

No. 660,317.

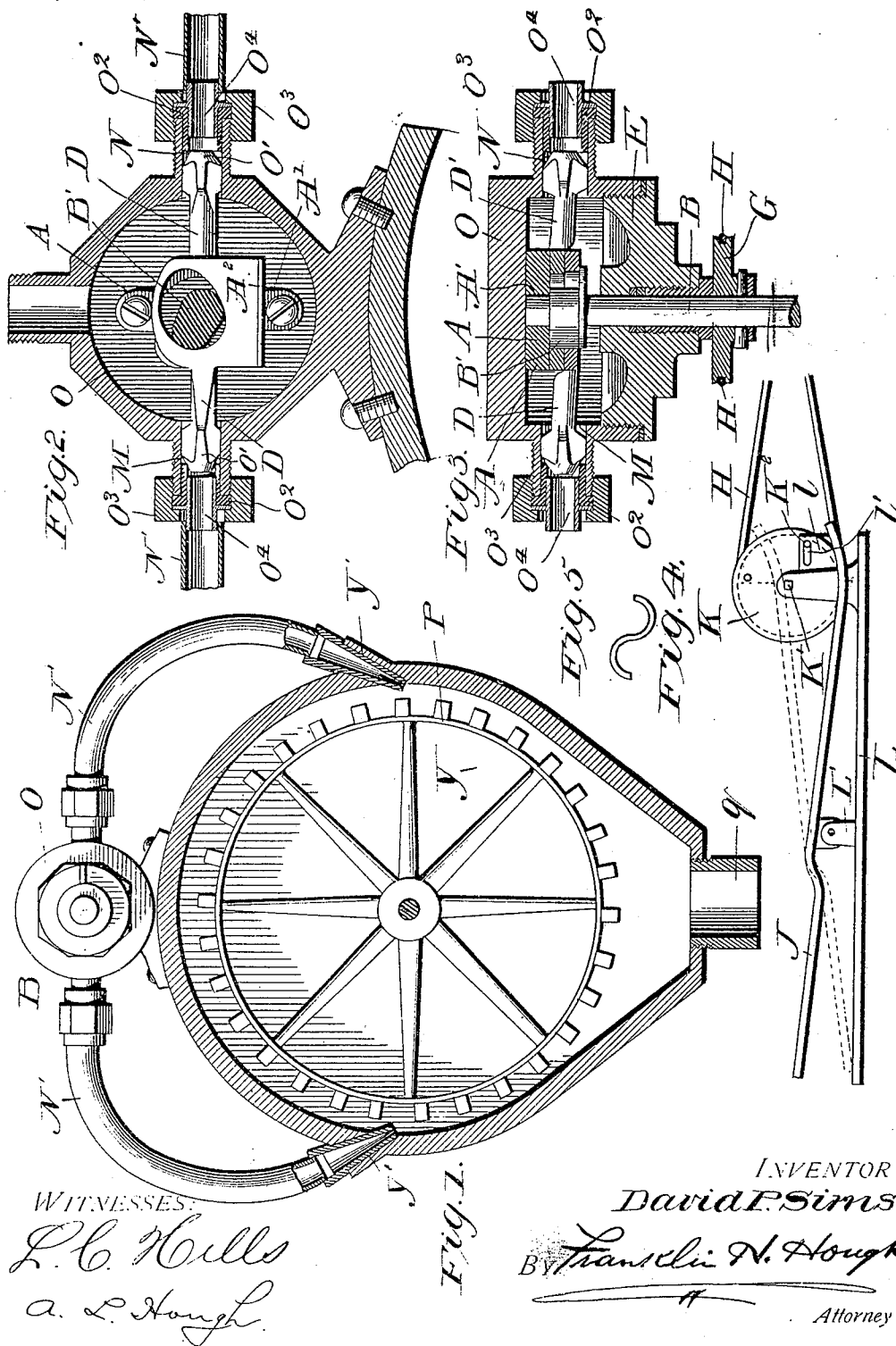
Patented Oct. 23, 1900.

D. P. SIMS.

VALVE REGULATING DEVICE FOR WATER MOTORS.

(Application filed Feb. 1, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

DAVID P. SIMS, OF LINCOLN, NEBRASKA.

VALVE-REGULATING DEVICE FOR WATER-MOTORS.

SPECIFICATION forming part of Letters Patent No. 660,317, dated October 23, 1900.

Application filed February 1, 1900. Serial No. 3,825. (No model.)

To all whom it may concern:

Be it known that I, DAVID P. SIMS, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Valve-Regulating Devices for Water-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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in valve-regulating mechanism in connection with rotary impact water-motors, and in carrying out the present invention it is my purpose to generally improve upon the form of construction of water-motor upon which I have been granted Letters Patent, Serial No. 696,830.

