

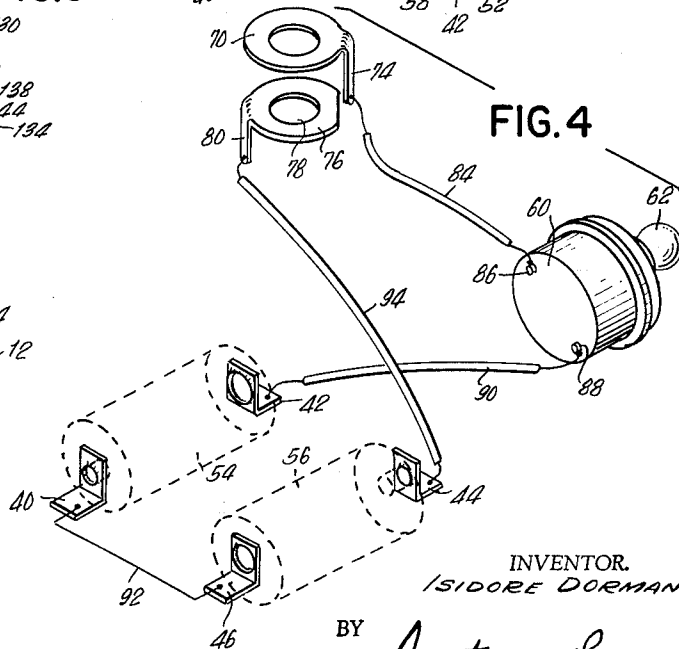
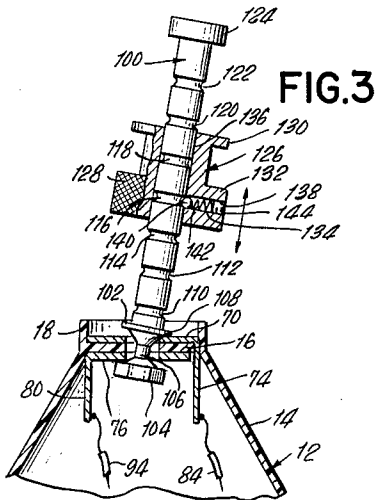
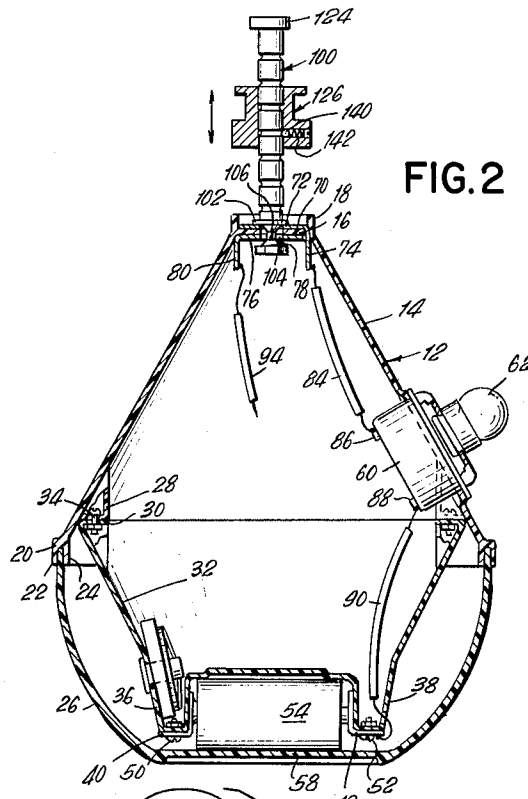
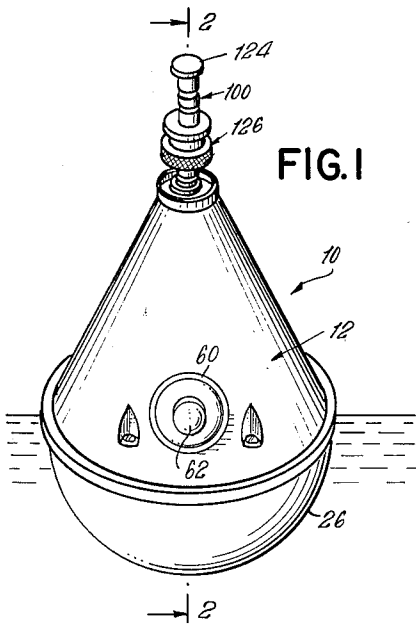
June 4, 1963

