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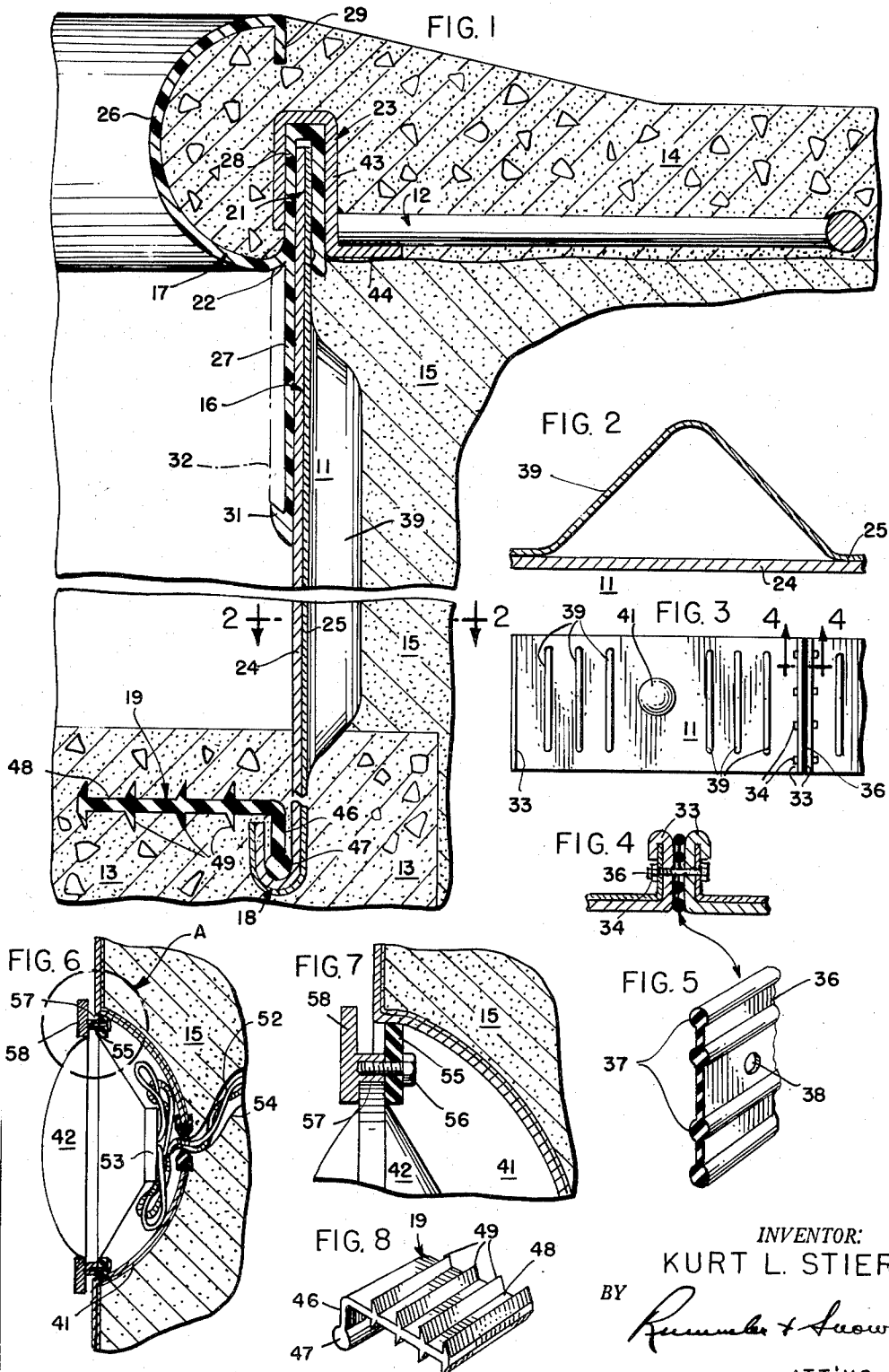
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3,239,975

