

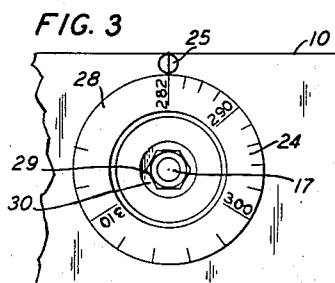
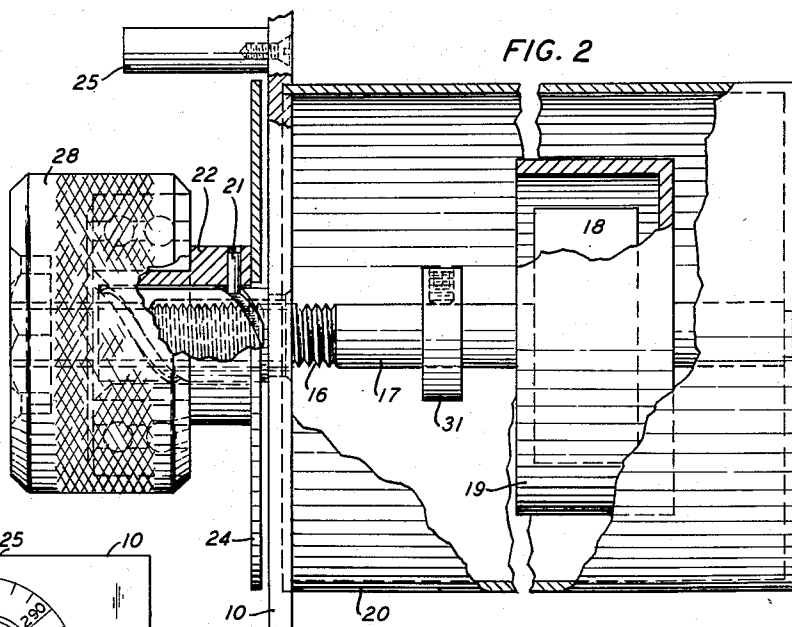
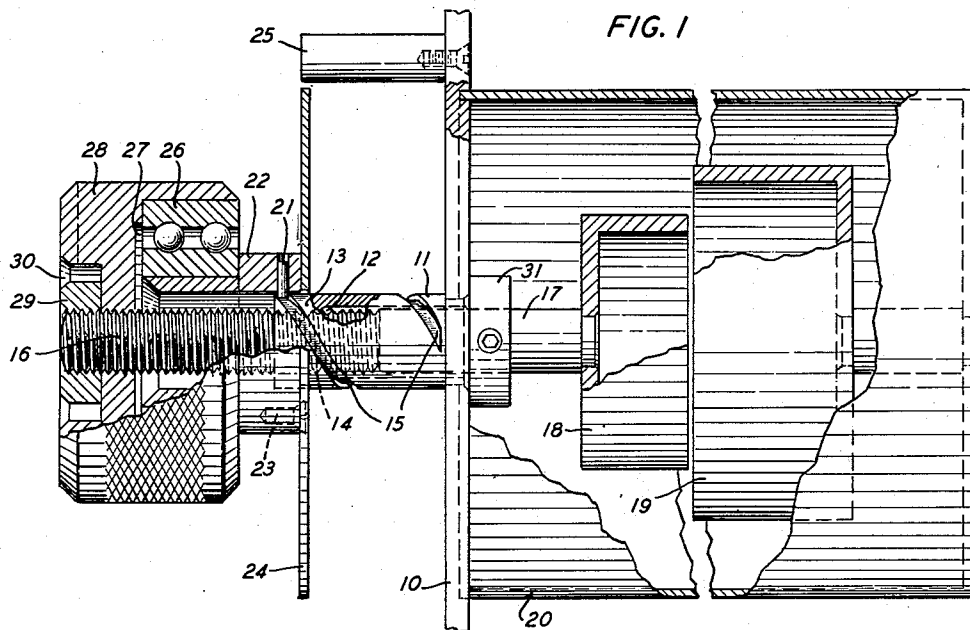
July 6, 1954

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2,682,859

TUNING DIAL ASSEMBLY FOR ELECTRICAL APPARATUS

Filed Dec. 27, 1951



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UNITED STATES PATENT OFFICE

2,682,859

TUNING DIAL ASSEMBLY FOR ELECTRICAL APPARATUS

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Application December 27, 1951, Serial No. 263,667

2 Claims. (Cl. 116—124.1)

1

This invention relates to tuning dial assemblies and more particularly to such assemblies wherein a longitudinal reciprocal tuning element may be selectively moved to accurately predetermined positions.

An object of this invention is the provision of a dial assembly for use with adjustable electrical apparatus wherein reciprocal axial motion, imparted to an operating shaft by a central knob, is converted to a calibrated circular motion.

