Oct. 11, 1932. H. R. HAYDEN 1,882,584

RADIO DIAL CONSTRUCTION

Filed Aug. 8, 1929

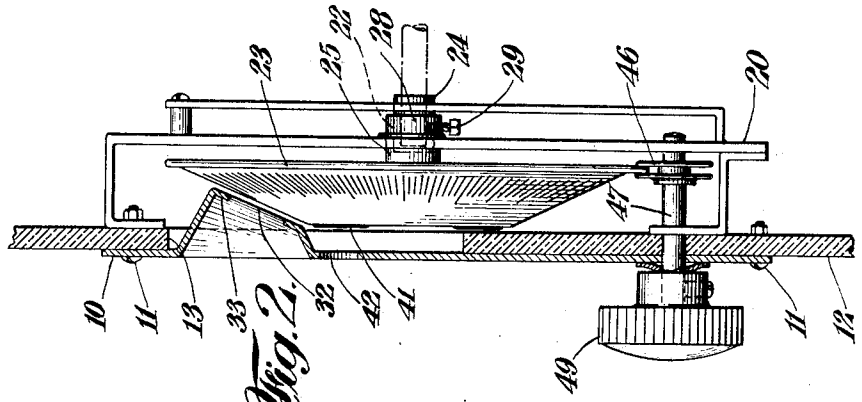



Fig. 2.

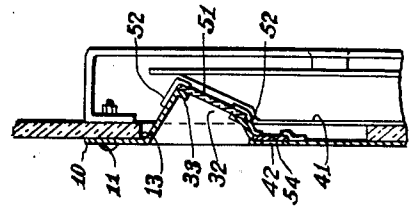



Fig. 3.

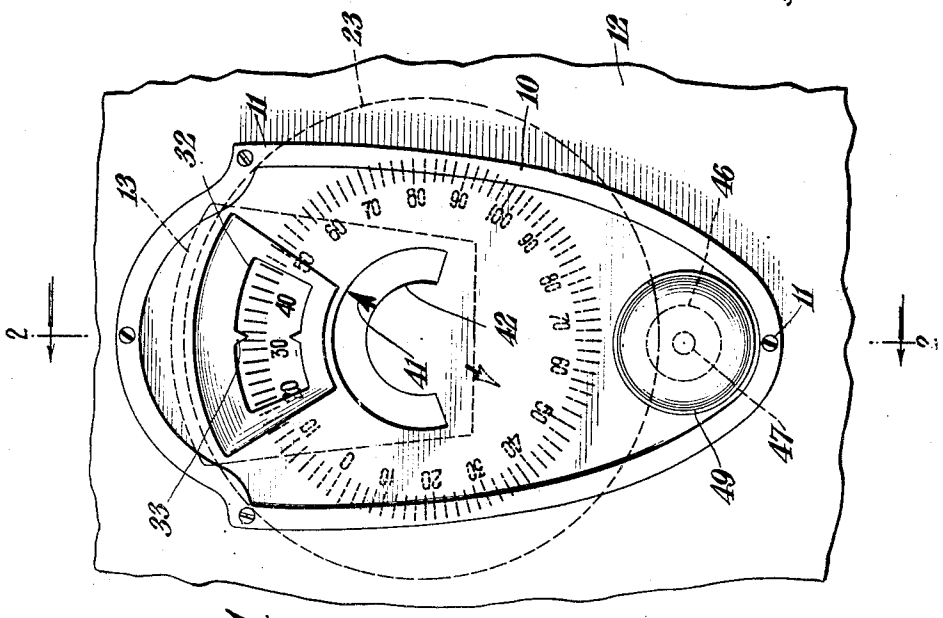



Fig. 1.

INVENTOR
Harold R. Hayden
BY
Sheldon H. Graves
his ATTORNEY

Patented Oct. 11, 1932

1,882,584

# UNITED STATES PATENT OFFICE

HAROLD R. HAYDEN, OF BROOKLYN, NEW YORK

## RADIO DIAL CONSTRUCTION

Application filed August 8, 1929. Serial No. 384,395.

