Aug. 18, 1936. F. B. NIGHTINGALE 2,051,175

SUBMERGIBLE ILLUMINATING DEVICE

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FIG. 1.

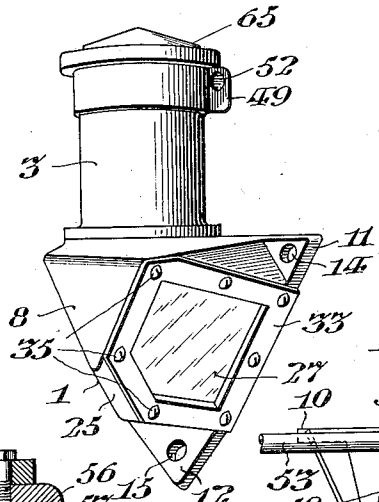


FIG. 2.

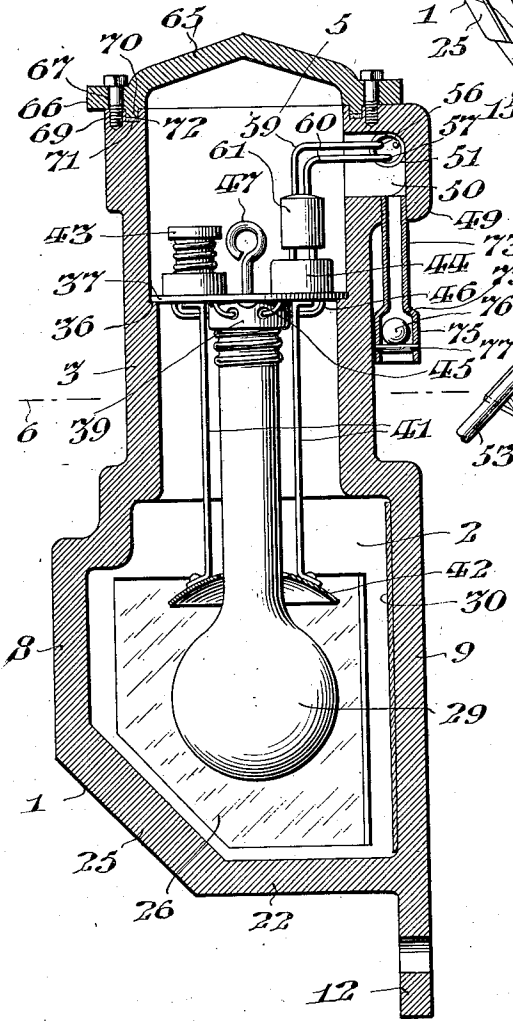


FIG. 3.

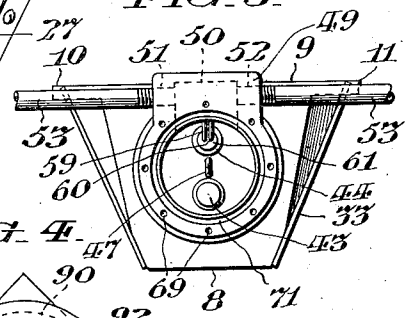


FIG. 4.

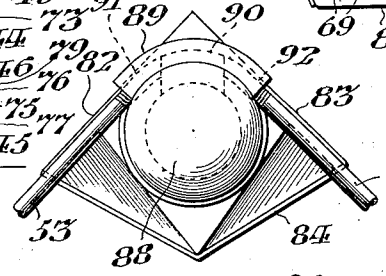
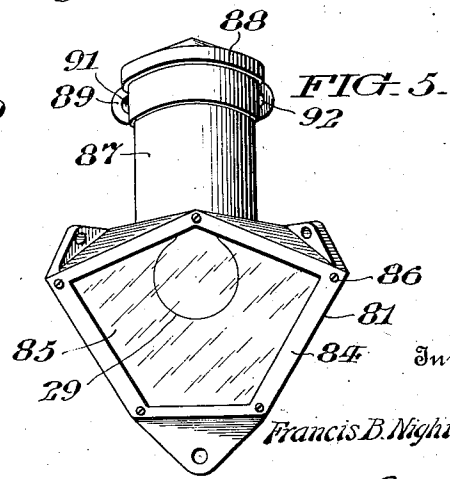


FIG. 5.



