

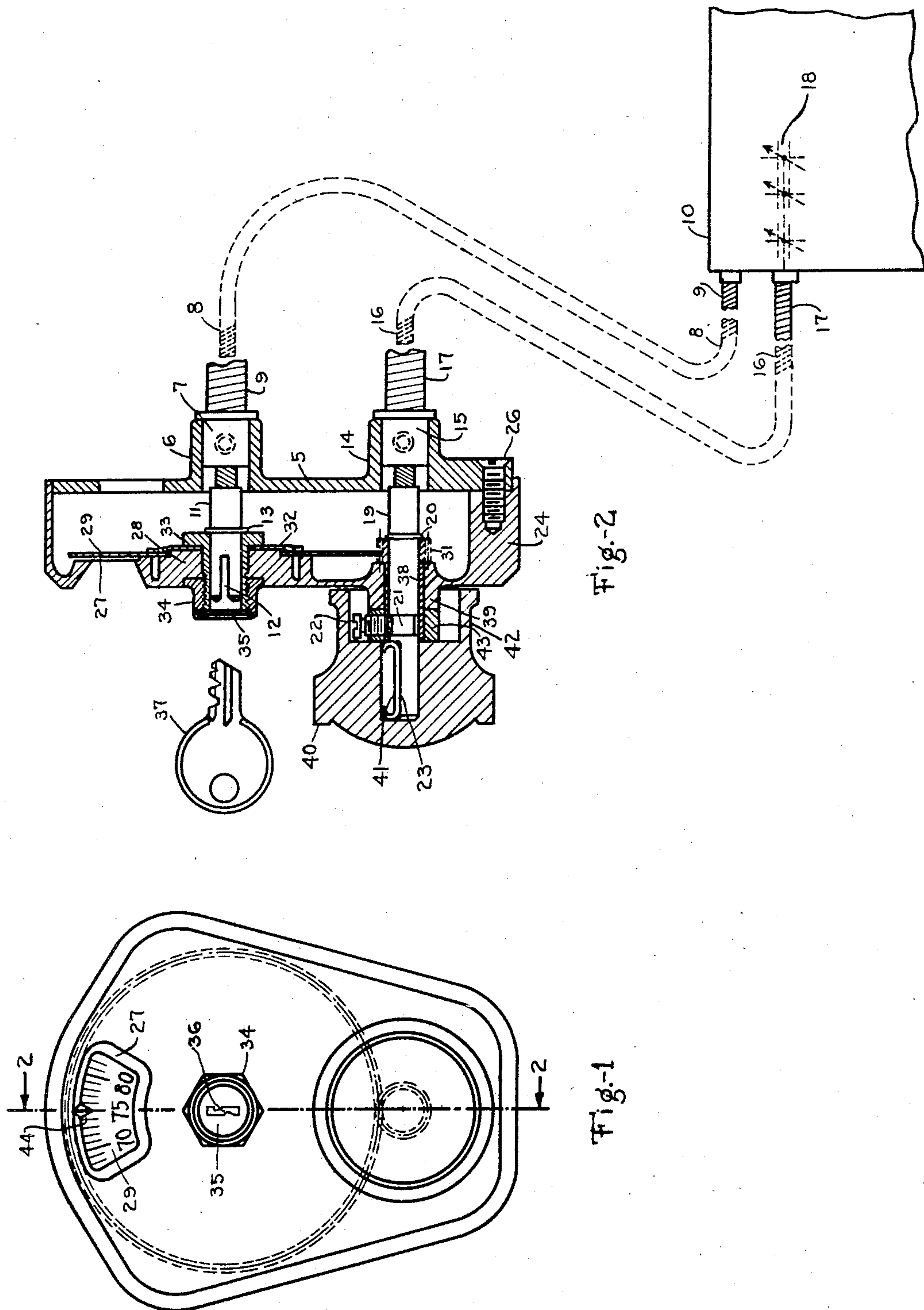
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RADIO RECEIVING APPARATUS

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RADIO RECEIVING APPARATUS

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7 Claims. (Cl. 74—10)

This invention relates to radio receivers and more particularly to a mechanically operated, remotely controlled radio receiver.

In certain types of radio receivers such as those employed in automobiles, it is customary to mount the radio receivers at a point distant from a remote control unit including a station selection knob, and to connect the control unit to the tuning element in the radio receiver chassis by means of a flexible shaft or other flexible mechanical connection. In such installations it has been found that after the chassis of the radio receiver and the control unit therefor have been mounted on their respective supports, it is necessary to reset the dial or other indicating device of the control unit so that the graduations on the dial match the respective station selecting positions of the tuning element of the radio receiver.

In former arrangements of this kind, the adjustment of the indicating device or dial to match the station-selecting settings of the tuning element has been accomplished only after considerable difficulty owing to the fact that the adjustment was necessarily made at the back of the control unit at a relatively inaccessible position.

In accordance with the present invention, a novel arrangement of parts of the control unit is provided in which the mentioned adjustment is effected from the front of this unit with a minimum amount of effort.

