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SWIMMING POOL

3,005,207

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2 Sheets-Sheet 2

FIG. 3

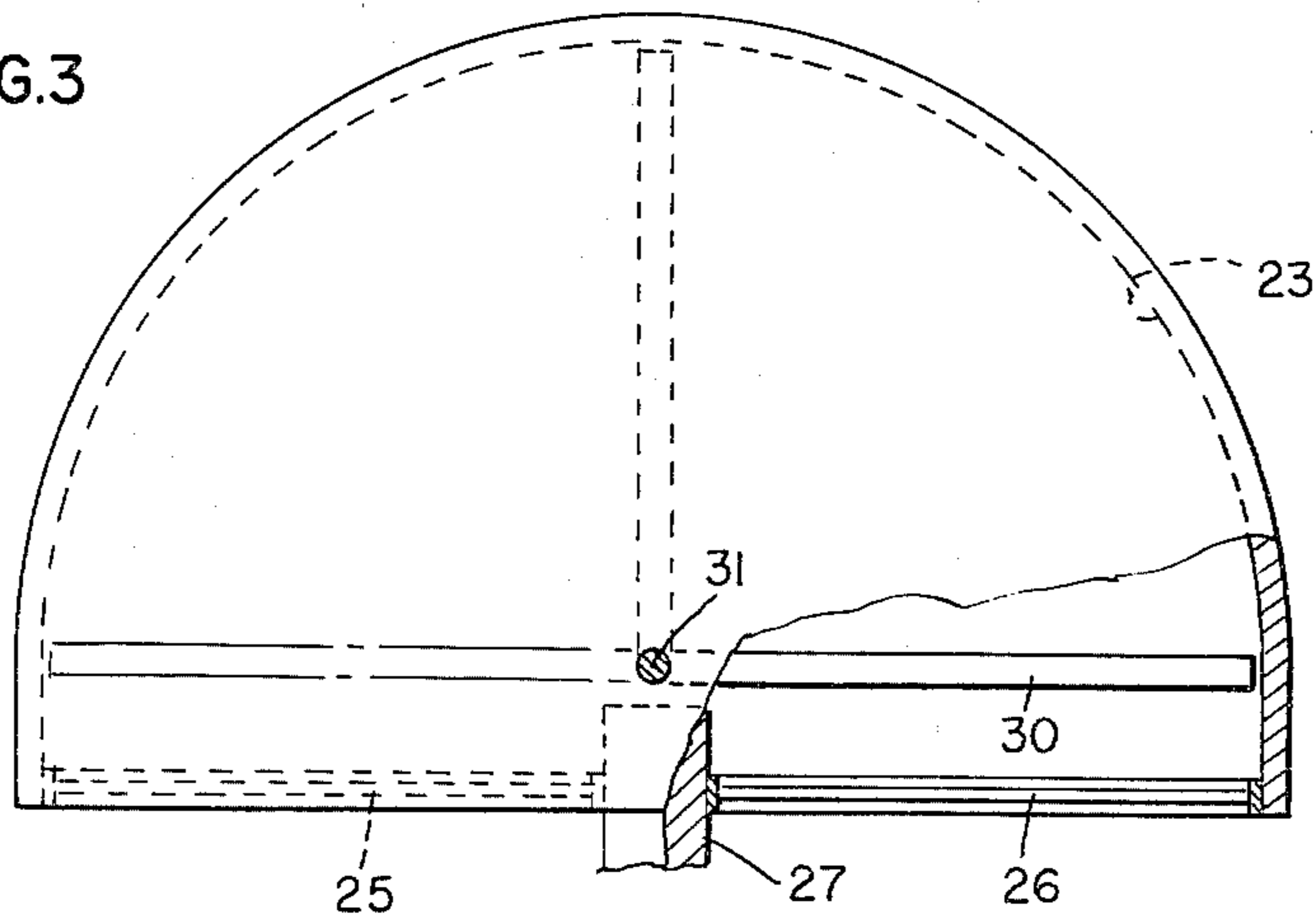


