

A. F. MARTEL.

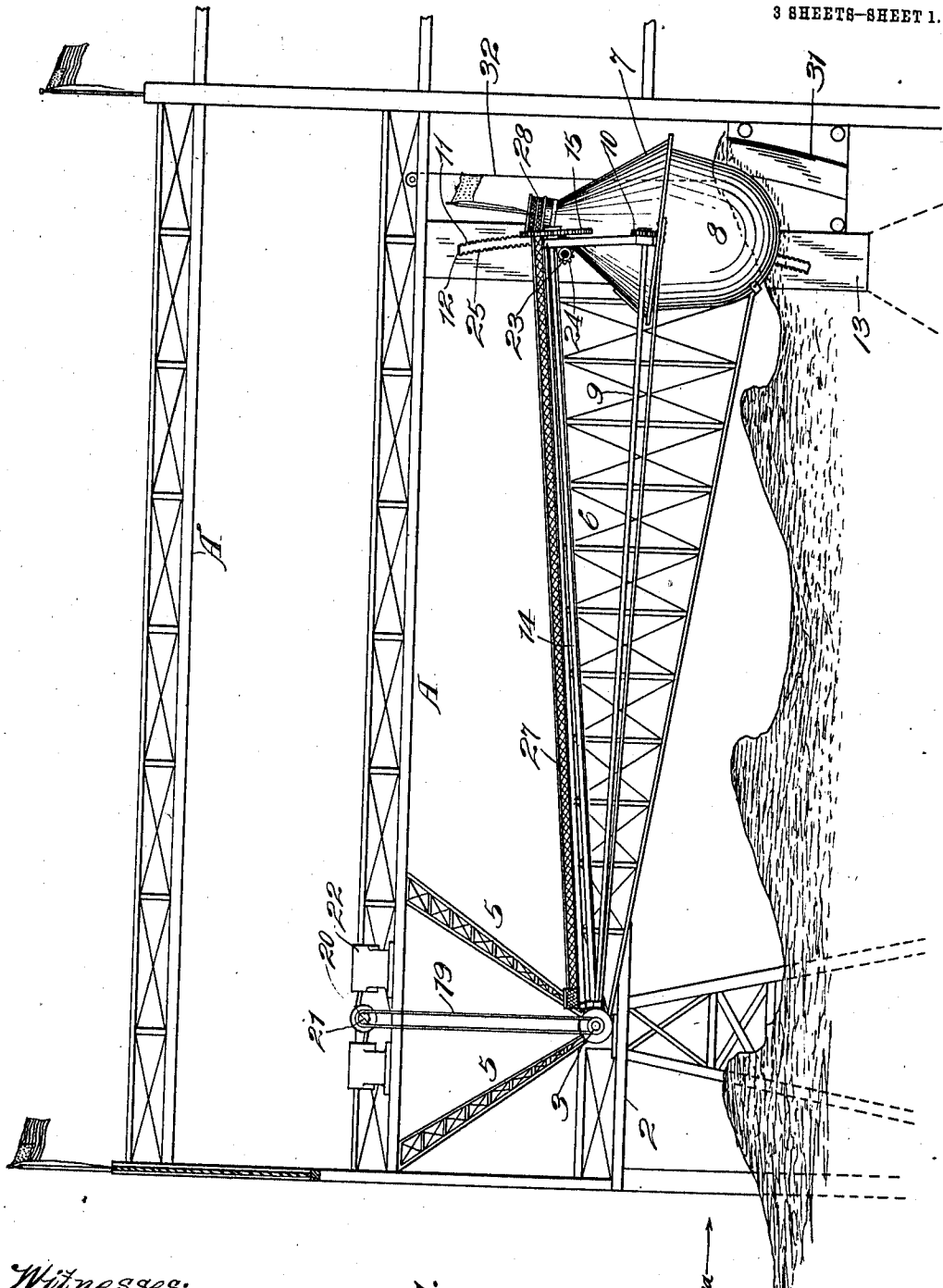
WAVE MOTOR.

APPLICATION FILED SEPT. 21, 1910.

