Feb. 12, 1929. 1,701,842

W. FISCH

ARTIFICIAL SURF BATHING POOL

Filed Jan. 6, 1927 2 Sheets-Sheet 1

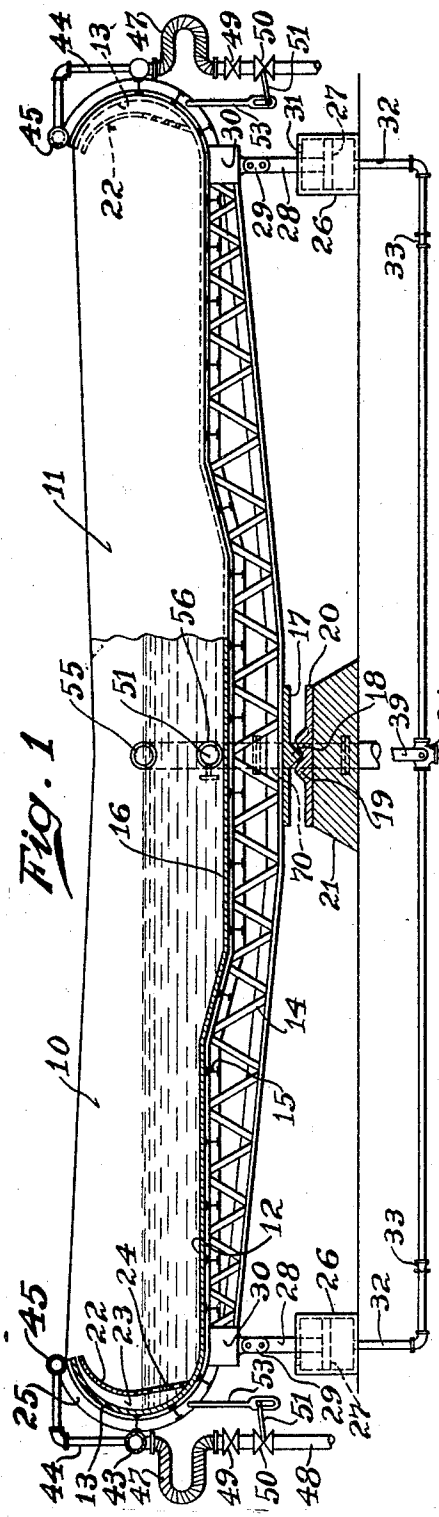

Fig. 1

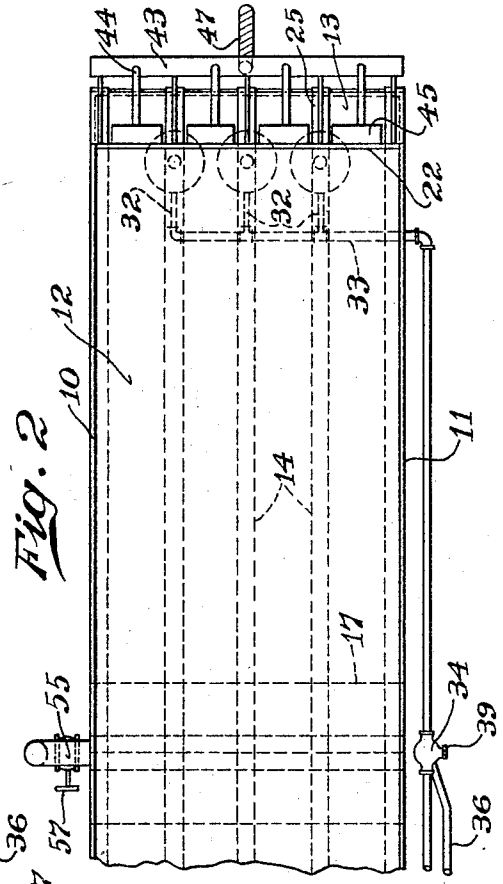

Fig. 2

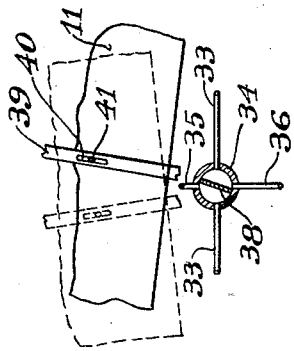

Fig. 3

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ARTIFICIAL SURF BATHING POOL

