

[54] **SWIMMING POOL COVER AND RESCUE DEVICE**

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[51] Int. Cl. **E04h 3/16, E04h 3/18**

[58] Field of Search **4/172, 172.13, 172.14**

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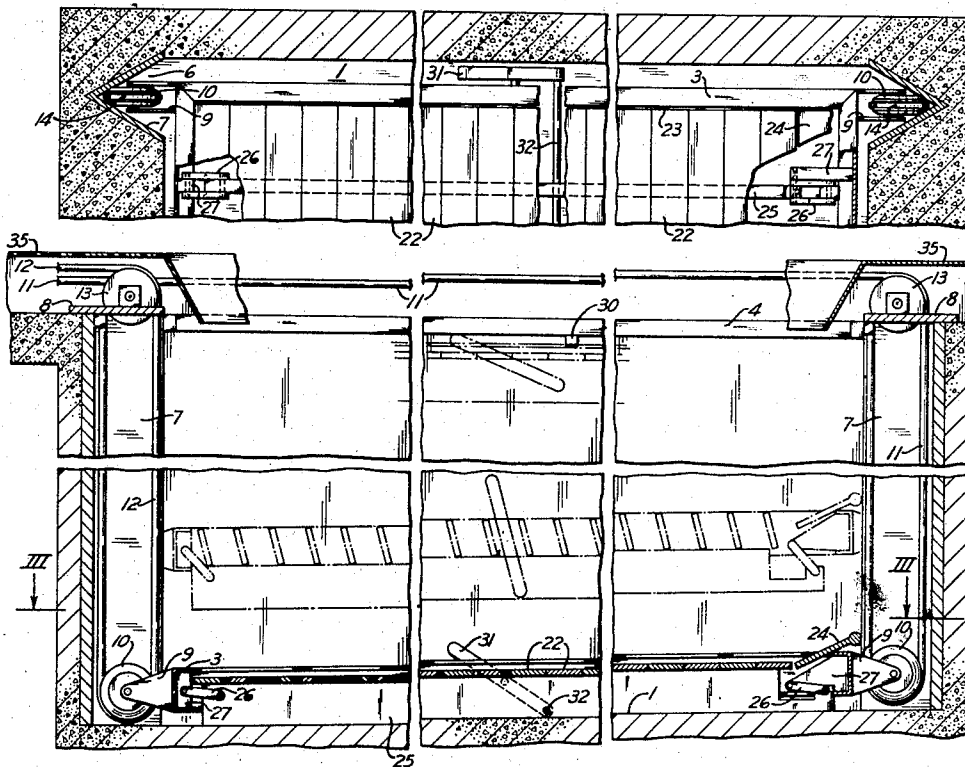
Primary Examiner—Henry K. Artis

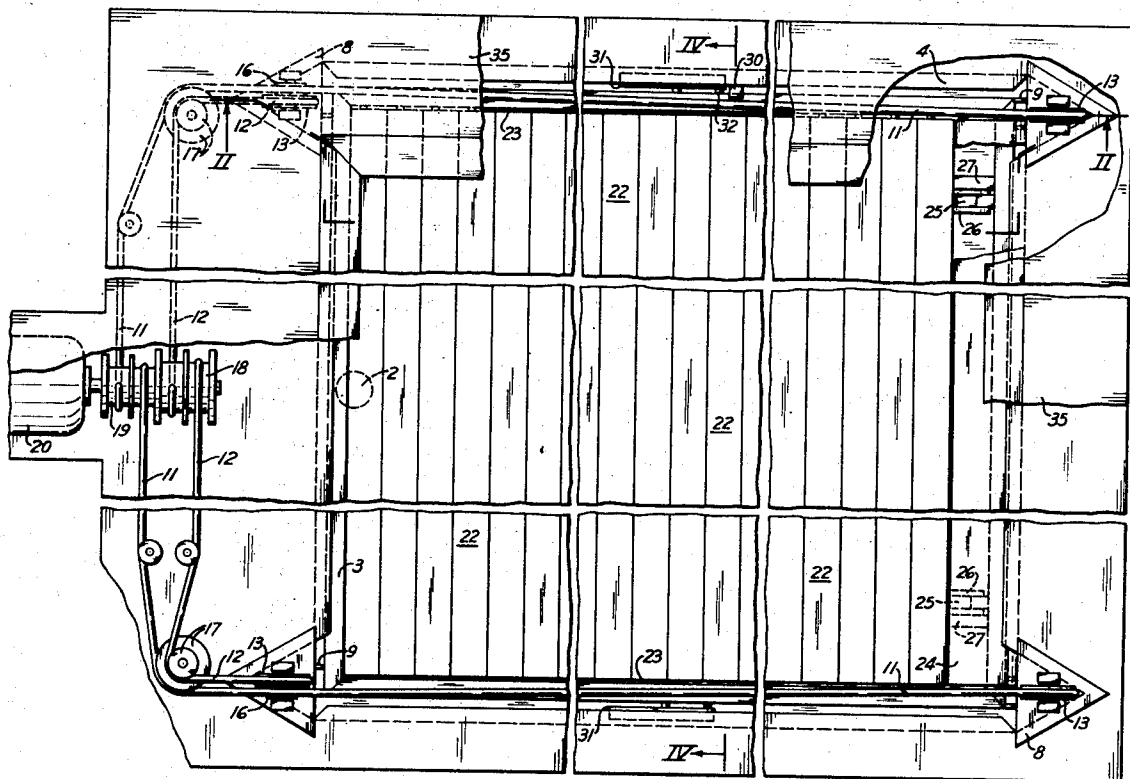
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[57] **ABSTRACT**

