

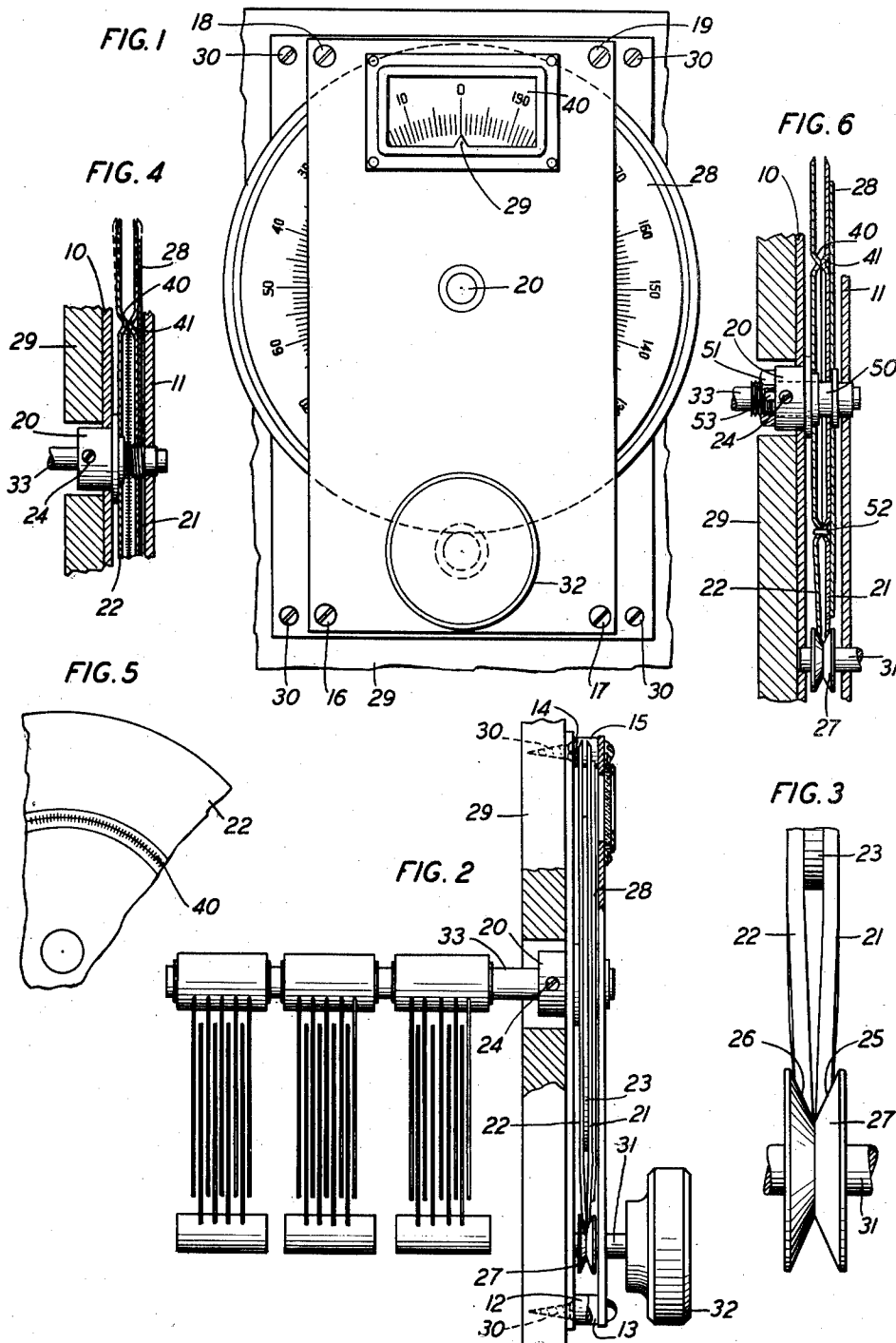
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TUNING DIAL

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TUNING DIAL

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This invention relates to tuning dials for use for actuating the adjustable elements in radio apparatus and the like.

The object of this invention is the provision of a tuning dial of this character which will be simple, cheap to manufacture and efficient in operation.

According to this invention, a manually operable knob is mounted on a spindle which is arranged for rotating a pulley. This pulley is provided at its periphery with a V-shaped groove which frictionally engages the beveled edges of two spring discs. These discs are mounted on a hub member to which the adjustable or tuning elements of the radio apparatus are connected and means is provided for changing the resiliency of the spring discs in order to modify their contact pressure in the grooved pulley. The hub member and the spindle are each journaled in a pair of parallel plates which are held in spaced relation to each other by a plurality of spacer members. One of the plates is provided with an opening or window through which appears a graduated dial for indicating the position of the tuning elements with respect to an index member carried by one of the plates, the indicator being in the form of a paper disc glued on one of the spring discs and having marks for translating the wave length of the signals in terms of meters or kilocycles or both as desired.

Other features of the invention will appear from the following description and from the claims appended thereto, reference being had to the accompanying drawing in which

Fig. 1 is a front assembly view of the dial;

Fig. 2 is a side view thereof showing a number of operating parts in section;

Fig. 3 is a partial view of the spring discs assembly shown in an enlarged scale;

Fig. 4 is a modification of the spring discs assembly;

Fig. 5 is a portion of one of the discs shown in Fig. 4; and

Fig. 6 is another modification of the spring discs assembly.

