

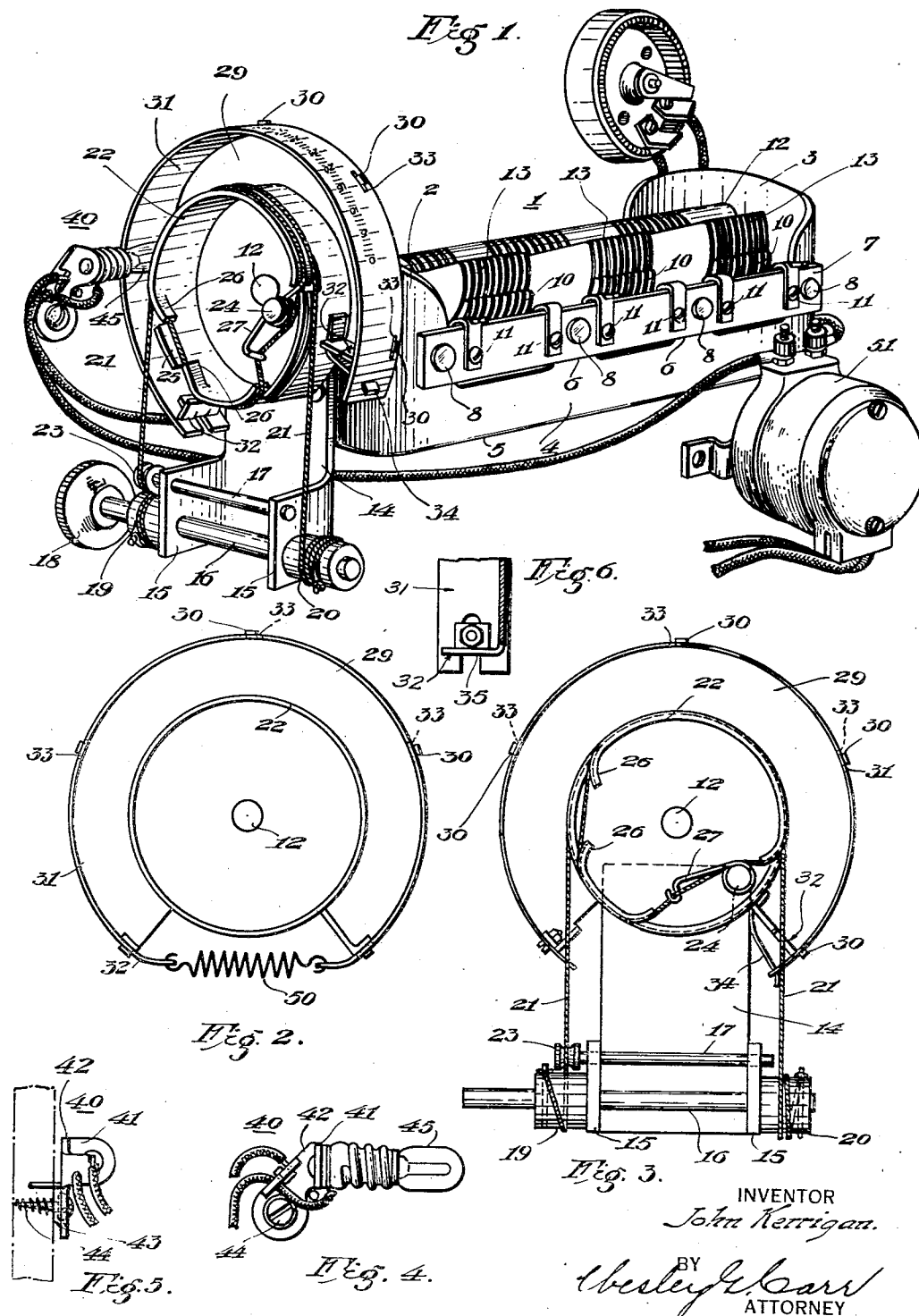
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RADIO APPARATUS

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RADIO APPARATUS

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My invention relates to radio apparatus and it has particular relation to control-devices for the tuning reactors comprised in radio receiving sets.

5 In the construction of modern radio receiving sets, it has been found expedient to abandon the former custom of mounting the indicating dials of the tuning reactors exteriorly of the cabinet containing the receiving apparatus and, instead, to so dispose
10 the dials rearwardly of the front panel of the cabinet that minor portions thereof are visible through openings in that panel. It is also now customary, as exemplified by a receiving set known as "Radiola 17", sold by
15 the Radio Corporation of America, to associate a plurality of tuning reactors with a single indicating dial of the type referred to and, in addition, to provide a single, exteriorly disposed, adjusting device that is
20 connected, by a phosphor-bronze cable or the like, to a shaft common to said reactors for adjustment thereof.

