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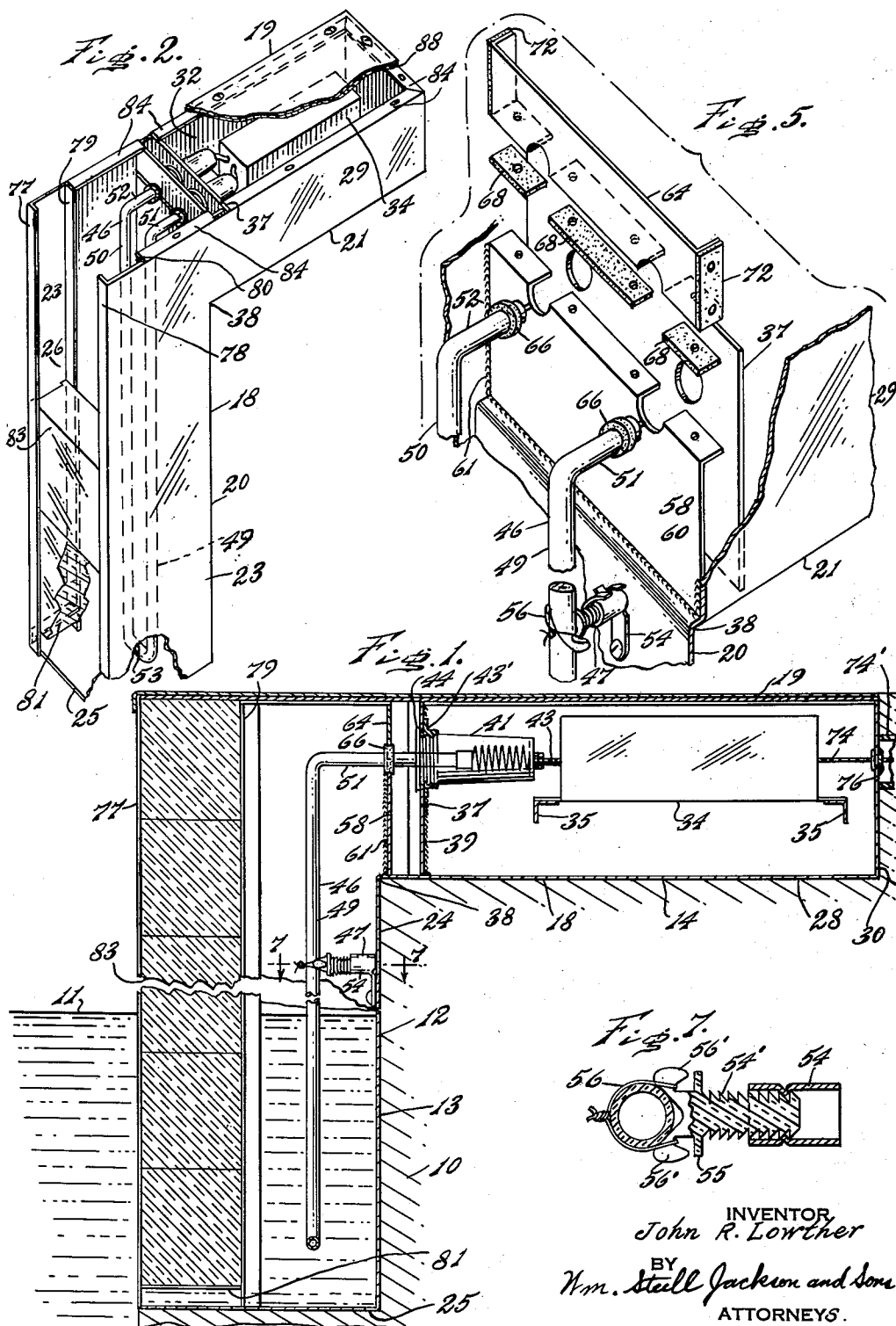
J. R. LOWTHER

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SWIMMING POOL LIGHTING SETUP

