July 18, 1933. H. TORRANCE 1,918,437

CONVERTIBLE SWIMMING POOL AND SKATING RINK

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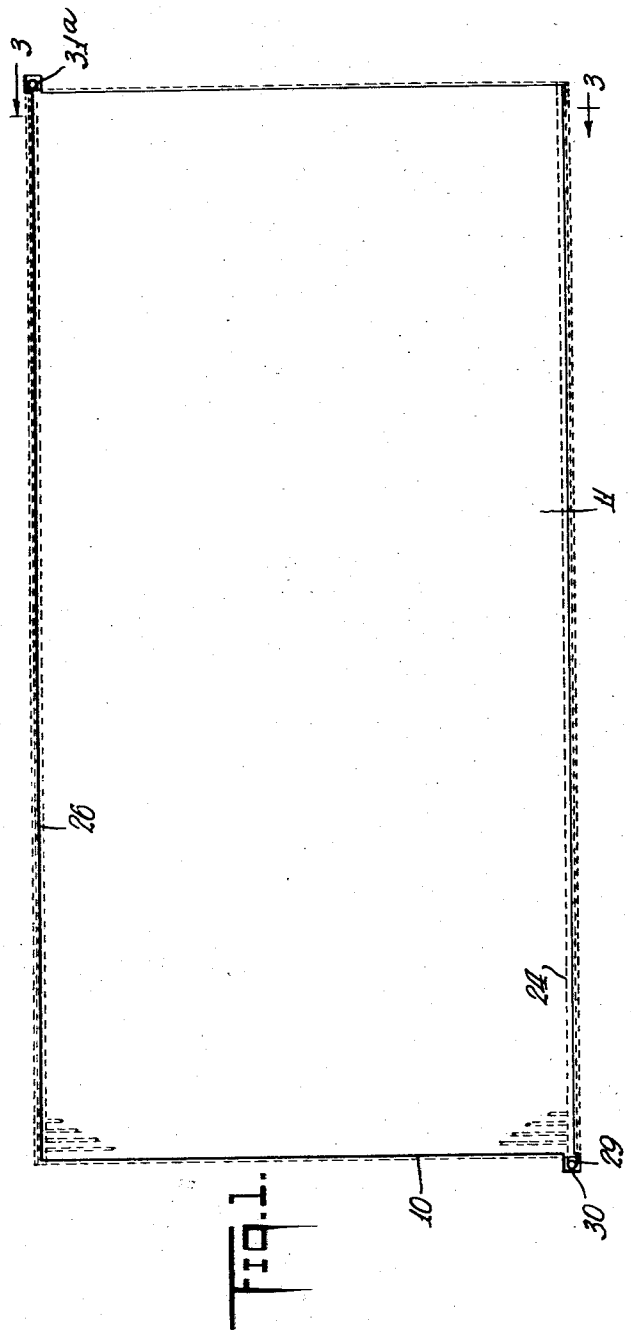


Fig. 1.

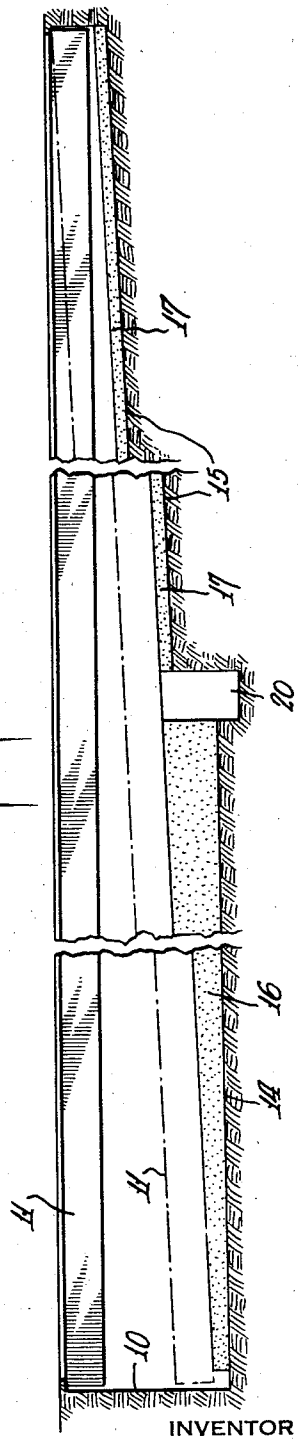


Fig. 2.

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CONVERTIBLE SWIMMING POOL AND SKATING RINK

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FIG. 3.

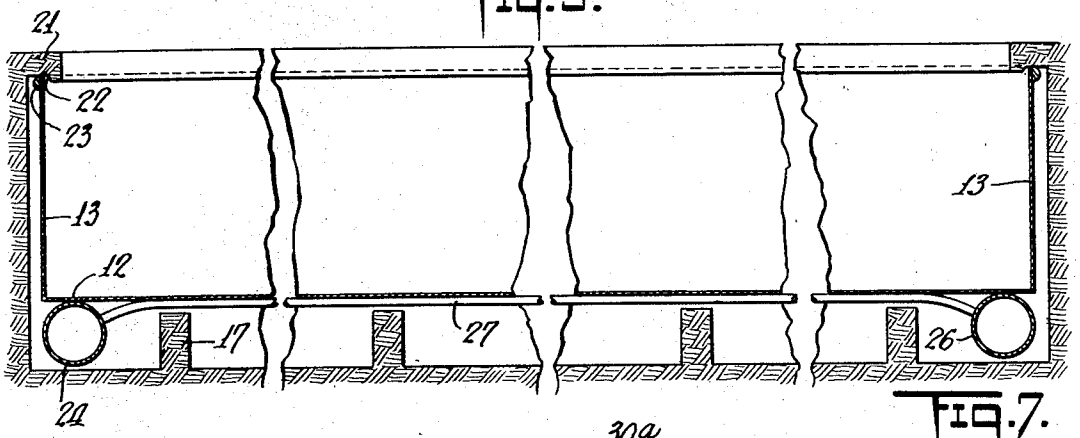


FIG. 4.

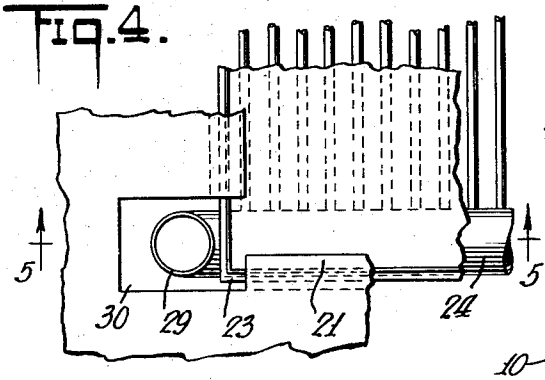


FIG. 5.

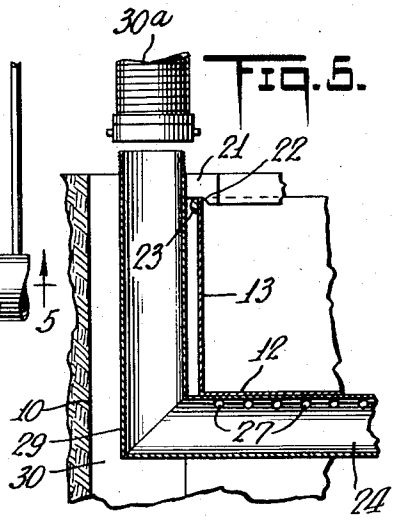


FIG. 7.

