

Aug. 9, 1932.

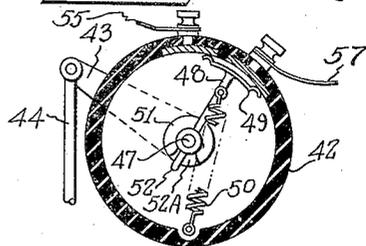
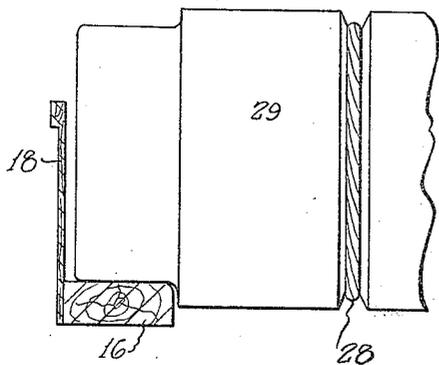
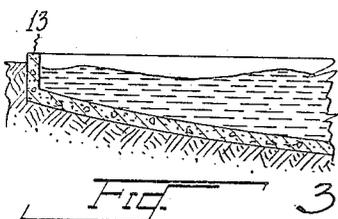
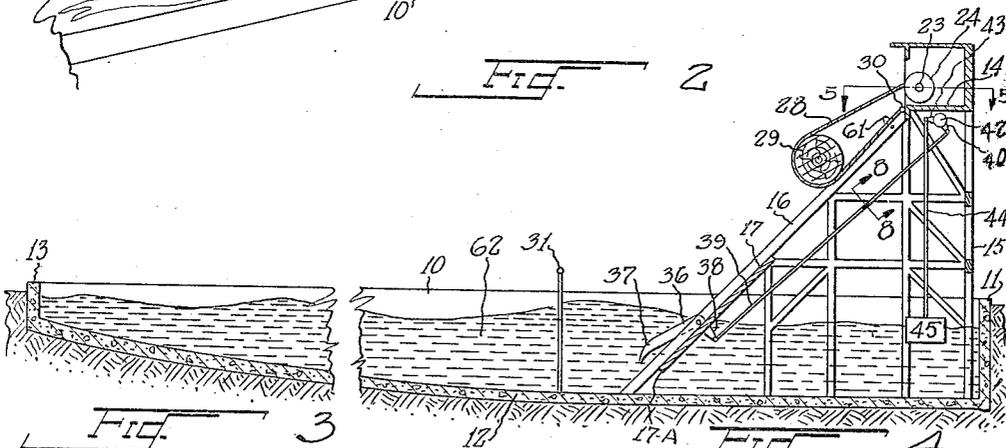
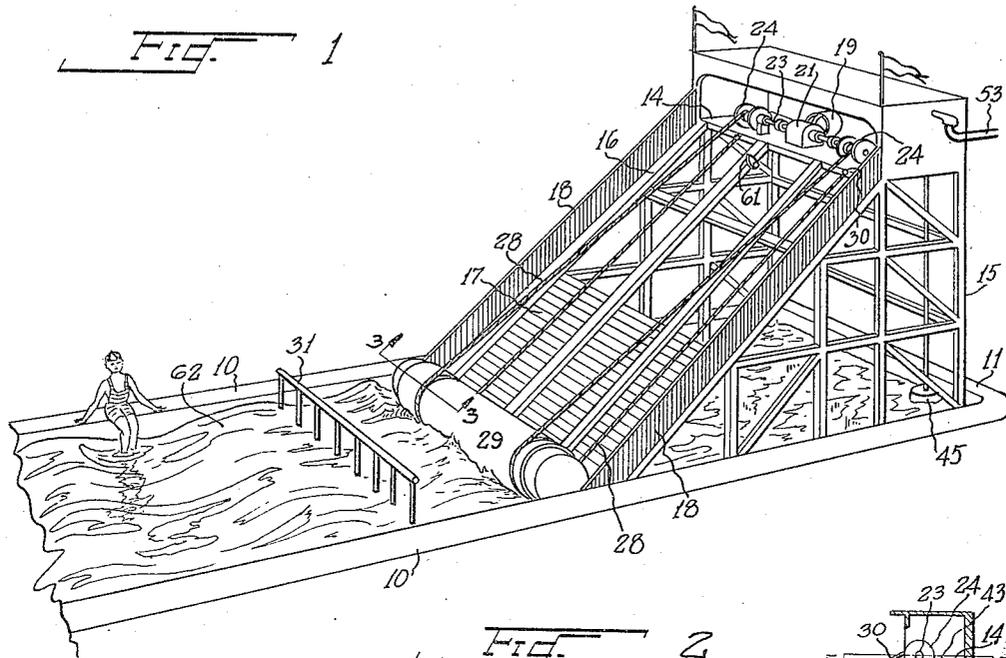
C. W. KELLER ET AL

