United States Patent [19]

Banchi

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[54] **SWIMMING POOL**

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[30] **Foreign Application Priority Data**

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Mar. 16, 1973 Italy.....12520/73

[52] **U.S. Cl.** **4/172.19**
[51] **Int. Cl.**..... **E04h 3/16,** E04h 3/18
[58] **Field of Search**..... 4/172, 172.19, 172.21; 52/169, 573

[56] **References Cited**

UNITED STATES PATENTS

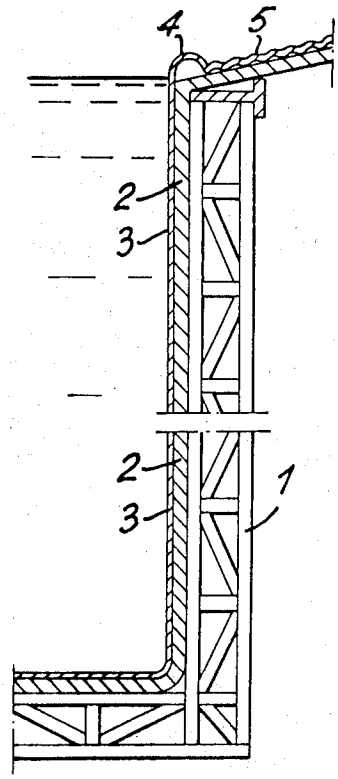
3,371,455	3/1968	Fox	52/169
3,396,500	8/1968	Lankheet	4/172.19 X
3,739,539	6/1973	Posnick	52/169
3,745,727	7/1973	Chichester, Sr.	4/172.19 X
3,746,603	7/1973	Hewett	52/573 X

Primary Examiner—Henry K. Artis
Attorney, Agent, or Firm—Edwin E. Greigg

[57] **ABSTRACT**

The swimming pool comprises a supporting tank structure formed by a supporting frame to which a supporting covering composed of sheet metal plates is secured. To the exposed surface of said supporting covering a watertight lining is glued, formed by thin panels of plastic material or stainless steel. Means are provided for joining said panels together in a watertight manner, while permitting the reciprocal movement between the supporting structure and the watertight lining due to differences in thermal expansion between said parts.

