

No. 741,762.

PATENTED OCT. 20, 1903.

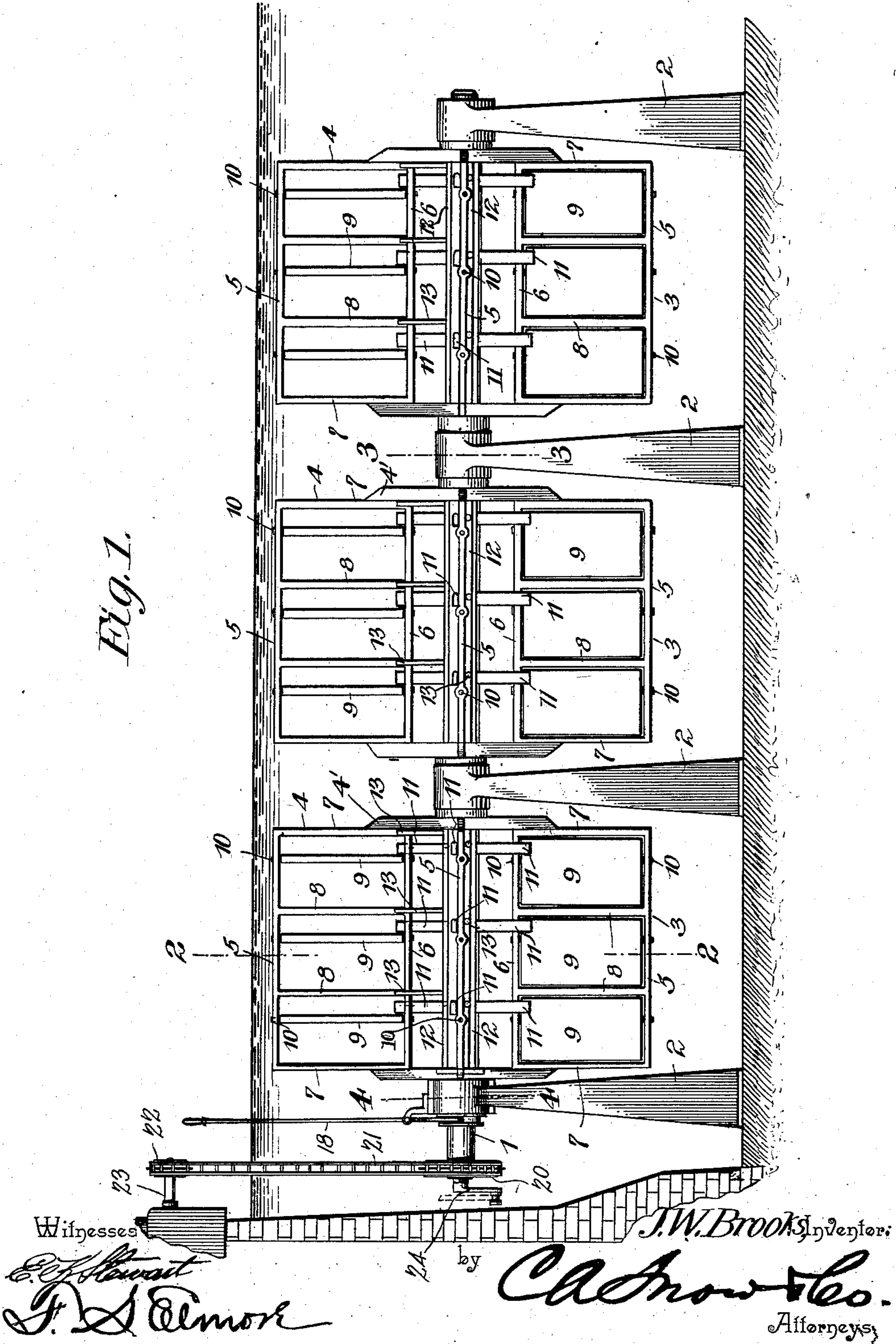
J. W. BROOKS.
WATER MOTOR.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



