

Dec. 15, 1970

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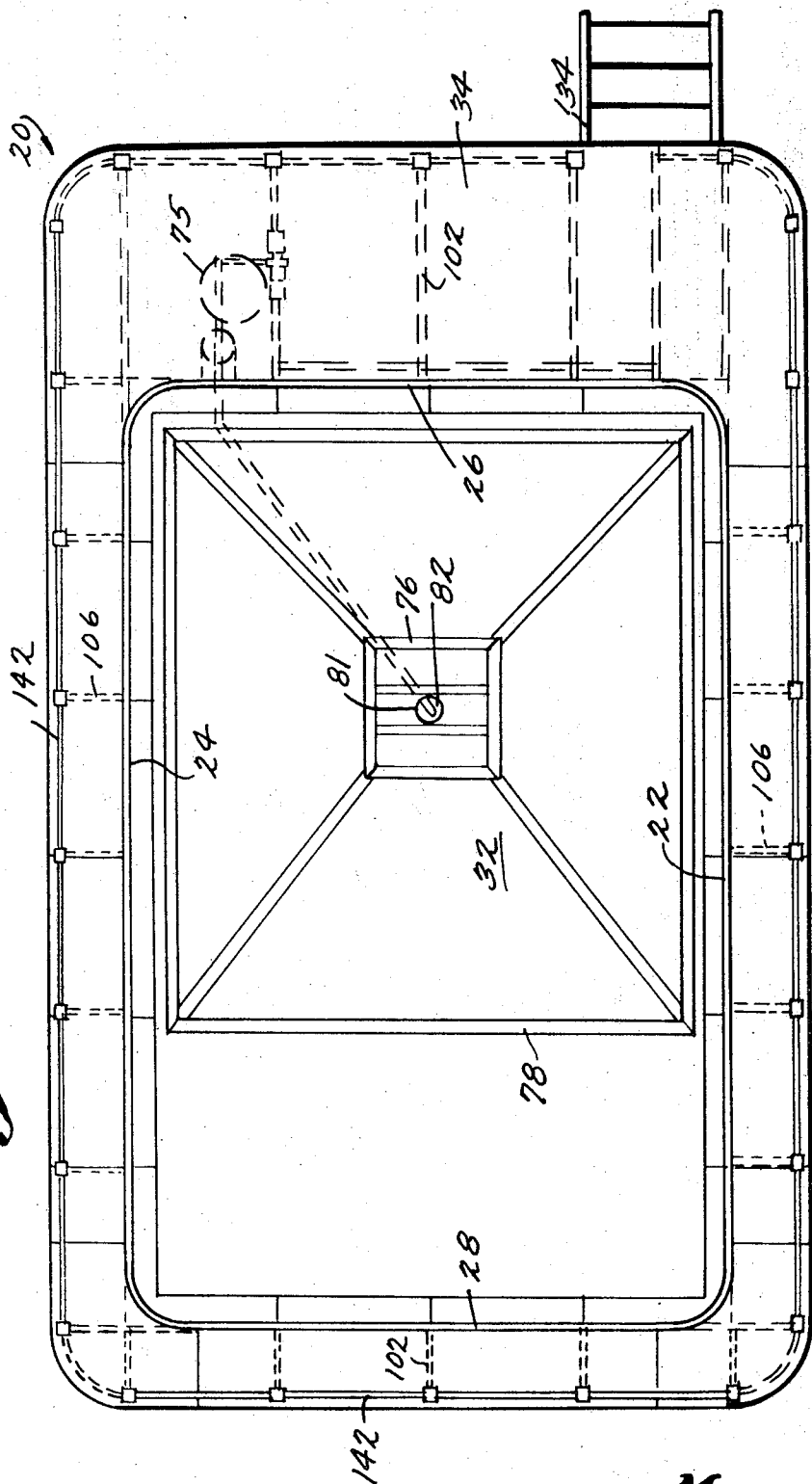
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RECTANGULAR SWIMMING POOL

Filed Dec. 12, 1967

5 Sheets-Sheet 1

Fig. 1.



