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J. INSUL

2,659,336

WARNING SIGNAL

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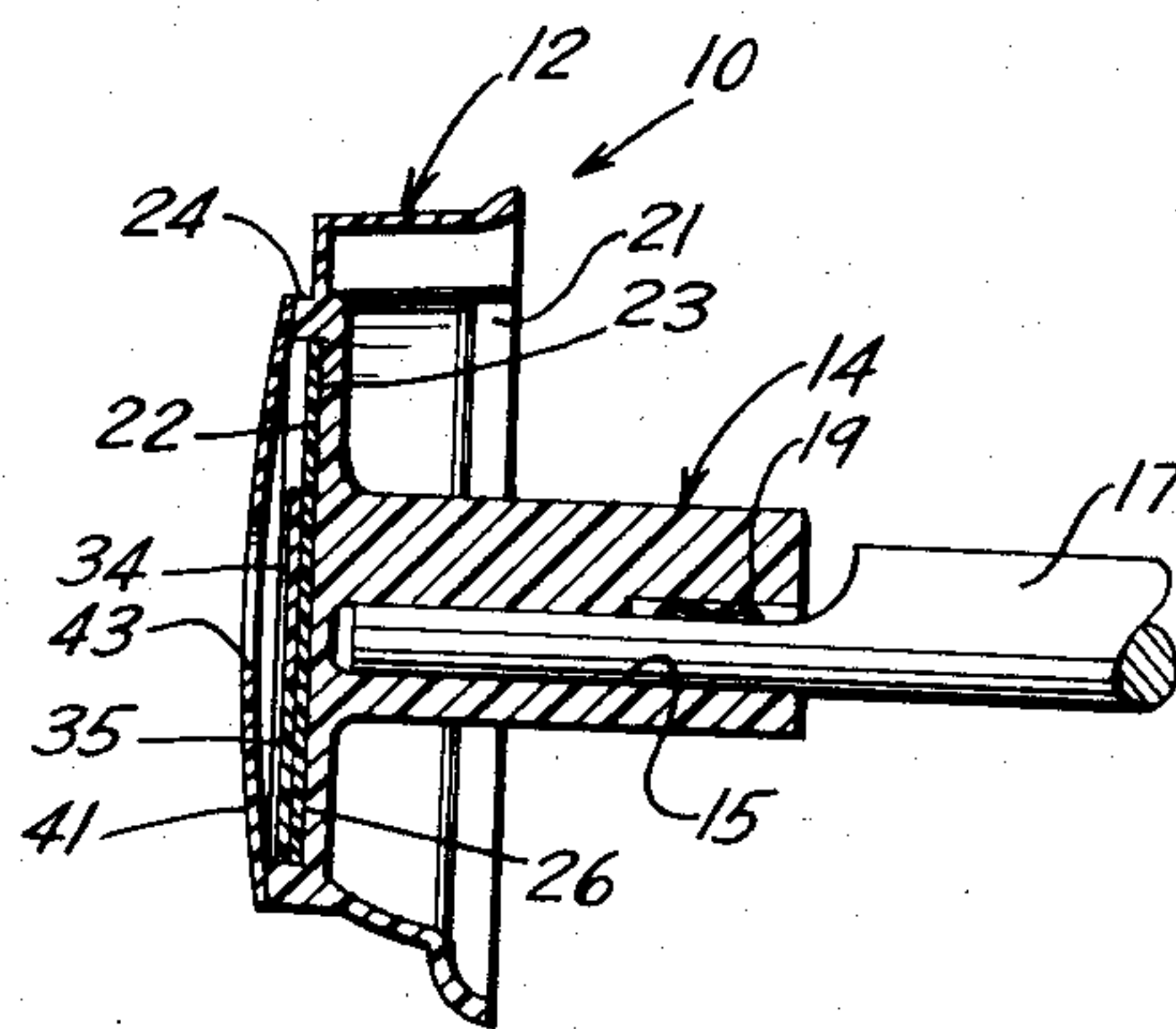
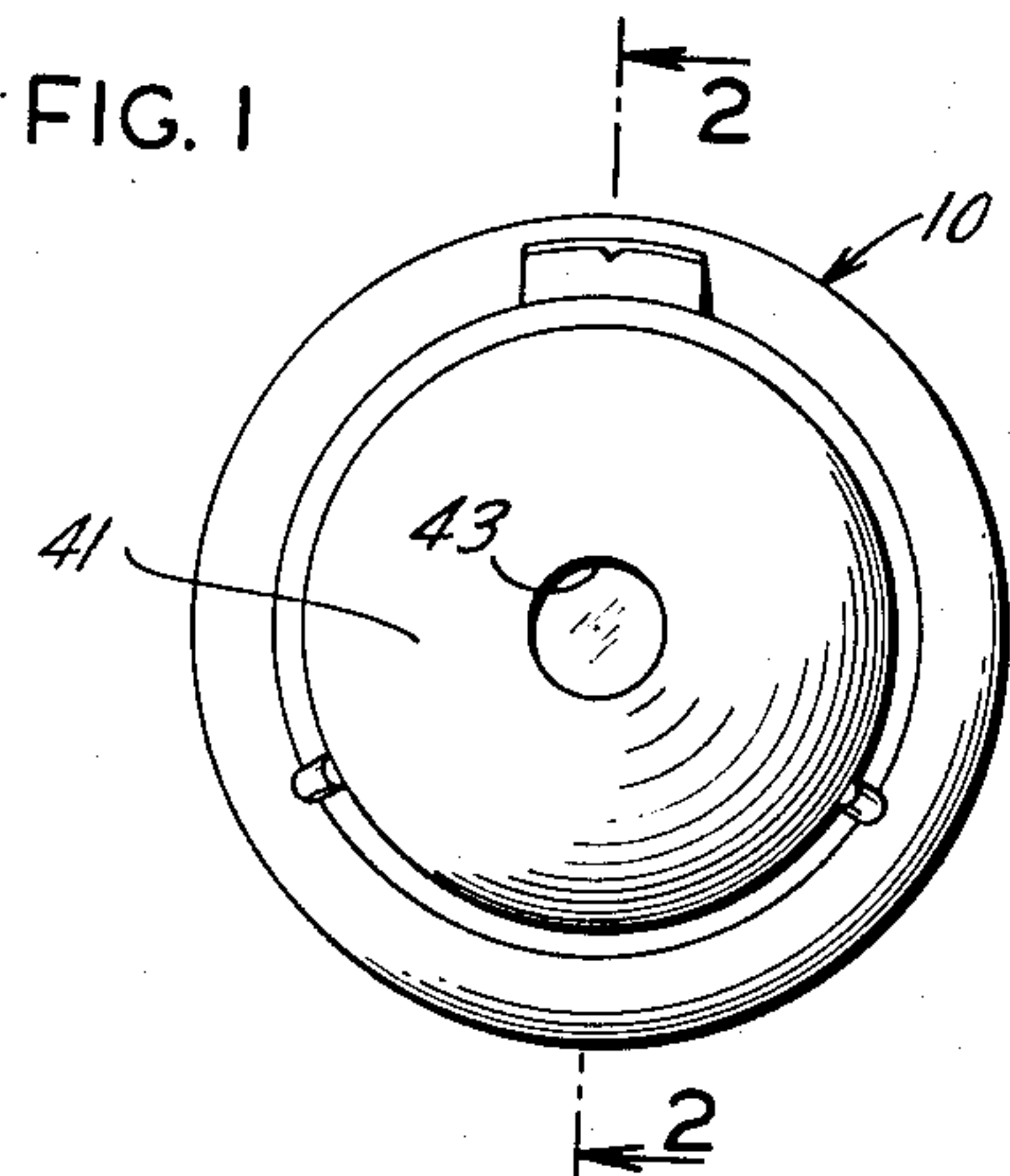


