July 10, 1923.

1,461,026

J. F. BOORAEM

SWIMMING POOL CONSTRUCTION

Filed March 8, 1922

3 Sheets-Sheet 1

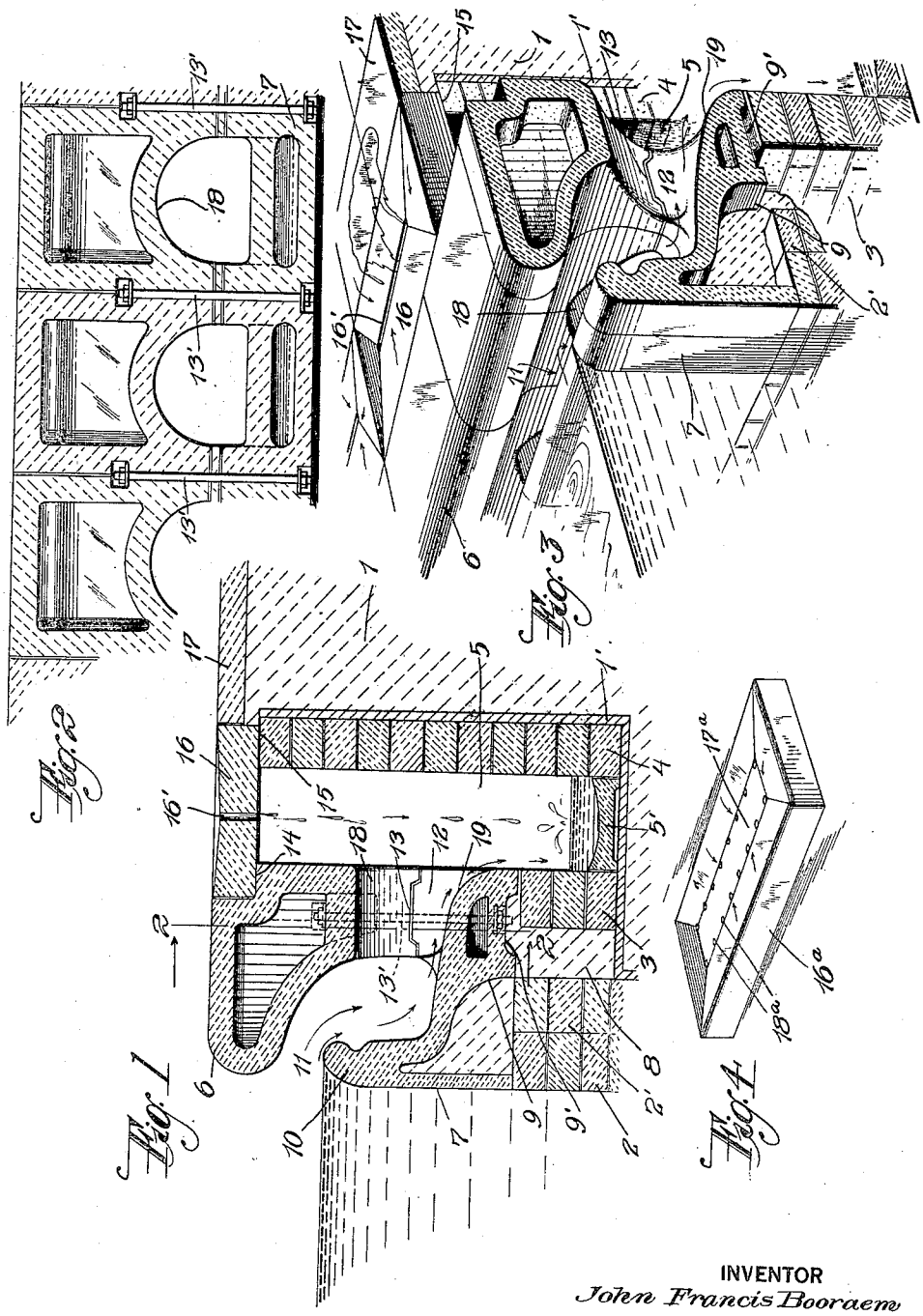


Fig. 1



Fig. 2



Fig. 3



Fig. 4