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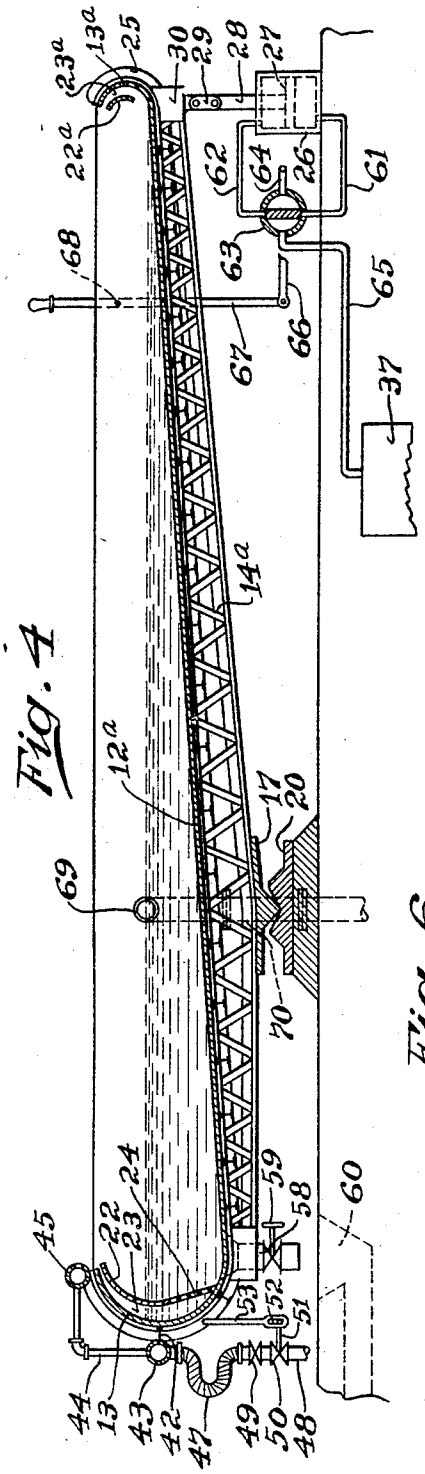

Fig. 4

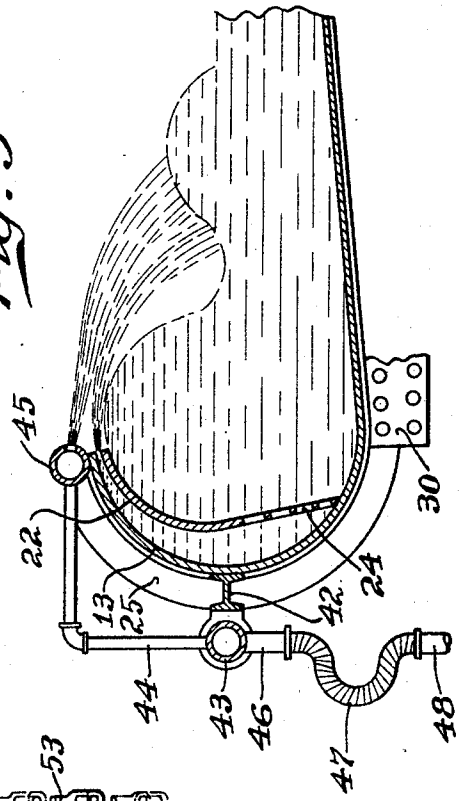

Fig. 5

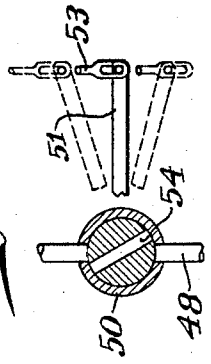

Fig. 6

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Patented Feb. 12, 1929. 1,701,842

UNITED STATES PATENT OFFICE.

