Sept. 3, 1963 S. R. SMITH, JR 3,102,508

LIGHT CONDITION INDICATING DEVICE

Filed Oct. 19, 1961

Fig. 1.

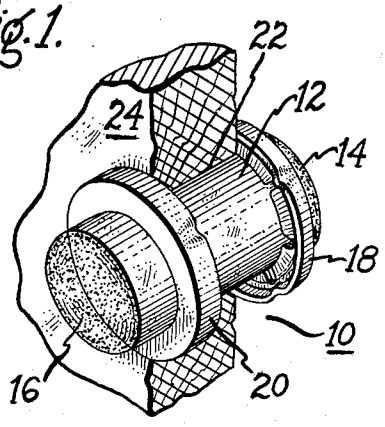


Fig. 2.

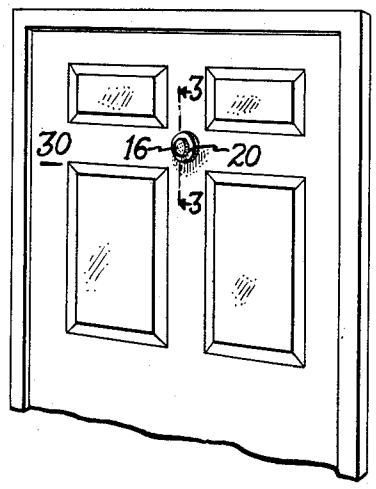


Fig. 3.

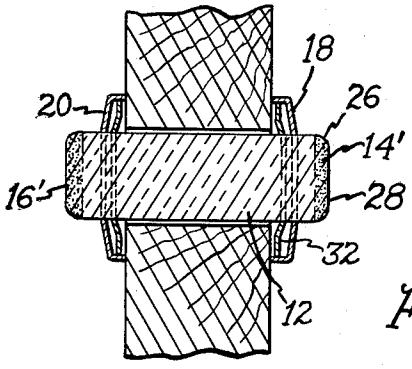


Fig. 5.

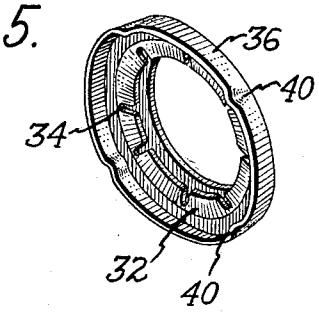
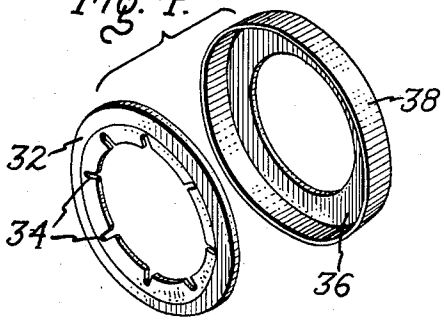


Fig. 4.



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United States Patent Office

3,102,508

Patented Sept. 3, 1963

3,102,508

LIGHT CONDITION INDICATING DEVICE

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Filed Oct. 19, 1961, Ser. No. 146,308
1 Claim. (Cl. 116—114)

This invention relates to a light condition indicating device and, more particularly, to a device for indicating the condition of lighting on the opposite side of an opaque body.

It is well known that in many present day industrial and residential buildings, a substantial amount of electricity is consumed unnecessarily due to lights left burning in unoccupied rooms or similar areas. In general, most of these areas are hidden from the sight of an observer by opaque bodies or panels, such as doors and walls. It is not possible to determine the condition of lighting on the opposite side of such bodies without opening a door or the like into such areas. Of course, it will be understood that as a general rule it is undesirable to open doors and the like during normal checking of a building, either industrial or residential, due to the problem of invading the privacy of one in the area enclosed by the opaque bodies. Further, it is very time consuming to open all such doors to check on the lighting condition in the hidden areas, and even more time consuming to knock on all doors before checking a hidden area.

One of the presently available solutions to this problem is the combining of a small light bulb in series with a light switch, such that when the switch is turned on, the bulb lights. As will be readily apparent, these switches are unsatisfactory for a number of reasons. One very obvious reason is the initial costs of such switches, as well as the expense of installing them in the desired location. Another undesirable feature of this type of light condition indicating device is the requirement that the switch be installed on a wall or other location outside of the area to be monitored.

Another solution to this problem is to provide all hidden areas with some type of internal window through which the condition of lighting in the area may be checked or monitored. Clearly, this is undesirable from a cost viewpoint for all present hidden areas, and also, in general, would be more expensive for new construction. Further, as will be apparent, for many areas in industrial buildings as well as residential buildings it is not desirable to install internal windows.