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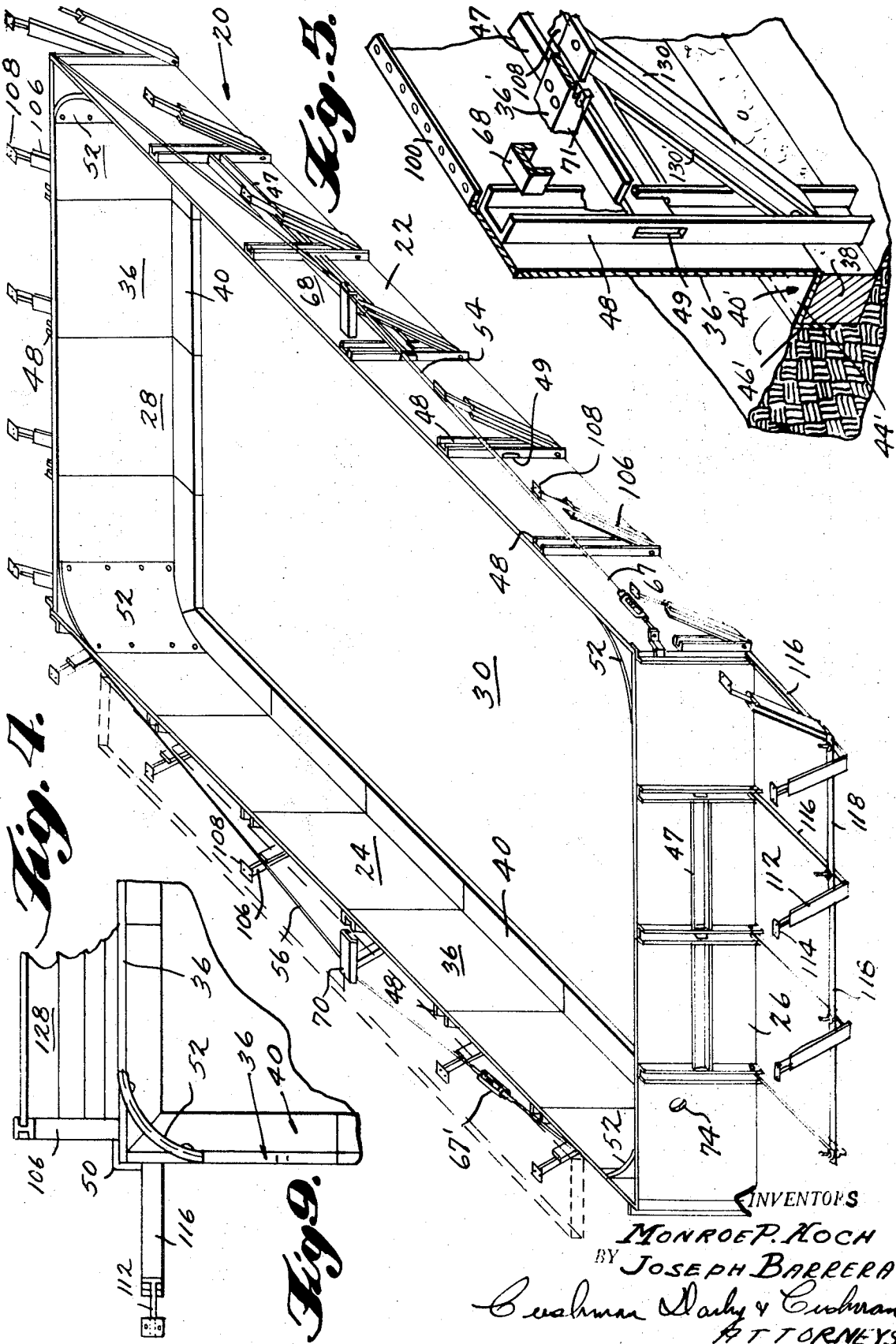
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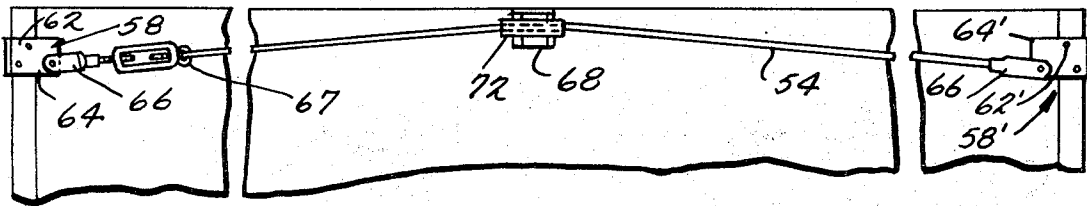


Fig. 7.

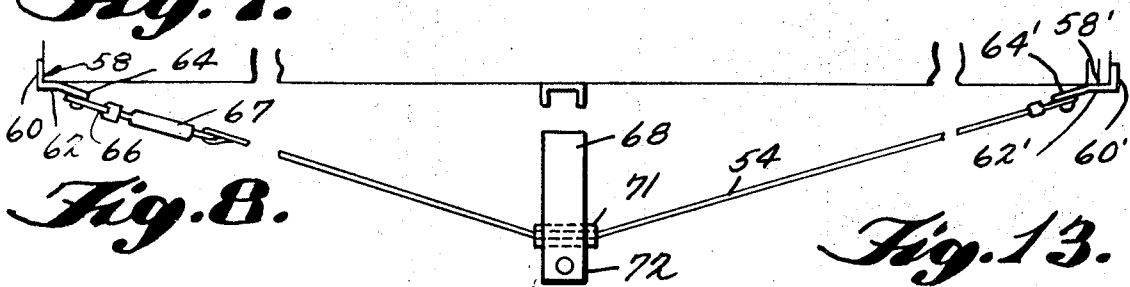


Fig. 8.

Fig. 13.

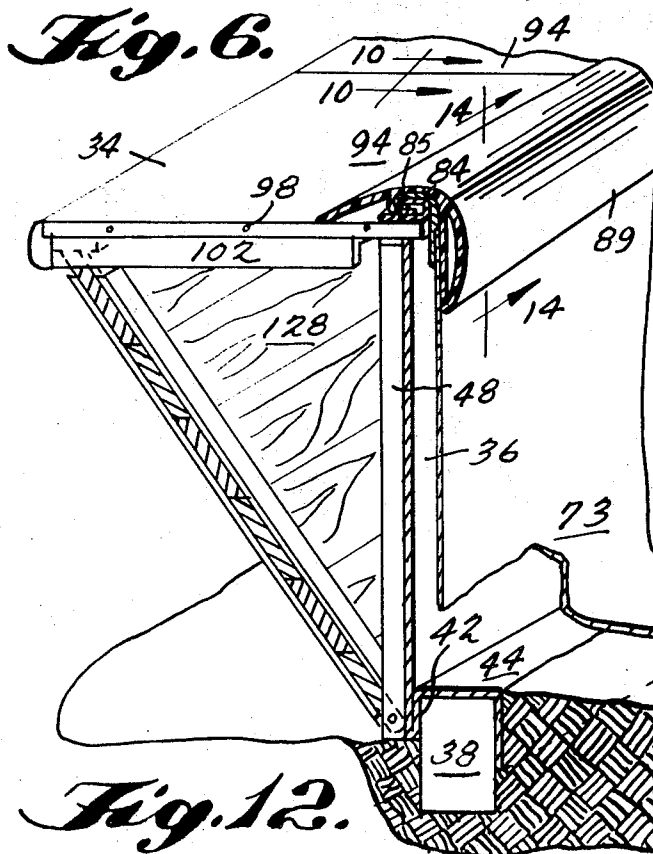


Fig. 6.