J. W. BROOKS.
WATER MOTOR.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2.

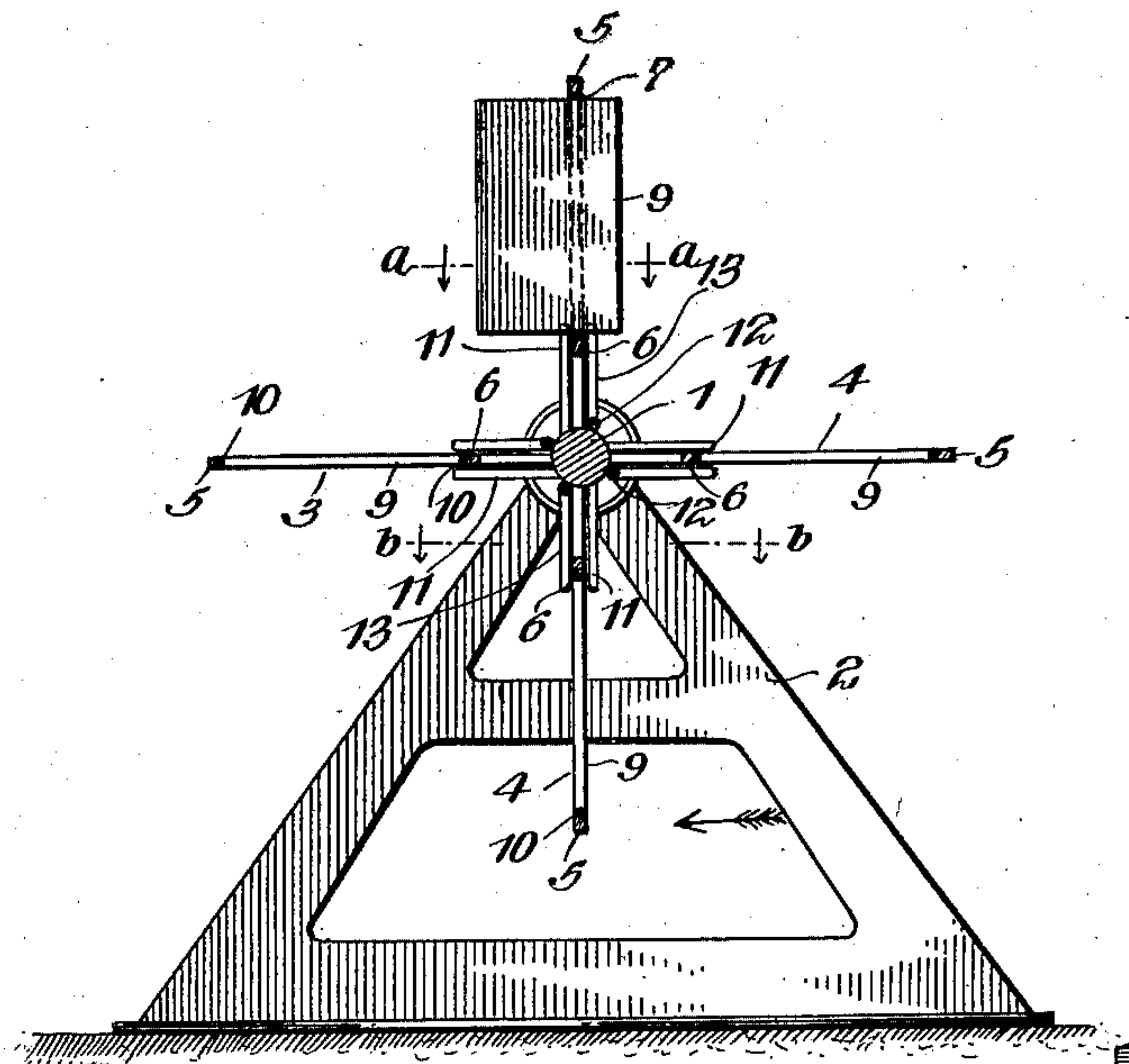


Fig. 3.