FIG. 2

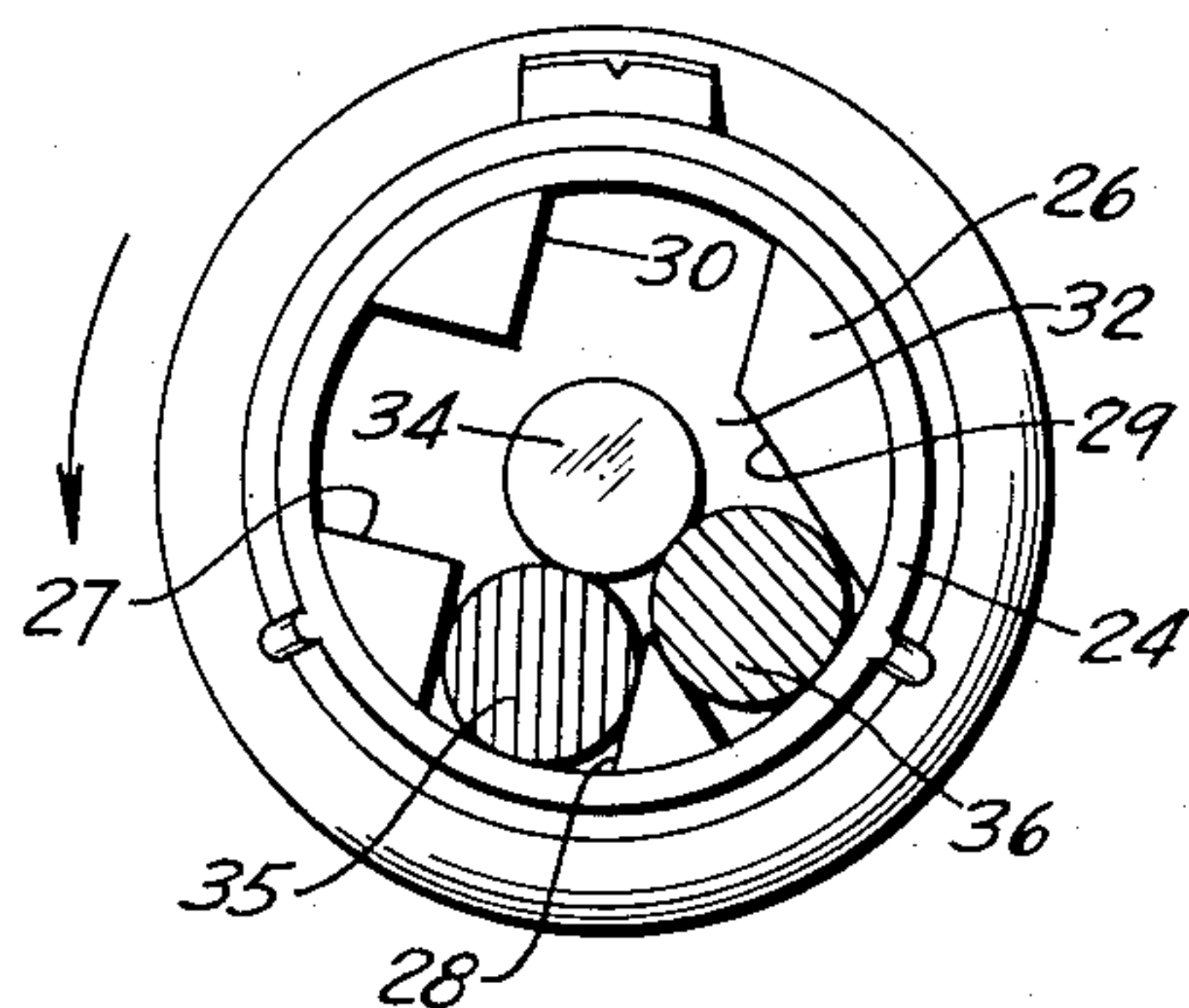


FIG. 3