15 Claims, 17 Drawing Figures



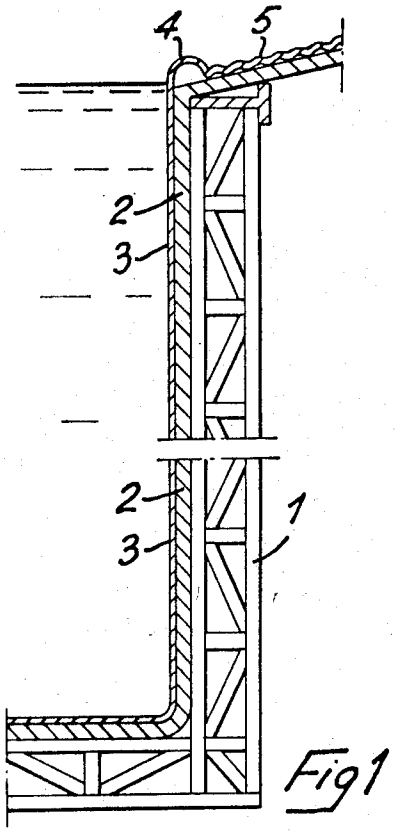


Fig1

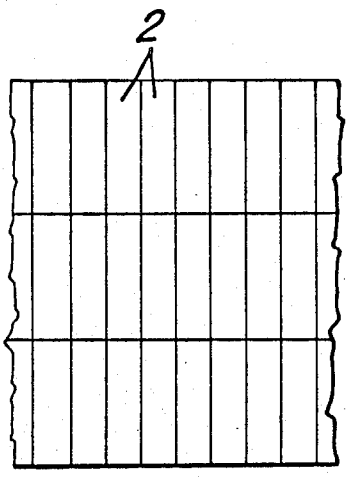


Fig.2

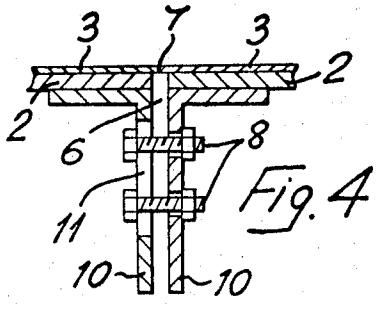


Fig.4

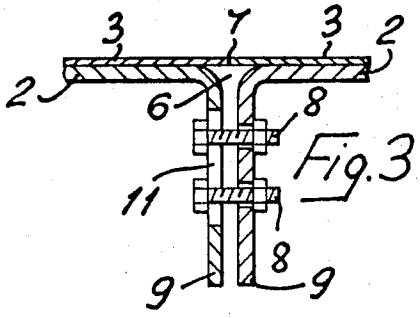


Fig.3

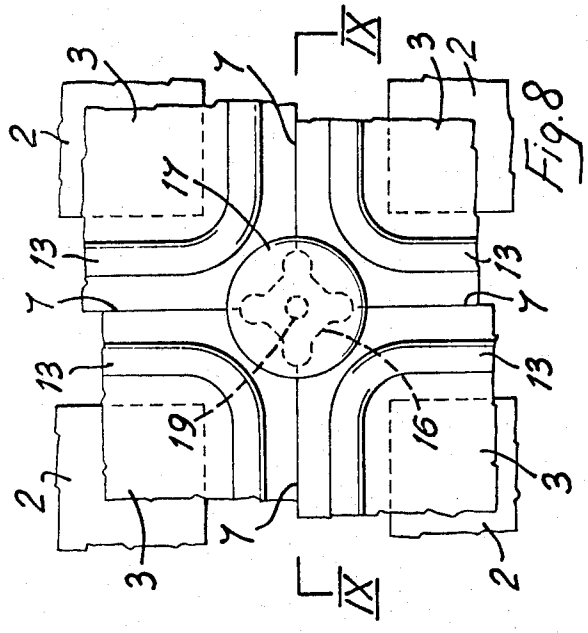


Fig.8

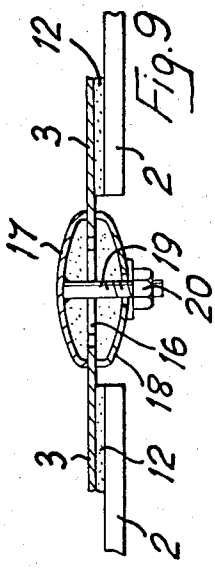


Fig.9

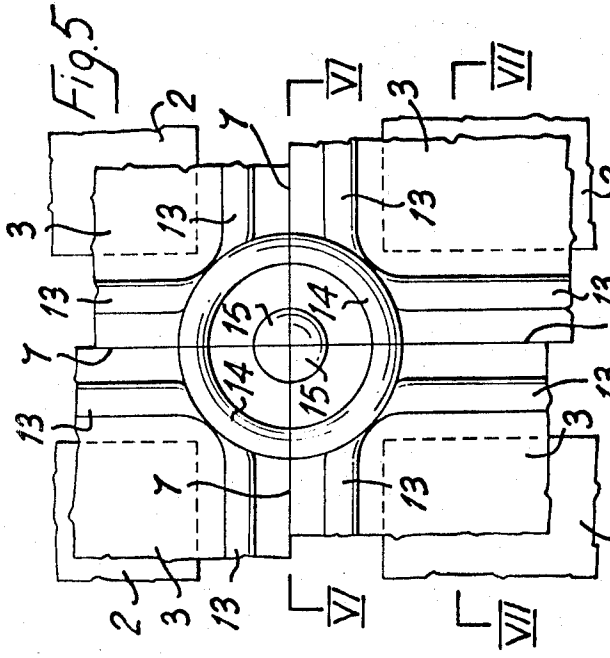


Fig.5

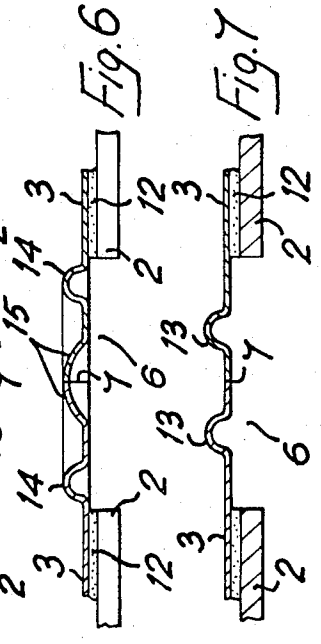


Fig.6

Fig.7

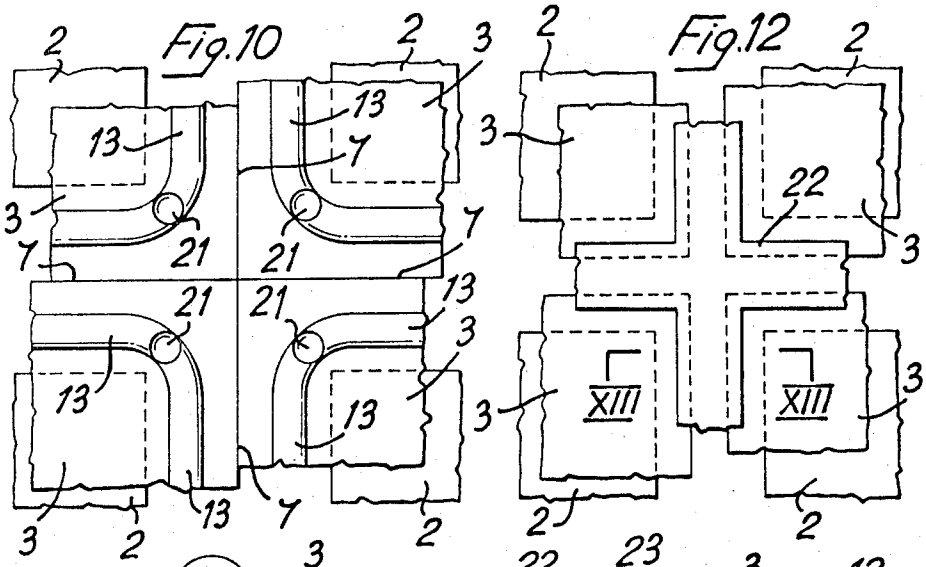


Fig.10
Fig.12
XIII
XIII

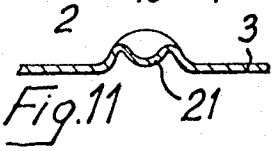


Fig.11

