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3,440,780

SWIMMING POOL WALL CONSTRUCTION

Filed Jan. 10, 1967

Sheet 1 of 2

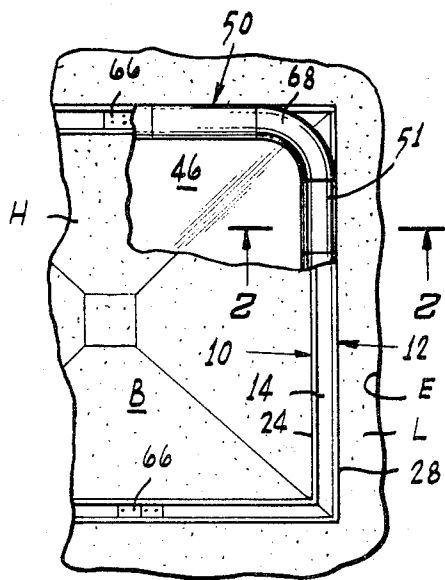


Fig. 1.

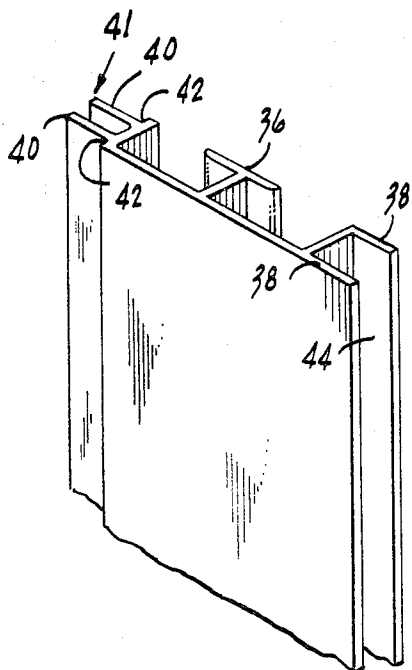


Fig. 5.

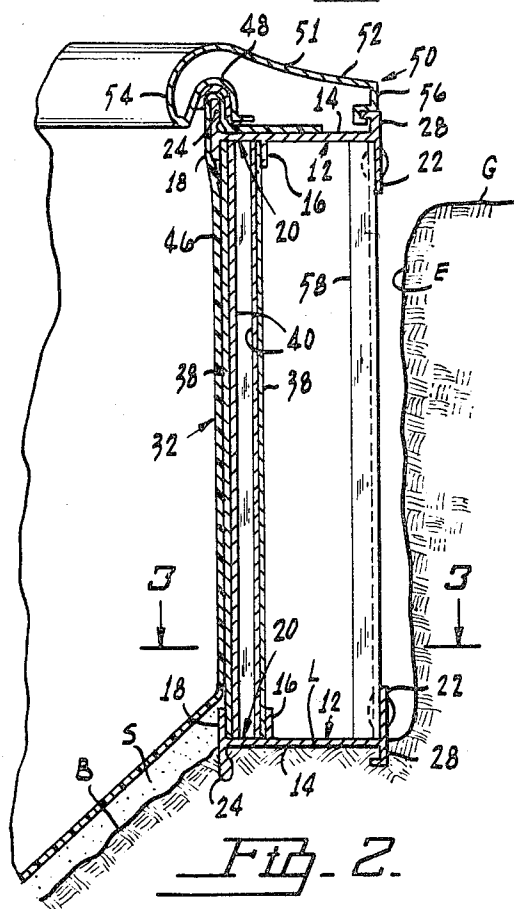


Fig. 2.

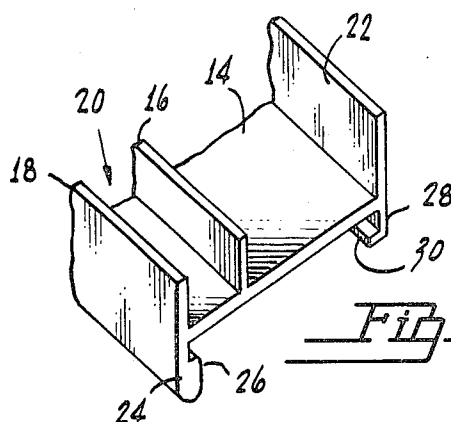


Fig. 6.