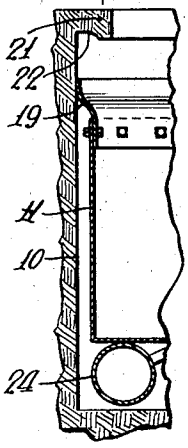
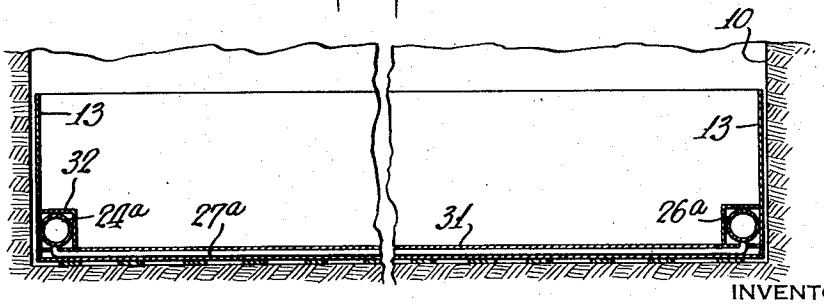


FIG. 8.



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CONVERTIBLE SWIMMING POOL AND SKATING RINK

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FIG. 6.

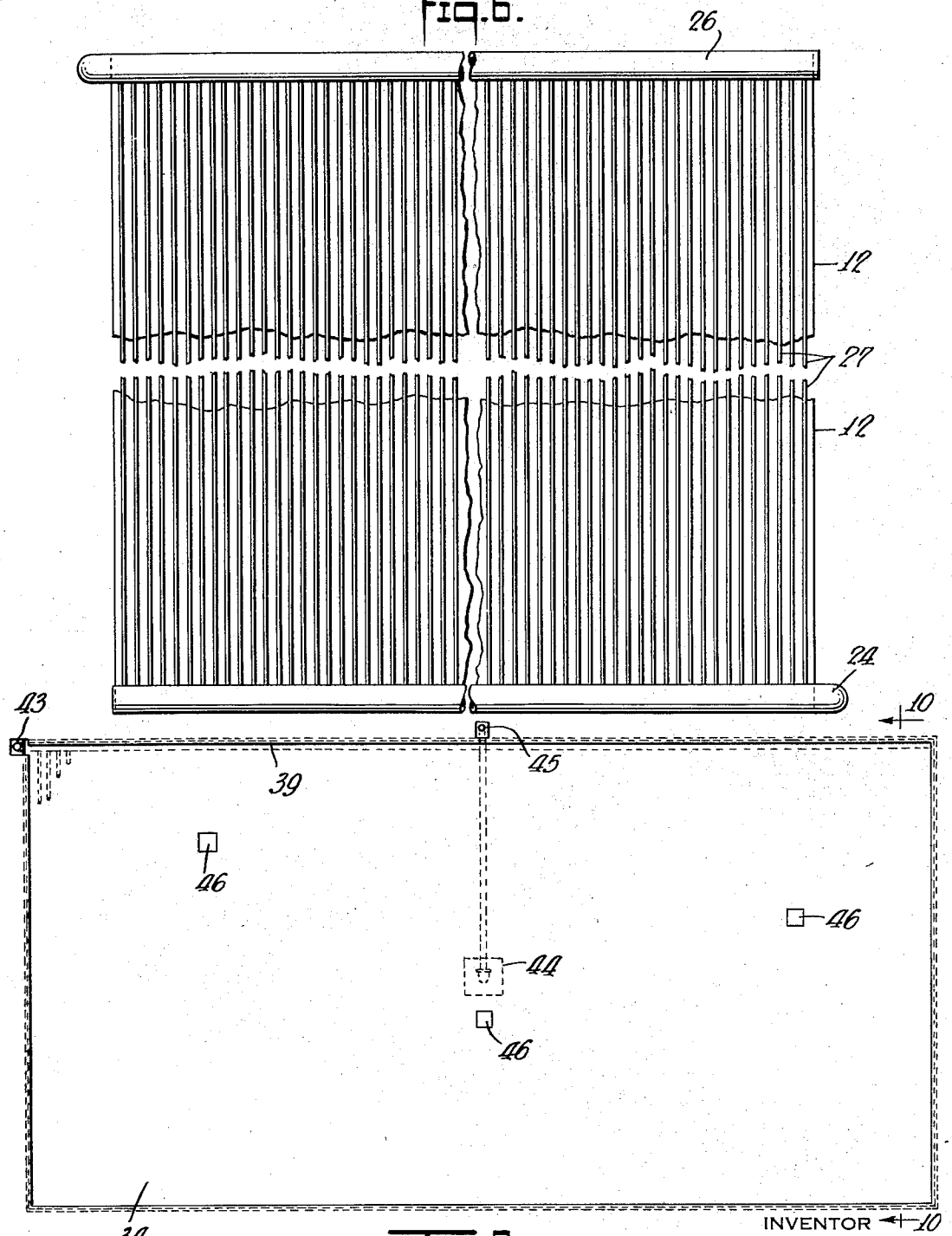


FIG. 8.

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CONVERTIBLE SWIMMING POOL AND SKATING RINK

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Fig. 10.

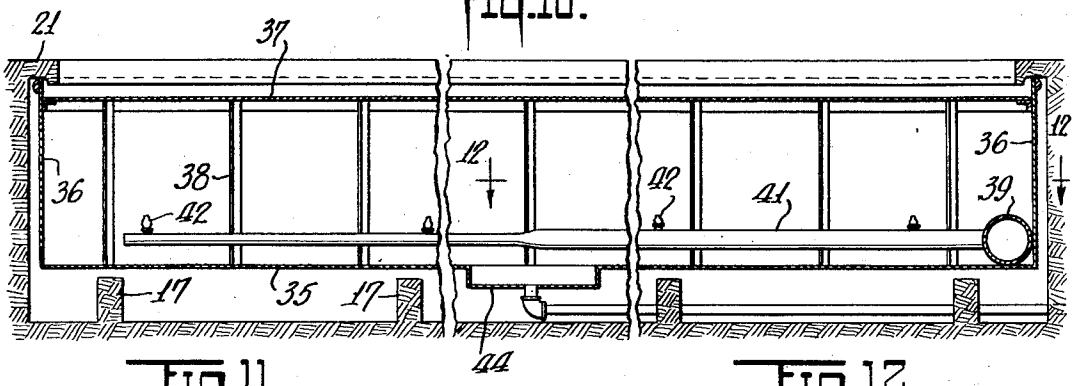


Fig. 11.

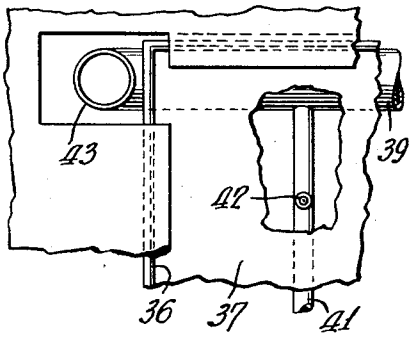


Fig. 12.

