United States Patent

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Yokohama, Japan
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[33] **Japan**
[31] **44/28,073**

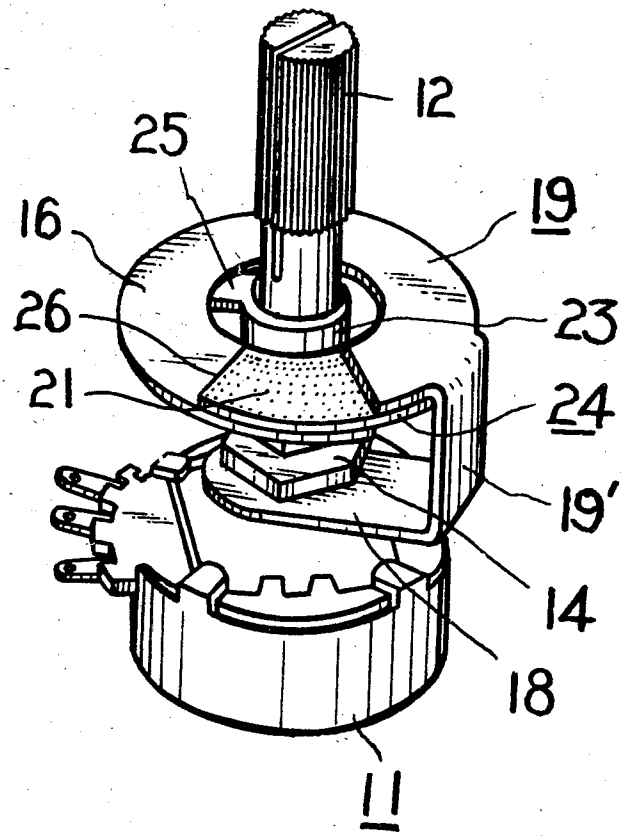
[54] **INDICATION DEVICE FOR SOUND PRODUCING EQUIPMENT**
8 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **338/196,** 338/119, 338/163
[51] **Int. Cl.** **H01c 9/02,** H01c 5/02
[50] **Field of Search** 338/119, 163, 196

[56] **References Cited**
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Assistant Examiner—Gerald P. Tolin
Attorney—Stevens, Davis, Miller and Mosher

ABSTRACT: An indication device for sound producing equipment in which a member having a cutout is secured to a stationary part of a variable resistor and a forward end of a plate secured to a movable part of the variable resistor is inserted in the cutout of the member so that the portion of the plate lies on the member in superposed relationship. By moving the rotary part, the amount of the exposed portion of the plate secured to the movable part is increased or reduced, so that variations in the value of resistance is indicated by the amount of the exposed portion of the plate.



Patented June 28, 1971 3,588,780

2 Sheets-Sheet 1

FIG. 1

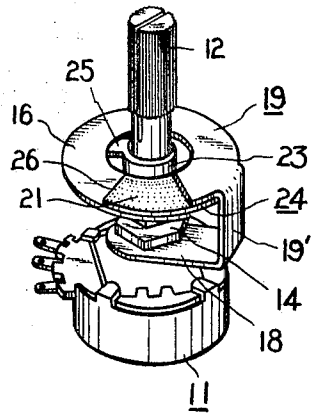


FIG. 2

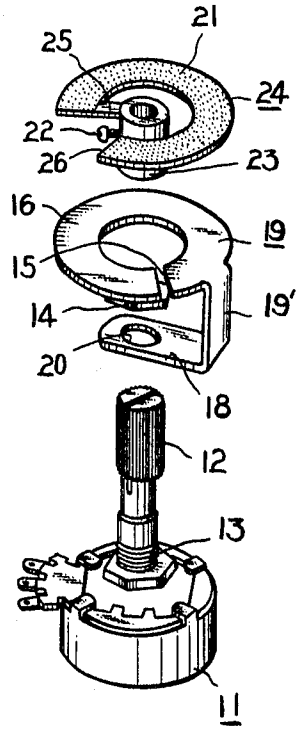
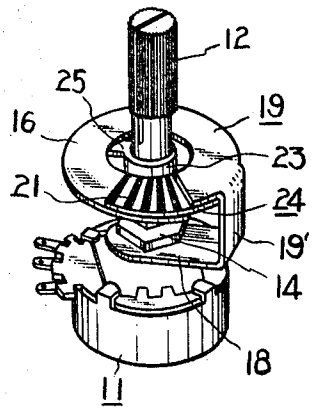