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Fig. 5

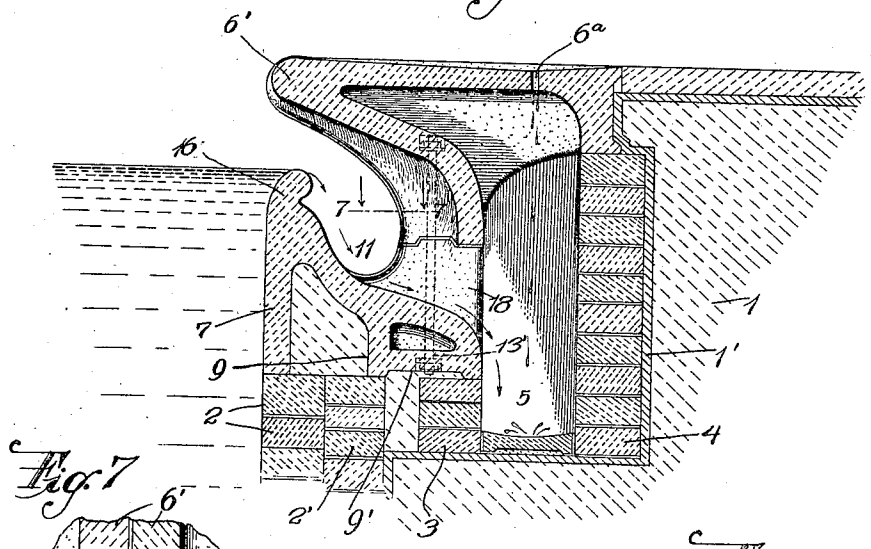



Fig. 7

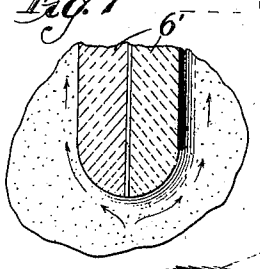
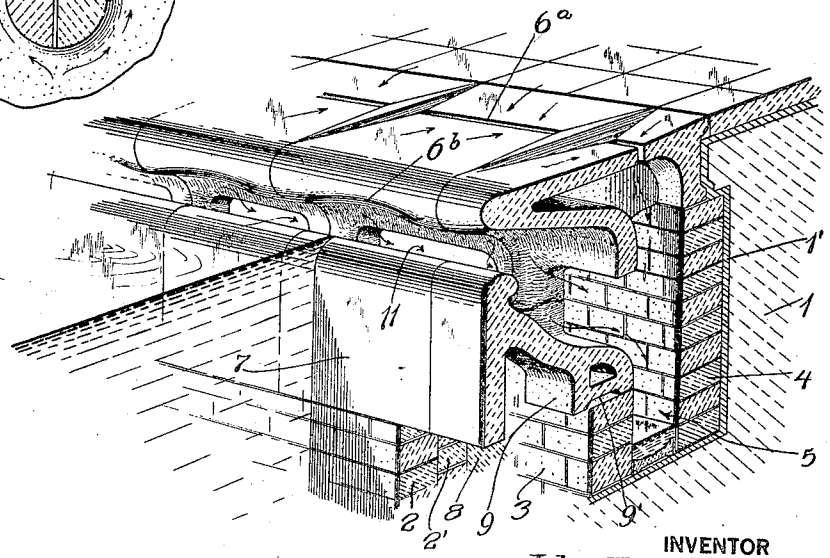



