June 22, 1971 J. A. LANKHEET 3,585,655

SWIMMING POOL CONSTRUCTION

Filed Nov. 19, 1968

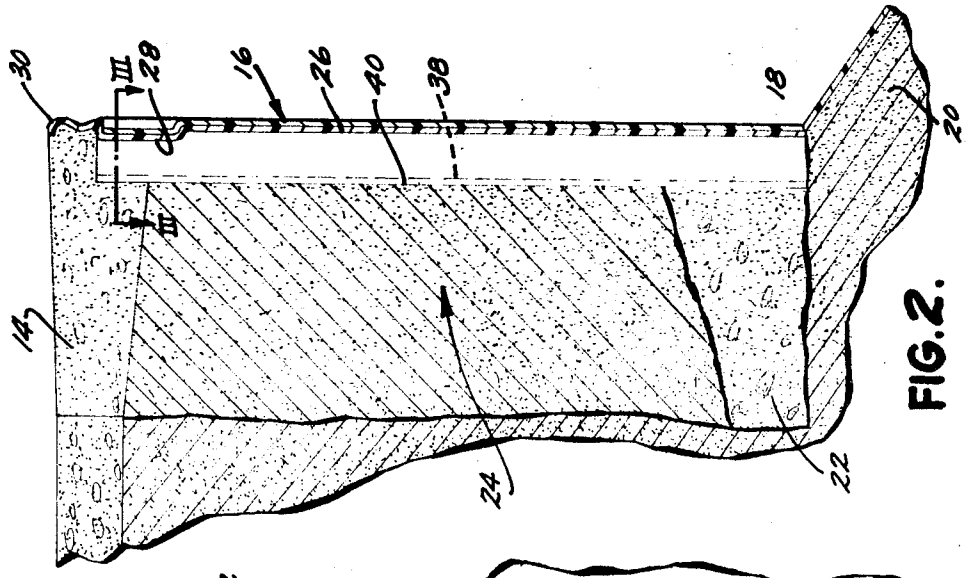


FIG. 2.

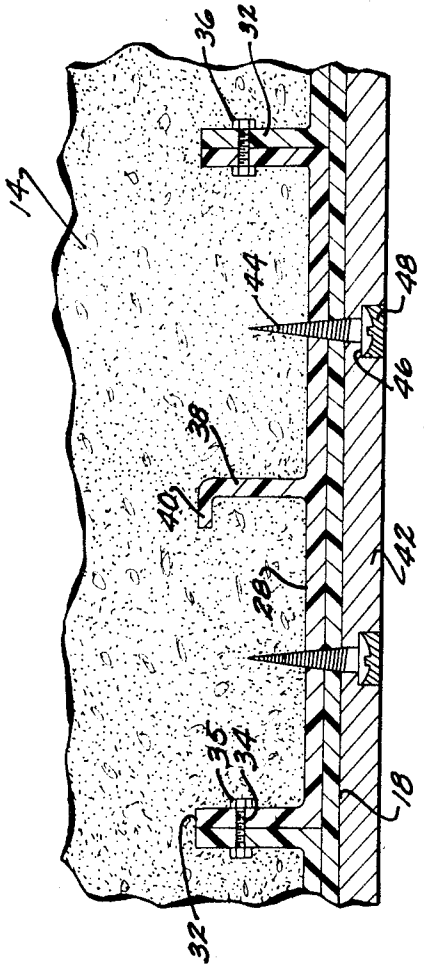


FIG. 3.

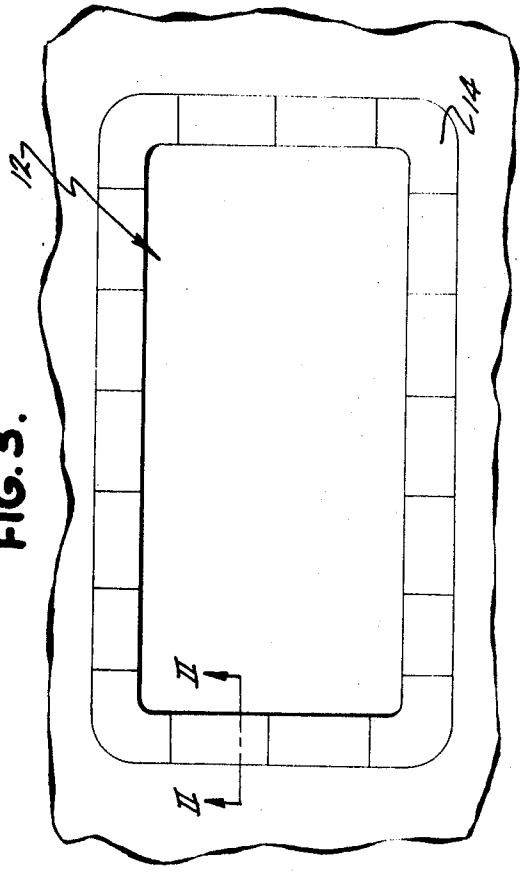


FIG. 1.