FIG. 3



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FIG. 4

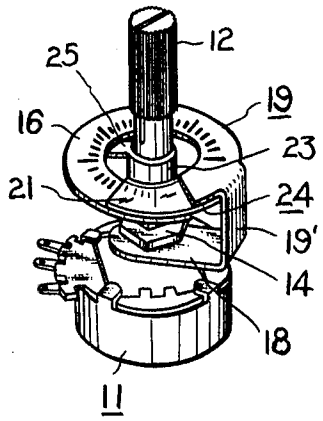


FIG. 5A

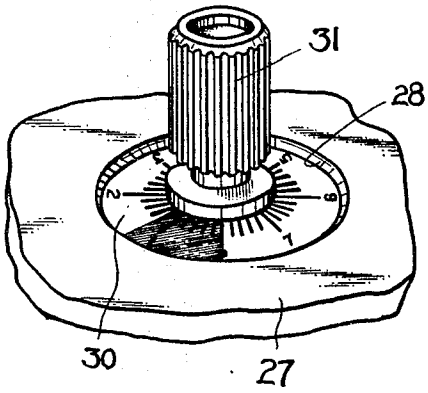
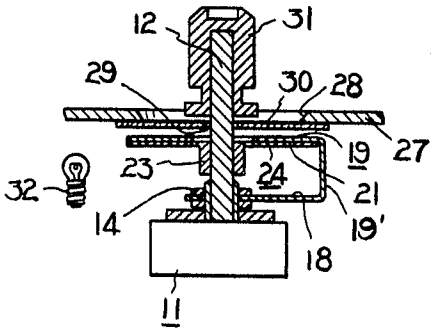


FIG. 5B



INDICATION DEVICE FOR SOUND PRODUCING EQUIPMENT

This invention relates to indication devices for sound producing equipment. More particularly, the invention is concerned with an indication device for stereophonic players, television sets and other sound producing equipment using a variable resistor for effecting volume and tone control which permits to quantitatively indicate changes in volume or tone in accordance with variations in the resistance value of the variable resistor caused by control operations.

A principal object of this invention is to provide an indication device which permits to indicate by simple means the results of operation of a variable resistor in sound producing equipment.

Another object of the invention is to provide an indication device for sound producing equipment which permits to quantitatively indicate the results of volume control or tone control in accordance with variations in the resistance value of a variable resistor.

Still another object of the invention is to provide an indication device for sound producing equipment which permits to readily read variations in the resistance value of a variable resistor from a position remote from the sound producing equipment provided with the indication device.

Additional objects as well as features and advantages of the invention will become evident from the description set forth hereinafter when considered in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of the indication device comprising one embodiment of this invention;

FIG. 2 is an exploded perspective view of the indication device of FIG. 1; and

FIG. 3, FIG. 4 and FIGS. 5A and 5B are perspective views of the indication device comprising other embodiments of the invention.

FIGS. 1 and 2 show one embodiment of the indication device according to this invention which has a body portion 11 of a variable resistor adapted to be mounted on a base plate (not shown) of a stereophonic player or television set by being secured thereto by means of an externally threaded bearing portion 13 of a rotary shaft 12 and a nut 14.

There is also shown a stationary member 19 comprising a first ring-shaped portion 16 formed with a cutout 15, and a mounting arm 18 disposed parallel to the portion 16 and normal to a connecting member 19' extending downwardly from the outer periphery of the ring-shaped portion 16. The stationary member 19 is fixed to the body portion 11 of the variable resistor by the nut 14 after the mounting arm 18 is inserted through an opening 20 formed therein with the bearing portion 13. A rotary indication plate 24 is shown as comprising a second ring-shaped portion 21 formed on its surface with a reticule pattern, for example, and a boss 23 connected to the portion 21 through a connecting member 25 and formed with a mounting screw 22. The ring-shaped portion 21 is formed with a cutout of substantial extent. The rotary indication plate 24 is secured to the rotary shaft 12 by means of the mounting screw 22.

In assembling these components and mounting the assembly on the base plate of the equipment, the rotary indication plate 24 is first mounted on the stationary member 19 by inserting an end 26 of the second ring-shaped portion 21 in the cutout 15 of the first ring-shaped portion 16 from below and moving the same to the left in FIGS. 1 and 2 so that a portion contiguous with the end 26 may emerge on the upper surface of the ring-shaped portion 16 as shown in FIG. 1.

The indication device constructed as aforementioned according to this invention operates such that as the rotary shaft 12 is rotated, the portion of the second ring-shaped portion 21 of the rotary indication plate 24 inserted in the cutout 15 of the first ring-shaped portion 16 of the fixed member 19 from below and laid on the upper surface of the portion 16 to be exposed to view can be varied in area. It will thus be evident that variations in the resistance value of the variable resistor can be quantitatively indicated by variations in the area of segmental exposed portion of the second ring-shaped portion 21.

FIGS. 3, 4, 5A and 5B show other embodiments of the indication device according to this invention. Similar parts will be given like reference characters in these embodiments and need not be described in detail.