Filed June 18, 1959

2 Sheets-Sheet 1



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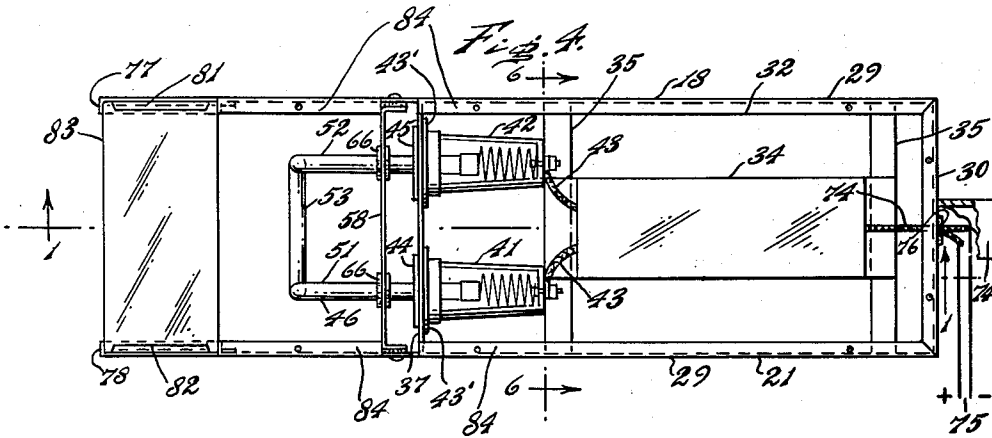
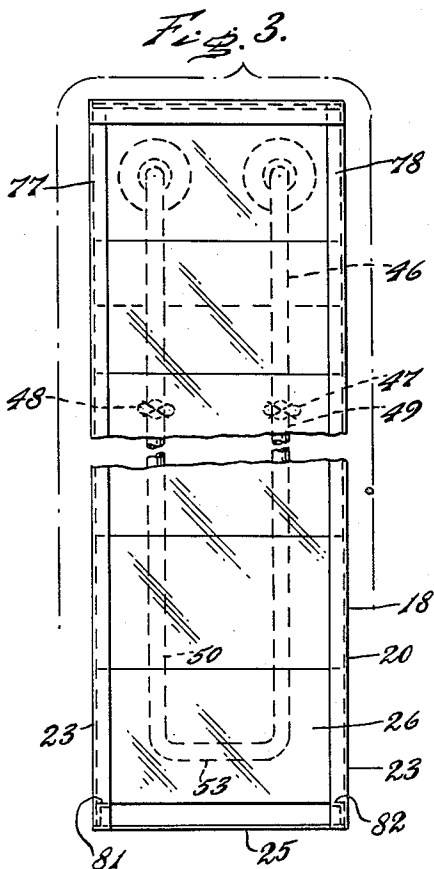
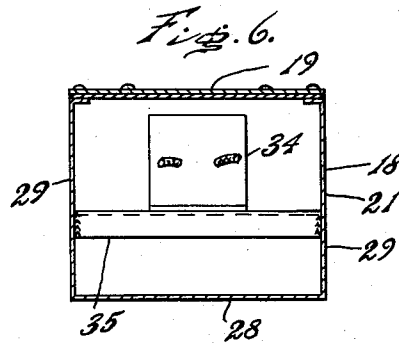
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2 Sheets-Sheet 2



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SWIMMING POOL LIGHTING SETUP

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6 Claims. (Cl. 240-26)

The present invention relates to a lighting setup for swimming pools.

A purpose of this invention is to provide an improved setup for lighting swimming pools.

A further purpose is to make the underwater lighting of such pools safer.

A further purpose of this invention is to provide a setup giving underwater lighting for such pools which will be at once thoroughly safe, highly effective, easy to install, long lasting, and relatively inexpensive.

Further purposes will appear in the specification and the claims.

My invention is illustrated in the drawings by an embodiment chosen from the standpoints of convenience in illustration, satisfactory operation, and clear demonstration of the principles involved.

FIGURE 1 is a fragmentary longitudinal section, taken along the line 1-1 of FIGURE 4, of this embodiment of my invention.

FIGURE 2 is a perspective, broken away, of this embodiment, leaving out the showing of the swimming pool wall and swimming pool.

FIGURE 3 is a fragmentary end view of what is shown in FIGURE 2.

FIGURE 4 is a somewhat fragmentary plan view of what is shown in FIGURE 2, except that the top cover is omitted, and FIGURE 4 also, diagrammatically and on a reduced scale, shows a connection to a current source.

FIGURE 5 is a fragmentary exploded perspective view showing structure near the angle of the inverted L in the same embodiment as shown in all the other figures.

FIGURE 6 is a cross section along the line 6-6 on FIGURE 4.

FIGURE 7 is a cross section along the line 7-7 on FIGURE 1, showing only a particular part of the light tube, and its support.

Describing in illustration but not in limitation and referring to the drawings:

Wall 10 of swimming pool 11 has recess 12, in the shape of an inverted L, with its vertical leg 13 located in the face of the wall toward the pool, and its horizontal leg 14 located in the top of the wall and extending back away from the pool.