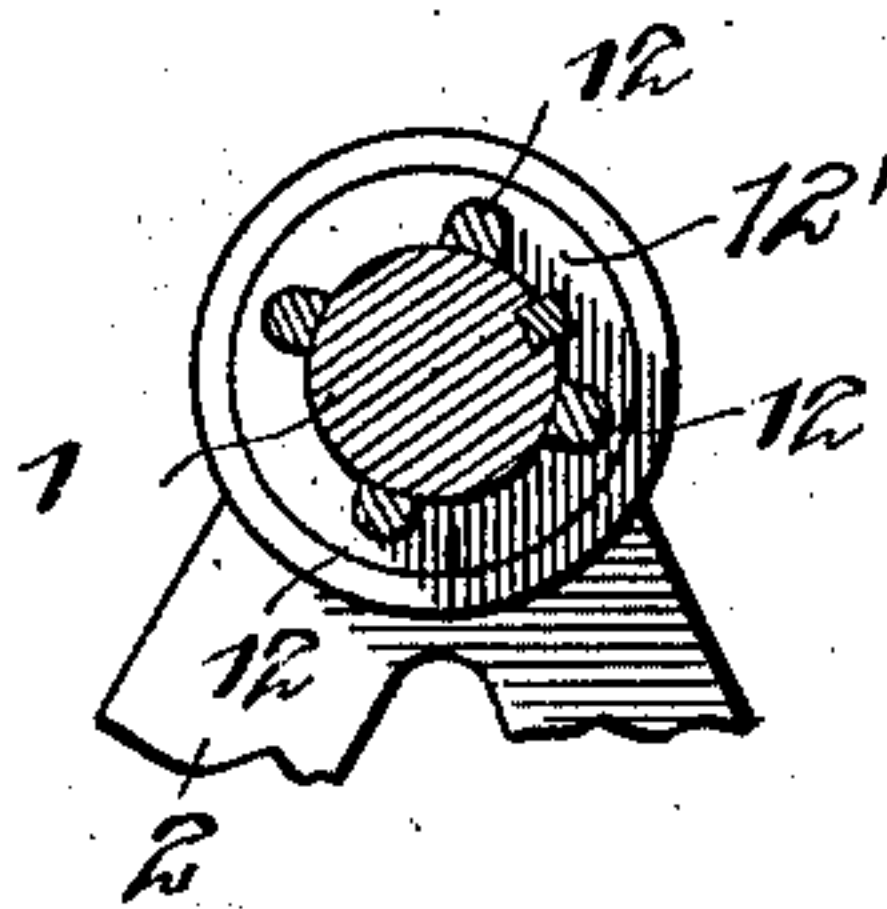


Fig. 4.