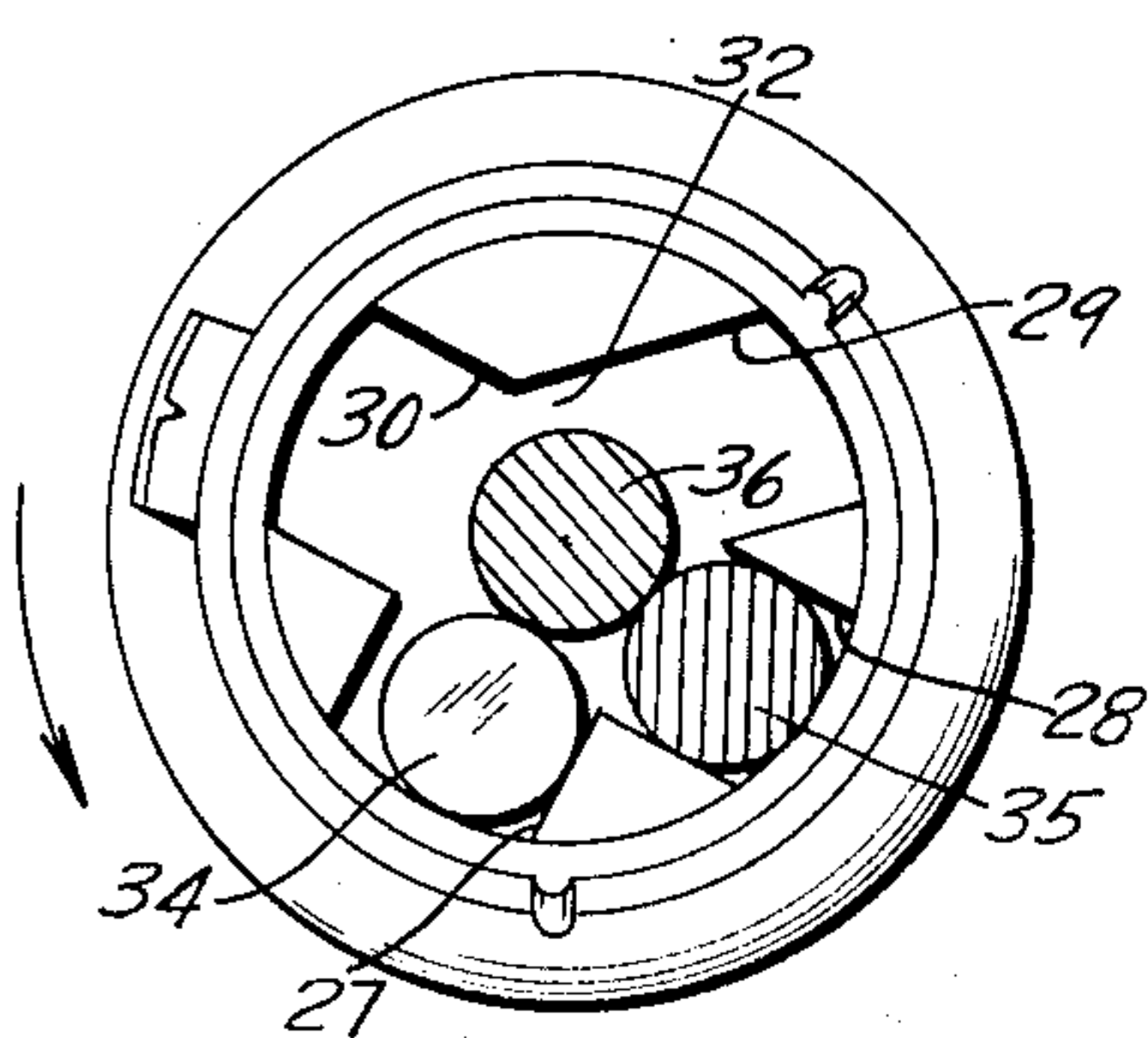
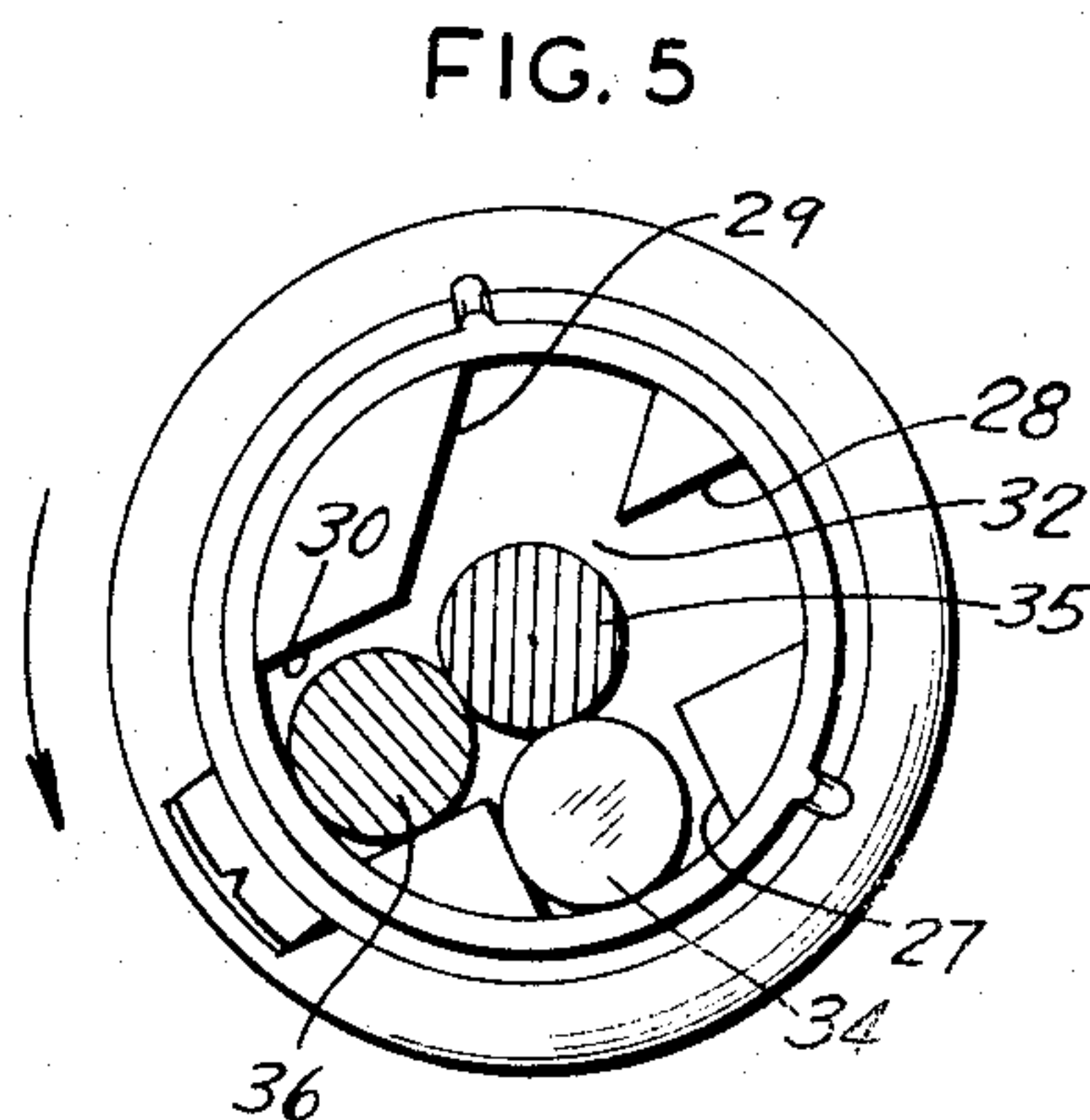


