July 31, 1962 S. A. BERMAN 3,046,566

SWIMMING POOL PROTECTIVE MEANS

Filed Dec. 30, 1959 2 Sheets-Sheet 1

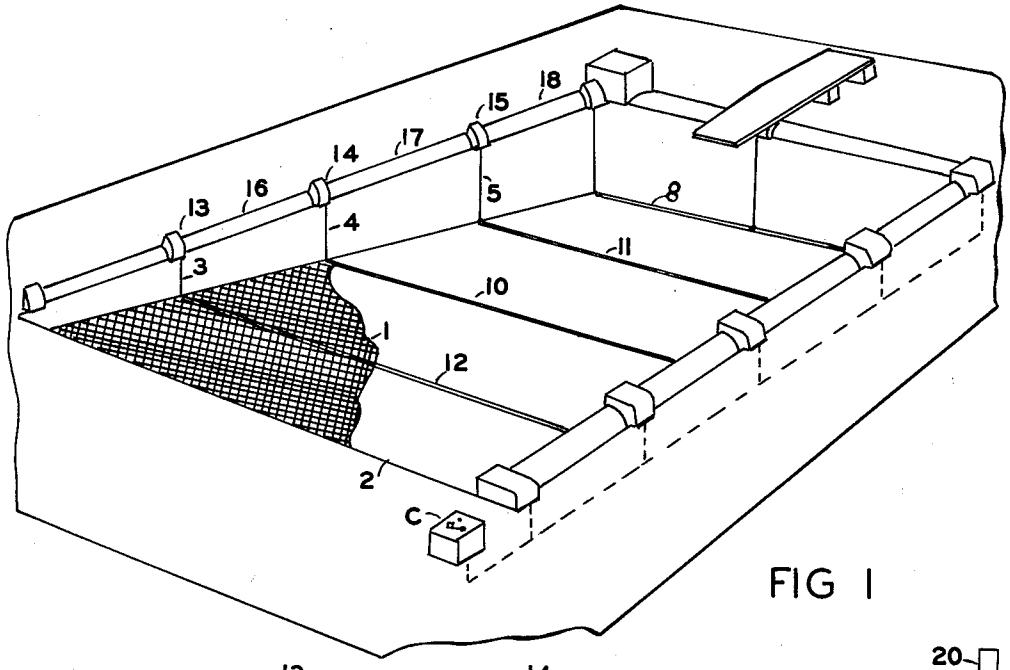


FIG 1

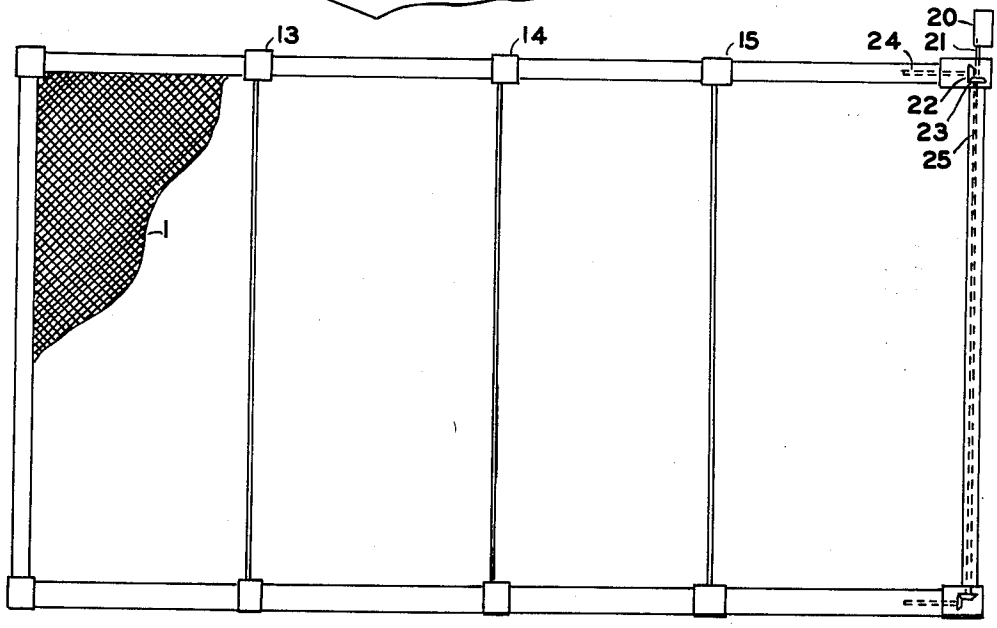


FIG 2

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SWIMMING POOL PROTECTIVE MEANS