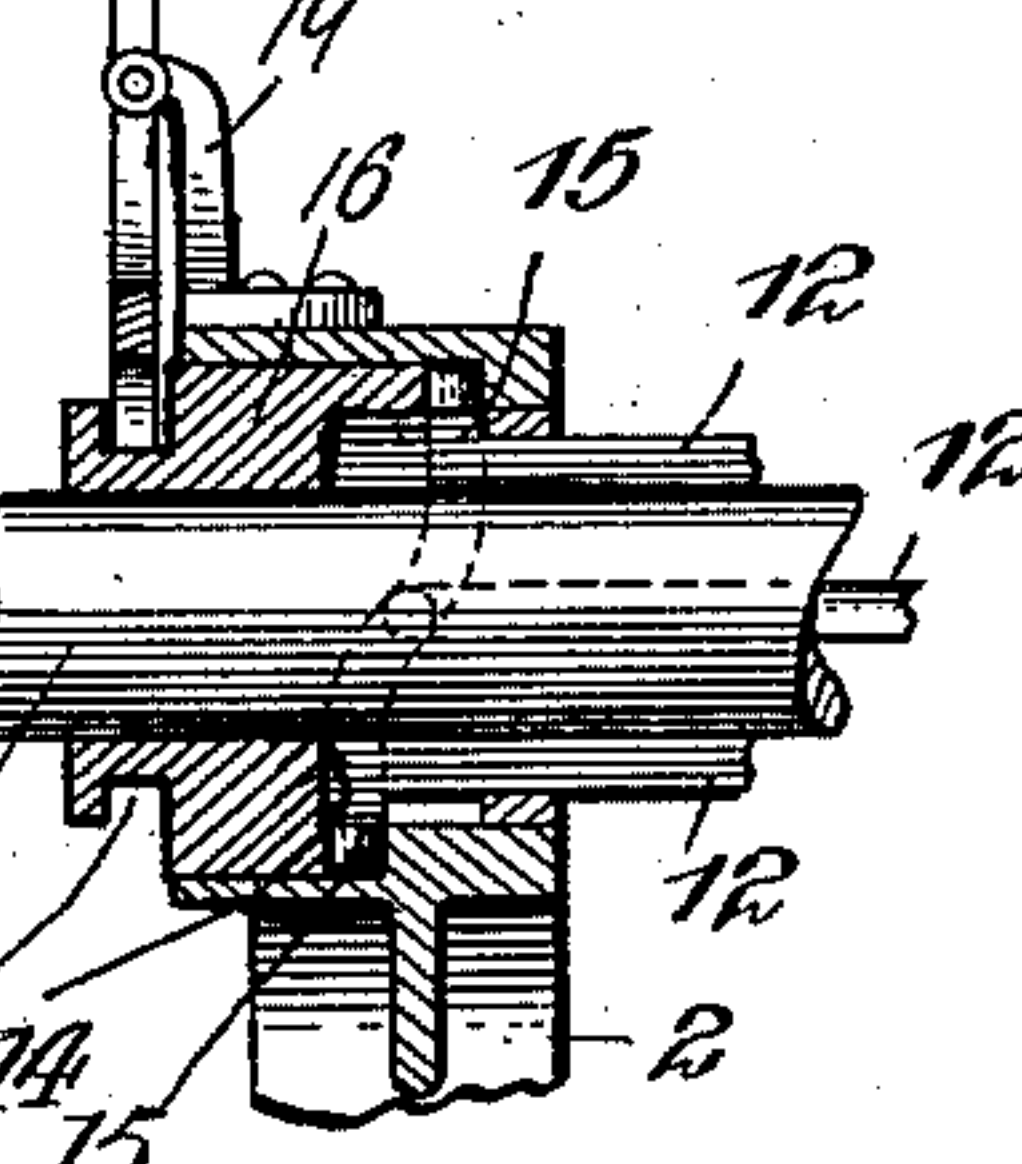