The embodiment of FIG. 3 is substantially similar to that of FIGS. 1 and 2 except for the surface pattern of the second ring-shaped portion 21 of the rotary indication plate 24 which is striped in this embodiment. A variation in the resistance value of the variable resistor can be indicated by an increase or reduction in the number of stripes exposed to view as the rotary shaft 12 is rotated.

It is to be noted that the surface pattern of the second ring-shaped portion 21 is not limited to reticule and stripes and that any suitable pattern including a colored surface may be used.

In the embodiment of FIG. 4, the surface of the first ring-shaped portion 16 of the stationary member 19 is calibrated in resistance values and the second ring-shaped portion 21 of the rotary indication plate 24 is in the form of a colored transparent or opaque plate. It will be seen that by rotating the rotary shaft 12, it is possible to read the markings on the calibrated scale through the second ring-shaped portion 21.

The embodiment shown in FIGS. 5A and 5B includes a decorative front panel 27 formed with a circular opening 28. A transparent disc 30 is formed in its central portion with an opening 29 and its surface is calibrated with the markings arranged radially about the center opening 29. The transparent disc 30 in this form is fitted in the circular opening 28. The rotary indication plate 24 having the surface of its second ring-shaped portion 21 colored, for example, is mounted on the rotary shaft 12 which is fitted in the center opening 29 of the transparent disc 30. A knob 31 is attached to the upper end of the shaft 12. By combining the rotary indication plate 24 with the stationary member 19 and manipulating the knob 31 to rotate the rotary shaft 12, the segmental portion of the colored ring-shaped portion 21 which is exposed to view through the transparent disc 30 will be increased or reduced in area, making it possible to quantitatively indicate variations in resistance value by means of the area of the segmental portion and the calibrated scale.

A lamp 32 may be provided in the vicinity of the calibrated scale on the transparent disc 30 so as to show the markings of the scale in relief and more effectively indicate the results of control operations.

While the invention has been shown and described with reference to preferred embodiments thereof, it is to be understood that the invention is not limited to the specific forms of the device and that many changes and modifications may be made within the scope of the annexed claims without departing from the spirit of the invention.

I claim:

1. An indication device for sound producing equipment comprising a variable resistor proper having a movable part, a plate mounted on said movable part, and a stationary member formed with a cutout and mounted on said variable resistor proper, a forward end of said plate mounted on said movable part being inserted in said cutout of said fixed member so that a portion of the plate lies on said fixed member in superposed relationship whereby a resistance value of the variable resistor is indicated by the area of the portion of the plate fixed to said movable part which is exposed to view.

2. An indication device for sound producing equipment as claimed in claim 1 wherein the surface of said plate fixed to said movable part is colored.

3. An indication device for sound producing equipment as claimed in claim 1 wherein the surface of said plate fixed to said movable part bears a pattern.

4. An indication device for sound producing equipment comprising a variable resistor proper having a rotary shaft, a rotary plate secured to said rotary shaft and comprising a cutout and a ring-shaped portion, and a stationary member mounted on said variable resistor proper and comprising a cu-

tout and a ring-shaped portion, a forward end of said ring-shaped portion of said rotary plate being inserted in said cutout of said stationary member so that a portion of the ring-shaped portion of the rotary plate lies on the ring-shaped portion of the stationary member in superposed relationship whereby the area of said portion which is exposed to view is varied as said rotary shaft is rotated.

5. An indication device for sound producing equipment as claimed in claim 4 wherein the surface of said rotary plate secured to said rotary shaft is colored.

6. An indication device for sound producing equipment as claimed in claim 4 wherein the surface of said rotary plate fixed to said rotary shaft bears a pattern.

7. An indication device for sound producing equipment as claimed in claim 4 wherein said ring-shaped portion of said rotary plate is in the form of a colored plate, and the surface of said ring-shaped portion of said stationary member is calibrated in resistance values with the markings being arranged radially.

8. An indication device for sound producing equipment comprising a decorative front panel formed with a circular opening, a transparent disc formed in its central portion with an opening and having a surface which is calibrated with the markings arranged radially about said center opening, said transparent disc being fitted in said circular opening in said decorative front panel, a variable resistor proper having a rotary shaft inserted in said center opening in said transparent disc, a rotary plate secured to said rotary shaft and comprising a cutout and a ring-shaped portion having a colored surface, and a stationary member mounted on said variable resistor proper and comprising a cutout and a ring-shaped portion, a forward end of said ring-shaped portion of said rotary plate being inserted in said cutout of said stationary member so that a portion of the ring-shaped portion of the rotary plate lies on the ring-shaped portion of the stationary member in superposed relationship whereby the area of the colored surface of the ring-shaped portion of the rotary member exposed to view through the transparent disc is increased or reduced as the rotary shaft is rotated.