

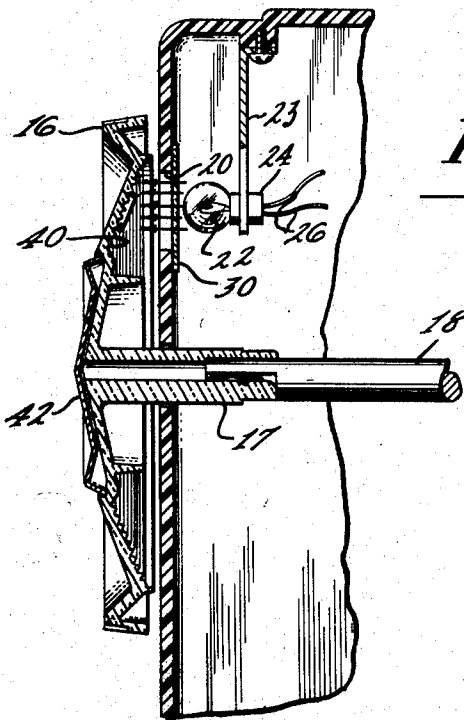
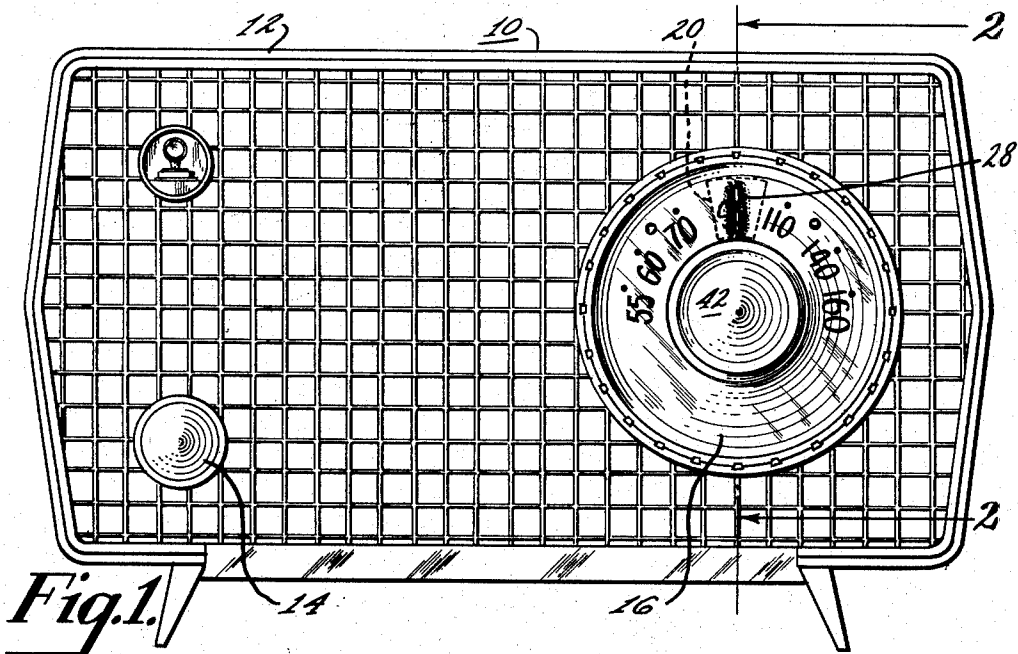
May 12, 1959

W. C. ROBERTS ET AL

2,885,992

DIAL INDICATOR

Filed Oct. 10, 1956



INVENTORS.
William C. Roberts &
Hans Mendelson
BY *H. O. Newton*
ATTORNEY.

1

2,885,992

DIAL INDICATOR

William C. Roberts, Haddonfield, and Hans Mendelson, Erlton, N.J., assignors to Radio Corporation of America, a corporation of Delaware

Application October 10, 1956, Serial No. 615,133

4 Claims. (Cl. 116—124.4)

This invention relates generally to illuminated dial indicators of the type used in electrical instruments, and more particularly relates to tuning dial indicators for radio broadcast receivers and the like.

