

C. E. EDWARDS.
WAVE MOTOR.
APPLICATION FILED MAR. 2, 1908.

923,823.

Patented June 8, 1909.
2 SHEETS—SHEET 1.

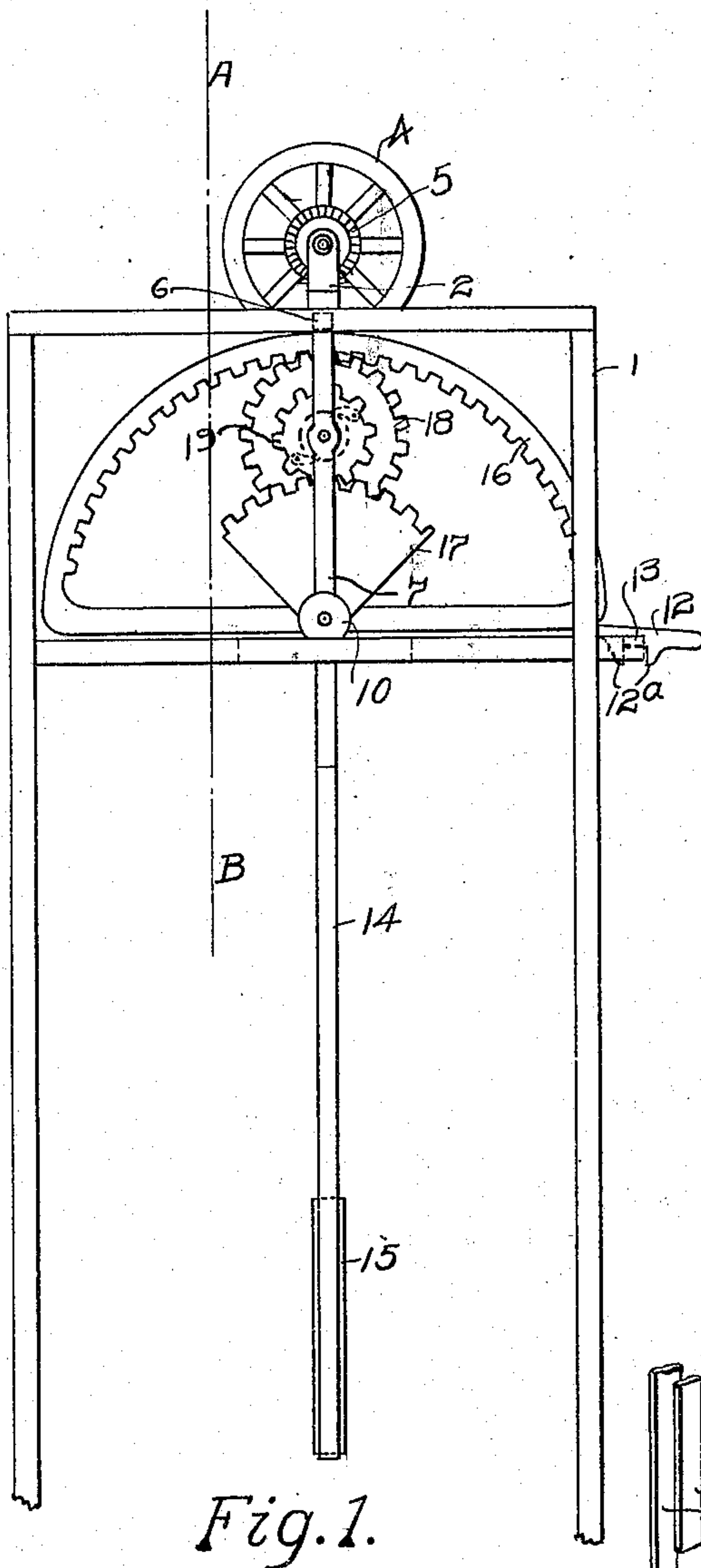


Fig. 1.