The various features of the invention will appear from the detailed description and the claims when taken with the drawing in which Fig. 1 is a front view of a control unit of the present invention; and Fig. 2 illustrates a vertical section of the control unit taken substantially on the line 2—2 of Fig. 1 and in addition also indicates portions of the flexible tuning shaft and the flexible volume control shaft leading from the unit to a receptacle containing the chassis of a radio receiver in which the tuning element only is diagrammatically illustrated.

In the drawing, 5 designates the rear or cover plate of a cast metal control unit which may be mounted by suitable mounting members (not shown) on the steering column (likewise not shown) of an automobile. The rear plate 5 is moulded with a boss 6 to serve as a bearing for a collar 7 which is attached in any suitable manner to a point near the end of a flexible shaft 8 illustrated as protected by a flexible armour cover 9. This shaft connects the control unit to the volume control mechanism (not shown) of a radio receiver which may be of any conventional type and which is mounted within a metal receptacle 10 on

any convenient part of the automobile such as on the dash thereof. The upper end of the flexible shaft 8 terminates in a cylindrical member 11 which has a kerf or key receiving slot 12 in its free end and which is provided intermediate of its ends with a peripheral groove to receive a split ring or washer 13 to serve as a stop as will be hereinafter set forth.

The rear plate 5 is also provided with a second boss 14, which serves as a bearing for a collar 15, attached in any suitable manner to a second flexible shaft or cable 16. This second cable, which is also protected by an armour 17, is connected at its lower end to the tuning member herein diagrammatically indicated as a gang condenser 18 forming a part of a radio receiver chassis, otherwise not shown but contained within the receptacle 10. The other end of the flexible cable 16 terminates in a cylindrical member 19 of somewhat greater length than the corresponding cylindrical member 11 of flexible shaft 8. The member 19 intermediate of its ends is provided with a peripheral groove to receive a split ring 20 the purpose of which will be set forth, and is also provided intermediate of its end with an enlarged peripheral groove 21 to receive the end of a cup point set screw 22 to be further referred to. In addition the free end of the member 19 has a slab side 23.

The control unit also includes a cover 24 which may be attached to the rear plate 5 by means of screws 26 of which only one is herein illustrated. The cover 24 is formed with a window 27 and with an internal boss 28 on which there is mounted for rotation the transparent annular indicating disk or dial 29 of transparent material such as celluloid. This dial is of such diameter that graduations and numerals designating broadcasting channels to which the tuning element of the radio receiver may be tuned, are visible through the window 27. At least a portion of the edge of this disk has gear teeth cut therein to engage corresponding teeth on a pinion 31 which is secured on the cylindrical member 19 in a manner to be set forth. The disk is held for rotation on the boss by an annular spring washer 32 which in turn is held in position by the enlarged head of a collar 33 extending through an opening in the cover where its threaded end is engaged by a nut 34. It will be noted that the exposed edge of this nut is spun over to hold in position a key escutcheon 35 having a key slot 36 to receive a key 37. The cylindrical member on the end of the shaft 11 extends into this sleeve which serves as a bearing therefor while

the split ring 13 engages the head of the collar 33 to prevent the shaft 11 from being displaced toward the left (Fig. 2) when key 37 is removed. The mentioned pinion 31 with which the teeth on the annular dial 29 engage, is provided with an integral sleeve 38 surrounding the cylindrical member 19 of the flexible cable 16 and extending through the boss 39 formed on the cover. A collar 43 through which the free end of the cylindrical member 19 extends, is fastened on the free end of the sleeve collar 38 by means of a cup point set screw 22 threaded through the sleeve into engagement with the annular groove 21 in the cylindrical member. A knob or handle 40 for rotating the flexible shaft 16 and thereby adjusting the tuning element 18 of the radio receiver, is detachably mounted on the cylindrical member 19 merely by pulling it toward the left as illustrated in Fig. 2. This knob is provided with a generally cylindrical opening having a slab side in which an elongated U-shaped flat spring 41 is mounted with its flat side engaging the slab side 23 of the cylindrical member 19 and with its free ends engaging the slab sided wall of the opening in knob 40. This knob is provided with a skirt 42 which extends almost to the front surface of the cover and conceals set-screw and its selected parts.

Where a flexible shaft interconnects the tuning element of a radio receiver with a remote control unit including a calibrated dial, it has been found that it is necessary to reset the dial to correspond with the proper station selecting positions of the tuning member 18 after the radio receiver chassis and the control unit have been installed. This is due to the fact that the bending of the flexible cable 16 in order to mount it in an inconspicuous place, introduces an error in the setting of the dial. In former arrangements it has been necessary to effect this correcting adjustment at the rear of the control unit after it has been mounted in place. This adjustment has been inconvenient to make since the adjusting screws are usually located in an inaccessible position. In applicant's arrangement it is merely necessary to remove the knob 40 by pulling it lengthwise of the cylindrical member 19 since the skirt 42 of the knob conceals the set screw 22. When this knob is removed, set screw 22 is readily accessible so that it can be unscrewed until it disengages the cylindrical member 19. The installer next turns the flattened end of the cylindrical member 19 of flexible shaft 16 to adjust the tuning member 18 of the radio receiver until a known station is tuned in. The collar and the set screw 22 may now be rotated until the designation on the front of the annular disk 29 corresponding to the selected broadcasting station, is in registry with the index 44 on the margin of window 27. After the dial has thus been properly set to match the adjustment of the tuning member 18, the cup point set screw 22 is screwed in to engage the cylindrical member at the groove 21 and thus lock the pinion to this member. Thereafter, the knob 40 is forced on to the free end of the cylindrical member 19 of the shaft 16 with the skirt 42 of the knob concealing the collar 43 and the set screw 22. While it forms no part of the present invention, it should be mentioned that the flexible shaft 8 in addition to adjusting the volume of reproduction of the radio receiver, in one of its extreme positions of rotation, disconnects the source of power from the radio receiver in a manner not shown. The adjustment of this flexible shaft is effected by turning the key 37