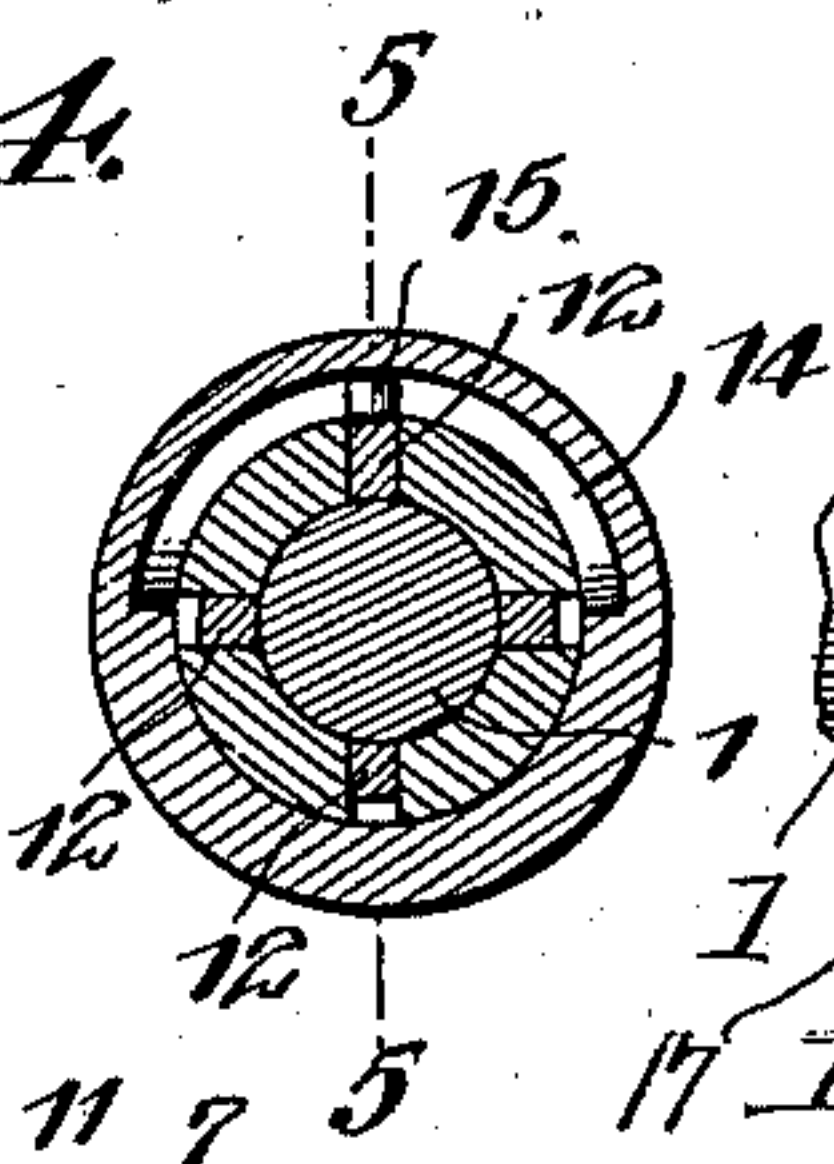


