March 4, 1924. 1,485,574

I. P. VIORA

WAVE AND TIDE MOTOR

Filed Oct. 6, 1922 2 Sheets-Sheet 1

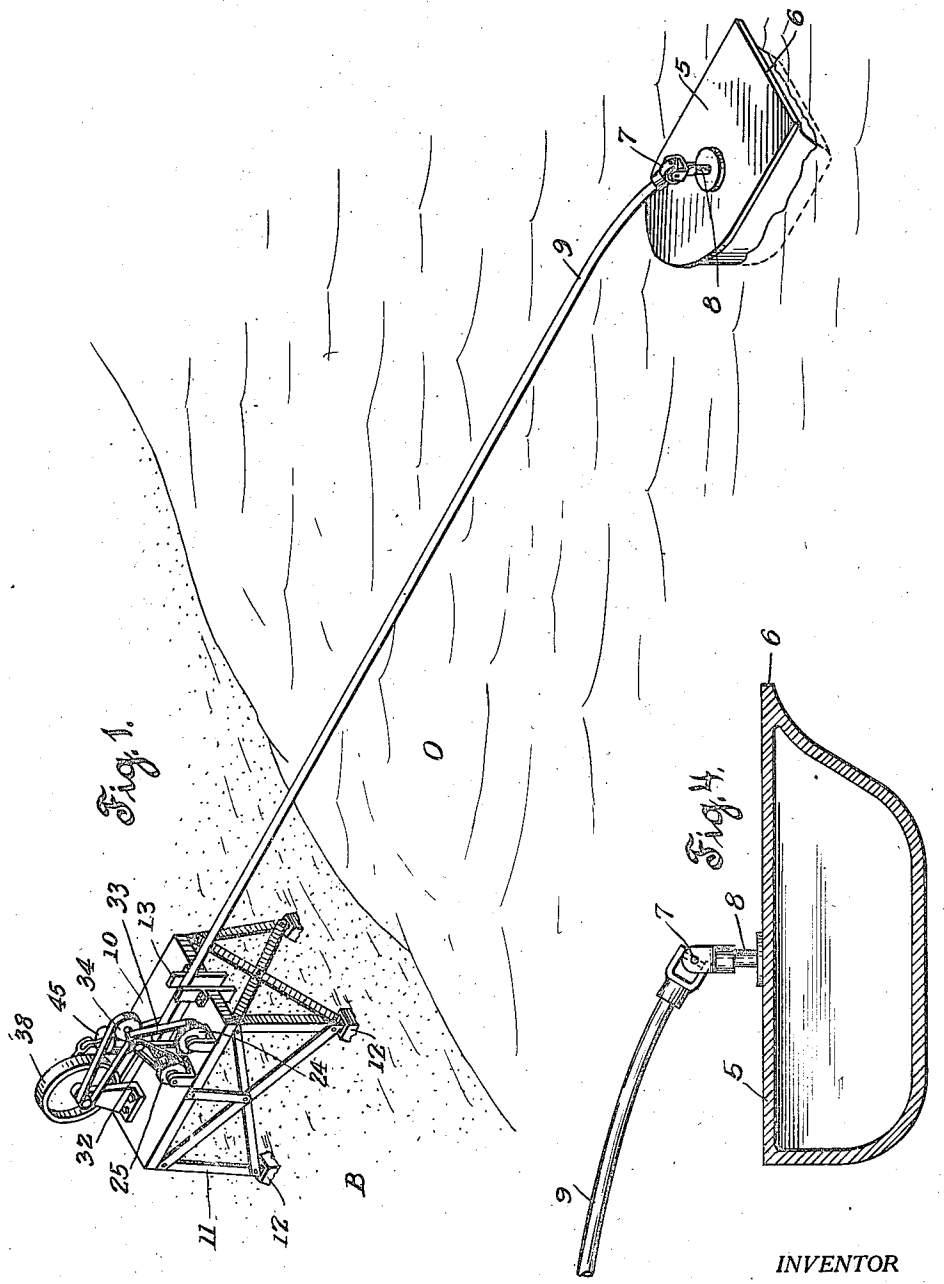


Fig. 1.

Fig. 4.

INVENTOR

Italo Pasquale Viora

BY

Arthur Phelps Marr

ATTORNEY

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Fig. 2.

