

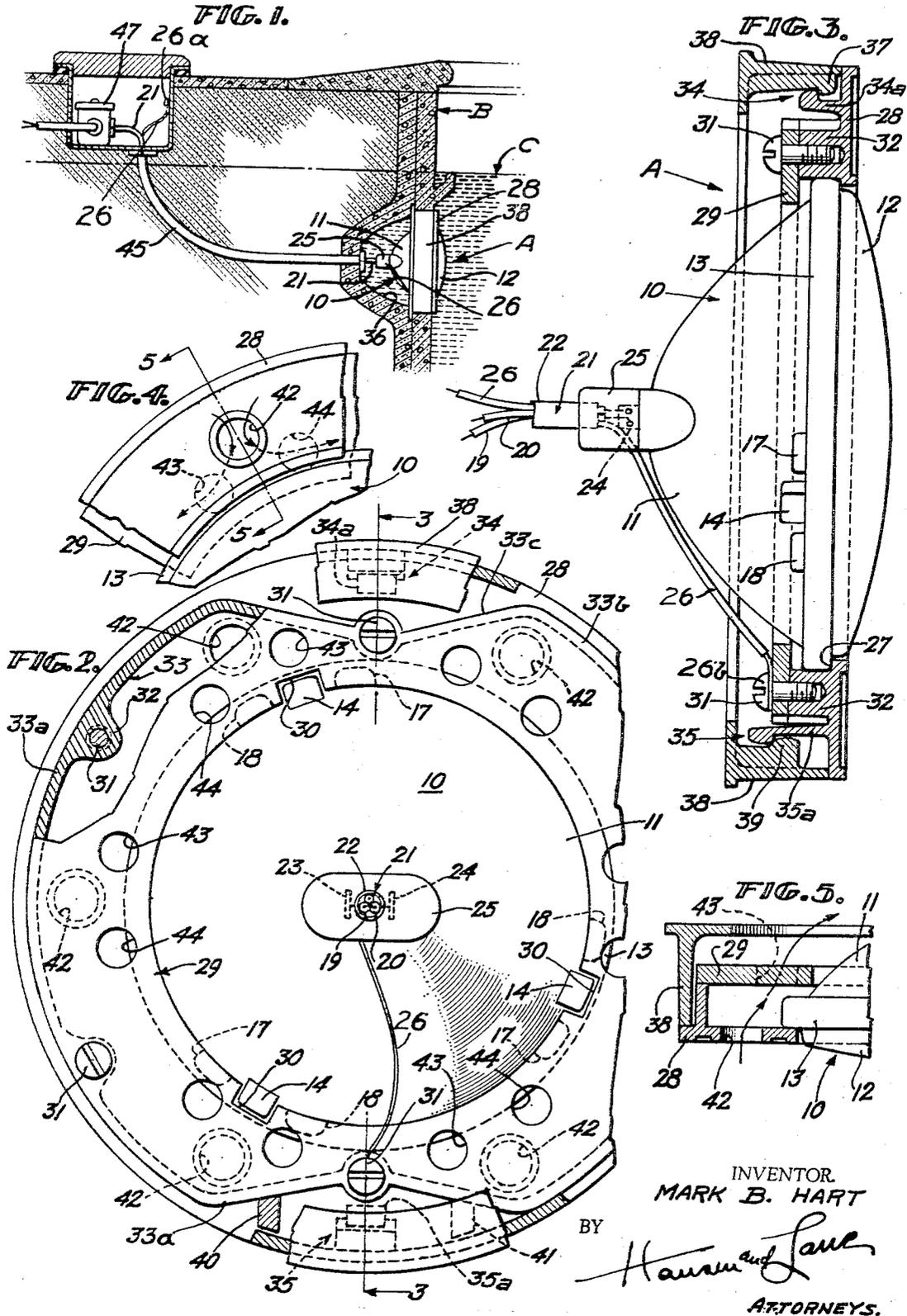
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UNDERWATER LIGHT FOR SWIMMING POOL

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**UNDERWATER LIGHT FOR SWIMMING POOL**

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**ABSTRACT OF THE DISCLOSURE**

A sealed beam electric lamp mounted in a non-waterproof housing in a recess in a wall of a swimming pool with a conduit of selected length openly communicating said recess with a junction station above the water level of the swimming pool, said lamp having filament contact posts on its rear side and a pair of waterproof insulated conductor wires connected one to each contact post. The connections between the contact posts and the wires are enclosed and permanently sealed in a small mass of waterproof sealing material, the conductors being of a length to extend entirely through the conduit and are releasably connected to a circuit at the junction station.

