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Barrera

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[54] **SWIMMING POOL**

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[52] **U.S. Cl.** **52/169,** 52/582

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

[58] **Field of Search** ..... 4/172, 172.19; 52/169, 52/586, 588, 582; 287/189.36 D, 189.36 R, 127 R; 61/49; 46/31, 21; 220/76

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[57] **ABSTRACT**

An in ground swimming pool erected in an excavation having a bottom wall and at least one side wall, generally including a plurality of vertically disposed panels hingedly secured together in end-to-end relation about the periphery of the excavation adjacent the side wall thereof, each hinged connection between successive panels consisting of at least one vertical slot disposed in one of the successive panels, a tab having a vertical recess, disposed on the other of the successive panels, received within the slot and cooperating therewith to provide a vertical passageway between the panels, and a pin disposed in the vertical passageway having a length greater than the vertical slot, for interlocking successive panels, means for supporting at least a portion of the vertical panels consisting of at least one elongated rigid member secured at one end to one of the panels, extending laterally through undisturbed soil disposed adjacent the panel, and anchored at the other end thereof, and a liner disposed within the plurality of panels, having the periphery thereof secured to the panels.

17 Claims, 7 Drawing Figures

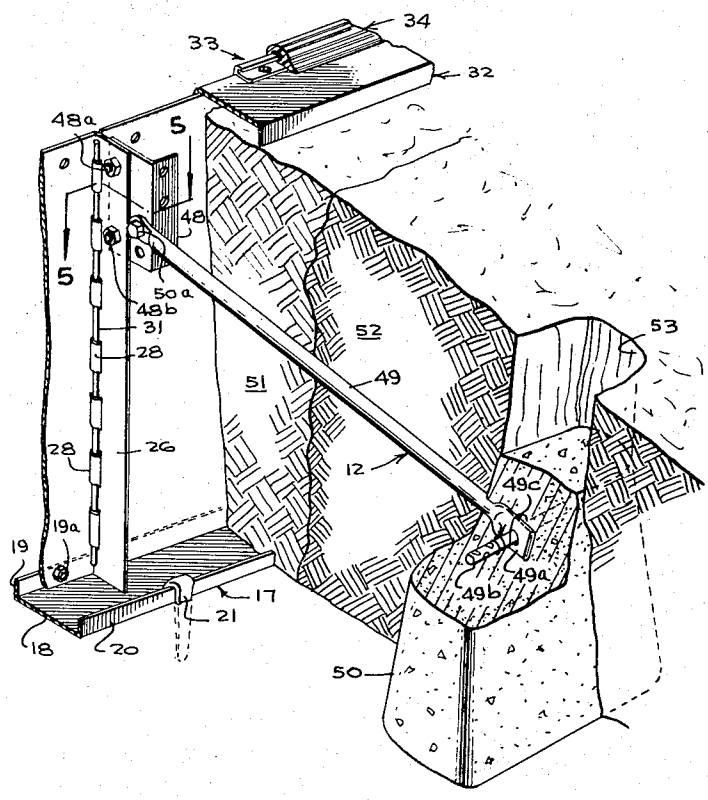


FIG-1

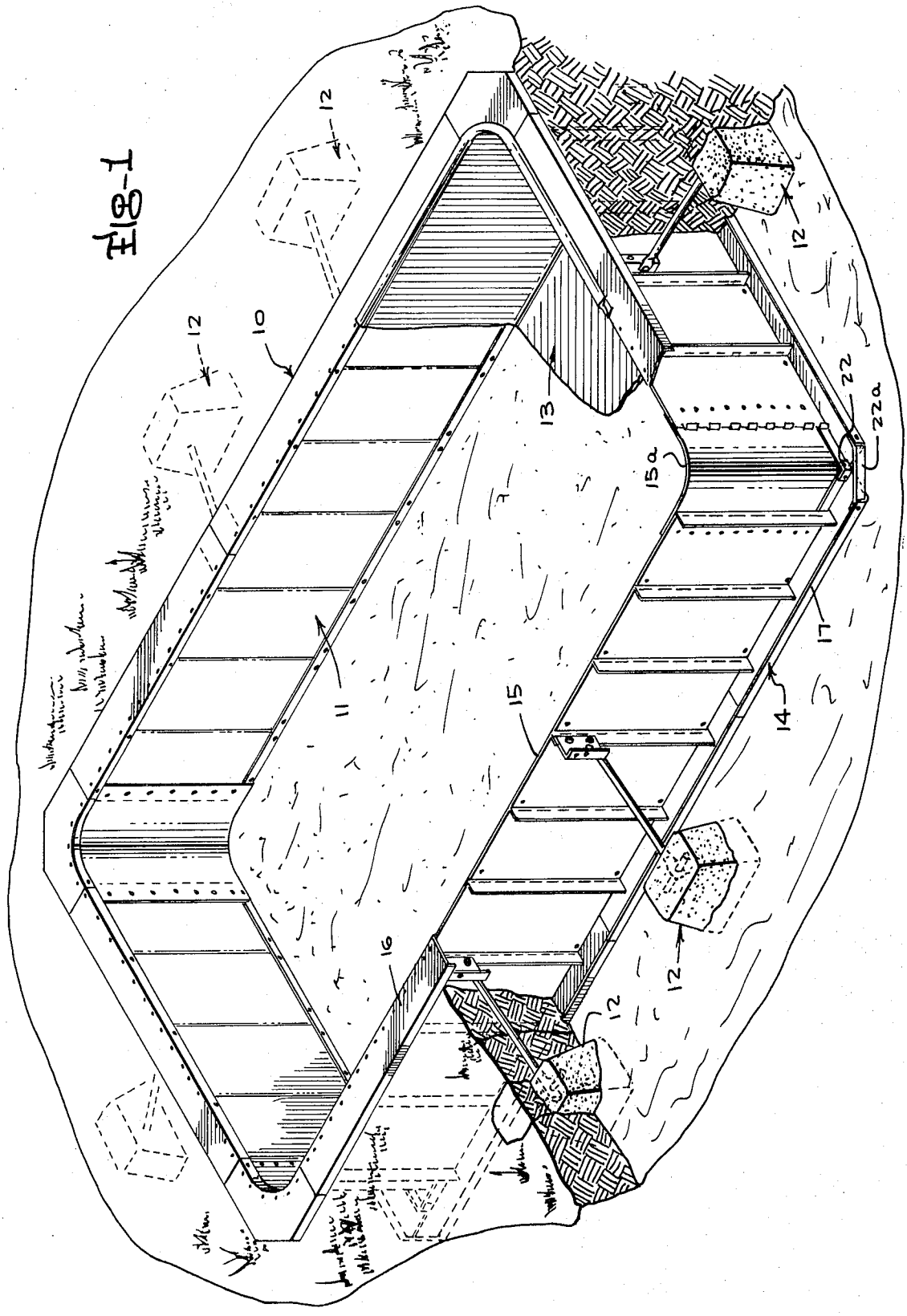


Fig-2

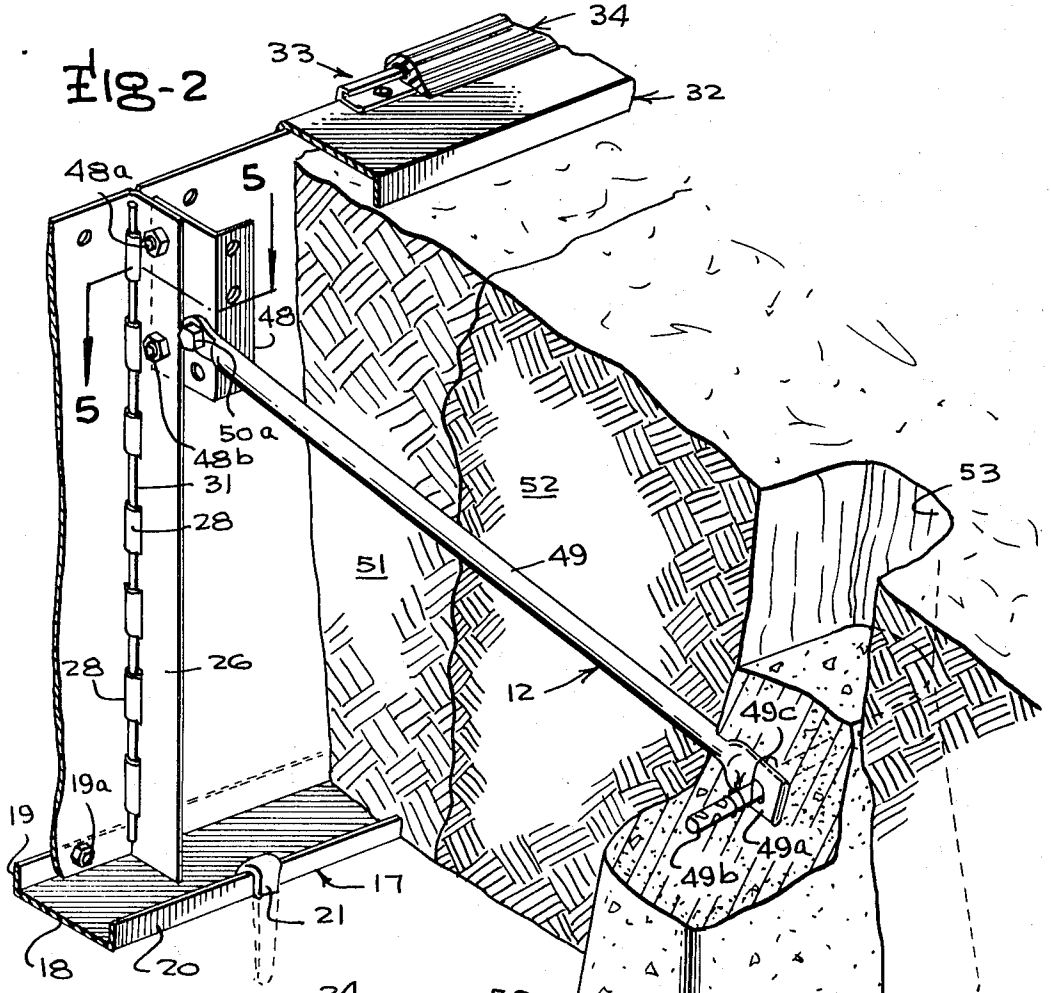
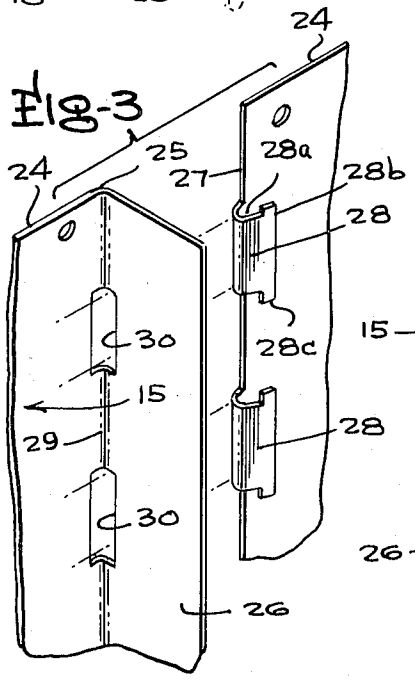


