

June 19, 1934.

W. H. EICHELMAN ET AL

1,963,405

SWIMMING POOL

Filed March 30, 1933

3 Sheets-Sheet 1

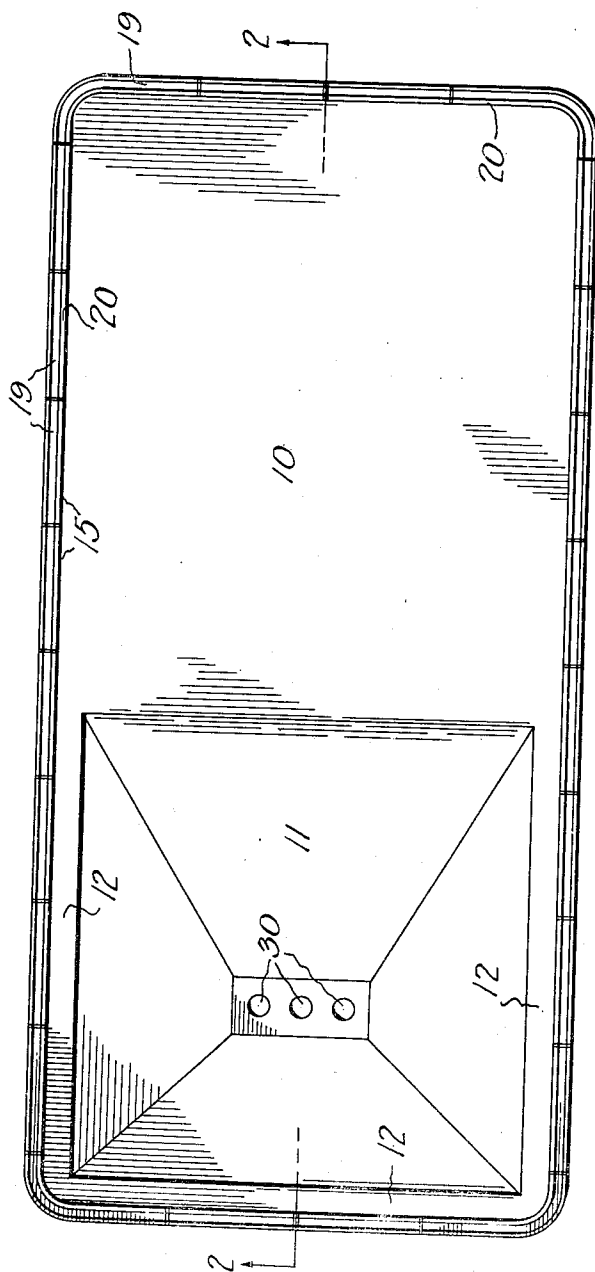


Fig. 1

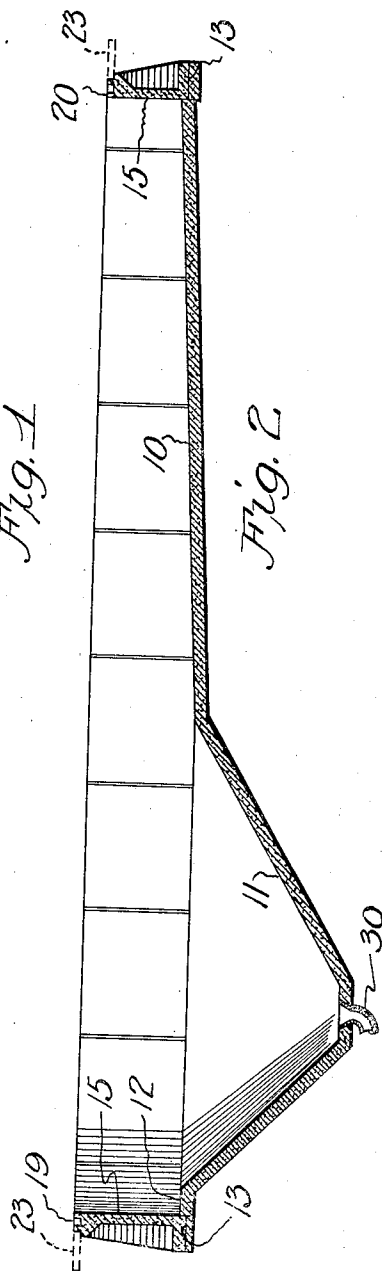


Fig. 2

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