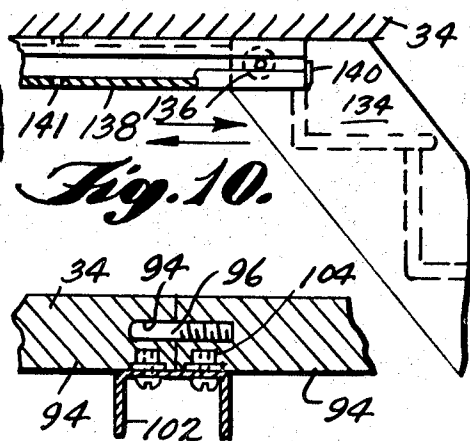
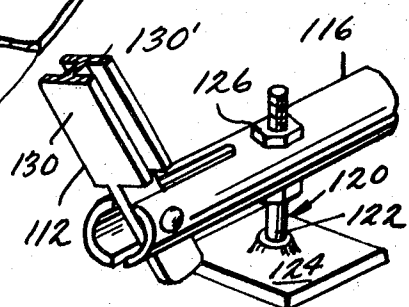
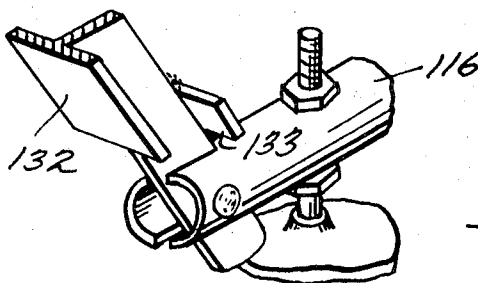


Fig. 10.

Fig. 11.



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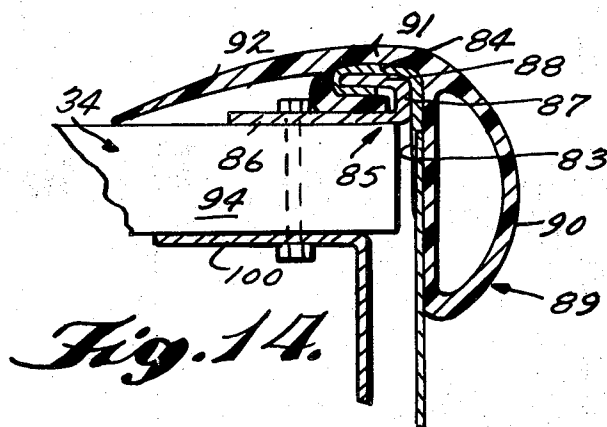


Fig. 17.

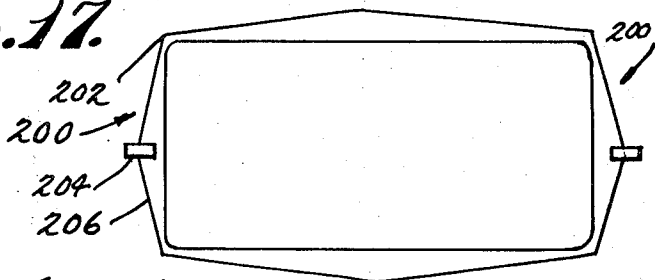


Fig. 18.

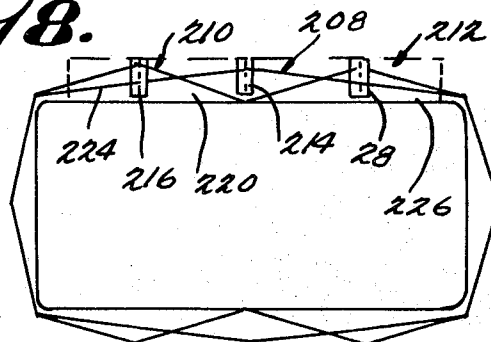
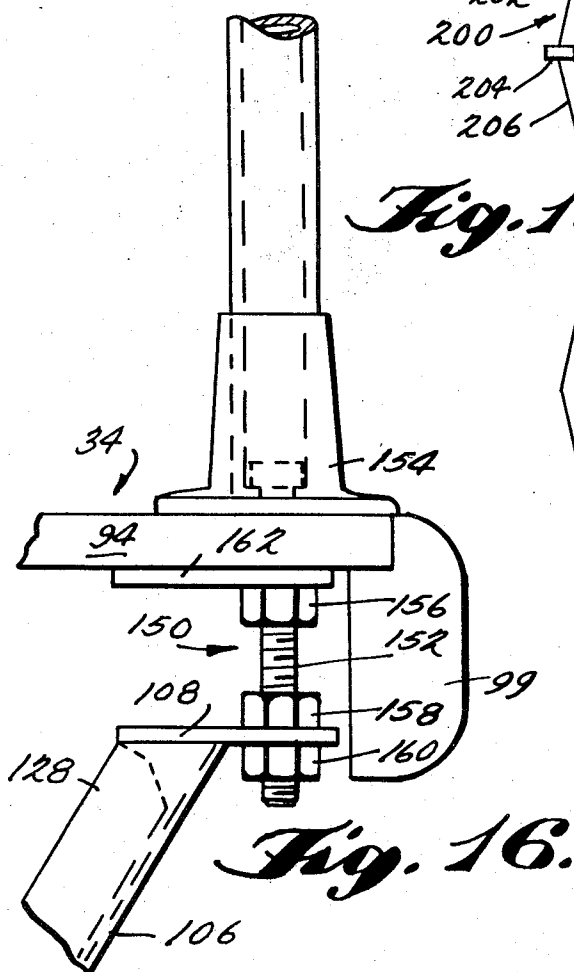


Fig. 16.