It is an object of the present invention to provide an improved dial indicator of simple construction and attractive appearance.

A further object of this invention is to provide an improved illuminated dial indicator for radio broadcast receivers and the like which is inexpensive to manufacture and which is easy to read accurately even in a completely darkened room.

Another object of this invention is to provide an improved dial indicator for electrical instruments such as radio signal receivers, which also serves to indicate whether or not the instrument is energized.

In accordance with the invention, suitable indicia, such as station or channel frequencies in the case of radio receiver and like tuning dials, is suitably printed or otherwise formed on a body of transparent material having a plurality of parallel or concentric grooves or corrugations on one side thereof. An electric filamentary dial lamp is disposed behind the transparent body and is energized with the apparatus in a conventional manner. The multiple refractions of light from the lamp produce a luminous line extending transversely to the parallel grooves, that is, radially in the case of a circular dial body. As the transparent body and the dial lamp are moved relative to one another to provide a desired control, the position of the luminous line relative to the indicia on the transparent body provides an easily discernable indication of the dial setting. The presence of the luminous line indicates that power is being applied to the apparatus.

The novel features that are considered characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, as well as additional objects and advantages thereof, will best be understood from the following description when read in connection with the accompanying drawings, in which:

Figure 1 is a front view of a radio broadcast receiver including a dial indicator embodying the invention; and

Figure 2 is a sectional view, partly broken away, of the broadcast receiver shown in Figure 1 taken on the section lines 2—2.

Referring now to the drawings, the dial indicator of the invention is illustrated in connection with a broadcast radio receiver 10 and provides an indication of the frequency to which the receiver is tuned. The receiver 10 includes a cabinet 12 which may be styled to suit the tastes of the designer. Housed within the cabinet 12 is a suitable signal receiver chassis, and a loudspeaker, not shown, which is mounted behind the front grill work of the cabinet. Extending from the lower left-hand corner of the cabinet 12 is a control knob 14 which provides a means to vary the volume of the sound emanating from

2

the speaker. The control knob 14 also operates an on-off switch to control the application of power to the receiver. The on-off switch is operated by the knob 14 at an extreme end of the volume control range in the usual manner.

The tuning device used in connection with the signal receiver is operated by the rotational movement of a tuning control knob 16 which is of relatively large diameter as compared to the volume control knob. As shown in Figure 2, the knob 16 has a hollow axially extending spindle 17 which is adapted to receive the end of a shaft 18 which may, for example, comprise the main drive shaft of a ganged tuning capacitor, not shown.

The knob 16 is made of a transparent material such as a clear plastic, and has a series of closely spaced concentric grooves or corrugations 40 on the side thereof adjacent the cabinet 12. The knob 16 also is provided with suitable indicia representative of the frequencies in the broadcast range, which may comprise raised hot stamped black figures positioned over the grooves 40. If desired the grooves may be formed in other ways and may be positioned on either the front or rear sides of the dial 16.

In one embodiment of the invention the sides of the grooves are molded to present an angle of 45° to horizontal, or, in other words the sides of the grooves are perpendicular to each other. A distance of .03 inch from one groove to the next was found to give excellent results. If desired, other constructions can be used such as where the grooves comprise a continuous spiral.

The knob 16 as shown is highly styled and includes a polished brass insert 42 over the central portion thereof. The outer rim of the knob is widened to provide a surface which may be easily gripped by the operator when tuning the receiver. The portion of the knob including the concentric grooves 40 and indicia is tilted from vertical to permit easy reading of the dial by an operator standing above the apparatus.

An aperture 20 is formed in the front surface of the cabinet 12 behind the grooves 40 on the knob 16, and a filamentary dial or pilot lamp 22 is supported by a bracket 23 within the cabinet 12 behind the aperture. The dial or pilot lamp 22 is mounted in a suitable socket 24 and is energized from the receiver power supply through the conductors 26 when the knob 14 is rotated to the on position.