SWIMMING POOL CONSTRUCTION

Filed Oct. 9, 1961

2 Sheets-Sheet 1



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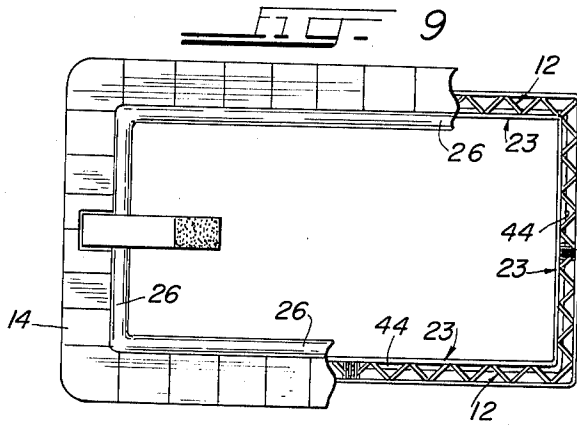
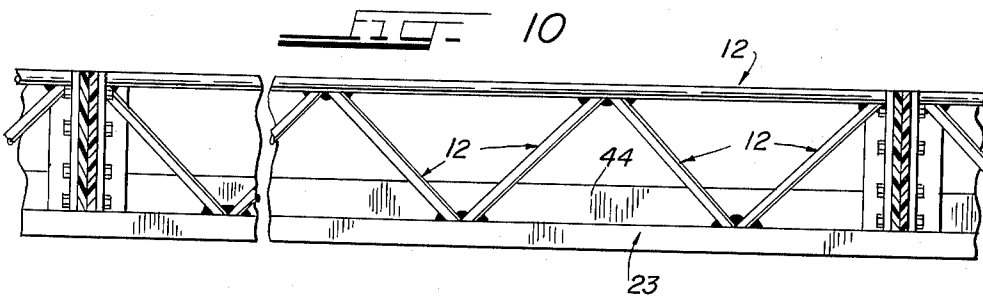
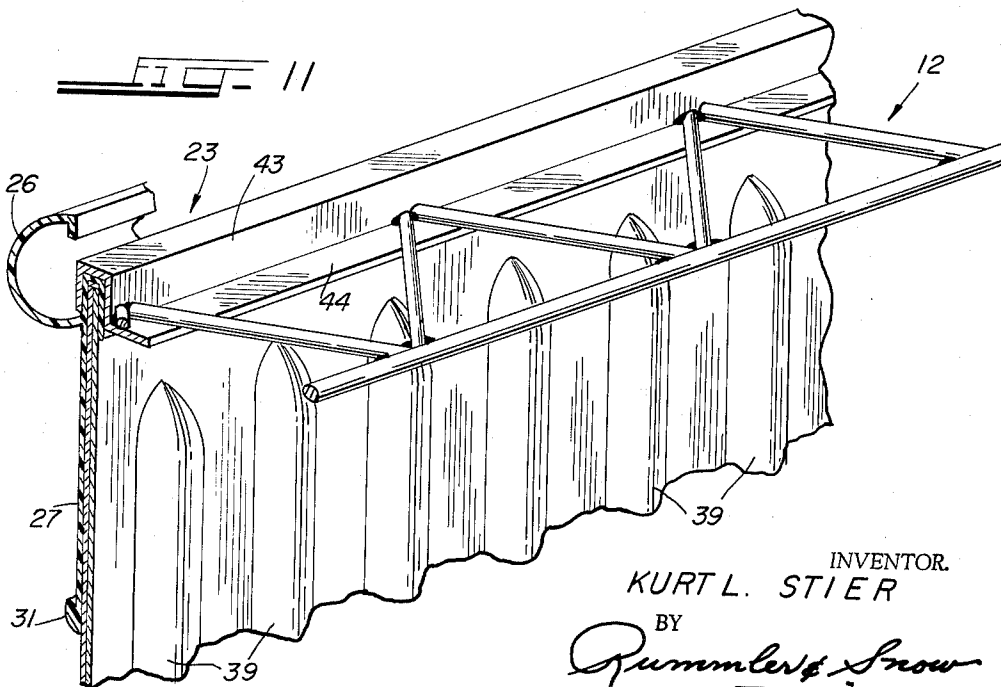
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2 Sheets-Sheet 2



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1

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SWIMMING POOL CONSTRUCTION
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6 Claims. (Cl. 52—169)

This invention relates to swimming-pool construction and particularly to improvements in sidewall panel and positioning truss-structures for on-the-job assembly of prefabricated wall panel swim-pool constructions as shown and described in my copending application, Serial No. 105,100, filed April 24, 1961.

