

Jan. 1, 1929.

1,697,377

L. J. WERNER

INDUCTANCE CONTROL

Filed Sept. 8, 1923

2 Sheets-Sheet 1

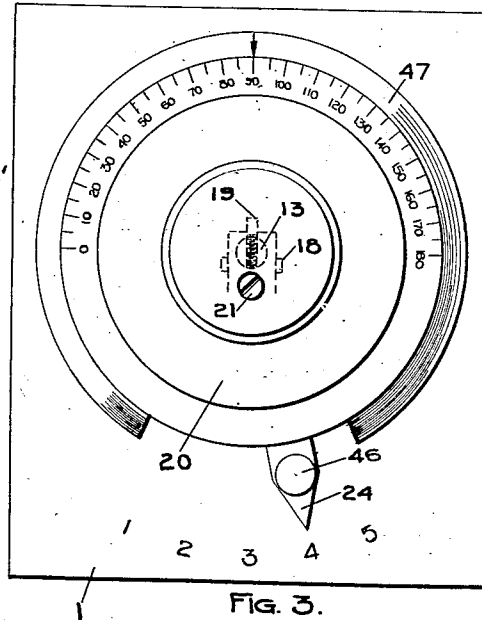
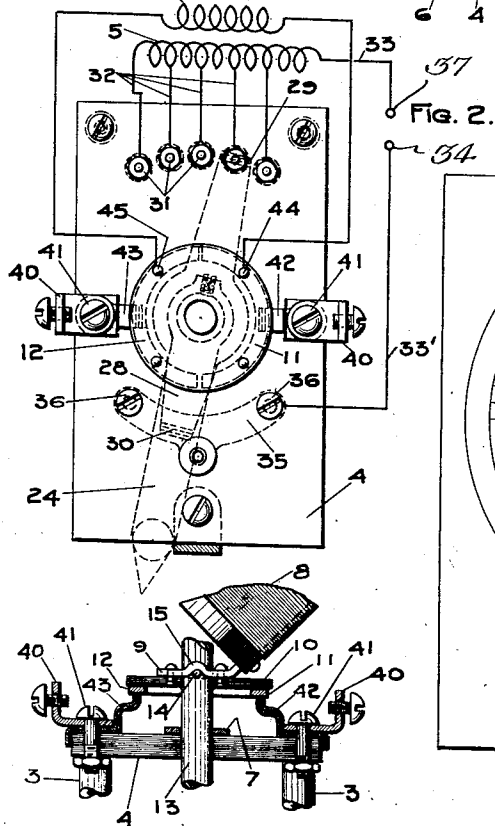
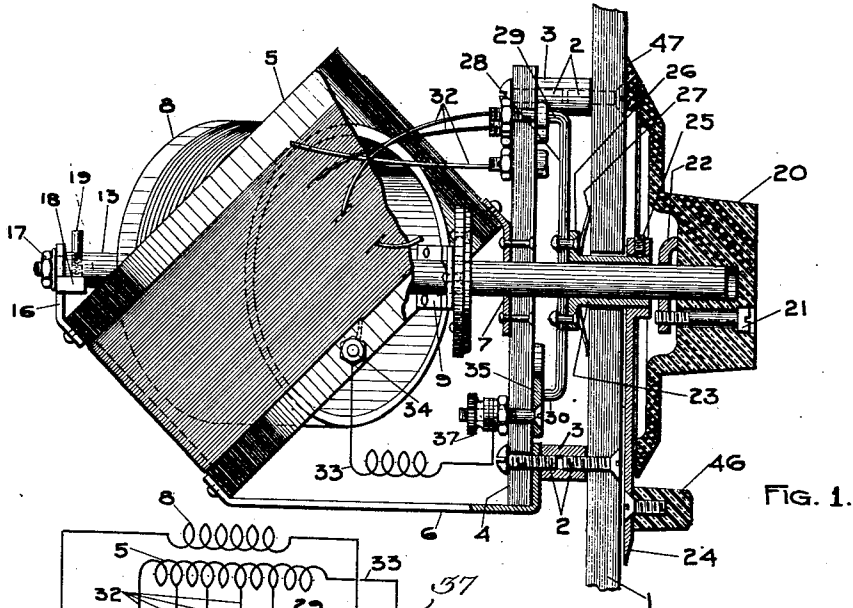
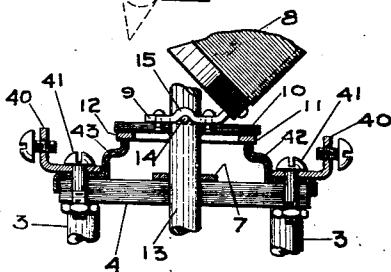