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RECTANGULAR SWIMMING POOL
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U.S. Cl. 4—172.19

19 Claims

ABSTRACT OF THE DISCLOSURE

The rectangular swimming pool is assembled from pre-fabricated panels and framework. The sidewalls and end walls of the pool are above ground level, have channel or L-shaped lower portions, which are utilized to anchor the sidewalls to a cinder block or poured concrete foundation and have corner cove panels which prevent the stagnation of water in the corners of the pool. An elevated deck with leveling jacks extends entirely around the pool and is provided with a roll-away ladder. The deck is supported by horizontal deck support frame members and a lower pool enclosure assembly with external torsion cables holding the deck in and down. The lower pool enclosure assembly has frame members which not only support the deck, but also carry decorative panels which extend from the ground to the outer edge of the deck to give the pool a pleasing appearance.

BRIEF DESCRIPTION OF THE INVENTION

The present invention relates generally to improvements in swimming pools and, in particular it relates to an improved swimming pool which is assembled from prefabricated panels and frame members.

The use of above-ground swimming pools constructed from prefabricated parts is becoming increasingly popular. However, the problem of providing an above-ground pool which is easily assembled, strong and durable, has continued to be a problem in industry. It is, therefore, a primary object of the present invention to provide an improved above-ground pool which is easy to assemble, structurally sound, durable and designed in such a manner that no reinforcing rods or straps pass across the inside bottom of the pool. In addition, it is an object to provide a swimming pool having an elevated deck extending entirely around the upper periphery of the pool, which has decorative side panels to conceal the filter system and pumps of the pool, as well as the outer surfaces of the pool sidewalls. Roll-away steps are also utilized in the pool of the present invention which can be stored and locked in place under the deck when not in use so that small children cannot gain access to the pool.

In accordance with the above objects, the rectangular swimming pool of the present invention comprises four walls which are joined together at right angles in such a manner as to assure maximum strength. The corners of the pool are provided with corner cove members to prevent water stagnation and the walls are made up of a plurality of panels having integral channel or L-shaped lower portions, which overlie a block or concrete foundation. The channel or L-shaped portions maintain the lower portions of the walls in position when internal pressures are exerted on the walls by water within the pool and also provide a safety ledge around the perimeter of the pool.

Extruded hanger elements, for anchoring the peripheral edges of the pool liner in place, extend around the inner edge of the pool deck and are secured by bolts to the deck and outwardly extending flanges of the wall panels. Coping elements are provided which both cover the hanger assembly and help retain the peripheral edge of the liner on the extruded hanger elements.

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The elevated deck, which is provided with leveling jacks, extends around the upper peripheral edges of the pool, is supported by a lower pool enclosure assembly and held down by adjustable torsion cables which are connected to the deck structure so as to exert a downward and inward force on the deck. The torsion cables are anchored to the corners of the pool at their ends and passing around the outer edges of deck frame members intermediate their ends. The frame members extend along the joints of adjoining deck panels or sections and are secured to the panels so that the forces exerted on the frame members by the torsion cables are transmitted to the deck.

The lower pool enclosure assembly has struts which not only support the elevated deck, but also carry lower decorative panel assemblies that hide the outer surface of the pool sidewalls, the pump and the filter equipment utilized with the pool. Roll-away stairs are provided at one end of the deck with the upper ends of the stairs being mounted on tracks which extend beneath the deck so that the stairs may be stored and locked in place under the deck when not in use.

Other unique features and advantages of the present invention will be more thoroughly understood from the following detailed description of the invention when taken in conjunction with the accompanying drawings in which:

FIG. 1 is a top plan view of the rectangular swimming pool of the present invention with a tubular frame assembly used to form a hopper;

FIG. 2 is a side elevational view of the rectangular swimming pool with some of the lower decorative sidewalls removed to better illustrate the pool's construction and showing a tubular frame assembly used to form a hopper in the pool;

FIG. 3 is an end elevational view of the rectangular swimming pool and the tubular frame assembly used to form a hopper in the pool;

FIG. 4 is a perspective view of the rectangular swimming pool with a level or concave sand floor and with the filtering equipment, roll-away stairs, lower decorative side panels and part of the elevated deck removed to better illustrate the support frame and torsion cables;

FIG. 5 is a perspective view partly in section showing frame members and the sidewall embodiment with the L-shaped anchoring extension;

FIG. 6 is a perspective view partly in section showing the elevated deck and the side wall embodiment with the channel-shaped anchoring extension;

FIG. 7 is a fragmentary side view of the rectangular swimming pool illustrating the manner in which the torsion cables are mounted on the pool;

FIG. 8 is a fragmentary plan view of one side of the pool illustrating the manner in which the torsion cables are secured to the pool;

FIG. 9 is a plan view of one of the corners of the pool illustrating the corner cove panels;

FIG. 10 is a sectional view along line 10—10 of FIG. 6; FIG. 11 is a perspective view of a H-shaped diagonal frame member and deck leveling jack assembly;

FIG. 12 is a perspective view of a T-shaped diagonal frame member and deck leveling jack assembly;

FIG. 13 is a side view partially in section of the roll-away stairs assembly;

FIG. 14 is a cross-sectional view of the liner hanger and coping assembly taken substantially along lines 14—14 of FIG. 6;

FIG. 15 is a cross-sectional view of the coping prior to installation;

FIG. 16 is a side view of the jack assembly utilized on the sides and one end of the deck;

FIG. 17 is a diagrammatic view of a second torsion cable assembly; and

FIG. 18 is a diagrammatic view of a third torsion cable assembly.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIGS. 1 through 4, the swimming pool is generally designated by reference character 20. The pool comprises sidewalls 22, 24, end walls 26, 28, a level or concave sand floor 30 or a floor with a hopper 32 and an elevated deck 34 which extends entirely around the tank of the pool.

The sidewalls 22, 24 and end walls 26, 28 of the pool are made of metallic panels 36 or 36' which, as best illustrated in FIGS. 4, 5 and 6, are mounted on a cinder block, cement or similar foundation. In the preferred form of the invention, a trench about the depth and width of a standard cinder block is dug around what will be the inside perimeter for the pool side and end walls. When the trench has been leveled, a cinder block or cement foundation 38 is placed therein and the wall panels 36 of the pool can be put in place.