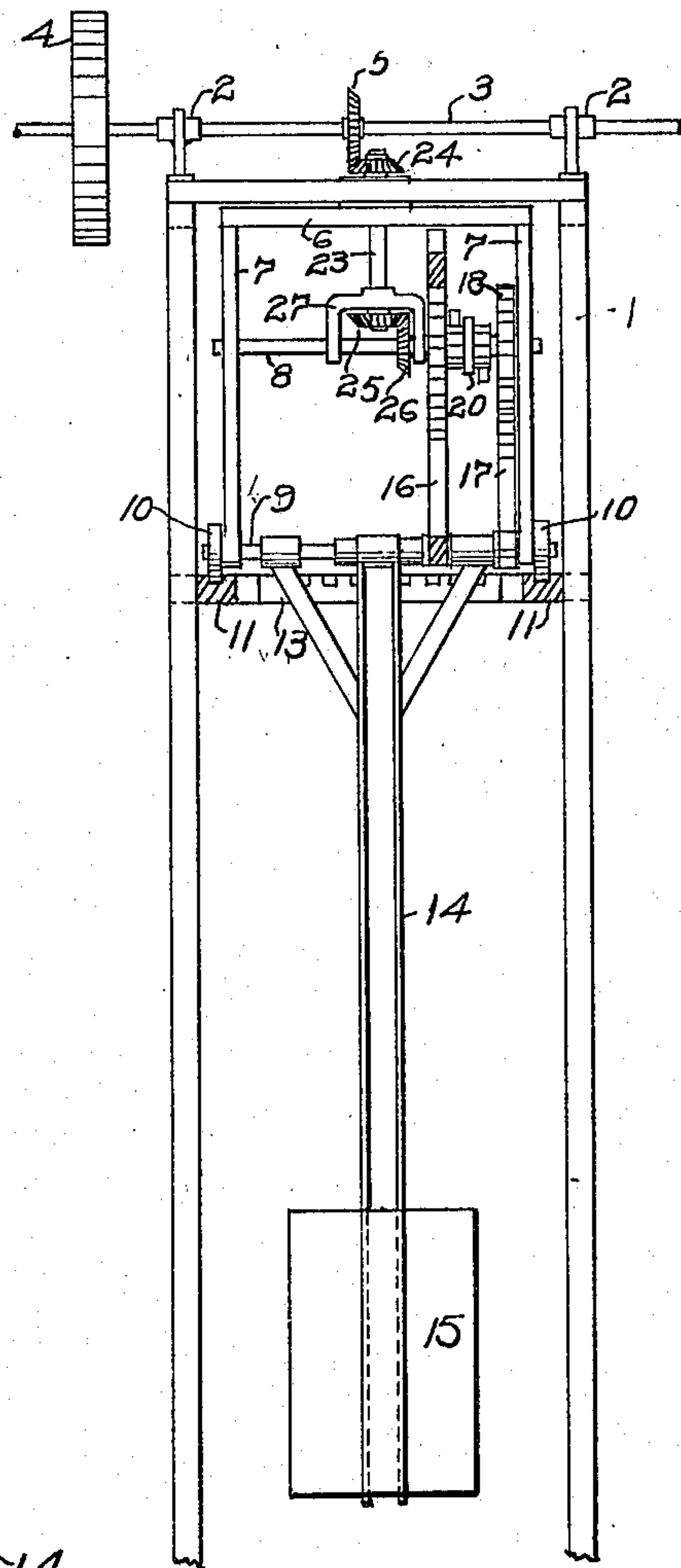


Fig. 2.

