March 25, 1941. C. A. BRAIDWOOD 2,236,132

SYSTEM OF MANUALLY OPERATED INDICATORS

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Fig. 1.

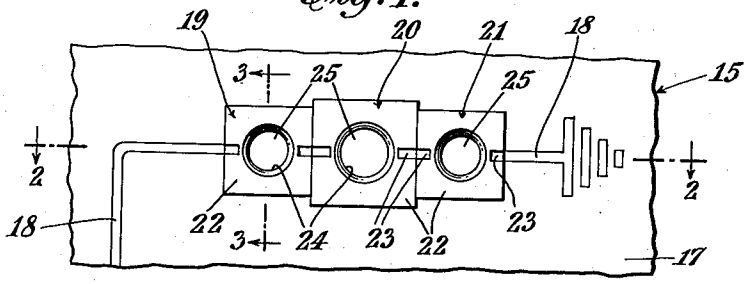


Fig. 2.

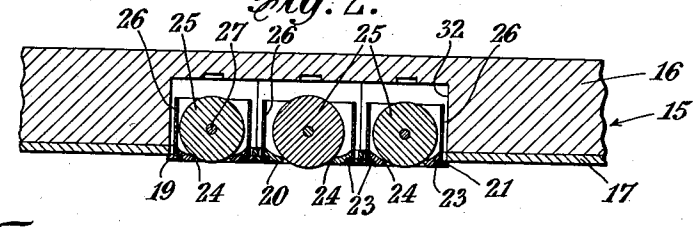


Fig. 3.

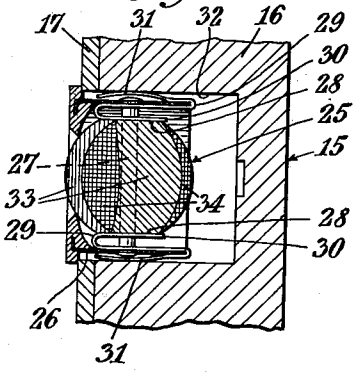


Fig. 4.

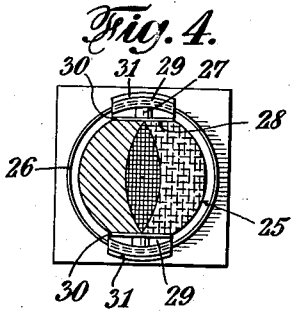


Fig. 5.

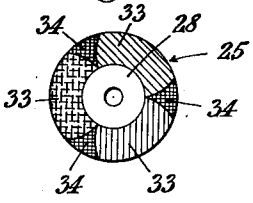


Fig. 6.

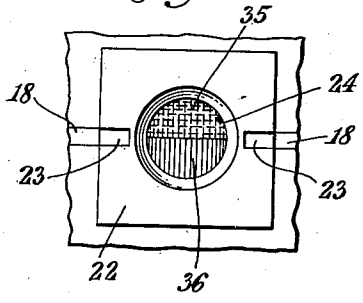
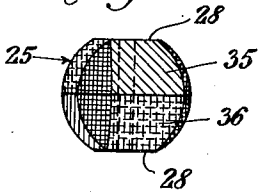


Fig. 7.



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Fig. 8.

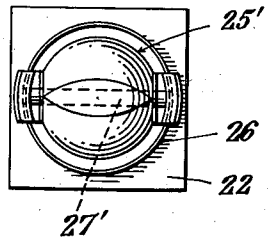


Fig. 9.

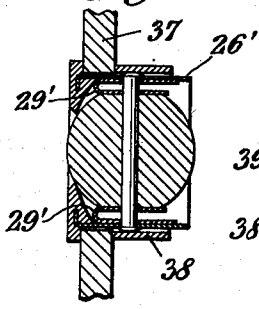


Fig. 10.