The main objects of this invention are to provide an improved prefabricated side-wall panel and positioning truss-structure assembly for the construction of out-door swimming pools of predetermined dimensions and horizontal outline or contour; and to provide an improved sealed junction of the upper ends of the assembled panels with a horizontally-disposed panel-positioning truss-structure which, after the completion of the pool and being embedded in a pool surrounding collar or walkway, permits a relative shifting of the panels and the collar or walkway to compensate for frost-activated ground swells.

A specific embodiment of this invention is shown in the accompanying drawings in which:

FIGURE 1 is a vertical, cross-sectional view of a swimming pool wall wherein the sidewall panel with its relatively-shiftable and water-sealed junctions with the positioning truss-structure and the concrete foundation are constructed in accordance with this invention, intermediate portions of the panel being broken away;

FIG. 2 is a fragmentary, transverse, sectional detail taken on the plane of the line 2—2 of FIG. 1;

FIG. 3 is a very-much-reduced rear face view of one of the individual panels and a portion of a connected adjoining panel constructed in accordance with this invention;

FIG. 4 is a much-enlarged, fragmentary cross-sectional detail of the sealed joint between the side edges of two panels, as taken on the plane of the line 4—4 of FIG. 3;

FIG. 5 is a further enlarged, fragmentary perspective view of the gasket for effecting water sealed connection between abutting panel flanges of a side-wall panel assembly;

FIG. 6 is a much-enlarged, fragmentary vertical sectional detail of an underwater light installation as employed with the improved wall-panel;

FIG. 7 is a further enlarged view of the portion of FIG. 6 within the circle "A" illustrating the removable mounting of the light;

FIG. 8 is a fragmentary perspective view of the water-stop used to seal the junction of the panels with the concrete bottom of the pool;

FIG. 9 is a plan view, partly broken away, showing a swimming pool constructed in accordance with this invention;

FIG. 10 is a plan view, illustrating the truss structure and the end to end connection of the same; and

FIG. 11 is a fragmentary perspective view further illustrating the connected relation of the truss structure and the swim pool wall panels.

The essential concept of this invention involves specially-structured, prefabricated panels and positioning truss-structures for on-the-job assembly to define in a ground excavation the predetermined perimetrical contour of a swimming pool which, after completion of the pool and the water-sealed anchorage of the lower perimeter of the panels in the pool base foundation, will permit a relative vertical shifting of the assembled panels and the interlocking coping and collar structure, to compensate for the frost-activated ground swell and subsequent recession thereof in the earth and fill surrounding the pool, and

2

yet maintain a sealed connection between the panels and the collar structure.

A swimming-pool wall-construction embodying the foregoing concept comprises a prefabricated wall 11 and positioning truss-structures 12 arranged generally as shown in FIG. 9 and in my said copending application. These truss-structures are prefabricated of suitable materials and of such contours and dimensions as to permit their on-the-job assembly to support the edge-to-end joined wall panels within a ground excavation preparatory to the subsequent pouring of concrete for a pool foundation 13, a back-fill 15 of earth, and a bordering concrete collar or walk 14, so as to define a swimming pool of desired outline or horizontal contour and dimension.

Generally, and as shown in FIG. 1, the swim-pool wall 11 comprises two sections; the main wall panel 16 and the coping or border 17. As indicated in the drawings these two sections are made separately and of different materials. However, it should be understood that both sections could be formed of the same material.

Whatever the material of which these two sections are formed, the main wall panel 16 has its lower marginal portion curved inwardly and upwardly to form a channel 18 in which is seated a water-stop or seal element 19 adapted to be embedded in the base of the pool. The upper marginal portion of the main panel 16 terminates in a straight, upwardly-disposed stem 21 for seating in the downwardly opening groove of an inverted channel-shaped bracket 23 integral on the inner edge or chord of the positioning truss-structure 12, as presently will be explained.

