May 19, 1931. O. WERNER 1,806,435

LIGHTING UNIT

Filed Sept. 26, 1929

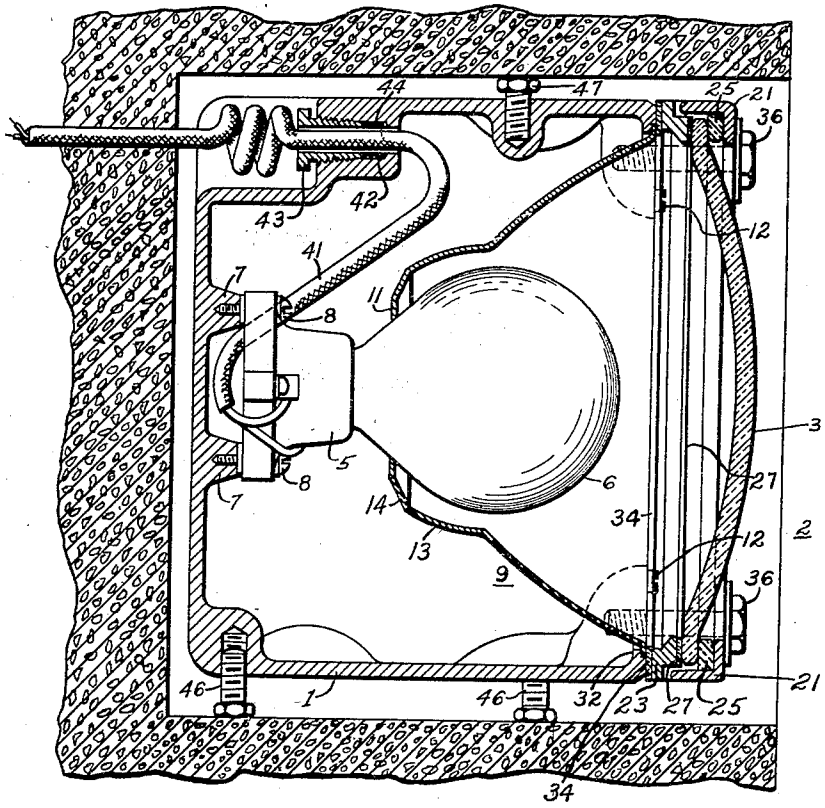


Fig. 1.

Fig. 2.

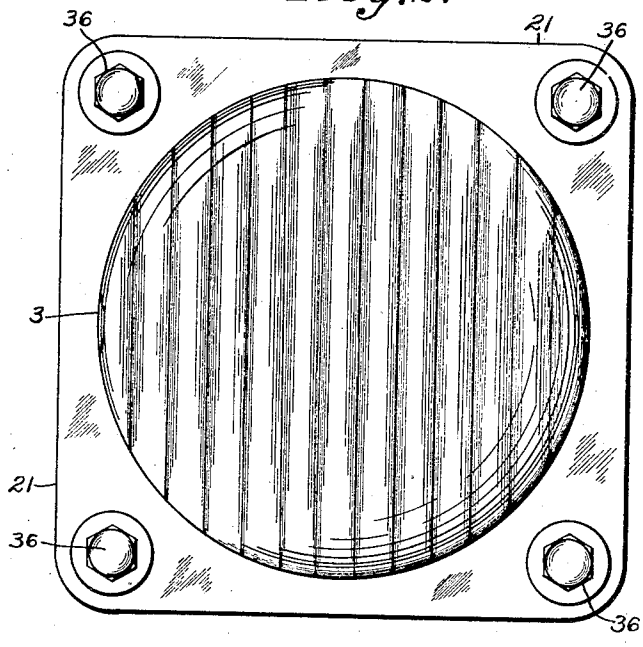
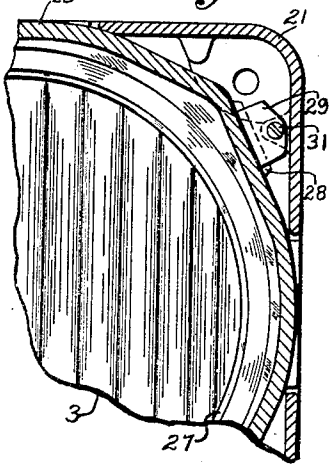


Fig. 3.



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UNITED STATES PATENT OFFICE

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LIGHTING UNIT

Application filed September 26, 1929. Serial No. 395,212.

My invention relates to lighting units and has particular relation to lighting units suitable for use under water.

An object of my invention is to provide a lighting unit for use under water which will be water-tight, which may readily be assembled and disassembled, which is peculiarly well adapted for use in connection with brick work, tiling and the like and which may readily be adjustable for directing the light therefrom at any desired angle.

Another object of my invention is to produce a device which is simple, durable and inexpensive in construction and maintenance and which is well insulated electrically.

Other objects of my invention will become apparent in the following description of the structure and operation of my device:

In under-water lighting, such as swimming pool lighting, it has been found that the moisture-proof lighting units usually used for lighting large areas are unsuitable for use under water because water seeps into the unit, a relatively great amount of space is required and it is difficult to maintain electrical insulation of the unit and the electrical conductors. For this and other reasons, I have found the devices of prior art unsuitable and have devised a unit particularly well-suited for the service.