To anchor the wall panels 36, 36' to the cinder block or cement foundation 38, the lower portion of each panel 36, 36' is provided with an inwardly extending, downwardly opening, channel or L-shaped extension 40 or 40' which overlies the cinder block or cement foundation.

As shown in FIG. 5, L-shaped extension 40' comprises an intermediate horizontal web 44' about the width of a cinder block and a vertical three-inch flange 46' extending downwardly from the inner end of web 44'. Flange 46' engages the inner surface of foundation 38 while the lower terminal portions of vertical channel members 48 engage the outer surface of foundation 38. With this arrangement, inner flange 46' maintains the lower portions of the panels, and consequently, the sidewalls in a fixed position when the sidewalls are subjected to internal pressure from water within the pool. In addition, the L-shaped extension 40' along with the lower terminal portions of frame members 48 provide means for properly aligning and positioning adjacent wall panels 36' of the assembly. The panels 36' of sidewalls 22, 24, and end walls 26, 28 are bolted or otherwise secured to the webs of vertical channel frame members 48 which extend along the joints formed by the abutting or overlapping edges of the wall panels from the upper edges of the panels to three inches below the juncture of terminal extensions 40' with the upper vertical portions of panels 36.

As shown in FIG. 6, the channel-shaped extension 40 comprises an outer vertical flange 42, an intermediate horizontal web 44 about the width of a cinder block and an inner vertical three-inch flange 46. The inner flange 46, which engages the inner surface of foundation 38, maintains the lower portions of the panels, and consequently, the sidewalls in a fixed position when the sidewalls are subjected to internal pressure from water within the pool. In addition, the channel-shaped extension 40 provides means for properly aligning and positioning adjacent panels of the assembly. The panels 36 or the sidewalls 22, 24, and end walls 26, 28 are bolted or otherwise secured to the webs of vertical channel frame members 48 which extend along the joints formed by the abutting or overlapping edges of the panels from extensions 40 to the upper edges of the panels.

Horizontal braces 47 extending between adjacent channel frame members 48 along the outer surfaces of panels 36 or 36' to strengthen the middle panels 36 or 36' of the side and end walls. Braces 47 are not provided for the corner panels of the side and end walls where the additional bracing is not needed. As shown in FIG. 4, which has some of the braces 47 removed to better illustrate the construction, and FIG. 5, the webs of horizontal braces 47 extend beyond the flanges at each end of the brace to form tongues which are received in slots 49 of channel frame members 48. During assembly of the pool, one of the tongues is inserted in a slot 49 of a frame member

48 already secured to panels 36 or 36' and the other end is inserted in the slot of an adjacent frame member 48 prior to securing the frame member 48 to the wall panels.

Pool sidewalls 22 and 24 extend perpendicular to pool end walls 26 and 28 with the tank of the pool thereby being rectangular in horizontal cross section. The rectangular configuration of the pool with the resulting right angle corner joints, FIG. 9, enables the pool corners to be constructed so as to provide for maximum strength. The corner panels at each of the corner joints are bolted to vertical angle or W shaped support frame members 50 or similar angle members which lend great strength and rigidity to the pool structure. While this construction is very strong and durable, it is not desirable to have a pool with right angle corners since the water within the pool tends to stagnate in such corners resulting in an accumulation of dirt. To eliminate stagnant water and dirt accumulation in the sharp corners and to reduce bubbling of the water circulation, thereby improving filtration, corner cove panels 52 are provided at each corner of the pool. The corner cove panels 52 extend from channel or L-shaped extensions 40, 40' which are mitered at the corners to insure a proper fit, to the upper edges of the wall panels 36, 36'. The inner surfaces of panels 52 are generally smooth and concave thereby rounding out the corners of the pool so that there are no places for the water within the pool to stagnate. These panels 52 are bolted or otherwise secured to corner panels 36, 36' and as can be readily appreciated, not only improve the circulation of water within the pool, but also provide an aesthetically pleasing appearance.

The sidewalls 22 and 24 of the pool are provided with external torsion cables 54, 56, respectively, which hold the deck panels or sections in and down. As shown in FIGS. 4, 7 and 8, the cables are secured at each end to the vertical corner support frame members 50 at points spaced below the upper edges of the pool walls by means of brackets 58, 58', which are bolted, welded or otherwise secured to the corner frame members. The brackets 58, 58' are made up of legs 60, 60' and 62, 62', which extend perpendicular with respect to each other, and diagonal extensions which are integral with legs 62, 62'. The cables 54 and 56 are mounted on the brackets by means of cable clevis or yokes 66 having pins which pass through apertures in the diagonal extensions 64, 64' of the brackets. Turn buckles 67 and 67' are provided in each cable so that the tension in the cable can be adjusted as needed.

Center deck and cable support struts 68 and 70 are positioned midway along the upper edges of sidewalls 22 and 24, respectively, and extend perpendicular to the sidewalls 22, 24 in a generally horizontal plane. The struts are bolted to the undersides adjacent deck panel sections with the struts extending along the joints formed by the middle deck panel sections of sides 22, 24. The inner ends of struts 68 and 70 do not abut frame members 48 and the outer ends are engaged by the torsion cables 54 and 56. In the preferred form of the invention, a horizontally extending notch 71 is provided in the outer edge of each center deck and cable support strut within which is mounted tube 72 or some similar element which prevents the torsion cable from chafing.

As can be readily seen from FIGS. 4 and 7, the center deck and cable support struts 68 and 70 are mounted on the undersides of abutting deck panels of the swimming pool at a greater height than the ends of the torsion cables 54 and 56 which are secured to the brackets at the corners of the pool. As a result of this assembly, the lines of force acting on the center deck and cable support struts 68 and 70 not only are directly inwardly, but also downwardly so that the cables help to hold deck 34 in and down.