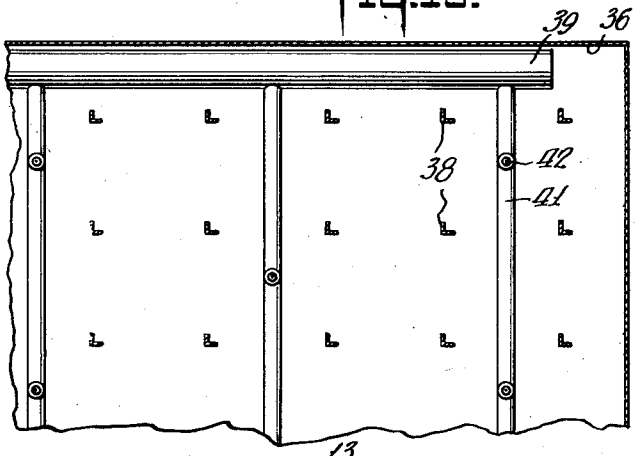
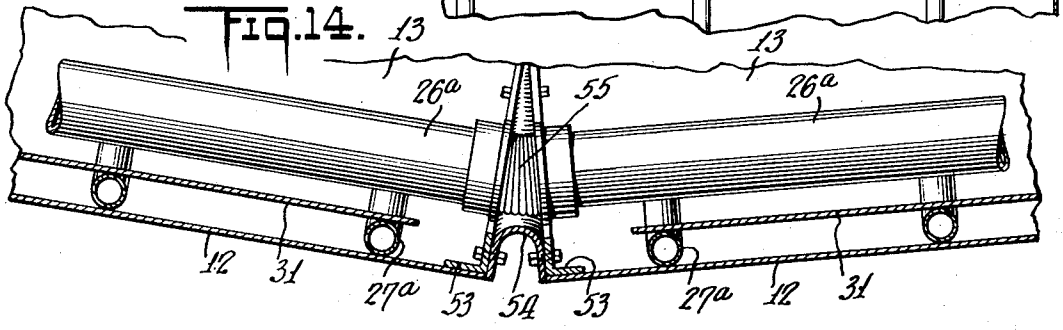


Fig. 14.



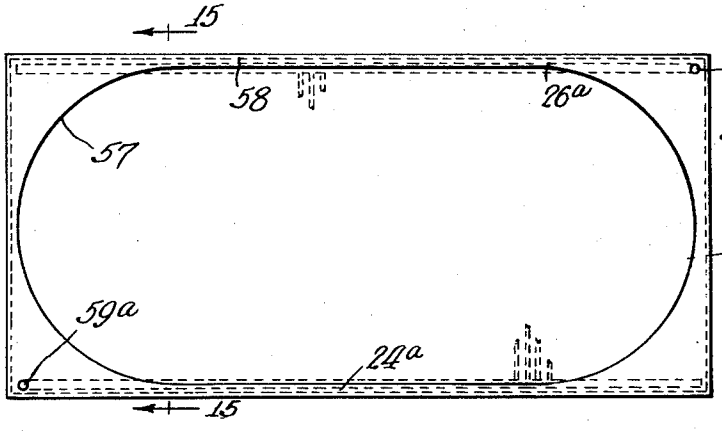


Fig. 15.

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CONVERTIBLE SWIMMING POOL AND SKATING RINK

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Fig. 15.

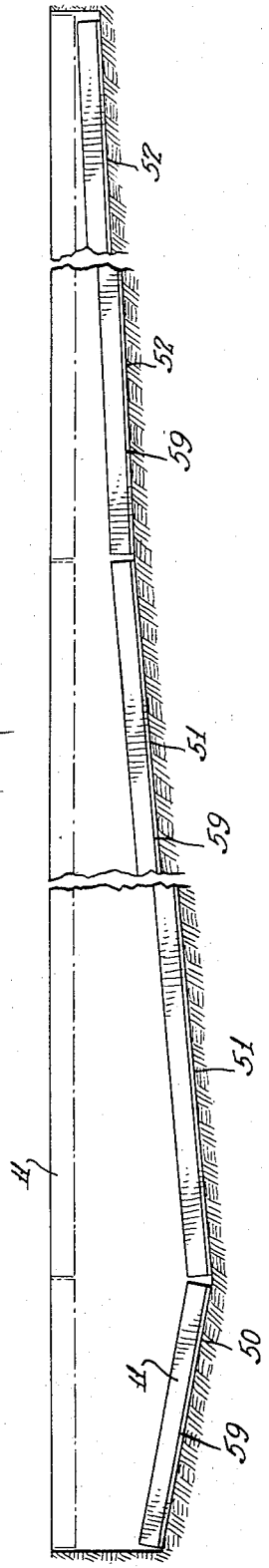
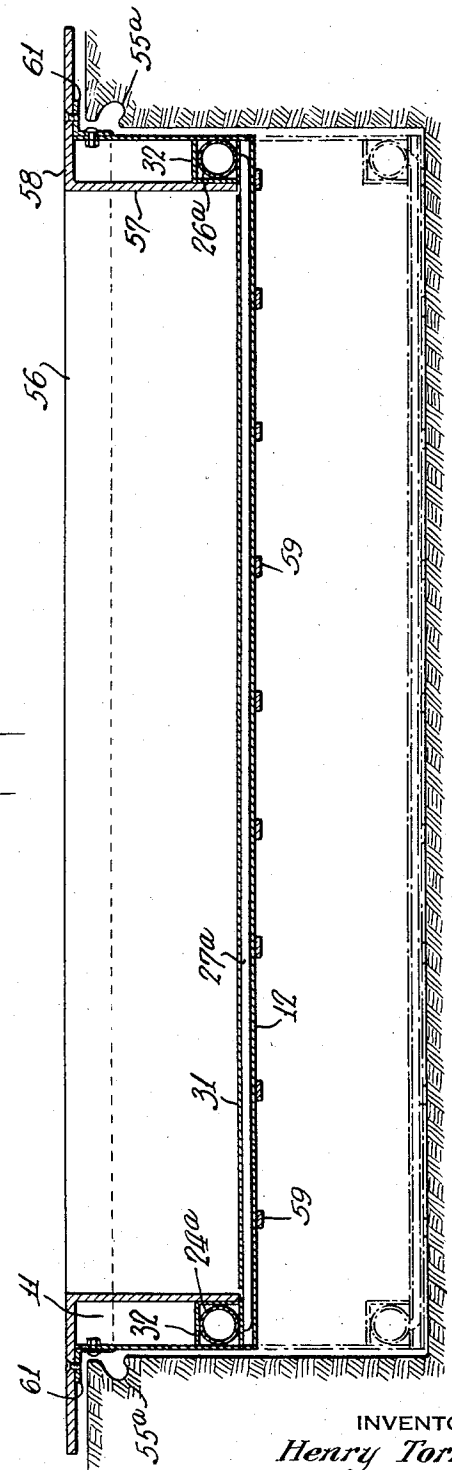


Fig. 16.



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CONVERTIBLE SWIMMING POOL AND SKATING RINK

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Fig. 17.

