

No. 819,006.

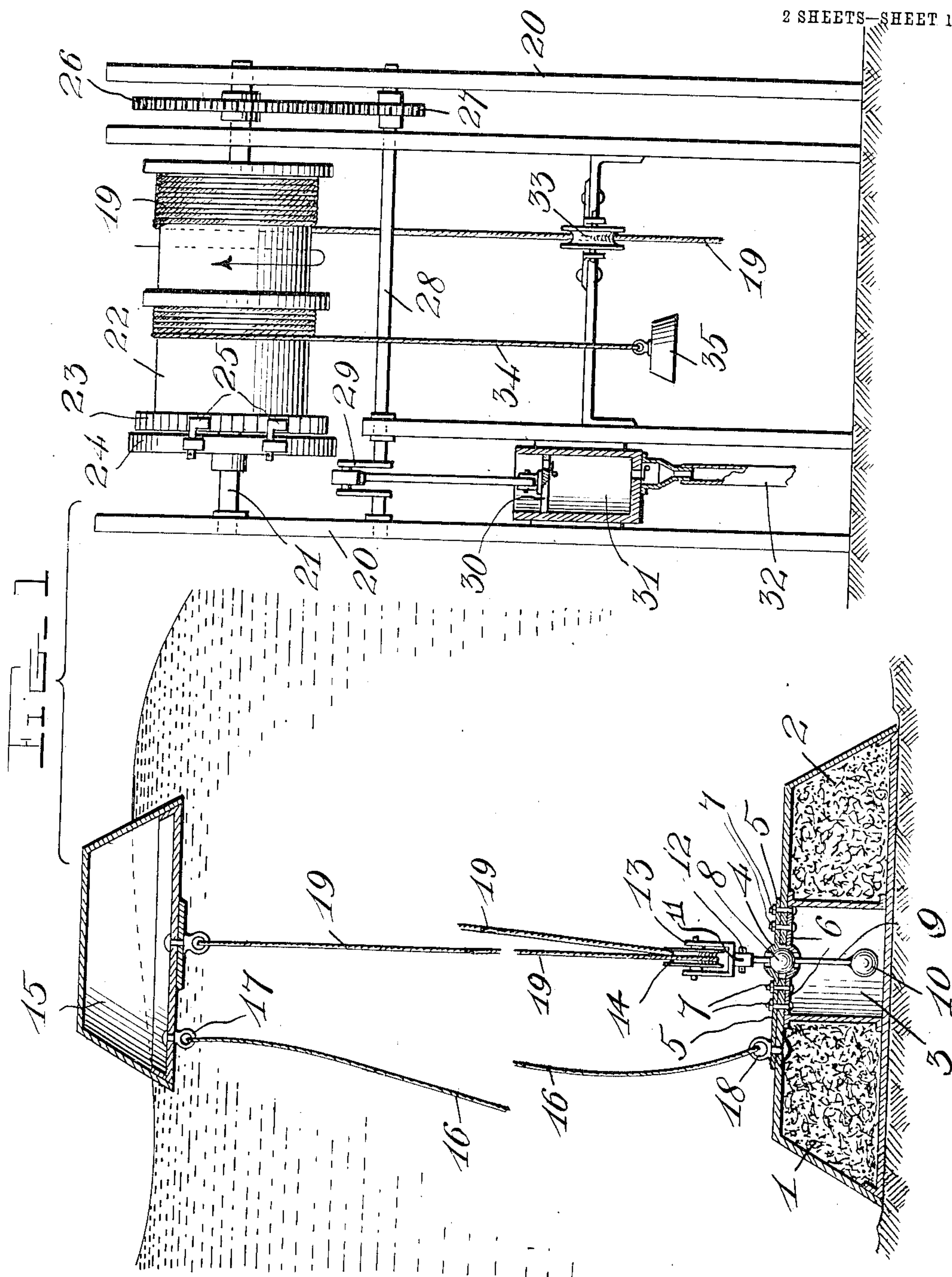
PATENTED APR. 24, 1906.