FIGS. 17 and 18 are diagrammatic views illustrating modifications of the torsion cable assembly to be utilized

on pools of greater width and length than the one illustrated in FIGS. 1 to 4. FIG. 17 illustrates a pool which is of such a width that torsion cable assemblies **200**, **200'**, similar to those illustrated in FIG. 7 and 8, are required along the ends of the pool as well as the sides. The brackets **202**, struts **204** and cables **206** utilized in the assembly of FIG. 17 can be the same as those of FIG. 7 and 8 or, if desired, along the end of the pool having the wide deck, the cables can be secured to the cable support struts at points spaced inwardly from the outer end of the struts. FIG. 18 illustrates a second modification of the torsion cable assembly for use on a pool of greater width and length than the pool illustrated in FIG. 1 to 4. The torsion cable assemblies along the ends of the pool are the same as those illustrated in FIG. 17. However, due to the length of the pool, torsion cable assemblies **208**, **210** and **212** are not only secured on each side of the pool to the center deck and cable support strut **214**, but also deck and cable support struts **216**, **218** on either side of the center deck and cable support strut. Support struts **216**, **218** are secured to deck at the joints between the middle panel sections **220**, **222** and panel sections **224**, **226** respectively, while strut **214** is secured to the deck at the joint between the middle panel sections in the same manner that struts **68** and **70** are joined to the deck **34**. With the above arrangement, the outer edges of a pool deck of great length and width can be securely held down and in place.

The floor of the pool can be flat, level or concave as shown by floor **30** in FIG. 4, or, as shown in FIGS. 1 to 3, the pool can be provided with a hopper at one end which extends below the surface of the ground. When it is desired to have a pool with a flat, level or concave floor such as **30**, a flexible liner **73** of water-proof material is laid over sand or suitable fill enclosed by the sidewalls and end walls of the pool and the liner is secured to hangers on deck **34** adjacent the upper edges of sidewalls **22**, **24** and end walls **26**, **28** as will be fully explained hereinafter. Of course, a suitable drain can be provided in the floor of the pool which, in combination with outlet **74** in end wall **26**, connects the tank of the pool with the conventional pump and filtration system **75**.

When it is desired to construct a pool with a hopper, a tubular frame assembly **32**, such as the one shown in FIGS. 2 and 3, is utilized. Frame assembly **32** is laid within an excavation at one end of the pool and is made up of a lower square center framework **76**, a larger upper square framework **78** and connecting members **80** which extend from the corners of framework **76** upwardly and outwardly to the corners of framework **78**. The tubular frame members of the assembly are bolted, welded or otherwise secured to each other along their abutting edges. As in the embodiment utilizing a flat, level or concave floor, the interior of the pool is lined with a flexible liner **73** of water-proof material. The liner is laid over sand or other suitable fill at the shallow end of the pool and over the tubular frame assembly **32** at the deep end of the pool with the liner being so shaped as to conform to the contours of the tubular frame assembly **32**. As in the previous embodiment, a drain **81** can be provided in the liner which is mounted on straps **82** extending between tubular frame members of lower framework **76**.

As best shown in FIGS. 6 and 14, the peripheral edge of liner **73** is heat sealed or otherwise secured to vertical extensions **83** of extruded vinyl hooks **84**. Hooks **84** are retained on hangers **85** which extend around the inner edge of deck **34**. Hangers **85** are preferably made of extruded aluminum members and comprise base portions **86** that are secured to deck **34** by bolts which pass through deck panels **94** and into nuts mounted in upper flanges **100** of the vertical wall panels **36** or **36'**. Hanger members **85** have vertical web portions **87** extending upwardly from the inner ends of base portions **86** and horizontal flanges **88** which extend outwardly from the

upper end of web **87** to form hooks which retain hooks **84** of liner **73**.

An extruded vinyl coping **89** is provided to cover the hanger assembly and help retain the complementary hooks of the hanger assembly (members **84**, **85**) in place. Coping **89** has a hollow section **90** with a convex inner surface that extends below extensions **83** to cover the upper edges of the liner **73** and give the inner rim of the pool an aesthetically pleasing appearance. Hook portion **91** extends outwardly from the upper end of hollow section **90** and when the coping **89** is in place, FIG. 14, hook portion **91** overlies hook **84** and is retained on hangers **85**. A resilient extension **92**, which, as shown in FIG. 15, is normally curved, merges with hook portion **91**. Extension **92** covers the outer ends of hangers **85** and due to its resilience, maintains hook portion **91** on hanger **85** thereby insuring that the coping **89** is firmly anchored in place.

The elevated deck **34**, which extends around the upper edge of the swimming pool tank, is approximately two feet wide along sidewalls **22**, **24** and end wall **28** and six feet wide along end wall **26**. As shown in FIG. 6 and 10, the deck comprises a series of plywood panels **94** which have complementary alignment dowels **96** and apertures **98** along their abutting edges; while the outer edges of the panels have molding strips **99** secured thereto which hide horizontal deck frame members **102** and strengthen the outer perimeter of the deck. The inner edges of panels **94** extend along and are supported by the upper flanges **100** of the vertical wall panels **36**. The bottom surfaces of panels **94**, adjacent their abutting edges, have wood nuts **104** mounted therein that are members **102** which extend part of the way along the joints of the deck panels **94** from the outer edge of the aligned with apertures in the horizontal deck frame deck to points spaced from the side or end walls. Bolts passing up through the webs of the channel-shaped horizontal deck frame members rigidly secure the deck **34** to these members. In addition, a series of holes are provided in panels **94**, which are aligned with apertures in the upper wall flanges **100** of the vertical sidewall panels **36** so that the inner ends of the deck panels can be rigidly secured to the side and end walls by the same bolts which secure hangers **85** to the deck. With the use of coping **89** around the inner perimeter of the deck along with wood units **104**, the deck has a smooth upper surface completely free of obstructions.