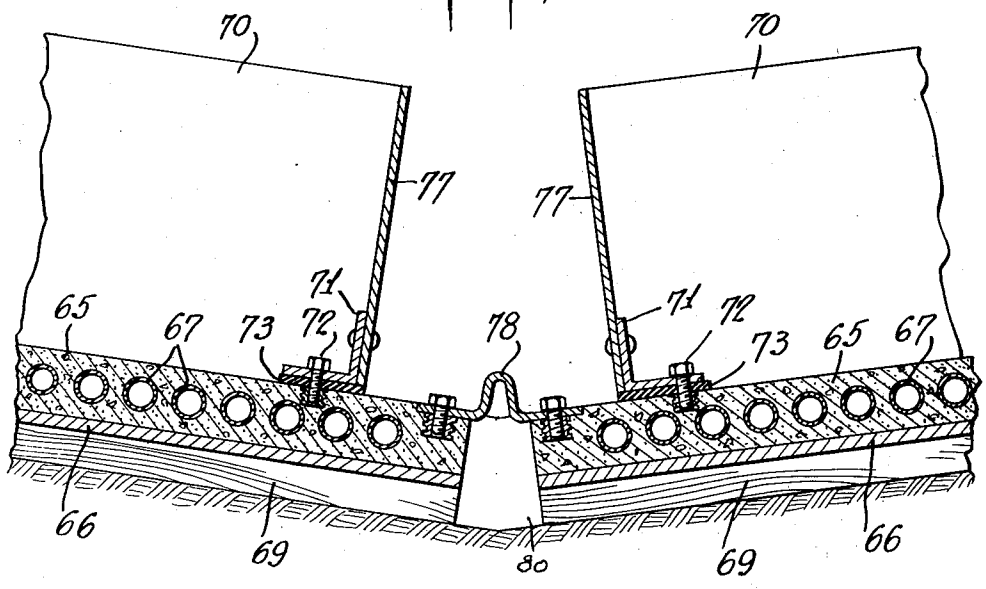
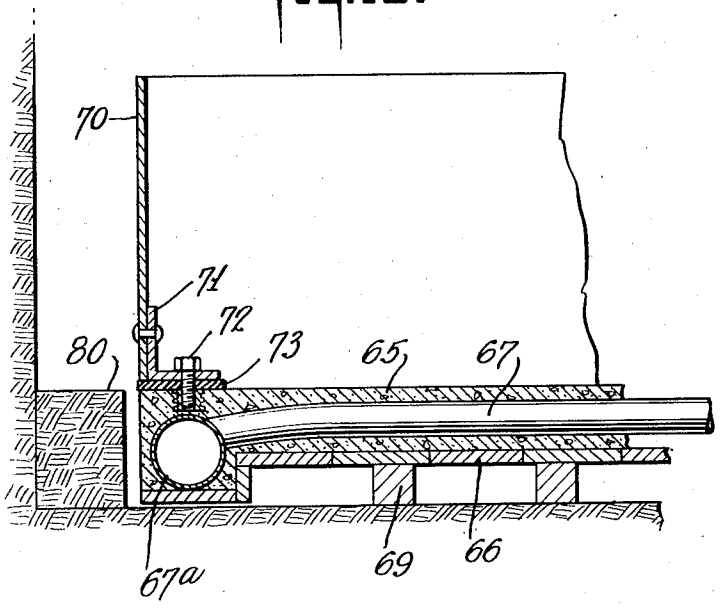


Fig. 18.



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UNITED STATES PATENT OFFICE

HENRY TORRANCE, OF NEW YORK, N. Y., ASSIGNOR TO THE CARBONDALE MACHINE CO., OF CARBONDALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

CONVERTIBLE SWIMMING POOL AND SKATING RINK

Application filed September 12, 1932. Serial No. 632,723.

The ordinary swimming pool is entirely out of use in the wintertime, and the ordinary skating rink is entirely out of use in the summertime.

One object of the present invention is to provide a construction which may be selectively converted into a swimming pool or skating rink in a comparatively short time, and without any substantial change in equipment, thus adapting it more nearly for continuous service. The usual outdoor swimming pool is at least as large as the usual ice-skating rink. These rinks are nearly always of a size suitable for hockey games and may measure approximately 100 feet by 200 feet.

This invention is more specially adapted for the larger pools although the small pools in a building could also be advantageously equipped with my invention for ordinary skating in the winter.

The usual skating rink has a coil system substantially covering the entire floor thereof and usually comprises a series of pipes about 1 or 1¼ inches, spaced 4 or 4½ inches apart and running lengthwise or crosswise of the rink between headers. To convert the usual type of skating rink into a swimming pool would necessitate the removal of these coils. It is obvious that such removal would be attended with a great deal of effort, time and expense. Furthermore, the problem of space for storing these coils would, in some cases, be a factor in making such conversion prohibitive.

Schemes have recently been proposed whereby sheet iron plates are supported by somewhat complicated supporting structures from the floor of the pool to form a skating floor and brine is sprayed underneath these plates. In such a construction, the supporting structure must first be built upon the floor of the pool and then the plate mounted on such a structure. In the summer, in order to reconvert the pit into a swimming pool, it is necessary to remove the supporting structure. Such a construction entails a great deal of effort and expense.

The present invention includes a floating floor which in the summer may form the bottom or floor of a swimming pool and in the winter may be floated towards the top of the pool to form a skating floor. This floor permanently carries means for freezing a layer of water on the top thereof. In the summer, when it is again desired to use the pit for a swimming pool, the floating floor is sunk to the bottom of the pit to form the floor of the swimming pool. This floating floor may be provided with a parapet or upturned flange around the edges thereof to hold a layer of water which may be frozen to form an ice surface.

Means are advantageously provided, such as a molding or curbing, for covering the gap between the edge of the floating floor and the side of the pit when said floor is at the bottom of the pit so as to eliminate unsightly appearances caused by such a gap and to avoid accidental contact of the swimmers with the edge of the floor. Also, means are advantageously provided for covering the edge of the floating floor when in raised position so as to form a neat joint between the edge of the pit and the edge of said floating floor.

The floating floor, if desired, may be coated with white enamel or any other color to match the color of the sides of the pit so that no visible indication of such floating floor will be present when the pit is converted into a swimming pool.

In one embodiment of my invention, the floating floor may take the form of a water-tight pontoon of sufficient depth to take care of dead and live loads when serving as a skating floor. For that purpose, it may be approximately 18 to 24 inches deep. The interior of the pontoon carries refrigerating means which advantageously includes a series of brine sprays adapted to spray brine against the underside surface of the top plate of the pontoon although any other suitable form of refrigerating means may be employed. In such a construction, if it is desired to use the pit for a swimming pool, the pontoon is filled with water and allowed to sink to the bottom of the pit. In the winter, when it is desired to use the pit for skating, the water is pumped out of the interior of the pontoon so as to permit the pontoon to float to or near the top of the pit. A layer of water on top of the pontoon is then frozen to form a skating floor.

In another embodiment of the present invention, the floating floor takes the form of a pan which may comprise a steel plate or a concrete slab which has sides sufficiently high to float with a maximum amount of load. Connected to this plate would be the usual set of refrigerating coils or other suitable refrigerating means. These coils may be attached

to the bottom of the plate or may be mounted on top of the plate and covered by a thin metal sheet so as to present a smooth surface when the pan is sunk. If a concrete slab is employed, the refrigerating conduit may be embedded therein and form a rust-proof construction therewith. In the summer, the pan rests on the bottom of the pit, suitable molding being provided to cover the gap between the edge of the pan and the side of the pit when in this position. In the winter, when it is desired to raise the pan to form a skating floor, the molding is removed, the water is drawn out of the pit from above the pan and water pumped into the bottom of the pan to float the pan towards the top of the pit. If desired, the molding may be permanently attached to the edges of the pan.