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SWIMMING POOL CONSTRUCTION

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U.S. Cl. 4—172 4 Claims

ABSTRACT OF THE DISCLOSURE

This disclosure relates to a swimming pool construction comprising a plurality of interconnected upper wall sections and a flexible plastic liner secured to the upper portion of the upper wall sections. Each wall section has at least one reinforcing and anchoring rib extending rearwardly and then laterally of each wall section to anchor the rib in concrete footings at the top and bottom of the wall section. A recessed channel is formed at the top portion of each wall section. A plastic liner is adjustably secured in the recessed channel by a tile or similar insert and a fastening device which extends through the tile and into the wall section.

This invention relates to a swimming pool construction. In one of its aspects, it relates to a swimming pool construction formed in part of rigid plastic wall panels which are anchored and embedded in concrete footings.

In another of its aspects, the invention relates to a swimming pool construction having a rigid upper wall portion and a flexible liner, wherein the flexible liner is adjustably secured within the recessed area at the top of the plastic wall section.

As swimming pools have become more popular, the need for more economical pool construction has become more evident. To this end, it has become more desirable to permit the pool owner to construct at least a part of his own pool.

Concrete pools are quite costly although more durable. Pools having heavy sheet vinyl or other similar plastic liners are much less expensive but less durable. Problems are often encounted in these plastic liner pools in maintaining the upper side walls from caving in. It has been suggested to use rigid plastic wall panels in combination with flexible plastic liners such as vinyl.

I have now discovered an improved swimming pool construction having plastic wall panels which are maintained in position by concrete footings and by anchoring and reinforcing flanges which extend rearwardly from the wall panels and in which construction a plastic liner is adjustably held in a recessed area by fastening means which extend through the wall panel.

By various aspects of this invention, one or more of the following, or other, objects can be obtained.

It is an object of this invention to provide an improved, more durable, inexpensive swimming pool construction with a flexible liner which is fastened to the top of the side walls in such a manner as to be hidden from view and adjustable to smooth out wrinkles in the liner.

It is a further object of this invention to provide a low cost and durable swimming pool construction having a rigid plastic side wall strongly and rigidly fixed so as to maintain its position to prevent the side walls from caving in.

Other aspects, objects, and the several advantages of this invention are apparent to one skilled in the art from a study of this disclosure, the drawings, and the appended claims.

According to the invention, there is provided a swimming pool construction having an upper wall surrounding the pool. A plurality of interconnected rigid plastic wall sections form the upper wall. Each of the sections has at least one reinforcing and anchoring rib which extends rearwardly from the wall panel and has a hook means at a rear portion of the reinforcing and anchoring rib. Concrete footings are provided behind the wall and surround the reinforcing and anchoring rib at least at a bottom portion of the wall section to firmly anchor the wall section to the footings. Preferably, a concrete deck is provided around the top portion of the upper wall and the deck extends down and surrounds the top portion of the reinforcing and anchoring rib to thereby anchor the top portion of each of the rigid wall sections.

Each of the wall panels has a recessed channel formed horizontally and tile is fixed in the recessed channel so that the front surface of the tile is substantially parallel to the front surface of the wall panels. A flexible vinyl liner forms the bottom of the pool and extends upwardly along the side walls, the liner being adjustably fixed between the tile and the recessed channel.

Preferably, the rigid wall panels are integrally formed from thermosetting resins with various fibrous fillers such as glass fibers, asbestos and the like. Examples of such compositions include phenol-formaldehyde and phenol-furfural, diallyl phthalate, and melamine-formaldehyde molding compounds. The composition of the wall panels is well known in the molding art. The composition is such that the wall panels are easily formed by well-known molding methods.

The flexible liner can be any suitable flexible material such as heavy gauge polyvinyl chloride, polyethylene, polypropylene or copolymers thereof.

The invention will now be described with reference to the accompanying drawings in which:

FIG. 1 is a plan view of a swimming pool according to the invention:

FIG. 2 is a sectional view seen along lines 2—2 of FIG. 1; and

FIG. 3 is a sectional view taken along lines 3—3 of FIG. 2.

Referring now to the drawings, a pool **12** has a concrete deck **14** surrounding the same. The swimming pool is constructed of a rigid plastic wall structure **16** which forms the upper part of the swimming pool and a liner **18** which extends along the wall structure **16** and forms the pool bottom at the dirt floor **20** of the pool.

At the bottom of the wall structure there are footings **22** which anchor the wall structure **16** at the bottom portion thereof. The footings extend around the entire circumference of the pool on the outside of the wall structure **16**. Loose fill **24**, such as sand or gravel, is above the footings **22** and supports the concrete deck **14**.

