

[54] SWIMMING POOL USER WARNING SYSTEM

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[22] Filed: **Dec. 6, 1971**

[21] Appl. No.: **204,878**

[52] U.S. Cl. **340/272, 200/81 R, 340/279**

[51] Int. Cl. **G08b 13/10**

[58] Field of Search **340/272, 276, 38 R, 340/258 R, 280, 279, 240, 236; 200/86 R, 86 A, 81 R, 81 H; 116/98, 65**

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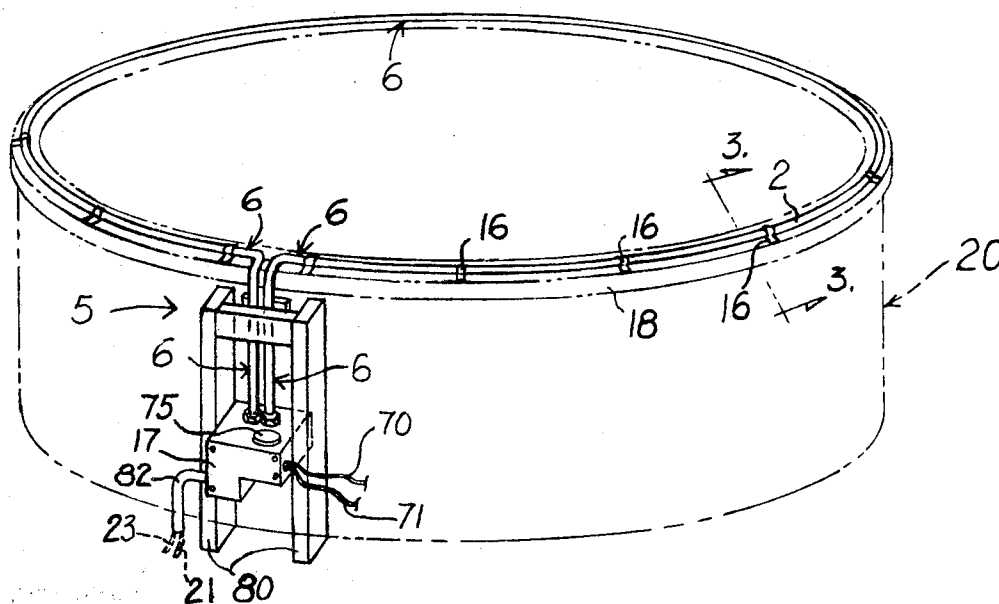
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[57] **ABSTRACT**

A swimming pool user warning system which warns as to the presence of a would-be unauthorized user of a swimming pool comprising, in combination, an electrical warning alarm, a normally open electrical switch and a compressible air-filled hose having both a normal undepressed condition and an actuated depressed condition. The hose is constructed in relation to the switch such that the latter is maintained open as long as the former is in its undepressed condition and such that the latter is closed upon any part of the former being actuated to its depressed condition. A mounting for the hose for an outdoor swimming pool is provided so that the hose is actuated to its depressed condition by the weight or force of such user, whereby to give off an alarm warning of his presence.