WILLIAM FISCH, OF ATLANTA, GEORGIA.

ARTIFICIAL SURF-BATHING POOL.

Application filed January 6, 1927. Serial No. 159,367.

My invention relates to an artificial surf bathing pool of the type in which by motion of the pool or tank a surge of water is induced which, acting against the marginal walls of the tank, will produce the effect of the surf.

In my present invention I show a tank which is balanced to rock with a fixed fulcrum on an intermediate transverse bearing, preferably of the knife edge type, in combination with power means for controlling its tilting or oscillatory movements. My present invention differs from the disclosure in my pending application, Serial No. 150,108, in which the tank was shown adapted to rock with a shifting fulcrum.

My present invention further contemplates broadly the provision of a baffle spaced from the marginal tank wall wherever there will be a surge or rush of water against it, this baffle being designed to produce an upwardly contracting spray chamber, open at its bottom and top, to the end that the surge of water into the contracting space of this chamber will produce the discharge of spray, preferably above the top of the induced wave effect.

More particularly, my invention contemplates a tiltable tank having curved marginal walls and a curved baffle spaced inwardly from the marginal tank walls with its lower end projecting below the low water level in the tank and its upper edge juxtaposed to the upper edge of the adjacent tank marginal wall so as to produce an inwardly and upwardly curved contracting spray chamber.

My invention further contemplates the provision of a tilting tank having a depressed center so as to give the necessary swimming depth there and to provide a less depth of water adjacent to the surf producing baffled ends of the tank.

My invention further contemplates the introduction of replacement water in the form of showers supplied from a source of water under pressure and controlled by valves automatically operated by the tank motion so that the showers play only at the end of the tank depressed below mean level position.

My invention further comprises the novel details of construction and arrangements of parts, which in their preferred embodiments only are illustrated in the accompanying drawings, which form a part of this specification, and in which:—

Fig. 1 is a partial longitudinal vertical cross-sectional view and a partial side elevation of the center mounted type of oscillatory tank.

Fig. 2 is a plan view of one end of the tank.

Fig. 3 illustrates in detail the valve mechanism for automatically controlling the motors which actuate the tank.

Fig. 4 is a longitudinal vertical cross-sectional view through a modified type of tank mounted off center and having a varying depth of water with a power control mechanism provided at one end only of the tank.

Fig. 5 is an enlarged detail view showing the wave, spray and shower producing mechanisms in cross-section at one end of the tank.

Fig. 6 is a detail view of the valve control means for automatically cutting the replacement water shower on and off.

Corresponding reference numerals refer to corresponding parts throughout the drawings.

In the embodiment of my invention illustrated in Figs. 1 and 2, I show an elongated tank having marginal side walls 10 and 11 which in the type illustrated are parallel and connect with the bottom 12 of the tank and with upwardly and inwardly curved end walls 13, which are preferably formed as continuations of the bottom 12. The bottom is supported upon longitudinal spaced trusses 14 which carry transverse I beams 15, the trusses being dropped across their central portion to provide a depressed bottom portion 16 extending transversely across the middle portion of the tank to produce there a maximum depth of water. The trusses are mounted upon a transverse central bearing plate 17 having along its center a dependent knife edge bearing 18 adapted to be received in a V-bearing 19 formed along the center of the supporting plate 20 that rests upon a suitable foundation 21. The tank is thus supported in line with its center of gravity on a knife edge bearing upon which it is adapted to oscillate so as to induce a surge of water toward its curved ends 13. These ends curve upwardly and over so as to approach the horizontal top plane of the tank at a very acute angle and in front of each of these walls 13 I interpose a similarly curved baffle 22 disposed so as to approach very close to the top of the end 13 and to have an increasing clearance downwardly from said top edge so as to provide what I term a spray chamber 23 which converges upwardly and inwardly.