Fig. 6.

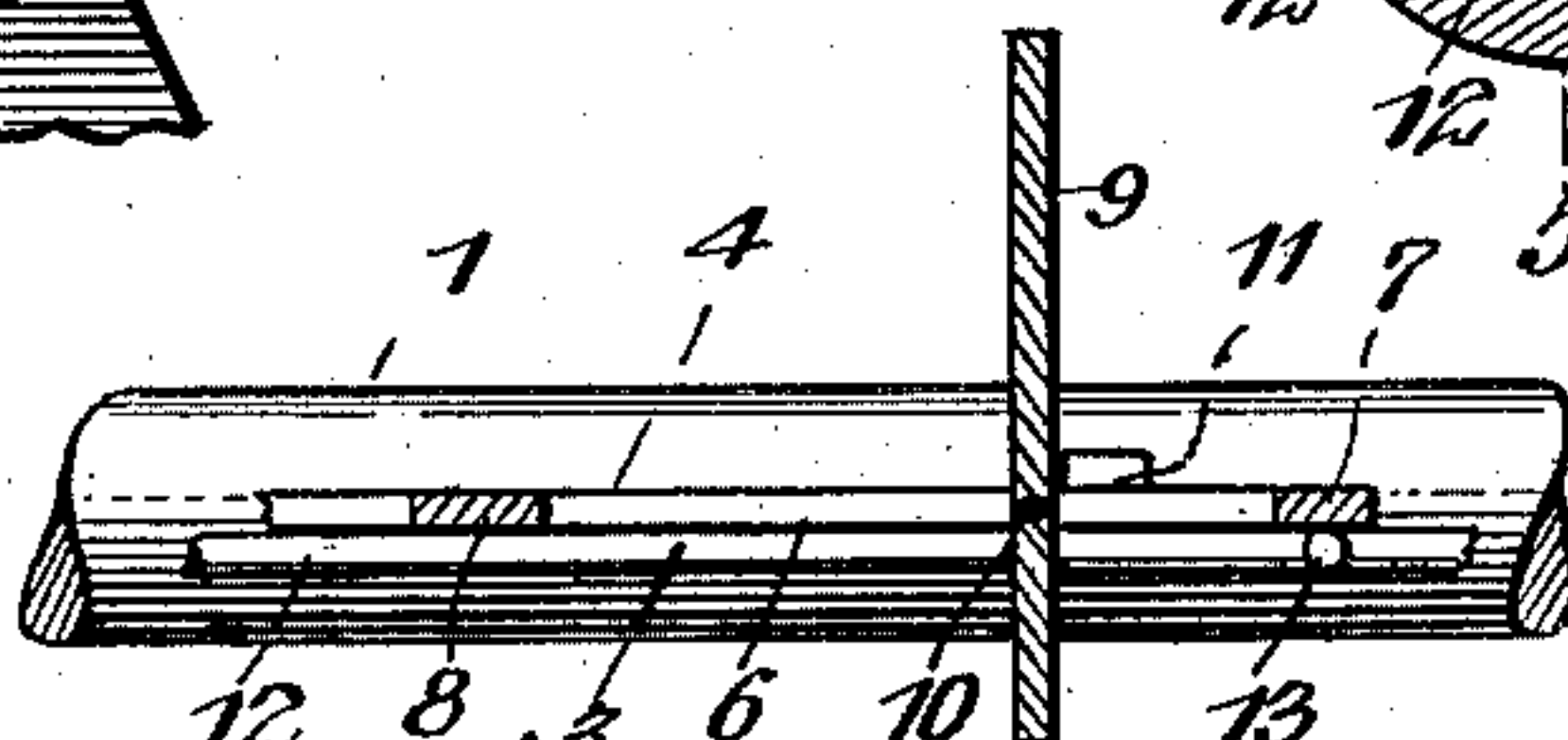


Fig. 5.

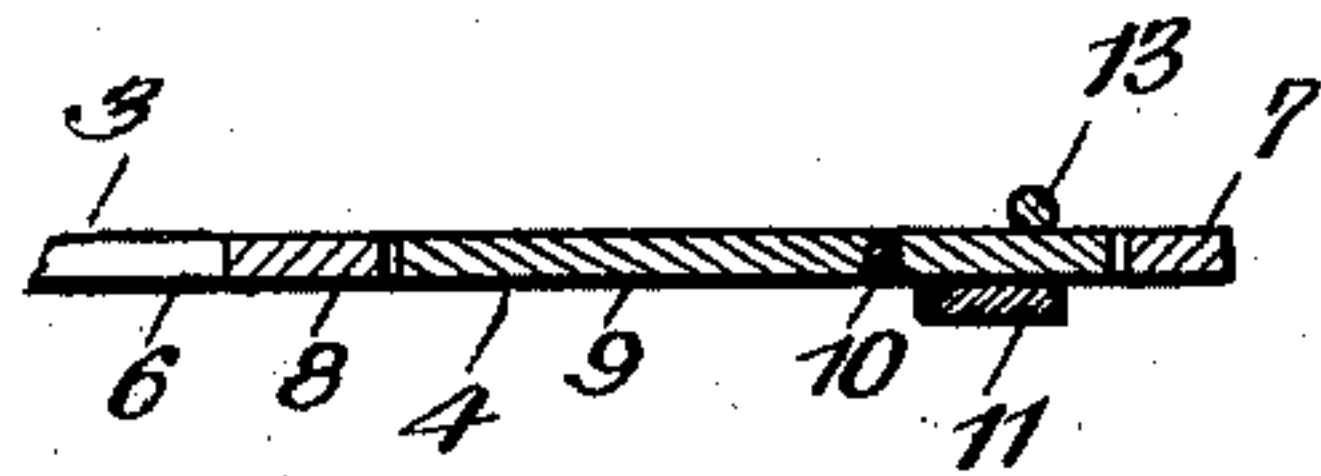


Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

JESSE W. BROOKS, OF CHURCH HILL, TEXAS.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 741,762, dated October 20, 1903.

Application filed February 27, 1903. Serial No. 145,409. (No model.)

To all whom it may concern:

Be it known that I, JESSE W. BROOKS, a citizen of the United States, residing at Church Hill, in the county of Rusk and State of Texas, have invented a new and useful Water-Motor, of which the following is a specification.

