No. 643,557. Patented Feb. 13, 1900.

S. P. SWEARINGEN.

WAVE MOTOR.

(Application filed Aug. 15, 1899.)

(No Model.) 2 Sheets—Sheet 1.

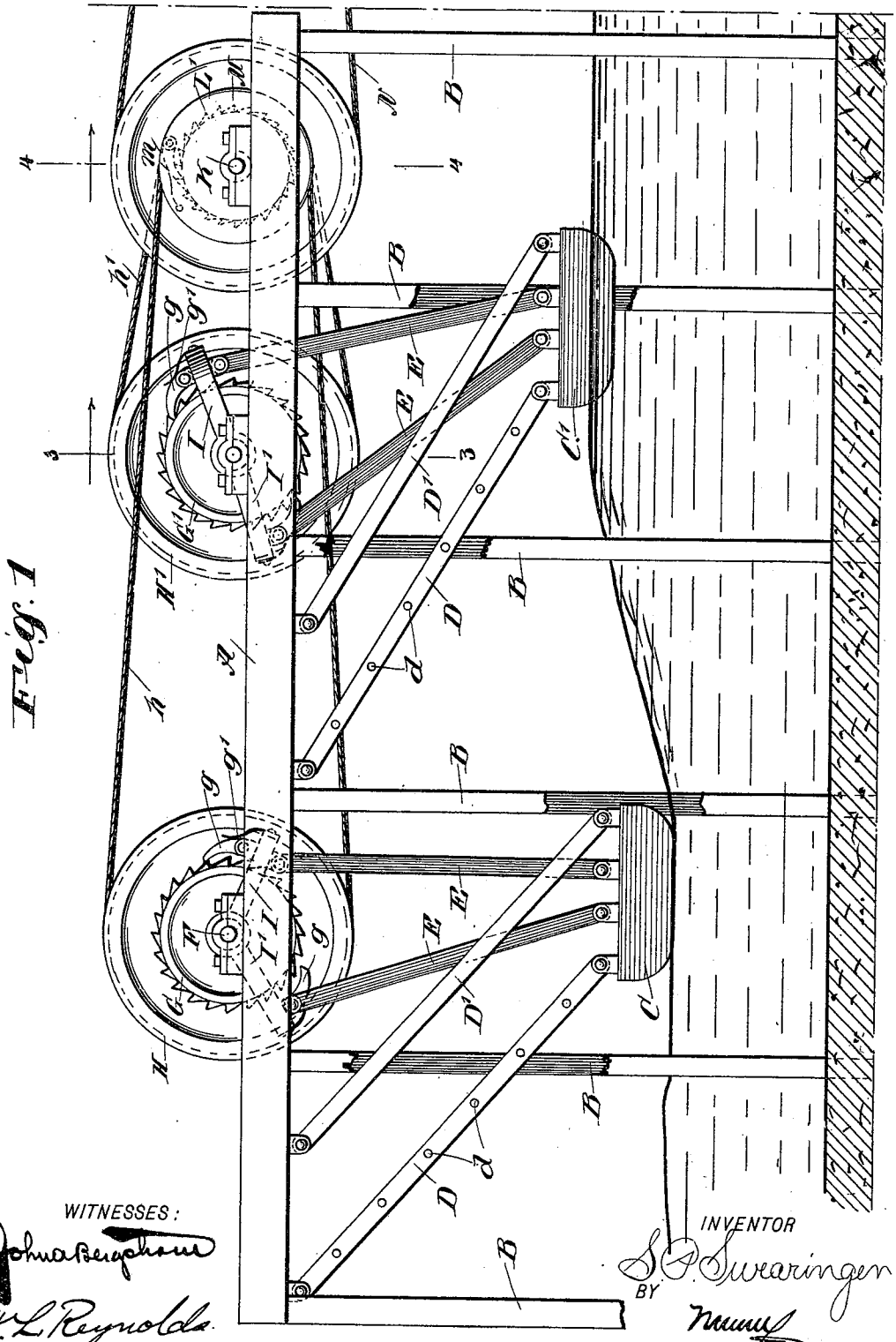


Fig. 1

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Fig. 2

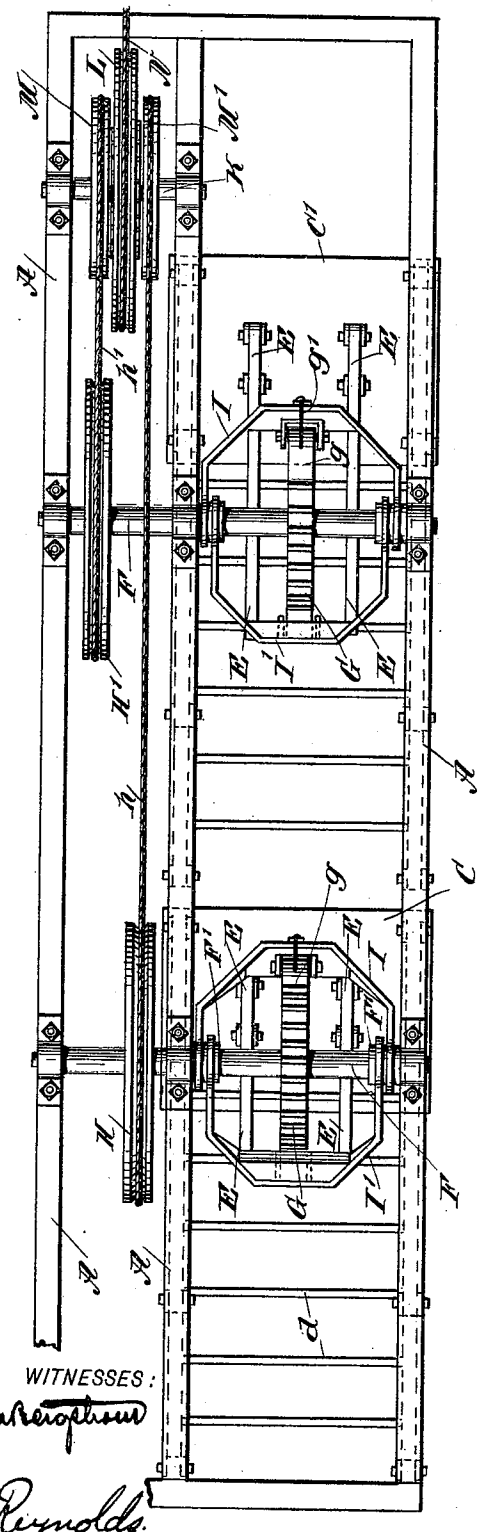


Fig. 4

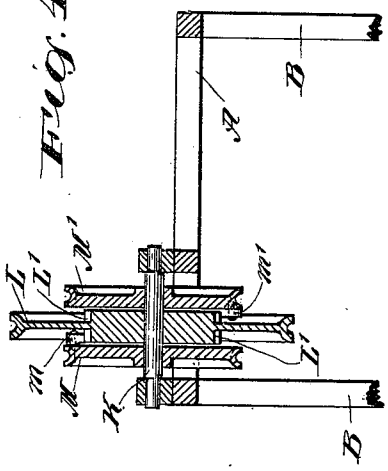
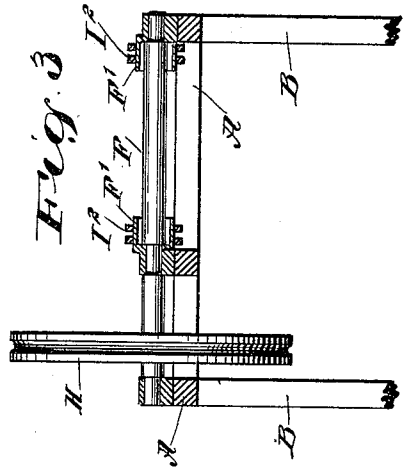


Fig. 3



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UNITED STATES PATENT OFFICE.

SAMUEL PARKER SWEARINGEN, OF PASADENA, CALIFORNIA.

WAVE-MOTOR.

SPECIFICATION forming part of Letters Patent No. 643,557, dated February 13, 1900.

Application filed August 15, 1899. Serial No. 727,306. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL PARKER SWEARINGEN, of Pasadena, in the county of Los Angeles and State of California, have invented a new and Improved Wave-Motor, of which the following is a full, clear, and exact description.

My invention relates to an improvement in wave-motors or devices intended for the generation of power by the utilization of the movement of the waves.

My invention comprises the novel features which are hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my device, certain of the supporting piles or posts being broken away to better show the working parts. Fig. 2 is a plan of the same; and Figs. 3 and 4 are cross-sections taken, respectively, upon the lines 3 3 and 4 4 of Fig. 1.

The object of my invention is to produce a device which shall be economical in construction and not liable to derangement by storms and which shall be adapted to utilize the power of the rise and fall and the backward and forward movement of the waves. With this object in view I first construct a framework consisting of longitudinal timbers A, which are supported upon piles B, which are driven into the water and extend to a considerable distance above the same. These piles and longitudinal timbers A are connected by any suitable system of cross-bracing, so as to form a structure which will stand the effect of storms. This structure extends out over the water, even at low tide, and has beneath the same one or more floats C C′, the number of floats used depending upon the amount of power required.

The floats are connected with the frame A by means of levers or links D D′, which are pivoted to the lower side of the frame and to the upper side of the float. These links permit the float to rise and fall and to at the same time have a swinging motion longitudinally of the frames A.