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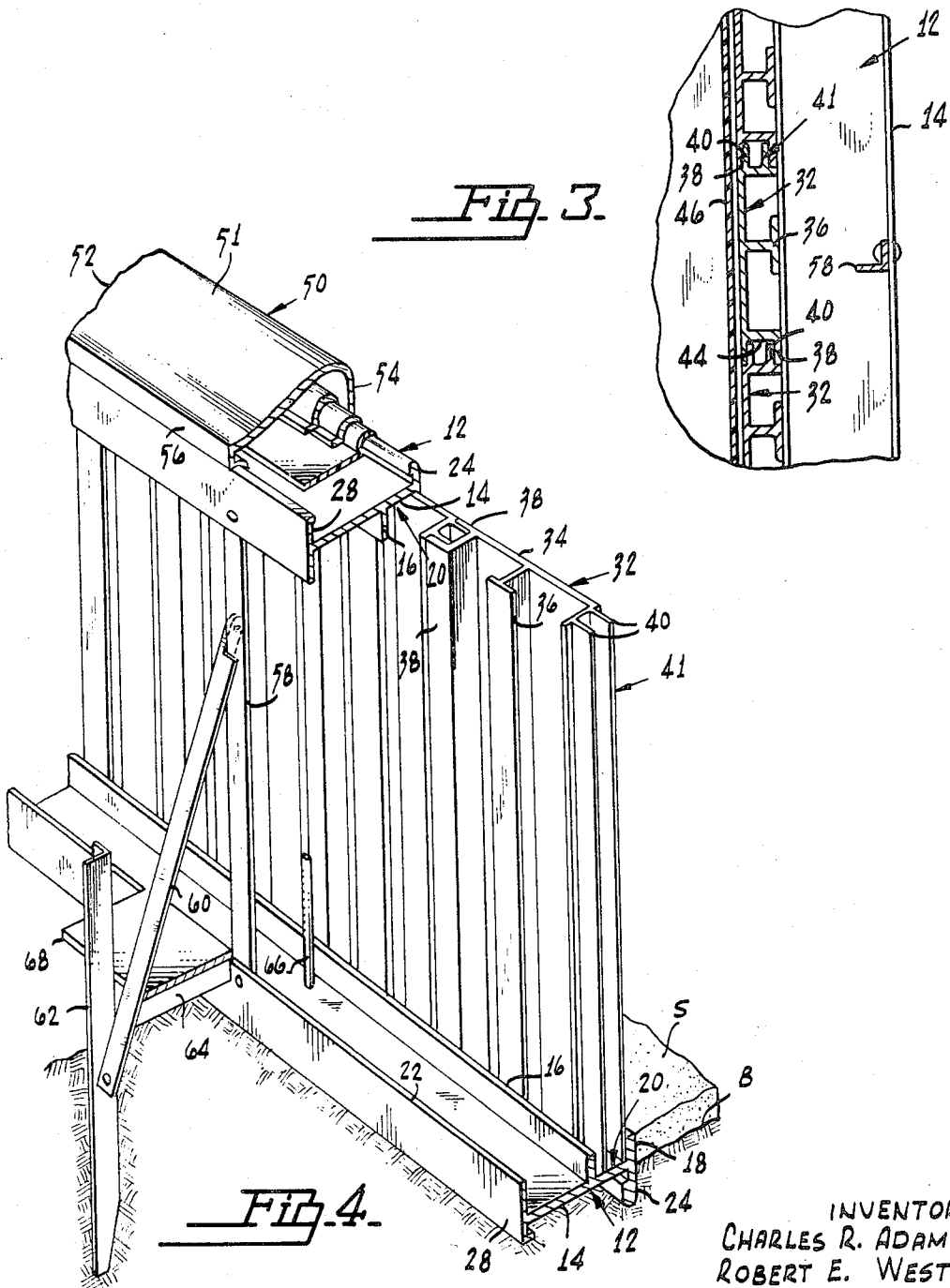
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SWIMMING POOL WALL CONSTRUCTION
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6 Claims