When a receiving set having a cable, or
25 cord-connected reactor-control has been in use for an extended period, however, the cable stretches to a greater or less degree, thus introducing undesirable back-lash and rendering the tuning operation increasingly
30 difficult. One object of my invention, accordingly, is to provide a cable-connected control device for a tuning reactor wherein back-lash is prevented from developing.

It has also, to a large extent, been customary to either provide the indicating dials
35 with permanent wave-length or frequency scale markings, rendering it necessary to shift the entire dial with respect to the shaft of a tuning reactor in the event that the said
40 scale markings do not properly coincide with a permanent fiduciary mark, carried by the panel, when the receiver is tuned, successively, to a plurality of frequencies. Another
45 object of my invention, therefore, is to provide a tuning dial having a movable indicating-scale associated therewith, which scale may easily be adjusted and fixed in the proper position during the manufacture of a
50 radio receiving set.

According to my invention I provide a

control device, suitable for use in connection with a variable reactor, comprising a driven element affixed to a movable portion of said reactor and a plurality of driving elements
55 carried by an actuating shaft. I interpose a flexible cable, or a cord, between the driving and driven elements and, further, provide resilient means, preferably mounted upon the driven element, for maintaining
60 the flexible connecting device under tension.

In addition, I supplement the resilient tensioning means by a frictional element which prevents sudden strains upon the cable from being transmitted to the said means, the frictional element, preferably, being in
65 the form of a "snubbing post" carried by the driven means and around which the cable is wrapped.

To permit the indicating scale to be adjusted, during the process of manufacture
70 of the device, I dispose a disc-shape element upon the shaft adjacent to the driven element and provide a spring for holding the scale around, and firmly against, the periphery
75 of the disc-shape element. The movable scale-mounting is capable of numerous modifications, several of which will, hereinafter, be described in detail.

The novel features that I consider characteristic of my invention are set forth with
80 particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from
85 the following description of a specific embodiment, when read in connection with the accompanying drawings, in which:

Figure 1 is a perspective view of a gang-condenser comprising a preferred embodiment of my invention,

Fig. 2 is a fragmentary view of a control device comprising an alternative embodiment of my invention,

Fig. 3 is an end elevational view of the device illustrated in Fig. 1, certain non-essential details being omitted,

Fig. 4 is a detail view of a swiveled lamp mounting,

Fig. 5 is an end elevational view of the device illustrated in Fig. 4, and

Fig. 6 is a fragmentary view of a portion of the device shown in Fig. 1, illustrating the manner in which one end of a scale may be adjustably anchored.

The apparatus, illustrated in Figs. 1 and 3 comprises a gang condenser of the type shown and described in the copending application of Henry C. Forbes, Serial No. 198,153, filed June 11, 1927, and assigned to the Westinghouse Electric & Manufacturing Company.

The condenser comprises a one-piece metallic structure 1 which is shaped somewhat like a bath tub, having end portions 2 and 3, side portions 4 and a bottom portion 5. The side portions 4 are each cut away intermediate the ends to below the level of the tops of the said ends, leaving a plurality of up-standing ears 6.

Insulating strips 7 are affixed, by means of rivets 8, to the up-standing ears 6 and to the end portions 2 and 3 and extend parallel to the long axis of the structure.

A plurality of groups of stator assemblies 10 are suspended between, and supported by, the insulating strips 7 by means of a plurality of small bolts 11 or analogous devices.

Each end portion of the frame is provided with an opening through which extends a shaft 12 carrying a plurality of groups 13 of rotor plates.

Additional details of the condenser structure are well known to those skilled in the art, the device being essentially that which was embodied in the hereinbefore referred to radio receiving set, "Radiola 17", and, since they form no part of my invention, the said details need not be more specifically enumerated at this point.

A depending plate 14 is affixed to one end of the metallic structure 1. The plate is provided with a plurality of outstanding ears 15 having bearing openings through which extends an operating shaft 16 and an idler-shaft 17. An actuating knob 18 is affixed to one end of the operating shaft and, normally, is disposed exteriorly of the front panel of a cabinet housing the condenser.

The shaft carries a plurality of small pulleys 19 and 20, to which the ends of a cable 21, or a similar flexible connecting device, are attached. The cable is wrapped a plurality of times around each of the small pulleys, in opposite directions, and the intermediate portion thereof is also wrapped a plurality of times around the periphery of a grooved cup-shape element 22 that is affixed to the end of the rotor-shaft 12 immediately above, and adjacent to, the depending plate 14.

An idler pulley 23 is rotatably carried by the idler-shaft 17 and is so disposed with respect to the driving pulley 19 that the cable is

guided into proper position on the periphery of the cup-shape element.