1,003,930.

Patented Sept. 19, 1911.

3 SHEETS—SHEET 1.



Witnesses:

F. E. Maynard.
Charles Pickles

Fig. 1.

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3 SHEETS—SHEET 2.

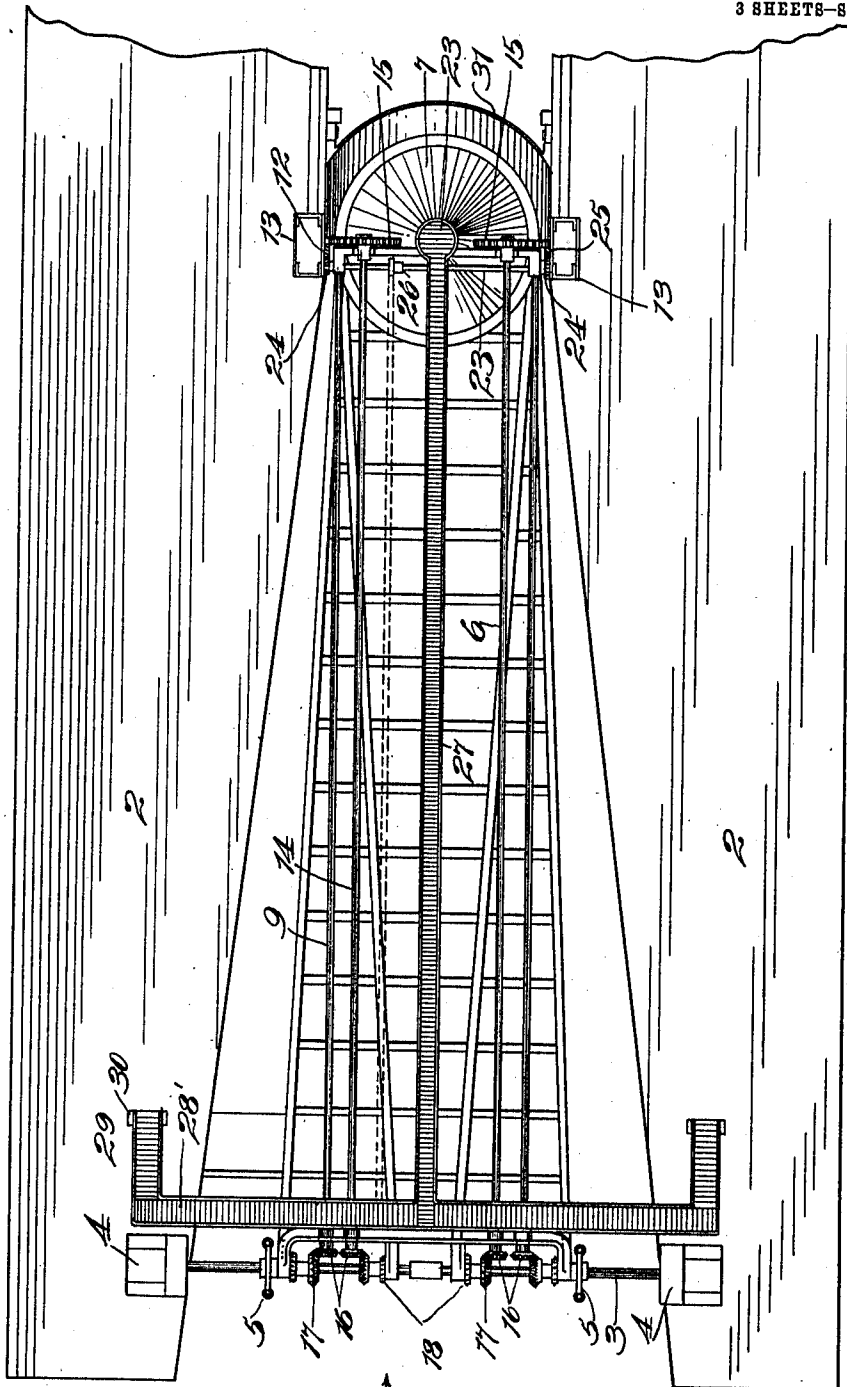


Fig. 2.