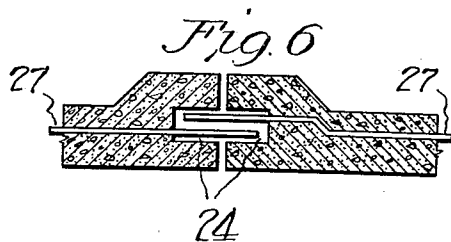
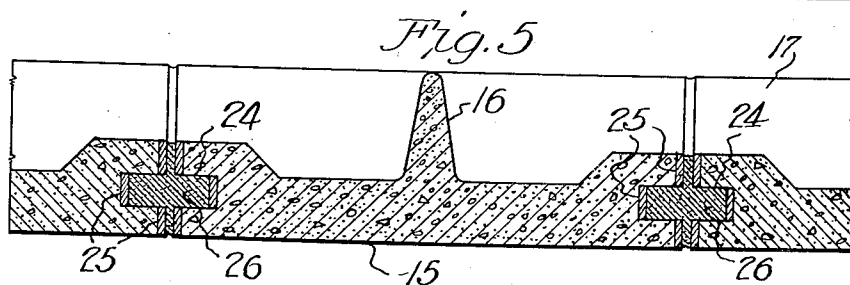
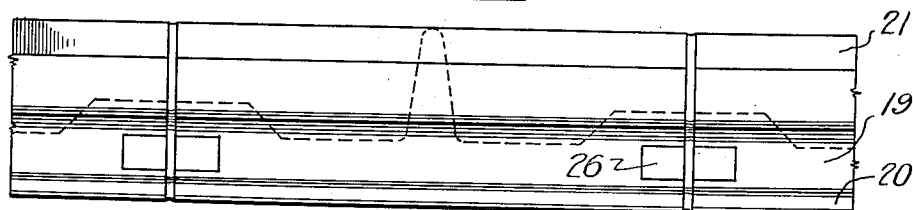
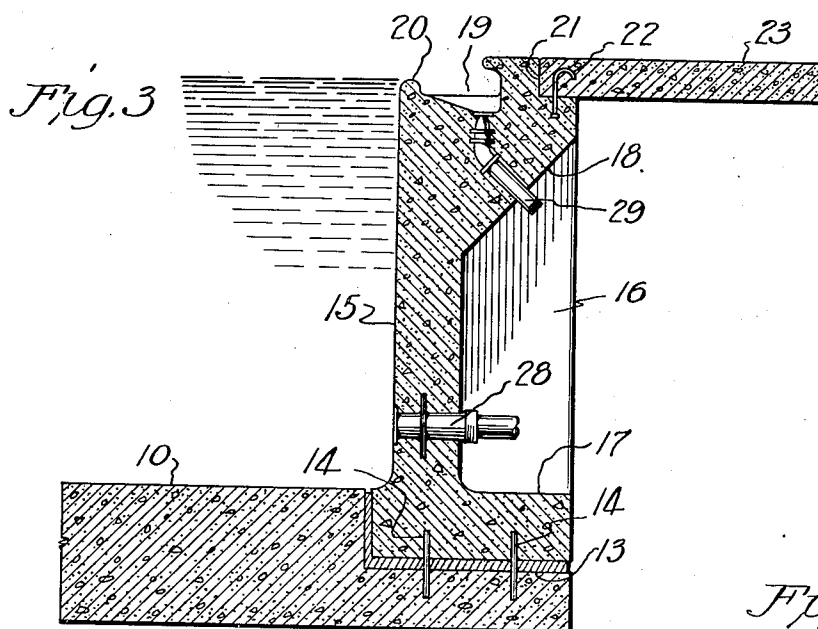
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3 Sheets-Sheet 2