In order to prevent the cable from slipping on the surface of the cup-shape element, it passes around a snubbing post 24, affixed to the interior of the said element, and beneath a portion 25 of the rim of the element defined by bending minor peripheral portions 26 thereof inwardly.

A resilient tensioning device 27 is mounted interiorly of the cup-shape element, one end of the tension device being so disposed as to contact the cable after it leaves the snubbing post, and thereby, to exert a constant tension upon it.

The specific form of the resilient tension device is not an essential element of my invention, it being obviously replaceable by a helical spring or the like.

By reason of the fact that the snubbing-post 24 is interposed between the tension device 27 and the end of the cable which is affixed to the pulley 18, forces originating in the said pulley are prevented from directly reaching the said tension device. The effect, therefore, of the tension device, upon the cable, is very gradual. Should the cable elongate, somewhat, during the operation of the control device, the elongation will be slowly taken up by the tension spring, but no substantial additional force will be placed upon the said spring by reason of the operation of the adjusting shaft. It will thus be seen that back-lash is prevented throughout the entire useful life of a control device comprising my invention.

A sectored disc-shape element 29 is mounted on the shaft 12, between the cup-shaped element 22 and the depending plate 14, the said disc-shape element being provided with a plurality of peripheral projections 30. One end of a translucent scale 31 is adjustably anchored, as shown in Fig. 6, to one of a plurality of ears 32 which extend outwardly from the disc-shape element. The scale is provided with a plurality of openings 33, each of the openings subtending an angle somewhat greater than the angle subtended by each of the peripheral projections 31 on the disc-shape element and being spaced along the length of the scale to correspond to the spacing of the said projections.

The scale is resiliently held in intimate contact with the periphery of the disc-shape element 29 by means of a spring 34, one end of said spring being anchored between one of the ears 32 and the cup-shape element 22, and the other end of which extends through an opening in the end of said scale. By slightly loosening a screw 35, shown in Fig. 6, comprised in the anchoring device, the scale may, therefore, be moved circumferentially of the disc-shape element a slight amount, in either direction, during the process of manufacture.

End stops, (not shown) may be provided to

prevent the condenser shaft from being rotated too far in either direction.

A swiveled lamp-mounting device 40 is disposed adjacent to the translucent scale. The lamp-mounting device, which is shown in detail in Figs. 4 and 5, comprises a socket-holding portion 41 extending at right angles to a base portion 42. The base portion is embossed to provide a circular offset bearing surface 43, which surface is maintained tightly against the rear face of the panel by means of a mounting-screw 40 or the like. The swivel-connection of the socket is such as to permit it to be moved out of cooperative relation with the translucent scale for the purpose of insertion or removal of a small lamp 45.

It is not absolutely necessary that one end of the translucent scale be anchored, an alternative form of the scale-holding means being shown in Fig. 2. Referring specifically to the latter figure, each end of the scale is provided with an opening into which the ends of the helical spring 50 are inserted. The scale, therefore, in the alternative form, is tightly held against the periphery of the disc-shape element but is prevented from accidental movement with respect thereto solely by friction.

Although I have shown, in Fig. 1, a small transformer 51 for energizing the lamp, any convenient power-source may be utilized for this purpose.

It will, accordingly, be apparent that I have provided an improved control device for the variable reactors comprised in radio receiving apparatus, wherein back-lash between the driving and driven portions is entirely eliminated. My control device is also advantageous in that the indicating scale may be shifted at any time, either during the process of manufacture or subsequent thereto, in order to compensate manufacturing variations.

The swiveled lamp-mounting is also a valuable feature of my invention, inasmuch as it permits the ready removal and replacement of the lamp.

Although I have illustrated and described certain specific embodiments of my invention, I am fully aware that many modifications thereof are possible. My invention, therefore, is not to be limited except insofar as is necessitated by the prior art and as indicated by the appended claims.

I claim as my invention:

1. A control device comprising a driving member, a driven member, flexible connecting means between said members, means for keeping said flexible means under tension and means for preventing forces arising in said driving means from directly reaching said tension means.

2. A control device comprising a driving member, a driven member, flexible connect-

ing means between said members, means carried by said driven member for keeping said flexible means under tension and additional means carried by said driven member for preventing forces arising in said driving means from directly reaching said tension means.

3. A control device comprising a driving member, a driven member, flexible connecting means between said members, resilient means carried by one of said members for keeping said flexible means under tension and snubbing means carried by one of said members for preventing forces arising in said driving member from directly reaching said tension means.

4. A control device comprising a driving member, a driven member, flexible connecting means between said members, resilient means carried by one of said members and contacting said flexible means to maintain it under tension and additional means carried by said member for preventing forces arising in said driving member from directly reaching said tension means.

In testimony whereof, I have hereunto subscribed my name this eighteenth day of June, 1929.

JOHN KERRIGAN.