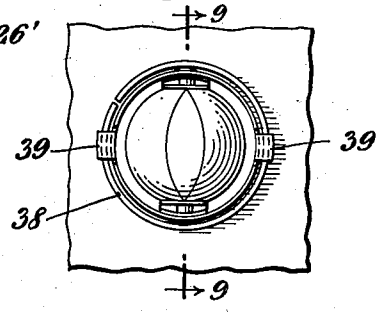
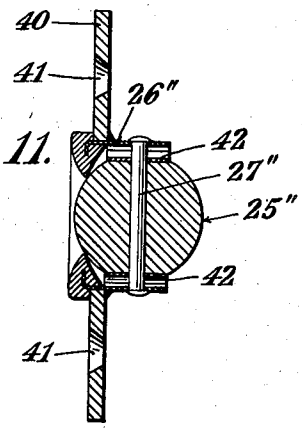


Fig. 11.



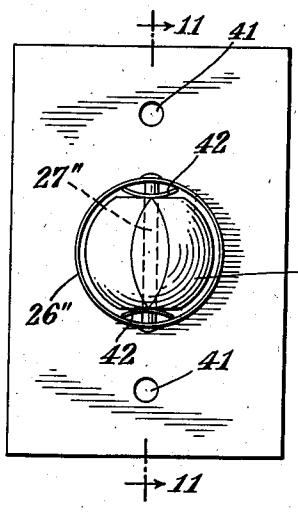
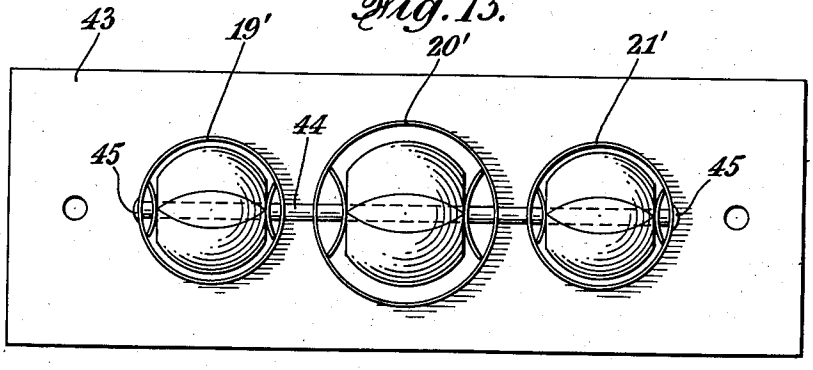


Fig. 12.

Fig. 13.



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UNITED STATES PATENT OFFICE

2,236,132

SYSTEM OF MANUALLY OPERATED INDICATORS

Chester A. Braidwood, Perth Amboy, N. J.

Application October 10, 1939, Serial No. 298,803

9 Claims. (Cl. 116—133)

This invention relates to a new and improved system of manually operated indicators, which are useful for various indicating purposes.

An object of the invention is the provision of a simple means for rotating a multi-colored globular body through an opening, to secure effectual indication of the position of electrical apparatus and for other characteristic indicating uses, including weather conditions, and which further provides for accurate, rapid and efficient operation.

Another object of the invention is to provide simple and efficient means for supporting indicating unit-frames upon a panel-board.

A still further object of the invention is to provide means connecting lines and symbols upon the face of a panel-board, thereby to obtain improved visibility.

The present system forming the subject matter of this invention, consists of one or more multi-colored balls mounted in a specially constructed frame, or frames, as will be hereinafter more fully described.

As the construction of my device is comparatively simple, the cost of manufacturing and applying the same should be proportionately low.

With the above and other objects in view, this invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described, claimed and illustrated in the accompanying drawings, forming part of this application, and in which similar characters of reference indicate corresponding parts in all views, and in which—

Figure 1 is a partial front view of my invention.

Figure 2 is a vertical section, taken on the line 2—2 in Figure 1.

Figure 3 is an enlarged transverse sectional view, taken on the line 3—3 in Figure 1.

Figure 4 is an enlarged elevational rear view of one of the indicating members of my devised system.

Figure 5 is a plan view of one of the indicator balls.

Figure 6 is a front elevational view, showing a modified form of my invention.

Figure 7 is an elevational view of an indicator ball, as shown in Figure 6.

Figure 8 is an elevational rear view, showing another modification of my invention.

Figure 9 is a transverse sectional view, taken on the line 9—9 in Figure 10, and showing another modification of my invention.