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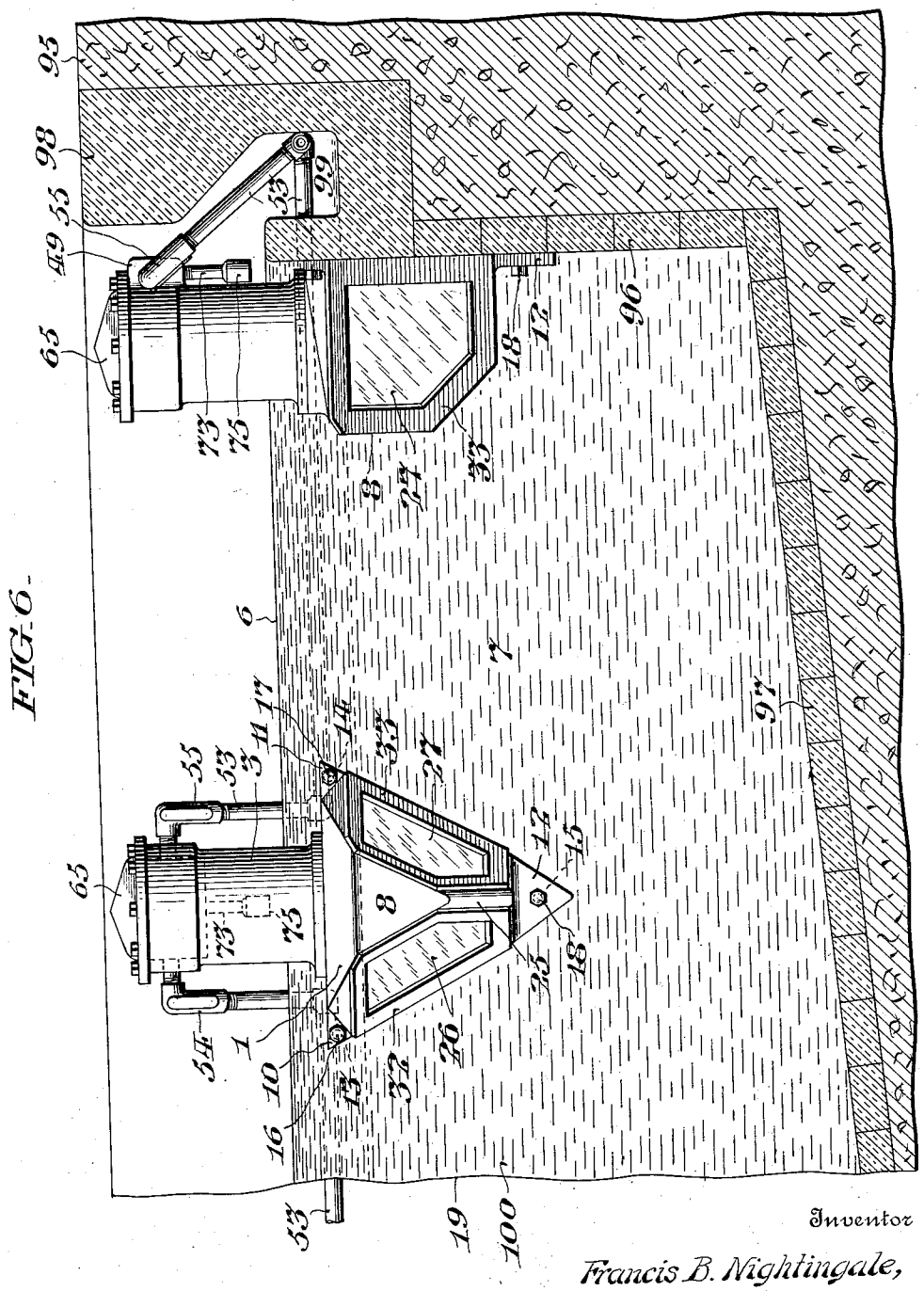
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SUBMERGIBLE ILLUMINATING DEVICE

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FIG. 6.



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Patented Aug. 18, 1936

2,051,175

UNITED STATES PATENT OFFICE

2,051,175

SUBMERGIBLE ILLUMINATING DEVICE

Francis B. Nightingale, Pasadena, Calif.

Application July 30, 1932, Serial No. 626,346

6 Claims. (Cl. 240—26)

My invention relates particularly to that class of illuminating devices that may be employed for directing light rays through water in swimming pools, aquariums and the like, and is especially directed to lighting fixtures that may be permanently attached in such submerged relation as to direct light rays through the pool.

The principal objects of my invention are to provide a submergible lighting fixture that may be applied to the walls of pools not especially built for illuminating apparatus, and that may be conveniently relamped without lowering the water level of the pool.

Other objects of my invention are to provide a submergible lighting fixture having an extension, projecting above the water level, through which access may be afforded to the interior of the lamp chamber at all times.

Further objects of my invention are to provide a lighting fixture with a light supporting unit that may be readily removed and replaced while the light projecting body of said fixture is submerged.

