H. A. & H. A. REIF.

WAVE MOTOR.

APPLICATION FILED MAR. 9, 1912.

1,035,469. Patented Aug. 13, 1912.

Fig. 1.

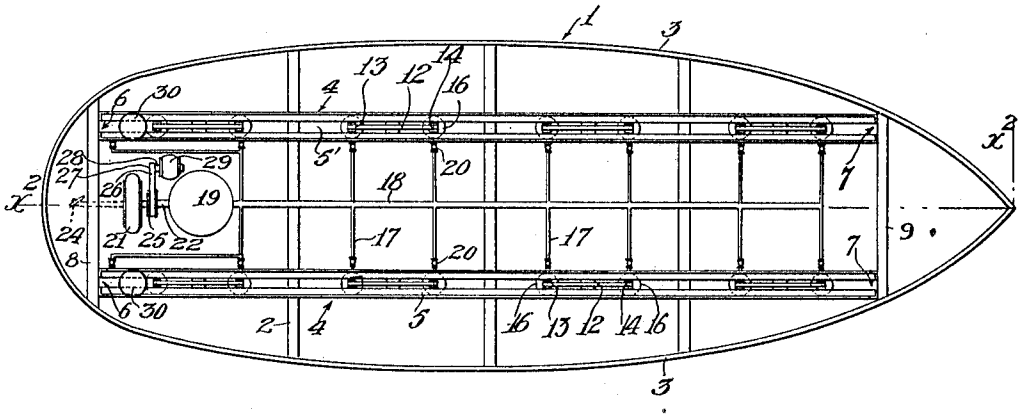


Fig 2

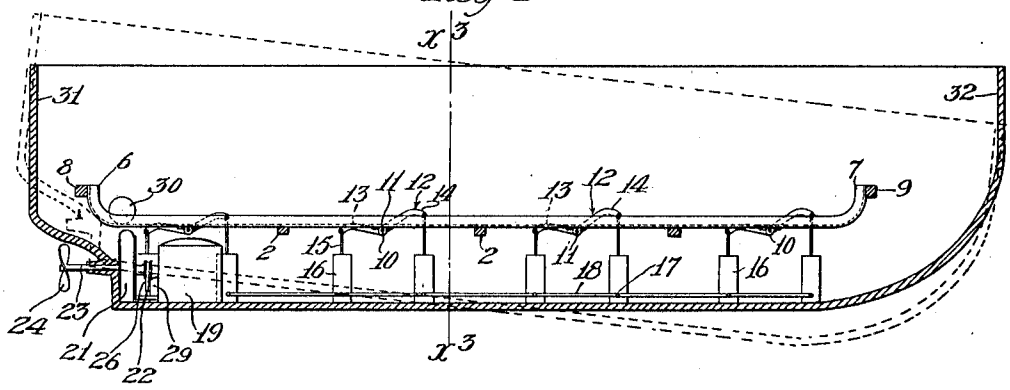


Fig. 3.

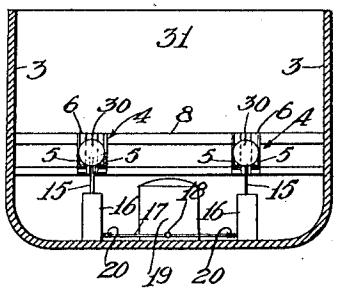
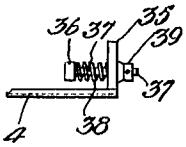


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY A. REIF AND HENRY ALLEN REIF, OF CASA VERDUGO, CALIFORNIA.

WAVE-MOTOR.

1,035,469. Specification of Letters Patent. Patented Aug. 13, 1912.

Application filed March 9, 1912. Serial No. 682,793.

To all whom it may concern:

Be it known that we, HENRY A. REIF and HENRY ALLEN REIF, both citizens of the United States, residing at Casa Verdugo, in the county of Los Angeles and State of California, have invented a new and useful Wave-Motor, of which the following is a specification.

Our invention relates to a device adapted to be operated by the motion of the waves for the purpose of transmitting power in such a form that the same may be used for operating machinery of various kinds.

The invention particularly consists of a floating body containing devices adapted to be operated by the motion of the floating body on the waves, and one of the main objects of the present invention is to produce a device of the character described of simple form and construction which may be operated with great simplicity.

Other objects and advantages will appear hereinafter from the following specification.

Referring to the drawings, which are for illustrative purposes only: Figure 1 is a plan view of a boat showing an embodiment of our invention. Fig. 2 is a longitudinal, sectional view on line x^2—x^2 Fig. 1. Fig. 3 is a transverse, sectional view on line x^3—x^3 Fig. 2. Fig. 4 is a fragmentary view of a portion of the device showing a modified form of the weight stop.

It is understood that any form of floating means or raft may be employed, but in the drawings we have shown the invention as applied to a boat designated at 1.