The main wall section 16 here is shown as comprising two laminated sheets 24 and 25, which may be of any suitable material, the former of which is somewhat thicker than the latter. As a metal most acceptable for the formation of this panel section 16, aluminum has been found desirable. Reinforced plastic material may also be used.

In the preferred form the wall panels 16 are made of laminated sheets of aluminum wherein the front or face sheet 24 is about twice the thickness of the back sheet 25. Sheet thicknesses of .064 and .032, respectively, have proved quite satisfactory. These sheets are cut to size and bonded together at the mill after which the face of the front sheet is coated in a known manner to provide a smooth sealed surface that will not pit or corrode. End flanges and the bottom channel 18 are formed at the mill after the sheets have been bonded and coated. When the panels have been installed to form the wall of the pool, and before pouring of concrete or back fill, the back side of the panels are sprayed with a suitable corrosion-stop material such as is commonly used for undercoating of automobiles.

The border section 17, of the wall 11, can be formed of any material capable of molding to form a coping part 26, a border-tile retaining part 27, and a stem part 28 in the form of an inverted channel. It should be understood that this border section 17 could be formed without the tile retaining part 27 if such an ornamentation were not desired.

As here shown this border section 17 is an elongate body made of molded rigid vinyl plastic. The coping part 26 is substantially C-shaped in section with the upper edge terminating in a depending flange 29 and its lower edge intergrated with the adjacent wall of the channel shaped stem part 28. The skirt or tile-retaining part 27, which is designed to lie against the wall section 16 as shown, has an upwardly-extending flange 31 along its lower edge opposed to the channel 22 formed by the juncture of the part 27 with the upwardly curved lower edge of the coping part 26. Conventional tile squares 32, here shown in dotted outline, may be seated

3

in this part 27 by having their lower edges set in the lower flange 31 and their upper edges pressed in under the curved lower face of the coping part 26 to seat in the channel 22.

The panels 16, as herein shown, obviously may be formed in various widths and lengths. Acceptable dimensions for most installations are 6 by 10 or 12 feet. The opposite lateral edges or said margins are formed with flanges 33 to permit uniting panels edge-to-edge by a series of bolt-and-nut fasteners 34 with an interposed gasket 36. A most acceptable form of gasket 36 is illustrated in FIGS. 4 and 5. As indicated, this comprises a strip of soft material—rubber or vinyl—with a plurality of parallel, longitudinally extending round ribs 37 formed on the opposite faces. The space between the two inner ribs 37 is wider than that between each outer rib and the adjacent inner rib to provide sufficient space for holes 38 for the fasteners 34 (see FIG. 5). As indicated in FIG. 4 the wall panel flanges 33 may be doubled back along their outer ends to enhance the strength of these panel-uniting elements.

The thinner lamina of each panel 11, intermediate its end, is embossed to form a plurality of longitudinally spaced, transverse stiffening ribs 39 and at least one of the panels is provided with a semi-cylindrical embossment 41, located nearly medially of the panel, for the recessed mounting of an electric light 42 for pool illumination, as presently will be explained. The ribs 39 are for vertical reinforcement of the panel 11 and are formed in the panel sheet 25 prior to its being bonded to thicker sheet 24. Such ribs extend nearly the full vertical width of the panel and are preferably on about 12 inch centers. The embossment 41, where needed, may be formed in the laminated panel after the sheets 24 and 25 have been bonded to each other.

The truss-structure 12, for positioning the herein-described panels 16, is of the construction and assembly, and is ground supported, substantially as set forth in my copending application Ser. No. 105,100 filed April 24, 1961, except that the herein shown bracket 23 replaces the panel supporting angle bar shown in the aforesaid application.