My invention relates to water-motors, and especially to that class of motors which are operated by tidal power, and has for its objects to produce a device of this character which will be comparatively simple of construction, inexpensive to manufacture and erect, efficient in operation, and one in which the blades which are acted upon by the current will be automatically locked while under its influence and will after passing beyond the influence of the current be automatically released to permit them to swing idle, thus reducing the resistance offered by them to a minimum.

The invention comprises the details of construction and combination of parts more fully described hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of a motor constructed in accordance with my invention. Fig. 2 is a vertical transverse sectional elevation on the line 2 2 of Fig. 1. Fig. 3 is a detailed section on the line 3 3 of Fig. 1. Fig. 4 is a similar view on the line 4 4 of Fig. 1. Fig. 5 is a similar view on the line 5 5 of Fig. 4, and Figs. 6 and 7 are detailed sectional elevations on the lines *a-a* and *b-b*, respectively, of Fig. 2.

Referring to the drawings, 1 indicates a main shaft mounted in suitable bearings 2 and driven by wheels 3. One or more of these wheels may be employed, according to the width of the stream or waterway in which the motor is mounted, and inasmuch as these wheels are all identical in construction and operation I will describe but one in detail, in which 4 indicates a suitable metal framework fixed to the shaft in any suitable manner, but preferably by bolting or otherwise securing them to rigid frame-bars 4', fixed to and radiating from the shaft 1. This framework comprises upper and lower side bars 5 and 6, end bars 7, and transverse partitions 8, which conjointly form three rectangular open frames in which are pivoted wings or blades 9, which are adapted to swing on their pivots

to an open or closed position in the manner and for the purpose presently described.

The pivots 10, on which the blades swing, are mounted a little to one side of the center of the blades in such manner that the blades will when released by their locking mechanism, to be presently described, be moved by contact with the water from an open to a closed position.

For locking and releasing the blades there is mounted on the main drive-shaft laterally-projecting pins 11 of a length sufficient for their outer ends to extend a short distance beyond the edge of the blade and at one side of the framework in which the blade is pivoted. Mounted in the bearings 2 and parallel with the main shaft are rods 12, which lie snugly against the main shaft and are adapted to be reciprocated longitudinally thereof, as hereinafter described. These rods, which are maintained in proper relation with the shaft and for rotation therewith by collars 12', splined to the shaft and rotating in the bearings 2, carry pins or fingers 13, which project laterally therefrom in a manner similar to the pins 11 to extend beyond and engage the inner edge of the blades, but at the side opposite to that engaged by the fixed pins 11. The pins 13 are adapted by the longitudinal reciprocation of the rods 12 to be moved into and out of engagement with the blades for locking or releasing the same, and when moved to the releasing position they occupy a position in alinement with the end bars 7 or partitions 8 of the frame, as clearly illustrated in Fig. 1. This movement of the rods 12 to cause the pins 13 to release or engage the frames is effected automatically by a cam-groove 14, formed internally of the end bearing 2, which is engaged by fingers 15, formed at the ends of the rods, preferably by bending their terminals at an angle. The cam-groove is so formed that the rods 12, which rotate with the main shaft, will be moved longitudinally to cause the fingers 13 to lock the blades while in a position to be acted upon by the current for driving the wheel and to automatically release the blades and permit them to swing idle after the blades have passed to a point beyond the influence of the current.

The wheels are provided with four of the frames 4, which project laterally from the main shaft at diametrically opposite points, as illustrated in Fig. 2, and each of these frames has mounted therein three of the blades. In assembling the main shaft and the four reciprocating rods the rods are first inserted through the bearings with their end fingers 15 in position in the cam-groove 14, and the main shaft is then inserted between them. Thus the shaft will serve to hold the fingers 13 in engagement with the groove, as clearly illustrated in Fig. 5. The rods are caused to rotate with the shaft by being held in engagement therewith through the medium of the framework which supports the blades.