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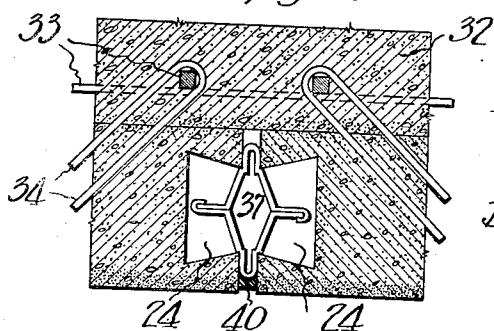
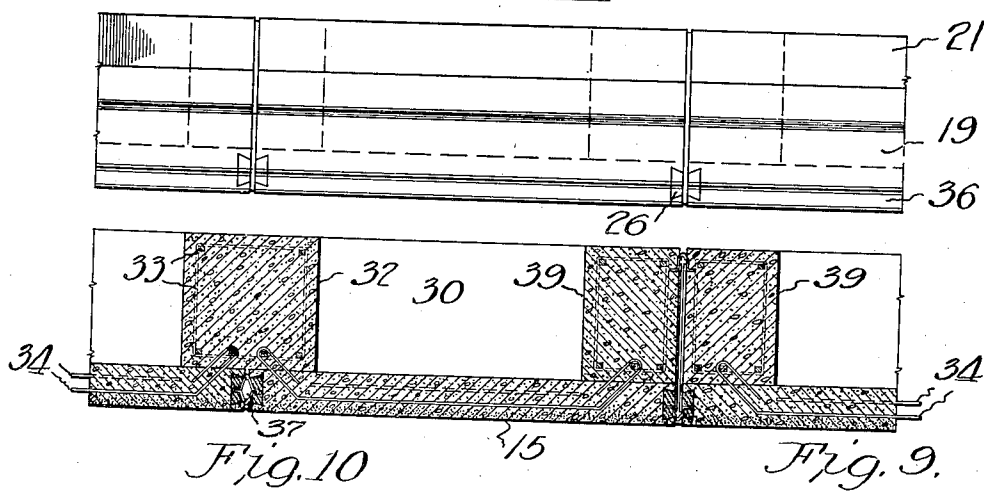
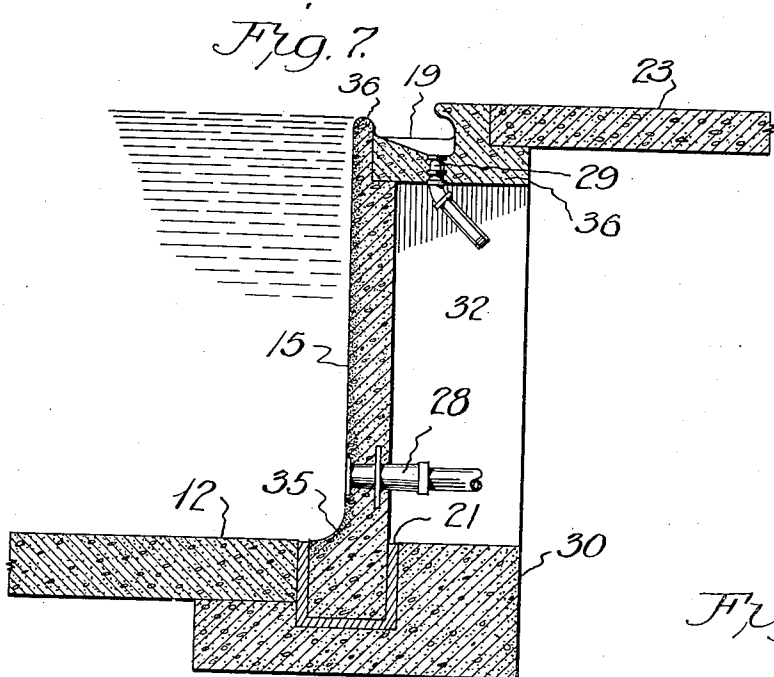
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SWIMMING POOL

Filed March 30, 1933

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

1,963,405

SWIMMING POOL

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Application March 30, 1933, Serial No. 663,462

8 Claims. (Cl. 72-13)

Our present invention relates to improvements in swimming pools, and is a continuation in part of our former application filed May 4, 1931, Serial No. 534,764 which has matured in Patent No. 1,908,332.

