Aug. 31, 1926. 1,598,146

H. B. McKENZIE

ADJUSTING MEANS

Filed August 30, 1924 2 Sheets-Sheet 1

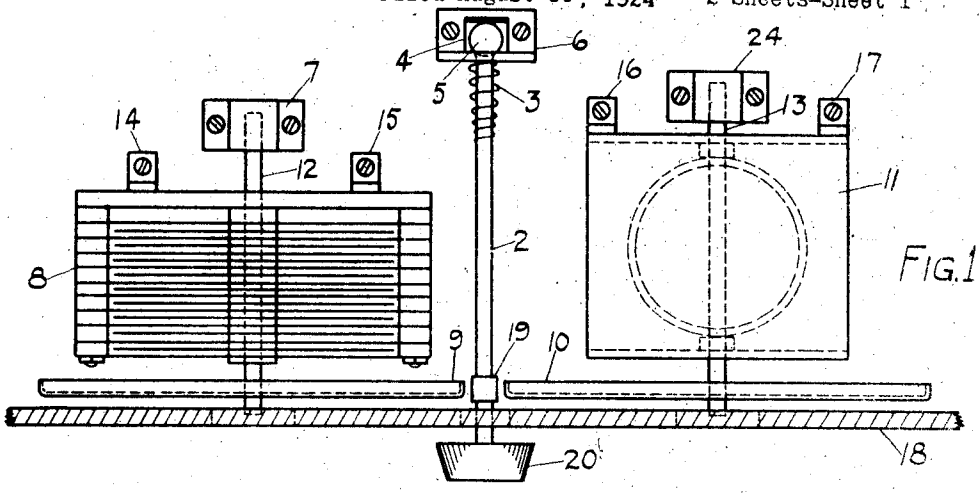


FIG. 1

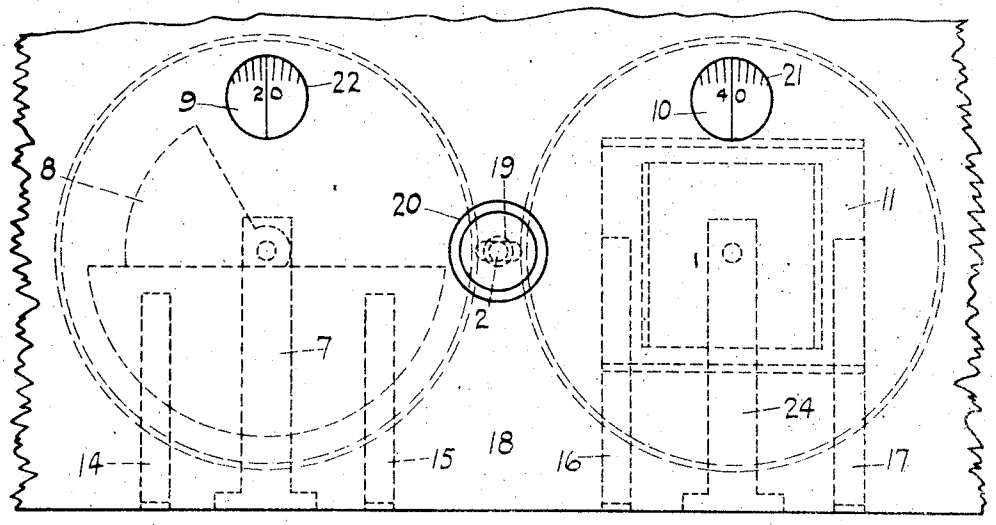


FIG. 2

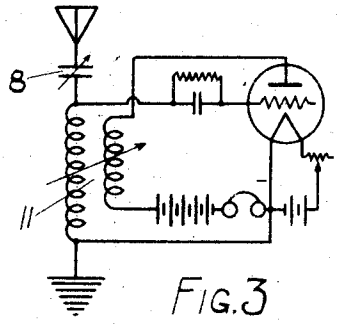


FIG. 3

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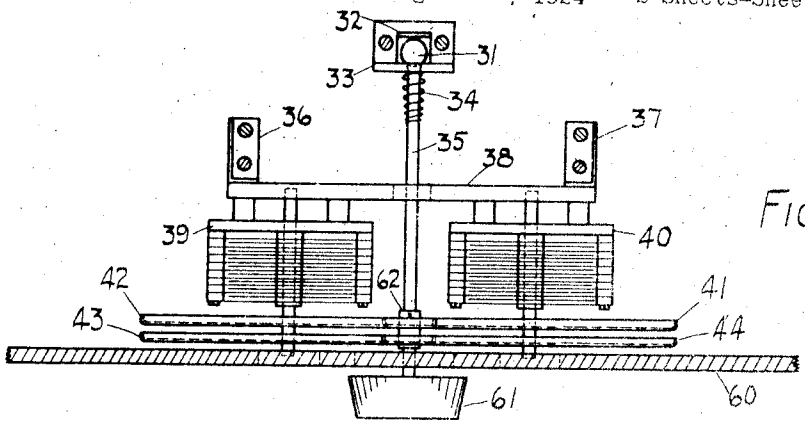


FIG. 4