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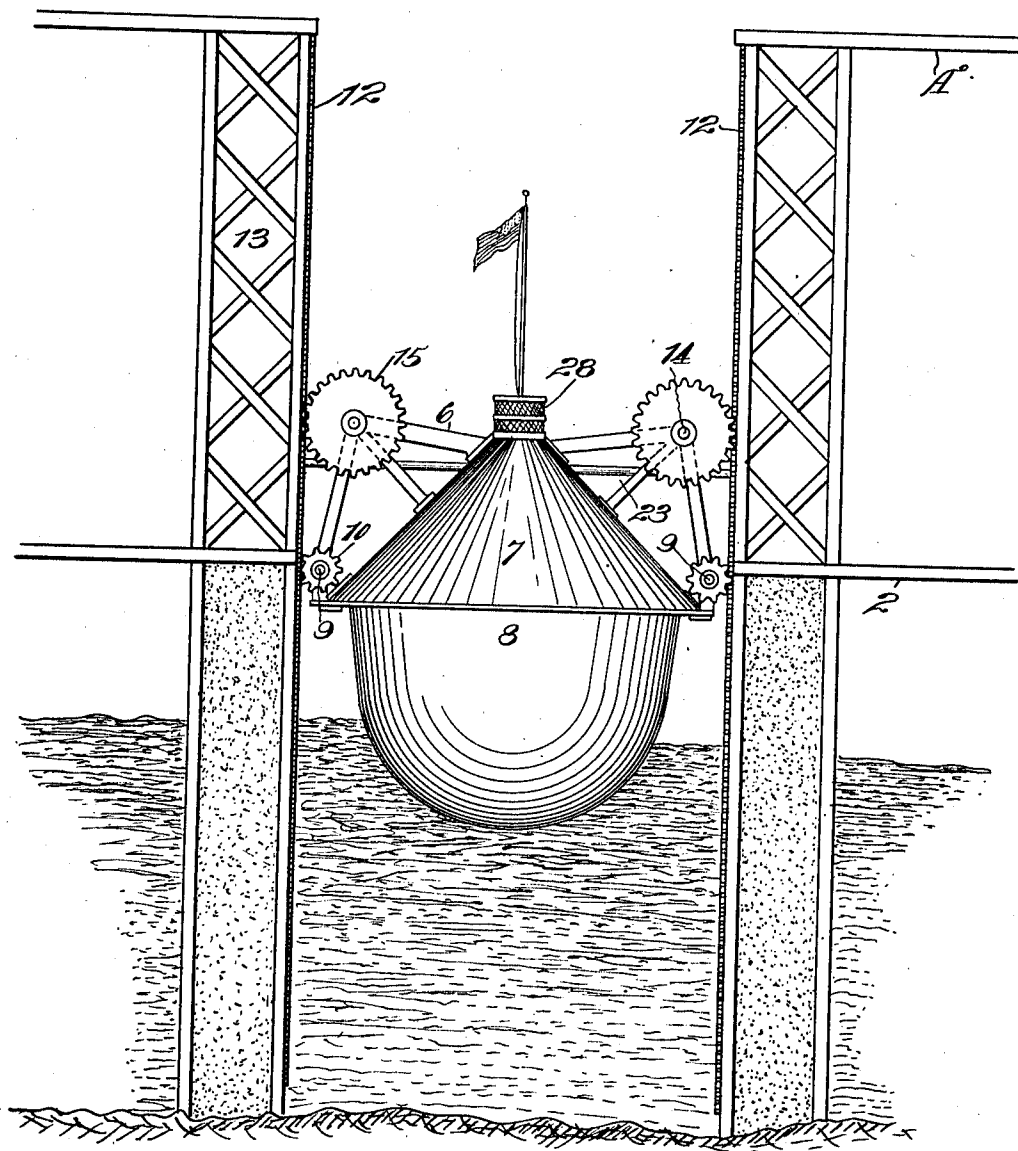


Fig. 3.