Fig-3



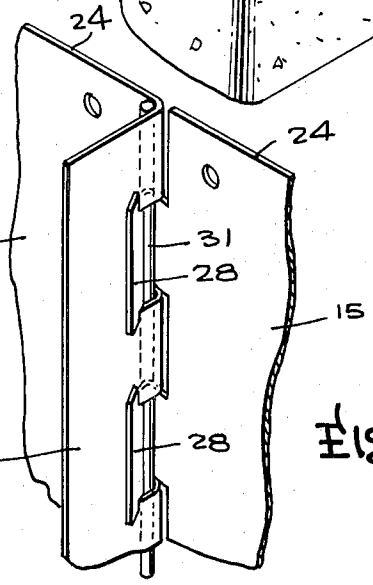


Fig-4

Fig-5

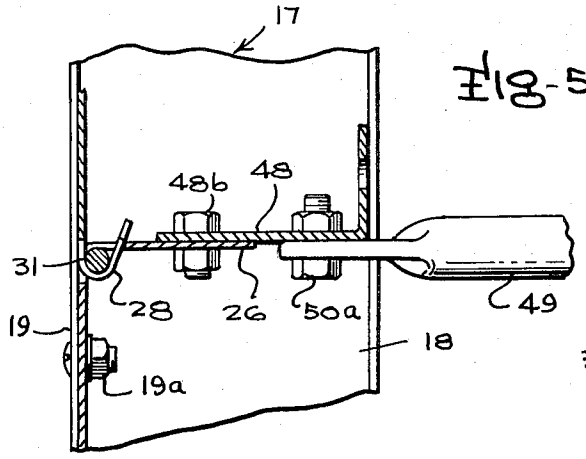


Fig-7

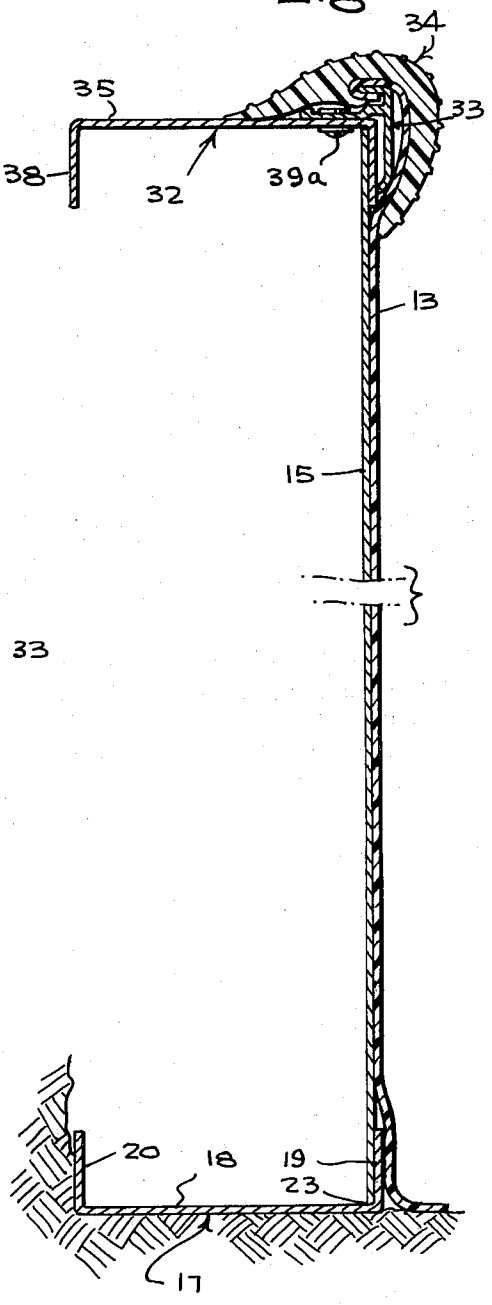
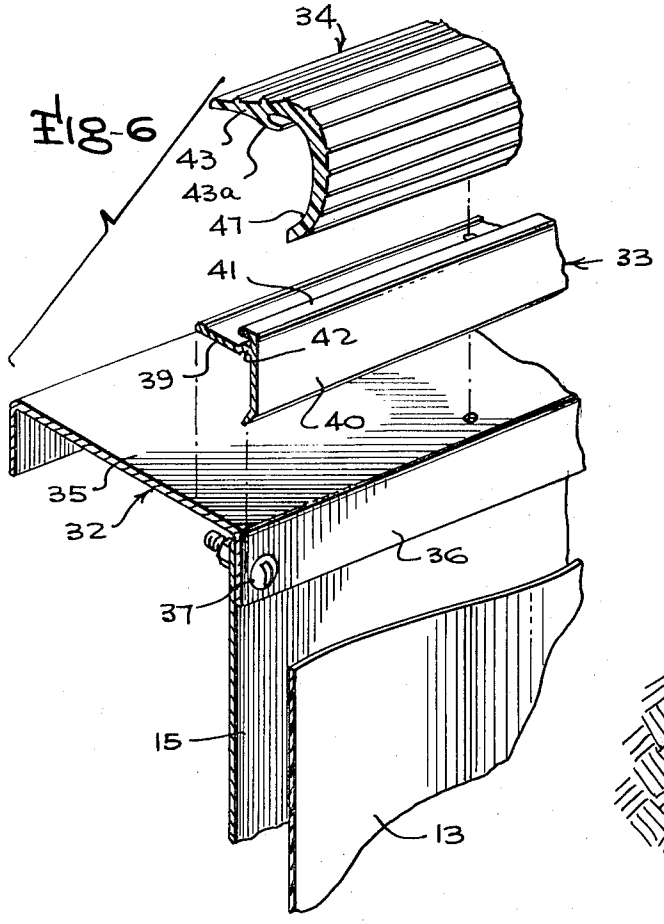


Fig-6



SWIMMING POOL

This invention relates to a swimming pool construction and more particularly to a swimming pool construction whose components can be assembled and sold as a kit to permit purchasers including building contractors and home owners to erect such pools in an excavation of appropriate dimensions.