FIG. 4.



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2 Sheets-Sheet 2

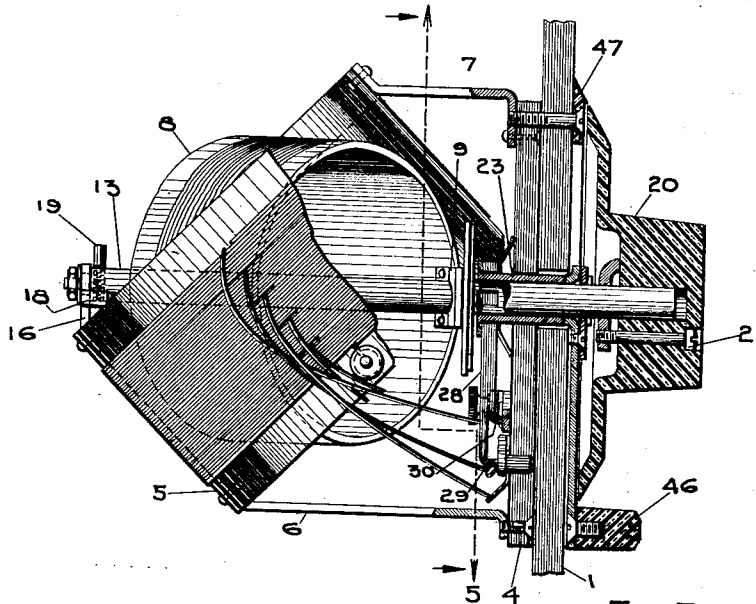


FIG. 5.

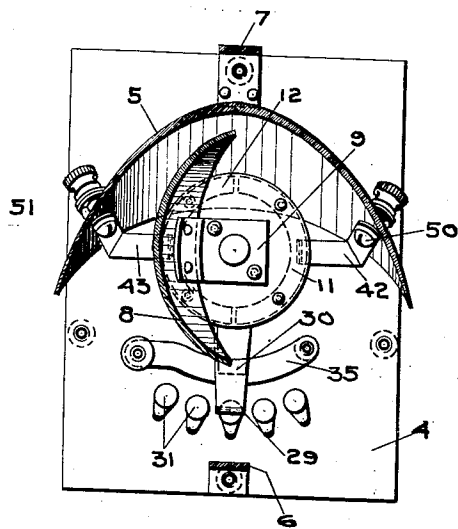


FIG. 6.

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UNITED STATES PATENT OFFICE.

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INDUCTANCE CONTROL.

Application filed September 8, 1923. Serial No. 661,706.

This invention relates to new and useful improvements in coupling coils for radiant energy receiving stations, and more particularly to mounting structures for vario couplers.

It is the object of the present invention to provide a vario-coupler of simple and efficient construction and one that may be readily mounted on a panel.

With this object in view, I mount the vario-coupler in such a manner that the number of primary turns to be connected into a circuit may be readily determined by the simple turning of a switch lever and without the necessity of the user mounting the switching contacts and soldering a large number of connections.

The invention will be more clearly understood from the following detailed description of an exemplification thereof and the appended claims.