FIG. 4



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ATTORNEYS



# UNITED STATES PATENT OFFICE

2,659,336

WARNING SIGNAL

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8 Claims. (Cl. 116—124)

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This invention relates to on-off indicators and, more particularly, to on-off indicators of the type particularly well adapted for use as control-knobs on radio receivers, gas stoves, electric stoves and the like.

A primary object of my invention is to afford a novel on-off indicator which may be effectively used on radios, gas stoves, electric stoves, and the like, which is capable of indicating not only fully "on" and fully "off" conditions of such instrumentalities but is also capable of effectively indicating intermediate positions therebetween.

A further object of my invention is to afford a novel on-off indicator of the aforementioned type which affords a novel indicating handle or control knob for turning control shafts such as embodied in radio receivers, and gas and electric stoves, and the like.

Another object of my invention is to afford a novel indicator of the aforementioned type wherein, "off," fully "on," and intermediate positions therebetween are clearly indicated by a visible signal in a novel and expeditious manner.

A further object of my invention is to afford a novel indicator of the aforementioned type which is self-contained, and is mechanical in nature.

Yet another object is to afford a novel indicator of the aforementioned type which is compact in form, may be readily and economically manufactured, and wherein various relative positions of a rotatable shaft may be indicated by a plurality of gravity-controlled members in a novel and expeditious manner.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawing which, by way of illustration, shows a preferred embodiment of the present invention and the principle thereof and what I now consider to be the best mode in which I have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention.

In the drawings:

Fig. 1 is a front elevational view of an indicator embodying the principles of my invention;

Fig. 2 is a sectional view taken substantially along the line 2—2 in Fig. 1;

Fig. 3 is a front elevational view similar to Fig. 1 but with certain parts removed so as to view the interior of the indicator; and

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Figs. 4 and 5 are views similar to Fig. 3 but showing the indicator in different rotated positions.

To illustrate the preferred embodiment of my invention an indicator is shown in the accompanying drawing which embodies the principle of my invention and which is in the form of a rotatable operator or control knob 10. The control knob 10 embodies, in general, a head or body member 12 from which an elongated hub 14 projects rearwardly. The hub 14 has a recess or socket 15 formed therein which is adapted to receive the outer end portion of a control shaft 17 such as is normally embodied in a radio receiver for turning the receiver on or off and controlling the volume, or a control shaft such as normally embodied in a gas stove or electric stove to turn the burners thereof on or off and control the operation of the burners.

As best seen in Fig. 2, the hub 14 is frictionally retained on the shaft 17 by means of a spring retaining member 19 mounted in the socket 15 and bearing against the shaft 17. However, as will be appreciated by those skilled in the art, other means for mounting and retaining the hub 14 on the shaft 17 may be used without departing from the purview of my invention.

The head 2 comprises a substantially cup-shaped base 21 having a front wall 22 from the forward face 23 of which projects a substantially circular-shaped flange 24. A substantially circular-shaped disc 26, Figs. 2 and 3, is mounted on the front face 23 of the wall 22 in relatively close fitting relation to the flange 24 so as to be held thereby against rotation relative to the wall 22. The disc 26 has a plurality of elongated grooves 27, 28, 29 and 30 formed therein, Figs. 2, 3, 4 and 5, which extend from the outer peripheral edge portion thereof into the center of the disc 26 and at which center they all interconnect to form a common central area or recess 32.