In practicing my invention, I provide a housing substantially rectangular in cross-section open at one end and mount the lens and reflector in suitable cover members adapted to close the open end of the housing. The lighting unit is mounted on one of the inside walls of the housing and electrical conductors are introduced through an opening in a recessed portion of the outside wall. The unit may be tilted by means of screws, which are threaded into the sides of the housing and may be locked into position when the unit is properly located.

Referring to the drawings in which like numerals indicate like parts,

Figure 1 is a view in cross-section of my device mounted within the recess of a wall, such as the wall of a swimming pool, or the like;

Fig. 2 is a view in front elevation of the lighting unit shown in Fig. 1; and

Fig. 3 is a view in elevation of a portion of the door or cover assembly taken from inside the unit.

Referring to the drawings, I prefer to utilize a housing 1, which is substantially cubical in shape, having one open side adapted to engage a cover or door 2 in which is placed a transparent lens 3.

A lamp socket 5, in which is placed lamp 6, is secured to suitable projections 7 on the rear wall of the housing by means of screws 8.

A reflector 9 is fastened in the open end of the housing by means of screws 12 which engage the reflector with suitable projections on the inner wall of the housing. The reflector is provided with an opening 11 at its center to permit the lamp to project through the reflector and into the socket. The major portion of the reflector is the shape generated by revolution of a parabola, while a rearwardly extending portion 13 is of the shape generated by the revolution of a portion of a circle having its center substantially at the light source. The most rearward portion of the reflector is a flange 14. This type of reflector is particularly well adapted for use in a housing of limited size and makes use of a considerable portion of the light from the light source.

The door 2 (Fig. 3) for closing the open end of the housing includes a cover frame or clamping ring 21 which is substantially square in elevation, a lens 3 which preferably is concavo-convex to withstand the water pressure and a lens retaining ring 23 which is adapted to hold the lens in place in the cover frame. The cover frame has a circular opening therein to receive the lens 3 and a thick gasket 25 of rubber or the like is disposed in a suitable recess between the cover frame and the outer flange of lens 3. The purpose of this thick gasket is merely to apply pressure against the rim of the lens to urge it inwardly against the lens retaining ring 23, and the coacting inner surface of the lens and the outer surface of the lens retaining rings are ground in order that they may be perfectly level and in order that a water-tight joint may be secured. A thin resilient gasket 27 is

disposed between the lens and the lens retaining ring. The lens retaining ring is preferably held in place in the cover frame by means of coacting lugs 28 on the lens retaining ring and clips 29 which are secured to the cover frame by means of screws 31.

A flange 32 at the open end of the housing and the inner face of the lens retaining ring 23 are ground to a flat surface in order that a water-tight joint may be provided between the lens retaining ring and the housing. A thin resilient gasket 34 is disposed between the lens retaining ring and the housing.

The door assembly is adapted to be fastened to the housing by means of four bolts 36 disposed in suitable depressed openings in the cover frame. The bolts urge the cover frame against the housing, thus clamping the lens and lens retaining ring fast against the open end of the housing to provide a water-tight joint.

Electrical energy is introduced into the lighting unit by means of conductors 41 which pass through a suitable opening 42 in the wall of the housing and are connected to the terminals of the lamp socket 5. In order to secure a water-tight joint, a threaded opening is provided in the wall of the housing and a hollow screw or nipple 43 is adapted to be threaded into the recess. Packing material 44 may be placed about the conductor, so that on screwing down the hollow screw, a water-tight connection is made. A recess is provided in the wall of the housing to permit receiving the slack in the supply current conductors when the unit is placed adjacent a wall.

Three adjusting screws 46 are provided to screw into the lower wall of the housing in order that the projector may be adjusted to direct the light rays in the desired direction. After the proper adjustment of the projector has been made, the unit may be locked or wedged in place in a depression of the wall or floor in which it is set by unscrewing a screw 47 which has threaded engagement with the upper wall of the housing. The adjusting and locking screws may be utilized for fastening the unit to a suitable framework if it is not to be located in a recess.

The construction described and illustrated is particularly well suited for use under water as it is water tight and the electrical conductors are well insulated. The unit may be adjusted for best projection of the light. The unit has no sharp outwardly projecting portions and, therefore, will not injure a person or object brushing by the unit. By reason of its small dimensions and its substantially cubical shape, it may be placed in a corner or along the wall of a swimming pool and takes up but relatively little space. Also, by reason of its rectangular section, it is particularly well adapted for use in a recess in the wall or floor of a swimming pool or the like as it takes the place of the brick or tile utilized in facing the wall or floor. It is to be understood that the term "cubical" is to be interpreted broadly to include any figure having parallel sides which adapt it for the use intended.

Although I have described a specific embodiment of my invention, I do not wish to be limited thereto and changes may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the appended claims.

I claim as my invention:

1. In an under-water projector adapted to fit into a recess in the wall, a housing, a lighting unit and reflector therein, means including a lens for closing the case water-tight, a plurality of adjustable supporting screws at the bottom of said casing to adjustably mount the casing in said recess, and means on the upper side of the casing for rigidly maintaining the casing in adjusted position.

2. In an under-water projector adapted to fit into a recess in the wall, a housing, a lighting unit and reflector therein, means including a lens for closing the case water-tight and a plurality of adjustable supporting screws at the bottom of said casing to adjustably mount the housing in said recess, and means comprising a screw for locking the same therein in adjusted position.

In testimony whereof, I have hereunto subscribed my name this 18th day of September 1929.

OSCAR WERNER.