In the drawings, Figs. 1-4 represent one, and Figs. 5 and 6 a second embodiment of the invention. Fig. 1 is a side elevation partly in section; Fig. 2 is a schematic illustration of the circuit connections together with the arrangement of the wipers; Fig. 3 a top plan view of the dial; Fig. 4 is a detail view of the rotor mounting; Fig. 5 a side elevation partly in section; and Fig. 6 is a sectional view of the device illustrated in Fig. 5 along lines 5-5 thereof.

Referring now to Figs. 1-4, 1 is a panel on which is mounted by means of screws 2 engaging bushings 3, a second panel 4. The stator coil 5 of a vario coupler is carried on the panel 4 by means of brackets 6, 7 fastened to the panel in any suitable manner. The rotor coil 8 is positioned within the stator coil 5 and is mounted by means of a bracket 9 on a disc of insulation 10 riveted thereto, said disc carrying contact segments 11 and 12. The bracket 9 is perforated to admit shaft 13. A pin 14 projecting from the shaft 13 lies in a corrugation 15 provided in the bracket 9 thus locking the rotor 8 firmly in place. The shaft 13 is supported at its end in a bearing provided by a bracket

16 carried by the stator 5, a nut 17 being provided on the screw threaded end of shaft 13 to limit its longitudinal movement. A finger 18 projects from the bracket 16 into the path of a lug 19 provided on the shaft 13 thus limiting the rotary motion of said shaft. The shaft extends through perforations provided in the panels 4 and 1 and carries at its other end a knob 20 fastened thereto by means of a screw 21 engaging a locking plate 22 which encircles the shaft 13. The shaft 13 is surrounded by a sleeve 23 one end of which projects to the right hand side of the panel 1 and carries a switching lever 24 mounted thereon by means of a set screw 25. The other end of the sleeve 23 is provided with a rim 26. The rim 26 is engaged by a flat spring 27 which lies against the panel 1. A wiper 28 composed of a plurality of flat springs is riveted to the rim 26 and is provided with a perforation through which the shaft 13 projects. The wiper has an upper and a lower bent down wiping contact arm 29 and 30, respectively. The contact arm 29 cooperates with terminals 31 in which connecting wires 32 terminate, the connecting wires 32 being connected with the primary coil 5 at different points thereof. The coil 5 is connected at one side to binding post or terminal 34 by a conductor 33, through the contact arms 29 and 30, while the opposite terminal of the coil 5 can be connected to the other side of the circuit by means of a conductor wire 33 leading to a terminal or binding post 37; the diagram of connections being indicated in Figure 2. The segment 35 is mounted on a panel 4 by screws 36. The wiping contact 30 of the wiper 28 cooperates with this segment 35.

The circuit connections with the rotary coil are established through binding posts 40 mounted on the panel 4 by means of bolts and nuts 41 and clamping into position sets of contact springs 42 and 43 cooperating as wipers with the contact segments 11 and 12 respectively. The secondary coil 8 is connected with segments 11 and 12 at terminals 44 and 45.

The operation of the device will obviously appear from the above. By means of the knob 20 and through the agency of the shaft 13 the secondary coil 8 may be rotated at 180°, lug 19 serving as a stop. During the rotation of the coil 8 the wipers 42 and 43 maintain good contact with the conducting segments 11 and 12 to which the terminals of this coil are connected. If it is desired to vary the number of turns included in the primary coil 5, a knob 46 mounted near the end of switching lever 24 is seized to move the lever to the right or to the left, the movement being limited within a cut-away portion of a disc 47 mounted on the panel 1 between said panel and the dial 20. The movement of the lever is transmitted to the wiper 28, the contact arm 29 of which will move from one terminal 31 to the other varying thus the number of turns connected into the circuit. The various positions of the wiper are determined by numerals displayed on the panel 1 in juxtaposition with the switching lever 24. While in the embodiment herein disclosed only five different positions are shown, obviously this number may be varied without departing from the present invention.