F. M. DEMPSEY.

WAVE MOTOR.

APPLICATION FILED DEC. 21, 1905.

2 SHEETS—SHEET 1.



Witnesses
P. H. Griesbauer

Inventor
F. M. Dempsey
By A. B. Wilson
Attorney

No. 819,006.

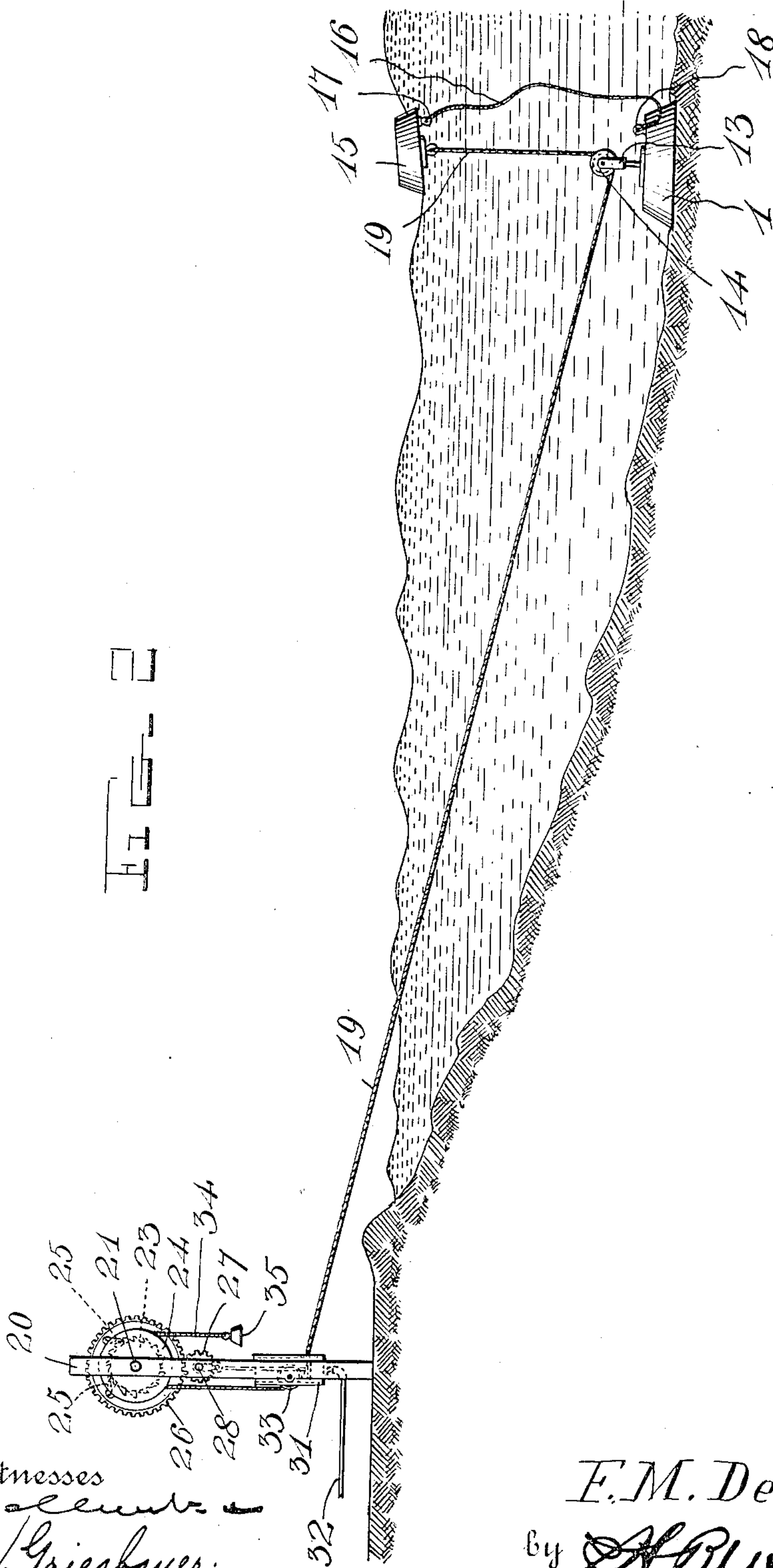
PATENTED APR. 24, 1906.