1,871,215

MACHINE FOR MAKING WAVES

Filed June 15, 1931

2 Sheets-Sheet 1



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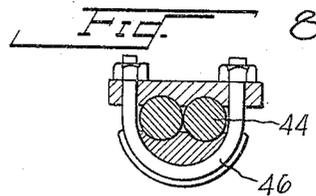
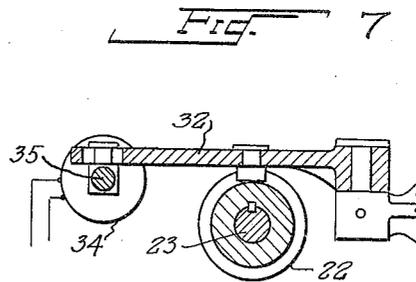
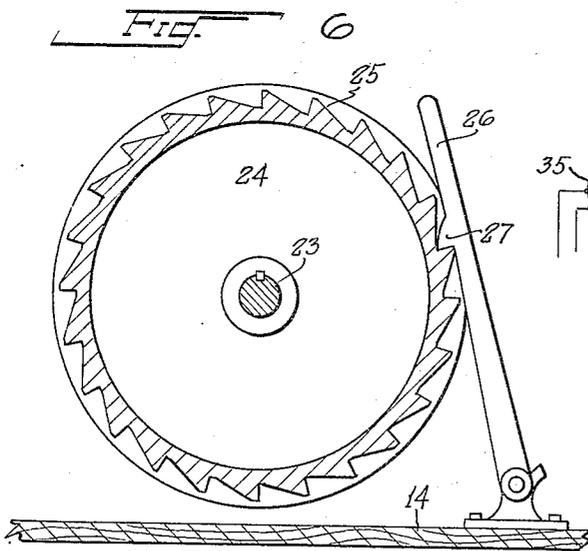
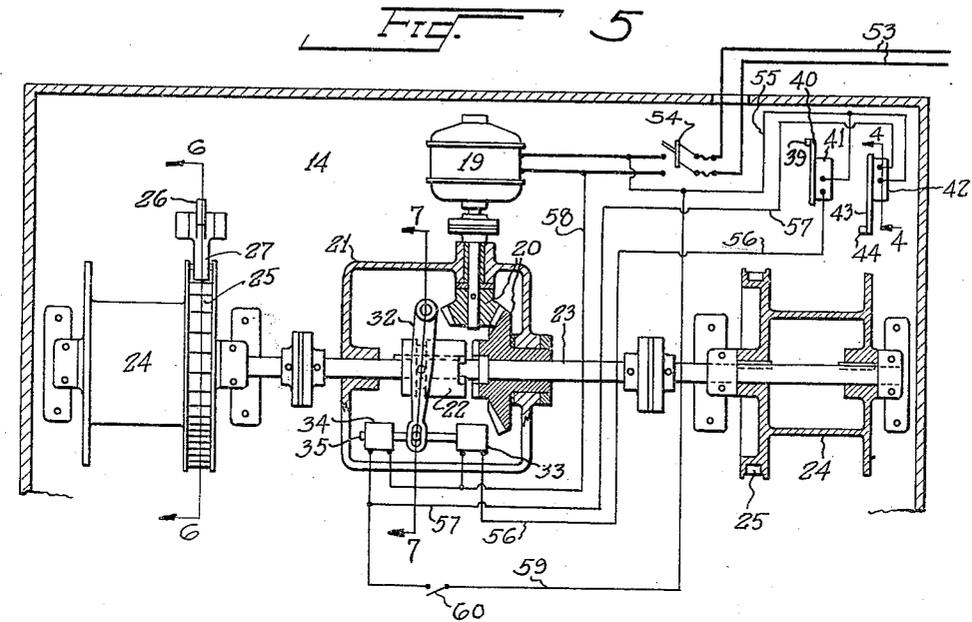
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MACHINE FOR MAKING WAVES