FIG. 4

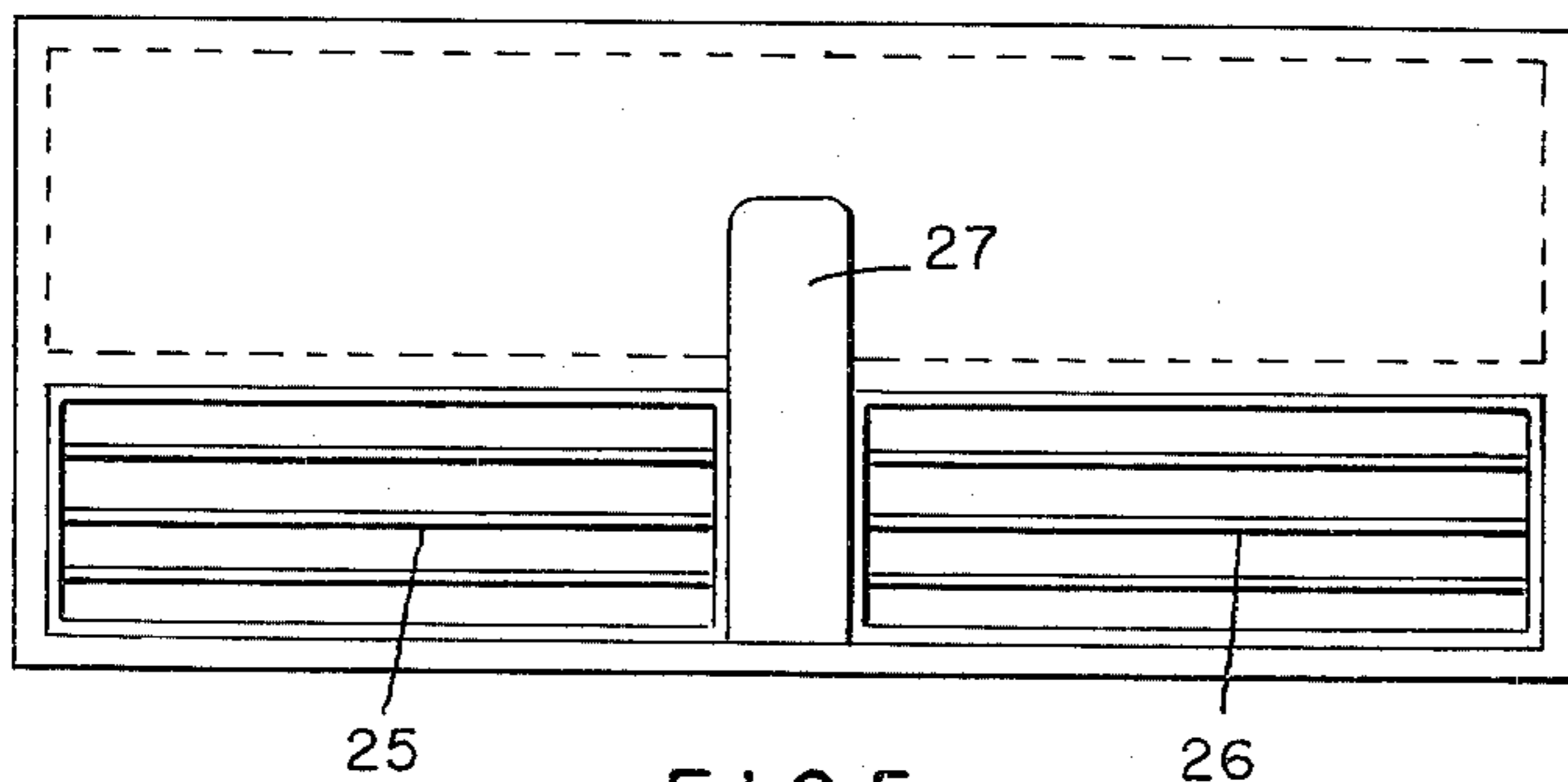
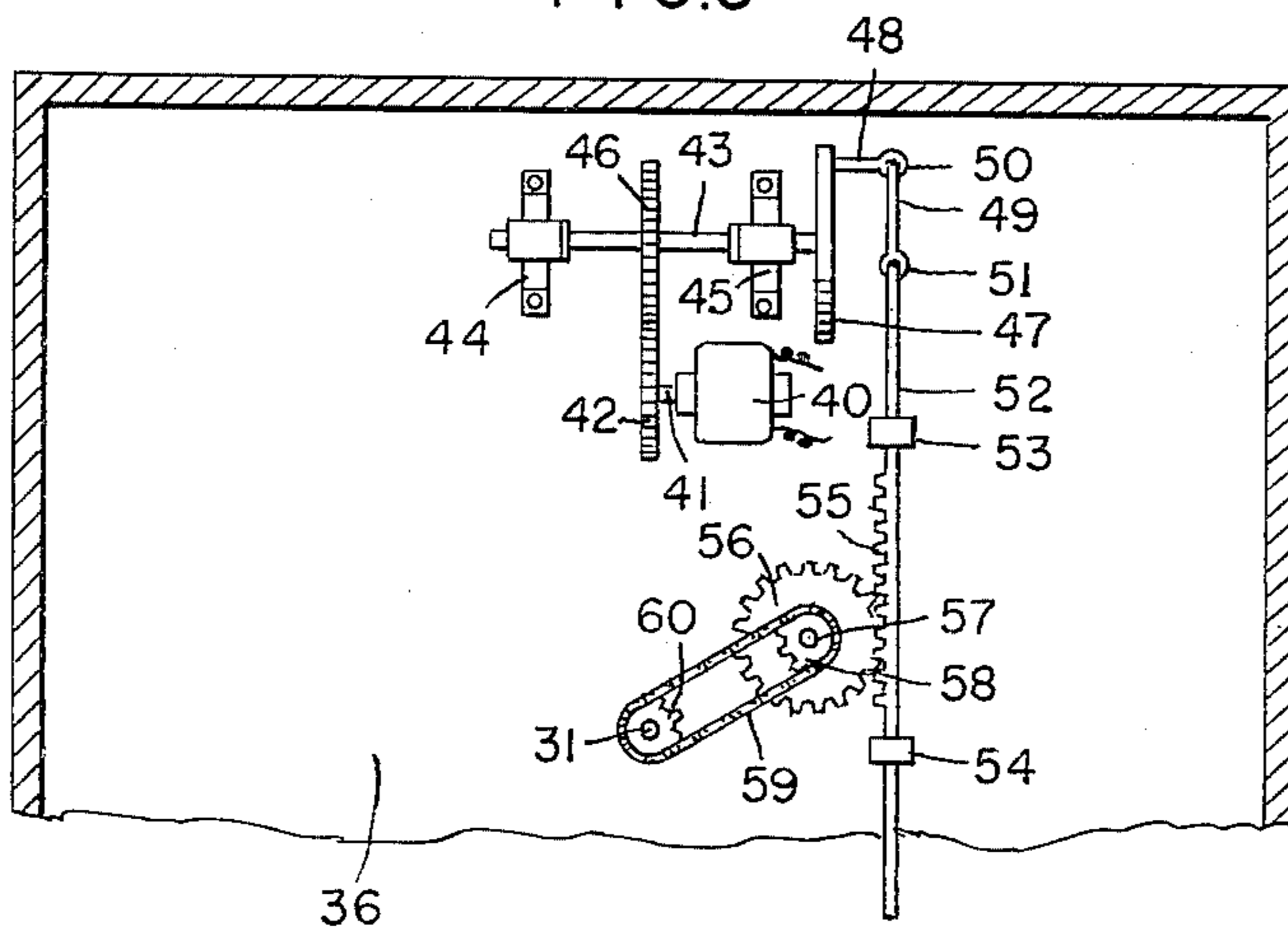