In the prior art, there has been developed a concept of providing kits of both above ground and in ground swimming pools which can be sold to building contractors or home owners for erection at selected sites. Usually, such kits include a number of components which may be secured together to provide a peripheral wall, a liner adapted to be positioned within the wall with the periphery thereof secured to the upper end of the wall, and various means for providing lateral support to the wall to prevent deformation caused by the lateral component of force produced by the body of water contained in the liner within the wall. In the type of pool construction as aforementioned, it has been found that the various constructions utilized in the prior art are not entirely satisfactory in providing a wall construction having sufficient capability to effectively and economically prevent deformation such as bulging and the like.

Accordingly, it is the principle object of the present invention to provide a novel swimming pool construction.

Another object of the present invention is to provide a novel swimming pool construction, the components of which may readily be assembled as a kit for sale to purchasers such as building contractors and home owners.

A further object of the present invention is to provide a novel swimming pool construction of the type having a peripheral wall, a liner disposed within and secured along its periphery to such wall, and means for providing lateral support to the wall.

A still further object of the present invention is to provide a novel in ground swimming pool construction.

Another object of the present invention is to provide a novel swimming pool construction having a wall construction consisting of a plurality of panels disposed in end-to-end relation, including novel means for interlocking such panels.

A further object of the present invention is to provide a novel swimming pool construction having a peripheral wall construction provided with improved means for preventing deformation of the wall construction when the fully erected pool is filled with water.

A still further object of the present invention is to provide a novel wall construction particularly suitable for an in ground swimming pool construction.

Another object of the present invention is to provide a novel panel construction particularly adapted for use in a peripheral wall for a swimming pool construction.

A further object of the present invention is to provide a novel method of erecting a swimming pool.

A still further object of the present invention is to provide a novel method of erecting an in ground swimming pool.

Another object of the present invention is to provide a novel swimming pool construction which is easy to assemble and disassemble.

A further object of the present invention is to provide a novel swimming pool construction which is comparatively simple in design, relatively inexpensive to manufacture and effective in performance.

Other objects and advantages of the present invention will become more apparent to those persons having ordinary skill in the art to which the invention pertains, from the following description taken in conjunction with the accompanying drawings wherein:

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

FIG. 2 is an enlarged perspective view of a portion of the embodiment shown in FIG. 1, illustrating the means for providing lateral support to the wall construction of the embodiment;

FIG. 3 is a fragmentary perspective view of a pair of successive panels utilized in the wall construction shown in FIGS. 1 and 2, illustrating the interlocking means of the panels in exploded relation;

FIG. 4 is a fragmentary, perspective view similar to the view shown in FIG. 3, illustrating the panels in the locked condition.

FIG. 5 is an enlarged cross-sectional view taken along line 5—5 in FIG. 2;

FIG. 6 is a perspective view of the upper end of a portion of the wall construction shown in FIG. 1, illustrating the components thereof in exploded relation; and

FIG. 7 is an enlarged, vertical cross-sectional view of the wall construction shown in FIG. 1.

Referring to the drawings, there is illustrated an embodiment of the invention consisting of an in ground swimming pool **10** disposed within an excavation having a bottom wall and a plurality of side walls. The swimming pool **10** generally includes a wall construction **11** seated on the bottom wall, adjacent the side walls of the excavation, a plurality of lateral support assemblies **12** disposed about the periphery of the wall construction **11**, and a liner **13** disposed within the wall construction **10** with the periphery thereof secured to the upper end of the wall construction.

The wall construction **11** consists of a lower base rail **14** seated on the bottom wall of the excavation, a plurality of vertically disposed panels **15** seated on and secured to the lower base rail **14**, adjacent the side walls of the excavation, and an upper rail **16** seated on and secured to the upper ends of the wall panels **15**. The lower base rail **14** consists of a plurality of upwardly opening channel-shaped members **17** secured to end-to-end relation. As best illustrated in FIG. **2**, each channel-shaped member **17** consists of a flat web portion **18** seated on the bottom wall of the excavation adjacent a side wall thereof, an inner flange portion **19** and an outer flange portion **20**. Each channel-shaped member **17** is anchored to the ground by means of one or more anchoring spikes or spades **21** having the upper portions thereof hooked over the outer flange portions **20** of the channel-shaped members. As best illustrated in FIG. **1**, the ends of the channel-shaped members adjacent the corners of the pool are rigidly interconnected by means of bolted connecting members **22** and **22***a*.