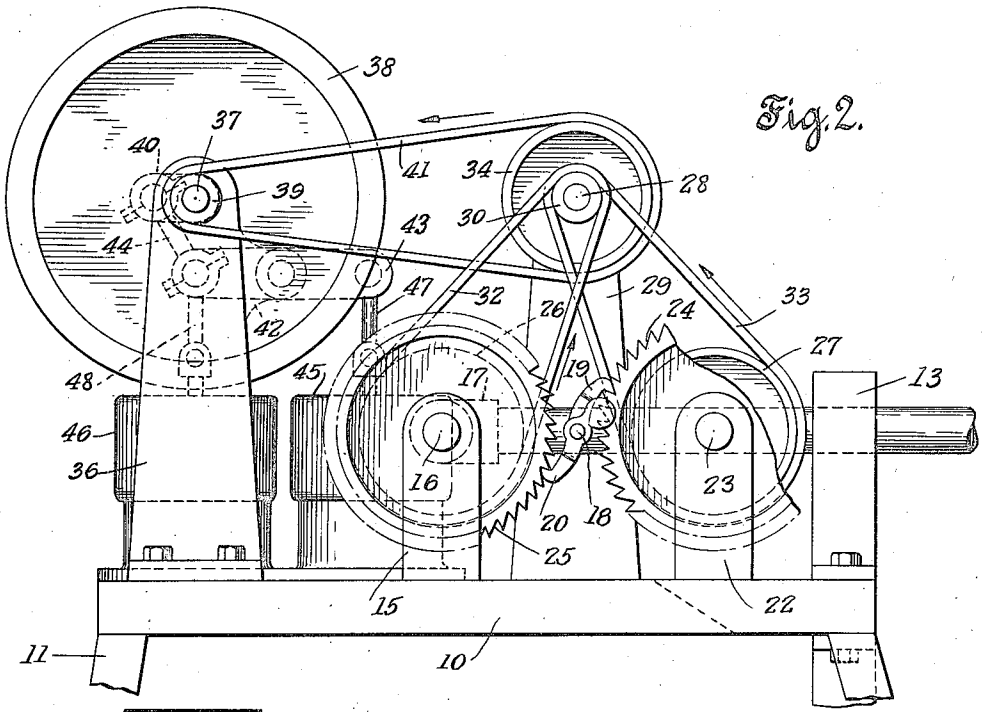
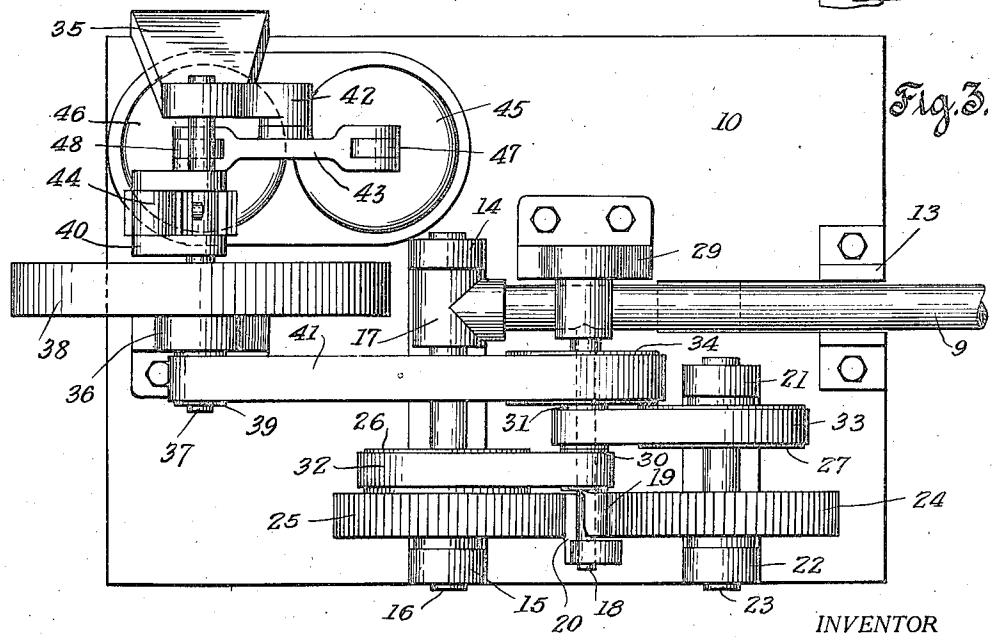


Fig. 3.



INVENTOR

Italo Pasquale Viora

BY

Watson Phelps & Marr

ATTORNEY

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UNITED STATES PATENT OFFICE.

ITALO PASQUALE VIORA, OF BROOKLYN, NEW YORK, ASSIGNOR TO ITALO PASQUALE VIORA, MILZIADE VITOLO, AND CARLO FISCHETTI, ALL OF BROOKLYN, NEW YORK.

WAVE AND TIDE MOTOR.

Application filed October 6, 1922. Serial No. 592,677.

To all whom it may concern:

Be it known that I, ITALO PASQUALE VIORA, a subject of the King of Italy, and resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented new and useful Improvements in Wave and Tide Motors, of which the following is the specification.

The device, the subject of this invention is a means for utilizing the force of power contained in sea water when under action, due to the rise and fall of tide and the movement known as the wave movement.

The principal objects of this invention are to provide a simple, practical, indestructible mechanism that will function in the manner desired and which will change the wave and tide movement into mechanical power, practically constant.

Another object of the invention is to convert reciprocal tide movement and pulsating wave movement into a rotary movement.

The means for accomplishing these objects, as well as the construction and operation of my device will be fully set forth as the specification progresses and the accompanying drawings should be referred to for a complete understanding of the description.

