

March 15, 1960

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2,928,103

SAFETY TYPE SWIMMING POOLS

Filed May 21, 1957

2 Sheets-Sheet 1

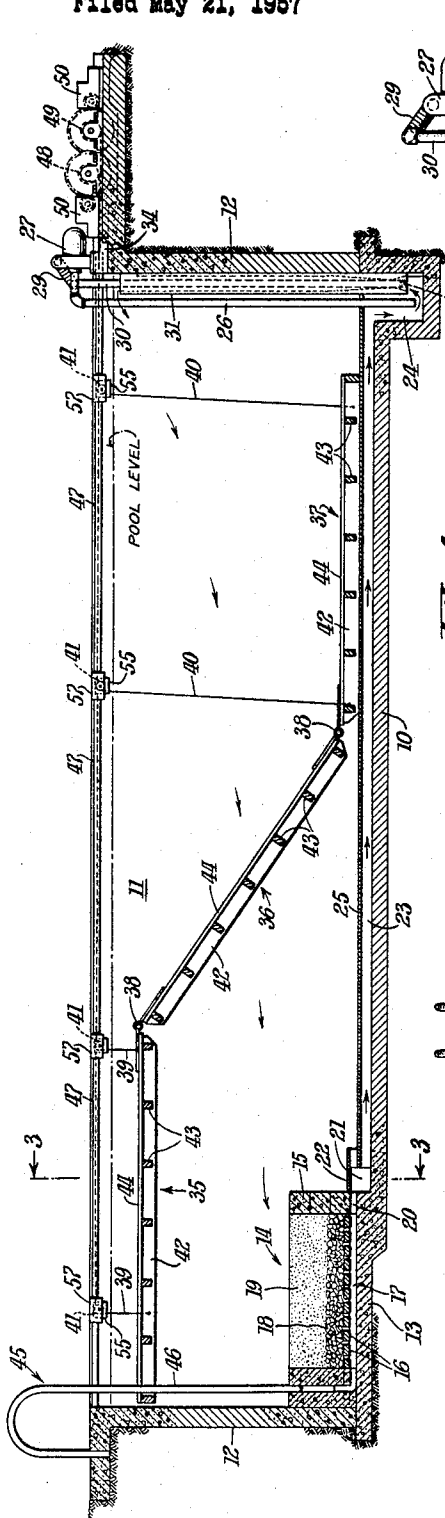


Fig. 1.

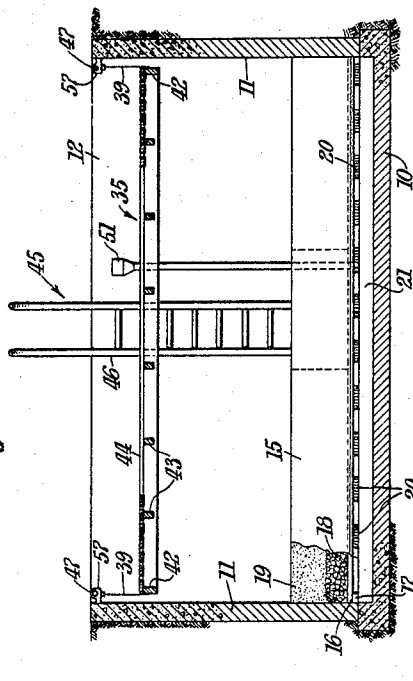


Fig. 3.

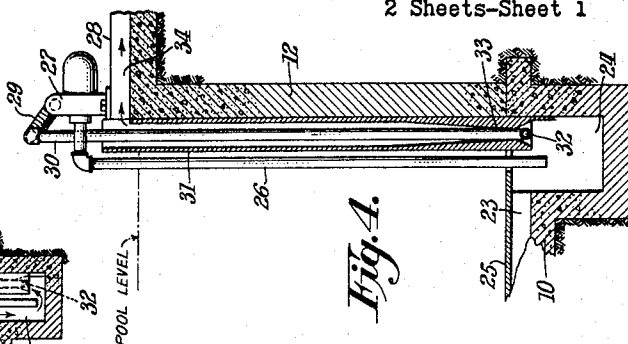


Fig. 4.

