United States Patent [19]

Heisner

[11] **3,789,435**

[45] **Feb. 5, 1974**

[54] **PREFABRICATED SWIMMING POOL**

[76] Inventor: **Mark Heisner,** 651 N. Terrance Ave., Mount Vernon, N.Y.

[22] Filed: **May 8, 1972**

[21] Appl. No.: **251,448**

[52] **U.S. Cl.** **4/172.19,** 52/693, 52/695

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

[58] **Field of Search** 4/172, 172.19, 172.21; 52/585, 52/588, 693, 695, 169

[56] **References Cited**

UNITED STATES PATENTS

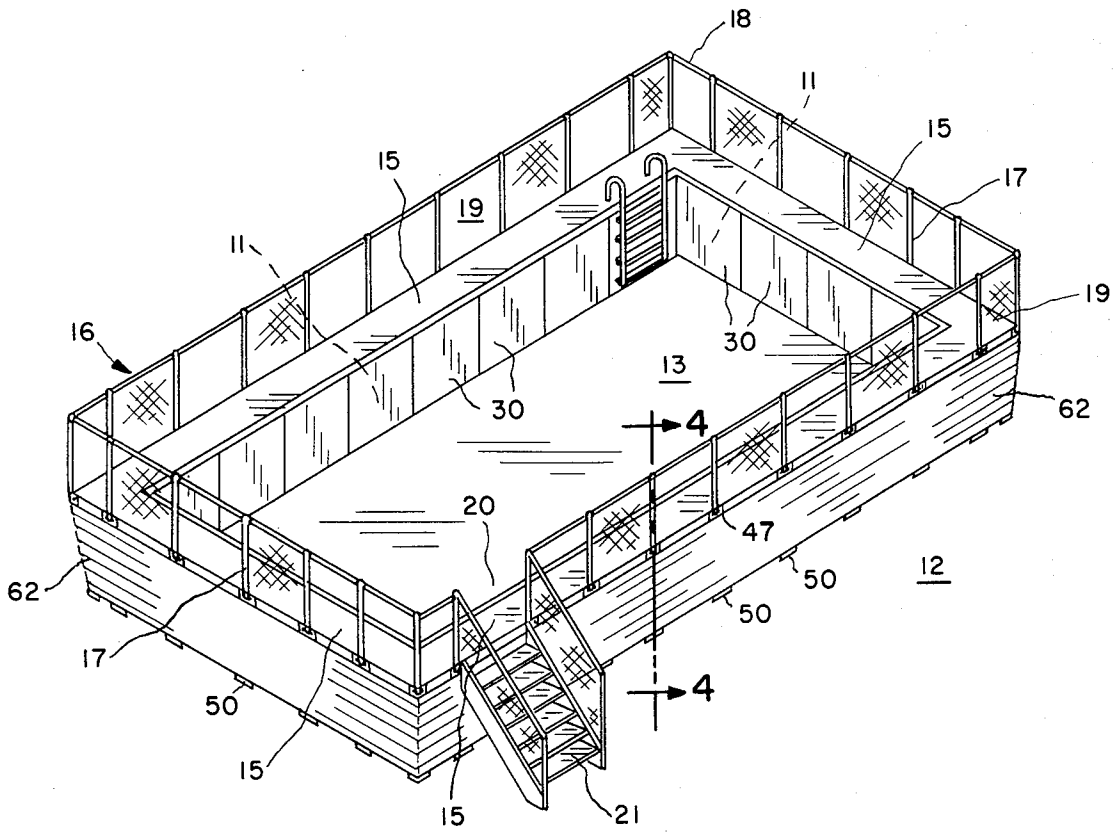
3,546,720	12/1970	Hoch et al.	4/172.19
3,553,744	1/1971	Gillen	4/172.19
3,443,263	5/1969	Minasy	4/172.19
3,315,278	4/1967	Schatzki	4/172.19
3,016,546	1/1962	Lerner	4/172.19
3,256,532	6/1966	Lindsey et al.	4/172.19
3,409,916	11/1968	Billig et al.	4/172.19
3,458,875	8/1969	Michalka et al.	4/172.19
3,479,780	11/1969	Schwarz et al.	4/172 X
3,720,064	3/1973	Hall	4/172 X

Primary Examiner—Henry K. Artis

[57] **ABSTRACT**

A prefabricated swimming pool is described which comprises steel walls and integral deck formed of prefabricated panels. A vinyl liner is employed to contain the water. The panels, which are generally of an inverted L-shape, are supported by an exterior truss construction where they are joined to adjacent panels, which simultaneously provides mounting means for a fence post permitting safe enclosure of the pool. The pool is especially adapted for above-ground use. Its modular construction also affords a wide variety of sizes. Among its main advantages are low cost, and fast installation without the need for skilled labor.