A vertically movable frame fits around the inside of a swimming pool and is normally located at its bottom. Extending across the frame is a plurality of parallel slats pivotally mounted in the opposite sides of the frame on horizontal axes. While the frame is at the bottom of the pool the slats are disposed edge to edge in a common plane to form a floor. Means are provided for raising the frame to the top of the pool, during which the slats pivot on their axes so that they are turned on edge. At the top of the pool the slats are turned back into a common plane to form a solid cover for the pool.

9 Claims, 4 Drawing Figures





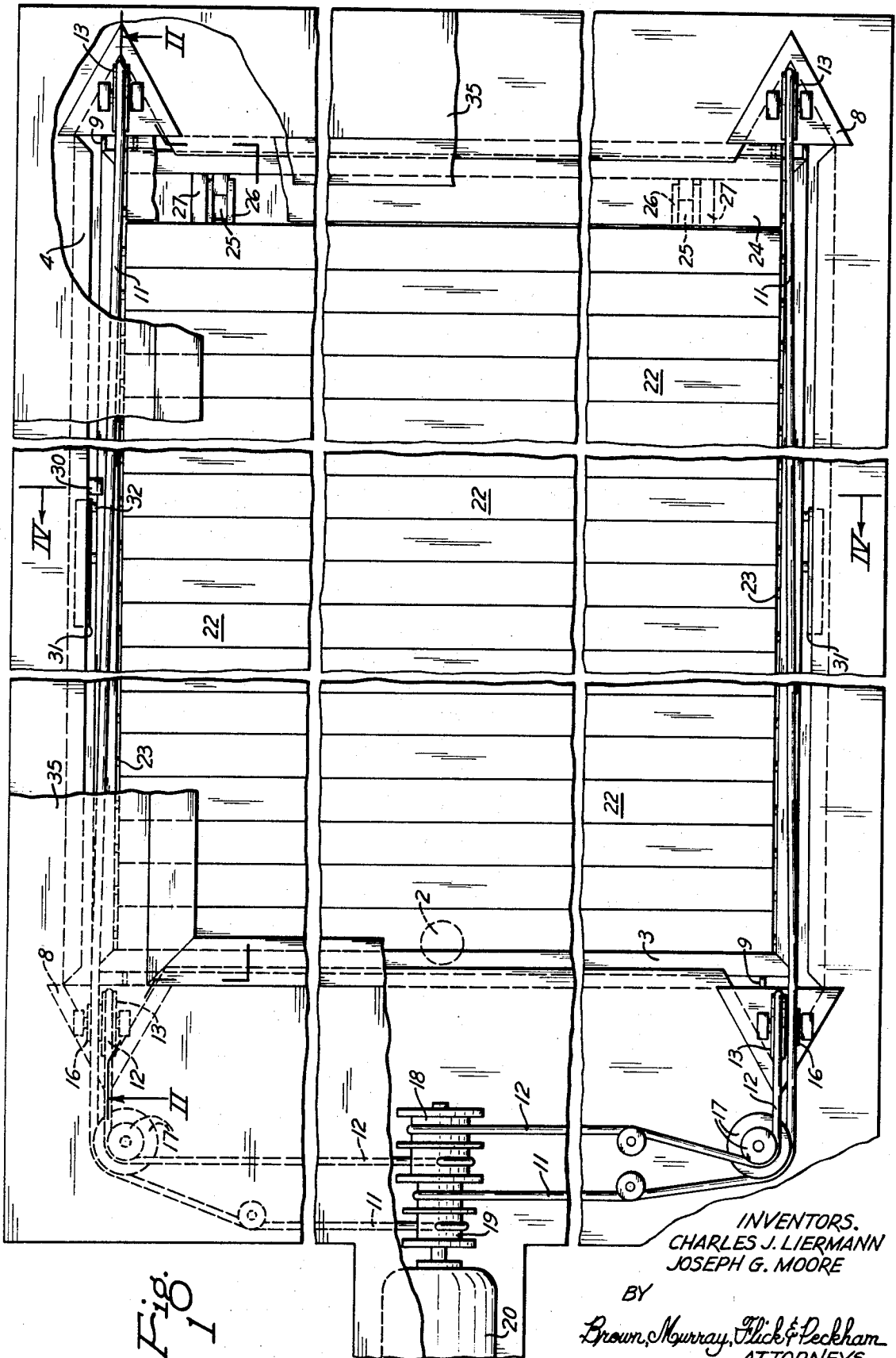


Fig. 1

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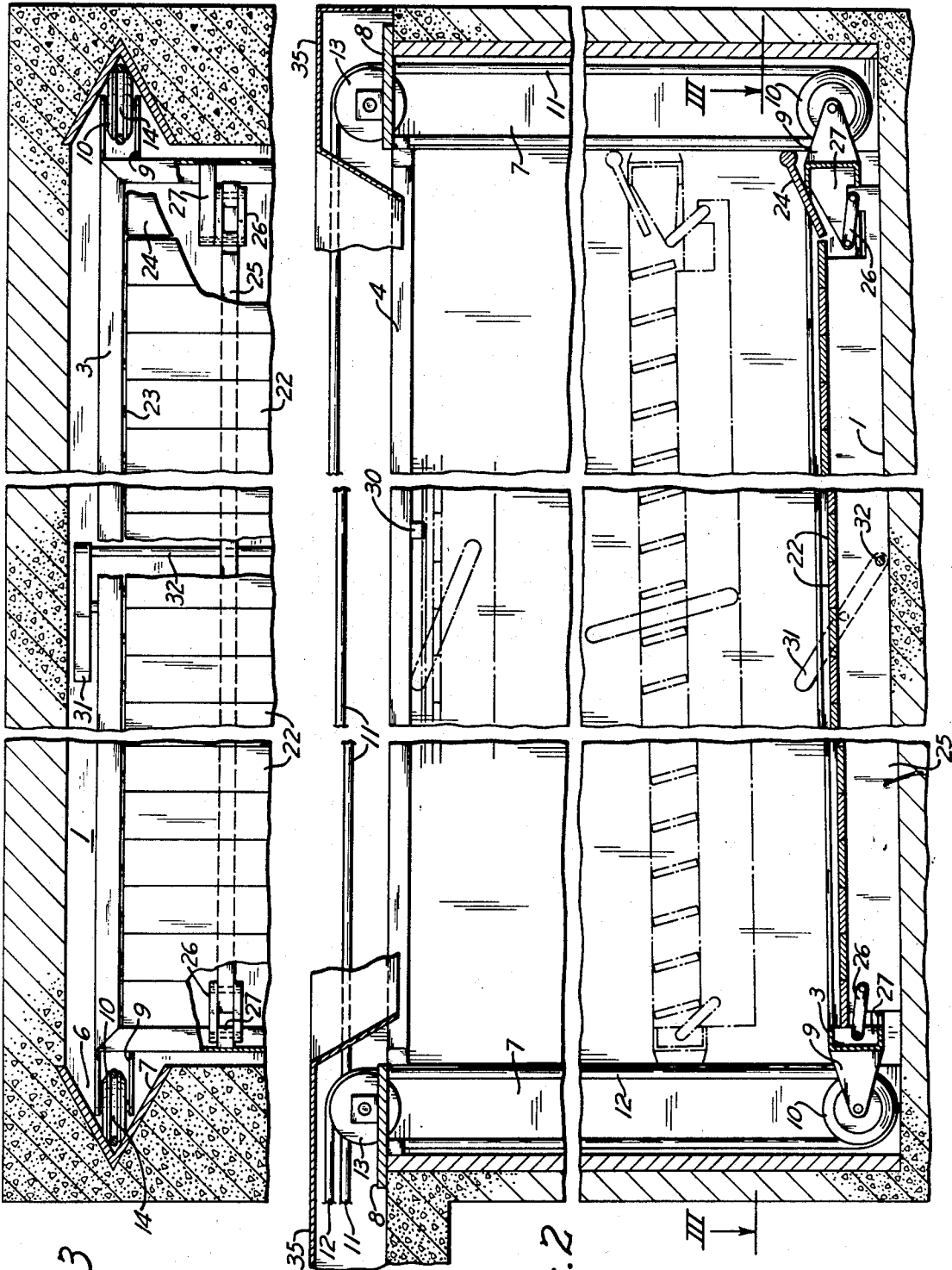