The outer edge of deck **34** along sidewalls **22**, **24** and end wall **28** is supported by diagonally extending frame members **106**. Members **106** are bolted, pinned or otherwise secured at their lower ends to the vertical frame members **48** adjacent the lower ends of the vertical frame members and have plates **108** welded to or fabricated as part of the upper ends of the diagonal frame members **106**. As best shown in FIG. 16, plates **108** are secured to the outer edges of the deck panels **94** by jack assemblies **150**. Jack assemblies **150** comprise studs **152**, railing base members **154**, plates **108**, nuts **156**, **158**, **160** and plates **162** or extensions of the webs of frame members **68**, **70** or **102** when the jack is located at a joint between deck panels **94**. The heads of studs **152** are mounted within railing base members **154** and extend downwardly through apertures in panels **94**, plates **162** or the web extensions and plates **108**. Nuts **156** are tightened against plates **162** or the web extensions to rigidly secure the base members **154** and plates **162** or web extensions as well as studs **152** to the deck. Nuts **158** and **160** engage the upper and lower surfaces of plate **108** so that by loosening and tightening nuts **158**, **160**, the level of the outer edges of deck **34** along sides **22**, **24** and end **28** can be adjusted.

Unlike the diagonal support frame members **106** along sides **22**, **24** and end **28**, no jack assemblies interconnect the upper ends of diagonal support frame members **112** to the deck along end **26** of the pool. Instead plates **114**

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of the diagonal frame members are rigidly secured to the deck in a fixed position by studs passing down from railing base members 154. Diagonal support frame members 112, instead of extending from the lower end of the vertical end wall frame members 48, extend upwardly from and are bolted to one-inch diameter extension tubes 116 which are, in turn, secured at their inner ends to the lower portions of vertical wall support frame members 48. These extension tubes are, in turn, linked together by a series of frame members 118 which run parallel to end wall 26.

As shown in FIG. 11, the outer ends of extension tubes 116 are provided with deck leveling jack assemblies 120 which each comprise a stud 122 that is mounted on a plate 124 and passes through a pair of apertures in one of the extension tubes 116. Nuts 126 are provided on either side of the extension tube 116 so that by loosening and tightening the nuts 126, the level of the outer ends of extension tubes 116 can be altered, thereby altering the elevation of the outer edge of the deck.

As shown in FIGS. 11 and 12, the diagonal support frame members 108, 114 are preferably made from either H-shaped frame members or T-shaped frame members. These frame members 108, 114 not only support the elevated deck, but also carry decorative panels 128 which extend from the lower ends of frame members 108, 114 to the upper ends of these members to give the outside of the pool an aesthetically pleasing appearance. These panels 128, which are preferably either the coiled type, awning type or narrow panel type, are made of plastic, aluminum, wood or similar materials and are slid into position between adjacent diagonal deck frame members.

When using the H-shaped frame members, the decorative panels are maintained in place between the pairs of flanges 130, 130' on each side of the web so that there is no need for using screws, bolts or other types of fasteners to keep the panels in place. In the preferred form of the invention, approximately six inches of the rear flange 130' of the H-member is cut away at the top to permit the panels 128 to be slid into place. However, it is contemplated that the amount of flange 130' which is cut away can be varied as required by the type of decorative panel used.

When a T-shaped frame member is utilized, the lateral edges of the outer surfaces of the decorative panels 128 rest on flanges 132; while the inner surfaces of the decorative panels adjacent their lower and upper edges engage vertical sidewall frame members 48 and/or a stop means 133 on extensions 116 and horizontally extending plates 108 or 114, respectively, which thereby maintain the decorative panels 128 in place.

Roll-away stairs 134 (FIG. 13) are mounted at one end of the pool to provide access to and from the deck 34. The upper end of the stairs are provided with a pair of outwardly extending roller 136 which are received in spaced-apart roller tracks 138 mounted on the underside of the deck and secured by bolts or similar means to the flanges of two of the horizontal deck support members 102. The spaced-apart pair of tracks 138 extend parallel with regard to each other from the outer edge of the deck to points adjacent the vertical end wall 26 and are provided with stops or protrusions 140 at the inner and outer ends to keep the rollers 136 of ladder 134 from rolling off the tracks. While in the preferred form, the tracks 138 are generally C-shaped with each track having a slot extending longitudinally along one side through which the support axles for rollers 136 pass, it is contemplated that tracks 138 can be of any suitable cross-sectional configuration. With this arrangement, the stairs can be stored (as shown in dashed lines in FIG. 2) under deck 34 simply by raising the lower end of the stairs and pushing the stairs inwardly until rollers 136 engage the inner stops 140. Apertures 141 can be provided in one of the tracks so that a lock, similar to a bicycle lock, can be utilized to prevent the stairs from being pulled out of storage by unauthorized persons.

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For the safety of those using pool 20, the pool has a railing 142 that extends entirely around and is secured to the outer perimeter of deck 34. The railing has a gate 144 directly above stairs 134 and, as discussed above, base members of the railing form an integral part of the deck leveling assemblies along sides 22, 24 and end 28.

While the preferred form of the invention has been shown and described, it is to be understood that all suitable modifications and equivalents may be resorted to which fall within the scope of the invention as claimed.

What is claimed is:

1. A rectangular swimming pool comprising:

end walls and sidewalls adapted to extend above ground level, each of said walls extending at right angles to adjacent walls to form a swimming pool having right angle corners;

anchoring means for anchoring said walls to the ground and retaining the lower portions of said walls in a fixed position, said anchoring means comprising a horizontal flange extending inwardly from the lower portion of said sidewalls and a vertical flange extending downwardly from the inner terminal end of said horizontal flange forming a safety ledge within said pool;

an elevated deck adjacent the upper peripheral edges of said sidewalls and said end walls;

external tension means extending between and secured to said corners, said external tension means engaging the outer ends of frame members mounted on the underside of said deck to exert inwardly and downwardly directed forces on said frame members and said deck to hold the outer edge of said deck down and in;

support means secured to said deck, said support means having jack assemblies for leveling said deck, diagonally extending frame members of said support means carrying cover panels, said cover panels extending between adjacent frame members and from adjacent ground level to adjacent the outer edges of said deck;

a liner within said pool; and

a hanger assembly means mounted adjacent the upper peripheral edges of said sidewalls and said end walls of said pools for securing said liner to said pool.

