

R. M. MOBIUS.
 AUTOMATIC WAVE APPARATUS.
 APPLICATION FILED JUNE 20, 1910.

988,012.

Patented Mar. 28, 1911.

3 SHEETS—SHEET 1.

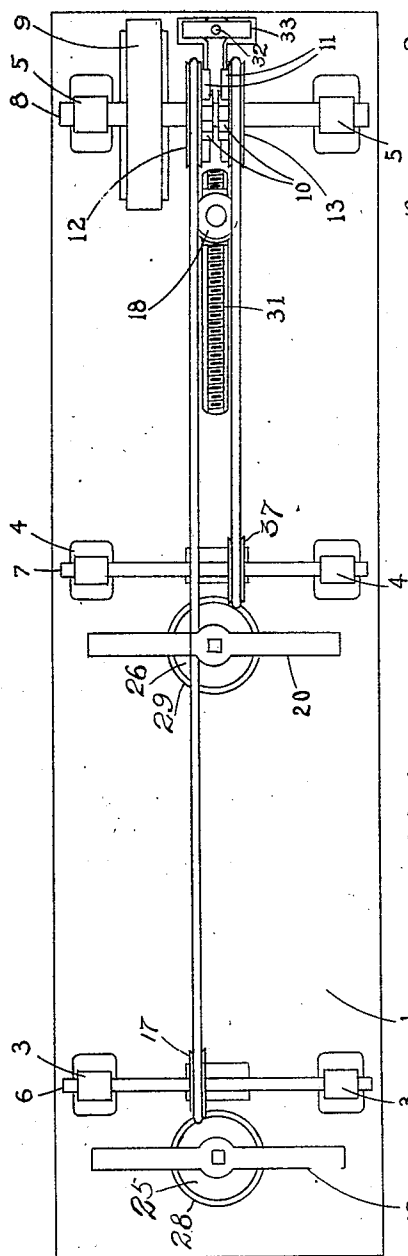


Fig. 1

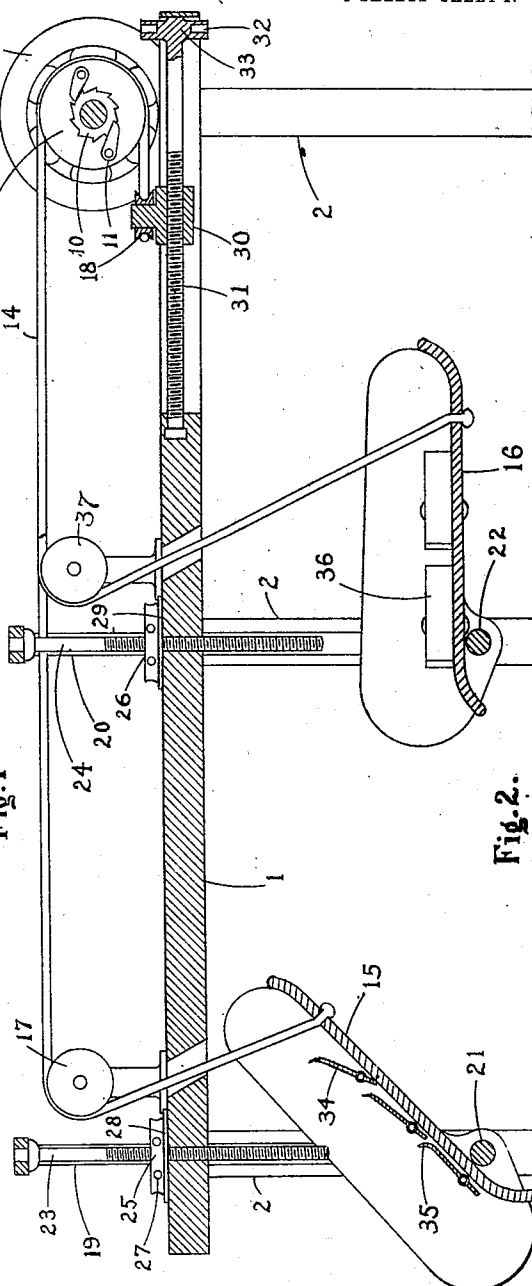


Fig. 2.