More specifically the present invention resides in a valve-regulating mechanism comprising a chamber into which a water-supply pipe leads and from which ports lead away on diametrically-opposite sides of the chamber, in which ports alternately-operated valves work, said valves being actuated by means of a cam rotating with a shaft, which latter is adapted to be rocked in opposite directions by means of a foot-tread or other means, whereby the water may be directed from opposite directions against the circumference of the motor-wheel accordingly as it may be desired to drive the wheel in one direction or the other.

To these ends and to such others as the invention may pertain the same consists, further, in the novel construction, combination, and adaptation of parts, as will be hereinafter more fully described, and then specifically defined in the appended claims.

My invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this application, and in which—

Figure 1 is a central vertical sectional view through the valves and regulating mechanism and the motor-wheel upon which the valve-chamber is secured. Fig. 2 is a cross-sectional view through the valves and cham-

ber. Fig. 3 is a plan view of the cam which operates the slide-valves. Fig. 4 is a detail view of the foot-tread whereby through the medium of suitable connections the valves are operated; and Fig. 5 is a detail view of one of the buckets on the circumference of the motor-wheel.

Reference now being had to the details of the drawings by letter, Y designates the casing of the motor-wheel P, which wheel is mounted on an operating-shaft and has a series of S-shaped buckets about its circumference, and an outlet passage-way q leads from said casing. Mounted on said casing is the chamber O, in the walls of which diametrically opposite to each other are the ports M and N, from which ports lead the pipes N', which communicate with the interior of the casing P through apertures Y' in the opposite edges of said casing. The ends of the pipes N' where they enter the casing are tapered, as shown. A thimble O² is inserted in each port M and N, and combined rubber gaskets and valve-seats O⁴ have their opposite ends seated, respectively, in the thimbles and pipes N'. Suitable unions O³ secure the pipes to the threaded walls of the ports M and N.

Secured to the inner wall of the chamber O is a bracket A, having a central aperture A', in which aperture one end of the shaft B has a bearing. The lower end of said bracket is provided with a shelf A², on which the edges of the flat ends of the valves D and D' rest and slide. These valves have heads O', adapted to seat against the inner ends of the thimbles O². The flat ends of the valves have irregular-shaped apertures therein, as illustrated, said apertures being oppositely arranged with reference to each other. Keyed to or forming a part of said shaft B is a cam B', which cam when the shaft is adjusted in place rests in said apertures, and accordingly as the shaft is rocked in one direction or the other one or the other of said valves will be reciprocated sufficiently to alternately open and close the valves. One face of said chamber has a removable cap E, having threaded connections with the interior of the chamber, and between said cap and the edge of the chamber is disposed a gasket or suitable packing. In said cap one end of the shaft B has a bearing, and on the outer end of the shaft

is mounted a grooved disk, about which a belt or cord H is held, said belt or band adapted to pass about the grooved pulley K, which is mounted on a stub-shaft K' on a projecting portion of the block L. On a vertical projection L' of the block L is pivoted the foot-tread J, the forward end of which has a lug L', which lug is slotted transversely. Mounted on the face of said grooved wheel K is a pin K², the free end of which passes through the aperture L', whereby as the foot-tread is rocked on its pivot said wheel K is caused to rock in opposite directions. As the wheel K rocks backward and forward the disks G, which are connected by belt or band to said wheel, will be caused to rock, and also the shaft B, carrying the cam, which cam rocking from side to side will cause the two valves to alternately open or close, as may be desired, to direct the stream of water to one side or the other of the motor-wheel to cause a forward or reverse movement to the motor-wheel.

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

1. A valve-regulating device for rotary impact water-motors, comprising in combination with the casing the supply and exit pipes communicating therewith, loosely-mounted slide-valves controlling the entrance to said exit-pipes, a rock-shaft having a cam loosely held in enlarged apertures in the stems of said valves, and a shelf on which the inner flattened ends of said valve-stems rest and slide, as set forth.

2. A valve-regulating device for rotary impact water-motors, comprising in combination with the casing of the valve-chamber, feeding and exit pipes communicating therewith, the valves for regulating the flow of water through said exit-pipes, a bracket on which the inner flattened ends of the stems of said valves rest and slide, a rock-shaft and cam thereon, which latter turns loosely in cam-shaped apertures in said flattened ends, a pulley-wheel mounted on said rock-shaft, a tread and connections between the latter and said pulley, whereby said shaft may be rocked, as set forth.

3. A valve-regulating device for rotary impact water-motors, comprising, in combination with the water-chamber with a removable screw-threaded face, pipes leading from the chamber, an angled bracket secured to the inner wall of the chamber, the valves seating against the ends of said pipes, and sliding on said bracket, the shaft having a bearing at one end, in the bracket, its other end in the screw-threaded face, the cam turning with the shaft, and working in irregular outlined apertures in the valve-stems, and means for rocking the shaft whereby, as the shaft is rocked, the valves will be alternately closed and opened.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID P. SIMS.

Witnesses:

A. D. KITCHEN,
A. B. HANCOCK.