FIG. 5



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3,005,207

SWIMMING POOL

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9 Claims. (Cl. 4-172)

This invention relates to swimming pools, and more particularly to a specially constructed swimming pool having means for producing simulated ocean waves therein.

Much of the enjoyment derived from ocean swimming is derived from the wave action of the ocean, whereas in a conventional swimming pool, the water is relatively calm and offers no enjoyment which might otherwise be derived if waves were present. It is, therefore, of primary concern in connection with this invention to provide a swimming pool assemblage which has associated therewith means for producing a wave action in the water of the pool and which simulates, as accurately as possible, the normal wave action encountered at the ocean without the treacherous undercurrents which are often present in the ocean.

Another object of this invention is to provide a swimming pool construction which is provided with a sloping bottom wall from one end to the other and with there being a secondary greater slope at the deepest end, whereat there is located a wave making device cooperable with the sloped bottom wall for producing a realistic simulation of ocean waves along the length of the pool from the deep toward the shallow end thereof.

A further object of this invention is to provide a wave making device for swimming pools which incorporates a recess or chamber at one end of a pool housing a swingable paddle therewithin which oscillates back and forth within the chamber and thereby produces a wave action emanating from the mouth of the chamber which opens upon and into the pool, there being a jetty projecting centrally outwardly from the chamber to control the wave action and prevent interference between the chamber openings on the opposite sides of the jetty.

With the above and other objects in view, this invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportions, and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

FIG. 1 is a plan view of a swimming pool constructed in accordance with this invention and illustrating the extent and shape of the jetty associated therewith;

FIG. 2 is a longitudinal section, taken through the pool shown in FIG. 1, and illustrating the sloped bottom wall and the disposition of the wave making chamber as well as the machinery associated with the paddle assembly;

FIG. 3 is a plan view of the wave making chamber with portions thereof broken away and illustrating the paddle in three positions therewithin;

FIG. 4 is an elevational view showing the wave making chamber and the machinery chamber immediately thereabove; and

FIG. 5 is a horizontal section, taken through the machinery chamber and showing the mechanism for driving the paddle.

Referring at this time more particularly to FIGS. 1 and 2, the swimming pool will be seen to include opposite side walls 10 and 11, an end wall 13 and a wall assembly at the opposite end indicated generally by the reference character 14. The bottom wall of the pool,

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as can be seen best in FIG. 2, includes a first section 15 which slopes gently downwardly from the end wall 13 toward the opposite end wall assembly 14 and there is a secondary portion of the bottom wall 16 which slopes rather abruptly to the wall 14 immediately adjacent such wall and for a purpose which will be presently apparent.

The slope of the two sections 15 and 16 is such that with the proper amount of water contained within the pool, the water line will substantially intersect with the bottom wall portion 15 at its upper extremity where the steps 17 commence and which extend therefrom up to the upper surface of the end wall 13. It is to be noted that the walls 10, 11, 13 and 14 are preferably of substantial width so as to provide a walk-way completely around the pool.

At the deepest end of the pool, it is preferred that the greatest depth is approximately six feet and the side walls 10 and 11 at this point are preferably approximately two to two and one-half times the water depth at this point. Hand rails 18 and 19 are employed along the inner faces and side walls 10 and 11 approximately at the water line and one or more entrance ladders 20 and 21 may be provided at convenient points in the pool to gain access to the interior thereof.

The wall assemblage 14 has at least two hollow portions 22 and 23 which form respectively a machinery chamber and a wave making chamber. The latter chamber 23 is in the form of a recess which opens directly into the pool beneath the water level and the two openings of this chamber are protected by grating or grills 25 and 26, see particularly FIG. 4.

An upstanding jetty 27 is provided to form the two openings from the wave making chamber 23 and this jetty projects forwardly from the inner wall 28 of the wall assembly 14 along the longitudinal center line of the pool and is connected to the abruptly sloped bottom wall portion 16 and terminates within the area of this secondary sloped portion 16.

As can be best seen in FIG. 3, the wave making chamber or recess 23 is of semi-circular shape and located within this recess is a paddle 30 having at one end thereof a vertical shaft extension 31 and aligned therewith a depending shaft extension 32, see particularly FIG. 2, with the extension 32 being received within a bearing 33 set into the bottom wall 34 of the chamber 23 and with there being a further bushing or bearing 35 journalling the upper shaft extension 31. This latter bushing or bearing 35 is set into the wall 36 which forms simultaneously the bottom wall for the machinery chamber 23 and the top wall of the wave making chamber 23. The mechanism indicated generally by the reference character 37 effects an oscillatory motion to the paddle 30 so that the same moves between the full line position shown in FIG. 3 to the dotted line position shown in that same figure and displaced 180° from the full line position. FIG. 3 also shows a central position of the paddle.

The mechanism for effecting the wave motion to the paddle is shown most clearly in FIG. 5 and will be seen to include an electric motor 40 having a drive shaft 41 upon which a gear 42 is mounted. A countershaft 43 is mounted in bearings 44 and 45 on the wall portion 36 and has a gear 46 fixed thereto which is in mesh with the gear 42. One extremity of the countershaft 43 carries a wheel 47 having an eccentrically located pin 48 thereon which is connected to a link or rod 49 by means of a swivel joint 50, the opposite extremity of this link being connected by means of a swivel joint 51 to one end of a rack bar 52. The rack bar 52 is mounted for reciprocal motion by means of a pair of spaced guides 53 and 54 and the rack bar includes the teeth 55 meshing with a gear 56 fixed to a vertical shaft 57 suitably journaled.