The bottom of the floating floor may be insulated if desired, but it would generally be preferred that such insulation need not be provided since it would be advantageous to have a layer of water frozen below the bottom of the floating floor. Thus, if it were possible to free say three inches of water below the bottom of the floating floor, it would help support the pan and would at the same time store a certain amount of refrigeration which will aid in maintaining the ice-skating surface.

The pan must have enough buoyancy to support the weight of the skates as well as its own weight and the weight of the refrigerating system connected thereto. It must also have enough buoyancy so that if by any chance many of the skaters would congregate on one side of the pool there would be no danger of sinking the pan. In the usual constructions, the sides of the pan are sufficiently high to amply take care of any live load on the floating surface. However, if desired, additional precaution may be taken to prevent any unusual conditions which may cause the floating floor to dangerously tilt. For that purpose, it is advisable in some constructions to install some means such as movable swinging supports at the edge of the pit, which would swing over to take the weight from the edges of the floating floor in case too many people congregate at one edge of the floor. These temporary emergency supports might be stirrups suspended from the sides of the pit and attached to the floating floor, or might be in the form of horizontal sliding beams which can be moved out to engage the pan. An advantageous and desirable construction for this purpose, includes a flange member detachably connected to the floating floor and extending outwardly from the side of the floor near the top thereof and above the walk around the pit. These members are adapted to engage the walk when sunk too low and prevent the floor from being submerged. In the summer, these flange members may be removed. Any similar emergency device may be used as required by the municipal or other authorities to prevent the sinking of the floating floor.

Since the sides of the pan would be about 2 feet high, the skating surface would be a substantial distance below the edge of the pit. This condition is highly desirable in skating rinks in order to keep a layer of cold air above the skating floor and protect said layer against horizontal drafts of hot air.

At the end of the skating season, the water may be drawn out of the pit and the pan sunk to the bottom where it may be washed, cleaned, repainted with white enamel if desired, and molding or curbing slipped in place between the edge of the pan and the side of the pit to form a neat joint. The pit will then be in condition for swimming. This takes but a short time and only a small amount of labor. The depth of the bottom of the pan including the coils will be a few inches so that the depth of the pit will not be materially decreased for swimming purposes.

The bottom of the swimming pool usually slopes lengthwise so that the pool at one end is shallow, while the other end is much deeper. If the bottom of the pit is of uniform slope throughout its length and lies in a single plane, the floating plane may be made to rest directly thereon. If the bottom of the pit does not lie in a single plane, as for instance when said bottom slopes in opposite directions towards the center, special provisions must be made for supporting the floating floor. For that purpose, a series of piers may be constructed on the bottom of the pit and may have their top supporting surfaces extending in a plane sloping lengthwise. If it is desired to retain a pool bottom sloping from both ends toward the center, the floating floor may be made in sections having means whereby these sections may be connected together, or if desired these sections may be hinged together.

In one of the forms of the present invention, there is provided as an important feature, a plate or slab having detachable sides to form a pan, these sides being removed when the plate or slab rests on the bottom of the pit, and reconnected around the edge of the plate or slab in the winter when it is desired to float it.

Furthermore, as an important feature, means are provided whereby the slab or plate is sealed around the edges to prevent water from being drawn underneath the slab when said slab is at the bottom of the pit. This arrangement is highly sanitary inasmuch as it prevents the formation of stagnant water underneath the slab or plate.

As an important feature of my invention, my floating floors may be constructed so that they may be placed in swimming pools already in existence without material change in the constructions of these pools.

In the accompanying drawings, there are shown for purposes of illustration, various embodiments of the present invention.

In these drawings:

Fig. 1 is a top plan view of one structure embodying my invention and showing a pit and a floating floor therein.

Fig. 2 is a longitudinal section through a pit and shows the floating floor diagrammatically in two positions; the floor is shown in dotted lines at the bottom of the pit when the pit is to be used as a swimming pool, and is shown in full lines in raised position to serve as a skating floor.

Fig. 3 is a section taken on the line 3—3 of Fig. 1.

Fig. 4 is a top plan view somewhat enlarged of one corner of my improved structure.

Fig. 5 is a section taken on the line 5—5 of Fig. 4.

Fig. 6 is a bottom plan view of my improved floating floor.

Fig. 7 is a sectional detail of a portion of the floating floor when in lowered position.

Fig. 8 is a sectional view of another form of structure embodying my invention.

Fig. 9 is a top plan view of another form of structure embodying my invention and showing a pit and a floating floor therein.

Fig. 10 is a section taken on the line 10—10 of Fig. 9.

Fig. 11 is a top plan view somewhat enlarged of one corner of the structure shown in Fig. 9.

Fig. 12 is a section taken on the line 12—12 of Fig. 11.

Fig. 13 is a section through another form of pit and showing another form of floating floor therein, in two positions.

Fig. 14 is a sectional detail showing the joint between adjoining floating floor sections of the form in Fig. 13 when said sections are at the bottom of the pit.

Fig. 15 shows the top plan view of another form of pit and a floating floor arranged therein to form an oval skating rink.

Fig. 16 is a section taken on the line 16—16 of Fig. 15.

Fig. 17 is a longitudinal sectional detail of a form of floor shown resting on the bottom of the pit, divided into sections, and ready to be floated to the top of the pit, and

Fig. 18 is a transverse sectional detail of the floor of Fig. 17 in position at the bottom of the pan and ready to be floated to the top of the pit.

In the specific embodiment of the present invention, there is provided a pit 10. Mounted in this pit is a floating floor 11 which may be raised or lowered in accordance with whether it is desired to use the pit as a swimming pool or as a skating rink. In the specific form shown in Figs. 1 to 7, the floating floor 11 takes the form of a pan comprising a steel plate 12 suitably reenforced and having side plates 13 along the edge thereof. These side plates 13 are sufficiently high to provide sufficient buoyancy to maintain the tank in floating position against dead weight and the live weight of the skaters. For that purpose, the side plates may be 18 to 24 inches high.

In the summer, when it is desired to use the pit 10 for a swimming pool, the floating floor 11 is sunk to the bottom of the pit. The pit 10 may be of ordinary construction customary in swimming pools and may have a bottom which slopes towards one end or in opposite directions towards the center. However, in the constructions shown in Figs. 1 to 7, the bottom of the pit is made of a special construction and comprises two floors 14 and 15 disposed at different elevations. The floor 14 at the lower level may be slightly sloped so as to render the pit substantially deep at one end. Supported on this floor 14 is a series of concrete piers 16 tapered downwardly towards the deep end of the pit and centered at suitable distances, as for instance six feet. Similarly disposed on the floor 15 of the pit are concrete piers 17 tapering upwardly towards the other end of the pit and also centered at suitable distances, as for instance six feet. The top surfaces of the piers 16 and 17 lie in a single sloping plane and are adapted to support the bottom of the plate 12 of the floating floor.

Means are provided to permit the space between the bottom of the floating floor and the bottom of the pit to be cleaned out by flushing or similar operations. For that purpose, the inner ends of the concrete piers 16 are spaced from the inner ends of the piers 17 to form a passageway 20 extending crosswise of the pit. This passageway is sufficiently wide and sufficiently high to permit a person to comfortably walk therethrough and is accessible from the outside of the pit by suitable passageways (not shown). If desired, suitable molding may be provided for covering the gap between the edges of the side plates 13 and the sides of the pit when the floor is in lowered position, so as to form a smooth continuous surface between said edges and sides and to protect the swimmers against danger of accidental contact with said edges. In Fig. 7 is shown a molding 19 detachably connected to the side plates 13 and curved into close proximity to the sides of the pit.