Fitting in this recess are frame 18, top cover 19, and associated components. Their position is such that the end of the frame nearest the pool is more or less flush with the rest of the wall face and the top cover is more or less flush with the top of the wall.

Frame 18, like the recess in which it fits, is in the shape of an inverted L, with vertical leg 20 and horizontal leg 21. More specifically, frame 18 is in the general form of an inverted L-shaped box structure, with largely open faces along the sides away from the interior angle of the L. Thus the legs are more or less channel-shaped in cross section, with the open faces of the two channels toward the pool and toward the top, respectively. In other words, vertical leg 20 has side walls 23, back wall 24, bottom end wall 25 and open front face 26, while horizontal leg 21 has bottom wall 28, side walls 29, back end wall 30, and open top face 32.

Transformer 34 is supported within the frame in a position well above the bottom of horizontal leg 21 and toward the rear of that leg, by means of brackets 35 welded to the frame in positions stretching across between the opposite side walls of its horizontal leg and preferably

2

nearly half way up in that leg, the transformer being removably secured to the brackets in any suitable manner, as by bolting it down.

Vertical partition or separator 37, located a short distance (as for example 3 inches to the rear of angle 38 where the horizontal and vertical legs meet, is welded around its edges at 39 to bottom wall 28 and side walls 29 of the horizontal leg to form a watertight joint, and is a continuous sheet except for holes to accommodate housings or sockets 41 and 42, of the type conventional for cold cathode light tubes, held in parallel positions directed toward the pool at about the same level as the transformer, with which they are electrically connected, as by wires 43. The housings or sockets may for example be held on by retaining rings 43', fastening them tightly to the partition. The holes are gasketed at 44 and 45 to complete the waterproofing at the partition.

Cold cathode light tube 46 is held in position by supports 47 and 48, which hold vertical portions 49 and 50, respectively. The tube is held in a position with its terminal end portions 51 and 52 extending for electrical connection into housings or sockets 41 and 42 respectively. Horizontal end portion 51 of the tube runs from the socket 41 in a direction toward the swimming pool. Then the tube turns vertically downward as vertical portion 49, extending down within the frame most of the length of vertical leg 20 of the frame. At a point not far from the bottom the tube turns across horizontally parallel to the swimming pool edge as bottom portion 53 and goes over into the other side of the frame from the side in which socket 41, horizontal end portion 51 and vertical portion 49 are located. It then turns upward as vertical portion 50, and when it reaches the same level as horizontal end portion 51 is on, it turns back away from the swimming pool into socket 42 as horizontal end portion 52. Supports 47 and 48 can take any suitable form, as illustrated more in detail by support 47. This includes holder 54 (of metal) secured to the back wall 24 of the frame, which holder holds the threaded supporting leg 54' of glass yoke unit 55. The yoke unit in turn holds vertical portion 49 of the tube by means of metal wire 56. This wire is looped around the two arms 56' of the yoke, which arms have an enlarging taper toward their ends to assist in holding the loops on, and passes around the light tube in between loops and the ends are brought around the light tube and tied by twisting the ends together.

Between partition 37 and angle 38, a second vertical partition 58 is located far enough away from the first vertical partition so that the welded part of the second does not prevent insertion of the housings or sockets into the poles in the first. This second partition has a lower part 60, welded at 61 around its bottom and sides to bottom 28 and sides 29 of horizontal leg 21 to form a watertight seal, and thus forming an integral part of the structure of frame 18. It also has an upper part 64 extending on up to the top of the frame and held in by some suitable temporary means such as screws. Parts 51 and 52 of cold cathode light tube 46 pass in between these parts through suitable holes, the holes being gasketed at 66, as are the joint lines between upper part 64 and lower part 60 (at 68) and also between upper part 64 and side walls 29 of the horizontal leg (at 72).

Thus the second partition 58 likewise forms a watertight barrier, which also assists in the support of cold cathode light tube 50.

Transformer 34 is connected to a suitable source of current 75, shown diagrammatically in FIGURE 4; the connection may be by means of wiring 74, which will usually be underground in the vicinity of the pool, and may for example be located in underground duct 74' after the wiring leaves frame 18. Thus there is a com-

plete electric circuit from the current source 75 through transformer 34 and from transformer 34 through socket 41 to cold cathode light tube 46 and back through socket 42 to transformer 34 and back to the current source 75. By means of duck seal 76 at the place where wiring 74 passes through rear end wall 30, the hole in the rear end wall is sealed off.