Fig. 3

Fig. 2

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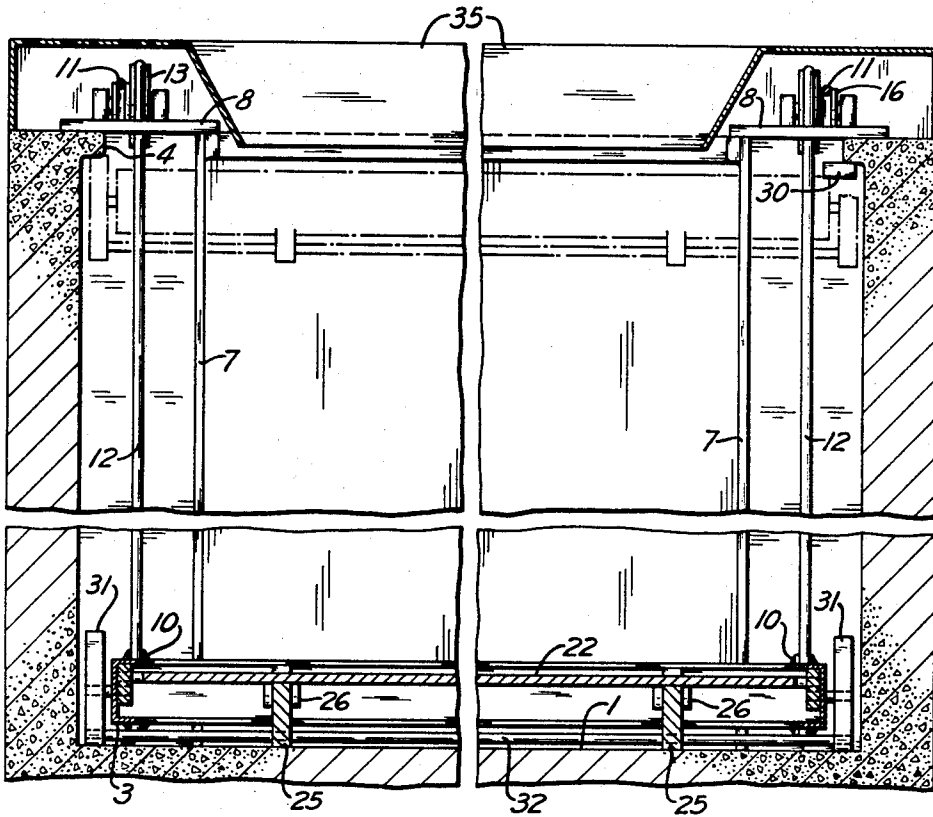


Fig. 4

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SWIMMING POOL COVER AND RESCUE DEVICE

It has been proposed to place gratings or nets at the bottom of swimming pools, with means for raising them to the top in order to rescue anyone who may have sunk to the bottom. Such devices can perform their rescue function, but it is an object of this invention to provide a rescue device which also will prevent leaves, sticks and other debris, as well as people and animals, from falling into the pool when it is not in use. Accordingly, a vertically movable rescue device is provided that serves, when it is at the top of the pool, as a solid cover for the pool.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which

FIG. 1 is a plan view;

FIG. 2 is a longitudinal vertical section taken on the line II—II of FIG. 1;

FIG. 3 is a fragmentary horizontal section taken on the line III—III of FIG. 2; and

FIG. 4 is a transverse vertical section taken on the line IV—IV of FIG. 1.