4 Claims, 5 Drawing Figures



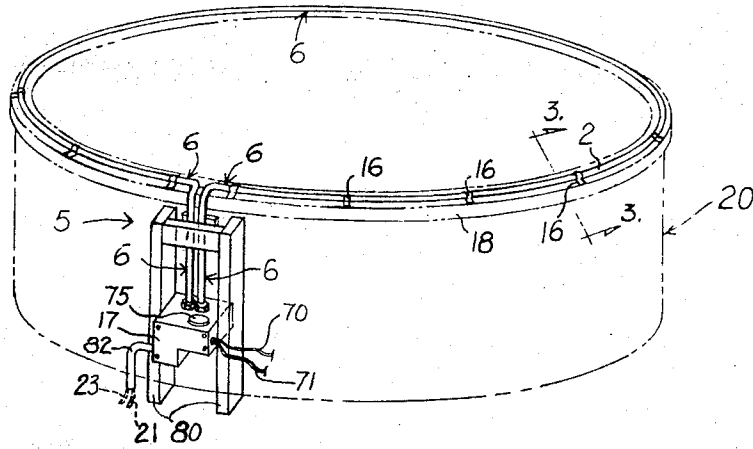


Fig. 1

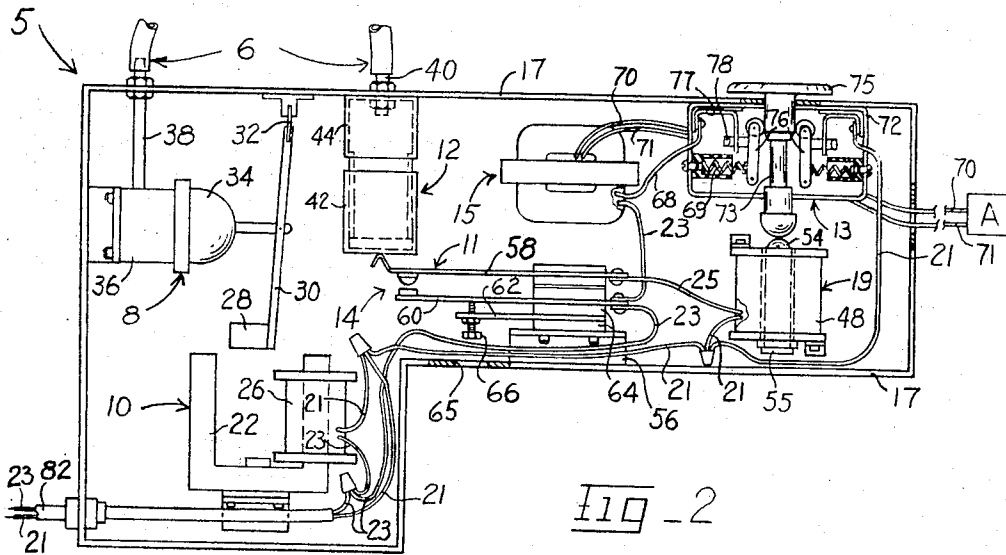


Fig. 2

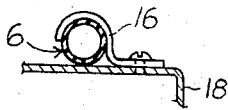


Fig. 3

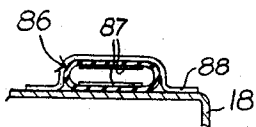


Fig. 5

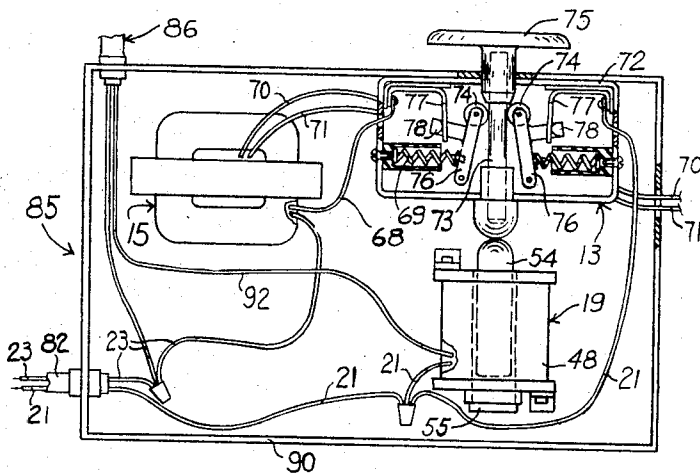


Fig. 4

SWIMMING POOL USER WARNING SYSTEM

BACKGROUND OF THE INVENTION

My invention relates to an intruder warning system, particularly for outdoor swimming pools.

The principal object of my invention is to make available to homeowners a reliable low cost swimming pool user warning system which guards against would-be unauthorized users of outdoor swimming pools.

The foregoing object of my invention and the advantages thereof will become apparent during the course of the following description, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1 and 2 are, respectively, perspective and sectional views of a swimming pool user warning system embodying my invention;

FIG. 3 is a sectional view of the structure of FIG. 1 taken on the line 3—3 thereof; and