Open front face 26 of vertical leg 20 of the frame has vertical guide strips 77, 78, 79 and 80, ending a short distance above the bottom of the frame at brackets 81 and 82, all of which are to properly position the vertical wall of glass blocks 83 to form the front part of vertical leg 20. Glass blocks 83 are preferably of a type which diffuses light. The wall ends slightly (preferably a little less than an inch) above the bottom of the vertical leg, so that the water of pool 11 extends into the vertical leg around the lower part of cold cathode light tube 46, but the interior is substantially inaccessible to someone in the swimming pool.

Gasketing 88 on the bottom of top cover 19 cooperates with the top of the horizontal leg 21 of the frame, including inwardly-extending horizontal strips 84 at suitable places around the perimeter of the leg's top, thus completing the waterproofing of the rear interior of the horizontal leg.

It is desirable for the frame and cover to be of some material that is relatively corrosion resistant, such as aluminum. Neoprene is a good material for the gasketing.

The cold cathode light tubes described herein are what are often popularly known as "neon light," from the fact that a gas is employed in their interior and the particular gas so employed is often neon. Other gas is also often employed instead, one gas which is especially often present in the interior of the tubes being argon.

Various colors of lights may be employed, by varying the gas used and also the fluorescent interior coating used, if any; and these different colors may be in different units illuminating the same swimming pool.

It may also be desirable to use a night tube. By this is meant a tube which itself gives off considerable ultraviolet light and little, if any, visible light, but whose ultraviolet light will activate any fluorescent materials in the vicinity round about, so that the fluorescent materials give off visible light. Thus, as one example, the use of the night tube may be accompanied by use of fluorescent materials in the bathing suits, caps or the like of the swimmers.

If desired, there may be employed a suitable drainage duct or other drainage means leading from the bottom or near the bottom of the compartment in which the transformer is located to some point away from the swimming pool.

The individual devices will be located in suitable locations along the borders of the swimming pool, employing whatever numbers the need for illumination calls for, and they will be operated in the manner customary with cold cathode lights.

In marked contrast to the sealed-in incandescent lamps now employed for underwater lighting, the set-up of the present invention is quite safe; yet it is relatively inexpensive. The swimmer has no access to the light, but if he did, even if the light tube were to be broken, he would be in no danger from electricity. Yet, the light, without resort to any complicated or expensive devices, gives excellent lighting to the underwater areas for which it is intended, and is quite economical, being capable of lasting extremely long periods. When subject to the conditions under which it is used in lighting of swimming pools, a typical sealed-in incandescent bulb will last only about 750 hours, necessitating frequent time-consuming, troublesome and expensive replacement. In contrast, in the setup of the present invention a cold cathode tube can be expected normally to last anywhere from 20,000 to 30,000 hours, and may, in some cases, last far longer than that.

In view of my invention and disclosure variations and modifications to meet individual whim or particular need

will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of my invention without copying the structure shown, and I therefore, claim all such insofar as they fall within the reasonable spirit and scope of my claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A swimming pool lighting setup comprising a swimming pool wall adapted to retain water at a level below the top of the wall, a pair of electrical sockets mounted thereon in a position above the normal water level of the pool, a cold cathode light tube mounted with its terminal ends in the respective sockets and its intermediate portion extending down substantially below the normal water level of the pool and in contact with the water thereof, a partition extending from the wall around said tube at points which are between the area of contact of the tube with the water and the respective terminal ends of the tube, and means to supply suitable current for the light tube to the sockets.

2. In a swimming pool light setup, a swimming pool wall adapted to retain water at a level below the top of the wall having an inverted L-shaped recess with the vertical portion of the L extending down adjacent to the swimming pool and the horizontal portion of the L extending back away from the swimming pool, a transformer mounted in the said horizontal portion above the bottom of said portion at a place away from the swimming pool, two electrical sockets mounted in said horizontal portion above the bottom of said portion at a place away from the swimming pool, lighting means including a cold cathode tube which is mounted with its terminal ends in the sockets and extends down into the vertical portion of the inverted L substantially below the bottom of the horizontal portion, a partition which extends around the tube at points between the sockets on the one hand and the place where the tube is substantially below the bottom of the horizontal portion on the other, said partition continuing up to the top of the recess and dividing the recess into two compartments more or less watertight with relation to each other, a cover over the one of those compartments which contains the sockets and transformer, electrical connections between transformer and tube by way of the sockets, and a source of suitable current electrically connected to the transformer.