From the above it will be clear that there is a present need for a light condition indicating device which will positively indicate the condition of lighting on the opposite side of an opaque body, that will be relatively low in cost, simple and inexpensive to install, and which will not limit the privacy of one on the hidden side of the opaque body. It is also desirable that the light indicating device be non-electric and not require that the switch means for controlling the lighting in the hidden area be mounted in a remote location. Of course, as is well known, opaque bodies, such as walls and doors, come in varying thickness. It is desirable that the light indicating device be adaptable to such bodies without custom making the device for the particular body thickness.

It is therefore, one object of this invention to provide a light indicating device for providing a positive indication of the light condition on the opposite side of an

opaque body which is inexpensive to purchase and which may be readily installed in such opaque body.

It is a further object of this invention to provide a light indicating device which requires no electrical attachments and which is not connected in any manner to the switch controlling the light condition to be indicated.

Another object of this invention is to provide a light indicating device which may be readily installed in an opaque body to indicate the lighting condition on the opposite side of such opaque body without limiting the privacy of one on such opposite side.

A further object of this invention is to provide a light indicating device which is adjustable for installing in opaque bodies of varying thickness.

In carrying out this invention in one form, a light indicating device is provided which comprises a lens member having a high light transmitting quality, the lens member being constructed to have light gathering surfaces at opposite ends thereof. Clamping or retaining means are provided which may be secured to opposite portions of the lens member, in the vicinity of the light gathering surfaces, so that the lens member may be readily installed in an opaque body with the light gathering surfaces on opposite sides of the opaque body. By means of this device, any light on one side of an opaque body will be picked up by the light gathering surface on that side of the opaque body, transmitted through the lens member to the light gathering surface on the opposite side of the opaque body, where it will be clearly visible to an observer looking at the outer light gathering surface.

The invention which is desired to be protected will be clearly pointed out and distinctly claimed in the claim appended hereto. However, it is believed that this invention and its objects and advantages, as well as the construction and operation of a preferred embodiment thereof, will be more clearly understood by reference to the following detailed description, when considered in the light of the accompanying drawing, in which:

FIGURE 1 is a perspective view of a preferred form of this invention showing the manner of mounting it in an opaque body;

FIGURE 2 is a front view of one side of the preferred form of the light indicating device of this invention, showing it installed in a door;

FIGURE 3 is an enlarged sectional view taken on the line 3—3 of FIGURE 2;

FIGURE 4 is a further enlarged exploded perspective view of the preferred form of clamping means of this invention; and

FIGURE 5 is a perspective view of the assembled clamping means shown in FIGURE 4.

Referring now to the drawing, in which like numerals are used to indicate like parts throughout the several views thereof, this invention is shown in the preferred embodiment as a light indicating device **10**, which comprises a lens member **12**, having light gathering surfaces **14** and **16** at opposite ends thereof, and being provided with clamping or securing means **18** and **20**, on opposite end portions of the lens member **12**. By means of the clamping members **18** and **20**, the light indicating device **10** may be readily secured in an opaque body with the light gathering surfaces **14** and **16** being on opposite sides of the body.

Considering now FIGURE 1 of the drawing, the light indicating device **10** is shown as comprising a cylindrical

lens member 12 extending through a hole 22 in an opaque body 24. The lens member 12 is preferably cylindrical in form so that it may be easily installed by merely drilling a hole, such as 22, in any opaque body enclosing a hidden area, such as the opaque wall 24. Of course, it will be understood, that other shapes of the lens member may be utilized. However, they would require a more complicated installation with present day tools. The lens member 12 is preferably made of a transparent material which has a high light transmitting quality, such as an acrylic resin. A preferred form of an acrylic resin is that which is known as methyl methacrylate. This material has exceptionally good light transmitting characteristics and is commercially available in cylindrical form at nominal cost. The diameter of the lens member is not critical, although it has been found that a cylindrical member having a diameter of approximately three-quarters of an inch provides sufficient light to the exterior light gathering surface to be readily distinguishable to one observing such light gathering surface.

With continued reference to FIGURE 1, it can be seen that the opposite ends of the cylindrical lens member 12 are in the shape of a hemisphere, and form the light gathering surfaces 14 and 16. It is preferred that the light gathering surfaces 14 and 16 be hemispherical in shape so as to readily gather light from any angle which may fall upon such surface. Also, the hemispherical shape makes any light transmitted by the lens member 12 to the exterior light gathering surface easily visible to an observer from any angle. Of course, it will be understood that it is not essential that the light gathering surfaces be hemispherical in form to provide the desired gathering and transmitting of light. The light gathering surfaces could be provided with a rounded edge portion with a substantially flat end portion, if desired, in the manner shown at 14' and 16' in FIGURE 3.