ABSTRACT OF THE DISCLOSURE

A swimming pool wall especially designed to use extruded products. Like, vertical panels have a tongue-and-groove interfit, and seat at their ends in grooves provided on one face of elongated receptors extending horizontally along the top and bottom of the wall. The receptors are identical, with the lower receptor inverted so that the grooves face each other. There are longitudinal ribs on the other receptor faces. Those of the upper receptor face upwardly to receive a coping. The ribs of the lower receptor extend downwardly to dig into the earth.

BACKGROUND OF THE INVENTION

Field of invention

The invention pertains to the art of constructing walls of swimming pools of the type in which a flexible, plastic liner is peripherally engaged between a coping and a coping receptor comprising the top portion of the wall.

Description of the prior art

One well known swimming pool construction presently in widespread use includes a plurality of prefabricated panels that are erected upon a ledge formed in the wall of an excavation, approximately three feet below the existing grade. The ledge extends around the pool bottom, which is provided by shaping the bottom of the excavation to the desired contour to include a deep-end hopper, and a shallow end in a typical installation. The bottom is covered with tamped sand, and a flexible plastic liner is positioned thereover. The edge of the liner is gripped between a coping receptor that extends around the top of the wall approximately at grade level, and a coping mounted upon the receptor.

Heretofore, the practice has been to fabricate the panel sections from wood or metal in large, relatively unwieldy sizes. Such sections, typically, might be perhaps three feet high and six to eight feet long, and would be framed by heavy lumber, or alternatively, by heavy metal flanges. The transportation, handling, and installation of such panel sections has been accompanied by considerable difficulty and expense. Levelling of each section, for example, is required when the section is placed upon the wall-supporting ledge, and has consistently involved great care with a consequent increase in the expense of installation. Temporary bracing is resorted to heavily in a typical installation, during the erection of the swimming pool wall. And, modular construction, with attendant simplification of parts and ease of installation, has been difficult to achieve.

These problems, involving the heavy weight and unwieldy size of existing swimming pool wall components, the difficulty of installation, the absence of a true module, and the relatively high cost, both in materials and assembly labor, involved in the fabrication of wall panels, are basically the problems which we have attacked and propose to solve, at least in great measure, by means of the present invention.

SUMMARY OF THE INVENTION

Briefly, the invention is a swimming pool wall which so far as different kinds of parts are concerned, comprises merely two basic components. One of these is a vertically extending wall panel which is light, inexpensive, and comparatively small in size, and hence easily handled both in transit and during the actual construction of the pool.

The other component is a receptor which is designed in such a fashion that two of them extended horizontally along the top and bottom of the wall will hold the panels assembled, stabilize the underlying earth against shifting either of the earth or of the wall itself, and support, along the top of the wall, a conventional swimming pool coping and liner.

The panel and receptor are so designed as to incorporate in both of them a cross-sectional configuration that is without variation from end to end of the panel or receptor as the case may be. The configuration is selected to permit these components to be extruded products. Preferably, aluminum is the material from which both the panel and receptor are made.

Since the panel and receptor are specially designed to permit them to be extruded, they can be made of any desired length, or can be swiftly and easily cut to length either at the factory or in situ. As a result, a wide range of pool sizes and shapes becomes possible, using a module constituted by the panel and the receptor, and involving no more than selecting a particular receptor length, and a particular number of panels of a selected height.

BRIEF DESCRIPTION OF THE DRAWING

FIGURE 1 is a fragmentary top plan view of a swimming pool construction incorporating a wall made under the present invention, as it appears in an unfilled excavation, a swimming pool coping and liner being partly broken away;

FIGURE 2 is an enlarged transverse sectional view through the wall substantially on line 2—2 of FIGURE 1;

FIGURE 3 is a horizontal section, on a same scale as FIGURE 2, taken substantially on line 3—3 of FIGURE 2;

FIGURE 4 is a fragmentary perspective view of the wall construction according to the present invention;

FIGURE 5 is a fragmentary perspective view, on a scale enlarged above that of FIGURE 2, of one of the panels per se; and

FIGURE 6 is a fragmentary perspective view on the same scale as FIGURE 5, of one of the receptors.