Referring to the drawings, a swimming pool is shown which generally will be of greater length than width. The bottom 1 of the pool slants from one end to the other to a drain 2 (FIG. 1) at the low end. Fitting within this pool is a rectangular frame 3 which, in horizontal position, comes close to the sides and ends of the pool but does not touch them. A masonry coping 4 around the top of the pool overlies the frame. While the pool is in use, the frame is at the bottom and will be inclined like the bottom of the pool, as shown in FIG. 2.

Each end of the pool is recessed to provide it with a pair of vertically extending guideways 6 that open toward the inside of the pool. Each recess has two side walls that converge away from the frame and that are lined with a pair of vertical plates 7 welded together along one vertical edge. Welded to the upper ends of these plates is a triangular plate 8. The ends of the frame are provided with brackets 9 that extend into the guideways, in which they carry wheels 10 that are tapered to the same extent as the sides of the guideways. The frame can be raised in the pool, guided by its wheels in the guideways, by means of cables 11 and 12 that pass over pulleys 13 rotatably mounted on the triangular plates and projecting down through slots therein. Although the cables could be anchored directly to the frame, mechanical advantage is obtained by anchoring the cables to the triangular plates 8 as shown in FIG. 2 and then extending them down around wheels 10, which are provided with circumferential grooves 14 for that purpose, and then up and over the pulleys. The cables at the shallower end of the pool extend toward the opposite end and across pulleys 16 that are coaxial with the pulleys 13 at the deep end. From the pulleys at the deep end, both sets of cables extend around horizontal sheaves 17 and whatever guide sheaves that may be needed to a pair of drums 18 and 19 mounted on a horizontal shaft. These drums are driven by an electric motor 20 to wind up the cables in order to raise the frame in the pool. The drum 18 that winds up the cables 12 from the deep end of the pool has a larger diameter than the other drum, so that by the time the frame is at the top of the pool its lower end will have been raised to the same level as the opposite end and the frame will be horizontal.

Extending across frame 3 between its opposite sides is a large number of parallel slats 22, the ends of which are provided with pivot pins 23 rotatably mounted in the sides of the frame. Each pin is closer to one edge of the slat than to the other so that when the slats are free, gravity will cause them to hang down in an on-edge position as shown in broken lines in the middle of FIG. 2. The edge portions of the slats are shaped so that they can be swung into a common plane, and can even be shaped to overlap one another if desired and yet provide a flat upper surface. At the higher end of the frame there is a slat 24 that is inclined upwardly slightly toward the adjoining end wall of the pool. The lower corners of this slat are pivoted to the sides of the frame like the other slats, but the upper edge of slat 24 is rounded and rests against the pool wall and slides against it when the frame is raised.

In order to swing the slats from their edge-wise position to their edge-to-edge position, a pair of parallel bars 25 extend lengthwise of the frame beneath the slats and engage their lower edges. Each bar is pivotally suspended by links 26 from supports 27 secured to the frame. In their lower positions, the bars hold the slats slightly inclined to the vertical. The position and length of the links are such that if bars 25 are moved lengthwise in one direction, they will simultaneously rise into frame 3 and thereby rotate the slats on their pivots until the slats are in edge-to-edge position in a common plane. When the frame is at the bottom of the pool, as shown in FIG. 2, the frame and slats 22 sink down relative to the bars, whereby the slats are turned up into a common plane to form a flat floor. Slat 24 closes the gap that otherwise would exit at that end of the frame.

When the cables start to raise the frame in the pool, the bars 25 remain on the bottom until their supporting links 26 have swung down as far as they can go, which permits slats 22 to turn by gravity to their edgewise position. As the frame continues to rise, the slats remain in this position so that they cut through the water and offer no resistance to raising the device. Just a few inches before the frame reaches its uppermost position, it can be stopped by shutting off motor 20 manually or automatically by engagement of the frame with a suitable limit switch. This permits a person who is being rescued by the frame to be removed from it while the slats are still on edge. Otherwise, the victim might be pinched or injured by the turning slats. The motor then is started again to raise the frame a little further until it trips a limit switch 30 at the top of the pool when the frame reaches its uppermost position, in which it is horizontal.