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2 Sheets-Sheet 2



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MACHINE FOR MAKING WAVES

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This invention relates generally to aquatic sports, and particularly to machines for making waves.

The main object of this invention is to provide a machine for producing surf artificially.

The second object is to produce a wave-making machine which will be synchronized with the waves produced thereby.

The third object is to make it possible for inland watering places and artificially formed swimming pools to provide the same recreation as is now obtainable only at the sea shore.

The fourth object is to so construct the device that same may be manually or automatically operated and that the height of the waves can be varied by the operator.

These, and other objects, will become more apparent from the specification following as illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of the entire apparatus.

Fig. 2 is a longitudinal section through the apparatus.

Fig. 3 is a section taken along the line 3—3 in Fig. 1.

Fig. 4 is a section taken along the line 4—4 in Fig. 5.

Fig. 5 is a horizontal section taken along the line 5—5 in Fig. 2.

Fig. 6 is a section taken along the line 6—6 in Fig. 5.

Fig. 7 is a section taken along the line 7—7 in Fig. 5.

Fig. 8 is a section taken along the line 8—8 in Fig. 2.

Similar numbers of reference refer to similar parts throughout the several views.

Referring in detail to the drawings, there is illustrated a tank which, in this instance, is provided with vertical sides 10, a vertical end wall 11 and a flat bottom 12 which slopes upwardly toward the vertical end 13. Near the end wall 11 is mounted an elevated platform 14 upon the uprights 15, which also support the sloping rollways 16 extending from the platform 14 to the bottom 12. The lower portion of the rollways 16 is covered on its

under side by planks 17 which do not extend entirely to the bottom 12 in order that water may pass under the lower edge 17—A of the planking. A guard rail 18 is provided along each side of the planking 17, and preferably extends to the platform 14.

On the platform 14 is mounted a motor 19 which, through a pair of bevel gears 20 mounted in a housing 21 and a clutch 22, drives a shaft 23 at whose opposite ends are mounted the cable winding drums 24, each of which is provided with a ratchet wheel 25 by means of which it may be locked through the positioning of a hand lever 26 which is provided with a pawl 27 adapted to engage the teeth of the wheel 25.

From each drum 24 extends a cable 28 which passes downwardly along the incline and thence around a cylindrical log 29 back to a point of fastening 30 near the platform 14. A guard 31 is placed across the tank to prevent swimmers from coming too close to the log 29.

The clutch 22 is operated by a clutch-operating lever 32 which is moved into or out of a driving position by means of the solenoids 33 and 34 whose core 35 is connected to the lever 32.

To a rollway 16 is attached a bell crank lever 36 whose end 37 is raised somewhat above the top level of the rollway 16 and whose end 38 projects downwardly and has attached thereto a switch-operating rod 39. The rod 39 is connected to the operating lever 40 of a switch 41 whose construction is identical with the switch 42 shown in Fig. 4.

The switch 42 is provided with an operating lever 43 whose outermost end is connected by means of a rod 44 to a float 45. Adjustment is provided for the float 45 by splitting the rod 44 and splicing it with the U bolt clamp 46 (as shown in Fig. 8). A similar clamp, or other means of adjusting the length of the rod, is also provided for the rod 39.

Referring more particularly to the switches 41 and 42 same are provided with a rotatable shaft 47 which is rocked by its respective lever 40 or 43. The shaft 47 has mounted thereon a radial arm 48 which carries a double brush 49. The arm 48 is held to one side

or the other of its central position by means of a spring 50.