The baffle in the form of a solid plate extends downwardly, preferably to a point below the low water level at its respective end of the tank, and in order to protect bathers from contact with its lower edge and to prevent foreign matter gaining access to the spray chamber 23, I provide a grating 24 which extends from the bottom of the solid baffle to the tank bottom 12. This grating will permit the surge of water to pass freely into the spray chamber. The top angle or channel member 25 of the trusses is carried upwardly on a curve about the end walls 13 and serves to rigidly brace the same.

In order to control the oscillation of the tank, I provide a plurality of compressed air cylinders or equivalent motors 26 preferably arranged under the ends of the middle trusses and having their pistons 27 provided with piston rods 28 connected by links 29 with plates 30 at the ends of the trusses proper. The cylinders are provided with top openings 31 and with a bottom connection 32 leading at each end of manifold pipes 33, which pipes 33 connect on opposite sides to a three-way valve 34 which has an exhaust opening 35 and a connection 36 leading to a tank or source of motor fluid pressure 37. The valve 38 is connected to an operating handle 39 which is adapted, as indicated in Fig. 3, to be connected by means of a slot 40 therein with a pin 41 on the side wall 11 of the tank and when engaged therewith to be rocked so as to deliver the pressure first to the motors at one end and then to the motors at the other end of the tank in such manner as to adapt the said motors not only to oscillate the tank but to control and cushion its movements and to bring it to rest. The manner of operation of this valve control is fully described in my pending application aforesaid and is not therefore claimed as a part of this application.

I attach to the end walls 13 and to their bracing elements 25 a bracket 42 on which is mounted a manifold pipe 43 having a plurality of vertical pipes 44 leading therefrom to perforated sprinkler pipes 45 mounted at the top of the sides 13 between the elements 25 and adapted to discharge a shower of water over into the tank. The manifold pipe 43 is supplied by water through a connection 46, a flexible pipe 47 and a main 48 leading from any suitable source of water supply under pressure. I provide a hand controlled valve 49 in the pipe 48 and also a tank controlled valve 50 having its lever 51 connected in the slot 52 of a link 53 pivotally suspended from the end of the tank. The arrangement is such that, as shown in Fig. 6, when the adjacent tank end swings down below mean level position the lever moves the port 54 of the valve into register with the inlet and outlet pipes and thus turns on the spray during the time that the tank is below mean level position, or during such part of this time as may prove desirable. The overflow water is drawn off from the center of the tank through a side overflow pipe 55, which pipe also has a bottom drain 56 normally controlled by a valve 57. This drain port is at the low level at the center of the tank. If desired the tank may be provided with suitable end elements as shown in Fig. 4.

In Fig. 4 the tank structure differs in that the bottom 12^a is flat and disposed at an incline or pitch which at the lower end merges into the wall 13 corresponding to that described in connection with Fig. 1. At its other or higher end it merges into a short curved wall 13^a. The trusses 14^a are designed to accommodate themselves to this design of tank and they rest on the bearing plate 17 off center but at what represents the approximate center of gravity of the tank with the water in its mean level position therein. This brings the bearing plate 17 close to the end 13 and leaves that end as the lower end of the tank. The baffle 22, spray chamber 23, grating 24, sprinkler 45, and the water connections thereto are all as described in connection with Fig. 1, and in addition thereto there is provided a cleanout opening 58, with a control valve 59 therefor, which delivers into a sump 60. At the end 13^a is provided a small baffle 22^a which produces a small spray chamber 23^a at the upper end of the tank, but the grating below the baffle is shown omitted at this end and the sprinkler is also omitted, though it could obviously be used if desired. The plates 30 are connected to the higher ends of the trusses 14^a and are connected to the motor piston 27 in the manner described for Fig. 1. In this arrangement however the cylinder 26 is connected at each end by pipes 61 and 62 to a valve 63 having an exhaust opening 64 and a pressure supply connection 65 leading from the tank 37 or like source of fluid pressure. As the tank rocks, the valve lever 66, which is connected by a slotted handle 67 to a pin 68 on the tank, will rock the valve so as alternately to admit pressure below and exhaust it from above the pistons, thus automatically oscillating the tank. By setting the valve in the neutral position shown in Fig. 4, which can be done by detaching the handle 67 from the pin, the valve can be set to blank off both connections 61 and 62 and thus cause the tank to come to rest. The overflow water is withdrawn through a pipe 69 which comprises a flexible portion 70 to follow the oscillatory movement of the tank. In like manner the overflow pipe 55 of Fig. 1 comprises a flexible portion 70.