Fig. 6




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Fig. 8

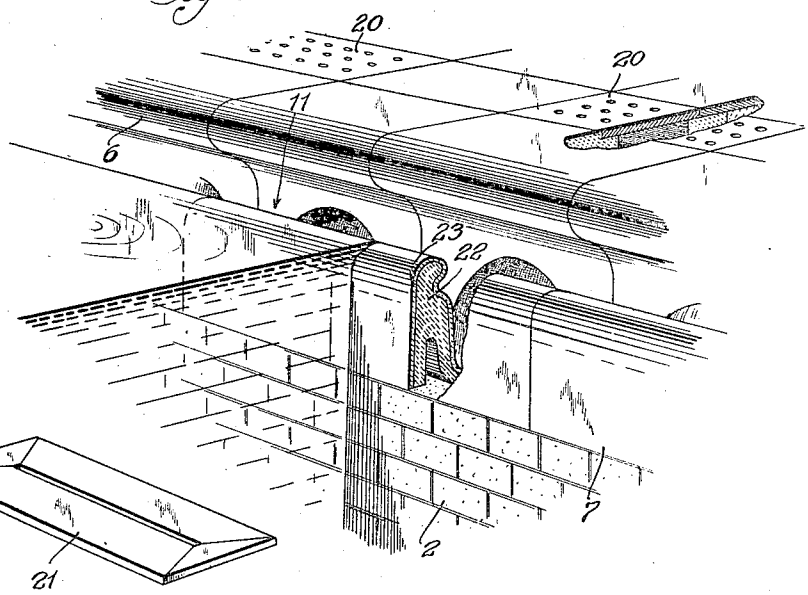



Fig. 9




Fig. 10

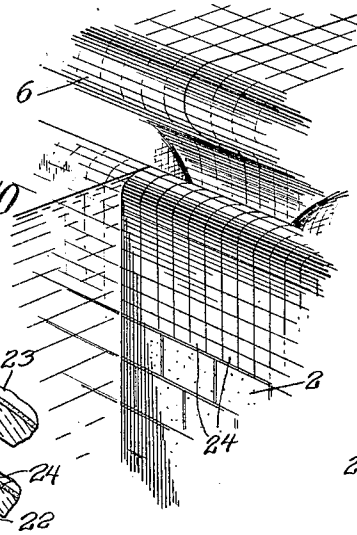



Fig. 12

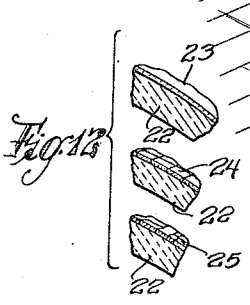
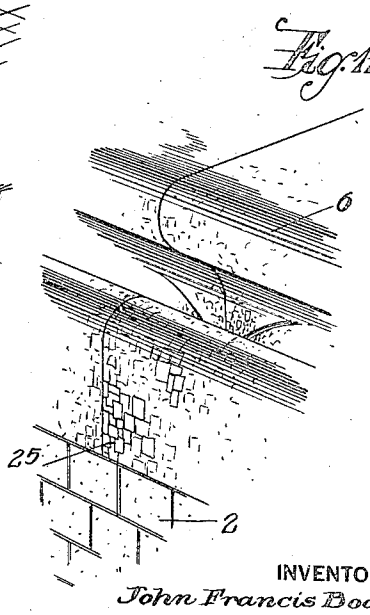



Fig. 11




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Patented July 10, 1923. 1,461,026

# UNITED STATES PATENT OFFICE.

JOHN FRANCIS BOORAEM, OF GREENWICH, CONNECTICUT.

## SWIMMNIG-POOL CONSTRUCTION.

Application filed March 8, 1922. Serial No. 542,099.

*To all whom it may concern:*

Be it known that I, JOHN FRANCIS BOORAEM, a citizen of the United States, and a resident of the city of Greenwich, county of Fairfield, State of Connecticut, have invented a new and useful Improvement in Swimming-Pool Constructions, of which the following is a specification.

The present invention comprehends certain improvements in swimming pool constructions and more particularly, improved means for taking care of the continuous overflow from the pool and also providing adequate drainage for the floor surface water at the edge or margin of the pool to prevent the flow or drip of such water back into the water of the pool. In attaining the above purpose, in one embodiment of the invention I provide an improved combination rail, cap and gutter course extending entirely along each side of the pool and which is so constructed that its cross-sectional area is comparatively limited, thereby rendering my new construction easy to install and comparatively inexpensive. As will be later more fully disclosed, the component parts of the combination rail, cap and gutter course are so constructed and relatively arranged that the over-flow water from the pool instead of flowing by gravity through a longitudinally sloping gutter to an outlet, is directed transversely from the gutter in the same direction as the over-flow so that no opportunity is afforded for mucus and other foreign matter to collect upon the walls of the gutter. In other words, the improved construction entirely eliminates the necessity of sloping the gutter longitudinally to the drains, which is quite undesirable in some types because of the pockets formed in the gutter by shrinkage and relative displacement of the gutter sections wherein mucus may collect with unsanitary and unsightly results.