As shown in FIGURE 3, the light gathering surface 14' is provided with a rounded edge portion 26 and a flat end portion 28. As will be understood, the rounded edge portion 26 will gather any light which falls on the light gathering surface 14' from a light source which is along the inner surface of the opaque body in which the lens member 12 is mounted. The rounded edge portion 26 and the flat end portion 28 will cooperate to gather light which falls on the light gathering surface 14' from any other part of the area enclosed by the opaque body. Of course, it will be obvious that the exterior light gathering surface, for example 16', will function in a similar manner to disclose to an observer any light which is transmitted by the lens member 12.

Referring now to FIGURES 1 and 3, it can be seen that in the preferred form of this invention, the cylindrical lens member 12 is securely mounted in the opaque body 24 by means of the clamping rings 18 and 20. These clamping rings may take any desired form, but in the preferred embodiment they are comprised of two parts to provide an adjustable means for securing the light indicating means 10 to opaque bodies of varying thickness. As will be apparent, the cylindrical lens member 12 may be provided in a few standard lengths, such as for example 3 and 6 inches. By use of the adjustable clamping rings 18 and 20, these lengths may be used to fit any thickness of walls and doors. Obviously, by standarizing on only a few lengths, the cost of the light indicating device 10 may be held to a minimum.

Considering now FIGURE 2 of the drawing, the light indicating device of this invention is shown as mounted on a door 30. As can be seen, the light gathering surface 16 is readily visible to an observer on the outside of the door and readily indicates the light condition on the opposite side of the door. If the observer notices that light is shining from the surface 16, he can then knock on the door 30 to ascertain if anyone is using the area beyond the door. Of course, if no light is visible on the surface 16, the observer will know that no light is on in the area beyond the door. In order to insure the privacy of anyone on the opposite side of the door, the light gathering surface 16 or 14, or both, may be provided with a roughened surface, such as by sanding or knurling. This will insure that no one will be able to look through the lens member 12, while not affecting the light gathering or transmitting characteristics of the indicating device.

The preferred clamping ring of this invention is clearly shown in FIGURES 4 and 5 of the drawing, to which reference will now be made. Referring especially to FIGURE 4 of the drawing, it will be seen that the clamping ring is made in two parts. The inner portion of the clamping ring is in the form of a retaining washer 32, generally known as a push-on fastener. The fastener or washer 32 is made from spring quality metal and is provided with a plurality of serrations 34 about the inner periphery thereof. The serrations 34 allow the washer 32 to be pushed on a cylindrical member which has a diameter slightly larger than the inner diameter of the fastener due to the bowing of the washer, as shown in FIGURE 3. However, the serrations tightly grip the cylindrical surface and resist motion in the opposite direction. It will be apparent that the washer member 32 would be sufficient to secure the lens member 12 in an opaque body. But the washer would present an unfinished look to the light indicating device of this invention. It is therefore, preferable to provide a decorative cover ring, as for example the cover ring 36. Cover ring 36 may be made of any desired material, such as for example brass, and may be provided with a design or color, as desired.

The cover ring 36 has an outer flange or lip 38, slightly larger in diameter than the outer diameter of the washer 32. As can be seen from FIGURE 5, the washer 32 fits within the cover ring 36 and may be secured thereto in any desired manner. For example, portions of the flange 38 may be staked or peened over the washer 32, as shown at 40. Of course, it will be obvious that other securing means could be used, if desired.

As will be clear to those skilled in this art, the light indicating device 10 may be installed in any opaque body or panel which encloses a hidden area. The clamping rings 18 and 20 are pushed on the cylindrical lens member 12, against the opaque body, thus firmly securing the lens member in such body. If a light source is on in such hidden area, the light therefrom is gathered by the surface of the lens member within the area. This light is transmitted through the lens member and to the opposite surface thereof. An unexpectedly large concentration of light or illumination is obtained in such opposite surface giving a clear indication of the light that is readily visible to an observer from any angle. The indication of the light source is clearly evident regardless of the thickness of the body in which the light indicating device is mounted.

While there has been shown and described the present preferred embodiment of this invention as required by the Patent Statutes, it will be obvious to those skilled in the art that various changes may be made in the construction thereof within the spirit of the invention hereinbefore set forth. It is intended to include all such modifications as fall within the spirit and scope of this invention, as defined in the appended claim.

What is claimed as new and which it is desired to secure by Letters Patent of the United States is:

A light indicating member for indicating the light condition on the opposite side of an opaque body comprising; a cylindrical lens member of light transmitting material, light gathering surfaces on opposite ends of said lens member, said light gathering surfaces being formed with rounded edge portions to gather and transmit light from substantially any angle, and adjustable clamping means mounted on opposite end portions of said lens member for securing said lens member in opaque bodies of varying thickness, said clamping means comprising a serrated

washer gripping said lens member and a cover ring, said cover ring being securely attached to said washer.

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