8 Claims, 8 Drawing Figures



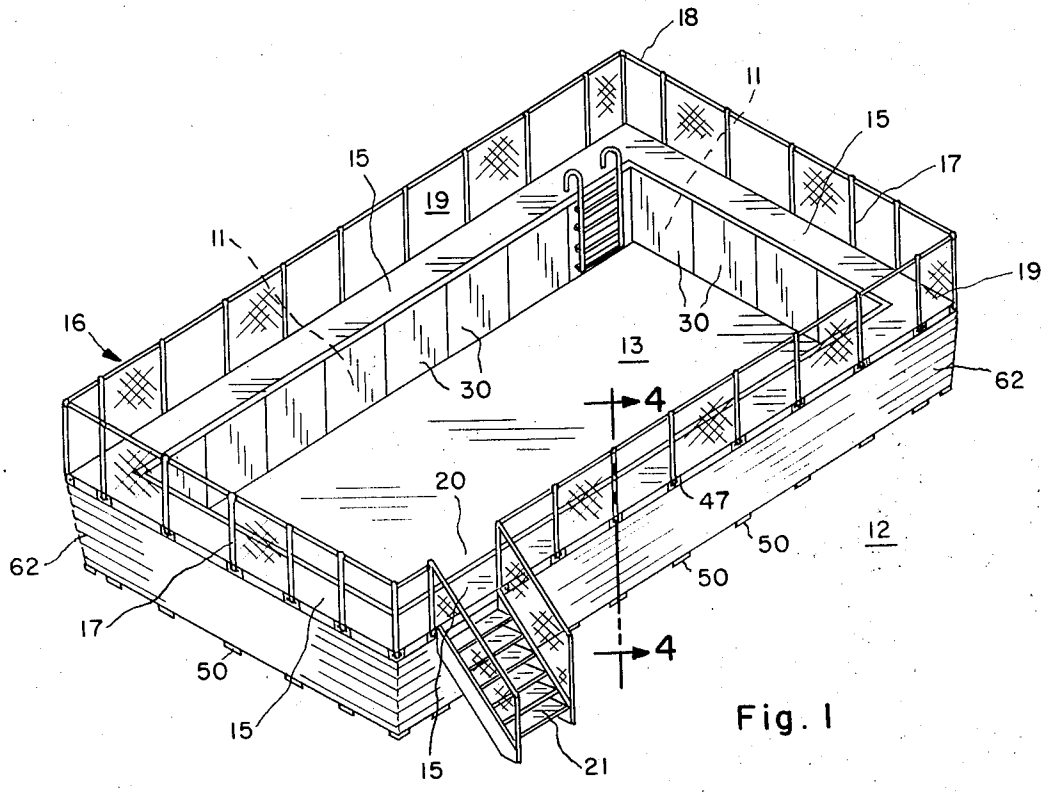

18
11
15
17
19
15
11
19
16
30
30
13
62
4
20
47
50
12
62
50
17
50
4
15
15
21

Fig. 1

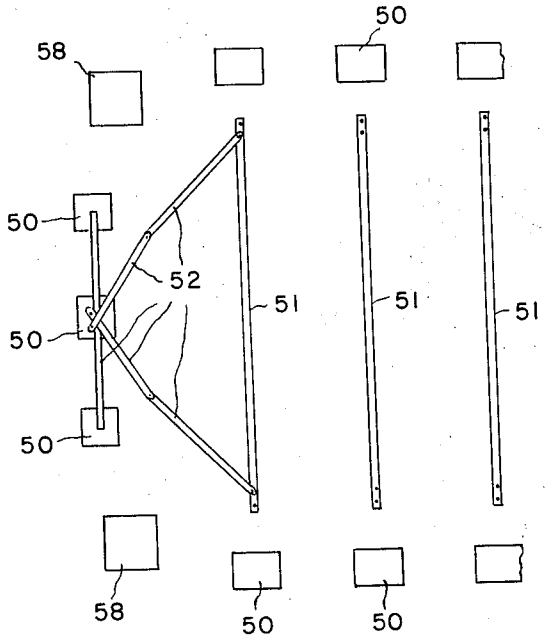

50
58
50
52
51
51
51
50
50
50
58
50
50

Fig. 2

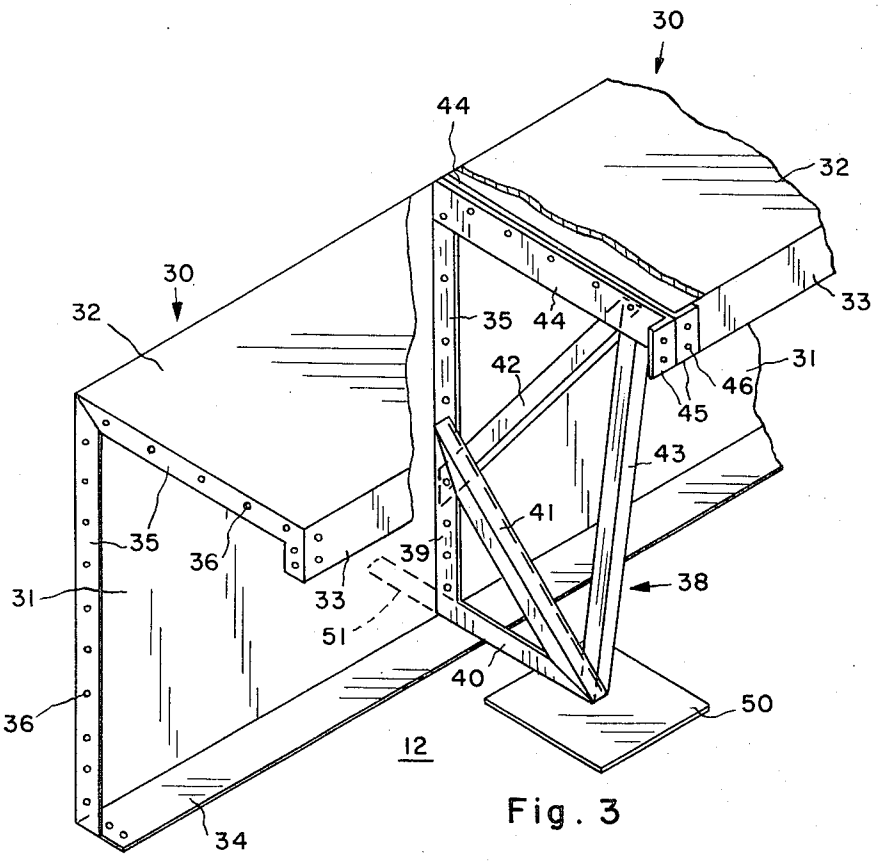

30
44
32
30
32
35
44
33
42
46
31
45
43
41
35
36
39
38
31
33
51
40
50
36
12
34

Fig. 3

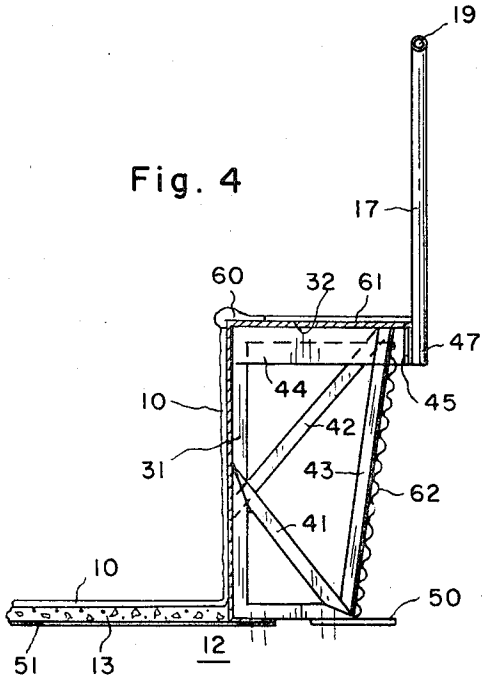

19
17
60
32
61
47
44
45
10
42
31
43
62
41
10
50
51
13
12

Fig. 4

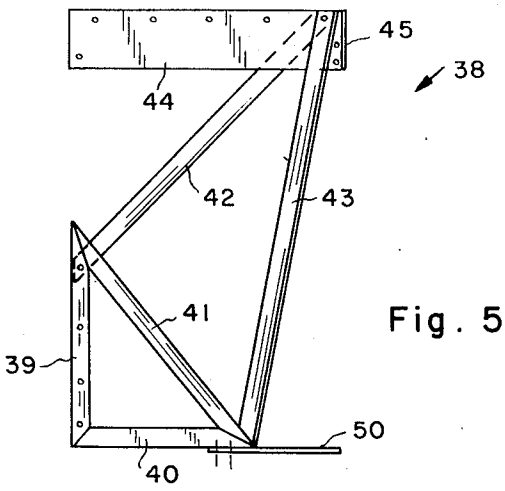


Fig. 5

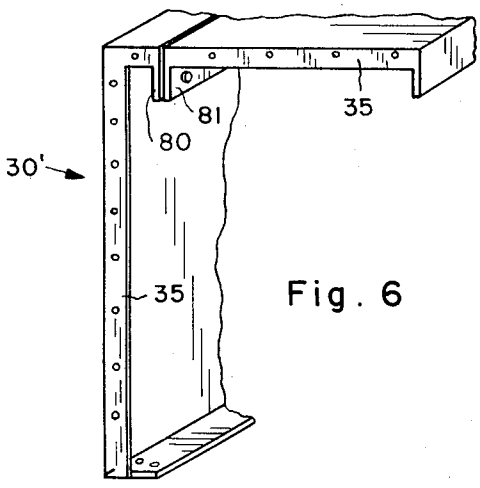


Fig. 6

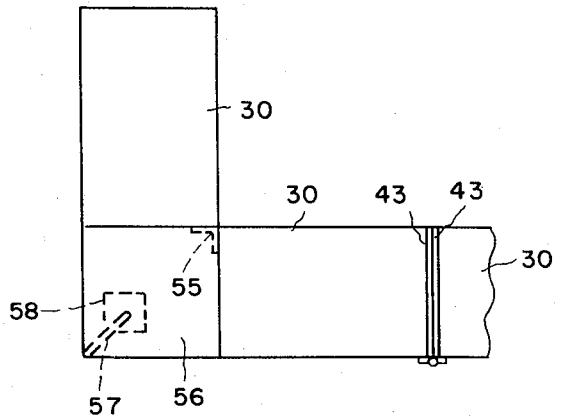


Fig. 7

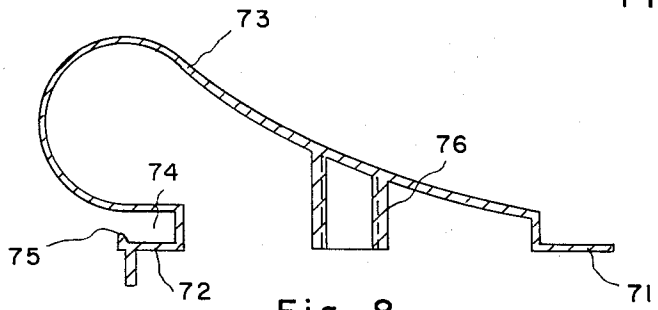


Fig. 8

PREFABRICATED SWIMMING POOL

This invention relates to swimming pool constructions, and in particular to a swimming pool constructed of prefabricated parts.