In Figs. 1, 2, 4 and 6 of the drawing, 10 and 11 are mounting plates which are held in spaced relation with respect to each other by

spacer members 12, 13, 14 and 15 through which the screws 16, 17, 18 and 19 extend in threaded engagement with the plate 10. On plates 10 and 11 is journaled a hub 20 on which a pair of spring discs 21 and 22 are securely mounted. Spring discs 21 and 22 are provided with peripheral beveled edges 25 and 26 arranged to register with a V-shaped groove in pulley 27. A spacer member 23 is interposed between the discs 21 and 22 as shown in Figs. 2 and 3 by which the contact pressure of the discs 21 and 22 in the grooved pulley 27 is determined as will be hereinafter described in detail.

Grooved pulley 27 is integrally formed with a shaft 31 which is journaled in the plates 10 and 11 and on one end of this shaft is mounted a knob 32 shown in Figs. 1 and 2 provided for manually actuating the shaft 31 and the hub 20 through the engagement of spring discs 21 and 22 with pulley 27. On spring disc 21 there is mounted a paper dial 28 which cooperates with a pointer 29 for translating the movement of the discs and the tuning elements carried thereby in wave lengths at which the radio signals are received or sent. This dial appears through an opening or window 40 in the front plate 11. The driving unit thus formed is held on a panel 29 by means of wood screws such as 30, and a screw 24 is provided for operatively connecting the adjustable shaft 33 and the group of condenser plates a_1 , b_1 and c_1 carried thereby to the hub 20.

In operation, the movement of shaft 31 and the pulley 27 carried thereby through the operation of knob 32 is effective to rotate the spring discs 21 and 22 through their pressure contact in the groove of pulley 27. The movement of discs 21 and 22 in turn is effective to rotate the shaft 33 and the group of rotor plates a_1 , b_1 and c_1 for a purpose well known in the radio art, such a movement being indicated by the movement of the dial 28 in cooperation with the pointer 29, this dial being graduated for indicating the wave lengths of the radio signals in meters or kilocycles or both as desired.

In the modification shown in Fig. 4 the spring discs 21 and 22 are formed with cir-

cular ridges 40 and 41 having their apexes provided with radial knurles or teeth as shown in Figs. 4 and 5. The disc 22 is mounted securely on the hub 20 and the disc 21 engages the threaded portion of the hub. In this arrangement the space between the peripheral edges of the discs 21 and 22 and therefore their contact pressure in the groove of pulley 27 is adjusted by changing the distance at the center of the discs, which is effected by rotating the disc 21 on the threaded portion of hub 20, in order to decrease the distance at their centers and thereby force these discs to take a position as indicated by the dotted lines in Fig. 4, the engagement of the discs with the pulley 27 being effective to further assist in forcing the teeth at the apexes of ridges in engagement with a considerable pressure and thus assuring the positive operation of the adjustable shaft 33.

Similarly, in the modification shown in Fig. 6 the discs 21 and 22 are each provided with circular ridges 40 and 41 disposed in abutting relation to each other. The disc 22 is mounted securely on the hub 20 and the disc 21 is securely mounted on one end of bushing 50 which is telescopically arranged in hub 20. The other end of this bushing is screw threaded and is engaged by a nut screw 51 which is provided to move the bushing 50 axially against the resiliency of the spring discs 21 and 22. In this modification a number of pins such as 52 are provided to prevent the relative movement of disc 21 with respect to disc 22 and the bushing 50 is provided with a longitudinally disposed slot 53 in which the set screw 24 extends to permit the engagement of this screw with the shaft 33.

In this arrangement the adjustment of the contact pressure between the resilient discs 21 and 22 and the grooved pulley 27 is effected by changing the space at the center of the discs through the tightening of nut screw 51, this adjustment being effective to increase the distance between the peripheral edges of discs 21 and 22 and thus increase their pressure contact in the groove of pulley 27 as above described in connection with the modification of Fig. 4.

Applicants have discovered that by changing the diameter of spacer member 23 or its thickness or both, or providing the spring discs with ridges and an adjustment at their centers this furnished a means whereby a considerable pressure contact between the spring discs 20 and 21 and the sides 25 and 26 of groove pulley 27 can be obtained, thus making possible the positive operation of the dial against considerable load.

What is claimed is:

1. In a tuning dial, a pair of mounting plates, a driving shaft journaled in said plates, a V-shaped pulley carried on said

driving shaft between said plates, a pair of bevel edged spring discs, circular ridges in abutting relationship on said discs for maintaining said discs in spaced relation, a driven shaft journaled in said mounting plates for supporting said discs, and means on said driven shaft, cooperating with said circular ridges, for increasing the space between said discs at their peripheries, by drawing the central portions of said discs towards each other.

2. In a tuning dial, a pair of mounting plates, a driving shaft journaled in said plates, a V-shaped pulley carried on said driving shaft between said plates, a pair of bevel edged spring discs, circular ridges having serrations thereon, in abutting relationship on said discs, for maintaining said discs in spaced relation, a driven shaft journaled in said mounting plates for supporting said discs, graduations on one of said discs, a window for viewing said graduations in one of said mounting plates, a driven shaft journaled in said mounting plates for supporting said discs, and means on said driven shaft cooperating with said circular ridges to increase the space between said discs at their peripheries when the central portions of said discs are drawn toward each other.

In witness whereof, we hereunto subscribe our names this 29th day of September, 1930.

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