Each of the wall panels **15** is substantially rectangular-shaped and includes a bottom edge **23** seated on the flat web portion **18** of a channel-shaped member **17**, adjacent an inner flange portion **19**, an upper edge **24** disposed substantially parallel to the lower edge **23**, a side edge **25** having an outwardly projecting, vertical flange **26**, and a side edge **27** disposed substantially parallel to the side edge **25**, having a plurality of vertically spaced tabs **28**. As best illustrated in FIG. **3**, the

junction 29 between the vertical flange portion 26 and the main body portion of each panel is provided with a plurality of vertically spaced slots 30. Each of the tabs 28 is curved to provide a vertical recess 28*a*, and is adapted to register and be received within a vertical slot 30 when a pair of panels 15 are secured together in side-by-side relation. As illustrated in FIGS. 3 and 4, the free ends of the tabs 28 are provided with upwardly and downwardly projecting portions 28*b* and 28*c*, the inner edges of which are adapted to engage a vertical flange 26 when the tabs 28 are recieved in slots 30 so that the vertical slots 28*a* of the tabs 28, and the vertical flange 26 and main body portion of the successive panel cooperate to provide a vertically aligned passageway adapted to receive an elongated pin 31 for locking successive panels together.

The upper rail 16 is best illustrated in FIGS. 6 and 7 and includes a plurality of downwardly opening channel-shaped members 32 disposed in end-to-end relation and secured on the upper ends of the panels 15, a plurality of extrusions 33 disposed in end-to-end relation and mounted on the channel-shaped members 32, and a continuous coping 34 mounted on the extrusions 33. The channel-shaped member 32 each is provided with a flat web portion 35, an inner downwardly projecting flange 36 overlying and secured to the upper inner sides of the panels 15 by means of a plurality of bolts 37, and an outer downwardly projecting flange 38 which is adapted to rest on the soil backfilled against the outer sides of the panels 15. The extrusions 33 are provided with horizontal sections 39 seated on and secured to the inner sides of the web portions 35 of the channel-shaped members, vertical sections 40 which are adapted to overlie the inner flange portions 36 of the channel-shaped members when the horizontal portions 39 are seated on and secured to the web portions of the channel-shaped members, and outwardly projecting flanges 41 providing outwardly opening horizontal recesses 42 which are adapted to receive the periphery of the liner 13. The coping 34 is provided with a substantially horizontal section 43 adapted to rest on the web portion 35 of the channel-shaped member 32 and horizontal sections 39 of the extrustions, having a lip portion 43*a* adapted to be received within recesses 42 to secure the periphery of the liner 13 within the recesses 42, and a downwardly curved portion 47 which is adapted to overlie the periphery of the liner 13.

FIG. 2 best illustrates a lateral support assembly 12 which consists of a bracket 48, a rigid metal rod 49 and an anchoring means 50. The bracket 48 is secured to the upper end of a vertical flange 26 by means of a pair of bolts 48*a* and 48*b*. A metal rod 49 is secured at its inner end to a bracket 48 by means of a bolt 50*a*, projects outwardly and downwardly through backfilled soil 51 disposed adjacent the outer sides of the panels 15 and undistrubed soil 52, and has its outer end permanently embedded in the anchoring means 50 preferably consisting of concrete poured in a hole 53 disposed laterally from the pool excavation. As shown in FIG. 2, the outer end of each metal rod 49 is flattened as at 49*a* which is provided with an opening therein for receiving therethrough a short piece of reinforcing steel 49*b* secured therein by means of a wire 49*c*.

In the erection of the swimming pool construction as described, the pool site is first excavated to the desired depth with the periphery thereof made slightly larger than the final periphery of the pool. Next, the holes 53 are dug about the periphery of the pool excavation to provide the areas of undisturbed soil 52 between the pool excavation and the holes 53. After the bottom wall of the pool excavation is fine graded, the lower base rail 14 is set in position on the bottom wall of the pool excavation about the periphery thereof. This consists of positioning the upwardly opening channel-shaped members in end-to-end relation to form the outline of the side walls for the pool structure, and bolting them together. The ends of the members 17 disposed at the corners of the pool are interconnected by means of the members 22 and 22*a*. The lower base rail then is completed by anchoring the members 17 to the ground by means of the anchor spikes or spades 20 each of which is provided with a hook portion engaging an outer flange portion 20 and a pointed portion which is driven into the ground.