There has been a growing need for relatively inexpensive swimming pools of relatively large size. There has also been increasing interest in portable above-ground pools that are easily assembled without the need of skilled labor on a temporary location, such as a community center, for just part or all of a swimming season, and which can later be readily disassembled, the parts returned or stored, and thus the temporary location put to a different use. Known swimming pool constructions do not satisfy the requirements of large size, varied configurations to suit the available site, easy, low-cost assembly with minimum site preparation, and low material cost.

The chief object of the invention is a swimming pool construction capable of large and varied sizes and shapes, and inexpensive and easy to assemble without skilled labor.

A further object of the invention is a swimming pool capable of above-ground as well as below-ground installation.

Still a further object is a swimming pool that is sturdily built, attractive, and enjoyable to use.

Another object is a swimming pool that can be safely enclosed by a suitable fence to prevent accidents when unattended.

These and other objects of the invention are achieved, in accordance with the invention, with a swimming pool constructed or prefabricated panels constituting both a side wall portion and an integral adjoining deck portion of the pool enclosure. Joining together a plurality of said panels completes the pool's side walls and provides a complete surrounding deck. The walls are supported against the pressure of the water by spaced sturdy truss constructions secured to the side walls and deck sections where the panels are joined together. Thus, the major connections all occur at the panel junctions, and this simplifies assembly.