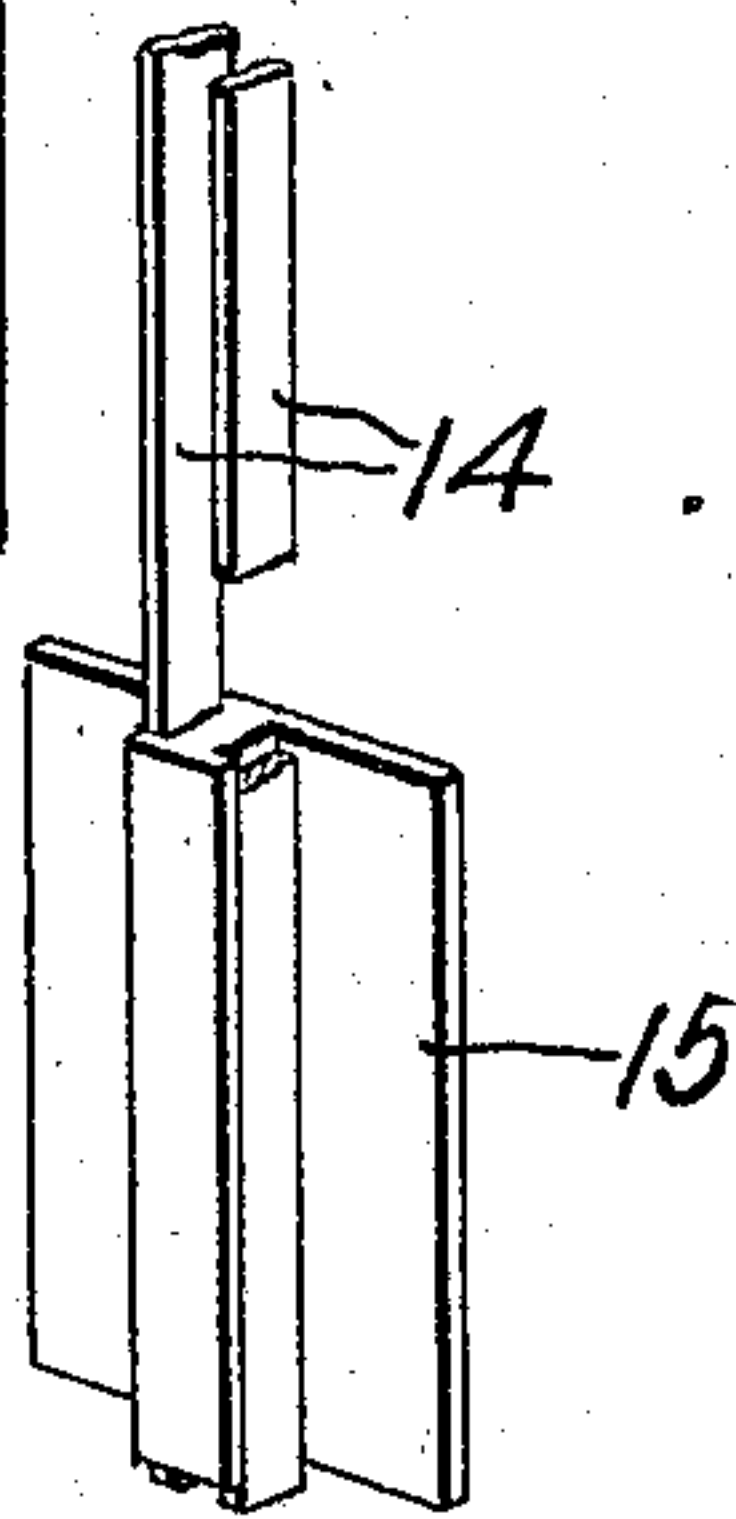


Fig. 6.