When the lower base rail 14 has been set and anchored in place, the side walls of the pool are then set in place by securing the wall panels 15 and 15*a* on the lower base rail 14 in end-to-end relation. Successive panels are secured together by guiding the panels together so that the tab portions 28 of one panel are received within the vertical slots 30 of the other panel and the flange portions 28*b* and 28*c* engage the vertical flange 26, and dropping the locking pin 31 along the juncture 29 and through vertically aligned recesses 28*a* of the tabs to interlock the successive panels. As best shown in FIG. 2, the lower edges of the panels 15 are seated on the web portions 18 of channel-shaped members 17, adjacent the inner flange portions 19 by means of bolts 19*a*.

When the wall construction progresses to a point adjacent a laterally spaced hole 53 and before the next successive panel is connected, a rigid metal rod 49 is driven from the upper end of the panel set in place, and through the undisturbed soil 52 between the pool excavation and the hole 53, into the hole 53, as illustrated in FIG. 2. The flat end 49*a* of the rod facilitates its penetration of the undisturbed soil 52. When the rod has been set in place, the next wall panel 15 provided with a bracket 48 is connected to the wall panel set in place, and the inner end of the rod 49 is secured to the bracket by means of a bolt 50*a*.

After all of the wall panels 15 have been set in place, interlocked in end-to-end relation and bolted to the inner flange portions 19 of channel-shpaed members 17 to complete the wall structure, the short pieces of reinforcing rods 49*b* are inserted in the openings in the flat ends of rods 49 and secured therein with the wires 49*c*. Concrete then is poured into the lower ends of the holes 53 and permitted to harden thus embedding the outer ends of the rods 49. The holes 53 then are filled to ground level and the side wall formed from the panels 15 is backfilled by depositing loose soil into the space between the undisturbed soil 52 and the outer sides of panels 17.

Next, the upper rail 16 is assembled by positioning the channel-shaped members 32 in end-to-end relation about the upper ends of the wall panels 15 so that the web portions 35 thereof are disposed on the upper edges 24 of the panels and the soil backfilled against the outer sides of the panels, the inner flange portions 36 overlie the upper inner sides of the panels 15 and are secured thereto by means of bolts 37, and the outer flange portions 38 project into the soil backfilled against the panels 15. The extrusions 33 are then

mounted on the channel-shaped members **32** with the horizontal sections **39** thereof seated on the inner ends of members **32** and rigidly secured thereto by means of bolts **39***a*, and the vertical sections **40** thereof overlying the inner flange portions **36** of the channel-shaped members. As soon as the extrusions **33** have been rigidly set in place and the bottom wall of the excavation has been suitably prepared by fine grading and possibly the addition of sand to provide an appropriate contour for the bottom of the pool, the liner **13** is placed in the pool and the periphery thereof is pulled up over the flange portions **41** of extrusions **33** and tucked into the vertical recesses **42.** The coping **34** is then applied so that the horizontal portion **43** thereof rests on the horizontal extrusion sections **39,** the lip portion **43***a* is received within recesses **42** to lock the periphery of the liner therein and the curved section **47** overlies the upper end of liner **13,** as illustrated in FIG. **7.** Assuming that the filter system for the pool has been connected, the swimming pool may be completed and ready for use simply by filling the liner with water.

It is contemplated that the components of the swimming pool construction as described, can be fabricated from any suitable material and by the use of any appropriate method. It is preferred, however, that the lower base and upper rails and the wall panels be fabricated from a sufficiently heavy gauge galvanized steel, the liner consists of a flexible and durable material, the extrusion mounted on the upper rail be fabricated of a lightweight metal such as aluminum, and the coping consist of a soft durable material such as vinyl.

It would be appreciated that the interlocking arrangement of the wall panels and the lateral support assemblies provide a rigid integral construction capable of preventing any deformation of the side walls of the pool under lateral pressure provided by water in the pool. In addition, it will be seen that the present invention provides a pool construction consisting of a number of components which may be readily assembled as a kit and sold to building contractors or home owners, and assembled with relatively little skill and few tools.

From the foregoing detailed description, it will be evident that there are a number of changes, adaptations and modifications of the present invention which come within the province of those skilled in the art. However, it is intended that all such variations not departing from the spirit of the invention be considered as within the scope thereof and as limited solely by the appended claims.