This invention relates to radio receiving apparatus and more particularly to dials or indicating devices, such as are employed for tuning the system to receive desired incoming signals.

The principal object of my invention is to provide a radio receiving apparatus with a dial having the indications thereon formed of luminous material visible in the dark. Heretofore in order to illuminate dials on radio receiving sets it has been customary to employ miniature electric lamps which are connected in circuit to the source of the current which supplies the vacuum tubes of the set. When the lamp is connected in series with the vacuum tubes the system can be operated only when the lamp is illuminated and on failure of the lamp, the system ceases to function. When the lamp is connected in shunt to the tube circuits switching on or off of the lamp or failure of the lamp is apt to cause changes in the voltage applied to the tube circuits, which interferes with the efficient operation of the system. By the use of a dial provided with luminous characters or indicia, the disadvantages above noted are overcome.

While I am aware that it has been proposed to apply luminous material to various devices for the purpose of rendering them visible in the dark, I am unaware that luminous material has ever been employed on the dials of radio receiving sets above described.

The specific features of my invention relate to the particular markings and arrangement of marking of luminous material on the dial with a view to permitting a ready and accurate reading of the dial setting, to the protection of the luminous material from dirt and wear, and also features of construction, as will be more particularly pointed out hereafter.

Also other objects and advantages of my invention will appear from the following description taken in connection with the accompanying drawing, wherein:

Figure 1 is a front elevation of one form of dial embodying my invention;

Figure 2 is a vertical transverse sectional view of the structure shown in Figure 1, certain of the parts being in elevation, and

Figure 3 is a detailed vertical sectional view showing a modification.

The dial shown in the drawing comprises a face plate 10 adapted to be secured by screws 11 to the front panel 12 of a radio receiving cabinet. The panel is formed with an opening 13, which is closed by the face plate 10, this opening conforming to the general shape of the face plate.

Secured at the back of the panel by screws 11 is a metal bracket 20, formed with a central bearing opening 22, in which is journaled a hollow shaft 24 which is adapted to be secured to and to turn the shaft of a tuning condenser or similar device. The shaft 24 between the bracket 20 and plate 10 carries a dial plate 23, formed with a hub 25, which is secured to the shaft 24 and rotates in contact with the bracket 20. The inner end of the shaft 24 carries a collar 28 which is secured to the shaft 24 by a screw 29 that extends through the collar and shaft and is adapted to secure the condenser shaft in the shaft 24. The collar 28 and hub 25 serve to prevent axial movement of the shaft 24 in the bearing opening 22.

The dial is graduated near its periphery and in the present invention these graduations are marked on the dial plate 23 with luminous paint, so as to be visible in the dark. The face plate 10 is formed with an opening or recessed window 32, through which the graduations may be seen. The plate 10 is formed at the opening with a suitable pointer 33, which cooperates with the graduations on the dial to indicate the position of the dial.

As shown in the drawing the graduations on the dial over 180° of arc are numbered 0 to 100 in a clockwise direction, and over the remaining 180° of arc, from 0 to 100 in a counter clockwise direction. In practice the motion of the dial will ordinarily be limited to 180° of arc and the particular set of dial graduations used will depend upon whether the dial is used with a condenser which is turned in a clockwise direction or counter clockwise direction for increase in wave lengths of signals received.

Also marked with luminous paint on the dial inside the circle of graduations are two arrows 41, pointing, respectively, to the centre graduation 50 of each scale. The face plate 10 is provided with an arcuate slot 42 located beneath the window 32, through which slot one or the other of the arrows 41 is always visible. The slot 42 is preferably located above the shaft 24 and extends over somewhat more than 180° of arc. By observing the position of the arrow behind the arcuate or segmental slot 42, it is possible for an operator in the dark to estimate the angular position of the dial or the adjustment position of the condenser. This is of considerable assistance in case the numbers on the dial cannot be accurately read. An operator can easily ascertain the position of the stationary pointer 33, relative to some number on the dial and by observing the position of the pointer or arrow 41 along the slot 42 or relative to the window 32, he can judge accurately what the number is.