Three gravity-controlled members 34, 35 and 36 are mounted in the grooves or passageways 27—30 and the central recess 32 and, as will be explained in greater detail presently, are movable through the passageways 27—30 into and out of the central area 32 during operative rotation of the control knob 10.

The passageways 27—30 are so arranged in the disc 26 that when control shaft 17 and, therefore, the control knob 10 mounted thereon is disposed in the normal "off" position shown in Fig. 3, the two passageways 28 and 29 project in a generally downward direction from the central area 32 and the two gravity-controlled members 35 and



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36 are disposed in those passageways, respectively, and rest against the flange 24. The gravity-controlled member 34 is, at such time, disposed in substantially centered position in the central area 32 and is supported in that position by the two gravity-controlled members 35 and 36 against which it rests.

A cover plate 41 which is circular in shape is mounted on the flange 24 and affords a retaining member which holds the gravity-controlled members 34—36 in the passageways 27—30 and the central area 32 and prevents their being laterally displaced therefrom. The cover plate 41 has an opening or viewing aperture 43 formed in the center portion thereof, Figs. 1 and 2, which is disposed in axial alignment with the central area 32 and the hub 14. Thus, it will be seen that a view of the central area 32 may be had through the viewing aperture 43 so that any one of the gravity-controlled members 34—36 which may be positioned in the central area 32 at any particular time is readily visible therein from in front of the control knob 10.

As is best seen in Figs. 3, 4 and 5, as the control knob 10 is rotated in a counter-clockwise direction as viewed in those figures, from the position shown in Fig. 3 to the position shown in Fig. 5, the gravity-controlled members 34, 36 and 35 are, in that order, sequentially disposed in the central area 32, in which position they are visible through the apertures 43.

Thus, it will be remembered that when the control knob 10 is disposed in the normal terminal or "off" position shown in Fig. 3, the gravity-controlled member 34 is disposed in the central area 32 and is supported in that position by the gravity-controlled members 35 and 36. As the control knob 10 is rotated in a counter-clockwise direction from the position shown in Fig. 3 to the position shown in Fig. 4, the passageway 27 moves from a generally upwardly projecting position to a generally downwardly projecting position, and the gravity-controlled member 34 moves by gravity from the central area 32 down into the passageway 27. At the same time, the passageway 29 moves from the generally downwardly projecting position shown in Fig. 3 to the generally upwardly projecting position shown in Fig. 4, and the gravity-controlled member 36 moves out of the passageway 29 into the central area 32 in which latter position it rests against and is supported by the gravity-controlled members 34 and 35 positioned therebelow, Fig. 4.

During rotation of the control knob 10 from the position shown in Fig. 4 to the other terminal or fully "on" position shown in Fig. 5, the passageway 30 moves from the generally upwardly projecting position shown in Fig. 4 to the generally downwardly projecting position shown in Fig. 5, and the gravity-controlled member 36 moves from the central area 32 down into the passageway 30. At the same time, the passageway 28 moves from the generally downwardly projecting position shown in Fig. 4 to the generally upwardly projecting position shown in Fig. 5, and the gravity-controlled member 35, which was disposed in the passageway 28 when the latter was disposed in the downwardly projecting position shown in Fig. 4, moves out of the passageway 28 into the central area 32 in which position it engages and is supported by the gravity-controlled members 34 and 36 which are then disposed therebelow.

As the control knob 10 is turned back in a

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clockwise direction from the fully "on" position shown in Fig. 5 to the "off" position shown in Fig. 3, the gravity-controlled members 34—36 sequentially move back through the central area 32 into their original or "normal" respective positions as shown in Fig. 3 to thereby indicate the various relative rotated positions of the control knob 10 during the return movement thereof.

Thus, it will be seen that by providing the gravity-controlled members 34—36 with different colors or other suitable distinguishing indicia, my novel invention affords a practical control knob for use on control shafts of radios, stoves, and the like, which not only clearly indicates the full "off" and full "on" positions shown for example in Figs. 3 and 5, respectively, but also clearly indicates intermediate positions such as, for example, that shown in Fig. 4.

It will be appreciated by those skilled in the art that although I have shown a control knob embodying only three different signal elements 34—36, a greater number of signal elements may be used in such a device without departing from the purview of my invention. Thus, for example, where more than three signal elements are used, additional passageways are also provided, the number of passageways exceeding the number of signal elements by one. If desired, of course, the passageways may be so arranged that at either one or both of the limiting positions of the control knob 10, the gravity-controlled members, such as the members 34—36, are each disposed in respective passageways and out of the central area 32 without departing from the purview of my invention.