Among the features of the invention are the use of generally L-shaped panel sections to form the side wall and simultaneously an adjoining deck section. Another feature is a novel truss member interconnecting the side wall and deck and bearing on a ground portion below the deck. Still another feature is the provision of fence post supporting means at the truss member enabling the ready mounting of an upright fence post at each panel junction, thus providing the foundation for addition of a fence surrounding the pool. A further feature in an above-ground construction is the provision of ground bearing members for supporting the weight of the structural pool members and the weight of the water and assisting in the assembly of the pool. Still another feature is a novel coping for use with the pool.

These and other objects and advantages of the invention will be best understood from the following detailed description of several exemplary embodiments thereof taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective view of one form of swimming pool in accordance with the invention with the vinyl liner omitted for clarity;

FIG. 2 is a plan view of part of the ground bearing members prior to assembly of the pool wall panels of the embodiment of FIG. 1;

FIG. 3 is a perspective view showing how adjacent wall-deck panels of the embodiment of FIG. 1 are joined together and supported;

FIG. 4 is a cross-sectional view through one side of the pool along the line 4—4 of FIG. 1 but with the vinyl liner in place;

FIG. 5 is a detail elevational view of the truss support shown in FIG. 3;

FIG. 6 is a perspective view of a modified wall-deck panel for a swimming pool in accordance with the invention;

FIG. 7 is a plan view illustrating how the wall-deck panels of the invention can be joined to form a pool corner;

FIG. 8 is a cross-sectional view of one form of coping in accordance with the invention.

FIG. 1 is a perspective view of the completed pool above-ground. The water is contained by a waterproof liner **10,** not shown in FIG. 1 for clarity, usually of vinyl, which extends from the side walls **11** which enclose the pool and over the pool bottom which is the ground **12,** or more usually over a layer of sand **13** on the ground. Extending around the periphery of the side walls **11** is a continuous deck **15.** The deck **15** is in turn enclosed by a fence **16,** comprising a plurality of upright posts **17** joined at their top by a railing **18** and around which is secured suitable fencing **19,** such as a wire mesh. An opening **20,** to be closed off by a suitable gate (not shown), provides access to the pool via a stairway **21.**

A major feature of the invention is the construction of the side walls which enclose the water area and support the liner which contains the water. In accordance with the invention, prefabricated panels in a modular concept are employed to construct both the side walls and the deck. The modular concept, which involves the use of panels of the same size, or of several fixed sizes, allows for simple change in the pool length or width by the addition or substraction of panel sections. Prefabrication allows for low cost mass-production of the panels and their supporting structure at a factory site, requiring only the use of non-skilled labor to assemble the shipped parts at the pool site, usually by means of nuts and bolts. It will be appreciated that an additional requirement of th system is the integrity of the pool side walls. The pressure exerted by the water on the pool side walls is enormous. In an in-ground construction, much of the lateral wall support is taken up by the surrounding ground. In an above-ground pool, however, that lateral support must be provided solely by the wall supports. A feature of the invention is that, although the side walls are constructed of a plurality of parts joined together at the pool site, not only are the parts easily assembled and disassembled with unskilled labor, but the final construction is extremely strong and readily resists the tendency of the water to cause the walls to bow out.

FIG. 3 is a perspective view of two of the panel sections showing how they are joined together and supported, and FIG. 4 is a cross-sectional view through the completed pool adjacent a panel joint. The entire pool is made up of the panel sectons as illustrated in FIGS. 3 and 4, and, with the exception of the pool corners, all

of the panel sections are joined together in edge abutting relationship.

A typical panel **30** in accordance with the invention has a generally inverted L-shape and may be constructed from a single sheet of metal, for example, galvanized steel, which is then bent to form a vertical side wall portion **31,** and an adjoining substantially right angle, horizontal deck portion **32.** In addition, the deck portion remote end is bent downwardly to form a short vertical deck end portion **33,** and the wall remote end is bent sideways to form a short horizontal ground bearing portion **34.** With the exception of the ground bearing portion **34,** the sheet sides of the remaining portions are bent rearwardly to form side flanges **35.** Suitable holes **36** ar punched in the side flanges **35,** and by securing suitable fasteners, such as bolts and nuts, through aligned holes in the adjacent flanges of adjacent panel sections, the latter can be securely joined to one another in edge abutting relationship. At the same time that the panel sections are joined together, a supporting truss member **38** is secured at the joint to the side wall **31** and adjoining deck **32,** and also providing a ground bearing portion to support the latter at a ground portion lying outwardly from the wall but under the deck.