The rigid plastic wall structure **16** is made from a plurality of panels of molded fiberglass. Each panel has a flat wall portion **26** and a horizontal recessed portion **28** at the top portion thereof. A coping **30** is formed above the recessed portion **28**. Each panel has vertical end flanges **32** extending from the bottom of each panel to the coping **30**. The wall portions **26** are fastened together at the end flanges **32** through bolts **36** which extend through holes **34** in the flanges **32**.

Each wall panel has at least one integrally molded, rearwardly extending rib **38** with a hook end **40** which is parallel to the wall portion **26**. The hook end **40** extends from the bottom of the wall panel **16** to the coping **30**. This hook end is used to anchor the wall panels in the concrete **22** and **14**.

The liner **18** is secured at the top portion thereof to the wall panels **16** between tile sections **42** and the recessed portion **28** of the rigid plastic wall panels **16**. For this purpose, the tile **42** has a recess **46** for screws **44** which extend though the tile **42** and threadably engage the

horizontal recessed portion **28** of the panels **16**. Grouting **48** covers the heads of the screws **44**.

The method of constructing the pool according to the invention is as follows: an excavation is made about 14" larger than the pool. The pool walls are positioned in the excavation and bolted together through the end flanges **32**. The wall structure **16** is then braced at the lower end then poured at the bottom portion of the flat wall portion **26**. As the concrete is poured, the hook ends **40** of the rib **38** will be embedded in the concrete to anchor each wall section within the concrete footings at the bottom.

Formation of the dirt floor **20** of the pool is then completed by further excavations and tamping of the dirt in place. The liner is then positioned within the pool and pulled up adjacent the side wall structure **26** until it is positioned within the horizontal recessed portion **28**. The pool is then partially filled with water. The area behind the wall structure **16** and above the footing **22** is then filled with sand or gravel. The liner **18** is then pulled up to the horizontal recessed portion **28** until it is tight within the pool. All of the wrinkles can be smoothed out of the liner and the liner further adjusted at the top of the wall panels **16**. The top portion of the liner is then cut so as to fit within the recessed wall portion **28**. The tile is then placed in the recessed wall portion **28** and screws **44** are put through the recessed portion **28** to clamp the top of the liner **18** between the tile **42** and the recessed wall portion **28**. The concrete deck **14** can then be poured.

Thus, by the invention, a simple and easy pool construction has been devised whereby an inexpensive plastic liner can be adjustably fit to the pool. The liner is clamped in place in an easy and simple operation. The liner can be pulled up and adjusted within the pool without having the same stick out. Further, the liner can be easily replaced by simply removing the screws, taking the tile out and replacing the liner in the same manner that the original liner was put in.

The rigid plastic wall structure provides a simple and economical manner of constructing the upper walls of the pool. The ribs anchor the pool in place at the top and the bottom in concrete footings.

Whereas the invention has been described with relation to a single embodiment wherein a liner is used, it is within the scope of the invention to construct a pool using the wall panel construction without a liner in combination with a concrete floor for the pool. In this construction, it is also within the scope of the invention to fill behind each panel with concrete as well as with a sand or gravel fill which has been described.

Reasonable variation and modification are possible within the scope of the foregoing disclosure, the drawings, and the appended claims without departing from the spirit of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A swimmng pool construction comprising an upper wall surrounding said pool and a flexible plastic liner for said swimming pool forming the bottom of said pool and extending upwardly along said wall, said upper wall formed from a plurality of integral and interconnected rigid plastic wall sections, each of said sections having a recessed channel horizontally formed at the top portion thereof, at least one reinforcing and anchoring rib extending rearwardly from said wall panel and having hook means at a rear portion thereof, and said wall sections further including a rounded end extending upwardly and rearwardly above the recessed portion thereof, and means for securing said panels together; tile fixed in said recessed channel so that the front surface of said tile is substantially parallel to the front surface of said wall panels; an upper portion of said plastic liner extending into said recessed channel between said tile and said wall panel; fastening means at said recessed channel to clamp said upper portion of said plastic liner between said tile and said plastic side wall panel within said recessed channel, said fastening means extending through said tile, through said plastic liner and into said side wall panels; and concrete footings behind said wall and surrounding said reinforcing and anchoring rib, at least at a bottom portion thereof, to firmly anchor said wall sections to said footings.

2. A swimming pool construction according to claim **1** further comprising a concrete deck around the top portion of said upper wall, said deck extending down and surrounding a top portion of said reinforcing and anchoring ribs, thereby anchoring said top portion of each of said rigid plastic wall sections.

3. A swimming pool construction according to claim **1** wherein said panels are a thermosetting resin with a fibrous filler.

4. A swimming pool construction according to claim **1** wherein said means for securing said panels together includes a rearwardly extending vertical flange at each side thereof and fastening means extending through each of said vertical flanges to clamp each such panel together.

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U.S. Cl. X.R.

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(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,585,655 Dated June 22, 1971

Inventor(s) J.A. Lankheet

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

Column 3, line 7:

After "end" insert --- from the inside of the pool and the concrete footings are ---.

Signed and sealed this 21st day of December 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Acting Commissioner of Patents