When it is desired to raise the floor 11 from the position shown in dotted lines in Fig. 2 into the position shown in full lines to form a skating floor, water may be drawn out from above the pan until said pan floats, and then water is forced beneath the pan to raise it into a position shown in full lines. In this raised position, it is necessary to protect the

edges of the side plates from accidental contact with the skaters and to prevent these edges from accidentally extending above the top of the pit in case too much water is pumped into the pit. For that purpose, the side of the pit along the upper edge thereof is provided with a curb 21 extending inwardly beyond the sides of the pit and having a recess 22 in the lower surface thereof to receive the upper edges of the side plates 13. If desired, the upper edges of the side plates 13 may be rolled outwardly to form a bead to reenforce said plates or a half round bar 23 may be welded or otherwise connected to the outsides of said edges. By means of this construction, it may not be necessary to provide a molding between the edges of the plates 13 and the side of the pit when the pan is sunk since this edge would be below the overhanging curb 21 and since this edge is rounded so that no injury can be sustained by a swimmer accidentally coming in contact therewith.

The pan 11 carries refrigerating means in the form of a coil or a conduit whereby the layer of water above the pan may be frozen to form an ice-skating surface. For that purpose, in the specific form shown in Figs. 1–7, there is provided a brine feed header 24 welded or otherwise connected to the bottom of the plate 12 and extending along one side thereof and a brine return header 26 extending along the opposite side. Connected between these headers are a series of pipes 27. These pipes may be of any size and spaced a sufficient distance to provide sufficient refrigeration to freeze a layer of water above the pan. For instance, the pipes may be from 1 to 1¼ inches and may be mounted on 4 to 4½ centers. The refrigerating conduit is connected to the bottom of the plate by any suitable means but is advantageously welded thereto in order that the plate 12 may present a smooth and continuous surface. Such welding may be effected by providing a series of holes in the plates 12 and spot welding the pipes and headers to said plate 12 through said holes.

In order to connect the refrigerating conduit to an outside source of cold brine when the pan is in raised position, there is provided a vertical pipe 29 connected to the inlet of the feed header 24 and disposed in a niche 30 formed in the pit 10 to receive said pipe. The upper end of the pipe 29 may be detachably connected to a brine supply pipe through a flexible coupling 30*a* which permits slight vertical movement of the floating floor in accordance with the amount of live load thereon. A similar arrangement for the outlet of the refrigerating conduit is employed, there being provided, for that purpose, a vertical pipe 31*a* connected to the outlet of the brine return header 26 and in position to be detachably connected to an outlet pipe through a flexible coupling.

In Fig. 8 is shown another way in which the refrigerating pipes and headers may be connected to the pan 11. In this form, the brine feed header 24*a* and the brine return header 26*a* are supported on top of the plate 12. Pipes 27*a* extend between these headers and are supported on said plate. A steel plate 31 is mounted on top of the pipes 27*a* between the headers. These headers are advantageously enclosed in a suitable casing 32 to present a neat appearance when in lowered position. In a suitable construction, the plates 12 and 31 would each be about $\frac{3}{16}$ inches while the pipes 27*a* would be about 1¼ inches, so that the aggregate thickness of the floor of the pan would be about two inches. It is seen that the depth of the pit would not be materially decreased when the pan is in lowered position.

The bottom of the pan 11 will be a substantial distance below the top of the pit when serving as a skating floor, and since the layer of ice above the bottom of the pan would not be more than a few inches deep, the stratum of cold air above said layer of ice and between the sides of the pan will be substantially protected against horizontal hot air drafts. Furthermore, the sides of the pan may serve as a dasher when the rink is being used for hockey.

In the summer, when it is desired to use the pit 10 for a swimming pool, the flexible couplings are removed from the pipes 29 and 31*a* and the ends of these pipes capped. The water is then drawn from the pit to lower the pan 11. The pit and pan may then be cleaned. The plate 12 in the construction shown in Figs. 1–7 or the plate 31 in the construction shown in Fig. 8, as well as the side plates 13, would be painted to match the color of the sides of the pit so that no visible indication of the pan is present when the pit is used as a swimming pool. The molding 19 could then be placed around the pan.

In the embodiment shown in Figs. 9–12, the floating floor takes the form of a pontoon 34 of sufficient depth to give it proper buoyancy against its dead weight and the weight of the skaters thereon. For that purpose, the pontoon may be about 18 inches high and comprises a bottom plate 35, side plates 36, and a top plate 37 spaced below the top edge of the side plates 36 to retain a layer of water on said plate 37. The plates 35 and 37 are suitably connected by brace members in the form of upstanding angle irons 38.

In the interior of said pontoon is refrigerating means in the form of a conduit which advantageously includes a brine feed header 39 having connected thereto a series of horizontal spray headers 41 each carrying a series of spray nozzles 42 adapted to project

cold brine against the bottom surface of the plate 35. This brine header is connected to a vertical inlet pipe 43 mounted at one end of the pit and adapted to be detachably connected to a supply pipe through a suitable flexible coupling as already described with respect to the form shown in Figs. 1–7. A sump 44 is provided in the bottom of the pontoon having a connection to a brine return header 45.

The pontoon is provided with a number of manholes 46 in the top thereof (only three being shown), whereby water may be drawn in or out of the pontoon. In the operation of this particular type of floating floor, when it is desired to use the pit for a swimming pool, the pontoon is filled with water through the manholes and lowered until it rests on the piers 16 and 17 at the bottom of the pit. If desired, the water may be drawn out of the pit and the pontoon lowered to rest in its lowermost position. The pit can then be cleaned, washed and painted and refilled with water. The pontoon is flooded so that it will remain at the bottom of the pit.

At the end of the summer, when it is desired to convert the pit into a skating rink, water is pumped out from the interior of this pontoon so as to permit said pontoon to float to the top of the water until the upper edges of the side plates 36 engage the curb 21. The manholes 46 are then closed and the layer of water on top of the plate 37 may then be frozen to form an ice-skating surface.

In Figs. 13 to 16 is shown a form of construction which is particularly adapted for use in a swimming pool already in existence to render such a swimming pool convertible into a skating rink without any substantial change in the shape of the pit.

The usual type of swimming pool has a floor divided into sections having different slopes so that the pool near one end is substantially deeper than at the other end. For instance, in Fig. 13 is shown a common type of swimming pool, the bottom of which comprises three sloping sections 50, 51 and 52 having different slopes. The sections 50 and 51 slope in opposite directions downwardly towards a region near the left end of the pit as shown in Fig. 13, while the section 52 slopes in the same direction as section 51 but has a different grade towards the right end of the pool.