FIGS. 4 and 5 are views similar to FIGS. 2 and 3, respectively, of another embodiment of my invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings in greater detail and first to the embodiment shown in FIGS. 1-3, 5 generally designates said swimming pool user warning system shown therein which comprises, in combination, compressible air-filled hose means 6 containing air under pressure, an air pump 8 at one end thereof, and air motor 12 at the other end thereof and warning means 14 including electrical switches 11, 13, a voltage step-down transformer 15 and a solenoid 19. The pump 8 is driven by an electromagnetic motor 10. All of the foregoing elements except for the air-filled hose means 6 are contained in a housing 17. Said air-filled hose means 6, is fastened by suitable clamps 16 to a rail 18 above and around the top of an outdoor swimming pool 20 which rail 18 is supported by circumferentially spaced apart ground supported posts (not shown). Said electromagnetic motor means 10 comprises, in the instance, a permanent magnet 22 made fast to a wall of said housing 17 by suitable structure, one leg of which magnet 22 carries an electromagnetic coil 26 fed with electrical energy via power lines 21 and 23 from a suitable electrical power source, such as the common household 115 volt a. c. source. The armature of said motor 10 comprises an oscillating iron slug 28 which is supported on the free end of a lever 30 the other end of which is pivotally connected, as at 32, to a side of said housing 17. The lever 30 intermediate its ends is connected to a moveable diaphragm part 34 of said air pump 8 which functions as a piston to compress air in the pump body 36 and to force it out of the pump outlet which is in the form of a pipe 38 carried in a wall of the housing 17 which pipe 38 communicates the interior of the pump body 36 and the interior of the air hose 6. The other end of said air hose 6 is connected to another pipe 40 carried in a wall of said housing 17 which communicates the interior of said air hose 6 and the interior of said motor 12. Said motor 12 is in the form of an expandible air chamber formed by two slidably interfitted non-metallic hollow bodies 44 and 42, one 42 of which is made fast to a side of said housing 24 by means which includes said pipe 40 and the other one 44 of which is slidable on the body 42.

Said solenoid 19 consists of an electromagnetic coil 48 made fast by suitable structure to a wall of the housing 17, a moveable plunger 54 which operates out of one end of said coil 48 and a non-metallic stop 55 for said plunger 54 covering the other end of said coil 48. Said solenoid 19 is wired in series circuit with said switch 11 across the power lines 21 and 23 by an electrical line 25. The switch 11 is mounted by suitable structure 56 on a wall of the housing 17 and consists of a pair of metal leaf springs 58 and 60 having mutually engaging contact points on the free ends thereof and a metal bar 62 carried between insulating bars 64 all of which strips and bars are made fast to said structure 56. The bar 62 carries an adjusting screw 66, the head of which is accessible from outside said housing 17 via an aperture 65 in a wall of the latter and the inner end of which bears against one 60 of said springs, the other 58 of which bears against the end of said body 42. The primary winding of said transformer 15 is wired in series circuit with said switch 13 across the power lines 21 and 23 by an electrical line 68. The secondary winding of said transformer is connected by electrical lines 70 and 71 in series circuit with an electrical alarm mechanism A such as a bell or a siren or lights or any combination of these. The switch 13 consists of a switch body 72 made fast by suitable structure to a wall of said housing 17 which slidably carries a switch plunger 73 having a metal shaft and insulated ends, one of which is in the form of a manual re-set button 75. Spring metal members 77 which are made fast to and insulated from the body 72 have free ends for making electrical contact as shown. The other end of the plunger 73 is arranged to be actuated by the solenoid plunger 54. Said switch 13 has two positions depending upon which end of the switch plunger 73 was last depressed. 76 designates a pair of pivotally mounted holding bars having rollers 74 (FIG. 4) on the free ends thereof which are spring pressed by compression springs 69 against the switch plunger 73 to hold it in its two positions. In the re-set or open position of the switch 13 when the re-set button 75 is last depressed the bars 76 do not make contact with metallic surfaces but in the actuated or closed position of the switch 13 when the solenoid plunger 54 last actuated the switch plunger 73 the bars 76 via the rollers 74 ride down the conical cam surface on the inner end of the button 75 and also make contact with the free ends of the spring members 77 via laterally projecting arms 78 thereon in which position electrical current travels through the bars 76 and the center section of the plunger 73 from one spring member 77 to the other. The spring members 77 which are contained in the switch body 72 are electrically connected, respectively, to electrical lines 21 and 68, respectively.