WITNESSES
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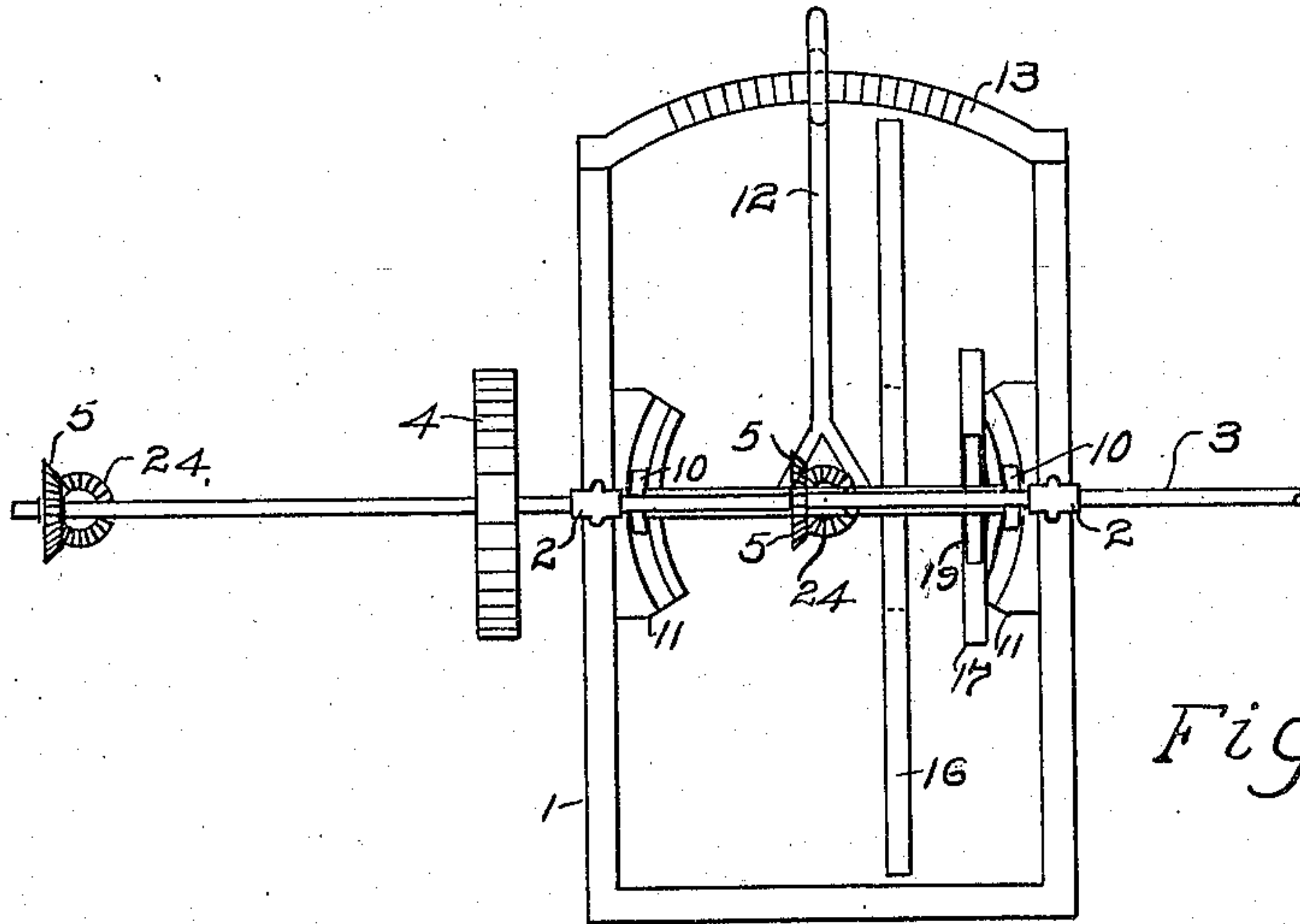


Fig. 3.