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3,092,822

SWIMMING POOL ALARM

Filed Sept. 11, 1961



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SWIMMING POOL ALARM

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Filed Sept. 11, 1961, Ser. No. 137,130
9 Claims. (Cl. 340-261)

This invention relates to electric signalling devices and more particularly to a swimming pool alarm.

The back-yard swimming pool is becoming a fashionable facility with which an ever increasing number of homes are being provided. One of the greatest drawbacks of the backyard swimming pool is the fact they represent a source of danger to children and domestic animals and pets as well as to adults who are unable to swim or who unknowingly stumble into the pool at night or otherwise, and thus become subject to drowning.

In the past, various types of swimming pool alarms have been devised which will provide an indication that the surface of the pool has been disturbed, thereby advising the owner of the pool to immediately investigate the area of the pool. However, these alarm devices are not selective of natural ripples caused by the wind from a disturbance caused by that of a child, a dog or other pet, or the like falling into the pool. Further, heretofore, there has been no satisfactory way of adjusting these alarm devices so that they could be made very sensitive during periods where there was little or no breeze, yet when the wind freshened, the swimming pool alarm could be rendered operative only for a disturbance above and beyond the normally induced waves or ripples caused by the wind with the swimming pool alarm set at a reduced sensitivity yet being selectively operated by an unnatural condition of the surface of the water. It is therefore an object of the invention to provide a swimming pool alarm which would overcome the defects of the prior art swimming pool alarms by being readily adjustable to varying degrees of sensitivity.

In accordance with the concepts of the present invention there is provided an actuation mechanism including a rod mounted on the top of a buoyant body carrying a weight adjustable along the length of the rod in a convenient manner, the rod being adapted to normally stand in a vertical position but which will tilt when the surface on the water in which the swimming pool alarm is floating is disturbed to a predetermined extent whereby the rod completes an operative electrical circuit from a battery to a signalling means such as an audible signal device and/or a visible signal device.

A further object of the present invention resides in the provision of a swimming pool alarm which may be readily molded out of conventional and relatively inexpensive synthetic plastic material and which uses the material from which the body is molded to insulate a pair of ring shaped contacts from each other whereby a rod can be used to complete an operative electrical circuit between these contacts and hence between a source of electrical power such as batteries or the like to a signal device.

A yet further object of the invention resides in the provision of a swimming pool alarm which may be shaped to conform substantially to the contours of a buoy so that the swimming pool alarm provides a nautical aspect for the swimming pool while holding the actuation mechanism of the swimming pool alarm at a relatively high position above the level of the water whereby the actuation mechanism is subject to a magnification of the rocking action to which the buoy is subject.

A further object of the present invention resides in the provision of a swimming pool alarm which employs an actuation device which, once it has been operated to cause a signal to be sounded or lighted, will maintain the alarm

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in operation notwithstanding the rocking action on the swimming pool alarm.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this swimming pool alarm, a preferred embodiment of which has been illustrated in the accompanying drawing, by way of example only, wherein:

FIG. 1 is a perspective view of the swimming pool alarm comprising the present invention;

FIG. 2 is an enlarged vertical sectional view of the swimming pool alarm taken along the plane of line 2-2 in FIG. 1;

FIG. 3 is an enlarged partial sectional view of the actuation mechanism of the swimming pool alarm showing the actuation mechanism in a tilted position completing an operative electrical circuit; and

FIG. 4 is a schematic diagram illustrating the various electrical components of the invention.