OPERATION

In operation of said swimming pool user warning system 5, the housing 17 may be suitably mounted near the swimming pool 20 as shown between a pair of spaced apart ground supported posts 80 so that the ends of the air hose 6 may be connected, respectively, to the pipes 38 and 40. The alarm mechanism A may be located remote from the swimming pool 20 preferably in a room in the habitation where it can be readily seen or heard. The electrical power lines 21 and 23 may be carried in metal conduit 82 which may be buried underground as shown. The control switch for the

power lines 21 and 23 which may also be located in said habitation controls the energization of the warning system 5 which upon being energized, assuming the re-set plunger 73 is in its depressed condition, charges the air hose 6 and the motor 12 with air under pressure by virtue of the operation of the air pump 8. When the motor 12 is charged with air under pressure the spring 58 is flexed by the body 42 which is yieldably held against movement by said spring 58. The warning system 5 remains in this condition of readiness as long as electrical power is furnished to the power lines 21 and 23 and the pump 8 merely has to replenish air losses in the pneumatic circuit to the air motor 12. When a would be unauthorized user of the swimming pool 20 depresses the air hose 6 by the weight or force of his body the increase in pressure in said pneumatic circuit causes the body 42 to move against the spring 58 overcoming its equilibrium condition and closing the switch 11, whereupon the solenoid 19 is energized causing the switch plunger 73 to be actuated by the solenoid plunger 54 to move the former to its extended position in which the switch 13 is closed and the primary winding of the transformer 15 is energized, whereupon the alarm A will light up and/or sound loud and clear to warn the inhabitant that an intruder is present. The alarm will be given off until the re-set plunger 73 is depressed to open the switch 13.

MODIFICATION

Referring to the embodiment shown in FIGS. 4 and 5, 85 designates said swimming pool user warning system shown therein which comprises, in combination, collapsible container means 86 containing electrical switch means 87 and warning means including said switch 13, solenoid 19 and transformer 15. Said switch 13, solenoid 19 and transformer 15 are contained in a housing 90. Said compressible means 86, in the instance, comprises a collapsible hose fastened by clamps 88 as in the case of the air hose 6 to the top rail 18 of an outdoor swimming pool which hose 86 has bonded to its top and bottom inside surfaces electrically conductive layers 87 which are electrically wired in series circuit with said solenoid 19 across the power lines 21 and 23 by an electrical line 92. Ends of the electrical lines 23 and 92 are joined, as by soldering, to the layers 87, respectively, at the end of the hose 86 which is attached to the housing 90. Said layers 87 extend the length of said hose 86, one end of which hose 86 connects to a pipe carried in a wall of the housing 90. The switch 13 and the primary winding of the transformer 15 are electrically connected together as in said prior embodiment 5.

OPERATION OF MODIFICATION

In operation of said swimming pool user warning sys-

tem 85, the housing 90 may be mounted the same as the housing 17 except that in this case the hose 86 need not be physically connected to the respective warning system housing although it is preferable that one end of said hose 86 be so connected as shown. The warning system 85 is always in a condition of readiness as long as electrical power is furnished to the power lines 21 and 23. When a would-be unauthorized user of the swimming pool 20 depresses the air hose 86 by his weight or force the same collapses and causes the layers 87 to touch each other which energizes the solenoid 19 to give off the alarm A as before described.

I claim:

1. A swimming pool user warning system which warns as to the presence of a would-be unauthorized user of a swimming pool comprising, in combination, electrical warning means for giving off an alarm, means for energizing said warning means comprising normally open electrical switch means and compressible air-filled hose means having both a normal updepressed condition and an actuated depressed condition, said hose means constructed in relation to said switch means such that the latter is maintained open as long as the former is in its undeepressed condition and such that the latter is closed upon any part of the former being actuated to its depressed condition, and means for mounting said hose means on a swimming pool so that said hose means is actuated to its depressed condition by the weight or force of such user, whereby to give off said alarm warning of his presence.

2. A swimming pool user warning system as claimed in claim 1, said hose means constructed to contain air under pressure, means for filling said hose means with air under pressure and for maintaining the same filled with said pressure air, an air motor in communication with said hose means, said switch means yieldably holding said air motor against movement as long as said hose means is in its undeepressed condition, said air motor actuated upon depression of said part of said hose means to close said switch means to give off said alarm.

3. A swimming pool user warning system as claimed in claim 1, said hose means containing said switch means such that the latter is both physically and electrically closed upon depression of said part of the former.

4. A swimming pool user warning system as claimed in claim 2, second electrical switch means which is manually actuable to open position, and solenoid means for actuating said second switch means to close position, said solenoid means energized upon closing of the first-mentioned switch means.

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