I claim:

1. A swimming pool construction disposed in an excavation having a bottom wall and at least one side wall comprising a plurality of vertically disposed panels interlocked together in end-to-end relation about the periphery of said excavation adjacent said side wall thereof, each interlocked connection between successive panels comprising one of said successive panels including a vertical flange offset outwardly relative to a main portion of said one of said successive panels, provided with a plurality of vertically spaced slots, disposed along the junction of said flange and said main portion of said one of said successive panels, the other of said successive panels including a plurality of vertically spaced, horizontally projecting bent tabs offset outwardly relative to a main portion of the other of said successive panels and received within said vertical slots whereby the inner surfaces of the main portions of said successive panels are disposed adjacent to each other and form a substantially continuous surface, each of said tabs having upwardly and downwardly projecting flanges engageable with the vertical flange of said one of said successive panels when said tabs are received within said vertical slots to provide a plurality of vertically aligned passageways, and an interlocking pin disposed within the aligned vertical passageways between said successive panels, means for supporting at least a portion of said panels laterally, and a liner disposed within said plurality of panels, having the periphery thereof secured thereto.

2. A swimming pool construction according to claim **1** including a lower base rail disposed about the periphery of said excavation to which the lower ends of said panels are secured.

3. A swimming pool construction according to claim **2** wherein said lower base rail consists of a plurality of upwardly opening channel-shaped members disposed in end-to-end relation, having said panels secured to inner flange portions thereof.

4. A swimming pool construction according to claim **2** including means for anchoring said lower base rail to the ground.

5. A swimming pool construction according to claim **1** including an upper rail disposed about the periphery of said excavation to which the upper ends of said panels are secured.

6. A swimming pool construction according to claim **5** wherein said upper rail consists of a plurality of downwardly opening channel-shaped members disposed in end-to-end relation, having said panels secured to inner flange portions thereof.

7. A swimming pool construction according to claim **5** including a continuous coping secured to said upper rail and wherein the periphery of said liner is disposed between said upper rail and said coping.

8. A swimming pool construction according to claim **1** including a lower base rail disposed about the periphery of said excavation consisting of a plurality of upwardly opening channel-shaped members disposed in end-to-end relation, having said panels secured to inner flange portions thereof, means for anchoring said lower base rail to the ground, an upper rail disposed about the periphery of said excavation consisting of a plurality of downwardly opening channel-shaped members disposed in end-to-end relation, having the upper ends of said panels secured to inner flange portions thereof, and a continuous coping secured to said upper rail, wherein the periphery of said liners is disposed between said upper rail and said coping.

9. A swimming pool construction according to claim **1** wherein said means for supporting said portion of vertical panels comprises at least one elongated rigid member secured at one end to one of said panels, extending laterally through undisturbed soil disposed adjacent said panel, and anchored at the other end thereof.

10. A swimming pool construction according to claim **9** wherein the outer end of said rigid member is embedded in concrete.

11. A swimming pool construction according to claim **9** including a lower base rail disposed about the periphery of said excavation to which the lower ends of said panels are secured.

12. A swimming pool construction according to claim **11** wherein said lower base rail consists of a plu-

rality of upwardly opening channel shaped members disposed in end-to-end relation, having said panels secured to inner flange portions thereof.

13. A swimming pool construction according to claim **11** including means for anchoring said lower base rail to the ground.

14. A swimming pool construction according to claim **9** including an upper rail disposed about the periphery of said excavation to which the upper ends of said panels are secured.

15. A swimming pool construction according to claim **14** wherein said upper rail consists of a plurality of downwardly opening channel-shaped members disposed in end-to-end relation, having said panels secured to inner flange portions thereof.

16. A swimming pool construction according to claim **14** including a continuous coping secured to said upper rail and wherein the periphery of said liner is disposed between said upper rail and said coping.

17. A swimming pool construction according to claim **9** including a lower base rail disposed about the periphery of said excavation consisting of a plurality of upwardly opening channel-shaped members disposed in end-to-end relation, having the lower ends of said panels secured to inner flange portions thereof, means for anchoring said lower base rail to the ground, an upper rail disposed about the periphery of said excavation consisting of a plurality of downwardly opening channel-shaped members disposed in end-to-end relation, having the upper ends of said panels secured to inner flange portions thereof, and a continuous coping secured to said upper rail, wherein the periphery of said liner is disposed between said upper rail and said coping.

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