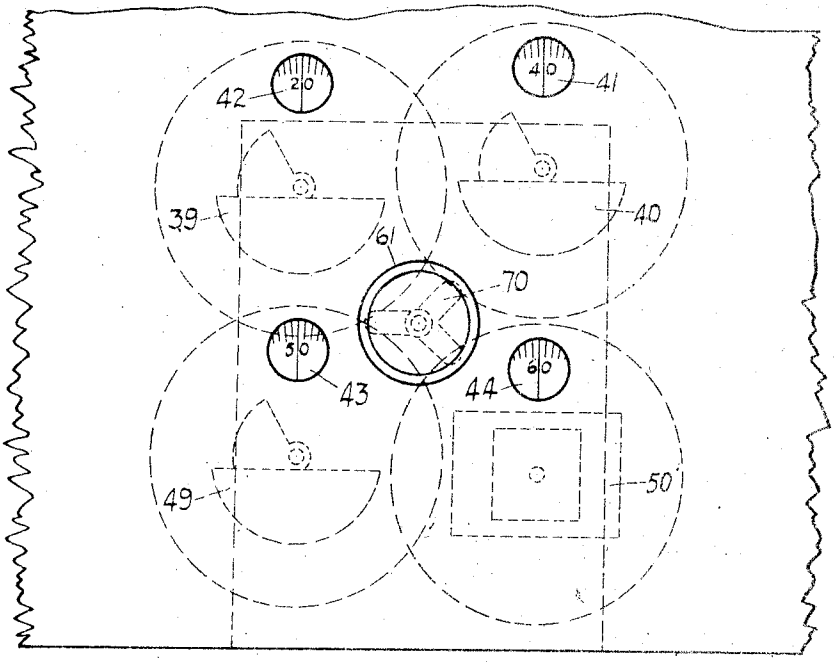


FIG. 5

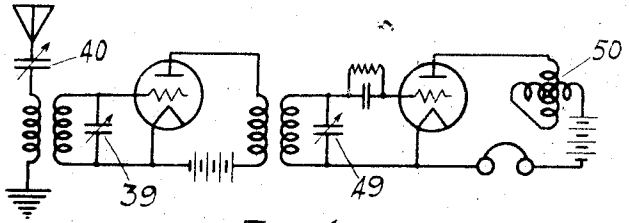


FIG. 6

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Patented Aug. 31, 1926 1,598,146

UNITED STATES PATENT OFFICE

HOWARD B. McKENZIE, OF TORONTO, ONTARIO, CANADA.

ADJUSTING MEANS.

Application filed August 30, 1924, Serial No. 735,155, and in Canada February 29, 1924.

My invention relates in general to means for adjusting control elements. It pertains in particular to means for adjusting electrical control elements such as switches, rheostats, variable condensers and the like, or mechanical control elements such as valves, orifices, mechanical motions or the like, and perhaps finds its chief application in the adjustment of the magnitude of the elements in radio telegraph and telephone circuits.

The principal objects contemplated by my invention comprise producing simple and efficient adjusting means common to a plurality of control elements, either electrical or mechanical, whereby these elements may be either successively or simultaneously varied in magnitude, position or condition expeditiously and if desired by small increments.

I accomplish these and other very desirable features which will hereinafter be pointed out and fully described by the novel mechanism and disposition of parts illustrated in the drawings and described in the accompanying specification.

As my invention possibly finds one of its chief applications in conjunction with radio circuits, I have chosen to illustrate such an embodiment in the drawings which accompany and form a part of this specification, and in which like reference numerals designate corresponding parts throughout:

Fig. 1 is a plan view of one such embodiment of my invention.

Fig. 2 is a broken elevation of the same.

Fig. 3 is a circuit diagram illustrating the cofunctionality of the control elements which are adapted to be adjusted by my invention.

Fig. 4 is a plan view of an alternative embodiment of my invention.

Fig. 5 is a broken elevation of the same.

Fig. 6 is a circuit diagram illustrating the cofunctionality of the elements adjustable by my invention.

Referring now especially to Figs. 1 to 3 in which I have illustrated my invention as applied to the successive adjustment of the electrical elements of a single circuit regenerative radio receiving system, my device comprises a shaft or adjusting member 2, one extremity of which is mounted to have universal movement, and for this purpose may be provided with a ball 5 which is mounted between members 4 and 6. The other extremity of the shaft passes through a slot provided therefor in a supporting panel 18, and is provided with a knurled knob 20. A coiled steel spring 3 is sleeved over the shaft 2, and is rigidly secured at one extremity to the support 6. The spring thus serves to support the shaft 2 normally with its axis at right angles to the plane of the supporting member 6. Obviously, many other methods of so supporting the shaft may be used, and the coiled spring is merely shown as one method of accomplishing the desired result. A collar of rubber or other suitable material 19 is provided on the shaft 2, and is so positioned that it may engage with the disc 9 or disc 10, dependent upon how the shaft is moved laterally in the slot provided therefor in the panel 18. The disc 9 is rigidly attached to the rotor or control member of a variable condenser 8, which is supported by uprights 14 and 15, and the shaft of which is journalled in a bearing 7. The disc 10 is rigidly attached to the shaft 13 of the control member of the variocoupler 11, which is likewise supported by uprights 16 and 17 and the shaft 13 of which is journalled in a bearing 24.

It will be noted from Fig. 2 that the discs 9 and 10 are graduated on their surfaces adjacent to the panel 18, and near the outer periphery thereof, and that these graduations may thus be observed through apertures 22 and 21 respectively, provided for the purpose in the panel 18. There is further provided in these apertures as shown diametrically disposed index lines 52 and 53, to aid in setting the control members of the elements.

It will be noted that as the shaft is moved toward the right or left as viewed in Fig. 2, that either the condenser 8 may be adjusted or the variocoupler 11 may be adjusted to the magnitude or position desired. As will be noted in Fig. 3, condenser 8 is in series with the antenna inductance, and variocoupler 11 determines the amount of feed back or regeneration in this simple circuit regenerative radio receiver, the other

elements of which, and their co-functionality, are well known in the art, and need no further explanation.

The discs 9 and 10 may be constructed in any suitable manner, and of any suitable material, but I prefer, from the standpoint of cheapness of construction, to construct them of relatively thin sheet metal, and form the outer edges thereof to produce a shallow cup. The periphery thus formed is preferably knurled and thus affords adequate friction with the collar 12 to insure proper operation. Obviously the collar 12 may be a pinion gear, and teeth may be provided in the periphery of the discs 9 and 10.