It is now generally recognized that it is desirable to provide a swimming pool having a depth of water at one end to permit of safe diving, which has been found to require a water depth of approximately eleven feet, and to slope the bottom of the pool from one end, where the diving depth of water is provided, upwardly to the other end of the pool where the swimmers can stand without being submerged.

The construction of such a pool is an expensive operation for side walls of a depth of eleven feet and more must be of a heavy retaining wall character to support the thrust of the surrounding earth when the water is removed from the pool for cleaning and while the pool is out of use during the inclement seasons. Free and unobstructed swimming can be had at a much less depth than eleven feet, or thereabouts, desirable for diving, and the enlargement of the deep or diving area of a pool increases the danger area except for diving.

It has been our object to provide a swimming pool which will have a diving area of requisite depth and extent but which will be much less expensive to construct. We have also had in mind the rendering of the diving area less hazardous to inexperienced swimmers and in case of accident by providing around the deep area at a distance within easy reach of the bottom a pathway upon which the swimmer may readily climb or stand and be in perfect safety.

It is not infrequently desired to decorate swimming pools by covering their sides with marble-like compositions, and as it will hereafter be seen, by employing the cast panel side walls hereinafter described, the marble-like surfacing may be secured easily and economically, which is well nigh impossible to secure with vertical walls of such dimension that the same have to be poured or cast in the position they are to ultimately occupy. It will, moreover, be seen that with our construction such refinements as the securing of facilities for skimming the pool and the anchoring of surrounding pathways thereto may be secured with little, if any, additional expense.

Believing that a pool must be sanitary and so constructed as to be easily kept sanitary and also inviting in appearances, it has further been our object to provide a pool wherein the walls them-

selves are built from precast slabs of monolithic material as above set forth, the slabs to be suitably reinforced to withstand water pressures. Realizing that the ordinary monolithic concrete wall is absorbent and porous, we have taken these precast slabs and finished them, eliminating the porosity and absorbent features of the ordinary monolithic concrete wall, so that they have a smooth glass-like surface to which algae will not adhere. The walls themselves, therefore, are easily kept clean and sanitary.

In the development of this wall, and at no additional expense, we find that various color schemes may be worked into the wall to give the pool individuality in treatment.

These wall slabs are also so constructed as to amply accommodate the always present problems of expansion and contraction found especially in outdoor projects of this type.

Further, this particular type of wall construction permits of:—

Ease of installation—a factory made precision product, installed at the job without fitting or cutting and with the resultant lack of debris;

Perfect alignment of walls and gutters—no bulging or sagging due to improper form work, which is so prevalent in monolithic concrete construction;

The installation at the factory of all fittings such as inlets, outlets, vacuum cleaner connections, under-water lights, etc.—assuring of their being absolutely water-tight—flush and in proper alignment and location—making it easy for the plumber and electrician to make up his connections at definite and positive locations already provided for him;

Unlimited color range in the walls and gutters. The beauty of the color is permanent and lasting. Fanciful designs may be employed without material increase in costs;

The entire pool walls and gutters being made up in advance at the factory, and delivered and erected quickly upon short notice.

It has further been our object to construct a wall for swimming pools or their like, which wall, in itself, will be the retaining wall. The slabs being precast at the factory may be surfaced, as above described, with a smooth glass-like and water repellant surface to which algae and other water born micro-organisms, fungus or plant life will not adhere or embed into. We attain at the same time a finished surface which will not crack or craze, chip or peel, as is the case with the materials we have previously had to work with.