In operation, as the tank in Fig. 1 oscillates back and forth with a slow movement, there will be a surge of water toward the lowered end of the tank which will strike against the baffle and surge up into the spray chamber 23, producing both the breaking

wave effect shown in Fig. 5, as well as an over-riding spray for the wave, the spray being caused by the rush of a mass of water into the contracting chamber which will tend to discharge it as a spray or jet of water. At the same time, as each end drops below mean position, it begins to open the valve 50 and, assuming valve 49 normally open, will admit water through the manifold piping system to the several sprinkler pipes 45 and thus discharge the replacement water in the form of a shower, thereby increasing the extent to which the bathers at the ends of the tank will be subjected to wave, spray and sprinkler effects which will give life, action and interest to the bathing. When it is desired to stop the tank, the valve lever 39 is disengaged from the pin 41 and the valve 38 is set to trap the air in either or both ends of the cylinders, as desired.

The operation of Fig. 4 is substantially the same, except that the motors are arranged at the shallow higher end of the tank where they obtain a considerable leverage for the control of the mass of water in the tank and the wave effects of the two ends of the tank will be somewhat different, due to the different depth and arrangement of the baffles 22 and 22a. At the higher end it is probable that there will be a greater effect from the spray, as the lower edge of the baffle is shown above the water level, but this is not essential and it may be submerged if it is found to produce the more desirable effect when disposed that way.

Though I have described with great particularity the details of the embodiment of the invention herein shown, it is not to be construed that I am limited thereto, as changes in arrangement and substitution of equivalents may be made by those skilled in the art without departing from the invention as defined in the appended claims.

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

1. A bathing pool of the character described, comprising a tank, means to induce a surge of water against a marginal tank wall, and a baffle spaced inwardly from said wall and arranged to provide a chamber of upwardly decreasing size having a top spray outlet disposed to discharge into the tank.

2. A bathing pool according to claim 1, in which the baffle is concave to convert part of the surging water into a wave and part into spray above the wave.

3. A bathing pool according to claim 1, in which the baffle is spaced above the tank bottom and terminates close to the top edge of the adjacent marginal wall of the tank to define therewith the walls of the spray outlet.

4. A bathing pool according to claim 1, in which both the marginal tank wall and the baffle are curved and disposed to approach each other to form a restricted top spray outlet.

5. A bathing pool of the character described, comprising an enlongated tank mounted to oscillate on a transverse roller bearing, power means to cause and control said oscillations, end curved baffles disposed to produce a breaking wave of water surging against it, the end wall of the tank forming with each adjacent baffle a spray chamber which converges upwardly and inwardly and is open above and below, and a sprinkler pipe above each spray chamber having means to cut it into and out of play responsive to the tank's oscillations.

6. In a bathing pool of the character described, a tank mounted to oscillate about a fixed fulcrum, power means to oscillate the tank, an end spray for introducing replacement water, and valve means for controlling the spray responsive to the tank's oscillations.

In testimony whereof I affix my signature.

WILLIAM FISCH.