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UNITED STATES PATENT OFFICE.

ADELARD F. MARTEL, OF BURLINGAME, CALIFORNIA, ASSIGNOR TO JOSEPH HOLLER,
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WAVE-MOTOR.

1,003,930.

Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed September 21, 1910. Serial No. 583,042.

To all whom it may concern:

Be it known that I, ADELARD F. MARTEL, citizen of the United States, residing at Burlingame, in the county of San Mateo and State of California, have invented new and useful Improvements in Wave-Motors, of which the following is a specification.

This invention relates to wave motors.

The object of this invention is to provide a powerful, substantial and economical apparatus for conversion of the motion of water into power; to provide an apparatus wherein the minimum amount of motion on the part of the apparatus is utilized for the generation of power and to provide a wave motor involving features of construction rendering it accessible and safe as an amusement device.

This invention consists of the parts and construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a central sectional view through the structure showing the float and its beam in elevation. Fig. 2 is a plan view of the apparatus. Fig. 3 is a shore-end view of the float and its gear train with the columns.

In the present embodiment of my invention, A, represents suitable platforms extending from the shore-line of a beach, oceanward and upon which platform may be erected various amusement devices, engine rooms or such other structures as may be desired. The lower platform as 2, is left open to form substantially a V-shaped pocket, and upon the outer end of the platform 2 is substantially secured a transverse supporting beam or journal 3 mounted in suitable blocks 4 upon the platform 2, and also trussed from the upper structure A by the beams 5. This supporting girder or cross-beam 3 is mounted at the sea-end of the platform structure A, and upon it is pivotally and loosely mounted the convergent end of an appropriate trussed frame 6 to the divergent shore-end of which is substantially secured a double shaped body or float 7, having a lower globular wall 8, the

upper portion of the float 7 being preferably conoidal in form for the purpose of quickly shedding water. The spherical lower portion 8 of the float 7 is adapted to buoyantly rise and fall with the variations in the elevation of water, either due to tidal action or to the motion of waves.

As before stated, the frame 6 is loosely pivoted for oscillation upon the support 3 and for the purpose of utilizing the motions of the float 7 there are journaled upon the frame 6, a plurality of shafts 9, one of which is mounted on each side of the center of the frame 6 and upon the outer end of the shafts 9 are secured pinions 10 which are adapted to mesh with the teeth 11 of arcuate racks 12, one of which is secured upon each of vertical piers or piles 13 adjacent the shore-end of the apparatus. Also journaled upon the frame 6 are other shafts 14 radiating from the transverse horizontal support 3 and upon the outer end of these shafts 14 are secured gears 15 of considerably larger diameter than the pinions 10 and adapted to mesh with the teeth 11 of the curved racks 12. It will thus be seen that the intermeshing of the pinions 10 and gears 15 with their respective racks 12 cause a rotation of their respective shafts 9 and 14 upon the slightest motion, either rising or falling of the float 7, and for the purpose of utilizing the power of the waves when lifting the float 7 and for utilizing the weight of the float 7 as kinetic energy when the same is falling, the inner ends of the several shafts 9 and 14 are provided with pinions 16 which are securely fastened thereon and adapted to mesh with complementary gears 17, loosely mounted for independent rotation about the pivot or support 3 of the frame 6.

Manifestly, the difference in the diameters of the power gears 10 and 15 cause their respective shafts to revolve at different speeds and likewise the transmitting pinions 17 have a differential motion from each other.

Particular stress is laid upon the transmission gearing of my wave motor inasmuch as by this system of transmission the slightest motion of the float 7 causes a rota-

tion of the power gears 10 and 15 by reason of their intermeshing with the fixed racks 12 and this motion is transmitted backwardly through the shafts 9 and 14 to the pinions 17, which are loosely mounted on the fixed pivot 3. Power may be transmitted from the bevel gears 15 by means of sprocket wheels 18 which are secured upon their hubs and over which may be directed suitable sprocket chains, or other power transmitting equivalents 19, each of the several chains being adapted to drive associated sprockets 20 secured upon one or more shafts 21 which are journaled upon the superstructure A, and power may be utilized from the different sprockets 20 to operate suitable air compressors 22, or for any other purpose desired.