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The upper extremity of the shaft 57 carries a sprocket wheel 58 operating in conjunction with a chain 59 and a further sprocket wheel 60 fixed to the upper end of the shaft extension 31 with the various gear ratios between the rack 55 and gear 56 and the sprocket and chain connection such that the full 180° of travel or oscillation of the paddle is effected.

It is to be noted that the wave making chamber 23 is located at the deepest end of the pool and that the bottom wall 34 thereof merges smoothly with the secondary inclined bottom wall portion 16 of the pool itself. By virtue of this arrangement, a wave action is very effectively produced, the water acted upon by the paddle 30 being discharged from the chamber 23 to impinge against the slope 16 which directs it upwardly towards the surface of the pool and then the water passes over the juncture between the two slopes 15 and 16 and with the lesser slope 15 permitting the wave action to progress longitudinally of the pool. In other words, the initial slope 16 tends to direct the water towards the surface in upward fashion to produce a good wave height and then the longer more gentle slope 15 permits the waves formed to gain length and to thereby simulate very effectively a normal ocean wave action. In this manner, waves of a considerable height may be produced.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claims, all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by those claims.

I claim:

1. A swimming pool of the character described comprising confining side and end walls, said pool having a bottom wall including first and second portions, said first portion originating at one end wall and sloping downwardly gently therefrom toward the opposite end wall and said second portion originating at the opposite end wall and sloping upwardly therefrom to merge with said primary portion and being sloped more abruptly than such primary portion, a wave chamber formed in said opposite end wall and opening into the pool and having a bottom merging smoothly with the origin of said second portion of the bottom wall, said opening having a vertical dimension which is a major portion of the height of the wave chamber and said opening extending a major portion of the length of said opposite end wall, means in said chamber for displacing water forcefully therefrom to impinge against said second portion of the bottom wall and being deflected upwardly thereby toward the surface of water in the pool whereby to propagate waves in the pool, said chamber being of semi-circular shape having its diametrical portion contained within the plane of said opposite end wall and said means comprising a vertically disposed rectangular paddle having vertical pivot means at one end thereof pivotally mounting the paddle for rotation about the center of curvature of said chamber, said paddle being slightly less in size than the generatrix of said wave chamber, there being means for oscillating said paddle to sweep back and forth within said chamber, the last mentioned means comprising an electric motor, a countershaft driven from said electric motor and having a wheel fixed thereon, a pin fixed to said wheel eccentrically thereof, a rack slidably guided for reciprocatory motion and being connected to said pin by means of a link, and a gear train from said rack to said pivot shaft of the paddle for oscillating the same through approximately 180° of arc.

2. A wave-producing swimming pool assembly comprising a pool having confining side and end walls and a sloping bottom wall, said bottom wall including a primary portion sloping downwardly from one end wall

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toward the opposite end wall and a secondary portion immediately adjacent said opposite end wall which is sloped downwardly more abruptly than the primary portion, a wave chamber at said opposite end of the pool opening into the same at the level of said bottom wall, said opening having a vertical dimension which is a major portion of the height of the wave chamber and said opening extending a major portion of the length of said opposite end wall, and means in said chamber for forcefully displacing water therefrom for initial impingement against said secondary portion of the bottom wall, said wave chamber being of semi-circular configuration having its diametrical portion contained within the plane of said opposite end wall and said means comprising a generally rectangular paddle having a vertical pivot at one end pivotally mounting the paddle about the center of curvature of the semi-circular chamber, said paddle being slightly less in size than the generatrix of said wave chamber, there being means for oscillating said paddle to sweep back and forth within said chamber, the last mentioned means comprising an electric motor, a countershaft driven from said electric motor and having a wheel fixed thereon, a pin fixed to said wheel eccentrically thereof, a rack slidably guided for reciprocatory motion and being connected to said pin by means of a link, and a gear train from said rack to said pivot shaft of the paddle for oscillating the same through approximately 180° of arc.

3. A wave-producing swimming pool comprising confining side and end walls and a bottom wall, one end wall having a wave chamber formed therein of semi-circular configuration having its diametrical portion contained within the plane of said one end wall and opening into the bottom of the pool, said opening having a vertical dimension which is a major portion of the height of the wave chamber and said opening extending a major portion of the length of said opposite end wall, a rectangular paddle having a vertical pivot shaft at one end pivotally mounting the paddle for oscillation about the center of curvature of said semi-circular chamber, said paddle being slightly less in size than the generatrix of said wave chamber, means mounted in said one end wall above said chamber for driving said paddle in oscillatory fashion through an arc of approximately 180° within said chamber.