DESCRIPTION OF THE PREFERRED EMBODIMENT

An excavation E is dug to include a ledge L which in a normal installation would be located about three feet, more or less, below the existing grade G. The ledge surrounds the bottom B, which is shaped to include the usual hopper H.

The wall 10 comprising the present invention includes a receptor 12 preferably of extruded aluminum, having a flat wide web 14. On one face of the web a pair of parallel flanges 16, 18 are formed, lying in planes normal to that of the web and extending the length of the web along one side edge portion thereof to define a continuous, longitudinal, panel-receiving groove 20 on said one face of the web. Extending along the opposite side edge of the web, and also continuous over the full length of the receptor, is a flange 22 serving both as a stiffener and as a connection surface for vertical bracing to be described.

Integrally formed upon the opposite face of web 14,

and extending continuously the full length of the web, are a rib 24 having an inwardly facing thickened portion or lip 26, and a rib 28 having an inwardly directed lip 30.

As stated, receptor 12 can be extruded to any length desired, or alternatively can be cut to a selected length, to extend the full length of a side or end of the swimming pool, or if desired any portion of the length of said pool side or end. Of importance, however, is the fact that the cross-sectional configuration of the receptor remains without variation from end to end thereof, not only to facilitate its extrusion from aluminum or other suitable material, but also its incorporation as a module capable of use regardless of the particular size or shape of the completed pool.

Referring to FIGURE 2, one receptor 12 extends along the top of the wall and the other extends along the bottom. They are identical, with the bottom receptor being inverted in respect to the upper one, to face the grooves 20 toward each other. In this way, panels 32, extending vertically between the upper and lower receptors, are seated at their ends in the confronting grooves 20, and are held assembled with each other and with the receptors, in this way to produce the pool wall in its basic essentials.

The panels 32 are all alike. They are designed with a constant cross-sectional configuration, to facilitate their extrusion from aluminum or other suitable material, with each panel including a flat web 34 integral intermediate its width with a rearwardly facing reinforcing rib of T-shaped cross-section. The rib projects from web 34 a distance such that with the web 34 in engagement with one wall of grooves 20, the flat face of the reinforcing or stiffening rib 36 is in corresponding, face-to-face engagement with the opposite wall of said grooves 20. In this way, each panel is reinforced, independently of its adjacent panels, against deformation of the web portion thereof under pressures either of the water confined within the pool, or of the surrounding backfill.

Integrally formed upon the web, at one side edge thereof, are parallel, transversely spaced side flanges 38. Integrally formed upon the opposite side edge of web 34 are parallel tongue elements 40 which together define a tongue means 41. Tongue elements 40 are set inwardly in such fashion as to define, at the faces thereof, stop shoulders 42.

Flanges 38 cooperate to define a channel 44 extending continuously from top to bottom of the panel, at one side edge thereof, which channel receives the tongue means 41 of the next adjacent panel (see FIGURES 3 and 4). Flanges 38 abut against the shoulders 42 when the panels are so assembled. The interfit of the panels, as will be noted, is such as to define a box-girderlike assemblage at the juncture of adjacent panels. The reinforcing ribs 36 alternate with such assemblages, and hence a strong, rigid wall structure results, without requirement of heavy back framing, riveting, bolting and other known expedients involving undesirable expenditures both of time and material.

Erection of the wall, thus, proceeds swiftly and easily, using only two basic components, namely, the panel 32 in selected number, and the receptor 12, also in selected number and of a selected length. The lower receptor, mounted upon ledge L, is leveled readily, over its full length, both in a transverse and longitudinal direction, and of importance is the fact that the ribs 24, 28 thereof dig into the earth, to stabilize both the wall structure and the earth itself, in the completed installation.