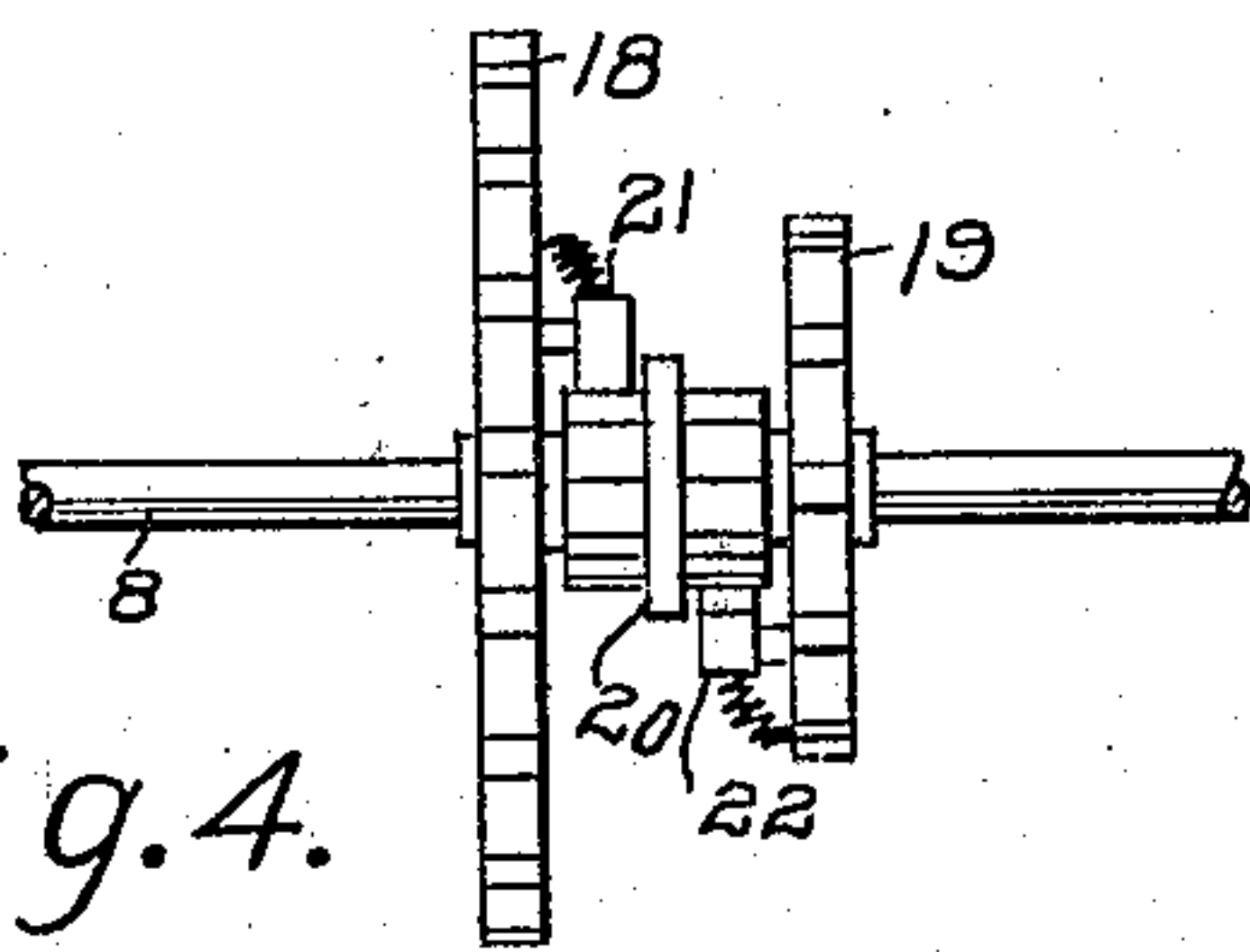


Fig. 4.

