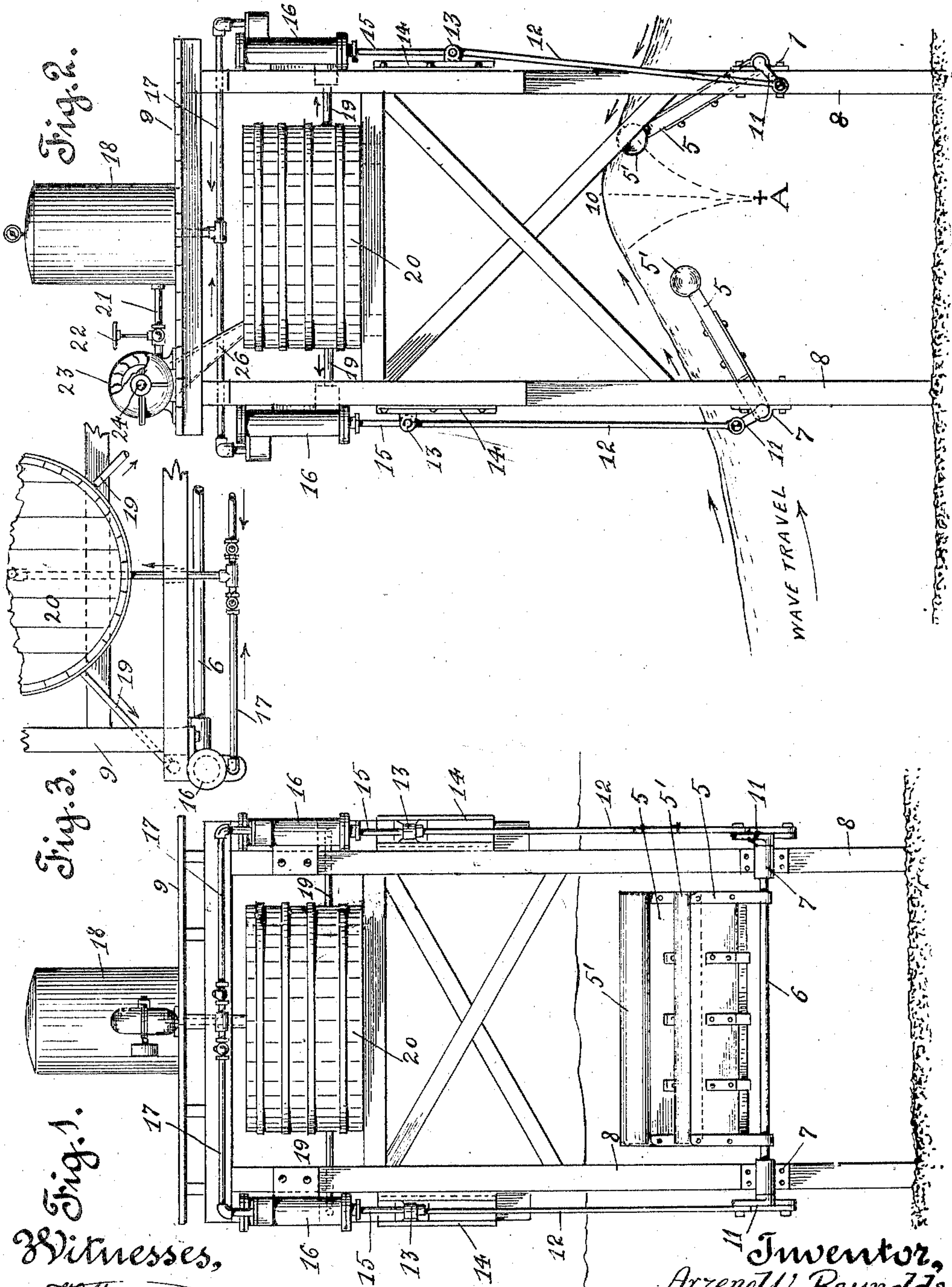


A. W. REYNOLDS.
WAVE MOTOR.
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967,437.

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Witnesses,
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UNITED STATES PATENT OFFICE.

ARZENO W. REYNOLDS, OF PERRIS, CALIFORNIA.

WAVE-MOTOR.

967,437.

Specification of Letters Patent.

Patented Aug. 16, 1910.

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To all whom it may concern:

Be it known that I, ARZENO W. REYNOLDS, a citizen of the United States, residing at Perris, in the county of Riverside and State of California, have invented new and useful Improvements in Wave-Motors, of which the following is a specification.

My invention relates particularly to that class of wave motors in which the motive power is derived from the horizontal action of the waves upon submerged pivotally mounted impact aprons, and a main object thereof is to provide an apparatus that will effectually utilize to the maximum extent the stored up energy attributable to a moving body of water, such as ocean waves.

