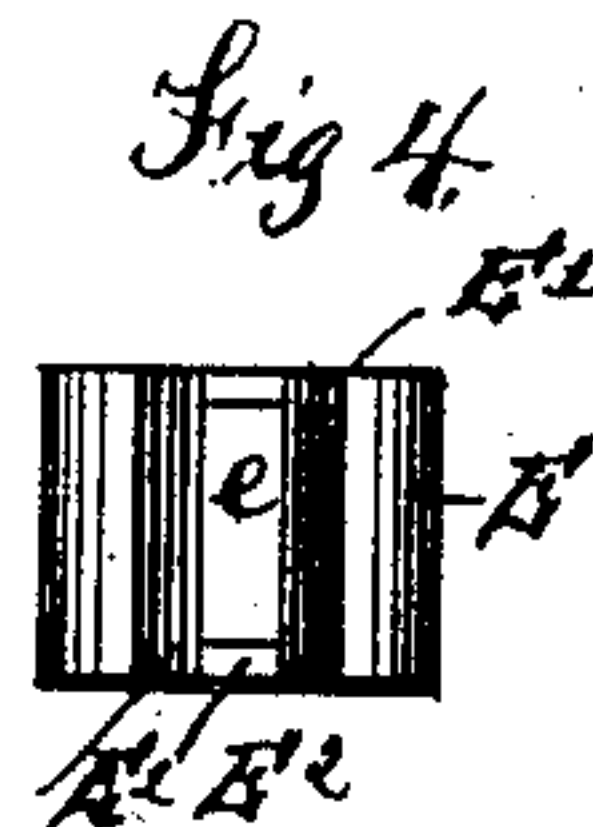
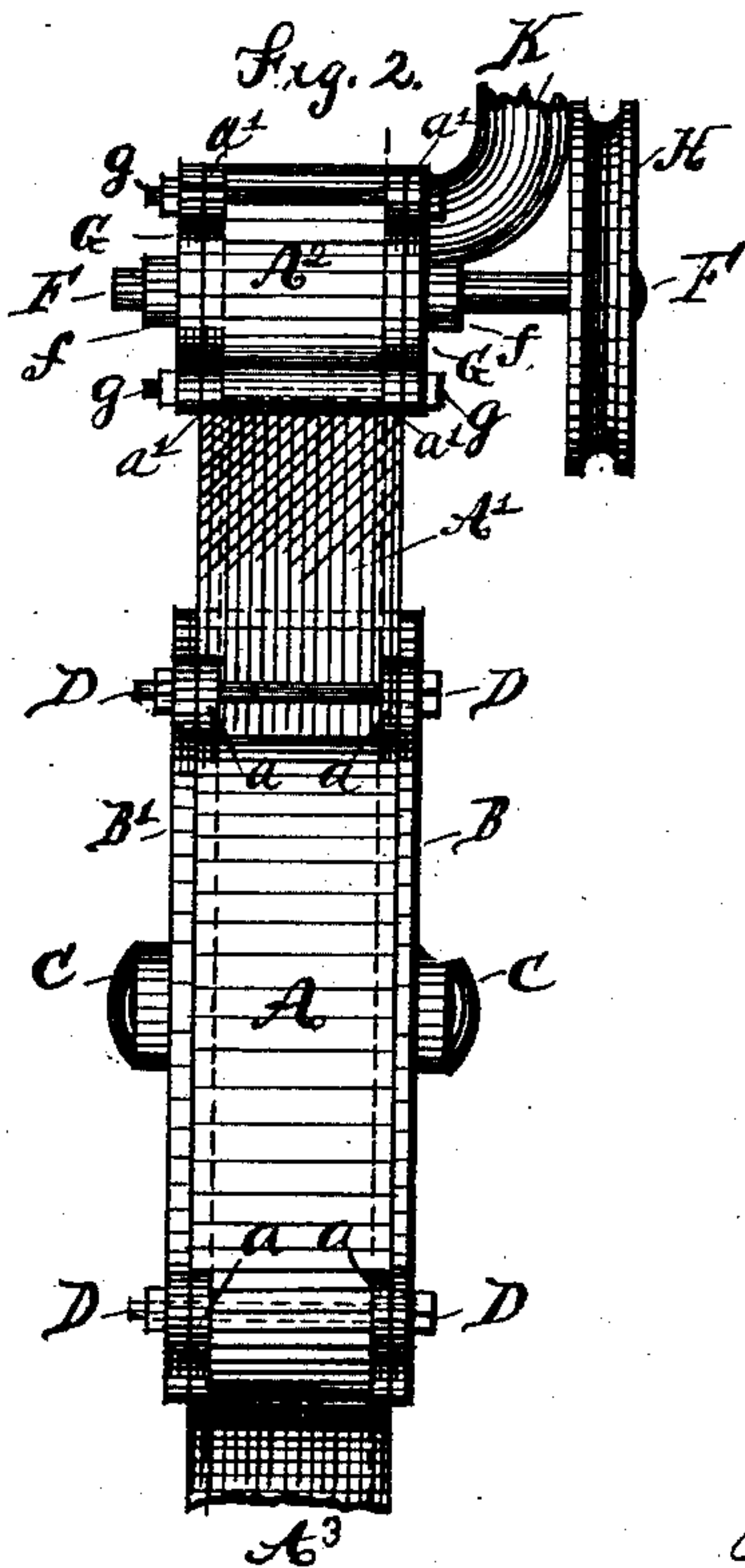