In the preferred embodiment of our invention, the dial assembly comprises a sleeve member, having a longitudinally extending central bore therein, fixedly secured to and projecting from the face of a suitable apparatus panel. The central bore of the sleeve, at its free end, is of reduced diameter and is internally threaded, and the outer surface thereof is provided with a helical groove having a substantially long lead, which extends the length of the sleeve. Positioned in the central bore of the sleeve, and having its outer end in threaded engagement with the outer end of the sleeve, is an operating shaft which is operatively connected to suitable apparatus mounted on the rear of the panel. Rotatably mounted on the sleeve and having an internally extending pin in engagement with the groove on the outer surface of the sleeve, is a shouldered hub member which has secured to its inner end an indicating dial plate. Mounted on the reduced diameter portion of the hub member, bearing against the shoulder and secured, as by a press fit, is a suitable bearing which is secured, also as by a press fit, in a recess in the rear of a knob member which is positioned on the outer threaded end of the shaft, and is secured thereto by a suitable nut located in a recess in the outer face of the knob.

In operation, when the control knob is rotated, either clockwise or counter-clockwise, the shaft will move axially with a reciprocating motion. Since the indicating dial is secured to the hub member, which, in turn, is rotatably mounted on the sleeve and in engagement with the groove therein which has a long lead, and since the shaft will travel in the fine threads in the sleeve, the knob will complete several revolutions to a single revolution of the dial depending on the pitch of the groove on the sleeve, thereby causing the apparatus attached to the shaft to reciprocate and be finely adjusted.

Other objects and advantages of this invention will be apparent from the following detailed description when read in connection with the following drawings wherein:

2

Fig. 1 is a side elevational view, partly in section of an assembly constructed in accordance with this invention, and illustrates the control knob at the end of its outward travel;

Fig. 2 is a view similar to Fig. 1 but shows the control knob at the end of its inward travel; and

Fig. 3 is a front elevational view, to a reduced scale, of the knob and indicating dial.

As shown in the drawings, there is mounted on the face of the apparatus panel 10, a shouldered sleeve member 11, which is secured in position in a suitable aperture in the panel by abutting the shoulder against the panel and spinning into contact with the panel the extending portion of the sleeve. The sleeve 11 is provided with a central bore 12 which has a reduced diameter portion 13 at its outer end and is provided with the fine internal threads 14. The outer surface of the sleeve 11 is provided with a helical groove 15 which has a long lead and extends substantially the full length of the sleeve 11.

Rotatably mounted in the central bore 12 of the sleeve 11, and having its threaded outer end 16 in engagement with the threads 14 on the sleeve 11, is the operating shaft 17 which is operatively connected to the adjustable member 18 of the capacitor 19 which is enclosed in the housing 20 mounted on the rear of the panel 10.

Journalled on the sleeve 11 and having an internally extending pin 21, in engagement with the groove 15 on the sleeve 11, is a shouldered hub member 22 which has secured to its inner end, by means of screws 23, an indicating dial plate 24, provided with suitable indicia, as shown in Fig. 3, arranged to register with the index pin 25 located on the panel 10.

Secured on the reduced diameter portion of the hub 22, against the shoulder, by means of a press fit, is the ball bearing 26 which is also secured by a press fit, in the recess 27 located in the rear of the knob 28. The knob 28 is in threaded engagement with the outer threaded end 16 of the shaft 17, is secured thereto, and locked in position by means of the jam nut 29 located in the recess 30 in the front face of the knob 28. A suitable collar 31 is secured on the shaft 17 to limit the outward movement of the shaft and its associated elements.

When the control knob 28 is rotated, either clockwise or counter-clockwise, the shaft 17 will move axially due to the engagement of the threaded end 16 with the fine internal threads 14 in the front end of the sleeve 11. Since the dial plate 24 is secured to the hub 22, which is rotatably mounted on the sleeve 11 with its pin

21 in engagement with the groove 15, which has a substantially long lead, and the shaft 17 will travel in the fine thread 14 of the sleeve 11, the knob 28 will complete several revolutions to a single revolution of the dial plate 24, the number depending upon the ratio of the pitch of the thread 14 to the pitch of the groove 15.

It will thus be observed that the movable element 18 of the capacitor 19, attached to the shaft 17, will be caused to reciprocate and the capacitance will be finely controlled. A wide range of adjustment is indicatable by the dial because of the limited rotation of the latter relative to the knob.

Although we have shown and described a preferred embodiment of our invention it is to be understood that various modifications may be made therein without departing from the scope and spirit of the invention.

What is claimed is:

1. A tuning dial for electrical apparatus comprising a support, a sleeve having a fine internal thread and an external helical groove secured to said support, a shaft in engagement with said internal thread, a hub rotatably mounted on said sleeve and in operative engagement with said ex-

ternal helical groove, a knob rotatably mounted on said hub and secured to said shaft for causing the rotation thereof and a dial plate secured to said hub.

2. A tuning dial for electrical apparatus comprising a support, a sleeve having a fine internal thread and a coarse external helical groove, secured to said support, a shaft in engagement with said fine internal thread, a hub rotatably mounted in said sleeve and having an internally extending pin in engagement with said external helical groove, a bearing secured on said hub, a knob mounted on said bearing for rotatably supporting said knob, said knob having one end of said shaft secured therein for causing the rotation thereof and a dial plate secured to said hub.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,622,389	Miessner	Mar. 29, 1927
1,725,639	Herman	Aug. 20, 1929
1,733,337	Deutscher	Oct. 29, 1929
1,836,583	Elliott	Dec. 15, 1931