During this last short travel of the device, bars 25 are moved lengthwise of the frame to swing slats 22 up into a horizontal plane. This can be done by means of inclined levers 31 pivotally connected to the opposite sides of the frame and projecting above it for engagement with the coping. The lower ends of the levers are connected to the opposite ends of a rod 32 that extends across the pool beneath the frame. This rod is rotatably mounted in the lower part of bars 25. When the upper ends of the two levers are stopped by the coping 4, their lower ends swing rod 32 upwardly and the rod moves the bars lengthwise of the frame to close the slats as indicated at the top of FIG. 2. The end slat 24 accommodates itself to the space between the slat at its lower edge and the pool wall at its opposite edge, thereby taking care of the change in angle of the frame as it is raised from its inclined position to its horizontal position. The pool now has a solid cover over it, which not only prevents people and animals from accidentally falling into the pool, but also helps to keep the pool clean by keeping out leaves and other foreign matter. This is a great help because keeping a swimming pool clean is a never-ending job.

The cables, wheels, pulleys and drums are covered by a wooden or sheet metal coping cover 35 that is mounted on top of the pool walls and extends down into the top of the pool on a slant for a short distance. The lower edge of this slanted portion can be located a short distance above the slats in their upper positions, or it can be practically engaged by them. In the latter case leaves that land on the slats can be blown by the wind up the sloping coping cover and away from the pool, or they can easily be swept up the coping cover.

If desired, in winter a plastic cover with side walls can be placed on the solid pool cover and filled with water which will freeze and form a skating rink. Also, this layer of ice over the pool may prevent the water in the pool from freezing, so that it will be unnecessary to drain the pool in winter.

According to the provisions of the patent statutes, we have explained the principle of our invention and have illustrated and described what we now consider to represent its best embodiment. However, we desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

75 We claim:

1. The combination with a swimming pool, of a rescue device therein comprising a vertically movable frame fitting around the inside of the pool and normally located at its bottom, a plurality of parallel slats extending across the frame between opposite sides thereof, means pivotally mounting the ends of the slats in said sides of the frame on horizontal axes, the slats being disposed edge-to-edge in a common plane while the frame is at the bottom of the pool to form a floor, means for raising the frame to the top of the pool and supporting it there, said slats being adapted to pivot on said axes by gravity while the frame is being raised to turn the slats on edge, and means for turning the slats back into a common plane when the frame reaches the top of the pool to form a solid cover for the pool.

2. The combination recited in claim 1, in which two opposite sides of the pool are provided with vertical guideways open toward the frame, and said safety device includes wheels mounted on horizontal axes and projecting into said guideways for engagement with the side walls thereof to guide the rack up and down.

3. The combination recited in claim 2, in which each of said guideways has a pair of sidewalls diverging toward the frame, and said wheels have outwardly tapering surfaces for engaging said sidewalls.

4. The combination recited in claim 3, in which each pair of said sidewalls is formed from a pair of vertical metal plates secured together along one vertical edge.

5. The combination recited in claim 2, including pulleys

mounted at the upper ends of said guideways, cables passing over said pulleys and operatively connected with said frame, and means for reeling in the cables to raise the frame in the pool.

6. The combination recited in claim 1, in which said slat-turning means include a bar extending across the lower edges of the slats in engagement therewith, means pivotally suspending the bar from the frame for movement lengthwise and upward, and means for producing said movement of the bar to cause it to swing the slats up into said common plane.

7. The combination recited in claim 6, in which said last-mentioned means include an inclined lever pivotally connected on parallel axes to said bar and frame and extending above the frame, and means at the top of the pool for engagement by the upper end of the lever to cause the lever to tilt and move the bar lengthwise.

8. The combination recited in claim 6, in which one end of the bottom of the pool is higher than the other, and including a slat at the higher end of the frame inclined upwardly toward the adjoining wall of the pool, and means pivotally connecting the lower corners of said slat to opposite sides of the frame, the upper edge of said slat sliding against said pool wall when the frame is raised.

9. The combination recited in claim 1, including a coping cover surrounding the top of the pool and sloping down into the pool substantially to said slats in their upper position.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,668,711 Dated June 13, 1972

Inventor(s) Charles J. Liermann, et. al.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the grant (only), insert the attached sheet for the cover sheet.

Signed and sealed this 26th day of December 1972.

(SEAL)

Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents