

June 14, 1927.

1,632,212

L. E. BALTZLEY

ADJUSTING DEVICE

Filed Nov. 14, 1925

2 Sheets-Sheet 1

Fig. 1.

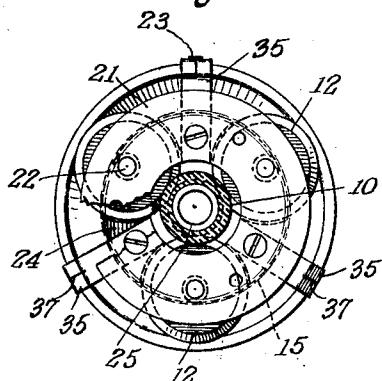


Fig. 2.

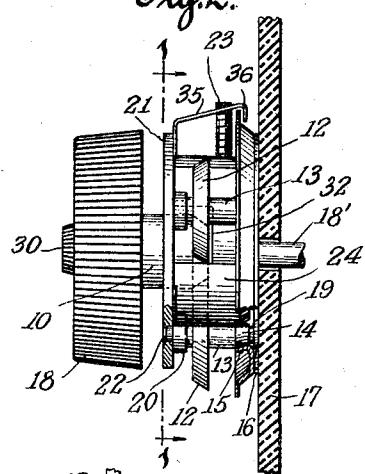


Fig. 3.

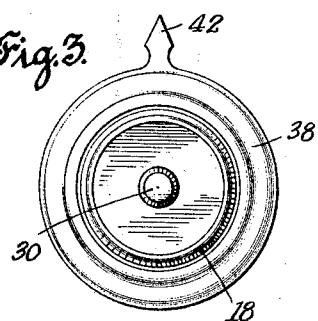


Fig. 4.

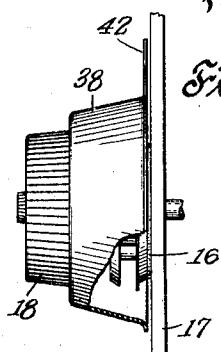


Fig. 5.

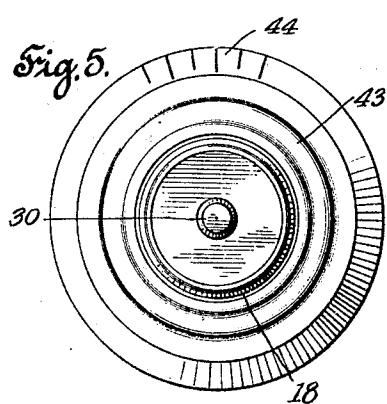
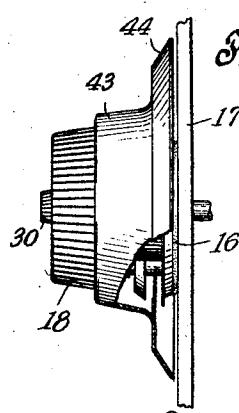


Fig. 6.



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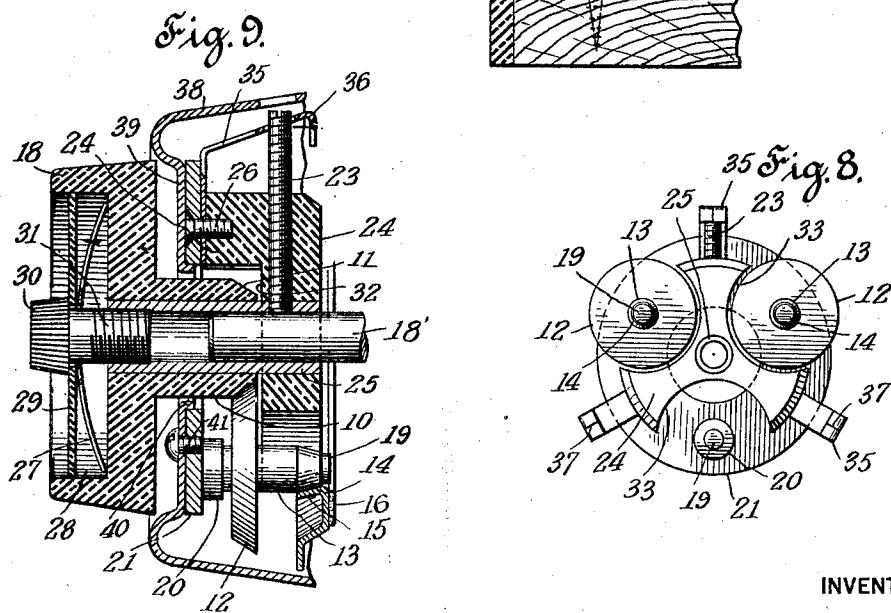
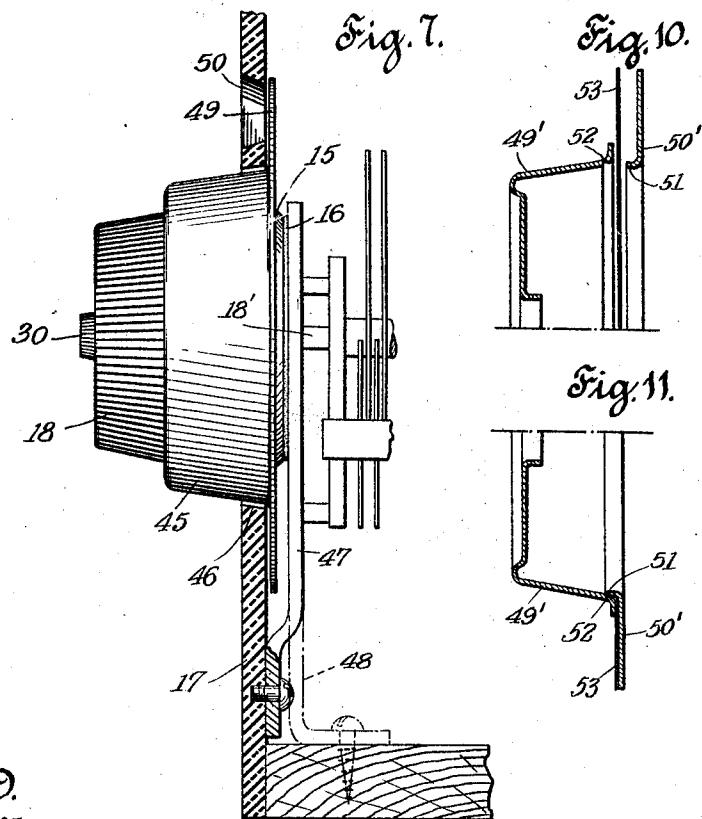
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2 Sheets-Sheet 2



INVENTOR

Louis E. Baltzley

Patented June 14, 1927.

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UNITED STATES PATENT OFFICE.

LOUIS E. BALTZLEY, OF GLEN RIDGE, NEW JERSEY.

ADJUSTING DEVICE.

Application filed November 14, 1925. Serial No. 68,949.

Special objects of this invention are to provide a simple, practical and inexpensive mechanism for the adjustment and control of such instruments as variable condensers and the like, and which mechanism will be in a form readily adaptable to meet different requirements.

The invention is particularly applicable for use as a radio control and in this connection a special feature of the invention is the construction of the operating mechanism of the device as a single unit and the provision of such unit with various forms of indicators interchangeably usable with the unit. This construction, for example, makes it possible to employ the same operating unit as a radio control both in that style of set where the indication is provided at the front of the panel as well as in the more advanced styles where the indication appears at the back of the panel.

The various novel features of the invention by which the foregoing and other desirable objects are attained are set forth in the following specification and broadly claimed.

The drawings forming part of the specification illustrate practical embodiments and uses of the invention, but the structure is subject to variations without departure from the broad spirit and scope of the invention.

Figures 1 and 2 are part sectional front and side views of the bare operating unit, Figure 1 in effect being a section taken on line 1—1 of Figure 2.