The present invention relates to a swimming pool light, and pertains more particularly to a light for illuminating the underwater area of a swimming pool.

In the past, various types of underwater lights have been developed for swimming pools. In most of these prior structures, an electric light is sealed within some type of enclosure having a transparent glass lens through which the light is projected into the swimming pool.

The present invention provides an underwater swimming pool light in which an electric lamp of the sealed-beam type, having filament contact posts on its rear side, is mounted in a removable mounting ring which grips the marginal area of the lamp, and is in turn fitted into a circular frame embedded in the concrete wall of a swimming pool around the mouth of a circular recess in the wall. A pair of waterproof, insulated conductors are connected to the usual filament contact posts of the lamp, and this connection is potted in a small mass of suitable waterproof potting material, such as epoxy resin. The conductors are led through a sealed conduit which extends from the wall recess to a point above the water level of the pool, where they are connected to a source of suitable electric current.

The lamp, the potting material, and the portion of the conductors below the water level of the pool are all exposed to the water in which they are immersed. The mounting ring is constructed to permit a circulation of water from the pool into the receptacle, but to mask the interior of the receptacle from the pool area to prevent the passage of light therebetween.

An object of the invention is to provide an improved and simplified underwater light for swimming pools.

A further object of the invention is to provide a receptacle in the wall of a swimming pool with an annular assembly releasably mounted in the mouth thereof and clamped to a marginal portion of a reflecting type electric lamp having filament contact members on the rear thereof, a pair of watertight conductor wires being connected to the contacts with the connections sealed within a potting of suitable waterproof material, a conduit extending from the receptacle to a point above the water level of the pool for receiving the conductors, which are threaded through the conduit and thence to an electrical junction box provided above the water level.

The foregoing objects and advantages of the invention will be apparent from the following description and the accompanying drawings wherein;

FIG. 1 is a small scale, fragmentary, vertical sectional

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view of an upper side portion of a swimming pool having an underwater light embodying the invention mounted therein.

FIG. 2 is an enlarged, rear, elevational view of the lamp and its mounting assembly shown in FIG. 1, portions being broken away.

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2.

FIG. 4 is a fragmentary, front, elevational view of a marginal portion of the assembly shown in FIG. 2, the arrows indicating the path of water flow through the lamp mounting ring structure, which also masks the passage of light therethrough.

FIG. 5 is a fragmentary, sectional view taken along line 5—5 of FIG. 4.

Referring to the drawings in detail, the illustrative form A of the invention comprises a conventional sealed beam electric lamp 10 having a usual parabolic rear portion 11 lined with a reflective coating, and forward lens portion 12. The lamp 10 also is provided with a marginal rim 13 with the usual three locating lugs 14 projecting from the rear of the rim, and a pair of positioning pads 17 and 18 provided one on each side of each locating lug 14 with their top surfaces defining a common plane for mounting the lamp in a conventional automotive type lamp mounting, not illustrated.

In the present instance, the lamp 10 is of the sealed beam type commonly used in floodlights, with the two ends of the lamp filament connected to usual terminal posts 23 and 24 which are sealed in the lamp structure during manufacture of the lamp.

A pair of conductor wires 19 and 20 are provided in a cable 21, which is sheathed in watertight casing 22 of suitable material such as rubber or neoprene. The conductors 19 and 20 are connected, as best illustrated in FIGS. 2 and 3, one to each of the usual filament terminal posts 23 and 24 which extend from the rear of the sealed beam lamp 10, and preferably are soldered thereto. A third conductor wire 26 is preferably included in the cable 21, one end thereof being grounded as at 26a (FIG. 1) and its other end being connected to the screw 31 of the lamp mounting structure A.