while it is inserted in the key slot 36 of the key escutcheon and in the slot 12 in the end of the cylindrical member 11 of the flexible shaft 8.

From the foregoing it will be seen that a simple, convenient arrangement is provided for readily matching the graduations on the dial in the remote control unit exactly with the positions of the adjustable tuning member of the radio receiver.

What I claim is:—

1. In control mechanism for radio receivers and the like, a receptacle having a window in the front wall thereof, a rotatable dial within said receptacle mounted for rotation behind said window, a shaft extending through said receptacle with its axis spaced from the axis of rotation of said dial, a sleeve rotatably mounted on a portion of said shaft and engaging said dial for rotating the same, said sleeve having a portion extending through a wall of said receptacle, and means at the front of said receptacle for attaching said sleeve to said shaft at any one of a plurality of possible positions of adjustment.

2. In control mechanism for radio receivers and the like, a receptacle cover having a window therein and having a boss formed on one wall thereof, a dial rotatably mounted on said boss behind said window, a shaft projecting through said cover, a sleeve also projecting through said cover at a point spaced from the axis of rotation of said dial, said sleeve engaging said dial for rotating the same, and means at the side of said cover opposite said dial for attaching said sleeve to said shaft at any one of a plurality of possible positions of adjustment.

3. In control mechanism for radio receivers and the like, a receptacle cover having a window therein, a dial rotatably mounted on one side of said cover behind said window, a shaft projecting through said cover with its axis spaced from the axis of rotation of said dial, a sleeve projecting through said cover and surrounding said shaft, said sleeve having means engaging said dial for rotating the same, and means at the front of said cover for adjustably attaching said sleeve to said shaft at any one of a plurality of possible positions of adjustment.

4. In control mechanism for radio receivers and the like, a receptacle having a window formed therein, a dial provided with teeth mounted in said receptacle for rotation behind said window, a shaft extending through a wall of said receptacle, a sleeve provided with a pinion to engage the teeth on said dial, said sleeve encircling said shaft and having a portion extending through a wall of said receptacle to the side thereof opposite said dial, means for attaching said sleeve to said shaft at the front side of said receptacle, and a knob at the front of said receptacle for rotating said shaft and said pinion.

5. In a remote control mechanism for radio receivers and the like, a receptacle having a window formed therein, a dial provided with teeth mounted in said receptacle for rotation behind said window, a shaft extending through a wall of said receptacle, a sleeve provided with a pinion to engage the teeth on said dial, said sleeve encircling said shaft and having a portion extending through the wall of said receptacle to the side thereof opposite said dial, means for attaching said sleeve to said shaft at the side of said receptacle opposite said dial and a knob at the front of the receptacle detachably engaging the end of said shaft, said knob being provided with a

skirt to cover the portion of the sleeve exposed at the front of said receptacle.

6. In a remote control mechanism for radio receivers and the like, a receptacle having a window formed therein, a dial provided with teeth mounted in said receptacle for rotation behind said window, a shaft provided with a flattened end extending through a wall of said receptacle to the front thereof, a sleeve provided with a pinion to engage the teeth on said dial, said sleeve encircling said shaft and having a portion extending through the wall of said receptacle to the front thereof, means for attaching said sleeve to said shaft at the front of said receptacle, and a knob at the front of the receptacle having a spring provided with a flattened surface to detachably engage the flattened end of said shaft, said knob being provided with a skirt to cover the portion of the sleeve exposed at the front of said receptacle.

7. In a remote control mechanism for radio re-

ceivers and the like, a receptacle having a window formed therein, a dial provided with teeth mounted in said receptacle for rotation behind said window, a shaft provided with a flattened end extending through a wall of said receptacle to the front thereof, a sleeve provided with a pinion to engage the teeth on said dial, said sleeve encircling said shaft and having a portion extending through a wall of said receptacle to the front thereof, a collar on said sleeve having a face engaging the front of said receptacle, a set screw in screw-threaded engagement with said collar and engaging said sleeve and said shaft to hold the same in adjustable relation, and a knob at the front of said receptacle having a spring provided with a flattened surface to detachably engage the flattened end of said shaft, said knob being provided with a skirt to cover the exposed surface of said collar.

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