I prefer to form the control knob 10 from a suitable opaque synthetic resinous plastic material such as, for example, suitably pigmented "Lucite," and to form the base 21 and the disc 26 separately and then secure the disc 26 in proper position on the front wall 22 of the base 21 by suitable means such as, for example, an adhesive. However, if desired, the disc 26 and base 21 may be formed as a single integral part such as, for example, by molding.

Also, it will be seen that although I have shown the viewing aperture 43 as an unclosed opening, this viewing aperture 43 may be closed by a suitable transparent material, such as, glass or "Lucite" in its natural form, to afford, in effect, a window therein and thereby seal the interior of the body member 12 against the entrance of dirt and other foreign matter. The disc 41 may be secured to the flange 24 by suitable means such as, for example, a suitable adhesive.

In the drawings the gravity-controlled members 34—36 are shown as circular-shaped discs, however, it will be appreciated that this is merely by way of illustrating the preferred form of my invention and that gravity-controlled members of other shapes or forms suitable to move through passageways such as the passageways 27—30 may be used without departing from the purview of my invention.

From the foregoing it will be seen that I have afforded a novel control knob wherein as the knob is oscillated between normal "off" position and fully "on" position, gravity-controlled members such as members 34, 35 and 36 sequentially move into and then out of the central area 32 to thereby afford a signal which is clearly visible through the aperture 43 to thereby indicate the relative rotated position of the control knob 10.



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Thus, it will be seen that I have afforded a novel control knob which affords a practical and effective indicating member for signalling the positions of a control shaft, such as, for example, the control shaft used on radio receivers, gas stoves, electric stoves, and the like.

Thus, while I have illustrated and described the preferred embodiment of my invention, it is to be understood that this is capable of variation and modification.

I claim:

1. An on-off indicator for use with a rotatable shaft and comprising a rotatable structure for connection and rotation with such a shaft, said structure including a plurality of passageways interconnected with each other, and having a viewing aperture opening from the exterior of said structure into the interconnection of said passageways, and a plurality of gravity-controlled members mounted in said passageways and bearing identifying indicia thereon, said passageways and said interconnection of said passageways having bounding surfaces shaped to cause said gravity-controlled members to move sequentially in said passageways into and out of a position in said interconnection wherein they are viewable through said aperture from outside of said structure.

2. An on-off indicator for use with a rotatable shaft and comprising a rotatable structure for connection and rotation with such a shaft, said structure including a plurality of passageways, each of said passageways terminating at one end in communication with a corresponding end of the other of said passageways to thereby afford an indicating area in communication with each of said passageways, means in said structure defining a viewing aperture opening outwardly of said structure and inwardly into said indicating area and through which aperture said indicating area is visible from outside of said structure, and a plurality of gravity-controlled members mounted in said passageways and sequentially movable therein into and out of said indicating area upon rotation of said structure, said members bearing identifying indicia thereon, said passageways being so disposed, and said passageways and said indicating area having bounding surfaces so shaped, that when one of said gravity-controlled members is disposed in said indicating area in substantially axial alignment with said viewing aperture said one gravity-controlled member is engaged with and supported by at least one other of said gravity-controlled members.

3. An indicator for use with a rotatable shaft for indicating various relative rotated positions of the shaft and comprising a rotatable operator, and means on said operator for operatively connecting said operator to the shaft for rotating said shaft upon rotation of said operator, said operator comprising a substantially flat internal surface area having a substantially centrally located indicating area formed therein and a plurality of grooves extending outwardly from said indicating area, a plurality of gravity-controlled members mounted in said surface area and movable in said passageways sequentially into and out of said indicating area, said members bearing identifying indicia thereon, and means defining an aperture in said operator through which said gravity-controlled members are visible when they are disposed in said recess.

4. An indicator-handle for use with a substantially horizontally disposed rotatable shaft for

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rotating such a shaft between two terminal positions and indicating the relative position of the shaft during such rotation, the indicator-handle comprising a head, a hub projecting from said head and having means for operatively connecting said hub to such a shaft in substantially axial alignment with the latter, means in said head defining a plurality of passageways therein, each of said passageways having an inner end portion and an outer end portion, said inner end portions of said passageways interconnecting with each other in a common area to thereby afford an indicating area, said passageways projecting outwardly from said indicating area in substantially uni-planar relation to each other and substantially perpendicular to the longitudinal axis of the shaft, a plurality of gravity-controlled members mounted in said passageways and movable therein sequentially to each other through said passageways into and out of said common area, said members bearing identifying indicia thereon, and means defining a viewing aperture in said head in such position that said gravity-controlled members are visible therethrough when they are disposed in said common area.