Figure 10 is an elevational rear view of Figure 9.

Figure 11 is a transverse sectional view, taken on the line 11—11 in Figure 12, and showing a still further modification of my invention.

Figure 12 is an elevational rear view of Figure 11; while

Figure 13 is an elevational rear view illustrating an arrangement of units based upon the modification shown in the Figures 11 and 12.

Referring more particularly to the drawings, Figures 1 to 5 show my devised system, comprising several units, which for the sake of general illustration are shown applied to a load dispatching board of the kind used, for instance, in electric power stations.

In said figures, 15 denotes a panel comprising a board 16 with a front-plate 17 mounted thereon. Upon said front-plate 17 are shown lines 18, as part of a circuit comprising the units 19, 20 and 21. The units 19 and 21 serve to indicate the positions of disconnecting switches, while 20 indicates the position of a circuit breaker.

While one of the units 20, shown in Figure 1, is larger than the correlated units 19 and 21, said units may, however, all be of the same dimension, or they may be of different dimensions. The units 19, 20 and 21 have face-plates 22 formed with slight depressions 23 therein, which latter may be filled, or painted with a color to match, or in operation show continuation of, the color of the lines 18 on the front of the indicator board 15. The face-plates are formed with beveled openings 24 through which portions of the revolving balls 25 are visible. Said face-plate 22 has secured thereto a ferrule-shaped member 26 formed with bores in the side thereof, while the balls 25 are turnably mounted upon pins 27 disposed in said bores in the ferrule-member 26.

The balls 25 are formed with a somewhat flattened surface 28 upon each of two opposite sides thereof. A spring 29 has one leg 30 resting against one of the said flattened sides of the ball, so that the latter will remain in an adjusted position, while the other leg 31 of the spring 29, which is bent upon itself, extends outside of the ferrule member 26. The legs 31 are made of such shape that they will securely engage the walls of the bores 32 in the panel 16: the legs of the spring 29 are held in relative position to the ball 25 by means of the pin 27.

The balls comprise two or more colored segments 33, in regard to which one colored segment or portions of two colored segments may be viewed through the beveled opening 24.

The colors of the balls are so arranged that

the major segments 33 are separated by minor segments 34.

In the Figures 6 and 7 are shown a modification to the effect that a group, or combination of color segments may be seen through the opening 24.

While the balls hereintofore have been shown with their axes arranged vertically, whereby a rotation of said balls may be effected through a sidewise movement accomplished by a finger of the operator, this arrangement, however, would be less desirable, where the indicator means are located out of, or above the reach of the operator's finger.

In this latter instance and as shown in Figure 8 the axis 27' of the ball 25' is, therefore, arranged in a horizontal position, which will permit the turning of said ball in an upward or downward direction; said turning movement may in this case be accomplished by means of a rod provided with a rubber tip at the end thereof.

In Figures 9 and 10 have been shown modifications to the effect that, where a heavy panel 16 is omitted, the unit may be placed directly through the bore in the panel 37; in this case a ring 38 is mounted over the ferrule member 26' against the back of the panel 37; the ferrule member 26' is in this instance provided with lugs 39 adapted to be bent over the ring 38, thus securing the unit to the panel 37.

In this latter modification, the leg 31 of the spring 29, as shown in Figure 3, is omitted; the spring in the modification shown in Figure 9, being indicated by 29'.

In the modification shown in Figures 11 and 12, the face-plate 40 is provided with holes 41, which permit the attachment of the unit to the panel-board by means of screws or bolts.

In this latter modification the ferrule-member 26'' secured to the face-plate, has mounted thereon two flat springs 42, curved to abut the flattened portions of the ball 25'', the latter being pivotally secured to said ferrule-member by a pin-axis 27''.

In Figure 13, the units 19', 20' and 21' are secured to a common face-plate 43, which, in turn, is secured to the indicator panel.

While the relative individual construction of the units shown in Figure 13 is similar to the one shown in Figure 12, in Figure 13 said units have been shown mounted upon a common axis 44, which is prevented from turning by the riveted end portions 45.