A quantity of suitable waterproof potting material 25, such as, for example, an epoxy or polyester resin, is molded or "potted" around the lamp filament terminal posts 23 and 24 and their connections to the conductors, including an end portion of the cable sheath 22, thereby thoroughly sealing these electrical connections within the potting material. The mass of potting material is as small as is compatible with adequate strength to permit handling during shipping and installing, so that it will be cooled throughout by the water in which it is immersed.

The lamp rim 13 fits into an annular, rabbeted recess 27 provided in a mounting ring 28, and is retained therein by a retaining ring 29 having an internal opening of a size to receive the parabolic reflector portion 11 of the lamp freely therein. The retaining ring 29 rests on the positioning pads 17 and 18 on the rear of the lamp rim 13, and the locating lugs 14 fit into notches 30 provided therefor in the retaining ring 29.

The retaining ring 29 is releasably attached co-axially to the rear of the mounting ring 28 by screws 31, which are screwed into widened boss portions 32 provided in an upstanding wall 33 which extends around the rear side of the mounting ring 28. The side portions 33a and 33b of the wall 33 are of circular curvature (FIG. 2) with angular re-entrant portions 33c and 33d at the upper and lower portions, respectively. These re-entrant wall portions 33c and 33d have latch means 34 and 35 (FIGS. 2-3) mounted respectively therein. The upper latch means 34 comprises a hook 34a cast integrally with the mount-

ing ring 28 which engages a lug 37 on a ring 38 forming a rim around the mouth of a circular recess 36 which is formed in the pool wall B, preferably when the latter is built.

The bottom latch means 35 comprises a spring finger 35a which may be cast integrally with the mounting ring 28, and has cam latch engagement with a second lug 39 on the recess ring 38. A pair of abutments 40 and 41 on the recess ring 38 assist in properly locating the mounting ring 28 in the recess ring 38 as shown in FIG. 2.

The mounting ring 28, lamp retaining ring 29 and recess ring 38 are preferably all of bronze, to insure long life and freedom from corrosion.

A plurality of water circulating openings 42 are provided in symmetrically spaced relation around the lamp mounting ring 28, and rearwardly of each of these openings, and offset laterally therefrom, are a pair of openings 43 and 44 in the lamp retaining ring 29. By this arrangement water is free to circulate through these openings 42, 43 and 44 from the pool and back again, but, since the openings 43 and 44 in the retaining ring are offset from those 42 in the mounting ring, they mask off any direct passage of light therethrough.

Sealed into the inner end of the wall recess 36, and opening thereinto, is a conduit 45, which may be of metal, plastic or other material suitable for underground and underwater use. From the recess 36 the conduit extends upwardly above the water level of the pool C. The cable 21 is threaded through the conduit 45, and the conductors 19 and 20 thereof are connected to a suitable source of electrical current represented by a junction box 47 (FIG. 1).

In using the present invention, assuming that the recess ring 38 is embedded in the pool wall B to form a rim around the mouth of the recess 36; to mount a sealed beam lamp 10 therein, the screws 31 are removed, as is also the retaining ring 29. A conventional sealed beam lamp 10 of proper size is fitted into the rabbeted seat 27 provided therefor in the mounting ring 28 from the rear thereof, and the retaining ring 29 is placed thereon as shown in FIGS. 2 and 3. With the locating lugs 14 of the lamp in the notches 30 of the retaining ring 29, and the retaining ring 29 seated on the pads 17 and 18 of the lamp, the screws 31 are reinserted in their respective holes and are drawn down snugly.

The lamp 10 preferably will have the cable 21 already connected thereto, with the connections between the cable conductors 18 and 20 and the lamp filament contact posts 23 and 24 sealed in the potting material 25, and the ground wire 26 emerging from a side of the potting material 25, this having been done at the factory where the lamps are processed for use in the present invention.

The cable 21 is threaded through the conduit 45 from the pool end thereof, which is easily done by pushing the cable through the conduit. The lower latch hook 35a is then placed on the lower lug 39 of the recess ring 38, and the mounting ring 28, with the lamp 10 mounted therein, is snapped into its position of FIGS. 1-3. The upper ends of the conductors 19 and 20 are then connected to a suitable source of electricity, the wire 26 is grounded and the light is then ready for use.