The inverted U-shaped bracket 23, in which the stem 28 of the coping 26 is firmly seated, has one of the parallel legs 43 terminating in a transverse flange 44 whereby the bracket 23 is bonded to the angulated rods, comprising the truss structure 12, so as to form the inner chord of the truss. Such an inverted U-shaped bracket 23 together with the coping stem 28 affords a snug but vertically shiftable seating of the interfitting stem 21 of the wall section 16. Such a seating of these interfitting stems 21 and 28 in the truss structure bracket 33 achieves two beneficial results. First, it provides for the firm support of the assembled border part 17 and panels 16 in the ground excavation preparatory to the pouring of the concrete foundation 13, the collar or walk 14 and the back fill 15. Secondly, after the construction of the pool is completed, the slidably interfitting stems, 21 of the wall panel and 28 of the border part 17, permit a shifting of the integrally connected coping, concrete collar and truss structure relative to the panels 16 to compensate for the frost-activated ground swells, such as occur with this type of out-door pool construction in the cold winter climates, without transmitting vertical strain to the panels themselves.

The water seal element 19 at the base of the panels 16, as herein shown, is angle-shaped in section with the shorter leg 46 having its end edge in the form of a rounded bead 47 of a size to fit tightly in the channel 18 along the lower end of the wall 11. The longer leg 48 of this water seal element 19 is formed with a series of parallel, laterally projecting ribs 49 extending along opposite faces, as indicated in FIG. 8. Such a water seal element 19 may be made of plastic or rubber and the horizontal, longer ribbed-leg 48 is embedded in the pool foundation

4

14 when the latter is poured. Thus, with the bead 47 on the vertical leg 46 tightly seated in the channel 18 at the base of the wall 11 a practically perfect and permanent water seal is provided along the inner lower margin of the finished pool.

In the finished pool, one or more of the panels 16, which has an appropriate embossment 41, may have an electric light 42 removably mounted therein. A very acceptable light for this purpose is the conventional 12 volt sealed-beam light to which the connections from the power supply cord 52 are water sealed. As indicated in FIG. 3, the cord 52 has the ends of the wires connected to the light socket terminals in the usual manner, after which a filled epoxy resin compound is molded around the base of the light to enclose the light socket terminals and form a water-seal cap 53. The cord 52 is encased in an electrical conduit pipe 54 of the usual type secured to the back of the embossment 41 in the conventional manner. The conduit 54 leads up through the backfill 15 to a junction box (not shown) at some convenient location above the pool where connection is made, through a suitable transformer, to a house lighting circuit.

As shown, the light 42 is held in place in the panel embossment 41 by three circumferentially-spaced rubber grommets 55 secured by bolts 56 threaded into bosses 57 projecting rearwardly from a clamping ring 58 embracing the rim of the light. The mounted grommets 55 are manually pressured into the opening of the embossment 41 and the light is thus frictionally held in place during the normal use of the pool. As shown, the clamping ring 58, which supports the light 42, is spaced outwardly from the panel wall sufficiently to permit water to circulate behind the light 42 and thus keep it cooled. Such a mounting of the light 42 permits easy removal of the light when the pool is not in regular use, as, for example, during the winter season in the colder climates. To this end the cord 52 has a considerable portion thereof, for example about 5 feet, coiled around the back end of the light 42 (see FIG. 6). Thus when the light 42 is removed it may set up on the rim of the pool until the time comes for a re-use thereof.

Aside from the economies incident to the structuring of a swimming pool with such prefabricated and easily-assembled panels and positioning truss-structures, when the pool is finished and in use there are several major advantages. One such advantage is a perfect water seal around the inner bottom perimeter of the pool such as will preclude any seepage which, in the course of time, might erode the ground under the foundation 14 and cause destructive cracks. A second, and very signal, advantage is that in the colder climates where frequent alternate freezing and thawing occurs, the resulting ground heaving under the positioning truss-structure 12, will not produce destructive strains on the side wall panel structure since a relative shifting movement is permitted the interfitting stem parts 21 and 28 of the assembled panels and border structure.

Other advantages are to be found in the improved structure of the wall panels wherein the laminated panels, whether of metal or plastic, are provided with vertical stiffening ribs by simply preforming the back side lamina before bonding it to the heavier main sheet; and in the improved form of the bordering or coping element whereby it automatically becomes an integral part of the bordering collar or walk, when the latter is formed, and also provides for the ready mounting of decorative bordering tiles around the upper periphery of the finished pool.