The entire cross-section of the wall slab is cast monolithic, including the surface. Thus the surface is an integral part of the retaining wall. This eliminates the possibility of a pressure developing between the surfacing materials and the retaining wall.

We attain the foregoing objects and results by means of the structure illustrated in the accompanying drawings, in which—

10 Fig. 1 is a plan of a swimming pool embodying our invention;

Fig. 2 is a longitudinal central section, on line 2—2 of Fig. 1;

15 Fig. 3 is a fragmental detail to an enlarged scale showing the assembly of a side wall panel with the bottom and also illustrating the feed, skimmer drain and pathway anchoring fittings;

Fig. 4 is a top plan of the side wall illustrated in Fig. 3;

20 Fig. 5 is a horizontal section through the side walls shown in Figs. 3 and 4;

Fig. 6 is a fragmental detail of a juncture between side wall panels before the bonding material has been introduced;

25 Fig. 7 is a fragmental detail similar to Fig. 3, showing the assembly of a side wall panel, footing, and supporting column;

Fig. 8 is a top plan of the side wall illustrated in Fig. 7;

30 Fig. 9 is a horizontal section through the side walls shown in Figs. 7 and 8; and

Fig. 10 is an enlarged fragmental detail of the juncture between side wall panels before the bonding material has been introduced.

35 Similar reference characters refer to similar parts throughout the respective views.

The bottom 10 of our swimming pool can advantageously be made of poured concrete, the same as is now generally done in building swimming pools, but instead of sloping the wall gradually from a diving depth at one end of the pool upwardly to a swimming or wading depth at the other end of the pool, the bottom or floor of our pool slopes but little from one end to the other thereof. Some slight slope may be advantageously retained throughout the major portion of the floor of our swimming pool to secure a complete emptying of the pool when the water is drawn off, but if such a slope or inclination is retained it is so slight as to be structurally of no importance.

Spaced from one end and the sides of the pool is an angular or inclined depression 11. The angle or angles of the walls of this depression from the vertical is or are such, with reference to the character of the earth underlying the pool, as to maintain such underlying earth in stable condition. That is, the angle or angles of the depression 11 of our pool is or are such as to eliminate any thrust inwardly from the underlying earth when the pool is emptied of water from cleaning or for any other reason. The spacing of the depression 11 from the end and side walls of the pool provides a submerged platform or platforms 12 around the pool, which platform or platforms are easily attained and mounted by any swimmer in the depression. Around the floor or bottom of the entire pool is formed a depressed channel 13 in which may advantageously be cast uniformly spaced dowels 14.

By providing a bottom or floor for the pool, as above described, the side walls are so reduced in height that instead of building forms and casting these side walls in position, they may be advantageously and economically formed of plates or

panels cast or otherwise formed in a factory and shipped to and installed on the job. A suitable and desirable form of panel for providing such vertical walls is shown in Figs. 3 to 10 inclusive, and as illustrated in Figs. 3 to 6, they consist of a plate 15 having extending from their rear faces one or more vertical reinforcing webs or buttresses 16. The plate 15 has provided integrally therewith an enlarged foot or base 17 of a size to fit in the depressed channel 13 of the bottom, and an enlarged top 18. In the top 18 of the panel is provided the skimming gutter 19, the forward edge 20 of which is slightly below the top of the panel. The outer upper corner of the panel is channeled, as at 21, and in the bottom of the channel 21 is advantageously cast hooks 22 which serve the double purpose of providing means for handling the panels while they are being placed in position and anchors for the slabs 23 of the pathway surrounding the pool. In the vertical end edges of the panels are provided vertical channels 24 for receiving suitable expansion material 25 and into which is poured a concrete bond 26. Such a construction permits the use of projecting horizontal reinforcing rods 27 which should be slightly bent or laid obliquely with respect to the horizontal so that the projecting ends of the rods will lie in staggered relation within the vertical channels 24.