Witnesses:

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 L. C. Buck

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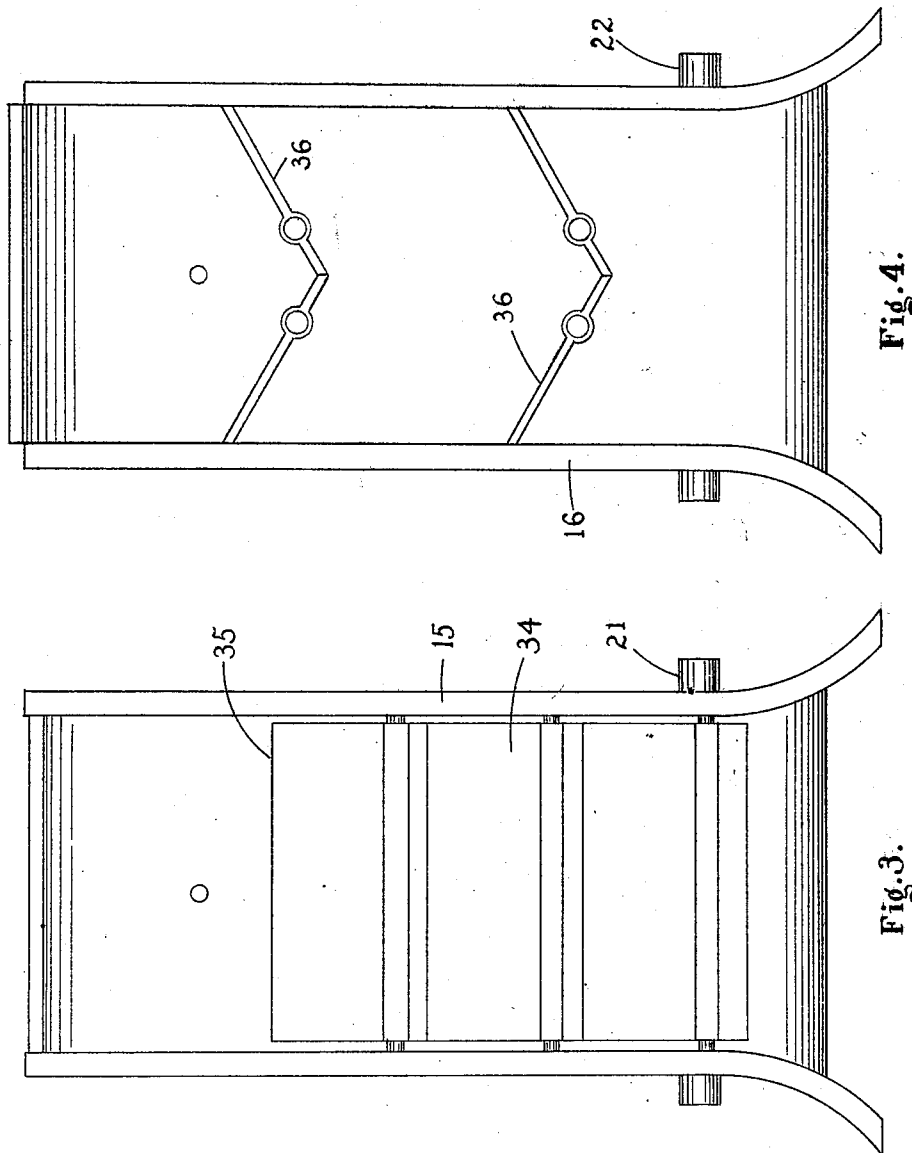
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3 SHEETS-SHEET 3.