Mounted on cross bars 2, which are supported on the sides 3 of the boat, is a pair of channels or guide-ways 4 which extend longitudinally on either side of the center line of the boat. Each channel or guide-way 4 consists of a pair of angle irons 5 spaced apart forming a slot or opening 5′ therebetween. The ends 6 and 7 of the angle irons 5 are curved upwardly and secured to cross bars 8 and 9 respectively. Secured to the underside of the angle irons 5 of each channel or guide-way 4 is a series of bearings 10, each having mounted therein a shaft 11 upon which is mounted intermediate its length a rock arm 12. The ends 13 and 14 of each rock arm 12 are provided with a rounded upper face, in the present instance the ends 13 and 14 being curved as indicated in Fig. 2. Connected to each end of the rock arm 12 is a rod 15 adapted to operate the plunger of an air compressor or pump 16. Each air compressor or pump 16 is connected by means of a pipe 17 with a common pipe 18 connected to a tank or reservoir 19, a check valve 20 being provided in each pipe 17 between the compressor 16 and the pipe 18 to prevent air passing from the pipe 18 to the compressors 16. Placed in the stern of the boat is an impact wheel 21 adapted to be operated by a supply of compressed air from the tank 19 through a pipe 22. The shaft 23 of the impact wheel 21 extends through the stern of the boat and is provided at its outer end with a propeller 24. Mounted on the forward end of the shaft 23 is a pulley 25 from which may be driven machinery of different kinds, in the present instance a belt 26 being shown connected with a pulley 27 on the shaft 28 of an electric generator 29. Each guide-way or channel 4 is provided with a weight adapted to run therein which, in the form shown, consists of a ball 30.

The operation of the device is as follows:—It is understood that the boat may be anchored or permitted to drift upon the surface of the ocean, or any other body of water. When the boat is in the position shown in Fig. 2, which is the position which the boat would assume if the surface of the water was smooth, the balls 30 would remain stationary in the channels or guide-ways 4, but should the stern 31 of the boat be raised by a wave and the bow 32 of the boat be depressed, as indicated in dotted lines, the balls 30 would roll down the guide-ways 4 and consecutively roll over the ends 14 of the rock arms 12, depressing the same below the surface of the guide-ways 4, thereby causing the rods 15 connected to the ends 14 of the rock arms 12 to be moved downwardly in their associated compressors 16, thereby forcing air under pressure through the check valves 20 and pipe 17 into the pipe 18, thence into the reservoir 19. The depression of the ends 14 of the arms 12 would cause the ends 13 of the arms 12 to project above the bottom of the guide-ways 4 as the balls 30 rolled over the ends 14. The balls 30 upon reaching the upturned ends 7 of the channels or guide-ways would be stopped thereby and as the wave passed under the boat the stern 31 would drop and the bow 32 of the boat rise so that the ends of the channels would be in a position with the ends 7 higher than the ends 6, thereby causing the balls 30 to roll

from the end 7 toward the stern of the boat and the ends 6 of the channels, during which travel of the balls toward the end of the boat each end 13 of the arms 12 would be depressed by the ball passing thereover, thereby causing the rod 15 secured to the ends 13 of the arms to be depressed, thereby operating the compressor 16 associated therewith to force compressed air through its associated pipe 17 into pipe 18, thence into the reservoir 19. Continued rocking of the boat caused by the waves would cause the balls to repeatedly travel from one end of the channels to the opposite end, as above described, at each time rocking the arms 12 to store air under pressure in the reservoir 19 which may be used for the purpose of driving any desired machinery.

In the form shown in Fig. 4, the ends of the channels or guide-ways 4 are each provided with a member 35 extending upwardly therefrom in which is mounted a buffer 36 on a rod 37 provided with a coil spring 38 between the buffer 36 and the member 35. Buffer 36 receives the impact of the ball 30 as it reaches the end of the guide-way and the spring 38 provides cushioning means therefor. The outward movement of the buffer 36 is limited by means of a stop 39 secured to the end of the rod 37.

What we claim is:—

1. A wave motor comprising a floating body, a channel mounted on said floating body, a series of arms pivotally mounted on said channel, and weight means adapted to roll in said channel successively over said arms to operate the arms.

2. A wave motor comprising a floating body, a channel mounted on said floating body, weight means adapted to travel in said channel, and a series of arms pivotally mounted intermediate their length on said channel, the opposite ends of said arms being adapted to alternately swing into the path of said weight means.

3. A wave motor comprising a floating body, a channel mounted on said floating body, weight means adapted to travel in said channel, a series of arms pivotally mounted intermediate their length on said channel, the opposite ends of said arms being adapted to alternately swing into the path of said weight means, a rod connected to each end of each arm, and a pump connected to the end of each arm.

4. A wave motor comprising a floating body, a channel longitudinally mounted in said floating body, the ends of said channel being curved upwardly, weight means adapted to travel in said channel, a series of arms pivotally mounted intermediate their length on said channel, the opposite ends of said arms being adapted to swing alternately into the path of said weight means, and means connected to each end of each arm adapted to transmit power therefrom.

5. A wave motor comprising a floating body, a channel longitudinally mounted in said floating body, the ends of said channel being curved upwardly, weight means adapted to travel in said channel, a series of arms pivotally mounted intermediate their length on said channel, the opposite ends of said arms being adapted to swing alternately into the path of said weight means, a rod connected to each end of each arm, a pump connected to each rod, a common reservoir connected to all the pumps to store liquid under pressure, a propeller, and means operated by the stored liquid to operate said propeller.

In testimony whereof, we have hereunto set our hands at Los Angeles, California, this 29th day of February, 1912.

HENRY A. REIF.
HENRY ALLEN REIF.

In presence of—
FRANK L. A. GRAHAM,
P. H. SHELTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."