My invention further includes a lighting fixture having light projecting windows angularly inclined through which reflected light rays are directed through the water of the pool.

Specifically stated, the form of my invention as hereinafter described comprises a windowed body tapering downwardly and inclosing the lamp receiving chamber and having an extension projecting upwardly and providing an opening disposed above the water level arranged to be sealed by a suitably provided closure. Said extension includes a recess having apertures through which line wires including make-and-break electrical connection with a lamp within the fixture may pass, said lamp being suitably mounted on a lamp support forming a removable and replaceable unit which not only supports the lamp but also carries a fuse and plug receiving socket mounted in series with said lamp, so that when supported in the fixture the make-and-break electrical connection, including a plug, may be engaged with said plug receiving socket by manipulation through the opening in said extension.

My invention also includes all of the various novel features of construction and arrangement as hereinafter more definitely specified.

In the accompanying drawings, Figure 1 is a perspective view of an illuminating fixture constructed in accordance with my invention as applied to the plane wall of a pool; Fig. 2 is a central vertical sectional view of said illuminating fixture taken transversely through the front and back walls of said fixture; Fig. 3 is a plan view of the fixture shown in Figs. 1 and 2, on the same scale as Fig. 1, and showing the closure cap removed; Fig. 4 is a plan view of an illuminating fixture similar to the fixture shown in Figs. 1, 2 and 3, but adapted for use at the corner of the pool and having the cap in place; Fig. 5 is a perspective view of the corner fixture shown in Fig. 4; and Fig. 6 is a fragmentary sectional view of a pool showing both a front and side elevation of the illuminating fixture illustrated in Figs. 1 and 2, as applied to the side and end walls respectively of said pool, and showing the conduit connections through which the line wires extend.

In said figures, the illuminating fixture illustrated in Figs. 1, 2, 3 and 6 comprises the housing 1 enclosing the lamp receiving chamber 2 and provided with the upwardly extending relatively restricted chimney 3 having an opening 5 disposed above the water level 6 of the pool 7.

The body or housing 1 is preferably of irregular contour, having substantially triangular front and rear walls 8 and 9 respectively, the latter being provided with suitably extended ears or lugs 10, 11 and 12 having apertures 13, 14 and 15 through which lag-screws 16, 17 and 18 may be extended to engage the fixture to the wall 19 of the pool 7, as illustrated in Fig. 6.

The bottom wall 22 is also substantially triangular and is joined to the front wall 8 by the inclined narrow extension 25 of said front wall 8. The side walls relatively converge downwardly and outwardly and comprise the glass panels 26 and 27 serving as windows through which the light rays from the lamp 29 are reflected by the reflector 30.

As best illustrated in Fig. 1, the glass panels 26 and 27 are secured in watertight relation to the lamp housing 1 by the frames 32 and 33, which are shown secured by the screws 35, but obviously this is a detail of construction that is capable of modification, as other means of retaining the glass panels in sealed relation to the housing structure may be employed.

As shown in Fig. 2, the upwardly extending chimney 3 is provided with the shoulder or ledge 36 serving as a support upon which the lamp supporting frame or plate 37 may rest. Said lamp supporting frame 37 carries on its under side the lamp socket 39 having the lamp 29 depending therefrom into the lamp chamber 2, and has depending therefrom the hangers 41 suspending the reflector 42 embracing the lamp 29, as shown in Fig. 2.

Upon the upper side of the lamp supporting frame 37 is mounted the fuse 43 and the plug-in socket 44, connected by the wires 45 and 46 with the lamp socket 39, said frame 37 being provided with the draw-pin having the eye 47 by which said frame 37 and the parts carried thereby may be conveniently withdrawn for replacement of the lamp 29 and its associated parts.

As shown in Figs. 2 and 6, the chimney 3 is provided with a rearwardly projecting protuberance 49 forming the offset pocket 50 having the outlets 51 and 52 to which is connected the line wire conduit 53 including the angle fittings 54 and 55 through which the line wires 56 and 57 extend.

As shown in Fig. 2, the line wires 56 and 57 are connected within the offset pocket 50 by the branch leads 59 and 60 with the switch plug 61 shown engaged with the plug-in socket 44 to illuminate the lamp 29. When it is desired to withdraw the frame 37 and the lamp 29 and the parts connected therewith, the switch plug 61 may be withdrawn from its socket 44 and be tucked away with its leads 59 and 60 into the pocket 50 so as to not interfere with the free withdrawal and replacement of said frame 37.