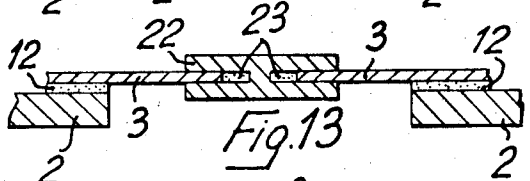
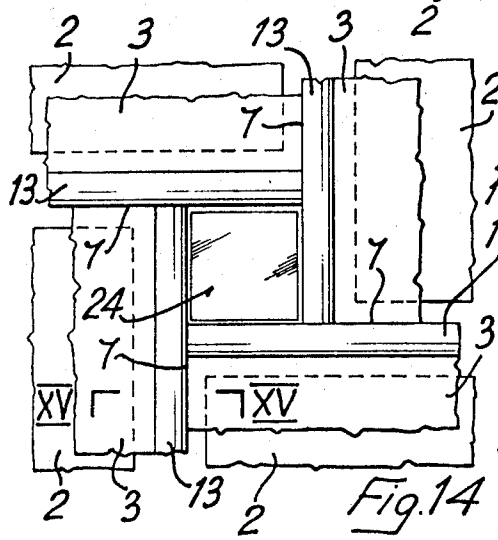


Fig.13


XV
XV
Fig.14

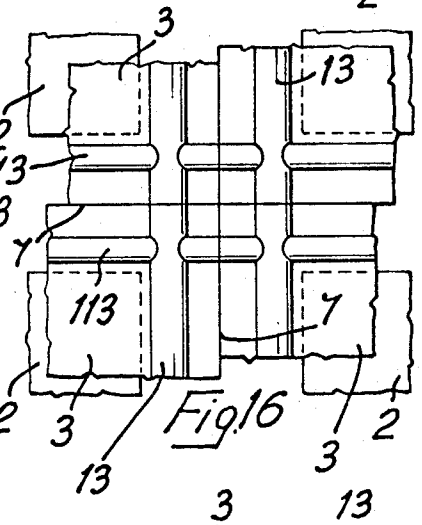


Fig.16

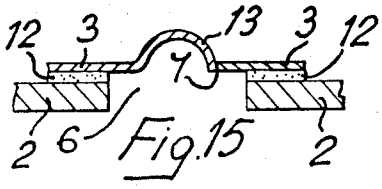


Fig.15

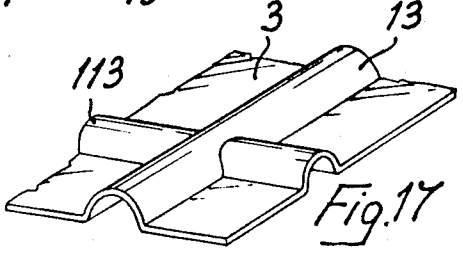


Fig.17

SWIMMING POOL

BACKGROUND OF THE INVENTION

In the prior art swimming pools, the tank is usually of reinforced concrete lined with glazed or ceramic tile. The said known swimming pool construction is however much too heavy, and, apart from this, it may be not dismantled without being destroyed.