Filed Dec. 30, 1959 2 Sheets-Sheet 2

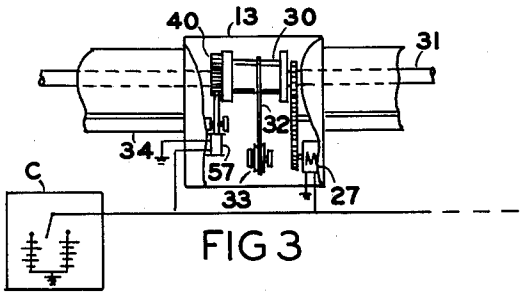


FIG 3

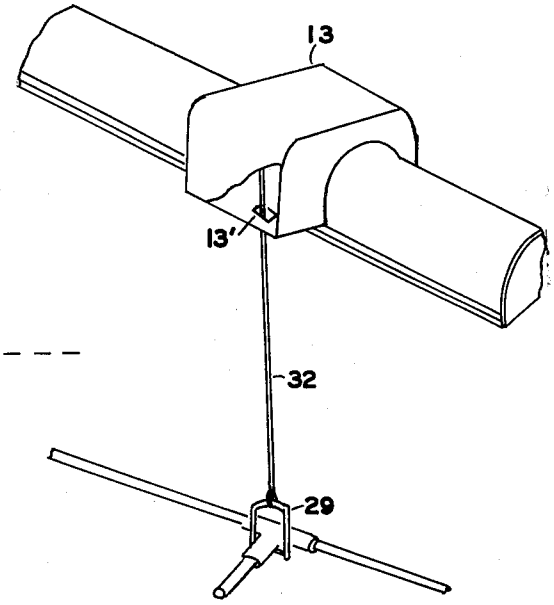


FIG 4

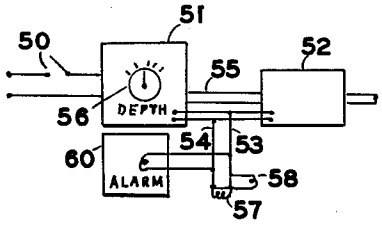


FIG 6

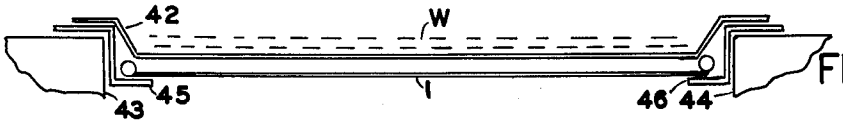


FIG 5

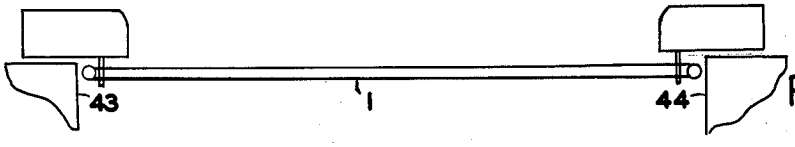


FIG 7

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SWIMMING POOL PROTECTIVE MEANS

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2 Claims. (Cl. 4—172)

This invention relates to swimming pool protective means and more particularly to a framed net and means to raise the frame.

Swimming pools, especially those at private homes, have become very numerous. These pools have no lifeguards and are left unattended for long periods of time. This presents quite a serious safety problem since these pools are attractive to all the small children in the neighborhood who are quite likely to fall into them. Many tragic drownings of this type have occurred. It is practically impossible to protect these pools with fences as it is necessary to have access gates which can not be locked at all times and fences can be climbed over. Even rain water at times will present sufficient water in a pool to make it dangerous. Also when the pools are empty they present a considerable hazard at night since a fall of six or eight feet onto a concrete floor may be quite dangerous.

The present invention provides protective means which not only affords a foolproof cover when the pool is not in use but which is also adjustable to control the depth of the water in the pool for use by small children. In an emergency the present invention may also be used as a lifesaving device, which may be operated by anyone. The present device will also keep out foreign matter such as twigs, leaves, etc. in an outdoor pool, although it may be used in indoor pools as well.