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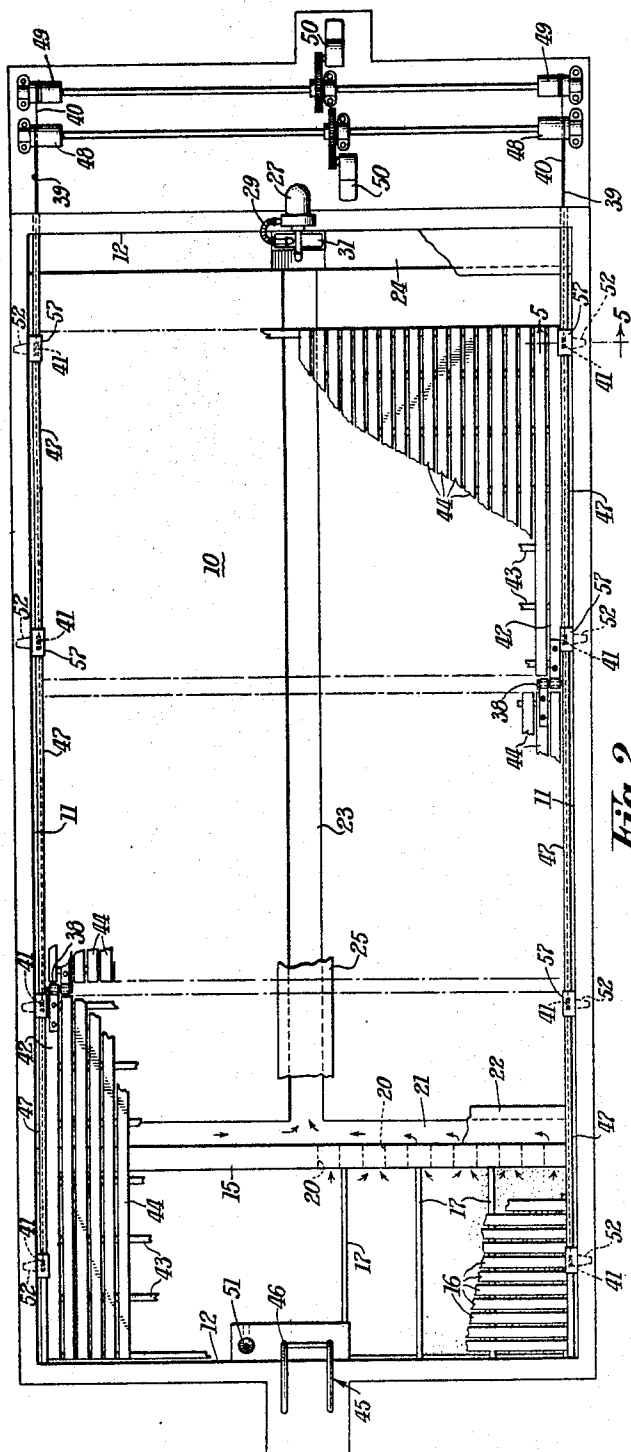


Fig. 2.

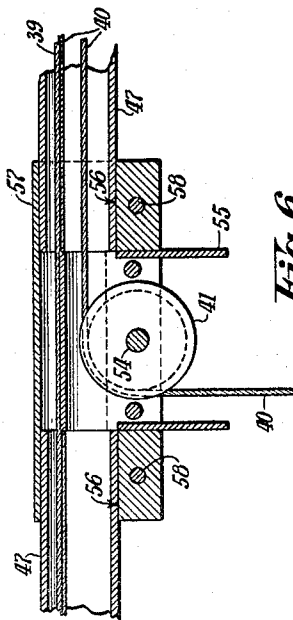


Fig. 6.

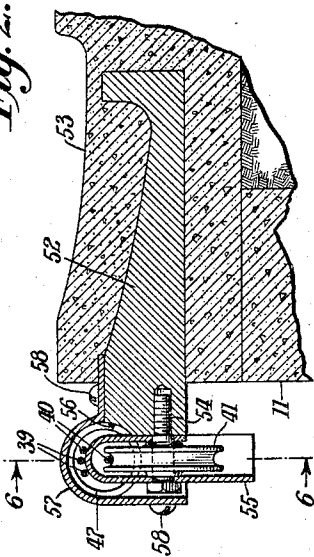


Fig. 5.

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SAFETY TYPE SWIMMING POOLS

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4 Claims. (Cl. 4—172)

The present invention relates to swimming pools and more particularly to means for improving the safety and utility of such pools.