The invention provides a lamp of great illuminating power, which is never in danger of overheating since it is immersed in, and is in direct contact with the water of the pool.

The circulation of pool water through the recess 36 by means of the holes 42, 43 and 44 prevents the accumulation of algae and other undesirable growths within the recess and on the various parts of the lamp assembly. Since the lamp is thoroughly cooled at all times, it has a long life expectancy, and if relamping should be required it can be easily and quickly accomplished by freeing the upper ends of the conductors 19 and 20 and reversing the procedure explained previously herein for mounting a lamp in the recess.

While I have illustrated and described a preferred embodiment of the present invention, it will be understood, however, that various changes and modifications may be made in the details thereof without departing from the scope of the invention as set forth in the appended claims.

I claim:

1. An underwater light for a swimming pool having a recess in a wall thereof below the water level of the pool, and having a conduit openly communicating the interior of the wall recess with a junction station above the water level of the pool;
  - a non-sealing lamp mounting member removably mounted in the mouth of the recess;
  - a sealed beam electric lamp having a pair of filament contact posts on the rear thereof and having also a marginal rim thereon;
  - means retaining the lamp rim seated co-axially within the mounting ring with a rear portion of the lamp extending into the wall recess whereby the entire exterior of the lamp is exposed to direct contact with water of the swimming pool;
  - a waterproof insulated conductor wire electrically connected to each of the filament contact posts, the conductor wires extending entirely through the conduit and being releasably connected to an electric circuit in the junction station above the water level of the pool; and
  - a small mass of waterproof material completely enclosing and sealing the contact posts and the electrical connections between the contact posts and the conductor wires.
2. An underwater light for a swimming pool as claimed in claim 1 wherein a rim is embedded in the wall around the mouth of the non-sealing recess therein and the lamp mounting ring is releasably latched co-axially in the rim.
3. An underwater light for a swimming pool as claimed in claim 1 wherein the lamp mounting ring has a plurality of openings therein to provide for circulation of pool water through the recess.
4. An underwater light for a swimming pool having a lamp receiving recess in a wall thereof below the water level of the pool, said light comprising;
  - a non-sealing lamp mounting ring of a size to fit in the mouth of the wall recess and having a plurality of water circulating holes therein,
  - means removably supporting the mounting ring in the mouth of the wall recess,
  - a sealed beam electric lamp having a pair of filament terminals on the rear thereof, and having also a marginal rim portion thereon, the rim portion being seated on a radially inward marginal portion of the lamp mounting ring whereby the entire exterior of the lamp is exposed to direct contact with water of the swimming pool,
  - clamp means fitted over the opposite side of the lamp rim portion from that seated on the lamp mounting ring,
  - means attaching the clamp means in lamp-rim-clamping relation to the mounting ring,
  - a waterproof insulated conductor wire electrically connected to each of the lamp filament terminals, a small mass of waterproof material completely enclosing and sealing the contact posts and the electrical connections between the contact posts and the conductor wires,
  - a cable conduit sealed to the pool wall and openly communicating an inner portion of the wall recess with a junction station above the pool water level,
  - the conductors being inserted entirely through the conduit from its wall recess end and being releasably connected at the junction station to a source of electricity above the pool water level.

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5. A swimming pool light as claimed in claim 4 wherein a third conductor wire is provided, one end thereof being grounded and its other end being electrically connected to the lamp mounting ring.

6. An underwater swimming pool light as claimed in claim 4 wherein the clamp ring has a plurality of water circulating holes therein in offset relation to the water circulating holes in the lamp mounting ring to mask against the emergence of light from the interior of the recess.

7. An underwater swimming pool light as claimed in claim 4 wherein the means supporting the lamp mounting ring in the mouth of the recess comprises an annular metal ring embedded concentrically in the mouth of the recess

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and with releasable latch means supporting the lamp mounting ring concentrically therein.

References Cited

UNITED STATES PATENTS

1,792,398	2/1931	Rothen	240—26
2,286,448	6/1942	Wahlberg	240—41
2,423,664	7/1947	Ryder	240—41
2,906,863	9/1959	Ritter	240—26
3,192,379	6/1965	De Garmo	240—26
3,265,884	8/1966	Kelley	240—26

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