In the drawings:—

Fig. 1, is a perspective view, showing my complete device in operative position.

Fig. 2, is an enlarged view of the converting mechanism and is in side elevation.

Fig. 3, is a plan view of the device shown in Fig. 2, and

Fig. 4, is a sectional view of the float member.

Similar reference numerals indicate like parts in all the figures where they appear.

In Fig. 1, the ocean O and beach B are shown merely as scratch lines, it only being desired to indicate these very natural elements.

Floating upon the water and at any desirable distance from the beach is a buoyant member 5, which should be hollow and formed generally as shown in Fig. 4.

The object of the projecting bow 6 is to cause waves to engage under this overhanging bow and to pass under the float, rather than to break against the bow as they would do were the bow pointed or flat and vertical.

The member 5 is of a high positive bouyancy as upon its bouyancy depends the power and number of movements that will be imparted therefrom.

I arrange a universal joint 7 upon the standard 8, which will allow the float member 5 to change its position within certain limits, as the wind or waves change and in so doing the float and its connection to the transmission rod 9 as well as the rod itself need not be so rugged as would be required were these parts firmly secured together.

The transmission rod 9 extends inshore and terminates in a member to be later described, which is supported upon the platform 10, the platform in turn is arranged or supported upon the bridge construction 11, secured to cement blocks or piles 12 and formed in or secured to the platform are guides 13, one on each side of the transmission rod 9.

Upon the platform 10 are bearing members 14 and 15 supporting the shaft 16, the transmission rod 9 is supported upon this shaft 16 by a fitting 17 and is freely rotatable thereon.

A pin 18 in the transmission rod 9 carries a plurality of dogs or pawls 19 and 20, the hooks or teeth of which extend in opposite directions.

Upon the platform 10, I arrange another pair of blocks 21 and 22, supporting the shaft 23. Upon this shaft is a ratchet gear 24, secured to the shaft 23 and upon the shaft 16 is a ratchet gear 25 in line with the ratchet gear 24 upon the shaft 23 and it is upon these ratchet gears 24 and 25 that the pawls or dogs 19 and 20 operate. It will be noted that the teeth on the ratchet gears 24 and 25 incline in opposite directions.

Secured upon the shaft 16 is a belt pulley 26 and upon the shaft 23 is a belt pulley 27 and upon a shaft 28 supported by a suitable standard or block 29 are similar belt pulleys 30 and 31 over which the belts 32 and 33 from the pulleys 26 and 27 operate. The pulleys 30 and 31 are of smaller diameter than the pulleys 26 and 27, to increase the speed of the shaft 28. Upon the shaft 28 is a larger belt pulley 34 as shown.

Standards or blocks 35 and 36 support the shaft 37, to which is secured a fly wheel 38 and the belt pulley 39. It will be noted that I form a crank 40 in this shaft 37 and that the belt 41 from the pulley 34 passes over the belt pulley 39 on this shaft 37.

Formed integral with the standard 35 is a projection 42 which rotatably supports the

rocker arm 43 and a link 44 from the crank 40 is connected to the rocker arm 43.

Under the rocker arm 43 are the cylinders 45 and 46 of a pumping mechanism or compressor and piston rods 47 and 48 from the rocker arm 43 operate suitable pistons in the cylinders 45 and 46.

The rise and fall of the float 5, due to the tide or wave action will oscillate the transmission arm 9, causing the dogs 19 and 20 to alternately engage and ratchet over the ratchet wheels 24 and 25. On the upward movement of the float, the ratchet wheel 25 will be partially rotated and upon the downward movement of the float, the ratchet wheel 24 will be partially rotated. The rotation of these wheels will cause the shaft 28 to be rotated always in the same direction as indicated by the arrows and the rotation of the shaft occasioned by the ratchet wheels will, through the connected mechanism described, operate the pistons in the cylinders 45 and 46, which may be air compressors or pumps, and storing the fluid pumped or compressed in suitable reservoirs, where it may be employed in air engines, air tools or water driven devices or merely for the purpose of circulating water.

It will be understood that the size of all parts may be changed at will, that the platform may and probably will be provided with a suitable housing and that other modifications may be made within the scope of the appended claims without departing from the principle or sacrificing the advantages of the invention.

Having carefully and fully described my invention, what I claim and desire to obtain is:—

1. A wave motor comprising a float and mechanism operated thereby, said mechanism consisting of a plurality of ratchet wheels, an intermediate shaft, a driven shaft and duplex pump mechanism, a lever operated by said float, a pin in said lever, a plurality of pawls upon said pin and adapted to engage said ratchet alternately, by the rise and fall of said float.

2. A wave motor comprising a float and mechanism operated thereby, said mechanism consisting of a plurality of ratchet wheels, a lever journalled to the shaft of one of said ratchet wheels, a pin in said lever, extending between said ratchet wheels and pawls upon said pin for each of said ratchet wheels, said pawls being adapted to engage said ratchet wheels alternately.

Signed at the city, county and State of New York, this 18th day of September, 1922.

ITALO PASQUALE VIORA.