It is to be noted that the luminous material which forms the graduations and numbers on the dial and the arrows 41, being located behind the face plate 10, is protected from dirt and wear. If desired, the window 32 and slot 42 may be provided with panes of glass or similar transparent material. I, however, find that the visibility of the luminous characters is improved when the window and slot are left open. Instead of a glass pane for the window 32, I may, if desired, employ a lens to magnify the characters on the dial. When it is desired to provide a glass protecting means for the luminous characters, I may employ a construction shown in Figure 3 wherein the window 32 is provided with a glass or other transparent pane 51 held in position by bent lugs 52 and a second pane 54 similarly secured over the opening 42.

The dial may be rotated by any suitable means, such for example, as a friction gear 46, positioned to embrace the outer edge of the dial. Gear 46 is mounted on a shaft 47, extending outwardly through the bracket 20, panel 12 and face plate 10, and may be rotated by a movable knob 49.

This application is a continuation in part of my copending application, Serial Number 196,244, filed June 3, 1927.

Having now described my invention, what I claim and desire to secure by Letters Patent, is:

1. A dial control comprising a face plate formed with a window and an arcuate slot, a dial rotatably mounted behind said face plate, graduations on said dial, visible through said window, and an arrow on said dial visible through said slot.

2. A dial control comprising a face plate formed with a window and an arcuate slot, a dial rotatably mounted behind said face plate, graduations on said dial, visible through said window, and an arrow on said dial visible through said slot; said graduations and arrow being formed of luminous material visible in the dark.

3. A radio dial comprising a plate having numbered graduations near its periphery, the numbers increasing successively in a clockwise direction for 180° of arc and increasing successively in a counter clockwise direction for the remaining 180° of arc, two arrows marked on said dial inside the series of graduations, said arrows pointing, respectively, toward the centres of said arcs.

4. A radio dial comprising a plate having numbered graduations near its periphery, the numbers increasing successively in a clockwise direction for 180° of arc and increasing successively in a counter clockwise direction for the remaining 180° of arc, two arrows marked on said dial inside the series of graduations, said arrows pointing, respectively, toward the centres of said arcs, said graduations and arrows being formed of luminous material visible in the dark.

5. A radio dial comprising a plate having numbered graduations near its periphery, the numbers increasing successively in a clockwise direction for 180° of arc and increasing successively in a counter clockwise direction for the remaining 180° of arc, two arrows marked on said dial inside the series of graduations, said arrows pointing, respectively, towards the centres of said arcs, a face plate in front of said dial, having a window through which dial graduations are visible, and an arcuate slot of approximately 180° of arc, through which one of said arrows is visible.

6. A dial control comprising a face plate formed with a window and an arcuate slot, a member rotatably connected to said plate, markings of different character movable respectively behind said window and slot and means movable with said member for carrying said markings.

7. A dial control comprising a face plate formed with a window and an arcuate slot, a member rotatably connected with said face plate, a dial rotatable with said member and markings of different character on said dial and movable respectively behind said window and slot.

8. A radio system dial control, a panel having a window and an elongated opening, a movable member having indicia, movable behind and visible through said window and also having a pointer movable behind and visible through said opening.

9. A radio system dial control comprising a face plate, a member behind said plate and movable over a definite range, said member being formed with markings of different character, each positioned out of the path of movement of the other and said face plate

being formed with a window and an elongated opening through which said markings are visible, certain of said markings being visible through said elongated opening throughout the entire range of movement of said member.

Signed at New York in the county of New York and State of New York this 7th day of August A. D. 1929.

HAROLD R. HAYDEN.