In order to permit the spring 50 to function independently of its respective float 45 or lever 37 it is desirable to provide a limited amount of lost motion between the hub 51 of the levers 40 and 43 and the end 52. This is accomplished by forming a notch 52—A in the hub 51 so that while a brush 49 may be moved by the rotation of the shaft 47 it is also capable of a limited movement under the influence of the spring 50. This is to prevent undesirable operation of the clutch when the float 45 is near the tripping position.

The motor 19 is supplied with current from a power line 53, under the control of a switch 54. From one side of the power line 53 extends a wire 55 which connects with one terminal each of the switches 41 and 42. The second terminal of the switch 41 connects by means of a wire 56 to one side of the solenoid 33. The second terminal of the switch 42 connects by means of a wire 57 to one side of the solenoid 34. The remaining terminals of the solenoids 33 and 34 are joined by means of a wire 58 to the power line 53. Shunted around the switch 42 is a wire 59 provided with a switch 60 having an upturned arm 61 whereby the circuit may be closed through the wire 59 when the log 29 is drawn too high on the rollway 16, namely to bring same into contact with the arm 61. This is merely a protective device to cause a disengagement of the clutch 22 to take place automatically whenever a log is raised too high on the rollway 16.

The operation of the device is as follows: Assuming that the water 62 is still and it is desired to cause waves to be formed therein the operator closes the switch 54 which starts the motor 19 causing the log 29 to be hauled up on the rollway 16. If, for example, it comes into contact with the safety switch arm 61 it will close the switch 60 and energize the solenoid 34, disengaging the clutch 22 thus permitting the log 29 to roll down into the water 62, the displacement of which produces the desired wave motion, and the waves in turn break upon the sloping bottom 12 giving the desired surf for the swimmers.

However, as soon as the log 29 has rolled over the lever end 37 it closes the switch 41 and energizes the solenoid 33, which engages the clutch 22 and causes the motor 19, through the drums 24 and cables 28, to again haul the log 29 up the rollway 16. While this is taking place the returning water which has previously been displaced passes under the end 17—A of the planking 17 and ultimately raises the float 45, thereby closing the switch 42, again energizing the solenoid 34 and releasing the log 29 which now returns to the water to set up a second wave, and so on.

Obviously, the clamps 46 must be adjust-

able to suit the condition under which the device operates in order that the movements of the log may be synchronized perfectly with the movement of the waves set up thereby.

We are aware that many forms of wave producing machines have been constructed in the past and that these have been unsatisfactory by reason of the fact that they did not provide a means of correlating the movements of the wave-producing mechanism with the movements of the waves themselves.

In many cases the devices have been destroyed entirely by the action of the waves set up by them. It is therefore not our intention to cover such devices broadly, but we do intend to cover all such forms and modifications thereof as fall fairly within the appended claims.

We claim:

1. In a wave producing machine, the combination of a water-displacing means, means for moving said displacing means to and from the water, and means for synchronizing the movements of the displacing member and the waves produced thereby.

2. In a machine for producing waves, the combination of a sloping rollway extending downwardly into the water, a log mounted on said rollway, cable means for drawing said log out of the water onto said rollway, cable hauling means for hauling and paying out cable, and a synchronizing means between said cable-hauling mechanism and the waves produced by said log consisting of a float actuated by a returning wave adapted to stop the operation of said cable-hauling mechanism, and lever means actuated by said log on its downward travel for causing the operation of said cable-hauling mechanism.

3. A wave-making machine having in combination an inclined rollway, a log mounted transversely across said rollway, cables for moving said log upwardly on said rollway, cable winding drums for hauling in said cables, a motor for driving said drums, an electrically operated clutch interposed between the motor and drums, trip means at the lower end of said rollway actuated by the descending log for throwing in said clutch, and a float-actuated trip for disengaging said clutch adapted to be operated by a returning wave.

4. In a wave-making machine, the combination of an elongated tank having one shallow and one deep end, water-displacing means mounted at the deep end of said tank means for operating said water-displacing means, and trip means for correlating the movements of said water-displacing means with the waves set up thereby.

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