F. M. DEMPSEY.

WAVE MOTOR.

APPLICATION FILED DEC. 21, 1905.

2 SHEETS—SHEET 2.



Witnesses

C. N. Griesbauer

Inventor

F. M. Dempsey

By *H. B. Wilson*

Attorney

UNITED STATES PATENT OFFICE.

FREDERICK M. DEMPSEY, OF VALLEJO, CALIFORNIA.

WAVE-MOTOR.

No. 819,006.

Specification of Letters Patent.

Patented April 24, 1906.

Application filed December 21, 1905. Serial No. 292,805.

To all whom it may concern:

Be it known that I, FREDERICK M. DEMPSEY, a citizen of the United States, residing at Vallejo, in the county of Solano and State of California, have invented certain new and useful Improvements in Wave-Motors; and I do 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 ap-
10 pertains to make and use the same.

This invention relates to wave-motors; and one of the principal objects of the same is to accumulate the energy exerted by the waves of the sea or other body of water and utiliz-
15 ing said energy for compressing air, which may be stored for future use in connection with various arts, such as running electric light and power plants or to furnish compressed air to be used in steam-engines in-
20 stead of steam.

Another object is to provide a simple and constantly-operated wave-motor which will operate under various conditions and which will be reliable, strong, and durable in use and
25 which will not be liable to get out of order.

These and other objects are accomplished by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a de-
30 vice made in accordance with my invention, and Fig. 2 is a diagrammatic view of a power plant established in accordance with my invention.

Referring to the drawings for a more particular description of the invention, the numeral 1 designates an anchor or weight adapted to rest upon the bottom of the ocean, bay, or other body of water at a point some distance from the shore. This anchor may be conven-
40 iently constructed of sheet metal and provided with a chamber 2, which may be filled with rock, sand, or other heavy substance. A central chamber 3 is provided, and at the upper wall of the central chamber a socket 4
45 is formed in any suitable manner, as by plates 5 6, secured to the body of the anchor by bolts 7. A weighted ball 8 is fitted within the socket and is provided with a shank 9 and a weight 10 at the lower end thereof. At the
50 upper end of the ball 8 a flange 11 projects, and connected to this shank by a cross-bolt 12 is a pulley-frame 13, to which a wheel or pulley 14 is journaled. A float or buoy 15, comprising a hollow sheet-metal casing, is
55 connected to the anchor by means of a cable 16, attached to a ring 17 on the buoy and to a

ring 18 on the anchor, there being sufficient slack in the cable to permit a free movement of the buoy within certain limits.

The buoy 15 is adapted to ride the waves 60 and upon an upward movement to pull upon a cable 19, connected to the bottom wall of the buoy and passing around the pulley 14 and from thence to a suitable winding mechanism or motor located upon the shore at some dis- 65 tance from the buoy. Located upon the shore is a suitable frame or support 20, comprising upright bars, and journaled within these bars is a shaft 21. Loosely mounted upon this shaft is a winding-drum 22. At 70 one end of the drum and fixed to said drum is a ratchet-wheel 23, and at the side of said ratchet-wheel and fixed to the shaft 21 is a wheel 24, to which a series of pawls 25 are pivotally connected. Secured to the shaft 75 21 is a gear-wheel 26, adapted to mesh with a pinion 27, fixed upon a crank-shaft 28, journaled in the frame of the machine. Connected to the crank 29 of the crank-shaft 28 is a piston 30, adapted to reciprocate in a 80 cylinder 31 to force air through a pipe 32 to a place of storage or use. The cable 19 passes around a grooved pulley 33, journaled in the motor-frame, said cable extending thence up and around the drum or cylinder and form- 85 ing three or four strands of the cable around said drum, the winding being from the front toward the back, so that when there is a pull upon the cable 19 the drum or cylinder is ro- 90 tated backwardly, as indicated by the arrow in Fig. 1. A cable 34, having a weight 35 secured to its lower end, is wound upon the drum or cylinder in a direction opposite to the winding of the cable 19.