With continuing reference to the accompanying drawing wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 generally designates the swimming pool alarm comprised in the present invention.

In accordance with the illustrated embodiment of the invention, the swimming pool alarm 10 is configured to simulate a buoy and includes a buoyant body 12 formed in three parts. The body 12 is provided with a conical shaped upper part 14 terminating in a top 16 provided with an upwardly extending flange 18 and has a lower portion 20 provided with a pair of spaced flanges 22 and 24 in which the upper edge of the bowl shaped bottom portion 26 of the body is adapted to be wedgingly fitted in place. The upper part 14 of the body is provided with pairs of inwardly extending projections 28 forming seats 30 for holding the battery holder 32 of the body thereto by means of bolts 34 or the like fasteners. The battery holder 32 tapers downwardly and inwardly and is provided with a pair of spaced legs 36 and 38 to which four battery holders of generally angle shape in configuration and indicated at 40, 42, 44, and 46 are secured.

The battery holders 40 through 46 fit flush against the feet 36 and 38 and are held in place by suitable bolts 50, 52 or like fasteners and serve to conveniently hold and mount batteries 54 and 56 in position. The batteries 54 and 56 are engaged by the upper surface of the bottom 58 of the lower portion 26 of the body 12.

Mounted in the upper part 14 of the body 12 is an alarm device 60 such as a sounder for providing a wailing sound. There may optionally be provided means for mounting a visual signal such as a lamp 62 in association with the alarm device 60. The audible alarm 60 and the visual alarm 62 may be of any conventional construction as may be desired and the audible alarm 60 can be provided separately or in conjunction with the visual alarm 62 and vice versa.

Mounted on the top 16 of the upper portion 14 of the body 12 is a ring contact member 70 having a central opening 72 therein and which is provided with a downwardly extending finger 74. Insulated from the ring contact member 70 by the top 16 is another ring contact member 76 having a central opening 78 therethrough and which is provided with a downwardly extending finger 80. The top is provided with a central opening 82 therein in alignment with the openings 72 and 78.

The finger 74 extends through the top 16 and thus is insulated from the finger 80. Connected to the finger 74 is a conductor 84 which is also connected to one terminal 86 of the signal device 60, 62 while to the other contact 88 thereof there is connected a conductor 90 which

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is also connected to the L-shaped battery holder 42 and batteries 54 and 56 which are interconnected by conductor 92 connected between battery holders 40 and 46. A conductor 94 interconnects the battery holder 44 with the finger 80.

In order to complete and operative electrical circuit between the ring contacts 70, 76 and hence to complete an operative electrical circuit from the batteries 54 and 56 to the signal devices 60, 62 there is provided a rod generally indicated at 100 which has a collar 102 secured thereto. The collar 102 normally rests on the ring 70 above the top 16. An enlargement 104 forming a contact member is secured to the rod 100 at its bottom end and facilitates resetting of the alarm. Spacing the enlargement 104 from the collar is a shaft portion 106 of reduced cross section and a conical shaped portion 108 which centers the rod 100.

The rod 100 is further provided with a series of annular grooves 110, 112, 114, 116, 118, 120 and 122 therein and may be provided with an enlarged head 124.

A suitable weight means 126 is provided and may have any desired exterior configuration and may have its outer surface knurled for facilitating handling. The weight means 126 is provided with an upper flange portion 130 for simplifying the grasping of the weight and has a lower thickened portion 132 in which a transverse bore 134 is formed communicating with the vertically extending bore 136. Within the transverse bore which is internally threaded at 138 there is disposed a ball detent 140 which is spring pressed by a spring 142 biasing the ball detent 140 and the threaded set screw 144 which locks the spring 142 and the ball detent 140 in place. The ball detent 140 is adapted to seat selectively in the grooves 110 through 122 to hold the weight means 126 in adjusted position.