As an important feature of the present invention, the floating floor in one of the forms is constructed so that when it is disposed in lowered position it conforms with the slope of the pit floor. For the purpose of illustration, this feature is shown as adapted to the general type of floating floor shown in Fig. 8 although it may be also adapted to the other forms shown. My improved floating floor is divided into transverse sections flexibly connected together to permit them to conform with the bottom of the pit. For that purpose, there are employed angle irons 53 extending along the transverse edges of the sections. Adjoining angle irons are connected together by a strip 54 of rubber or other water-proof material bent upwardly as shown. The headers 24*a* and 26*a* may be similarly divided into sections corresponding to the sections of the plate 12 and connected together by suitable flexible couplings 55 to permit the various sections of the headers to slope at different angles. The tops of the angle irons 53 and the strips 54 extend below the plate sections 31. The side plates 13 are also divided into sections, the adjoining ends of said sections being connected by a flexible strip which may be integral with the strip 54 or may be a separate strip having a water-tight connection therewith.

In Fig. 13, the pan is shown in full lines resting directly on the bottom of the pit, strips 59 being connected to the bottom of the plate 12 so that a small space is provided between the bottom of the plate 12 and the bottom of the pit when said plate is in its lowermost position, so that water may find its way in said space to float the pan. In this position, the edges of the pan must be spaced from the sides of the pit a sufficient distance so that when the pan is floated into the dotted position shown in which all the sections thereof extend in a single plane, the pan will not bind to the sides of the pit but will be free to float.

The sections of the floor may be detachably joined so as to permit them to be taken out for thawing or cleaning them. For that purpose, the strips 54 may be detachably connected to the angle irons 53.

The ordinary skating rink is usually adapted to be used for hockey and most hockey rinks are somewhat oval in shape. Most swimming pools are rectangular in shape. In the form of invention shown in Figs. 15 and 16 a rectangular swimming pool already in existance may be easily converted into an oval skating rink without materially changing the construction of the pit. The pit in Fig. 16 is shown of the usual construction having an overflow channel 55*a* for limiting the height of the water when said pit is used as a swimming pool.

When the pan is floated into raised position shown in full lines in Fig. 16, a dasher board 56 is mounted, which extends upwardly from the plate 31 to form a dasher surface 57 against which a hockey puck may be hurled and has a flange member 58 which extends outwardly over the curb of the pit. This dasher board 56 is detachably connected to the pan and extends around the pit to form an oval enclosure as shown in Fig. 15. The dasher board serves to conceal the headers 24*a* and 26*a* and covers the gap between the sides of the pan and the sides of the pit.

In the construction shown in Fig. 15, a space will be left between the corners of the pit and the dasher board 56. In this space may be inserted a supply pipe 59*a* and an outlet pipe 60 having detachable connections to the inlet of the feed header 24*a* and the outlet of the return header 26*a* respectively, these pipes being removed in the summer when it is desired to sink the pan, and the open ends of the headers capped. By means of this construction, no niche need be constructed in the pit to receive the inlet and outlet pipes 59 and 60.

Emergency means may be provided to prevent the floating floor from sinking as the result of excess live load. Such means may comprise angle irons or clips 61 (Fig. 16) detachably connected to the upper edge of the pan and having flanges which overhang the end of the pit and which are adapted to engage it in case of excess live load. The flange member 58 may be connected to said angle irons and supported thereby.

Under certain conditions, it may be desirable that the floating floor when in lowered position at the bottom of a swimming pool be rust-proof so that the swimming water does not become contaminated. For that purpose, there is shown in Figs. 17 and 18 a floor which comprises a concrete slab 65 having on the bottom thereof a wood sheathing 66 and having embedded therein brine pipes 67 extending between headers in a manner already described (brine feed header 67*a* only being shown). These headers are also embedded in concrete. The concrete above the pipes 67 is sufficiently thin so that a layer of water may be frozen on the slab. By means of this arrangement, all of the metal parts of the floor are enclosed in concrete so that the desired sanitary condition in the swiming pool may be maintained and a better appearing pool bottom effected.

The sheathing 66 preferably has connected underneath the bottom thereof a series of plates or strips 69 adapted to rest directly on the bottom of the pit, and serving to form a space between the bottom of the slab in its lowermost position and the bottom of the pit, so that water may find its way under the slab when it is desired to float it. If desired, these strips 69 may be provided with transverse apertures to permit water to more easily circulate below the slab.

As an important feature of the form of invention shown in Figs. 17 and 18, the side plates are detachably connected to the slabs so that they may be removed when the slab is at the bottom of the pool or may be positioned to form a pan therewith to float it in the water. For that purpose, there is embedded in the concrete slab 65 along the edges thereof a series of threaded sockets 68. Steel side plates 70 are provided which may be permanently connected at the bottom to angle irons 71. The angle irons 71 are detachably attached around the edges of the slab 65 by any suitable means such as bolts 72 threaded into the sockets 68. Interposed between the angle irons 71 and the slab 65 are gaskets 73 which form a water-proof joint.

In Fig. 17 is shown the concrete floor divided into sections adapted to conform with the bottom of the pit where said bottom is divided into sections sloping in different directions. Also, in accordance with this construction, the sections may be floated separately and independently and for that purpose, each section may have detachably mounted transversely thereof between the side plates 70, plates 77 having water-proof connections with said side plates 70 and the slabs 65 to form pan sections. Both plates 70 and 77 are removed during the summer when the slab 65 is resting at the bottom of the pit and are attached in position when it is desired to float the slab. The slab sections are floated and then a suitable strip 78 of rubber, copper or other suitable flexible water-proof material connected across adjoining ends of the concrete sections. Similar strips are connected across the gap between adjoining side plates 70.

It is sometimes desirable that no water be lodged beneath the plates or the slabs when at the bottom of the pit, this water sometimes becoming stagnant unless certain provisions are made to prevent it. As a feature of the construction shown in Fig. 18, means are provided for sealing the edges of the slab to the sides of the pit so that no water may find its way under said slab when in its lowermost position. For that purpose, a concrete strip 80 would be provided extending along the sides of the pit at the bottom. This strip 80 is as high as the aggregate height of the slab 65 so that when the slab is resting on the bottom of the pit, the top surface thereof is level with the top of the block 80. The pool may be drained entirely and then the gap between the strip 80 and the edges of the slab 65 corked or sealed by any suitable means. In the winter, when it is desired to float the slab, the corking or sealing is removed, the plates 70 and 77 installed in position, and the sections floated to the top. The strips 78 are then connected between the adjoining ends of the slab sections, and similar strips connected between adjoining ends of the side plates 70.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A convertible swimming pool and skating rink, including a pit large enough to serve as a swimming pool, a floor in said pit extending across substantially the entire area of said pit and adapted to be sunk to the bottom of the pit and serve as a floor for

said pit when said pit is used as a swimming pool or raised to a position near the top of said pit to serve as a skating floor, and means carried by said floor for circulating a refrigerant in heat interchanging relationship therewith to freeze a layer of water above said floor to form an ice-skating surface.

2. A construction adapted to be converted into a swimming pool or a skating rink, including a pit large enough to serve as a swimming pool, a floor in said pit extending across substantially the entire area of said pit, means whereby said floor may be sunk at the bottom of the pit and serves as a floor for said pit when said pit is used as a swimming pool or floated on water to a position near the top of said pit to serve as a skating floor, and means carried by said floor to freeze a layer of water above said floor to form an ice-skating surface.

3. A construction adapted to be converted into a swimming pool or a skating rink, including a pit large enough to serve as a swimming pool, a pan extending across substantially the entire area of said pit, said pan being adapted to be sunk at the bottom of the pit when said pit serves as a swimming pool, and adapted to be floated on water near the top of said pit to serve as a skating floor, and means carried by said pan to freeze a layer of water in said pan to form an ice-skating surface.