Another feature of the present invention resides in the provision of a drainage trench into which the over-flow from the gutter is immediately discharged in a transverse direction, and which also receives the floor surface water around the margin of the pool through suitable scuppers, floor plates or drains arranged in the floor surface. This trench may be thoroughly cleaned by removing certain of the scupper or drainage sections arranged in the floor without in any way interfering with the continued use of the pool, the provision of the drainage trench also materially reducing the area of the gutter surface adjacent to the pool necessary to be cleaned and eliminating the necessity of providing a multiplicity of outlet connections extending to a common drainage pipe laid around the pool behind the wall structure.

With the above and other objects in view, the invention consists in the improved swimming pool construction and in the form and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawings wherein I have disclosed several desirable and practical embodiments of the invention and in which similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a fragmentary vertical section through a construction according to the present invention;

Fig. 2 is a fragmentary section taken substantially at right angles to Fig. 1 on the line 2—2 therein;

Fig. 3 is a fragmentary perspective view with parts broken away showing the improved construction;

Fig. 4 is a perspective view showing a slightly modified form of floor plate or drain;

Fig. 5 is a fragmentary vertical section showing a slight modification;

Fig. 6 is a fragmentary perspective of the same;

Fig. 7 is a fragmentary horizontal section taken on the line 7—7 in Fig. 5;

Fig. 8 is also a partial perspective with intermediate parts broken away and showing a further slight modification;

Fig. 9 shows a modified form of slab, floor plate or drain-insert in perspective;

Fig. 10 shows a further slight modification in a fragmentary perspective;

Fig. 11 is a similar view showing a further modification, and

Fig. 12 shows alternative sections of still further forms of the invention.

In one embodiment of my present invention which I have illustrated by way of example in Fig. 1 of the drawings, the retaining wall 1 which is of concrete or other

similar material and surrounds the pool, is provided in its upper edge along each side of the pool with a continuous longitudinally extending shelf or recess, the surfaces of which are preferably disposed at 90° angles with relation to each other. These angular surfaces, as well as the side surfaces of the wall 1 which bound the pool, are covered with a suitable waterproof material 1′.

In the construction of the pool in accordance with the present invention, the side walls of the pool are composed of courses of enameled brick or tiling 2 laid in superposed relation against the waterproofing material 1′. This enameled brick, as clearly shown in the drawings, extends for a certain distance above the base of the longitudinal shelf in the wall or foundation 1. Intermediate and rear courses of enameled brick or tile, designated 3 and 4 respectively, are laid upon the waterproofing material covering the horizontal base surface of the marginal shelf in the wall 1, the enameled brick or tile 4 being engaged against the vertically extending portion of the waterproof material at the rear side of said shelf. The intermediate courses of brick 3 are spaced a suitable distance from the brick 4 to provide a drainage trench 5 of predetermined width. This trench is provided with a longitudinally sloping or inclined bottom which, if desired, may consist of separate bricks, slabs or tiles 5′ of suitable material. The bricks 3 are likewise properly spaced from the brick 2 constituting the lining for the pool and provide supporting means for the combination rail and gutter units to be presently referred to, as well as forming the outer wall of the trench 5.

The cap, gutter course and life rail units are preferably made in two sections, the cap course units 6 in this embodiment of the invention being of the form illustrated in Figs. 1, 2 and 3 of the drawings. The gutter and rail course units 7 may be relatively narrow in comparison to the units of this character as heretofore used, each of said rail and gutter course units being provided at its outer side with an upstanding rail or flange 10. The cross-sectional form of these gutter course units is such as to provide transversely and inwardly sloping or inclined base surfaces as hereinafter more particularly referred to. A relatively small amount of mortar, cement or other plastic material, indicated at 8, is required to fill in between the tile lining 2 and the brick 3 and in practice there will usually be a course of common brick outside the waterproofing to bond with the enameled brick in a substantial 8″ wall. The inner portion of each combination gutter and rail unit is relatively thick and is provided in its outer side face and in its bottom face with cutouts or recesses 9 and 9′ respectively, which receive the cementitious material 8. Thus there is produced a secure interlock or anchorage of the gutter and rail course units in the material 8 so as to prevent transverse creeping of said units with relation to the tiling 2 and the brick 3.