2. In the rectangular swimming pool of claim 1:

corner cove panel means for preventing the stagnation of water at the corners of said pool, said corner cove panel means mounted in said corners of said pool and said corner cove panel means having an inwardly facing concave surface extending from adjacent the lower portions of the walls to adjacent the upper edges of said walls.

3. In the rectangular swimming pool of claim 1:

said anchoring means being channel-shaped in transverse cross-section and said anchoring means adapted to overlie a block foundation having its upper surface substantially level with the ground.

4. In the rectangular swimming pool of claim 1:

said external tension means comprising cables, said cables having adjusting means for changing the tension in said cables.

5. In the rectangular swimming pool of claim 1:

said elevated deck comprising panels having alignment dowels along one edge and complementary alignment apertures along a second edge so that adjacent deck panels can be readily aligned with one another.

6. In the rectangular swimming pool of claim 1:

said diagonally extending frame members being substantially H-shaped in transverse cross section, the lateral edges of said cover panels being received between and retained by flanges of adjacent diagonally extending frame members.

7. In the rectangular swimming pool of claim 1:

said diagonally extending frame members being sub-

stantially T-shaped and the outer surface of said cover panels adjacent the lateral edges thereof resting on flanges of adjacent diagonally extending frame members.

8. In the rectangular swimming pool of claim 1: said elevated deck having a pair of spaced-apart parallel track means secured to its lower surface, said track means extending perpendicular to one of said end walls from points adjacent said end wall to points adjacent an outer edge of said deck; stairs having rollers mounted thereon adjacent an upper end of said stairs, said rollers being carried in said track means wherein said stairs can be stored by rolling the stairs under said deck.

9. In the rectangular swimming pool of claim 1: said hanger assembly means comprising a first hook secured to the deck of said pool and a second complementary hook secured to the peripheral edges of the liner.

10. In the rectangular swimming pool of claim 9: a coping, said coping having a hook portion overlying said first and second hooks when said coping is in place and said coping having a resilient extension which engages said deck to maintain said coping in place.

11. In the rectangular swimming pool of claim 1: said support means comprising horizontal frame members, said horizontal frame members secured to the underside of adjacent deck panels and said horizontal frame members extending along joints formed by abutting edges of said adjacent deck panels; said diagonally extending frame members along said sidewalls and one of said end walls, being secured at their lower ends to vertical sidewall and end wall frame members, said diagonally extending frame members along the other of said end walls being secured to the outer ends of horizontally extending extensions, said extensions being secured at their inner ends to lower portions of vertical end wall frame members of said other end wall.

12. In the rectangular swimming pool of claim 11: jack means provided on the outer ends of said extensions for leveling said support means and said deck.

13. In the rectangular swimming pool of claim 11: jack means for leveling the deck, said jack means interconnecting upper ends of said diagonally extending frame members along said sidewalls and said one of said end walls with said deck.

14. A rectangular swimming pool comprising: end walls and sidewalls adapted to extend above ground level, each of said walls extending at right angles to adjacent walls to form a swimming pool having right corners; a block foundation extending about the perimeter of said pool and having its upper surface substantially level with the ground; anchoring means fixably attached to and retaining lower portions of said sidewalls and said end walls in a fixed position, said anchoring means being channel-shaped in transverse cross-section with said channel opening downwardly, and said anchoring means adapted to overlie said block foundation.

15. In the rectangular swimming pool of claim 14: said anchoring means being an integral portion of said walls, and said anchoring means extending at right angles to and inwardly with respect to upper portions of said walls.

16. In the rectangular swimming pool of claim 14: an elevated deck adjacent the upper peripheral edges of said sidewalls and said end walls;

external torsion means extending between and secured to said corners, said external tension means engaging the outer ends of frame members mounted on the underside of said deck to exert inwardly and downwardly directed forces on said frame members and said deck to hold the outer edge of said deck down and in.

17. In the rectangular swimming pool of claim 16: said external tension means comprising cables, said cables having adjusting means for changing the tension in said cables.

18. In the rectangular swimming pool of claim 14: corner cove panel means to prevent water from stagnating in the corner, said cove panel means having an inwardly facing concave surface extending from adjacent the anchoring means of said walls to adjacent the upper edges of said walls, and each of said corner cove panel means being secured to an end wall and a sidewall along the vertical edges of said corner cove panel means.

19. The rectangular swimming pool of claim 1 comprising:

end walls and sidewalls adapted to extend above ground level, each of said walls extending at right angles to adjacent walls to form a swimming pool having right angle corners;

anchoring means for retaining the lower portions of said walls in a fixed position;

said end walls and said sidewalls having vertical frame members secured to their outer surfaces, said vertical frame members extending along joints formed by adjacent panels which make up said end walls and said sidewalls;

horizontal braces extending between and secured to at least some of said vertical frame members, said horizontal braces engaging the outer surfaces of said end walls and said sidewalls to strengthen said walls.

References Cited

UNITED STATES PATENTS

3,318,059	5/1967	Wright	52—293XR
3,397,494	8/1968	Waring	52—169XR
3,440,780	4/1969	Adam et al.	52—169
3,447,168	6/1969	Gabrielli et al.	4—172
2,490,272	12/1949	Kasle	4—172P
3,059,243	10/1962	Ross et al.	4—172
3,256,532	6/1966	Lindsay et al.	4—172
3,335,430	8/1967	Schwarz et al.	4—172
3,354,473	11/1967	Schwarz et al.	4—172
3,409,916	11/1968	Billig et al.	4—172
3,428,969	2/1969	Diamond et al.	4—172
3,427,662	2/1969	Jacuzzi et al.	4—172

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52—169, 249, 300, 588