Although but one specific embodiment of this invention has been herein shown and described it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. A ground-excavated swimming pool comprising, a plurality of laterally connected vertically-disposed, sub-

5

stantially rigid wall panels, defining the horizontal contour of the pool, and a plurality of horizontally-disposed panel-positioning truss-structures connected end to end and extending coextensively along the upper margins of said panels for fixed integration with a perimetrical concrete collar for said pool, said collar being free of direct connection to said panels, each of the truss structures having an integrally connected channel-shaped bracket opening downwardly substantially normal to the plane of the truss-structures and extending continuously along the inner edge thereof, the upper ends of said panels extending into the channel of said brackets for vertically slidable interfitting connection with the truss-structures to permit relative vertical shifting of the panels and the truss-structures to compensate for frost activated ground swells around the perimeter of the pool.

2. A ground-excavated swimming pool comprising, a plurality of laterally-connected, vertically-disposed, substantially rigid wall panels, a plurality of coping members, each having a vertical stem and body part curving upwardly and away from the lower end of the stem, mounted on the top edges of the panels with the body part disposed inwardly of the pool, said vertical stem having a downwardly opening groove coextensive with the coping member and slidably receiving the top margins of the panels, and a plurality of horizontally disposed panel-positioning truss-structures connected end to end and extending coextensively along the upper margins of said panels for fixed integration with a perimetrical concrete collar for said pool, said collar being free of direct connection to said panels, each of the truss structures having an integrally connected channel-shaped bracket opening downwardly substantially normal to the plane of the truss-structures and extending continuously along the inner edge thereof, the upper ends of said vertical stems of the coping members extending into the channel of said brackets for interfitting connection with the truss structures to permit relative vertical shifting of the panels and the truss-structures to compensate for frost activated ground swells around the perimeter of the pool.

3. A ground-excavated swimming pool comprising, a plurality of laterally connected vertically-disposed, substantially rigid wall panels defining the horizontal pool contour, a plurality of horizontally-disposed panel-positioning truss-structures connected end to end and extending coextensively along the upper outer margins of said panels to border the pool with a horizontally-projecting perimetrical means for integration with a pool-surrounding ground supported collar, said collar being free of direct connection to said panels, and means providing an integral downwardly-opening channel contiguous with the inner chord of the respective truss-structures and telescopically fitting over the entire upper end portions of the respective panels to permit relative vertical shifting of the panels and the truss-structures to compensate for frost-activated ground swells around the perimeter of the pool.

4. A ground-excavated swimming pool comprising, a plurality of laterally joined, vertically-disposed substantially rigid wall panels, a plurality of end-to-end joined horizontally-disposed panel-positioning truss structures

6

extending coextensively along and outwardly from the upper margins of said panels, a border section extending along the inner face of the upper margins of said panels to provide a coping for the pool, said border section having a vertical stem part provided with a downwardly opening groove coextensive with the border section and a body part curving inwardly away and upwardly from the lower portion of the said stem part, the said stem part of the border section being vertically slidably seated over the upper edges of the wall panels, and downwardly opening channel members integrally connected to and extending along the inner chords of the truss-structures and telescopically mounted over the vertical stem part of the said border section so as to connect said truss-structures to the panels and yet permit relative vertical shifting of the truss structures and border section relative to the panels to compensate for the frost activated ground swells around the pool.

5. In a swimming pool having a concrete bottom foundation and a concrete collar outlining the horizontal contour of the pool, a wall construction comprising, a plurality of substantially rigid, vertical wall panels connected together side-edge to side-edge to define the horizontal contour of the pool, the bottom ends of said panels being embedded in said foundation, a continuous horizontal outwardly-projecting supporting truss-structure extending coextensively along the top margins of said panels and integrally connected with said concrete collar, and means integrally mounted on said truss-structure and comprising a downwardly-opening channel-shaped bracket telescopically receiving and continuous with the top margin of said panels.

6. The swimming pool wall construction defined in claim 5 wherein the last named means comprises a coping member, having a vertical stem and a body part curving upwardly and away from the lower end of the stem, mounted on the top edges of the panels with the body part disposed inwardly of the pool, the said vertical stem having a downwardly opening groove coextensive with the coping member and slidably receiving the top margins of the panels, and the truss-structure comprises a downwardly-opening channel-shaped bracket integrally connected with the inner chord of the truss structure and telescopically fitted over the said coping member's stem.

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