The chimney 3 is provided with the cap or closure 65 preferably conical and having the peripheral flange 66 provided with apertures 67 in registry with corresponding threaded apertures 69 in the rim of said chimney 3. Said cap or closure 65 may preferably be provided with the bead 70 fitted into a corresponding groove 71 in the rim of said chimney 3 and if desired, a sealing ring 72 of suitable material may be seated in said groove to provide a watertight seal.

In order to relieve the sealed chamber 2 from expansive pressures incident to the heating of the lamp 29, a breathing device comprising a pipe 73 is connected to the pocket 50, and has its free depending end portion enlarged into a bell 75 in which may be mounted a valve ball 76 normally retained by the transversely extended bar 77, but arranged to engage the conical valve seat 79 to prevent water entering the chamber 3 when a wave enters the bell 75.

The illuminating fixture shown in Figs. 4 and 5 is particularly adapted to be placed in the angle or corner of the pool and has the back of its housing structure 81 disposed in relatively normal planes 82 and 83, as best illustrated in Fig. 4. The front wall of this corner fixture comprises a single window formed of a panel of glass 85 retained by the rim frame 84 secured by the retaining screws 86. Said front wall panel 85 is inclined and converges downwardly toward the back.

The housing 81 is provided with the upwardly extending chimney 87 having the cap or closure 88, and has the sectoral rearwardly projecting protuberance 89, see Fig. 4, forming the offset pocket 90 having the outlets 91 and 92 to which the line wire conduit 53 is connected; otherwise, the interior of the chimney 87 is similar to the chimney 3 shown in Figs. 1, 2 and 3, and the lamp supporting frame 37 carrying the lamp 29 is interchangeable with either the straight wall or corner fixture.

The application of the fixtures thus described may be best understood from an inspection of Fig. 6, wherein is illustrated said fixtures as applied to the side and end walls of swimming pool formed of concrete 95 having its walls 96 and bottom 97 faced with tile and its rim structure 98 provided with a gutter 99 not only serving as an overflow for the water 100 of the pool, but affording a convenient runway for the line wire conduits 53, as indicated in Fig. 6.

My invention is advantageous in that the illuminating fixtures are applicable to both old and new pools alike, and may be permanently installed in either, and the lamps and associated parts may be removed and replaced as a unit without lowering the level of the water or without danger of electrolysis.

I do not desire to limit my invention to the precise details of construction and arrangement as herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A submergible lighting fixture comprising a housing having light projecting means and provided with an extension projecting upwardly and opening above the water level and having a recess provided with openings, wire carrying conduits connected with said openings, line wires leading through said conduits and including a socket-plug arranged to be disposed in said recess when not connected with its socket, and a lamp supporting unit removable and replaceable through said extension and carrying a lamp, an associated plug-socket with which said socket-plug may be engaged to energize said lamp, a closure for said fixture, and pressure relieving means including a check-valve connected with the interior of said fixture and serving to exclude water.

2. A submergible lighting fixture comprising an opaque housing forming a lamp chamber having light projecting windows relatively converging downwardly and outwardly and arranged to direct light beams laterally at relatively different angles toward the bottom of a pool, and an upwardly extending open-top projection having a lateral pocket provided with inlet and outlet apertures for line wires, said fixture having a wall arranged to bear against the inner surface of a pool wall and being extended at relatively spaced regions parallel with said pool wall to afford lugs or wings for conveniently attaching the fixture at selected locations to said pool wall.

3. A submergible lighting fixture comprising a housing having oppositely disposed substantially V-shaped opaque walls connected by an inclined transparent wall and forming a lamp chamber, said transparent wall being inclined to direct light rays obliquely downward and outward, and having an upwardly projecting reduced hollow extension through which a lamp assembly may be inserted into said lamp chamber and removed therefrom.

4. A submergible lighting fixture comprising a housing having light projecting means and provided with an extension projecting upwardly and opening above the water level, a closure for said fixture, and pressure relieving means including a check valve normally maintained open by gravity, being connected with the interior of said fixture and serving to exclude water therefrom.

5. A submergible lighting fixture comprising a housing forming a lamp chamber and having light projecting windows relatively converging downwardly and outwardly and arranged to direct light beams laterally at relatively different angles toward the bottom of the pool, and an upwardly extending open top projection having a lateral pocket provided with inlet and outlet apertures for line wires.

6. A submergible lighting fixture comprising a housing forming a lamp chamber having light projecting windows relatively converging downwardly and outwardly and arranged to direct light beams laterally at relatively different angles toward the bottom of a pool, and an upwardly extending open top projection having a lateral pocket provided with inlet and outlet apertures for line wires, and provided with supporting means and a lamp unit removably carried by said supporting means and having a lamp extended into said chamber.

FRANCIS B. NIGHTINGALE.