SUMMARY OF THE INVENTION

The present invention aims obviate to the drawbacks of the prior art swimming pools, by providing a swimming pool which is lighter in weight and easily dismantled.

According to the invention the above is accomplished by providing a swimming pool assembly including a tank structure formed by a supporting frame to which a plurality of sheet metal plates are secured, and by further adhering to the exposed surface of the metal plates a watertight lining comprising thin panels either plastic material or stainless steel with the panels being joined together in a watertight manner.

In order to permit the movement between the plurality of metal plates comprising a portion of the swimming pool assembly and the watertight lining which extends thereover, which condition arises due to the difference in thermal expansion between the superposed elements, means are provided, according to the invention, for joining the panels of the lining together in a watertight manner, so as to accomodate such movements. These and other objects will become more apparent from a reading of the following specification taken in conjunction with the drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a partial vertical section of a swimming pool according to the invention.

FIG. 2 is a partial plan view of the bottom of the swimming pool.

FIG. 3 is a section of a particular of a joint between two covering plates of the tank structure according to the invention.

FIG. 4 is another embodiment of a joint corresponding to FIG. 3.

FIG. 5 is a plan view of the junction center between four covering plates of the tank structure according to the invention.

FIGS. 6 and 7 are cross sectional views taken along the lines VI—VI and VII—VII of FIG. 5.

FIG. 8 is a plan view of another embodiment of junction center between four covering plates.

FIG. 9 is a cross section along line IX—IX of FIG. 8.

FIG. 10 is a plan view of a still further embodiment of the junction center between four panels.

FIG. 11 is a cross-section through a particular of FIG. 10.

FIG. 12 is a plan view of another embodiment of a junction center between four panels.

FIG. 13 is a cross-section taken along line XIII—XIII of FIG. 12.

FIG. 14 is a plan view of another embodiment of the junction center between four panels.

FIG. 15 is a cross-section taken along line XV—XV of FIG. 14.

FIG. 16 is a plan view of another embodiment of the junction center between four panels.

FIG. 17 is a perspective view of a corner of a lining panel according to the embodiment of FIG. 16.

DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

With reference to FIGS. 1 and 2, the swimming pool shown comprises a box-type framework 1. To the said framework 1, the sheet metal plates 2 are secured to thus form the bottom and sidewalls of the tank of the swimming pool. The sheet metal plates 2 are advantageously of an elongated rectangular shape and are disposed side by side, as shown in FIG. 2. The said plates 2 are secured to the framework 1 in a releasable manner by means of bolts or the like connecting means.

Lining panels 3 are secured to the exposed surface of the plates 2. The said panels 3 are formed from a thin sheet of plastic material stainless steel and constitute the inner lining of the swimming pool. As best shown in FIG. 1, some of the panels 2 are arranged to extend outwardly over the framework as illustrated at 2a in order to form a support for the suitably profiled lining panels 3, the upper edge 4 of which terminates in a walkway 5 that extends all around the swimming pool.

As best shown in FIGS. 3 and 4, expansion gaps 6 are provided between the aligned plates 2. The panels 3 extend over plates 2 to cover the said expansion gaps 6, to bridge the same and are joined together at the said expansion gaps by means of a weld seam 7.

With particular reference to the embodiment of FIG. 3, the edges of the plates 2 are bent inwardly at right angles so as to form the connecting flanges 9 which are provided with slots 11 and through which the connecting bolts 8 are passed.

According to the embodiment of FIG. 4, the angle irons 10 are welded to the lower side of the plates 2. The said angle irons 10 are also provided, as described in the embodiment of FIG. 3, with slots 11 for passage of the connecting bolts 8.

DESCRIPTION OF SOME EMBODIMENTS OF EXPANSION JOINTS BETWEEN THE LINING PANELS

According to the invention, it is of considerable importance that the lining panels be free of movement relative to the supporting structure, at least at the junction points of the said panels, in order to compensate for the different thermal expansion of these parts.

To this end, a number of expansion joints have been developed according to the invention, which are particularly suited for connection of the lining panels, especially where the lining panels are to be made of stainless steel.

With reference to the embodiments of FIGS. 5, 6 and 7, the lining panels 3 are secured to the supporting plates 2 by means of a layer of adhesive 12. The lining panels 3 are provided at their peripheral edges which extend beyond the underlying plates 2 with a corrugation 13 that extend along the edges of the panels and parallel to the weld seam 7.