Figures 3 and 4 are front and side views of the unit with a cover or shield applied thereto and serving as a pointer traversing a suitable scale on the front of the panel.

Figures 5 and 6 are similar views showing the applied cover or shield as a dial member carrying a scale for registry with a marker on the panel.

Figure 7 is a vertical sectional view illustrating the applied cover or shield as a scale at the back of the panel and readable through a suitable window in the panel.

Figures 8 and 9 are detail views of the rear and central portions of the operating unit. Figs. 10 and 11 are sectional details of the scale structure.

The operating unit consists in the illustration of a central roll 10 having a beveled inner end 11 engaging the correspondingly beveled larger ends 12 of rollers 13 grouped about the axis of roll 10 and having smaller

beveled ends 14 engaging a beveled track 15. This track is shown as having a friction pad 16 bearing against the face of the panel 17 so that when the center roll is turned by means of the knob or handle 18 on the outer end of the same, the rollers 13 will turn at reduced speed and by engagement with the track will effect a bodily rotation of the rollers about the central axis. This central axis is represented in the present instance by the shaft 18' which may be the shaft of a condenser or other instrument to be adjusted.

The rollers 13 are rotatably and slidably mounted on studs 19 shown as having shouldered ends 20 secured on an annular back plate 21 by riveting at 22. This annular plate thus forms a carrier for the rollers and has provision for affixing it to the shaft 18 to be operated, consisting here of a set screw 23. To insulate the structure from the condenser shaft, a collar of insulating material 24 is shown as interposed between the supporting plate and shaft. This insulating member is shown as carrying at its center, a sleeve 25 of a size to slip over the shaft and the set screw 23 is indicated as extending through the insulating member and the center sleeve so as to directly engage the shaft. The supporting plate 21 is shown fastened to the face of the insulating collar or hub by securing screws 26.

The central actuating roll 10 is rotatably and slidably journaled on the center sleeve 25 and is shown as held in tractive engagement with the ends of the surrounding rollers by a spring washer 27 seated in a cavity 28 in the face of the knob beneath a washer 29 engaged by the head 30 of a split screw 31 entered in the outer end of the sleeve.

The central knob or handle roll 10, the washer 29 which carries the spring and the adjusting head 30 of the spring tensioning screw 31 are all shown as made of insulating material so that hand operation and adjustment of these parts will not electrically affect the instrument to which the device is attached.

The effect of the spring washer being to shift the center roll inwardly into tractive engagement with the outer ends of the surrounding rollers and to force said rollers inwardly into engagement with the track, it will be observed that adjustment of the tension of this spring by means of the thumb screw 31 will have the effect of varying the

tractive engagement of the actuating roll with the traveling rollers, the engagement of the rollers with the track and the engagement of the track with the panel. Consequently, after the device has been secured upon the shaft, the parts may all be set at the desired tractive pressure by means of this single adjusting screw.

To gain compactness and reduce the amount of insulation required, the insulating hub is shown as countersunk in its outer face at 32 to admit the inner end of the actuating roll and as having its sides cut away at the back at 33 to receive the larger ends of the rollers and enable the same to contact the inner end of the actuating roll. The central insulator 24 is thus in the nature of a spider, with a hub portion fixed on the center sleeve with three radially and forwardly projecting arms carrying the roller supporting annulus.

The annular track 15 is automatically centered by the inward thrust of the tapering rollers and so requires no special centering means. This track is shown as formed of a sheet metal ring cupped to provide the beveled track surface at the inside and to provide an outstanding peripheral flange 34. Spring metal clips or straps 35 are shown as held between the arms of the central insulator and the back of the supporting plate 21 and as having hooked ends 36 which extend freely in back of the flange 34 so as to hold the track loosely attached to the unit when the unit is removed from the shaft. Thus attached, the track acts as a loose stop serving to prevent the rollers from slipping endwise off the pivot pins. If desired, however, the track may be quickly detached by simply spreading the spring arms 35 sufficiently to carry the hooked ends thereof clear of the flange at the forward outer edge of the track.