Referring now to Figs. 4 and 6, I have illustrated my device as adapted to adjust both simultaneously and successively a group of control elements in a radio frequency amplifying receiver, and for this purpose I have illustrated three variable condensers 39, 40, 49, and a variometer 50. These elements are provided with graduated discs 40, 41, 43 and 44 respectively. The adjusting member 35 is disposed substantially centrally with respect to these elements, and the discs occupy, as indicated in Fig. 4, two planes, a pair of each of the discs being maintained in each of the two planes. The adjusting member 35 is provided with a ball 31, which is maintained in a manner for universal motion between members 32 and 33. There is further provided a coiled steel spring 34, which, as heretofore described, serves to support the shaft normally in a median position out of contact with any of the discs.

The condensers 39, 40 and 49 and the variometer 50 are all mounted as indicated on a false panel 38, which is preferably formed of insulating material, and is supported by means of standards 36 and 37. The panel 60 is provided with a series of slots, which are substantially 120° to each other, that the adjusting member 35 may be moved by means of the knurled knob 61 to bring the rubber collar 62 into contact simultaneously with the discs 42 and 43, whereby condensers 39 and 49 may be simultaneously adjusted or into contact with disc 41, whereby condenser 40 may be separately adjusted or into contact with disc 44, whereby the variometer 50 may be separately adjusted. Referring to Fig. 6, it will be seen that condenser 40 which is separately adjusted, is located in the antenna, and condensers 39 and 49, which are simultaneously adjusted constitute the secondary tuning condensers, both for the radio frequency amplifier step, and for the detector step, that variometer 50 which is separately adjusted constitutes the plate tuning of the detector circuit. These are all features which are well known in the radio art, and require no further explanation.

It will be noted from the above description that my improved device permits of the simultaneous or successive variation or adjustment of control elements, by means of but a single adjusting member. It will be further obvious that while I have illustrated and described my device as applied to the adjustment of electrical controls such as are used in the radio art, that my device is applicable to the control of mechanical elements, and is capable of useful application in many arts, as for instance, it may be used to control a plurality of bleed valves such as are used in connection with turbines. Again it may be used to adjust the position of moving members in mechanical motions, or the extent of aperture or orifices and valves. It may be further used to adjust either simultaneously or successively the spark adjustment and throttle control of gas engines. It will be further noticed that the diameter of the rotor may, if desired, be small with respect to the diameter of the rotated part, and thus extremely fine or vernier adjustments may be attained, or if desired, the rotor may mesh with a rack to translate rotary motion into linear motion. All of these desirable features and applications will be obvious to those skilled in the art from the above description.

It is particularly pointed out that my device is simple, rugged and fool-proof, and that it may be cheaply constructed and installed; that its use simplifies and expedites the operation of electrical or mechanical apparatus, and that for these reasons it is especially adapted to use in connection with electrical elements in radio telegraph or telephone circuits or systems.

Having thus completely described my device, what I claim as new and desire to secure by United States Letters Patent is as follows:

1. In an adjusting means, a plurality of variable control elements mechanically dissociated, a driving means, means maintaining said driving means normally out of operative contact with said control elements, means whereby said driving means may be moved into operative relation with any of said control elements and means whereby said driving means may be moved into operative relation with a plurality of said elements.

2. In an adjusting means, a plurality of mechanically dissociated variable control elements, a driving means for adjusting said elements, said driving means being mounted at one extremity thereof to have universal motion and normally dissociated mechanically with said control elements, means whereby said driving means may be moved into operative relation with any of said control elements selectively and means whereby said driving means may be moved into operative relation with a plurality of said elements.

3. In an adjusting means, a plurality of

mechanically dissociated variable control elements, a driving means for adjusting said elements, said driving means being mounted at one extremity thereof to have universal motion and normally dissociated mechanically with said control elements, means whereby said driving means may be moved into operative relation with any of said control elements selectively and means whereby said driving means may be moved into operative relation with a plurality of said elements to permit simultaneous adjustment thereof.

HOWARD B. McKENZIE.