The gutter and rail units constructed as above described, provide a longitudinally extending gutter 11 which is continuous along each side of the pool, the base wall of such continuous gutter having no longitudinal inclination. Each of the gutter units is further provided at the inner end thereof and on its upper side at the rear of the gutter 11 with spaced bosses 12 having ribs upon their upper edges to engage in complemental recesses formed in spaced parts 13 of the cap units or sections 6. Each cap unit is preferably of hollow construction and one side thereof is properly shaped to form the upper and inner side wall of the gutter 11. It is of course, understood that a suitable mortar or cement is used between the parts 12 and 13 of the cap and gutter units to securely bind the same together.

For the purpose of further securing the cap units rigidly in place, I provide the vertical anchoring bolts 13′. These bolts extend through channels or recesses in the contacting side faces of adjacent cap units as shown in Fig. 2 of the drawings.

The upper portion of each cap unit 6 at the inner side thereof is recessed or rabbeted as at 14, thereby providing shoulders, which in conjunction with the seating surfaces 15 of the brick course 4, receive and support the floor scuppers or drainage slabs 16. These slabs may be of glazed terra cotta, bronze or similar materials and provide means for closing the trench 5. At intervals these scuppers or drainage plates are removable for insertion of hose for scouring out the trench. As herein shown, each of said slabs is flush at its edges with the floor 17 of the pool, the upper surface of the slab sloping inwardly and downwardly from each edge thereof to a longitudinally extending slot 16′ which affords means for draining the surface water on the floor surrounding the pool into the trench 5. It is also to be noted in this connection that the upper surfaces of the cap unit 6 slightly slope inwardly, thereby directing the drip water from the bathers to the slots 16′ and preventing the flow of said water into the water of the pool.

It will be apparent from the above description that the structure consists essentially of only two series of units. The gutter 11 which is produced by the assemblage of said units in the manner stated, is in direct communication with the trench 5 through the arch shaped passages indicated at 18 which are formed between the opposed inner end portions of each comple-

mental pair of cap and gutter units. As heretofore noted, the bottom surfaces of these passages formed by the gutter units are transversely inclined in an inward and downward direction as shown at 19 and substantially constitute unbroken continuations of the gutter 11. While any desired number of these transverse communicating passages may be provided, in order to take care of the most rapid and voluminous overflow from the pool, I preferably provide such openings between each pair of cap and gutter units. It will be noted that these passages are comparatively wide so that any possibility of clogging is practically eliminated and the free transverse flow or outlet of the water from the gutter 11 into the trench 5 will be assured under all conditions of use. At the same time, however, owing to the two-part construction and the particular form and manner of assemblage of the parts or units, it is found that such structure is entirely adequate to sustain the weights which may be imposed thereon and in practice is so designed.

As shown in Figs. 2 and 3 of the drawings, the passages 18 may be provided with arch shaped top walls which may add to some extent to the strength and appearance of the structure, though the rectangular formation of such passages as illustrated in Fig. 6, will not unduly weaken the structural units. This is particularly true in view of the cross-sectional form of the unit shown in this latter figure and the extensive supported area thereof. Both the cap and the gutter sections or units are made hollow wherever practicable in order to secure lightness and avoid warping without sacrificing rigidity and strength. Such construction likewise, permits of uniform shrinkage in accordance with well established practice in the manufacture of clay products.

In Fig. 4 of the drawings I have shown a slightly different form of the drainage slab $16^a$ wherein there is provided a flat depressed central upper surface $17^a$ lined with longitudinally spaced perforations $18^a$ at its opposite sides. The marginal surfaces surrounding said depressed surface portion are inwardly and downwardly inclined for directing the water to said perforations as will be obvious. These perforations obviate the likelihood of the foot of the bather being injured and at the same time provide adequate drainage for the floor surface. In the construction shown in Figs. 5 and 6, the use of the separate scupper sections or drainage slabs is dispensed with and the cap units 6′ are of greater width so as to extend rearwardly over the trench and to seat at their rear edges upon the bricks 4 so that they will be flush with the floor surface. In this construction the upper surface of the cap unit is depressed and provided with oppositely sloping areas directing the surface water into the slots or openings $6^a$. The under surface of the front or outer end of each cap section is centrally concaved as indicated at $6^b$ to afford additional clearance for the over-flow water. Also, the front surfaces of these cap units 6′ at their meeting or contacting side portions are rounded or convexed as shown in Fig. 7 so that the flow of the water is not retarded and no opportunity is given for mucus or other foreign matter to be retained thereon.