As an operating or adjusting mechanism, the device is complete as thus far described. By turning the knob 18, very fine and gradual adjustments may be effected and there being no gears, there is an entire absence of backlash and lost motion, enabling adjustments of extreme accuracy and a smooth continuity of motion in either direction. For quick adjustments the entire unit may be turned as by grasping the mechanism in back of the knob, for instance, by engagement of the fingers with the clips 35, the track in such cases simply slipping over the face of the panel or other part which it engages. If a pointer or indicator is desirable for indicating the position of the mechanism adjusted, one or more of the clips 35 may be lined or otherwise marked to serve as such, as indicated at 37, or the set screw 23 by which the unit is secured on the shaft, may be utilized as a pointer.

It is preferably, however, to cover or

shield the operating parts of the device to keep out dust and give the device a more finished appearance. In such a case the cover or shield may be utilized as an indicator.

In Figures 3 and 4 the shell or cover 38 is shown as of generally frustoconical shape having a substantially flat front wall 39, Figure 9, engaged directly over the face of the supporting ring 21 and provided with an inwardly extending annular flange 40 at the center entered within said ring to center the shell thereon. Screws 41 are shown extending through the front of the shell into the ring or plate 21 to secure the shell thus centered, in position at the back of the knob 18. The conical skirt portion of the shell extends inwardly over the rollers and track and for indication purposes is shown provided with an outwardly extending pointer 42 at the base of the same. The shell travels with the operating unit in the adjustment of the same so this pointer may register with a suitable scale or indications provided on the face of the panel.

If desired, the shell may take the form of a dial, as indicated at 43 in Figures 5 and 6, where the same is shown as having a wide outstanding flange 44 carrying a scale or other desired indicia.

To meet requirements for an indicator at the back of the panel, the cover may be in the form of a shell 45 projecting forwardly through a corresponding opening 46 in the panel and carrying in back of the panel, a flange 49 marked with suitable designations visible through a window 50 in the panel. Under these conditions the track 15 may engage the face of the bracket or support 47 for the condenser or other instrument, which bracket customarily is secured either to the back of the panel or to the baseboard of the instrument, as indicated at 48. Two scales may be provided on the flange of the shell extending in opposite directions and adapting the device for either right or left hand operations. The conical portion of the shell which projects forwardly through the panel is of sufficient depth to afford a convenient grip for the quick adjustment of the device and the knob serves as before, as operating means for securing fine adjustments.

The unitary construction of the device, independent of any dial structure makes it readily adaptable to any special dial or panel requirements and enables the manufacture of the device as a standard unit adaptable to many special uses. The shells may be made up in various colors and shapes and be constructed of different materials suited to the purpose.

They also may be made up either in one piece or in a number of pieces. Figures 10 and 11 show in detail how the shell may be made up of a body or cover portion 49' and

a back or rim portion 50', the latter having an acutely angled flange 51 at the inner edge of the same adapted to be sprung into a groove 52 in the rear of the cover shell. If 5 desired, an annular scale or indicator 53 may be clamped in between the meeting faces of these two parts. This method of construction allows for the selection of different styles of scales and back flanges for the 10 cover. The back flange 50' may be of different widths and instead of using a separate scale this flange itself may carry the markings.

What is claimed is:

15 1. An adjusting device comprising a metallic sleeve, a hub of insulating material fixed on said sleeve, an open center flat metallic ring attached to said hub, rearwardly projecting pivot studs fixed on the back of 20 said ring, rollers slidably journaled on said studs at the back of said flat ring, an actuating roll journaled on the sleeve at the front of the hub projecting rearwardly through the open center of the flat ring and 25 engageable at its inner end with the forward ends of the rollers and a track engageable by the rearward ends of the rollers.

2. An adjusting device comprising a sleeve, a hub of insulating material fixed on 30 said sleeve, a ring attached to said hub, pivot studs carried by said ring, rollers slidably journaled on said studs, an actuating roll journaled on the sleeve at one side of the hub and engageable at its inner end with the forward ends of the rollers, a track engageable by the rearward ends of the rollers and clips for loosely retaining the track, said clips being secured between the hub and 35 ring.