Instead of enlarging the foot or base of the panel or plate 15, as shown at Fig. 3 and as indicated at 17, often times we find it desirable to provide a separate footing 30, for the panel as shown at Fig. 7, which footing is suitably recessed at 21 to receive the panel. Further, this footing may be extended as shown. This construction actually establishes and provides the safety ledge or platform 12 to which is brought the floor or bottom of the pool at the deep section, or driving area. This construction also permits of the elimination of the web or buttress 16 as a support cast integral with the panel, and in lieu thereof we cast a column 32, directly at the intersection of the panels. The column 32 is suitably reinforced and tied into the footing 30 by means of reinforcing steel bars 33. Also, the reinforcing steel 34 of the panels is carried into and cast with the columns (Fig. 9).

The slabs or panels 15 average about 4" in thickness and have two-way reinforcement with steel rods 6" on centers. The method of manufacture is a compression and vibratory process together with prescribed methods of curing and finishing. Tests made by commercial and private laboratories upon specimens cut from these slabs show a compressive strength of 10,000 to 11,000 lbs. per square inch, absorption thru face 1½% and transverse strength of 1200 to 1900 lbs. per square inch. Inasmuch as the U. S. Bureau of Standards have indicated that 5,000 lbs. in compression is a good quality precast material, the safety factor in the slabs can be readily seen.

In horizontal and vertical dimensions the slabs are approximately 5' 0" in length and about 5' 0" in height with a sanitary cove 35, where they intersect the floor, and a hand grip 36 at the top.

The gutter 19 may be cast integral with the slab, as shown at Fig. 3. It also may be cast in separate independent slab 36, as shown at Fig. 7. In this case, the slab 36 extends across, to, and is supported upon the columns 32.

It is generally acknowledged that in monolithic or precast construction, either in the walls or floors of a pool, that there is an appreciable

amount of lateral movement set up in the slabs known as expansion and contraction due to changes in temperature. Pool design and construction must recognize this and prepare for it.

5 We have provided an expansion joint which will effectively join the slabs and allow of a definite, predetermined movement and at the same time join these slabs water-tight. This joint is shown and described in detail in our co-pending
10 applications for:—Expansion joint, filed August 12, 1932 Serial Number 628,576 and filed February 23, 1933, Serial Number 657,978. As before stated, the side edges or abutting vertical end edges of the panels are provided with
15 channels 24 for receiving suitable expansion material. It is at these points that we insert the expansion joint 37 just referred to.

In outdoor pools, which are subjected annually to marked changes in temperature, with the resultant increase in expansion and contraction,
20 we have found it desirable, at predetermined intervals, to carry the expansion joints not only through the wall, but also through the columns and footings. Fig. 9 shows the joint 38 carried
25 through and splitting the column 39 in two halves. All joints are pointed at the face with a mastic material 40, which preferably matches the surface color of the slab or side wall plate.

One or more of such side wall plates should be
30 provided with fittings 28 to which the feed pipe is attached for filling the pool and drain fittings 29 for draining the water from the skimming gutters 19. The main drain or drains for the pool are more advantageously provided in the bottom
35 of the depression 11, as shown at 30 in Figs. 1 and 2.

The skimming of the pool is accomplished by admitting water through the fittings 28 until the water spills over the edge 20 into the gutter 19,
40 which simple operation is all that is required for freeing the pool from all oily or fatty exudations from the body and other floating foreign elements which may get into the pool.

By constructing a swimming pool as herein illustrated and described, a pool may be secured which may be used similarly to an ordinary pool but which is much safer and may be much easier decorated at a very substantial saving both in
45 labor and material.

50 We are aware that prior to our invention swimming pools or the like have been built from moulded bricks, tile and terra cotta. Also, that monolithic concrete walls in pools have been protected with expansion joints. Therefore we do not claim such broadly, but what we do claim
55 as new and desire to secure by Letters Patent is:

1. A swimming pool or the like comprised of a monolithic floor and a circumferential wall the floor having a portion extending beyond and circumferentially of said wall, and having a depression, said wall being formed of a plurality of individual sections of monolithic material, each section having the lower end thereof arranged in the depression of said floor and joined with said floor
60 and having the side edges joined with an adjacent section by a water-tight joint extending from the lower to the upper portion of said wall providing means compensating for the lateral movement of said wall sections, and vertically disposed spaced means arranged in rear of said wall sections and supported by said floor extension for supporting said sections against the head of water contained in said pool.