It may be noted that in the use of the heavy panel 16, the indicator balls can be operated only from the front of the panel; while in the construction shown in the Figures 9 to 13, that is, where the heavy board has been omitted, the indicator balls may be operated from the back of the panel, as well as from the front thereof.

It is obvious that changes may be made in the form, construction and arrangement of the several parts, as shown herein, within the scope of the appended claims, without departing from the spirit of the invention, and I do not, therefore, wish to limit myself to the exact construction and arrangement shown and described herein.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In an indicator system, a number of multi-colored balls, face-plates formed with openings therein and adapted to visibly receive said balls, said face-plates being adapted for attachment to a panel, ferrule-formed members fixedly secured upon the rear sides of said face-plates, axial pins arranged through the ferrule-formed members, said balls being turnably mounted upon said pins in said ferrule-formed members, the balls each being formed with a flattened portion upon each of two opposite sides thereof, springs mounted in the ferrule-formed members and adapted to engage said flattened sides of the balls, whereby to secure the latter in an adjusted position.

2. In an indicator system, a panel comprising a board, a front-plate mounted upon the latter and being provided with indicating lines and symbols thereon, indicator units made with separate face-plates and being mounted in said panel-board, the face-plates of said units having recesses therein corresponding with the indicating lines of said front plate, ferrule-shaped members secured to the back of the face-plates of said units, and multi-colored indicator balls turnably mounted in said ferrule-shaped members, the face-plates of the units being formed upon the inner sides with bevelled openings at the corners thereof, whereby to permit a greater visibility of the balls.

3. In an indicator system, a panel comprising a board, a front-plate mounted upon the latter and being provided with indicating lines and symbols thereon, indicator units made with separate face-plates and being mounted in said panel-board, the face-plates of said units having recessed indicating lines thereon corresponding with those of said front-plate, ferrule-shaped members secured to the back of the face-plates of the units and being formed with bores in the walls thereof, pins axially arranged through said bores, multi-colored balls mounted upon said pins in said ferrule-shaped members, said balls each being formed with flattened surfaces upon two opposite sides thereof, and spring members disposed in said ferrule-shaped members and adapted to engage the flattened sides of the balls, whereby to secure the latter in adjusted positions, the face-plates of the units being formed with beveled openings therein, substantially as and for the purpose set forth.

4. In an indicator system, a panel comprising a board, a front-plate mounted upon the latter and being provided with indicating lines and symbols thereon, indicator units made with separate face-plates and being mounted in said panel-board, the face-plates of said units having recesses therein corresponding with the indicating lines of said front plate, ferrule-shaped members secured to the back of the face-plates of said units, and multi-colored indicator balls turnably mounted in said ferrule-shaped members, the face-plates of the units being formed upon the inner sides with bevelled openings at the corners thereof, whereby to permit a greater visibility of the balls, said indicating lines consisting of recesses having a paint applied thereto.

5. In a device, as claimed in claim 3, and wherein the indicating lines on the face plate may be arranged horizontally in relation to the axes of the balls.

6. In an indicator unit, a face-plate, a ferrule-shaped member secured to the latter, said ferrule-shaped member being formed with bores in the sides thereof, a pin-axis arranged through said bores, and a multi-colored ball turnably mounted upon said pin-axis in said ferrule-shaped member, said ball being provided with a flattened portion upon each of two opposite sides thereof, springs, each bent upon itself to form

three legs and being mounted upon said pin-axis, one spring upon each side of the ferrule-shaped member, one leg of each of said springs resting against the flattened portions of the ball, whereby to secure the latter in an adjusted position, another leg of each of said springs extending outside of the ferrule-shaped member, the latter leg being adapted to secure the unit in a socket of a panel-board.

7. In a device, as claimed in claim 6, and wherein the colors of the multi-colored ball are separated by minor spaces of a different color.

8. In a device as claimed in claim 6, and wherein the arrangement of the colors is to the effect that two or more colors meeting at a center line, are visible, by the use of two turnable multi-colored hemispheres on an axis.

9. In a device, as claimed in claim 3, and wherein the pin-axis carrying the ball, is prevented from turning by having its end portions riveted.

CHESTER A. BRAIDWOOD.