A further and important object is to provide a simple and inexpensive mechanism for transferring and utilizing energy created by the movement of the wave operated aprons.

In the accomplishment of the above recited objects, I preferably employ horizontally disposed impact aprons, pivotally mounted at the lower edge thereof on a suitable supporting structure, the aprons being disposed so as to receive the greatest impact of the oscillatory moving wave. A suitable pumping mechanism is provided for utilizing in a uniform manner the oscillatory movement of the aprons, and transmitting the same to a rotary driving mechanism.

In the drawings annexed hereto and forming a part of this specification:—Figure 1— is a front elevation of my improved apparatus operatively mounted on a pier. Fig. 2— is a side elevation of my apparatus, parts being broken away for clarity of illustration. Fig. 3— is a partial plan view of the power transmitting apparatus.

The motor embodying my invention comprises, essentially, an operating element which is mounted for an oscillatory movement and consists of a horizontally disposed apron 5, pivotally mounted on a shaft 6 secured in bearings 7, that are rigidly attached to the face of piling 8 which form a support for the pier construction 9. Apron 5 is preferably broad enough to receive the full impact of a swiftly moving wave, and is preferably disposed slightly below the surface of the water, so as to receive the maximum effect of the wave motion, which as is well known oscillates from the radial point A upwardly to the wave crest 10. Disposed along the upper horizontal edge of each

apron 5 and rigidly secured thereto is an air chamber 5' that is adapted to maintain the aprons in an approximately vertical position and prevent a complete revolution on their movement, which is found to be undesirable as the maximum force exerted by the waves is toward the surface, as clearly indicated in Fig. 2 of the drawing. By the above described placement of the aprons I am enabled to fully and completely utilize to the fullest extent the energy exerted by the moving wave.

The ends of shaft 6 are provided with crank arms 11, preferably disposed at right angles to apron 5, and pivotally connected thereto are vertically extending connecting rods 12, that are suitably connected to reciprocating cross-heads 13 mounted in guides 14 secured to the pier construction. The cross-heads are in turn pivotally connected to piston rods 15 adapted to reciprocate in pump cylinder 16 secured to the pier piling. The cylinders are provided with the usual valve mechanism (not shown), and connected thereto are fluid transmission pipe lines 17, that terminate in the bottom of a pressure tank or reservoir 18, mounted on the pier floor. The lower portion of the cylinders are connected by pipe lines 19 that lead to a fluid storage reservoir or tank 20 located directly below the pressure tank.

By providing the storage tank 20 I am enabled to use clean fresh water or other suitable fluid that will not corrode or clog the mechanism through which it passes and this adds greatly to the efficiency of the power producing mechanism.

Suitably disposed upon the floor of the pier structure and connected by a pipe line 21 controlled by valve 22 there is provided a fluid operated wheel 23 revolvably mounted on a shaft 24. This wheel is provided with a fluid discharge outlet 26 that empties into the storage tank 20, said fluid being forced by the pump 16 upwardly to the pressure tank 18 for further utilization by wheel 23. It will thus be apparent from the above that by using a storage tank and pumping therefrom to a pressure tank all irregularity of power developed by the pumps is transformed to a regular and uniform pressure before delivery to the wheel. Any suitable fluid may be used in operating this wheel, and the power generated thereby may be taken off shaft 24 and utilized in any desirable manner.

It will be observed from the foregoing description that I have produced a highly efficient apparatus, that will uniformly transform the power contained in ocean waves into utilizable energy. By mounting the aprons directly in the path of wave travel, I am also enabled to extract the maximum power contained in the moving waves.

It will be understood from the foregoing description that as many units as is found desirable may be erected, thus materially increasing the efficiency of the motor, and if desired the pumps may be coupled to a liquid storage reservoir located at a distance from the motor.

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

1. A wave motor, having an oscillating apron mounted to rotate on an axis at its lower edge and adapted to swing by the wave action in both directions from a vertical plane, and mechanism connected with said apron for developing power.

2. A wave motor, consisting of a horizontally disposed revoluble shaft provided on the ends thereof with crank arms, an apron rigidly connected to said shaft, a plurality of pumps operatively connected to said crank arms, and a fluid operated power wheel driven by said pump.

3. A wave motor, consisting of an oscillating apron, said apron being pivoted on the lower edge thereof, a pair of pumping cylinders operatively connected to said apron and adapted to be actuated thereby, a liquid storage reservoir connected to said pumps, a fluid pressure reservoir also connected to said pumps, and a fluid operated motor connected to said pressure tank.

In witness that I claim the foregoing I have hereunto subscribed my name this 6th day of April, 1909.

A. W. REYNOLDS.

Witnesses:

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MYRTLE A. PALMER.