3. A swimming pool lighting setup comprising a swimming pool wall adapted to retain water at a level below the top of the wall having a recess in its side and top in the shape of an inverted L, with the inverted part of the recess being along the pool and the horizontal part of the recess extending back away from the pool, supporting structure supported by the swimming pool in the said horizontal part of the recess in a place away from the pool, a transformer supported by the supporting structure in a position away from the pool and above the normal water level therein and spaced substantially above the bottom of the recess in said place in said horizontal part thereof, two sockets positioned at the same height as the transformer and extending horizontally from the transformer toward the pool in directions parallel to each other, a cold cathode light tube comprising a U shape having parallel arms and having its opposite terminal ends each socketed in a different one of the respective sockets and having its arms extending first in parallel relationship in a direction toward the pool, then having its arms extending in parallel relationship in a direction downward in the vertical part of the recess, the tube continuing downward with its arms parallel to each other to a point below the normal water level of the pool and then having a bottom portion across between the bottoms of the two downward directed portions of the arms, a first separator unit having a lower portion extending vertically up from the bottom of the horizontal portion of the recess to the parallel horizontal portions of said arms of the light tube, an upper portion extending from the parallel horizontal portions of the light tube to the top of the recess and gasketing compress-

5

sibly positioned between the two portions of the separator unit and also between each of said portions and the light tube to complete a water-tight vertical seal across the recess, a second separator unit located away from the pool with respect to the first unit and extending vertically up from the bottom of the horizontal portion of the recess around the sockets to the top of said horizontal portion of the recess including gasketing compressibly positioned next to the sockets to complete a water-tight vertical seal across the recess, a cover member on the top of the recess having gasketing compressibly positioned with the side walls of the recess and the tops of the vertical sealing units to complete a water-tight seal for the horizontal portion of the recess behind said separator units, a vertical wall of glass blocks between the swimming pool and the vertical portions of the light tube, said wall of glass blocks being supported by the swimming pool wall in a position in which the bottom of the wall of glass blocks is spaced above the bottom of said recess, a source of current for the cold cathode light tube, and electrical connections completing a circuit from said source through the transformer and cold cathode light tube by way of the sockets, said electrical connections being surrounded by a water-tight seal on entrance into the said space in said horizontal part of said recess in which the transformer is located.

4. A setup for under water lighting of a swimming pool comprising an inverted L-shaped hollow frame having a horizontal portion above the normal water level and a vertical portion extending below the normal water level, a transformer mounted thereon and located in the horizontal portion of the frame, and a cold cathode light tube mounted on the frame which tube has two terminal ends which are electrically connected to the transformer and are located in the horizontal portion of the frame and which tube also has an intermediate portion extending down into the vertical portion of the frame below the bottom of the horizontal portion of the frame and more than half the distance between the top of the frame and the bottom of the vertical leg of the L.

5. A swimming pool lighting setup comprising an inverted L-shaped hollow frame having a horizontal portion above the normal water level and a vertical portion extending below the normal water level, a pair of electrical sockets mounted on the frame and located in the horizontal portion thereof spaced above the bottom of said portion, a cold cathode light tube having its terminal ends mounted in the sockets and its intermediate portion extending into the rest of the frame to a position substantially below the bottom of the horizontal portion, and a water-tight partition extending from the bottom of the horizontal portion of the frame up at least to the light

6

tube at a place which is between the part of the light tube which is substantially below the bottom of said horizontal portion on the one hand and the ends of the light tube on the other.

6. An internal illumination unit for swimming pools comprising a frame in the shape of an inverted L having a horizontal portion above the normal water level and a vertical portion extending below the normal water level and having a channel-like cross section with the open end of the channel at the top in the case of the horizontal leg and at the side away from the horizontal leg in the case of the vertical leg, brackets mounted in the interior of the horizontal leg in a position spaced from the vertical leg and spaced above the bottom of the horizontal leg, a transformer mounted on the brackets, electric sockets electrically connected to the transformer and positioned in the horizontal leg spaced from the bottom of that leg, a cold cathode tube emitting radiation having a wave length within the range which includes visible and ultraviolet light which tube is mounted with its terminal ends in the sockets and the intermediate portion of the tube extending down the greater part of the way to the bottom of the vertical leg, a partition of glass block mounted on the frame and positioned to extend vertically up from near but not at the bottom of the open face of the vertical leg to the top of the frame, a top cover extending over and sealing off the entire open top of the frame, and a partition extending vertically up from the bottom of the horizontal leg on around the light tube to the top cover and dividing the frame into a plurality of compartments sealed off from one another.

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