A major problem confronting the owner of a private swimming pool is the protection against unauthorized use of the pool. The "attractive nuisance" nature of a pool increases the personal liability hazard to the owner and makes necessary the constant attendance of a watchman or the construction of an effective enclosing barrier both of which are expensive and add nothing to the enjoyment or utility of the pool itself.

According to the present invention a submersible articulated platform is provided which may be selectively raised and lowered into the pool to form a cover to prevent unauthorized use or to form an adjustable floor for the pool to establish different effective depths adapted to the needs of a wide variety of swimmers. Thus the protective feature is attained without the disadvantage of an unsightly barrier or constant surveillance but with the advantage of increased utility of the pool per se occasioned by the quick and easy adjustment of the effective swimming depth thus provided.

The use of the submersible platform as above provided makes it practically feasible to employ an open top, large-area sand filter bed located permanently within the pool itself because the platform prevents adverse mechanical disturbance of the filter bed by the swimmers. This simplifies the entire filtering system eliminating backwashing and much costly piping and making it possible to employ a smaller pump due to the reduced pressure head required.

It is a primary object of this invention, therefore, to provide a swimming pool having simple adjustable means for altering the effective swimming depth including zero depth which latter condition prevents unauthorized use.

It is another object of this invention to provide a swimming pool having a large-area sand-bed filter built into the pool structure and in direct contact with the body of water of the pool itself and having means for protecting the filter bed against adverse disturbance by the swimmers.

Still other objects and advantages of this invention will be manifest from the detailed description following in connection with the attached drawings whereof Fig. 1 is a longitudinal vertical sectional view of a swimming pool embodying the invention.

Fig. 2 is a top plan view of the swimming pool of Fig. 1.

Fig. 3 is a transverse vertical sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a detailed vertical section of the pump end of the pool with the venturi box raised for pumping out to empty the pool.

Fig. 5 is a detailed vertical section taken on the line 5—5 of Fig. 2 showing a pulley and pipe supporting assembly.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5.

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Referring now to Fig. 1 there is shown a swimming pool structure comprising a floor 10 and side walls 11 and 12 of reinforced concrete. At one end of the pool on a raised portion 13 of the floor 10 is a filter box 14 formed by a transverse wall 15 of cinder blocks extending across the entire width of the pool to provide a large surface area. A wooden slatted bottom is formed by closely spaced lateral planks 16 laid on longitudinal stringers 17 to provide a perforate support for a bed of gravel 18 on top of which is laid a bed of sand 19 extending to the top of the box. The transverse wall 15 is formed at the bottom with spaced openings 20 which connect the spaces beneath the slatted bottom with a transverse header trough 21 provided with a cover 22.

The header trough 21 connects with a central longitudinal trough 23 formed in the pool floor 10 and runs the full length of the pool to terminate in a pump sump 24 at the other end. This longitudinal trough is also provided with a cover 25 which extends over the sump 24. Extending downward into the sump 24 is an intake pipe 26 connected to a centrifugal pump 27 located on a concrete apron 28 at the top of the pool. The outlet end of the pump 27 is connected through a flexible hose 29 to a vertical pipe 30 which runs downward inside of a venturi box 31 and terminates in a horizontal header pipe 32 just below the venturi constriction 33 which is also within the sump 24.

The header pipe 32 is formed with small jet openings (not visible) faced upwards on the top. The high velocity jets created by the flow through these openings react in the venturi section to change velocity head to pressure head and induces large volume flow from the sump 24 upwards through the venturi box 31 to the surface of the pool as indicated by the arrows. In this manner large circulation flow is maintained through the pool and the filter bed.

When it is desired to empty the pool, the venturi box 31 is raised so that its top edge is above the pool level (as shown in Fig. 4) which action connects the box 31 on one side to an outflow drain 34 to which the normal circulatory flow is thus diverted. If desired the venturi pipe 30 may be disconnected at the flexible hose 29 and a regular hose connected to the outlet of the pump 27 for irrigation or emergency fire fighting.