More specifically, the present invention generally comprises a framed net which is adapted to lie on the bottom of the pool and which is connected to vertical cables at the sides of the pool. A number of pulleys are located around the sides of the pool, and each pulley has a cable or wire connected to the frame. The pulleys are preferably connected together by means of shafting which is motor driven or they may be driven by separate motors. The diameter of the pulleys is proportional to the depth of the pool at the location of each pulley station so that when the framed net is raised, it will be substantially level at the top of the pool. The frame is fitted to the sides of the pool sufficiently close enough to prevent anything and anyone from getting between the side of the frame and the side of the pool. The frame may be adapted to any special shape of a pool. The irregular shape, however, would not affect the lifting, as that is in the vertical direction. Suitable ratchet locks are preferably provided on each spool so that the frame may be safely supported at any desired depth below the water across the entire length and width of the pool for instance, to make it safe for small children.

Accordingly, a principal object of the invention is to provide new and improved swimming pool protective apparatus.

Another object of the invention is to provide new and improved swimming pool protective apparatus which is adapted to completely cover the pool across the top thereof when it is fully raised to prevent anyone and anything from falling into the pool.

Another object of the invention is to provide new and improved framed net means for swimming pools which are closely fitted to the sides of the pool so that nothing can fall between the side of the pool and the side of the frame.

Another object of the invention is to provide new and improved framed net means which are adapted to lie at the bottom of a swimming pool and which are adapted to

be raised vertically by spools spaced around the pool to any desired depth.

Another object of the invention is to provide new and improved swimming pool protective means comprising a tubular or other frame adapted to fit closely to the sides of a swimming pool, a net on said frame, said frame having rollers contacting the sides of the pool, means to raise the framed net vertically in an adjustable manner by motor driven lifting means, and control means for said motor means.

These and other objects of the invention will be apparent from the following specification and drawings, in which:

FIG. 1 is a perspective view of an embodiment of the invention.

FIG. 2 is a plan view of an embodiment of the invention.

FIG. 3 is a detail view of a spool and pulley drive for the invention.

FIG. 4 is a detail view of an embodiment of the invention.

FIGS. 5 and 7 are side detail views of an embodiment of the invention showing the net in raised positions.

FIG. 6 is a typical electrical circuit arrangement.

Referring to the figures the invention comprises a framed net 1 which is fitted to the sides of the swimming pool 2 and which is adapted to be raised by the cables 3, 4, 5 spaced around the pool as will be more fully described.

The net comprises an outside frame for instance of aluminum which may be of a series of members or tubes 6, 7, 8 which are connected together and also to a plurality of cross members 10, 11, 12 which are also light metal tubing or solid rods. The connections of the side members and cross members may be made with a T connection equivalent to a plumbing T for copper tubing and the corner members may be connected by means of a 90 degree or other angle elbow in similar fashion. Rollers may be added to the frame to roll on one or more sides of the pool.

The frame is made to fit the sides of the pool as closely as possible which is relatively easy in a rectangular shape pool. However, if the pool has an irregular shape the frame may be constructed to fit the sides thereof.

The frame is covered with a net 1 which may be of nylon, fiberglass and/or synthetic or metal mesh similar in appearance to window screening or of a slightly larger mesh. The mesh or screening is preferably fixed to the side members by turning over the edges and sewing a hem with a space for inserting the tubing or other member or attached directly to a frame with rivets or equivalent. The mesh may be attached to the cross members by sewing separate small pieces on the underside of the mesh, leaving an opening for the cross members, or by other conventional means.

The net is adapted to be raised by a series of power driven spools contained in the housings 13, 14, 15, etc. The size of the spools is chosen proportional to the depth of the pool at the particular location so that when the net is fully raised it will be substantially level at the top of the pool. The spools may be connected together by means of shafting or if desired may be separately driven in synchronism by separate motors by conventional control means C. If the spools are connected by shafting to be driven by one motor the connecting shafting is preferably covered by covers such as 16, 17, 18 connected between the housings.

FIG. 2 shows a plan view illustrating the arrangement for a single motor drive. The motor 20 is connected by means of the shaft 21 and bevelled gears 22, 23 to the shafts 24, 25 which are connected to spools in the hous-

ings 14, 15, etc., all of the housings around the pool being connected together in similar manner.