40 3. An adjusting device comprising a sleeve, a hub of insulating material fixed on said sleeve, a ring attached to said hub, pivot studs carried by said ring, rollers slidably journaled on said studs, an actuating roll journaled on the sleeve at one side of the hub and engageable at its inner end with the forward ends of the rollers, a track engageable by the rearward ends of the rollers and retaining means for the track, said means being yieldable to release the track from its 45 engaged relation with the rollers.

4. In an adjusting device, a supporting ring, means for securing the same upon the shaft of an instrument to be adjusted, rearwardly projecting pivot studs carried by 50 said ring, rollers slidably journaled on said studs, an actuating roll journaled to engage at its inner end with the forward ends of the rollers, a track engageable by the rearward ends of the rollers and means for 55 releasably confining said track to the ring to cause said track to hold the rollers slidably confined on the studs.

5. In an adjusting device, a flat metallic 60 supporting ring, means for securing the

same upon the shaft of an instrument to be adjusted, rearwardly projecting pivot studs fixed on said ring, rollers slidably journaled on said studs, an actuating roll journaled to engage at its inner end with the forward ends of the rollers, a track engageable by the rearward ends of the rollers and a cover detachably secured over the front of the ring and extending rearwardly over the rollers. 70

6. In an adjusting device, a supporting ring, means for securing the same upon the shaft of an instrument to be adjusted, rearwardly projecting pivot studs carried by 75 said ring, rollers slidably journaled on said studs, an actuating roll journaled to engage at its inner end with the forward ends of the rollers, a track engageable by the rearward ends of the rollers and a cover centered on the ring by having a flange entering within the ring, said cover extending rearwardly from the ring over the rollers. 80

7. An instrument adjusting device comprising a flat metallic supporting ring attachable to the shaft of an instrument to be adjusted, a set screw behind said ring for variably securing said ring to the instrument shaft, a shell removably attachable to said ring and providing a cover about the sides of the same and over said set screw, rollers journaled on the ring and housed within the shell when the shell is in place, an actuating roll having a handle at the front of the removable shell and journaled to engage at its inner end with the forward ends of the rollers and a track engageable by the rearward ends of the rollers and means for fixedly securing the shell to the ring whereby when said shell is used it may be employed as a handle for bodily rotating the metallic supporting ring. 95

8. In apparatus of the character disclosed, a panel having an opening, a member in back of said panel opening, a track having a slipping engagement with said member, a handle, speed reducing drive means operated by said handle and engaging said track and a cover over said speed reducing drive means extending forwardly through the panel opening. 100

9. In combination, a panel having an 115 opening and a member at the back of said opening, an adjusting device having quick and slow adjusting means and having a sliding connection with the member at the back of the panel opening, said adjusting device extending from the member at the back of the panel and having said quick and said slow adjusting means projecting forwardly through said opening. 120

10. An adjusting device comprising rollers grouped about a central axis, a holder on which said rollers are journaled in bearings providing free axial self-adjustment of the rollers, an actuating roll journaled on the central axis aforesaid bearing at its inner 125 130

end on the outer ends of the rollers and having at its outer end, an actuating handle, a track engaged by the inner ends of the rollers, said track and the holder being relatively rotatable and one having means accessible for detachably securing the same on the part to be adjusted and a copper shell detachably mounted on the holder in back of the actuating handle and extending rearwardly over the rollers, said shell covering and forming a guard over said securing means.

11. In apparatus of the character disclosed, a dial structure consisting of a hollow cover, an outstanding annular flange

secured to the back of said cover and a scale clamped between the meeting faces of the cover and flange, the parts being secured in this relation by an acutely angled shoulder on the flange entering a groove in the back 20 of the cover.

12. In apparatus of the character disclosed, a dial structure comprising a hollow cover having an internal groove at the back of the same and an annular flange having 25 an acutely angled shoulder entered in said groove.

In witness whereof, I have hereunto set my hand this 26th day of October, 1925.

LOUIS E. BALTZLEY.