Referring now to Figs. 5 and 6 in which the same reference numerals are used as in Figs. 1-4, we have a structure in which the panel 4 is mounted flush against the panel 1. The sleeve 23 is somewhat longer and projects through both panels 1 and 4, the wiper 28 being bent double as compared with Fig. 1, both contact arms 29 and 30 extending downward but to different depths. The contact arm 30 cooperates with the segment 35 mounted on the panel and the contact arm 29 cooperates with the terminals 31 also mounted on the panel 4 just below the segment 35. Otherwise the structure is in all respects identical with the one hereinbefore described except that the wipers 42 and 43 (Fig. 6) which cooperate with segments 11 and 12 are mounted on the shell of stator coil 5 by means of screws 50 and 51.

What I claim is:

1. In a vario-coupler a rotor coil and a stator coil, one within the other and encompassed thereby, a plurality of connections with the stator coil, terminals for said connections, a shaft for operating the rotor coil, contact mechanism associated with the rotor coil and the shaft for enabling electrical connection to be made with the rotor coil in all relative positions thereof, and additional contact mechanism concentric with said shaft to enable the stator coil to be selectively connected into circuit through any one of said terminals, said additional contact mechanism comprising movable contacts for both ends of the stator coil.

2. In a vario-coupler a rotor coil and stator coil, one within the other and encom-

passed thereby, a plurality of connections with the stator coil, terminals to said connections, a shaft for operating said rotor coil, contact mechanism associated with the shaft for enabling electrical connection to be made with the rotor coil in all relative positions thereof, additional contact mechanism concentric with the shaft to enable the stator coil to be selectively connected into circuit through any one of said terminals, said additional contact mechanism comprising movable contacts for both ends of the stator coil, a lever for operating the said additional contact mechanism, and a knob on said shaft overlying the lever.

3. In a vario-coupler a rotor coil and a stator coil, one within the other and encompassed thereby, a panel supporting the stator coil, a plurality of connections with the stator coil, terminals on said panel for said connections, a shaft for operating said rotor coil, contact mechanism associated with the rotor coil and carried by said shaft and panel for enabling electrical connection to be made with the rotor coil in all relative positions thereof, and additional contact mechanism concentric with said shaft to enable the stator coil to be selectively connected into circuit through any one of said terminals, said additional contact mechanism comprising movable contacts for both ends of the stator coil.

4. In a vario-coupler a rotor coil and stator coil, one within the other and encompassed thereby, a plurality of connections with the stator coil, a panel on which the stator coil is mounted, terminals for said connections carried by the panel, a shaft for operating the rotor coil, contact mechanism associated with the rotor coil, the shaft and the panel to permit electrical connection to be made with the rotor coil in all positions thereof, additional contact mechanism concentric with said shaft to enable the stator coil to be selectively connected into circuit through any one of said terminals, said additional contact mechanism comprising movable contacts for both ends of the stator coil, a lever to operate the additional contact mechanism, and a knob on the shaft overlying said lever.

5. In a vario-coupler, a coil, connections with said coil at a plurality of points thereof, a panel, a contact segment thereon in which connection with one end of the coil terminates, terminals on said panel for the other connections, two wipers, one cooperating with said segment and the other with said terminals, a second panel on one side of which said panel is mounted, and a lever on the other side of said second panel for moving said wipers.

6. In a vario-coupler, a stator and a rotor coil, connections with said stator at a plurality of points, a first panel, a second panel

on the rear side of which said first panel is
mounted, terminals on said first panel for
said connections, a conducting segment on
said first panel in which one end of the sta-
tor coil terminates, a wiper having two con-
5 tacts, one cooperating with said terminals
and the other with said conducting seg-
ment, a knob on the other side of said sec-
ond panel for actuating said rotor, and a
lever at the other side of said second panel 10
for operating said wiper.

In testimony whereof I affix my signa-
ture.

LEO J. WERNER.