When the dial lamp 22 is energized, the light therefrom is refracted by the concentric grooves or corrugations on the rear side of the knob 16 into a vertically extending luminous line 28 of enhanced illumination which serves as the tuning dial pointer, and as an on-off indicator. If desired, the color of the luminous line 28 may be selected by inserting an appropriate color filter 30 over the aperture 20 in the cabinet 12.

It can be seen that as the tuning knob 16 is rotated to select a desired station, the luminous line 28 appears directly on the transparent knob 16 in substantially the same place as the indicia to show the exact tuning of the receiver.

It has been found that the luminous line 28 appears sharpest when the dial lamp 22 is adjusted so that the filament extends in a vertical direction. However, good definition of the luminous line is produced when the filament extends in any other direction, and provides a dial indicator which may be easily read even in a darkened room.

In accordance with the foregoing, an improved dial indicator system has been provided which is of simple construction and attractive appearance and is easy to read even in a completely darkened room. When the receiver is deenergized the luminous line disappears thereby providing an on-off indicator for the receiver.

3

What is claimed is:

1. A tuning indicator for a radio broadcast receiver comprising in combination, a rotatable tuning knob having a flat dial portion of transparent material with closely-spaced relatively-narrow concentric grooves on one side of said dial portion, means providing frequency representing indicia on said dial portion coextensive and aligned with said grooves, means providing a light-conducting aperture in rear of said dial portion and adjacent to said grooves, a filamentary dial lamp mounted in alignment with said aperture to pass light therefrom in one direction through said dial portion and grooves and produce a frontally-visible radial line of illumination in association with the indicia as a dial marker.

2. A tuning indicator for a radio broadcast receiver having a rotatable tuning control shaft comprising, a circular rotatable tuning dial for said shaft of transparent material having a plurality of closely-spaced concentric grooves on the rearward side thereof, means providing a circular line of indicia on said dial representative of the frequencies to which said receiver is tunable and extending along a path generally parallel to and frontally of said grooves, means providing a light conducting aperture aligned with said grooves at the rearward side of said tuning dial, a filamentary dial lamp mounted in rear of and aligned with said aperture to provide illumination through said grooves and a visible luminous line on said dial extending transversely to said grooves and line of indicia, and circuit means connected with said dial lamp for energizing said lamp to establish said luminous line when the receiver is energized.

3. In a radio receiver, a tuning indicator for a tuning device comprising in combination, a rotatably-mounted circular tuning dial having at least a portion of transparent material and having a plurality of closely-spaced relatively-narrow concentric grooves on one side of said portion, tuning indicia on said tuning dial extending along said portion, means including a filamentary dial lamp mounted to spot-illuminate said indicia through said dial

4

portion and said grooves and produce a visible line of illumination superposed thereon as a reference mark or pointer, and means for energizing said dial lamp with said receiver to establish said visible line when said receiver is in operation.

4. A dial indicator for electrical apparatus, comprising in combination, a dial element of transparent material having front and rear sides, means providing indicia in an extended frontally-viewable area along the dial element and a plurality of closely-spaced grooves in parallel relation on the rear side thereof in alignment and coextensive with the indicia, a relatively small filamentary dial lamp for said indicator mounted adjacent to the grooves at the rear side of said dial element, means interposed between the lamp and said dial element providing a light-conducting aperture aligned with the lamp and a portion of the frontally-viewable area of said indicia to direct light from the lamp through the dial element from the rear and provide by multiple refractions of light through said grooves a frontally-visible luminous line of enhanced illumination on said dial member extending transversely to said grooves and the indicia as a dial marker or pointer, said dial member and said dial lamp being relatively movable in a direction to move the luminous line along the dial element, and means providing circuit connections with said lamp for applying energizing current thereto from said apparatus, thereby to establish said luminous line when the apparatus is in operation.

References Cited in the file of this patent

UNITED STATES PATENTS

2,117,441	McWeeny	May 17, 1938
2,619,932	Brewster	Dec. 2, 1952
2,648,305	Appleman	Aug. 11, 1953
2,681,634	Polley	June 22, 1954
2,713,103	Slate	July 12, 1955