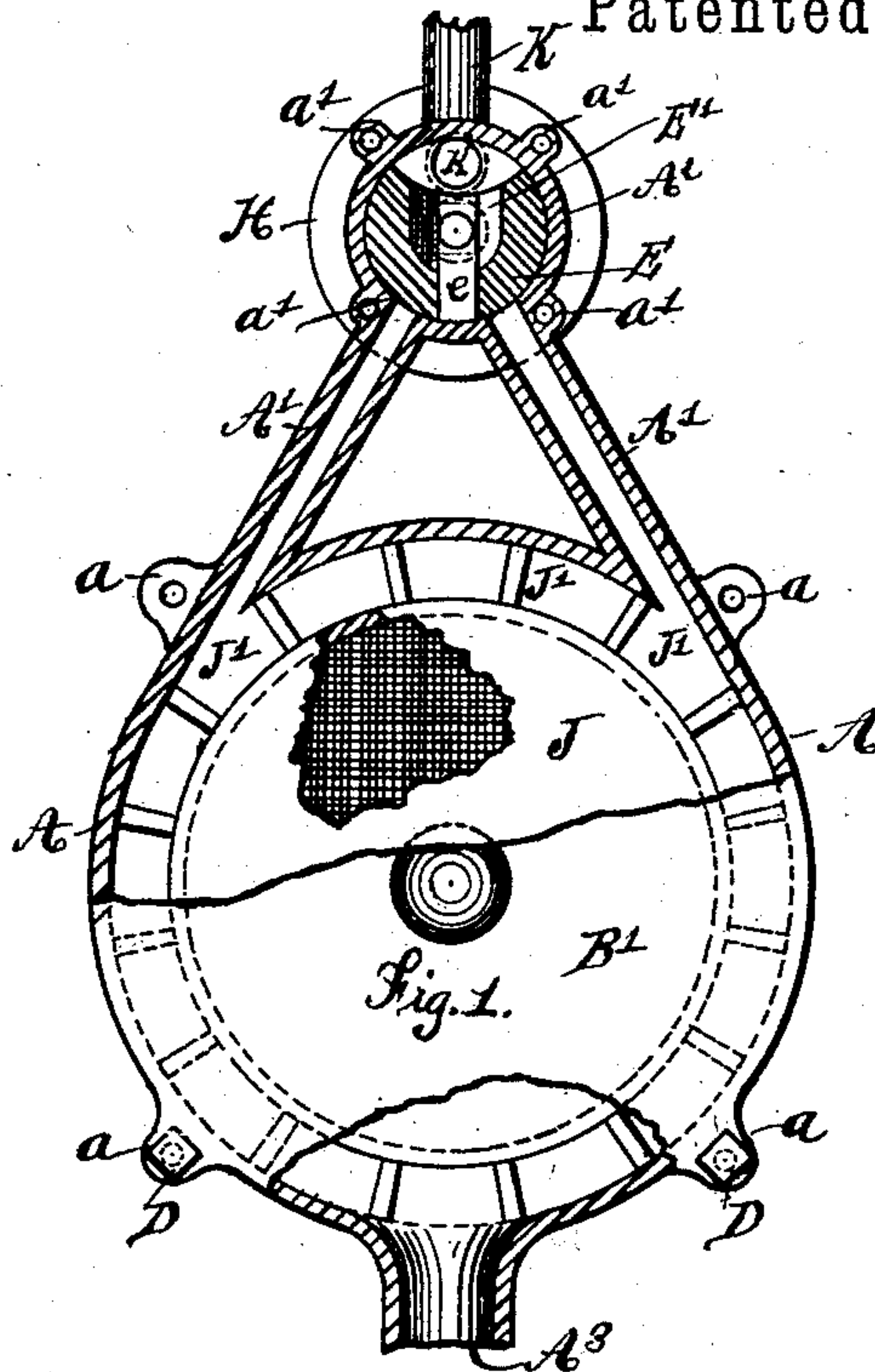