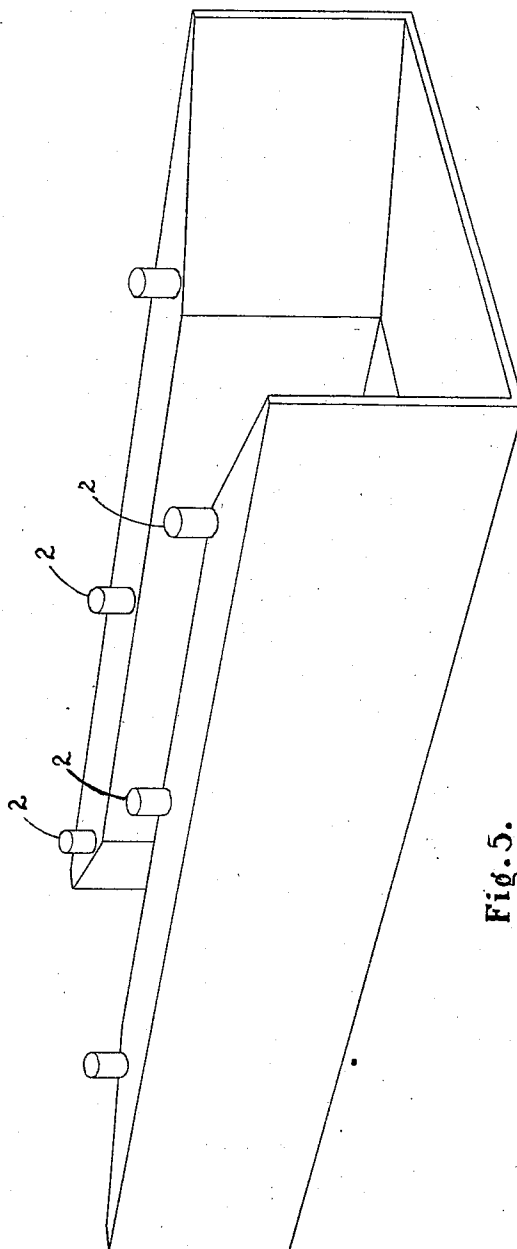


Fig. 5.

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UNITED STATES PATENT OFFICE.

ROBERT MAX MOBIUS, OF SAN DIEGO, CALIFORNIA.

AUTOMATIC WAVE APPARATUS.

988,012.

Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed June 20, 1910. Serial No. 567,986.

To all whom it may concern:

Be it known that I, ROBERT MAX MOBIUS, a citizen of Canada, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Automatic Wave Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an automatic wave apparatus and has for its object the provision of simple and efficient apparatus for developing power from the movement of the seas, waves, and surf.

It is more particularly a device in which hinged members are adapted to oscillate successively under the impact of the advancing waves and surf, thereby operating wire cables over ratchet pulleys in alternate directions, and by means of a power shaft and balance wheel operated by the said pulleys, converting the energy of the waves or surf into mechanical power.

To accomplish this result, the invention embodies certain details of construction and combination of parts, substantially as herein illustrated, described, and claimed.

Similar characters of reference designate corresponding parts throughout the different views shown in the accompanying drawings, in which;

Figure 1 is a top plan view of the device. Fig. 2 represents a vertical longitudinal sectional view. Fig. 3 is a detail view of the forward oscillating member. Fig. 4 is a detail view of the rear oscillating member. Fig. 5 is a perspective view of a float or barge on which the apparatus may be mounted and thereby made a portable device.

Referring more particularly to the drawings, numeral 1 designates a platform mounted on piles 2, and carrying a series of bearings 3, 4, and 5, in which are mounted shafts 6, 7, and power shaft 8, respectively. A heavy balance wheel 9, is mounted on shaft 8, also ratchet wheels 10, which are operated by pawls 11, mounted on pulleys 12 and 13.

A wire cable 14, having one end attached to the forward oscillating member 15, and the other end to the rear oscillating member 16, is carried from the forward member over pulley 17, and thence over pulleys 12, 18, 13 and 37, respectively, pulley 18, being adjust-

able and serving as an idler for the cable. The forward oscillating member 15, is carried by adjustable frame 19, and rear member 16, is carried by frame 20. The lower horizontal portions 21 and 22, of the frames, serve as axles on which members 15 and 16 are fulcrumed.

Large threaded bars 23 and 24, extending downward vertically from the upper portions of frames 19 and 20, engage with correspondingly threaded members 25 and 26, provided with a series of holes 27, in which a bar may be inserted to adjust the oscillating members to the varying height of the water caused by the tides.