Supposing the current which drives the motor to be flowing in the direction of the arrow in Fig. 2, the blades will swing in their open position edgewise to the water until they arrive at a point which will bring their opposite sides to the current, when the force of the tide thereon will serve to close them, at which time the cam-groove will move the corresponding rod 12 to cause the pins 13 to engage with and lock the blade, thus holding them in their locked position until they have passed beyond the influence of the current, when the rod will be moved by the cam in the opposite direction to cause the pins to release the blade, and the weight of the water thereon will cause them to again swing open and present their edges to the water, thus offering practically no resistance and materially facilitating the operation of the device.

In order that the blades 9 may be permanently locked to stop the operation of the device, I provide the bearing 2, which has formed on its inner face the cam-groove 14 for operating the rods, with a longitudinally-movable sleeve 16, which is formed at its inner end to constitute the outer wall of the cam-groove 14 and which has its outer end beyond the bearing-tube transversely grooved, as at 17, to receive suitable rollers carried by the lower bifurcated end of a lever 18, which is pivoted in a bearing 19, secured in any suitable manner to the upper outer face of the shaft-bearing 2, the lever being extended upward to a point within convenient reach of the operator or attendant. The sleeve 16, which normally occupies the position illustrated in Fig. 5, constitutes, as before stated, the outer wall of the cam-groove 14, which serves during the rotation of the wheel to move the rods 12 to a position to cause their fingers 13 to release the blades 9, so that by operating the lever 18 to withdraw the sleeve it is obvious that as the wheel rotates the rods 12 will be moved to position for locking the blades 9 and will remain in such position until the sleeve is again returned by the lever to normal position to permit the same to return the rods to releasing position. From this it will be seen that by manipulating the lever the blades will all be locked, thus equalizing the

pressure of the water upon them and stopping the operation of the wheel, as will be readily understood, and that when the sleeve is again returned to normal position by the lever two sets of the blades will at once be released, thus insuring the immediate starting of the device.

Mounted at the end of the shaft is a sprocket-wheel 20, connected by a chain 21 with a wheel 22, which drives the main shaft 23 of the mechanism operated by the motor. The shaft 1 of the motor is also provided at its end with a suitable crank 24 for receiving the lower end of a pump-rod or the like.

From the foregoing description it will be seen that I produce a device which is comparatively simple of construction and inexpensive to produce and one which is efficient in operation and permits of the blades being automatically locked and released at the proper times to maintain them positively closed while being acted upon by the current and permit them to swing idle when beyond the influence of the current, and in attaining these ends I do not limit or confine myself to the details herein shown and described, as various changes may be made therein without departing from the spirit or scope of my invention.

Having thus described my invention, what I claim is—

1. In a water-motor, the combination with a wheel having pivoted wings or blades, of a plurality of rods adapted to be reciprocated, devices carried by the rods for locking or releasing the blades, means for automatically reciprocating the rods, and means operable for maintaining all of the blades in one of said positions.

2. In a water-motor, the combination with a wheel having pivoted wings or blades, of a plurality of rods adapted to be reciprocated, devices carried by the rods for locking or releasing the blades, means for automatically reciprocating the rods, and means operable in conjunction with the rods for maintaining all of the blades in one of said positions.

3. In a water-motor, the combination with a wheel having pivoted wings or blades, of a shaft carrying and operable by the wheel, a bearing for the shaft provided with a cam-groove and a movable collar forming one wall of the groove, a plurality of rods engaged with the groove and operable for reciprocation thereby, devices carried by the rods for locking or releasing the blades, and means for operating the movable collar to permit all of the rods to remain passive for maintaining all of the blades in one of said positions.

4. In a water-motor, the combination with a wheel having pivoted wings or blades, of a shaft carrying and operable by the wheel, stops carried by the shaft for limiting the movement of the blades in one direction, a bearing for the shaft provided with a cam-groove and a movable collar forming one wall of the groove, a plurality of rods mounted for

rotation with the shaft and having fingers
engaged with the groove and operable for re-
ciprocation thereby, pins carried by the rods
for locking or releasing the blades, and means
5 for operating the movable collar to permit all
of the rods to remain passive for maintain-
ing all of the blades in one of said positions.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

JESSE W. BROOKS.

Witnesses:

GEO. S. STRONG, Sr.,

R. L. BALLENGER.