In each of the constructions above described, it will be understood that the overflow water passes immediately from the gutter 11 transversely into the trench 5 from which it is drained into a suitable outlet, and does not flow longitudinally in said gutter.

In Fig. 8 of the drawings I have shown the drainage plates or slabs 20 which are relatively thin and may be formed of metal or terra cotta, as desired. I have also shown said plates as being perforated, but if desired, they may be replaced by similar plates 21 of the form shown in Fig. 9, having a single longitudinal central slot.

In this form of my invention the cap units and the gutter and rail units may be composed of an inner body portion 22 of cement, concrete or other similar material upon which a surface layer or veneer 23 of water proof cement, decorative composition, imitation ceramic of mosaic tiling may be placed.

In Fig. 10 of the drawings I have illustrated a structure with a facing composed of separate tiles, bricks or blocks 24 laid in courses showing substantially the same effect produced by monolithic construction of cement as in Fig. 8 and then lining or marking off the surfaces thereof in the manner well known to the art in imitation of tiling.

In Fig 11 I have shown the structure provided with a surface of ceramic tiles or mosaic blocks 25 embedded in the monolithic concrete or other plastic body structure and in Fig. 12 I have shown fragmentary sections of each of the structural forms disclosed in Figs. 8, 10 and 11, respectively. It will be understood that in each of these constructions, the transverse communicating passages connecting the trench with the gutter for the immediate drainage of the latter prevails.

In a swimming pool constructed as herein described, the over-flow and splash water received in the gutter 11 does not, as heretofore, flow longitudinally along the gutter to a drain provided therein at the lower end of its sloping surface, but finds a direct and immediate exit through passages 18, continuing to flow in the same direction as in passing from the pool into the gutter. Therefore, such flow is not in any way arrested or checked as would be the case if the water were required to suddenly change its

course and flow in a direction at right angles to the initial direction of flow when it leaves the pool. On the contrary, the flow is entirely unimpeded and it may be said that the gutter will always be substantially empty since the water passes immediately therefrom into the trench 5. This trench is of ample capacity to take care of all over-flow as well as the drip or drain water and as above noted, provision is made for the easy flushing and cleaning of the walls of this trench through removable floor plates, without interfering with the continued use of the pool.

Another advantage incident to my present construction is that it is unnecessary to puncture the waterproofing material 1' as has heretofore been required in making the proper connections to the piping outlets or leads at from 5 ft. to 20 ft. apart between the gutter and the common drain pipe extending around the pool. In the present instance it will be seen that I entirely dispense with the use of such a pipe line, as it is only necessary to provide a single outlet connection at one end of the pool to the drainage trench 5. I, therefore, avoid the expense incident to the provision and installation of the large number of connections between the overflow gutter and the round about connecting pipe line, and my improved system is in general considerably less expensive than prior systems in that the drainage trench is located within the waterproofing line of the wall or foundation. Further, by such location of the trench, its bottom may be given a slope or inclination of any desired degree in order to rapidly discharge the water therefrom. In prior constructions having the round about carry-off or drain pipe connected by pipe leads with a plurality of openings in the gutter, said longitudinal slope of the pipe was necessarily restricted. Therefore, the new construction operates to more rapidly carry off the splash and over-flow water and directs the scum and mucus out of sight into the collecting trench in the shortest possible time and by the quickest route. I am thus also able to reduce the depth of the gutter so that it may be easily cleaned with a hose, the discharge flowing directly into the trench.

An additional advantage obtained by the present construction, resides in the elimination of the separate life rail and the construction of the rail and gutter in the form of a single unit. This reduces the cost of installation, and adds to the neat and attractive appearance of the marginal wall of the pool.