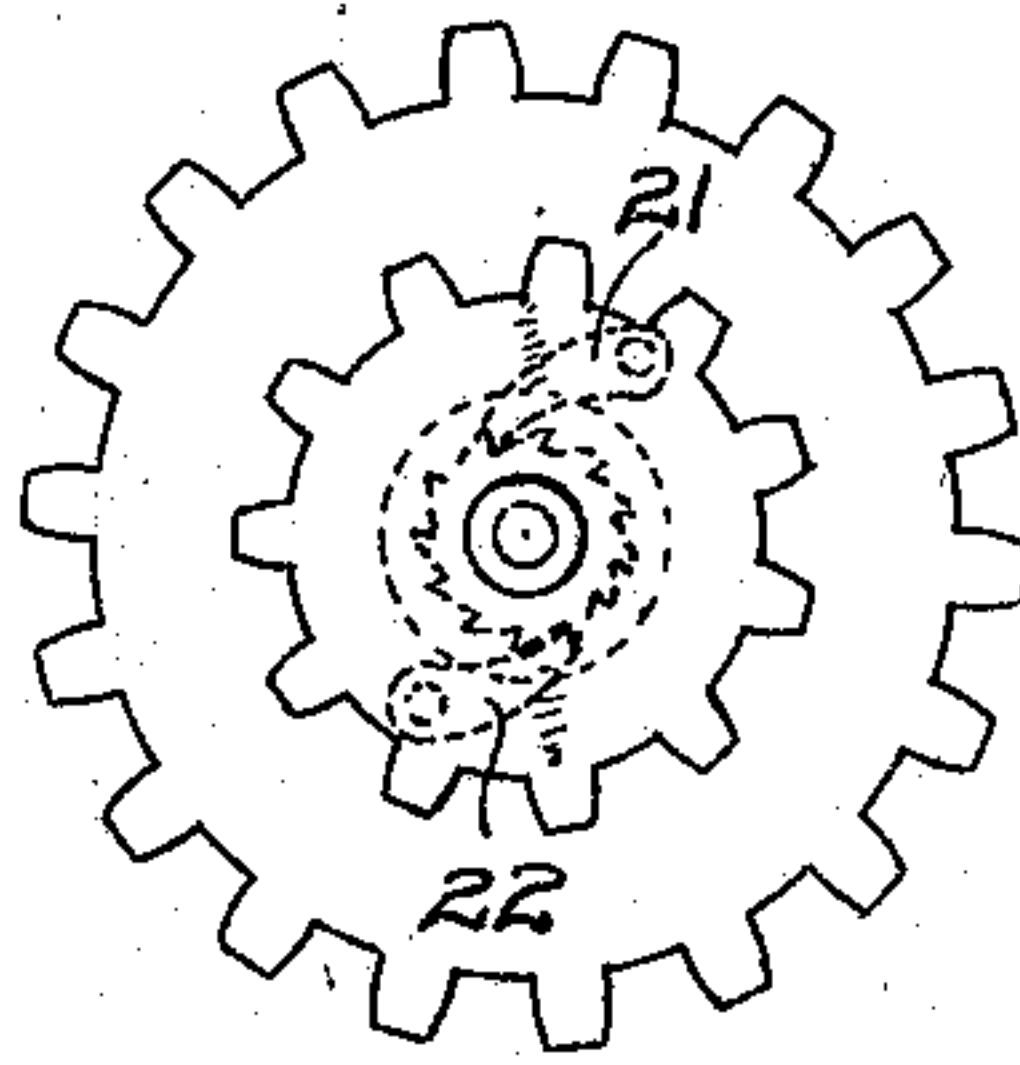


Fig. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES E. EDWARDS, OF SAN DIEGO, CALIFORNIA, ASSIGNOR TO THE EDWARDS-WAVE MOTOR CO., OF SAN DIEGO, CALIFORNIA, A CORPORATION.

WAVE-MOTOR.

No. 923,823.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed March 2, 1908. Serial No. 418,825.

To all whom it may concern:

Be it known that I, CHARLES E. EDWARDS, a citizen of the United States, residing at San Diego, county of San Diego, State of California, have invented an Improved Wave-Motor; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device for producing power from the waves and which I call a wave motor.

The objects are first, to provide a new and improved wave motor which acts as a unit to transmit power from the waves directly to any mechanism to which it may be applied: second, to utilize power from the waves either coming or going.

The invention consists in the parts and the construction and combination of parts which I shall hereinafter describe and claim.

Figure 1 is a side elevation of my device. Fig. 2 is a sectional view taken through A—B in Fig. 1. Fig. 3 is a plan view. Fig. 4 is a side view of a detail on an enlarged scale, Fig. 5 an end view of said detail and Fig. 6 is a perspective view of the gate, parts being broken away, showing its attachment to the swinging arm.

My invention includes a plurality of devices connected to one shaft, of which the one described and shown is only one unit, the other units being the same and connected to a shaft as shown.

My device is mounted within and upon a frame or structure of any suitable form to suit the position of the device and the convenience in installing it. In this case, I have mounted a frame 1 on fixed piling. On the top of frame 1 and supported by bearings 2, one at each side, is a shaft 3. Said shaft may be any length desired and a plurality of devices connected thereto; upon said shaft are mounted fly-wheel 4 and bevel gears 5, one for each unit of the complete mechanism.

Inside of frame 1 and centrally located is another smaller frame composed of a horizontal cross piece 6, and two vertically extending pieces 7; said pieces 7 are provided with bearings for the support of shafts 8 and 9, which are kept parallel with each other and a certain distance apart by the pieces 7; on the outer ends of shaft 9 and adjacent to the outside of the pieces 7 are wheels 10, which are for the purpose of supporting the inner frame and to facilitate its rotation within the outer

frame, the outer frame being provided with segments 11, one on each side of the frame and provided with grooves adapted for a path in which wheels 10 are adapted to travel concentric with the shaft 23.