4. A wave-producing swimming pool comprising confining side and end walls and a bottom wall, one end wall having a wave chamber formed therein of semi-circular configuration having its diametrical portion contained within the plane of said one end wall and opening into the bottom of the pool, said opening having a vertical dimension which is a major portion of the height of the wave chamber and said opening extending a major portion of the length of said opposite end wall, a rectangular paddle having a vertical pivot shaft at one end pivotally mounting the paddle for oscillation about the center of curvature of said semi-circular chamber, said paddle being slightly less in size than the generatrix of said wave chamber, means mounted in said one end wall above said chamber for driving said paddle in oscillatory fashion through an arc of approximately 180° within said chamber, said means for oscillating said paddle back and forth within the chamber comprising an electric motor, a countershaft driven from said electric motor and having a wheel fixed thereon, a pin fixed to said wheel eccentrically thereof, a rack slidably guided for reciprocatory motion and being connected to said pin by means of a link, and a gear train from said rack to said pivot shaft of the paddle for oscillating the same through approximately 180° of arc.

5. A wave-producing swimming pool assembly comprising a pool having confining side and end walls and a sloping bottom wall, said bottom wall including a primary portion sloping downwardly from one end wall toward the opposite end wall and a secondary portion

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immediately adjacent said opposite end wall which is sloped downwardly more abruptly than the primary portion, a wave chamber at said opposite end of the pool opening into the same at the level of said bottom wall, and means in said chamber for forcefully displacing water therefrom for initial impingement against said secondary portion of the bottom wall, said wave chamber being of semi-cylindrical configuration having its diametrical portion contained within the plane of said opposite end wall, said opening having a vertical dimension which is a major portion of the height of the wave chamber and said opening extending a major portion of the length of said opposite end wall, the lower wall of said wave chamber being substantially at the level of the pool bottom at the opposite end wall, said means comprising a generally rectangular paddle having a vertical pivot at one end pivotally mounting the paddle about the center of curvature of the semi-cylindrical chamber, said paddle being slightly less in size than generatrix of said wave chamber, and mechanism for oscillating the paddle to sweep back and forth in said chamber about said pivot.

6. A swimming pool of the character described comprising confining side and end walls, said pool having a bottom wall including first and second portions, said first portion originating at one end wall and sloping gently downwardly therefrom toward the opposite end wall, said second portion originating at the opposite end wall and sloping upwardly therefrom to merge with said first portion, said second portion having a greater slope than said first portion, said second portion extending a minor portion of the distance between said one end wall and said opposite end wall, a wave chamber comprising a recess formed in said opposite end wall, said recess extending substantially the width of the pool, said wave chamber having a bottom merging smoothly with the portion of said second portion of the bottom wall adjacent to said opposite end wall, a jetty extending upwardly from said second portion of the bottom wall substantially above said recess, said jetty extending from said opposite end

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wall along a central portion of the pool toward said one end wall and terminating within the area of said second wall portion to define two openings from said wave chamber, and means within said chamber for alternately displacing water forcefully from one or the other of said openings to impinge against said second portion of the bottom wall to be deflected upwardly toward the surface of the water in the pool to propagate waves in the pool, said jetty preventing interference between water entering or leaving said openings on opposite sides of the jetty.

7. A swimming pool as defined in claim 6, wherein the depth of said pool at the shallowest portion thereof is approximately one-half the depth of the pool at the deepest portion thereof.

8. A swimming pool as defined in claim 6, wherein the side walls are of a height at the deepest portion of the pool approximately twice the depth of the water in the pool.

9. A swimming pool as defined in claim 6, wherein said wave chamber is substantially semi-cylindrical in configuration having its diametrical portion contained within the plane of said opposite end wall, said means for alternately displacing water forcefully from one or the other of said openings comprising a generally rectangular paddle having a vertical pivot at one end pivotally mounting the paddle about the center of curvature of the semi-cylindrical chamber, said paddle being slightly less in size than the generatrix of said wave chamber, and mechanism for oscillating the paddle to sweep back and forth in said chamber about said pivot.

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