FIG. 3 shows a detail view of a typical housing and spool 30 which is adapted to be driven by means of the shaft 31. Attached to this spool is a wire rope or cable 32 which may be of stainless steel or nylon. The housing FIG. 4 has a floor with an aperture 13' for the cable, to prevent children putting their hands in the machinery. The cable runs over a guide pulley 33 which extends over the side 34 of the pool. The diameter of the spool is chosen proportional to the depth of the pool at a particular station so that a given number of revolutions of all the spools will raise the net substantially level at the top when the net is raised from a position on the bottom of the pool. If the bottom of the pool has different angles of slope the side frames of the net are preferably hinged at the points where the slope changes.

The cable 32 may be connected to the side frame by a loop in the cable or a clip device 29 may be pinned through or around the frame 28, FIG. 4. A ratchet 40 and pawl 41, FIG. 3, is preferably provided to lock the spool in any position so that the net may be set at any depth, for instance when being used by small children. The ratchet may be manually operated or preferably released by a solenoid 57 when the motor is energized or when it is desired to lower the net. The motor is preferably an electric motor of less than one to three or five horsepower for average size nets and is preferably reversible. If the motor is not reversible it may be disconnected so that the net sinks of its own weight.

Alternatively, instead of having one motor with connecting shafting extending all around the pool each housing may have a similar individual motor 27, FIG. 3, all connected together to be actuated by a common control or controls C which may be located at some convenient place or places adjacent the pool or even at a remote location or locations for instance inside a house. This will eliminate the need for shafting and covers all around the pool and would facilitate installation. It has been found that relatively small motors will raise a net in as little as five seconds and larger motors will raise the net even quicker. Therefore my device may be used as a lifesaving device eliminating the need of trained lifeguards. Audible and visible alarms 60, FIG. 6, are preferably connected to be energized when the net is being raised or lowered.

FIG. 5 shows a detail view illustrating an arrangement which may be used when the net 1 is raised within a few inches of the top of the pool. A waterproof cover 42 may be placed on the net and over the edges 43, 44 of the pool. This arrangement may be used for covering the pool semi-permanently, for instance during the winter time. The net may be reinforced in this position by means of clamps or brackets 45, 46, and the water proof covering may be even covered with an inch or so of water W for ice skating purposes in the winter time.

FIG. 6 shows a typical circuit arrangement for the motor control. Power is applied through the On/Off switch 50 through a depth control series connected switching means 51 to the motor 52. When the motor is energized the rachets are opened by solenoids 57, 58 connected to the leads 53, 54. The depth switch 51 may have a counter connected to the motor by shaft 55 and have a calibrated dial 56 which may be calibrated in terms of percent of depth so that the motor will be turned off at the correct depth of the net. A reversing switch for reversing the power to the motor may be incorporated if desired. If multiple motors are used they are connected in parallel in conventional manner. An audible and visible alarm 60 is preferably connected to give warning when the net is being raised or lowered. Emergency push button controls may be located wherever convenient.

FIG. 7 shows the net 1 in fully raised position completely covering the pool.

Many modifications may be made by those who desire to practice the invention without departing from the scope thereof which is defined by the following claims.

I claim:

1. Protective means for a swiming pool comprising frame means fitting closely inside the interior sides of said swimming pool, said frame means comprising a series of straight members connected together, a net on said frame members, a plurality of spools around the edge of said swimming pool, a cable having one end connected to each of said spools, the other end of said cables being connected to said frame, a plurality of electric motors each connected to one of said spools to raise said net, the diameter and rate of cable takeup of each spool being proportional to the depth of said pool at the location of said respective spools whereby said net may be lifted to a substantially level position at the top of said pool, electrical control means connected to said motors to operate said motors in synchronism, and alarm means connected to said electrical control means to give warning when said motors are operated to raise said net.

2. Electric motor control means for a swimming pool safety net, comprising a plurality of housings around a swimming pool, a spool mounted in each housing, the diameter of each spool being proportional to the depth of said pool at the location of each of said spools, a pulley connected to each housing in overhanging relation over the side of said pool, an electric motor in each housing connected to one of said spools, a cable connected to each of said spools, said housing being completely enclosed except for a small aperture on the bottom thereof adapted to permit entry of one of said cables and electric motor control means connected to drive said motors and spools in synchronism.

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