With the lower receptor in place, the installation proceeds with ease, involving little more than the positioning of each panel in the upwardly facing groove 20 of the lower receptor, and the interfitting of adjacent panels, in the same way, in successively following order. The upper receptor 12 is positioned upon the upper ends of the panels, with its groove 20 facing downwardly. The

upper ends of the panels thus seat in the downwardly opening groove of the upper receptor.

A conventional swimming pool liner, formed as a continuous, flexible sheet of polyvinyl chloride or other suitable material, has been designated 46, and is supported by wall 10 in a manner already known. The mounting of the liner involves the positioning of the upper edge portion thereof over the upwardly projecting, beaded rib 24 of the upper receptor 12, after which a flexible liner clip 48, of inverted U shape in cross-section, is engaged over the rib-supported edge portion of the liner. A coping 50 is then applied. Coping 50 is conventional per se, and might comprise a cast concrete block if desired. Or, as shown alternatively, the coping can be of metal or plastic construction, in which each coping block or element 51 includes a rearwardly downwardly curving web portion 52 formed with a front flange 54 having a downwardly opening groove receiving the clip 48, the edge portion of line 46, and the upwardly projecting rib 24 of the upper receptor 12.

Coping 50, clip 48, and liner 46 do not comprise part of the wall 10 constituting the present invention. However, they serve in combination with the wall itself in producing the completed swimming pool. In such a pool, the liner, after extending downwardly along the flat front surface of the wall defined by the interfitting panels, overlies the bottom B of the pool, and more particularly is supported directly upon a layer of tamped, contoured sand S.

The wall 10 does, however, include vertical bracing provided by a plurality of braces 58 spaced apart any desired distance around the periphery of the pool, to assure a wall construction of requisite strength. Each brace 58, as shown in FIGURE 2, may comprise an angle member bolted, riveted or otherwise fixedly secured at its opposite ends to the inner faces of the reinforcing flanges 22 of the upper and lower receptors. Braces 58 are thus disposed parallel to the assembly of panels, in rearwardly spaced relation thereto.

It becomes apparent, thus, that (referring particularly to FIGURE 2) the brace 58, receptors 12, and the assembly of panels 32 cooperate to define a rectangular, trusslike structure producing an exceptionally strong wall construction in relation to the lightness thereof, when the wall is viewed in cross-section at the location of any of said braces 58.

Additional bracing, however, may be and preferably is employed, as shown in FIGURE 4. This includes a triangular bracing structure 59, located wherever desired about the periphery of the pool, the location of said structure 59 being selected to coincide with the location of a vertical brace 58. Structure 59 includes an inclined brace 60, which extends upwardly from a ground-penetrating stake 62 spaced laterally outwardly from the lower receptor. A tie 64 extends horizontally between and is fixedly connected to the vertical brace 58 and stake 62. Inclined brace 60 is further connected fixedly to and extends between the stake and the vertical brace.

At selected intervals along the length of the lower receptor, holes are formed therein, and elongated ground anchors 66 are driven therethrough. This is in itself a conventional expedient in the erection of swimming pool walls.

It is also desirable to provide, in overlying relation to the tie 64, a flat plate 68 serving as an earth wedge to further stabilize the installation.

Referring to FIGURE 1, wherever receptors 12 are in end-abutting relation to adjacent receptors, to provide a continuous upper or lower receptor as the case may be, we connect the abutting receptors by means of tie plates 66 which are riveted or otherwise secured to the abutting receptors.

It is also desirable to provide means for incorporating a curved corner coping 68 in the swimming pool. The

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construction of the wall which we have described herein lends itself easily to this arrangement, in that a corner coping can be of cast construction, while having the downwardly opening front flange 54 and lipped rear flange 56 engaging the upwardly projecting receptor rib 24.