An articulated platform comprising three sections 35, 36 and 37 hinged together at points 38 is suspended from cables 39 and 40 which run over pulleys 41 supported in the pool wall at the top as will be explained presently. Each platform section comprises longitudinal headers 42 to which are secured lateral stringers 43 with spaced planking 44 laid on top of the stringers 43. This structural frame may be made of wood such as cypress or of metal such as aluminum and the buoyance may be adjusted by means of removable weights and/or plastic bags filled with air and attached to the platforms so that, if unsupported, the platforms would just sink slowly. It is important that the weights be located close to the headers near the cable connections so as to load the cables directly and minimize the fiber stress in the stringers. The air-filled plastic bags, if used, should be placed beneath the stringers at the mid-point of the span for the same reason.

The arrangement is such that the two end sections 35 and 37 may be independently raised or lowered to establish areas of different depth, for example, a shallow end for children and a deep end for adults or, if desirable, both sections may be raised or lowered to the same depth to establish a pool of uniform depth at any level. Thus the pool may become a safe skating rink by merely adjusting the platforms to a very shallow depth of only a few inches before freezing. When the sections are fully raised to establish zero depth, the pool is effectively

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covered and this prevents unauthorized use and lessens contamination by air-borne debris.

At the filter end of the pool is a pipe-frame ladder 45 having vertical rails 46 which serve as guides for the platform section 35 to maintain a fixed longitudinal and lateral position at any level and since the three sections are hinged together this is the only lateral restraint required. The cables 39 and 40 secured to the headers 42 run upward over the pulleys 41 and thence horizontally through pipes 47 secured to the top inside surfaces of the pool walls on both sides and emerge at the pump end of the pool where they are secured to capstan drums 48 and 49 driven preferably by suitable gear motors 50 or if desired by hand winches. Each end platform 35 and 37 has its four cables 39 and 40 (two on each side) wound at the same rate on the drums 48 and 49 driven through suitable gearing by its respective motor 50 to insure level and parallel movement and independent control for each platform. The intermediate platform 36, being hinged, takes whatever position is dictated by the positions of the two end platforms 35 and 37 but at all times forms therewith an unbroken slatted area which determines the effective pool depth for swimming.

A skimmer drain 51 of conventional type connects with the space beneath the filter bed 14 as shown best in Fig. 3.

In Figs. 5 and 6 are shown details of a combined pulley and pipe support which may be used in providing a practical cable arrangement for this invention. A cast metal saddle fitting 52 is embedded in the concrete curbing 53 at the top of the pool wall. The pulley 41 is journaled on a shouldered stud screw 54 threaded into the saddle fitting; the screw also carrying a sheet metal retainer guard 55 to prevent cable fouling. The pipes 47—47 for carrying the cables are received at each end of the saddle fitting in quarter round depressions 56 and secured thereto by means of a sheet metal cover 57 fastened to the fitting by screws 58. It will be seen from this construction that the cables are completely and safely housed in the pipes which serve as convenient and attractive hand rails along the sides of the pool, and that the

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pulleys are fully shielded from contact with the swimmers.

Having thus set forth the nature of the invention, what I claim herein is:

1. The combination in a swimming pool of a sand bed filter at one end within the pool proper, a jet pump at the other end, a covered trough on the bottom of the pool connecting the outflow of the filter bed to the intake of the jet pump, and a submersible articulated cover for the pool providing adjustable effective swimming depths and preventing disturbance of the filter bed by the swimmers.

2. The combination in a swimming pool of an open-top filter bed built into the pool in direct contact with the water body thereof and a submersible articulated platform located above the filter bed and having means for raising and lowering for providing adjustable effective swimming depths and preventing disturbance of the filter bed by the swimmers.

3. In a swimming pool, a submerged open-top sand-bed filter located within the pool at one end in direct contact with the water body, a sump connected with said filter, a pump for raising water from the sump to the surface of the pool and a submersible perforate articulated platform for establishing different effective swimming depths and preventing mechanical disturbance of the filter bed by the swimmers.

4. The combination in a swimming pool of an open-top filter bed built into the pool in direct contact with the water body thereof and a perforate submerged platform located above the filter bed for preventing disturbance of the filter bed by the swimmers.

References Cited in the file of this patent

UNITED STATES PATENTS

1,091,909	Birmingham	Mar. 31, 1914
1,101,166	Collins	June 23, 1914
1,918,437	Torrance	July 18, 1933
2,073,784	Day	Mar. 16, 1937
2,825,910	Prudek	Mar. 11, 1958