The truss member **38** comprises (see also FIG. **5**) a first triangular section composed of, for example, angle iron and comprising vertical side element **39,** horizontal side element **40,** and joining hypotenuse element **41.** The vertical side **39** is joined at its flange **35** to the lower half of the side wall portion **31,** and the horizontal side element **40** is adapted to bear against the ground **12.** Also constituting part of the truss are two deck supporting struts **42, 43,** which may also be of angle iron. Both deck-support struts **42, 43** are connected together to a portion of the deck flange remote from the side wall. The first deck strut **42** is joined to the triangular section where the vertical side element **39** and hypotenuse element **41** meet, and the second deck strut **43** is joined to the triangular section where the horizontal side element **40** and the hypotenuse element **41** meet. The triangular section **39–41** can be prefabricated if desired and connected at the pool site to the other truss elements as shown. In addition, a plate **44** is provided as a cleat across the top of the truss **38** to reinforce the deck and also to provide with the vertical deck end portion **33** a mounting site for an upwardly extending fence post **17.** In a preferred form, two side-by-side cleats **44** are provided, each of which has an end bent-over in the opposite direction, providing adjacent flanges **45,** with punched holes **46,** for receiving suitable fasteners for a mounting socket **47** for receiving and supporting the fence post. The various elements described are jointed together where they meet by suitable fasteners such as nuts and bolts to form a rigid truss structure **38** at each of the joints where adjacent panel sections meet, one such joint between two panels being shown in FIG. **3.**

The assembly of the pool is facilitated by the use of a number of ground bearing plates and rods or strips, for example of metal, to distribute the weight of the wall-deck and water-filled liner and present excessive ground penetration of the various ground bearing members. This is illustrated in FIG. **2.** A plate **50** is provided at the location of each wall-deck truss **38,** and a strip **51** is provided extending from the wall truss location across to the opposite wall. By laying off on the ground the truss locating plates **50,** which will be equally spaced apart, and by providing the crossing strips **51** in between as shown, the exact position of the pool can be established. The pool ends use a plurality of crossing interconnected strips **52** as shown in FIG. **2** to prevent movement of the various ground bearing members. The various parts positioned as shown may be fixed in position by means of spikes driven through suitable holes therein into the ground. Then the various panel sections **30** are joined together and to their supporting truss **38,** as illustrated in FIGS. **3** and **4,** and positioned so that the remote end of each truss ground bearing portion is located over one of the rectangular plates **50.** In this way, all of the straight side wall sections can be quickly assembled together. The manner of interconnecting the corner sections is illustrated in FIG. **7.** The interconnection for the corner is a simple angle iron piece **55** which is joined to the vertical flanges of the adjacent side walls **30.** No truss support is necessary, as those provided along the straight sides provide adequate strength for the assembly. The only additional support required is to support an additional corner deck section **56** to fill in the empty space. This can be secured in any convenient manner to the adjacent deck sections, and then supported by a post **57** extending from the corner to an underlying corner ground bearing plate **58.**

After the entire side walls have been assembled, a layer of sand **13** (FIG. **4**) is provided over the center ground and then the vinyl liner **10** installed and secured in place by a corner coping **60,** and an appropriate covering **61** laid on the deck surface. The fencing is readily provided by mounting the vertical posts **17** to the cleat flanges **45** by means of a suitable support **47.** Then the top railing **18** and wire mesh **19** are easily added.

Finally, corrugated panels **62,** for example of plastic, can be secured across the truss sections to provide a very decorative and attractive exterior.

FIG. **8** is a cross-section of one form of coping usable with the invention. It comprises a one piece section of suitable material, for example, extruded plastic, comprising a deck seating remote flat end **71,** and a deck-wall seating corner end **72.** A curved section **73** joins the two ends together. A recessed part **74,** provided with a protuberance **75,** serves to receive the liner **10,** which can be snapped therein. A depending section **76,** with threaded grooves, is used for mounting the coping on the deck, for example, by means of a screw through the deck wall **32.**

While it is preferred to construct the integral wall-deck sections out of a single piece of sheet metal, as this is the simplest and least expensive way of fabrication, it is also possible to provide such sections in two pieces for ready assembly at the pool site. One construction is illustrated in FIG. **6.** The panel section **30'** is the same as those illustrated in FIG. **3** except that the top of the wall section terminates in a short horizontal flanged section **80** to be secured, for example, bolted, to a similar section **81** on the adjacent deck.