Upon the frame A and above the float C is journaled a shaft F, which extends transversely of the frames and of the direction of movement of the float C. Upon this shaft are fixedly secured a ratchet-wheel G and a pulley-wheel H. Two levers I and I′ are journaled concentric the shaft and extend in opposite directions therefrom. These levers may be journaled directly upon the shaft F, but preferably are journaled upon sleeves F′, which surround the shaft and are secured directly to the frame. These sleeves are shown in cross-section in Fig. 3.

Upon the outer ends of the levers I and I′ are placed pawls *g*, which are held in engagement with the teeth of the ratchet-wheel G by means of springs *g*′. The two levers I and I′ are connected with the float by means of links E, which are pivoted to said levers and to the float. As the float swings in one direction under the influence of the wave the pawl *g* upon one of the levers will engage the teeth of the wheel G to turn it in one direction, and when the float C moves in the opposite direction the other pawl *g* will be moved so as to engage the teeth and turn the wheel. The float C thus acts to turn the wheel G both in its upward and downward movement.

I have herein shown two floats C and C′, which are connected to shafts F, located upon the frame in an exactly similar manner.

At another point upon the frame a short shaft K is journaled, the said shaft being provided with a pulley-wheel L, secured thereto, and having two ratchet-wheels L′, secured to opposite sides thereof. These ratchet-wheels might, if desired, be made separate from the wheel L and fixedly secured to the shaft. It, however, makes the construction more compact to have the ratchet-wheels secured to the side of the pulley-wheel L.

Upon the outer sides of each of the ratchet-wheels L′ are placed pulley-wheels M and M′, said pulley-wheels being mounted loosely upon the shaft K and being connected, respectively, with the pulley-wheels H and H′, mounted upon the two shafts F, by means of ropes or belts *h* and *h*′.

By multiplying the number of floats a more even and steady power is delivered than is possible where only a single float is used. The device, however, will work satisfactorily with a single float, although in such case it is desirable that the pulley-wheel L be made

of considerable weight, so as to act as a fly-wheel to carry the motion past points where power is not being delivered thereto from the float. Power is conveyed from the fly-wheel L by means of a cable N, which passes over said wheel and connects with a suitable wheel located upon shore or upon any suitable fixed structure.

This device may be used for any purpose for which power is desired, either for pumping water, running machinery, generating electricity, or any of the usual purposes for which power is desired.

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

1. A wave-motor, comprising a frame above the water, a float, a set of arms pivoted to float and frame, and permitting the float to swing in the direction of movement of the waves, a shaft journaled on the frame, a lever pivoted concentric with said shaft and a bar or link pivoted to the outer end of said lever and to the float, and a clutch connection between the lever which is journaled concentric the shaft and the shaft to rotate it, substantially as described.

2. A wave-motor, comprising a frame above the water, a float, a set of arms pivoted to float and frame and permitting the float to swing in the direction of movement of the waves, a shaft journaled on the frame, a ratchet-wheel secured to the shaft, two levers pivoted concentric with said shaft and extending in opposite directions therefrom, a pawl on each lever engaging opposite sides of the ratchet-wheel, and links or bars connected to the outer ends of said levers and to the float, substantially as described.

3. A wave-motor, comprising a frame above the water, a float, a set of arms pivoted to float and frame, and permitting the float to swing in the direction of movement of the waves, a shaft journaled on the frame, a ratchet-wheel and a belt-wheel secured to said shaft, two levers pivoted concentric to said shaft, pawls on said levers engaging the ratchet-wheel, links or bars pivoted to the outer ends of said levers and to the floats, a second shaft journaled on the frame and having a fly-wheel, and a ratchet-wheel secured thereon, a belt-wheel loosely mounted on the same shaft and carrying a pawl adapted to engage the teeth of the ratchet-wheel, and a belt connecting the belt-wheels upon the two shafts, substantially as described.

4. A wave-motor, comprising a frame above the water, a float, a set of arms pivoted to float and frame and permitting the float to swing in the direction of movement of the waves, a shaft journaled in the frame, a ratchet-wheel and belt-wheel secured to said shaft, sleeves secured to the frame and surrounding the shafts, two levers pivoted upon said sleeves and extending in opposite directions from the shaft, pawls on said levers engaging the ratchet-wheel, and links or bars pivoted to the outer ends of said levers and to the floats, substantially as described.

5. A wave-motor, comprising a frame above the water, a float, a set of arms pivoted to float and frame and permitting the float to swing in the direction of movement of the waves, a shaft journaled in the frame, a ratchet-wheel and belt-wheel secured to said shaft, sleeves secured to the frame and surrounding the shafts, two levers pivoted upon said sleeves and extending in opposite directions from the shaft, pawls on said levers engaging the ratchet-wheel, links or bars pivoted to the outer ends of said levers and to the floats, a second shaft journaled on the frame and having a fly-wheel, and a ratchet-wheel secured thereon, a belt-wheel loosely mounted on the same shaft and carrying a pawl adapted to engage the teeth of the ratchet-wheel, and a belt connecting the belt-wheels upon the two shafts, substantially as described.

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