may be overcome when the knob 17 is turned to turn the shaft 13 to effect coarse or approximate adjustment, the finer adjustment being effected by turning the knob 22 and the shaft 19, the cam and lever mechanism 32, 29, etc., constituting speed decreasing mechanism that couples the shaft 19 with the adjustable condenser element.

While the invention is preferably embodied in a construction which possesses these two adjustments, the invention is not to be thus restricted.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A condenser including the two elements thereof; a hollow shaft upon which one of said condenser elements is mounted and itself mounted to turn whereby the condenser element carried thereby is made adjustable with respect to the other condenser element; a second shaft within the hollow shaft and adapted to turn with respect thereto; and speed reducing cam and lever mechanism establishing turning connection between the second shaft and the adjustable condenser element.

2. A condenser including the two elements thereof; a hollow shaft upon which one of said condenser elements is mounted and itself mounted to turn whereby the condenser element carried thereby is made adjustable with respect to the other condenser element; a second shaft within the hollow shaft and adapted to turn with respect thereto; and speed modifying cam and lever mechanism establishing turning connection between the second shaft and the adjustable condenser element.

3. A condenser including the two elements thereof; a hollow shaft upon which one of said condenser elements is mounted and itself mounted to turn whereby the condenser element carried thereby is made adjustable with respect to the other condenser element; a second shaft within the hollow shaft and adapted to turn with respect thereto; and speed reducing oscillating mechanism for oscillating the adjustable condenser element and establishing oscillating connection between the second shaft and the adjustable condenser element.

4. A condenser including the two elements thereof; a hollow shaft upon which one of said condenser elements is mounted and itself mounted to turn whereby the condenser element carried thereby is made adjustable with respect to the other condenser element; a second shaft within the hollow shaft and adapted to turn with respect thereto; and speed modifying oscillating mechanism for oscillating the adjustable condenser element and establishing oscillating connection between the second shaft and the adjustable condenser element.

In witness whereof, I hereunto subscribe my name this 21st day of June A. D., 1922.

JOHN F. LINDBERG.