As will be observed from the foregoing, the size of the panel can be easily adjusted to fit available sites by the simple addition or subtraction of panel sections, both in the length as well as the width. It will also be evident that the pool can also be inset in the ground as well as above ground.

The pool described has a constant depth, for example four feet, which is sufficient for most needs. However,

it is readily adapted to be made with a deeper diving end where desired. For this purpose, a hole would have to be dug in the ground to the desired depth, for example 8 feet, and the panel sections surrounding the hole elongated in the vertical direction. Thus, 8 foot deep vertical panels would be provided, with four feet extending below ground and supported thereby, and the remaining 4 feet above ground and supported by the truss sections **38** as above described. It is also possible to slope the pool bottom between the eight foot deep end and the 4 foot deep end by using 6 foot high panel sections between 8 foot and 4 foot sections. The resultant pool would closely approximate in appearance much more expensive, all concrete, in-ground pools, and without a hopper diving end common to the less-expensive family pools, which restricts the available diving area.

While described especially for above-ground use, it will be understood that the novel construction also offers certain advantages for in-ground use. For instance, the integral deck provides a built-in surrounding walkway which eliminates the need for a separate concrete installation. The latter is especially disadvantageous because concrete installation is normally not possible unti the ground settles, which may take as much as several months. Also, the ease of adding a surrounding fence with the novel pool construction also sharply reduces the owner's pool cost.

There has thus been described a novel swimming pool construction offering rapid installation, low-cost manufacture, sturdy construction, and attractiveness, utilizing the module principle and factory prefabricated parts affording a variety of sizes and shapes to suit available sites.

While my invention has been described in connection with specific embodiments thereof, those skilled in the art will recognize that various modifications are possible within the principles enunciated herein and thus the present invention is not to be limited to the specific embodiments disclosed.

What is claimed is:

1. A swimming pool construction comprising an annular enclosure comprised of vertical side walls and an integral adjoining deck extending horizontally outwardly from the upper edge of the side walls and forming therewith a generally inverted L-shaped cross-section, and a waterproof liner extending along the side walls and the enclosure bottom; said side walls and deck comprising a plurality of prefabricated panels and means connecting the adjoining edges of the panels; and means located outwardly of the side walls and under the deck for laterally supporting the side walls against the water pressure exerted when the pool is filled and for vertically supporting the deck, said supporting means comprising a plurality of spaced bearing truss members each generally extending in a vertical plane and interconnecting the side wall with the deck at a portion remote from the side wall and bearing on a ground portion underneath the deck, said truss members being joined to the side wall and deck panels at their junctions with adjacent panels and being located only at the panel junctions, each truss member comprising a triangular member one of whose sides is joined to a lower portion of the side wall and the other of whose sides serves as a ground bearing side, first and second tie members both having ends joined to the deck at a portion remote from the side walls and whose other ends are joined to the triangular member at opposite ends thereof, and a plate-like member extending horizontally just under the deck.

2. A swimming pool construction as set forth in claim **1** wherein each panel is made of metal and comprises a single sheet of metal formed into a general L-shape to constitute both a side wall portion and an adjoining deck portion.

3. A swimming pool construction as set forth in claim **2** wherein each panel further comprises a short outwardly extending horizontal portion at its base and a short downwardly extending vertical portion at the deck periphery.

4. A swimming pool as set forth in claim **1** wherein the plate-like member comprises two cleats with oppositely extending flange parts for supporting a pool enclosure.

5. A swimming pool as set forth in claim **1** and including a plurality of fence posts extending upward above the deck at locations above the truss members, and means for mounting the fence posts to the truss members.

6. A swimming pool as set forth in claim **1** and adapted for construction above ground and further including a plurality of ground bearing members located on the ground and extending at least partly under the truss members.

7. A swimming pool as set forth in claim **8** wherein the ground bearing members comprise a plurality of plates and a plurality of elongated ties extending under the pool between opposed truss members, and means for anchoring the ties and plate members to the ground.

8. A swimming pool as set forth in claim **7** and comprising a coping for mounting over the wall-deck corner, said coping comprising a curved portion, a recessed portion under the curved portion for receiving the liner, and means for securing the coping to the deck.

* * * * *