Metal plates 28 and 29, interposed between members 25 and 26, and the platform, respectively, act as washers. Pulley 18, mounted on threaded block 30, which engages threaded bar 31, operates to take up the slack in the cable, caused by the adjustment of members 15 and 16. A series of holes 32, in head 33, of bar 31, are provided for the adjustment of the device.

On member 15, a series of stops 34, pivoted to the sides of the member, are provided, and are designed to assume a position parallel with the bottom of member 15, when a wave is impacted thereon, and which have upper edge 35, curved upward, thereby causing the stops to be lifted by a contrary motion of the waves, and retain a portion of the same. On rear member 16, a series of stops 36, arranged in pairs, and pivoted to the bottom of the member, are provided. These stops are so mounted as to permit the free passage of the water when a wave is impacted thereon, but will turn and form a series of retaining walls against a contrary motion of the waves.

In the operation of this device, the oscillating members are adjusted to a position in which the bottom surfaces approximate the normal level of the water when said members are in a horizontal position. The forward member, having been left in an inclined position by the preceding wave, receives the impact of the next successive wave. The water rolls upon said forward member, and, by its motion and weight, causes the same to assume a horizontal position. The said member, being connected by a wire cable to the rear member, causes said rear member to rise to an inclined position, and thereby be operated by the advancing wave, in the same manner as the forward

member. The oscillating motion of the two impact members is carried by the cable, to the power shaft, suitable mechanism being provided to cause a continuous motion of the same, in one direction, when actuated by the cable.

This mechanism may be installed upon a floating barge, or it may be constructed on solid foundations.

It will be seen that simple and efficient means are herein provided for accomplishing the objects of the invention, but while the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise construction as set forth, but includes within its purview such changes and combinations of material, as may be necessary or desirable to utilize the basic idea of the herein described invention.

Having described my invention what I claim is:

1. A device of the character described, comprising a platform mounted on piling, a power shaft mounted on the platform, ratchet pulleys on the power shaft, and a pair of oscillating impact members, connected by a wire cable passing over the ratchet pulleys, and adapted to be successively operated by waves passing over the oscillating members.

2. A device of the character described, comprising a platform mounted on piling, a power shaft mounted on the platform, ratchet pulleys on the power shaft, and a pair of oscillating impact members, connected by a wire cable passing over the ratchet pulleys, and pivoted to independent adjustable frames, substantially as set forth.

3. A device of the character described, comprising a platform mounted on piling, a power shaft mounted on the platform, ratchet pulleys mounted on the power shaft, a pair of adjustable impact oscillating mem-

bers connected by a wire cable which passes over the ratchet pulleys, and an idler pulley, adjustable for taking up the slack of the cable, caused by the adjustment of the oscillating members, substantially as shown.

4. A device of the character described, comprising a platform piling supporting the platform, frames slidably mounted upon opposite members of the piling, oscillating members pivoted to the frames, means to adjust the frames, a cable actuated by the oscillating members, and operating a power shaft, and a heavy balance wheel mounted on the power shaft to maintain a uniform motion to the power shaft.

5. A device of the character described, comprising a platform, a power shaft mounted on the platform, a pair of impact oscillating members, pivoted at one end, and adapted to alternately assume inclined and horizontal positions upon receiving the impact of the waves, stops pivoted to the sides and bottom of the impact members, and adapted to permit a free passage of the waves in one direction over the impact members, and to be moved to form retaining walls when a contrary movement of the water occurs, and a cable secured to the free ends of the oscillating members, and adapted to operate the power shaft.

6. A device of the character described, consisting of units of two pivoted or hinged platforms, connected for automatic adjustments of their respective inclinations, to receive the gravity and velocity impact of the waves, and suitable mechanical connections for utilizing the power so generated, by means of standard appliances.

In testimony whereof, I affix my signature, in presence of two witnesses.

ROBERT MAX MOBIUS.

Witnesses:

LOUIS C. BUCK,
J. A. MASTER.