If desired, a transverse shaft 23 may be mounted upon the outer end of the oscillating frame 6 and upon this transverse shaft may be secured pinions 24 adapted to engage rack teeth 25 formed upon one edge of the fixed curved guide rack 12. Power may be transmitted from this transverse shaft 24 by means of sprocket chains, or other suitable transmission devices as indicated at 26.

One of the important features of this apparatus is in providing a gang-way 27 which extends along the upper members of the frame 6 and leads to a suitable platform or gallery 28 built upon the upper portion of the float 7. The end of the gang-way 27 which is approximate the pivot or support 3, is accessible from either side of the permanent structure 2 by means of transverse gang-planks 28' which have flexible step connections 29 resting upon the plane of the platform 2, and which are provided with rollers 30 which allow the footsteps 29 to oscillate back and forth upon the flooring 2 as the frame 6 oscillates. This feature not only affords means whereby the operator or operators of the motor may have access to the machinery mounted upon the float 7 and to various portions of the frame 6, but also affords a way for converting the apparatus into an amusement device. The oscillations of the frame 6 and its float 7 attract the attention of visitors and others in its vicinity, and by providing means of access, as the gang-planks 27 and 28' to the observation platform 28, persons may be admitted to the latter; the float 7 being an attraction to the visitors.

It frequently occurs on beaches and seashores that waves may run with greater or less height at various times, and for the purpose of amplifying the motion of the lower waves I have suspended substantially beneath the float 7 an adjustable deflecting plate 31 movable vertically beneath suitable guides by cable connections, as 32. By bringing the deflecting plate 31 into close relation to the bottom 8 of the float the low

waves running in will impact against the curved concaved deflector 31 and their momentum will cause them to rise a considerable distance higher than they would normally do without the interposition of the obstruction 31. The curved arc of the deflector 31 is struck upon the center or support 3, thereby forming a concentric line with the movement of the float 7 rendering it impossible for the latter to strike the deflector 31.

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

1. A wave motor comprising an anchoring structure, a supporting pivot, an oscillating frame loosely mounted upon said pivot, a buoyant body secured upon the free end of the oscillating frame and adapted to rise and fall with variations in the surface of water, transmission mechanism mounted upon said frame, said mechanism including an arcuate rack, gears mounted in the frame adjacent the float and engaging said rack, shafts upon which said gears are secured, radiating from the pivot, and transmitting devices loosely mounted upon the pivot and driven by connections with the radiating shafts.

2. A wave motor comprising an anchoring structure, a transverse support secured upon said structure, a radius frame loosely pivoted upon said support, a float mounted upon the free end of the oscillating frame, and power transmitting mechanism journaled upon the frame and operatively engaging fixed devices of the anchoring support, said transmitting mechanism including an arcuate rack at the side of the float, gears mounted upon said structure adjacent the float, and engaging said rack and shafts upon which the gears are secured.

3. A wave motor comprising an anchoring structure, a transverse support secured upon said structure, a radius frame loosely pivoted upon said support, a float mounted upon the free end of the oscillating frame, power transmitting mechanism journaled upon the frame and operatively engaging fixed devices of the anchoring support, said mechanism including an arcuate rack, gears mounted upon the frame adjacent the structure and engaging said rack, shafts upon which the gears are secured, other gears on said shafts, a driven shaft carrying the second named gears, and power transmitting instrumentalities loosely mounted for operation upon the pivotal support from which power may be transmitted to operate suitable machinery.

4. In an apparatus of the character described, an oscillatory frame, a fixed pivot upon which one end of the frame is loosely mounted, a buoyant member secured to the free end of the frame having a platform on

the upper end, means for controlling the transverse motion of the frame at its outer end, and means including a gangway extending from end to end of the frame and
5 terminating in said platform whereby access may be had to the pivoted end of the frame and to its outer free end.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ADELARD F. MARTEL.

Witnesses:

FREDERICK E. MAYNARD,
CHARLES EDELMAN.

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