As can be readily understood, when the body 12 is in a vertical position and when the rod 100 extending vertically, there is an open circuit between the contact ring members 70 and 76 whereby the batteries are not connected to the signal device 60, 62. However, should the swimming pool alarm 10 be subject to a sudden rocking or tilting, this will cause relative movement of the body 12 with respect to the rod 100 since the rod will tend to remain in a vertical position. It is to be understood that even if the alarm were to be subjected to a gradual tilting it would go off when the angle of tilt reached was such that the center of gravity of the rod 100 and weight means 126 in assembled state were unsupported. Should the rocking be enough to tilt the rod, the tapered conical portion 108 will allow the rod 100 to tilt freely and to remain tilted relative to the body 12 until reset. When the rod 100 is tilted, the collar 102 is in electrical contact with the ring contact member 70 while the enlargement 104 engages the ring contact member 76. This will complete an operative electrical circuit from the batteries 54, 56 to the signal device 60, 62.

As can be readily recognized, there will be more tendency for the rod 100 to tilt relative to the body 12 when the weight means 126 is raised because the center of gravity is raised. Thus, when the weight means 106 is in a raised position such as when the ball detent means 140 is engaged in a slot 122, the swimming pool alarm will be set to its most sensitive position. This is because only a slight rocking of the swimming pool alarm will cause a permanent tilting of the rod 100 to occur. This arrangement is especially desirable when there is little or no breeze and the surface of the swimming pool is completely claim. Should a body such as that of a pet, young child, or the like fall in the swimming pool, the ripples occurring from such immersion will be sufficient to immediately cause the rod 100 to tilt and an operative electrical circuit to the signal device 60, 62 to be completed. This will cause a wailing sound and/or a visible signal so that the caretaker or owners of the swimming pool can readily come to see what has happened at

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the swimming pool. Of course, the rod 100 will not right itself and hence the alarm will remain on until reset. On the other hand, should there be a considerable breeze blowing, the sensitivity may be decreased by moving the weight means 126 downward until a setting of suitable decreased sensitivity is reached. Of course, the lower the position of the weight means the less sensitive the device will be but still it will be able to selectively react to a motion of the water caused by a body falling in the swimming pool when compared to ripples formed by the wind.

The weight means 126 when in the lowermost position on rod 100 locks the alarm in a "off" position.

A latitude of modification, change and substitution is intended in the foregoing disclosure and in some instances some features of the invention will be employed without a corresponding use of other features. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope of the invention herein.

I claim:

1. In a swimming pool alarm comprising a buoyant hollow body, a source of electric power in said body, a signal device mounted on said body, a pair of contact members electrically connected to said signal device and said source of electric power, said body having a top provided with an opening therein, said contact member being secured to said body in spaced relationship to each other and insulated from each other by said top, and a rod extended upwardly from within said body out of said body through said opening, said rod including a collar, said collar resting above said top when said rod is in a vertical position, said rod being loosely disposed in said opening and being capable of tilting, said rod engaging both said contact members when tilted to complete an operative electrical circuit between said battery and said signal device.

2. In a swimming pool alarm having a buoyant body provided with a source of electrical power and with a signal device, an actuation mechanism for completing an operative electrical circuit between said source of electrical power and said signal device in response to variation from a preset normal of the condition of the water surface, said actuation mechanism comprising a pair of spaced contacts mounted in insulated relationship to each other on said body, said contacts having aligned openings therethrough, a rod loosely positioned in said openings and being capable of tilting, said rod having a collar, said collar seating on one of said contacts when said rod is in a vertical position, said rod engaging both of said contacts when in a tilted position.

3. In a swimming pool alarm having a buoyant body provided with a source of electrical power and with a signal device, an actuation mechanism for completing an operative electrical circuit between said source of electrical power and said signal device in response to variations from a pre-set normal of the condition of the water surface, said actuation mechanism comprising a pair of spaced contacts mounted in insulated relationship to each other on said body, said contacts having aligned openings therethrough, a rod loosely positioned in said openings and being capable of tilting, said rod having a collar, said collar seating on one of said contacts when said rod is in a vertical position, said rod engaging both of said contacts when in a tilted position, and weighted means positioned on said rod and movable to a selected position along said rod to adjust the sensitivity of said actuation device.