(No Model.)

J. SMITH.  
WATER WHEEL.

No. 318,214.

Patented May 19, 1885.



Witnesses:  
John C Miller  
J. W. Shaw

Inventor  
Jesper Smith  
A. W. Morgan & Son  
Attorneys

# UNITED STATES PATENT OFFICE.

JESPER SMITH, OF WASHINGTON, NEW JERSEY.

## WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 318,214, dated May 19, 1885.

Application filed April 24, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JESPER SMITH, a citizen of the United States, residing at Washington, in the county of Warren and State of New Jersey, have invented certain new and useful Improvements in Water-Wheels, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of this improvement is a reversible water-motor of economical construction and simple operation, adapted for use in the operation of elevators. These results are attained by the mechanism illustrated in the drawings herewith filed as part hereof, in which the same letters of reference denote the same parts in the different views.

Figure 1 is a front elevation, partly in section, of a water-motor embodying the features of my improvement. Fig. 2 is a side view of the same. Fig. 3 is a side elevation of the valve detached. Fig. 4 is a top view of the same.

25 A is the water-wheel casing or cylinder, having inclined recessed extensions A', and a circular valve-chamber, A<sup>2</sup>, and an exhaust opening, A<sup>3</sup>, at the lower part of the casing A, all made integral.

30 B B' are cylinder-heads secured to the cylindrical casing A' by bolts D, which pass through perforated lugs on the parts B B', corresponding in size and position to lugs a on the casing A, with which they are made integral.

35 C C are bosses, made integral with the cylinder-heads B B' and provided with inner recesses for the purpose of receiving and forming bearings for correspondingly-sized journals with which the water-wheel J is provided.

40 J' represents radial buckets or arms, made integral with the body of the wheel J, which is made hollow to avoid unnecessary weight.

45 E is the valve, having an opening, e, in its lower part, agreeing in size with the recesses in the inclined connections A', through one or the other of which the water is applied to driving the wheel J, as hereinafter fully explained.

50 G G are caps for inclosing the valve E in

the chamber A<sup>2</sup>, having integral perforated lugs a', by means of which the caps G G are bolted to the valve-casing A<sup>2</sup>, as shown at g g.

F is the valve-operating rod, having an oblong square form intermediate of its ends, corresponding in size to the recesses E' in the sides of the valve, (more fully shown in Figs. 3 and 4,) for a purpose to be presently set forth. Outside of the body of the valve the rod F is made round in order that it may fit, move in, and be packed water-tight by stuffing-boxes f, as indicated in Fig. 2. The valve E is provided in its upper part with an enlarged recess, E', on each side of the rod F, connecting with the central recess, e, in order that water may pass through the valve and into the conduits A' without obstruction from the rod F.

H is a grooved pulley, suitably secured to the valve-rod F. Said pulley is to be provided with an operating rope or chain extending to the top of the building in which the motor is employed, in order that its operation may be governed from any part of the traverse of the elevator to which it is applied.

75 K is the water-induction pipe, which may be made integral with the cap G, as shown, and thus introduce the water through the side of the valve-chamber; or the supply of water may be introduced through the top thereof, as may be deemed most advisable.

By operating the pulley H the oblong square portion of the rod F will engage with the side walls of the valve and cause it to oscillate in one direction or the other, and by so doing bring the central recess, e, in line with either of the conduits A', and thus apply the water to the corresponding part of the wheel J, which may thus be promptly driven in either direction as occasion may require.

90 By shifting the valve to the position shown in Fig. 1 the water-supply will be cut off from both conduits, and the operation of the wheel J will cease. The pressure of the water on the body of the valve will make a water-tight joint with the valve-seat, and thus prevent leakage or waste when the motor is not in use.

Having explained the construction and operation of my improvement, what I claim as

100



new, and desire to secure by Letters Patent,  
is—

5 In a reversible water-motor, the combination of the water-wheel, the casing having inclined recessed extensions terminating in a circular valve-chamber, the valve having a central water-way provided with an enlargement in its upper part, as described, and the valve-operating shaft, all constructed and ar-

ranged to operate as and for the purpose set forth.

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

JESPER SMITH.

Witnesses:

WM. GUNSAULES,  
AUG. P. HANN.