At the corners or junction point between four panels the longitudinal and transversal corrugations 13 of each panel 3 are connected together by a curved transition corrugation. Moreover, the said panels are each provided at this junction point with a curved corruga-

tion 14 which extends for one fourth of the circumference of the corner of the panel 3 and has its center portion disposed at the said corner. The said corrugation 14 partially overlaps the curved transition corrugation between the straight corrugations 13 of the panel. Further at their corners, the said panels are provided with a partial embossment 15 which extends for one-fourth of a hemisphere. At the junction point of which extends the four panels 3 the curved corrugations 14 thus comprise a full circle corrugation and the partial embossments 15 comprise a hemispheric cup.

In view of the foregoing description, it will now be appreciated that a compensation for the thermal expansion of the lining panels is provided for in all directions.

In FIGS. 8 and 9, a second embodiment of an expansion joint is shown. According to this embodiment, the panels 3 are each provided with longitudinal and transversal corrugations at their edges, there being connected together at their corners by curved transition corrugations. At their junction point, the corners of the panels 3 are provided with a substantially rhombic part 16. The said part 16 is covered by two oppositely disposed cup-like elements 17, 18, which are connected together through the part 16 by a connecting stud 19 secured at one end to cup 17 and arranged to pass through an aperture in cup 18. A tightening bolt 20 is made fast on the free end of said stud 19, so as to tighten cups 17 and 18 together and urge them into firm contact against the corners of the panels 3. The space inside of cups 17 and 18 may be filled with a suitable cement. Thus, it will be apparent from the foregoing that the cap members 17 and 18 together with a suitable adhesive will provide a secure leakproof joint.

In the embodiment shown in FIGS. 10 and 11, the curved transition corrugation connecting the straight corrugations 13, is provided centrally of the curved area with an hemispherical depression 21.

In the embodiment of FIGS. 12 and 13, the panels 3, instead of being welded together, are connected together by strips 22 which ever the joints, as shown. The said strips 22 are provided with oppositely extending lateral grooves 23, in which the edges of the panels are inserted together with a suitable plastic cement.

In the embodiment of FIGS. 14 and 15, the panels 3 are each provided with a longitudinal corrugation 13. The said panels 3 are so offset, one with respect to the other, as to define at the junction point between four panels a square aperture which is closed by a cover piece 24 welded to the said panels.

In the embodiment shown in FIGS. 16 and 17, the panels 3 are each provided with a first longitudinal corrugation 13 and with a second transversal corrugation 113 which intersects and erasses the corrugation 13 near the corners of said panel. The panels 3 are welded together at 7.

Of course, the present invention is not limited to the embodiments of the invention disclosed but are only illustrative of the inventive concept.

I claim:

1. A swimming pool assembly comprising the following elements, a supporting structure including a frame, a plurality of sheet metal plates in spaced edge to edge relationship supported on said frame, lining panels including edge portions arranged to overlie said plurality of plates, means serving to join said panels together in a water-tight manner and compensate for movement in the structure as well as thermal expansion of said respective elements comprising the pool assembly.

2. The structure described in claim 1, in which the supporting plates are secured to the frame in spaced relation to provide an expansion gap therebetween.

3. The structure described in claim 2, in which the supporting plates are detachably connected together.

4. The structure described in claim 2, in which the expansion gap between said plates is arranged to accommodate a plastic cement.

5. A structure according to claim 1, in which the said lining panels are joined together by means of joint covering strips provided with lateral grooves in which the edges of the panels are inserted.

6. A structure according to claim 1, in which the said lining panels are butt welded together.

7. A structure according to claim 1, in which the edges of said lining panels are provided with, at least, one corrugation.

8. A structure according to claim 1, in which the edges of said panels are each provided with longitudinal and transversal corrugations.

9. A structure according to claim 8, in which the said corrugations are connected together by the edges of said panels by means of curved transition corrugations.

10. A structure according to claim 8, in which the said corrugations cross the edges of said panels.

11. A structure according to claim 9, in which the said curved transition corrugations are each provided with at least one hemispherical embossment in their median region.

12. A structure according to claim 1, in which the said lining panels are each provided with corner portions which include a curved corrugation adapted to embrace the corrugation of an adjacent panel.

13. A structure according to claim 1, in which the junction point of plural adjacent lining panels include a hemispherical embossment.

14. A structure according to claim 1, in which the junction points of plural adjacent lining panels are arranged to receive leakproof cap members.

15. A structure according to claim 14, in which the adjacent lining panels are offset relative to each other prior to attachment of the leakproof cap members.

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