This application is in part a continuation of an application filed by me on December 30, 1921, under Serial No. 525,991.

While I have herein shown and disclosed several desirable and satisfactory embodiments of the invention, it will nevertheless be understood that my improved pool construction is susceptible to still further modification in the form, construction and relative arrangement of its several parts and I, therefore, reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. A swimming pool construction comprising an overflow gutter and a trench extending longitudinally of the margin of the pool in spaced relation to each other and transverse passages affording direct communication between said gutter and trench.

2. A swimming pool construction comprising an overflow gutter and a trench spaced apart and extending in parallel relation to the pool margin and passages affording direct communication between the gutter and trench, the base walls of the gutter and passages having a continuous transverse inward and downward inclination operating to continue the initial flow of the water without interruption from the gutter into said trench.

3. A swimming pool construction comprising gutter course units and cap course units forming an overflow receiving gutter extending longitudinally of the pool margin, a drainage trench at the inner sides of the gutter and cap course units, said units having means affording transverse communicating passages between the gutter and the trench for directing the water in uninterrupted flow from said gutter into the trench.

4. A swimming pool construction comprising a supporting wall, waterproofing on the surfaces of said wall, and two series of complementary units together forming a continuous marginal gutter for the pool, and a trench at the inner side of the gutter within the water proofed area of said wall, said units being constructed to provide transverse passages affording direct communication between the gutter and said trench.

5. A drainage system for swimming pools comprising a continuous marginal gutter and a continuous drainage trench at the outer side of said gutter and below the same and in open communication with said gutter to receive the overflow water without interruption of its initial transverse course of flow.

6. A swimming pool construction comprising a trench extending along each side of the pool, cap course units at the inner side of the trench next adjacent to the pool having transverse passages permitting of

the uninterrupted transverse flow of over-flow water from the pool into said trench, and drainage members for the floor surface surrounding the pool closing the upper side of said trench.

7. A swimming pool construction comprising spaced superposed courses of bricks forming a drainage trench therebetween, superposed courses of tile forming the side walls of the pool, a gutter structure consisting of a plurality of like units supported upon the tile and one of the superposed courses of brick, said gutter units having transversely and downwardly sloping surfaces permitting of the uninterrupted initial transverse flow of the water from the pool through said gutter and into the trench, and means for draining the floor surface water into said trench.

8. A swimming pool construction comprising a wall, transversely spaced superposed courses of brick forming a trench therebetween and inner superposed courses of tile constituting the wall of the pool, combination rail and gutter units supported upon said tile and one of the brick courses, cementitious anchoring means for said units filling the space between said tile and brick courses, said gutter units being disposed above the base of the trench and having transversely inclined downwardly sloping walls directing the over-flow water from the pool without changing from its initial course from the gutter into said trench.

9. A swimming pool construction comprising combination gutter and rail course units, cap course units supported upon said gutter and rail course units and forming therewith a continuous gutter, a drainage trench at the inner side of said gutter and cap course units, said units being constructed to provide transverse passages affording means for the direct flow of the water without changing its initial course from the gutter into said trench.

10. A swimming pool construction comprising combination gutter and rail course units, cap course units supported upon said gutter and rail course units and forming therewith a continuous gutter, a drainage trench at the inner side of said gutter and cap course units, said units being constructed to provide transverse passages affording means for the direct flow of the water without changing its initial course from the gutter into said trench, drainage means for the floor surface water covering the upper side of the trench, the upper surfaces of said cap course units being inclined to direct the surface water to said drainage means.

11. A swimming pool construction comprising a combination gutter and rail course unit, and a separate drainage tunnel, the gutter surface sloping transversely and downwardly away from the rail to direct the overflow water into a separate drainage trench.

12. In swimming pool construction, a combination gutter and rail course unit, a complementary cap course unit, and a separate drainage trench, said units being provided with projections adapted for interlocking engagement to support the cap course unit upon the gutter and rail unit and together forming part of a continuous gutter having transverse passages between said projections at the outer side of the gutter through which the over-flow water may pass without interruption of its initial course of flow into a drainage trench.

In testimony that I claim the foregoing as my invention, I have signed my name hereunder.

J. FRANCIS BOORAEM.