5. An indicator-handle as defined in claim 4 and in which said common area and said aperture are disposed in substantially axial relation to said hub.

6. An indicator-handle for use with a substantially horizontally disposed rotatable shaft for rotating such a shaft between two terminal positions and indicating the relative position of the shaft during such rotation, the indicator-handle comprising a head, a hub projecting from said head and having means for operatively connecting said hub to such a shaft in substantially axial alignment with the latter, means in said head defining a plurality of passageways therein, each of said passageways having an inner end portion and an outer end portion, said inner end portions of said passageways interconnecting with each other in a common area to thereby afford an indicating area, said passageways projecting outwardly from said indicating area in substantially uni-planar relation to each other and substantially perpendicular to the longitudinal axis of the shaft, a plurality of gravity-controlled members mounted in said passageways and movable therein sequentially to each other through said passageways into and out of said indicating area, said members bearing identifying indicia thereon, said gravity-controlled members being so disposed in said passageways that when one of said gravity-controlled members is disposed in one position in said indicating area said one member is engaged with and supported by two of the other of said gravity-controlled members, and means defining a viewing aperture in said body member in such position that said gravity-controlled members are visible therethrough from outside of said body member when they are disposed in said common area.

7. An indicator-handle for use with a substantially horizontally disposed rotatable shaft for rotating such a shaft between an "off" position and an "on" position and indicating the relative position of the shaft during such rotation, and comprising a body member having a front side and a rear side, and an elongated hub projecting outwardly from said rear side and having a socket therein for receiving such a shaft in substantially axial alignment with said hub to thereby mount said hub and said body member on the shaft in position to rotate said shaft upon



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rotation of said body member, said body member including a substantially circular-shaped disc on said front side, said disc being disposed in substantially axial alignment with the longitudinal axis of said hub, said disc having a plurality of elongated substantially uni-planar passageways therein, said passageways connecting with each other at the center of said disc to afford a common area thereat and projecting outwardly therefrom toward the outer circumference of said disc, at least one of said passageways projecting generally downwardly from said common area and at least another of said passageways projecting generally upwardly from said common area when the shaft is disposed in said "off" position, a plurality of gravity-controlled members mounted in said disc and movable in said passageways into and out of said common area, said last mentioned members bearing identifying indicia thereon, said gravity-controlled members being so disposed in said passageways that when the shaft is disposed in said "off" position one of said gravity-controlled members is disposed in said common area and is engaged with and rests on another gravity-controlled member disposed in a generally downwardly projecting passageway and said gravity-controlled members sequentially move into said common area during oscillation of the shaft between said "off" and "on" positions, and a cover member mounted over said disc on the opposite side of said disc from said hub, said cover member having a viewing aperture therein through which said gravity-controlled members are visible when they are disposed in said common area.

8. An indicator-handle for use with a substantially horizontally disposed rotatable shaft for rotating such a shaft between two limiting positions and indicating the relative position of the shaft during such rotation, and comprising a body member having a front side and a rear side, and an elongated hub projecting outwardly from said rear side and having a socket therein for receiving such a shaft in substantially axial

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alignment with said hub to thereby mount said hub and said body member on the shaft in position to rotate said shaft upon rotation of said body member, said body member including a substantially circular-shaped disc on said front side, said disc being disposed in substantially axial alignment with the longitudinal axis of said hub, said disc having a plurality of elongated substantially uni-planar passageways therein, said passageways connecting with each other at the center of said disc to afford a common area thereat and projecting outwardly therefrom toward the outer circumference of said disc, said passageways being so disposed in said disc that when the shaft is disposed in at least one of the limiting positions at least one of said passageways project generally upwardly from said common area and at least one of said passageways project generally downwardly from said common area, a plurality of gravity-controlled members mounted in said disc and movable in said passageways into and out of said common area, said gravity-controlled members being at least one in number less than said passageways and bearing identifying indicia thereon, said gravity-controlled members and said passageways being so disposed in said disc that when said shaft is disposed in said one limiting position one of said gravity-controlled members is disposed in said common area and is engaged with and rests on another gravity-controlled member in a generally downwardly projecting passageway and that said gravity-controlled members move sequentially in said passageways into said common area during a complete oscillating of the shaft between said limiting positions, and a retaining member extending over said disc on the opposite side thereof from said hub, said retaining member having a viewing aperture therein through which said gravity-controlled members are visible when they are disposed in said common area.

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No references cited.