The operation of the invention may be de- 95 scribed as follows: When the buoy rises upon the crest of a wave, it draws upon the cable 19, which rotates the drum or cylinder 22 in the direction of the arrow, and the pawls engage the ratchet-teeth and rotate the shaft 21. The 100 rotation of this shaft operates the air-pump in an obvious manner and forces air through a pipe to a place of storage or use. When the buoy descends in the trough of the sea, there is a certain amount of slack in the cable 19, 105 which is promptly taken up by means of the cable 34 and the weight thereon, the pawls then riding over the teeth on the ratchet-wheel until the buoy again ascends upon the crest of a wave, when the winding action is 110 repeated. It will be understood, of course, that any number of drums or cylinders may

be mounted upon the shaft 21 to be used in connection with a buoy and anchor for each cylinder or drum, and in this way a large quantity of energy may be stored. Owing to the slack in the cable 16, the float or buoy can move out of a vertical plane with the anchor without interfering with the action of the cable 19, owing to the ball-and-socket arrangement and the manner of mounting the pulley.

From the foregoing it will be obvious that the winding mechanism may be located upon a bridge over the water or a raft instead of being located on the shore, and it will be understood that the word "shore" in the claims is intended to cover such an arrangement and location of the parts of the device.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a wave-motor, a buoy adapted to rise and fall with the waves, an anchoring device connected to the buoy by a slack cable, a driving-cable connected to the buoy and passing around a pulley mounted upon a weighted ball, and a socket for said ball on said anchor, in combination with a winding mechanism, and means for storing the energy by the rise and fall of the buoy, substantially as described.

2. A wave-motor comprising a buoyant element, a weight or anchor, a cable connected to the buoyant element and passing around a pulley mounted upon a weighted ball, and a socket for said ball upon the weight or anchor, in combination with a winding-drum mounted loosely upon a shaft, a ratchet mechanism secured to said shaft to be rotated

by the movement of the drum, substantially as described.

3. In a wave-motor, a buoyant element designed to ride the waves, a weight or anchor adapted to rest upon the bottom of the sea or other body of water, a flexible connection between said buoyant element and anchor, a pulley universally mounted upon said anchor, a cable connected to said buoy and passing around said pulley, said cable extending to a winding mechanism upon the shore, in combination with a drum mounted loosely upon a shaft, a ratchet mechanism fixed to said drum, a cable and counterweight for taking up the slack of the first-mentioned cable, and an air-pump operated by said shaft, substantially as described.

4. A wave-motor comprising a buoy, a weight or anchor, a flexible connection between said buoy and anchor, a socket formed in the upper wall of the anchor, a weighted ball adapted to move in said socket, a pulley connected to said ball, a cable connected to the buoy and extending around said pulley, said cable extending to and around a drum located upon the shore, said drum being loosely mounted upon a shaft, a ratchet mechanism fixed to said shaft at the side of said drum, a counterweight for taking up the slack of said cable, a gear-wheel on said shaft, a crank-shaft mounted in the frame, a pinion meshing with said gear-wheel, and an air-pump operated by said crank-shaft, substantially as described.

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

FREDERICK M. DEMPSEY.

Witnesses:

JOEL A. HARVEY,
FRED D. HIGSON.