What is claimed is:

1. A swimming pool wall structure comprising:
 - (a) a plurality of like vertical panels each of which includes a channel extending along one side edge of the panel and a tongue means extending along its opposite side edge within the channel of the next adjacent panel; and
 - (b) a pair of elongated, horizontally extending receptors including webs formed on one face with longitudinal panel-receiving grooves said receptors being spaced vertically to define an upper receptor the groove of which opens downwardly to receive the upper ends of the panels, and a lower receptor the groove of which opens upwardly to receive the lower ends of the panels,

said receptors being identically formed with the lower receptor inverted in respect to the upper receptor, said webs being formed on their other faces with identical, longitudinally extending means defining upon the upper receptor means to receive a coping, and defining on the lower receptor anchor means extending into the ground to prevent shifting of the earth below the wall structure.
2. A swimming pool wall structure as in claim 1 in which said grooves are extended along one longitudinal edge of the webs, the width of the webs projecting laterally outwardly from the panels with the other longitudinal edges of the webs lying in a common vertical plane, said wall structure including vertical brace means connected between said other longitudinal edges of the receptor webs in laterally spaced relation to said panels.
3. A swimming pool wall structure as in claim 2 wherein the coping-receiving and anchor means of the upper and lower receptors comprises a pair of longitudinally extending ribs extending along the respective longitudinal edges of each for support of a coping over the full width of the receptor web with the panels and braces supportably underlying the respective opposite longitudinal edge portions of the coping, said ribs extending upwardly from the web of the upper receptor and downwardly from the web of the lower receptor, said receptors including flanges extending toward each other from said other longitudinal edges of the webs in said common vertical plane providing means to which said vertical braces are connected.
4. A swimming pool wall structure comprising:
 - (a) a plurality of like vertical panels each of which includes a channel extending along one side edge of the panel and a tongue means extending along its opposite side edge within the channel of the next adjacent panel; and
 - (b) a pair of elongated, horizontally extending receptors including webs formed on one face with longitudinal panel-receiving grooves, said receptors being spaced vertically to define an upper receptor the groove of which opens downwardly to receive the upper ends of the panels, and a lower receptor the groove of which opens upwardly to receive the lower ends of the panels, said receptors being identically formed with the lower receptor inverted in respect to the upper receptor, each of said webs being formed on its other face with means defining upon the upper

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receptor means to receive a coping, and defining on the lower receptor anchor means extending into the ground to prevent shifting of the earth below the wall structure, said grooves being extended along one longitudinal edge of the webs, the width of the webs projecting laterally outwardly from the panels, said wall structure including brace means connected between the other side edges of the receptor webs in laterally spaced relation to said panels, the coping-receiving and anchor means of the upper and lower receptors comprising a pair of longitudinally extending ribs, extending along the respective longitudinal edges of each for support of a coping over the full width of the receptor web with the panels and braces supportably underlying the respective opposite longitudinal edge portions of the coping,

the ribs being respectively formed with confronting, inturned lips respectively providing upon the upper and lower receptors means to grip said coping and the earth, respectively.

5. A swimming pool wall structure comprising:

- (a) a plurality of like vertical panels each of which is an extrusion the cross-sectional shape of which is the same over its full length, each panel including a channel along one of its vertical edges and a tongue extending along the other vertical edge thereof within the channel of the next adjacent panel; and
- (b) a pair of identically formed but oppositely disposed elongated, horizontal receptors each of which is an extrusion the cross-sectional shape of which is the same over its full length, each receptor including a horizontal web formed with a continuous panel-receiving groove on one face thereof and with a pair of longitudinal ribs on the other face thereof, the grooves of the respective receptors opening toward each other to receive the respective opposite ends of the panels, the ribs of the upper receptor facing upwardly to receive a swimming pool coping and the ribs of the lower receptor facing downwardly to grip the earth.

6. A swimming pool wall structure as in claim 5 wherein the grooves are extended along one longitudinal edge of the receptors, the width of the webs of the receptors exceeding the width of the grooves so as to project laterally outwardly from the upper and lower ends of the panels, the other longitudinal edges of the webs being formed with flanges extending toward each other in a common vertical plane, said wall structure further including vertical braces connected between said flanges, said ribs of each receptor being extended along the opposite longitudinal edges of the web thereon.

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U.S. Cl. X.R.

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