4. A construction adapted to be converted into a swimming pool or a skating rink, including a pit large enough to serve as a swimming pool, a pan extending across substantially the entire area of said pit, said pan being adapted to be sunk at the bottom of the pit when said pit serves as a swimming pool, and adapted to be floated on water near the top of said pit to serve as a skating floor, and a brine conduit disposed adjacent the bottom of said pan and adapted to freeze a layer of water in said pan to form an ice-skating surface.

5. A construction adapted to be converted into a swimming pool or a skating rink, including a pit large enough to serve as a swimming pool, a pan extending across substantially the entire area of said pit, said pan being adapted to be sunk to the bottom of the pit, when said pit serves as a swimming pool, and adapted to be floated on water near the top of said pit to serve as a skating floor, a refrigerating conduit on the bottom of said pan, and a plate covering said conduit and presenting a smooth continuous surface, said conduit being adapted to freeze a layer of water on top of said plate to form an ice-skating surface.

6. A construction adapted to be converted into a swimming pool or a skating rink, including a pit large enough to serve as a swimming pool, a pan extending across substantially the entire area of said pit, said pan being adapted to be sunk to the bottom of the pit when said pit serves as a swimming pool, and adapted to be floated on water near the top of said pit to serve as a skating floor, and refrigerating coils connected to said pan underneath the bottom thereof and adapted to freeze a layer of water in said pan to form an ice skating surface.

7. A construction adapted to be converted into a swimming pool or a skating rink, including a pit large enough to serve as a swimming pool, a pontoon extending across substantially the entire area of the pit, said pontoon having openings therein whereby water may be drawn in or out of said pontoon to sink said pontoon to the bottom of the pit when said pit operates as a swimming pool or to float said pontoon near the top of said pit to form a skating floor, and means carried by said pontoon for freezing a layer of water on the top thereof to form an ice-skating surface.

8. A construction adapted to be converted into a swimming pool or a skating rink, including a pit large enough to serve as a swimming pool, a pontoon extending across substantially the entire area of the pit, said pontoon having openings therein whereby water may be admitted to said pontoon to sink said pontoon to the bottom of the pit when said pit operates as a swimming pool or replaced by air to float said pontoon near the top of said pit to form a skating floor, and a refrigerating conduit in the interior of said pontoon for freezing a layer of water on the top thereof to form an ice-skating surface.

9. A construction adapted to be converted into a swimming pool or a skating rink, including a pit large enough to serve as a swimming pool, a pontoon extending across substantially the entire area of the pit, said pontoon having openings therein whereby water may be drawn in or out of said pontoon to sink said pontoon to the bottom of the pit when said pit operates as a swimming pool, or to float said pontoon near the top of said pit to form a skating floor, and a brine spray device in said pontoon adapted to spray cold brine against the interior surface of the upper portion of said pontoon to freeze a layer of water on the top thereof to form an ice-skating surface.

10. In combination, a floor adapted to be positioned in a swimming pool and having means whereby said floor may be sunk to the bottom of the pool when it is desired to use the pool for swimming or floated on water to the top of the pool to serve as a skating floor, and means carried by said floor to freeze a layer of water above said floor to form an ice-skating rink.

11. In combination, a pan adapted to be positioned in a swimming pool and adapted

to be sunk to the bottom of the pit to serve as a swimming floor or floated on water near the top of the pool to serve as a skating floor, and a refrigerating conduit carried by said pan to freeze a layer of water in said pan to form an ice-skating surface.

12. In combination, a pontoon adapted to be positioned in a swimming pool and adapted to be sunk to the bottom of the pit to serve as a swimming floor or floated on water near the top of the pool to serve as a skating floor, and a refrigerating conduit inside said pontoon to freeze a layer of water on the top of said pontoon to form an ice-skating surface.

13. In combination, a floor adapted to be positioned in a swimming pool and comprising a plurality of sections flexibly connected together whereby said sections may be made to slope in different directions, said floor being adapted to be sunk to the bottom of the pool and conform with the shape of the bottom, or to be floated on water near the top of the pool to serve as a skating floor, and means carried by said floor to freeze a layer of water above said floor to form an ice-skating rink.

14. A convertible swimming pool and skating rink, including a pit large enough to serve as a swimming pool, and having a bottom divided into sections which slope in different directions, a floor in said pit extending across substantially the entire area of said pit and adapted to be sunk to the bottom of the pit and serve as a floor for said pit when said pit is used as a swimming pool or floated to a position near the top of said pit to serve as a skating rink, said floor comprising a plurality of sections corresponding to the section of the pit floor, and having connecting means between said floor sections to permit said sections to conform with the slope of the pit bottom when said floor is sunk to the bottom of the pit, and to permit said floor sections to lie in one plane when floating on water, and means carried by said floor for circulating a refrigerant in heat interchanging relationship therewith to freeze a layer of water above said floor to form an ice-skating surface.

15. A convertible swimming pool and skating rink, including a pit large enough to serve as a swimming pool, a floor in said pit extending across substantially the entire area of said pit, means whereby said floor may be sunk to the bottom of the pit and serve as a floor for said pit when said pit is used as a swimming pool, or floated on water to a position near the top of said pit to serve as a skating floor, means for limiting the downward movement of the floor when floated on top of the pit, and means carried by said floor for freezing a layer of water above said floor to form an ice-skating surface.

16. A convertible swimming pool and skating rink, including a pit large enough to serve as a swimming pool, a floor in said pit extending substantially across the entire area of said pit, detachable side plates adapted to form a pan therewith when connected around the edges thereof, said floor being adapted to be sunk in position at the bottom of the pit when said pit is used as a swimming pool or floated to a position near the top of said pit to serve as a skating rink when said side plates are connected around the edges thereof, and a refrigerating conduit carried by said floor for freezing a layer of water thereabove to form an ice-skating surface.

17. A convertible swimming pool and skating rink, including a pit large enough to serve as a swimming pool, a floor in said pit extending substantially across entire area of said pit and including a concrete slab, and side plates connected around the edge of said slab to form a pan therewith, said floor being adapted to be sunk to the bottom of the pit or floated on water near the top of said pit, and a refrigerating conduit embedded in said slab and adapted to freeze a layer of water on said slab.

18. A swimming pool adapted to be converted into a skating rink, and including a pit large enough to serve as a swimming pool, and having a strip along the sides thereof at the bottom to form a recess, a floor slightly smaller than the recess and adapted to fit in said recess when lowered in its lowermost position, the top of said floor being substantially level with the top of said strip when said floor is in said position, detachable side plates adapted to form a pan with said floor whereby said floor may be floated to or near the top of said pit to serve as a skating rink, and a refrigerating conduit carried by said floor for freezing a layer of water thereabove to form an ice-skating surface.

19. A convertible swimming pool and skating rink, including a pit large enough to serve as a swimming pool, a floor in said pit extending substantially across the entire area of said pit, means whereby said floor may be sunk to the bottom of the pit when said pit serves as a swimming pool, or floated to or near the top of the pit to form a skating rink, means for sealing the edge of the floor to the pit when said floor is in its lowermost position, whereby no water may be admitted between the bottom of said floor and the bottom of said pit when said floor is in said lowermost position, and a refrigerating conduit carried by said floor for freezing a layer of water thereabove to form an ice-skating surface.

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