Mounted on shaft 9 and approximately centrally located is lever 12, which is provided with double lugs 12^a adapted to fit on either side of an arc 13 fastened to the outside frame; said arc being provided with several slots in which the lever 12 fits; said lever 12 serves two purposes, one to hold the inner frame central and the other for partially rotating the same, so as to set it in various directions. Mounted on this shaft 9 and attached thereto is a double swinging arm 14 in which slides vertically a gate 15, said gate adapted to ascend and descend with the rising and lowering of the tide. Mounted on said shaft and attached thereto are also two gear segments 16 and 17. 16 is an internal gear and 17 external.

Upon shaft 8 and adapted to mesh with gear segments 16 and 17 are pinions 18 and 19. Loosely fitted on said shaft between said pinions, and fixed to shaft 8, is a double ratchet wheel 20 adapted to engage with pawls 21 and 22 which are attached to the pinions 18 and 19. When the arm 14 swings in one direction the gear segments move with it, which cause the pinions 18 and 19 to rotate in opposite directions, the pawl on one engaging with the ratchet, while the other moves over the ratchet teeth, and when the arm 14 moves in the opposite direction the same results are obtained, therefore, the shaft 8 revolves in one direction at all times, and whenever the arm moves in either direction. Shaft 8 is connected to shaft 3 by means of a short perpendicular shaft 23 with bevel gears 24 and 25, one on each end, which mesh with bevel gears 5 and 26; 26 being fixed on shaft 8, and the mesh of gears 25 and 26 being supported by casting 27. The shaft 23 acts as a pivot around which the inner frame revolves when it is desired to shift the frame to suit the wave motion. It can be readily seen that with this construction, that a plurality of these devices connected to one shaft 3 the shaft would be made to revolve in one direction at all times and each unit would operate independently of another, except in the one direction. They can be easily adjusted to the direction of the waves and gate 15; acting as a float would adapt

itself to the rising and lowering of the tide. From shaft 3 the power may be transmitted to be utilized in any manner suitable.

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

1. The combination of a swinging gate so mounted as to extend into the water, double gear segments attached thereto and adapted to revolve loose pinions upon a shaft, said pinions revolving in opposite directions; a ratchet fixed on said shaft, pawls mounted on said pinions and adapted to revolve the shaft in one direction at all times, all substantially as set forth.

2. The combination of a swinging gate so mounted on a shaft and affixed thereto as to extend into the water, another shaft above said first mentioned shaft and parallel thereto, means between said shafts for operating the upper shaft in one direction at all times, a frame, means for supporting said frame, means for pivoting said frame, all substantially as set forth.

3. In a wave motor, the combination of a swinging gate adapted to rise and lower as a float, the lower end extending into the water; a shaft to which it is attached, another shaft parallel to said first mentioned shaft, a frame connecting said shafts, said frame supported on wheels and adapted to be turned in either

direction, a lever for turning and holding said frame in varied positions, gear and ratchet means for turning the shaft in one direction at all times, gear and shaft means for connecting said shaft to another shaft; said construction being only one unit of which there are a plurality, all substantially as set forth.

4. In a wave motor, the combination of a gate supported by a swinging arm, said gate adapted to float in the water and to rise and lower, a frame within another frame and adapted to be rotated therein and connecting three pieces of shafting 8-9 and 23. shaft 9 being oscillated by said arm, shaft 8 rotated in one direction at all times by means of gearing and ratchets, a shaft perpendicular to said shaft 8, means for connecting the latter with the former, means for operating said perpendicular shaft, another shaft mounted upon an outer frame; means for connecting said perpendicular shaft to the latter, means for operating said latter shaft, said latter shaft being connected to a plurality of said devices, and said latter shaft being provided with a plurality of fly wheels, the above construction being only a unit of which there are a plurality, all substantially as set forth.

CHARLES E. EDWARDS.

Witnesses:

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