2. A swimming pool or the like comprised of a monolithic floor and a monolithic circumferen-

tial wall defining the interior of said pool, said wall being comprised of a plurality of abutting individual sections which extend from the floor to the periphery of said pool, a footing for said floor and side walls extending circumferentially of said side walls and having a depression, and vertically disposed means spaced from each other circumferentially of said pool for supporting said wall sections against the head of water contained in said pool, said vertically disposed means being comprised of a column anchored to said footing and located at the rear of said wall sections, said wall sections being joined with each other at the sides thereof by a water-tight joint compensating for the lateral movement of said sections.

3. A swimming pool or the like comprised of a floor and a circumferential wall defining the interior of said pool, said wall being comprised of a plurality of abutting individual sections which extend from the floor to the periphery of said pool, a footing for said walls, vertically disposed means for supporting said wall sections against the head of water contained in said pool, said means being comprised of a column anchored to said footing and located at the rear of said wall sections, said wall sections being joined with each other at the sides thereof by a water-tight joint compensating for the lateral movement of said sections, said column being arranged adjacent said joint.

4. Panels forming the enclosing walls of a swimming pool or the like, each panel comprising a single slab of precast monolithic material of structural strength to withstand water pressure developed within the pool, each single slab extending from the bottom to the top of each panel, each of said panels being joined with each other at their adjacent edges by a water-tight joint compensating for the lateral movement thereof, and vertically disposed means extending from said floor to adjacent the upper edge of said panels for supporting said panels against the known head of water as developed within the pool, said means having an end bearing upon an extension defining the area of the floor.

5. A swimming pool or the like having a floor and enclosing walls, a footing therefor provided with a depressed channel, the side walls being comprised of a plurality of precast monolithic slabs of structural strength to withstand water pressure developed within the pool, cooperating with said channel and extending therefrom to the upper edge of said pool, each of said slabs being joined with each other by a joint compensating for the lateral movement thereof, and means for supporting said slabs against the head of water developed within the pool and against the face of each slab, said means comprising a plurality of columns anchored to said footing and abutting the rear face of said wall at the junction of each slab to the next adjacent slab.

6. A swimming pool or the like comprised of a floor and a circumferential wall, said wall being comprised of a plurality of vertically disposed individual sections of monolithic material, said floor having a circumferential recess, and each of said sections having an enlargement at its opposite ends, the enlargement at the lower end being mounted in said recess in said floor and the enlargement at the upper end being recessed for the reception of a floor portion and vertical disposed means extending from said first mentioned floor to the upper enlargement providing means supporting said wall sections against the known head of water contained in said pool.

7. A swimming pool or the like comprised of a floor and a circumferential wall, said floor having a portion which extends outwardly beyond said wall, said wall being comprised of a plurality of individual vertically disposed slab sections, said extending portion of said floor being recessed for the reception of the lower end of said slabs, the upper end of said slabs having an enlargement providing a support for a floor, and means extending between said floor extension and said enlargement supporting said wall sections against the known head of water contained in said pool.
8. A swimming pool or the like comprised of a floor and a circumferential wall, said floor having a portion which extends outwardly beyond said wall and is provided with a recess, said wall being comprised of a plurality of individual vertically disposed slab sections, opposed edges of each slab section having means located between said sections compensating for movement of said slab sections circumferentially of said wall and providing a water tight connection between said slab sections, said slab sections having an enlargement of the upper and lower portion thereof, the lower enlargement being located in the recess of said floor, the enlargement at the upper end of said slabs being formed to receive a floor portion, and vertically disposed means extending between said floor and the last mentioned enlargement providing a support for said wall sections against the head of water contained in said pool.

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WILLIAM H. EICHELMAN,

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