4. In a swimming pool alarm having a buoyant body provided with a source of electrical power and with a signal device, an actuation mechanism for completing an operative electrical circuit between said source of electrical power and said signal device in response to variations from a pre-set normal of the condition of the water surface, said actuation mechanism comprising a pair of

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spaced contact rings mounted in insulated relationship to each other on the top of said body, a rod loosely positioned in and extending through said rings and being capable of tilting, said rod having a collar, said collar seating on one of said rings when said rod is in a vertical position, said rod having an enlargement beneath the other of said rings, said enlargement and said collar engaging said ring when said rod is in a tilted position.

5. In a swimming pool alarm having a buoyant body provided with a source of electrical power and with a signal device, an actuation mechanism for completing an operative electrical circuit between said source of electrical power and said signal device in response to variations from a pre-set normal of the condition of the water surface, said actuation mechanism comprising a pair of spaced contact rings mounted on the top of said body and insulated from each other by said body, a rod loosely positioned in said rings and being capable of tilting, said rod including a collar, said collar seating on one of said rings when said rod is in a vertical position, said rod engaging both of said rings when in a tilted position, and weight means positioned on said rod and movable to a selected position along said rod to adjust the sensitivity of said actuation device.

6. In a swimming pool alarm comprising a buoyant hollow body, a source of electric power in said body, a signal device mounted on said body, a pair of spaced contact rings electrically connected to said signal device and said source of electric power, said body having a top provided with an opening therein, said rings being secured to and insulated by said top, and a rod extended upwardly from within said body out of said body through said opening and through said rings, said rod including a collar, said collar resting on one of said rings when said rod is in a vertical position, said rod being loosely disposed in said opening and being capable of tilting, said rod engaging both said rings when tilted to complete an operative electrical circuit between said battery and said signal device.

7. A swimming pool alarm comprising a buoyant hollow body, a source of electric power in said body, a signal device mounted on said body, a pair of spaced contact rings electrically connected to said signal device and said source of electric power, said body having a top

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provided with an opening therein, said rings being secured to and insulated from each other by said top, a rod extended upwardly from within said body out of said body through said opening, said rod including a collar, said collar resting on one of said rings when said rod is in a vertical position, said rod being loosely disposed in said opening and being capable of tilting, said rod engaging both said rings when tilted to complete an operative electrical circuit between said battery and said signal device, and weighted means positioned on said rod and movable to a selected position along said rod to adjust the sensitivity of said swimming pool alarm.

8. A swimming pool alarm comprising a buoyant hollow body, a source of electric power in said body, a signal device mounted on said body, a pair of spaced contact rings electrically connected to said signal device and said source of electric power, said body having a top provided with an opening therein, said rings being secured to and insulated from each other by said top, a rod extended upwardly from within said body out of said body through said opening, said rod including a collar, said collar resting above said top when said rod is in a vertical position, said rod being loosely disposed in said opening and being capable of tilting, said rod engaging both said rings when tilted to complete an operative electrical circuit between said battery and said signal device, said rod having a plurality of spaced annular grooves therein, weight means slidably positioned on said rod and movable along said rod, and spring pressed ball detent means carried by said weight means for selectively holding said weight means in an adjusted position along said rod to adjust the sensitivity of said swimming pool alarm.

9. A swimming pool alarm comprising a buoyant body having a relatively small open platform, a source of electric power in said body, a signal device attached to said body, a normally vertically balanced rod resting on said platform, two circular conductors operatively connected to said signal device and said source of electric power arranged in proximity to said rod in such position that when said rod is caused to totter by the tilting of the buoyant body said rod contacts both said conductors thus completing an operative electrical circuit to said signal device.

No references cited.