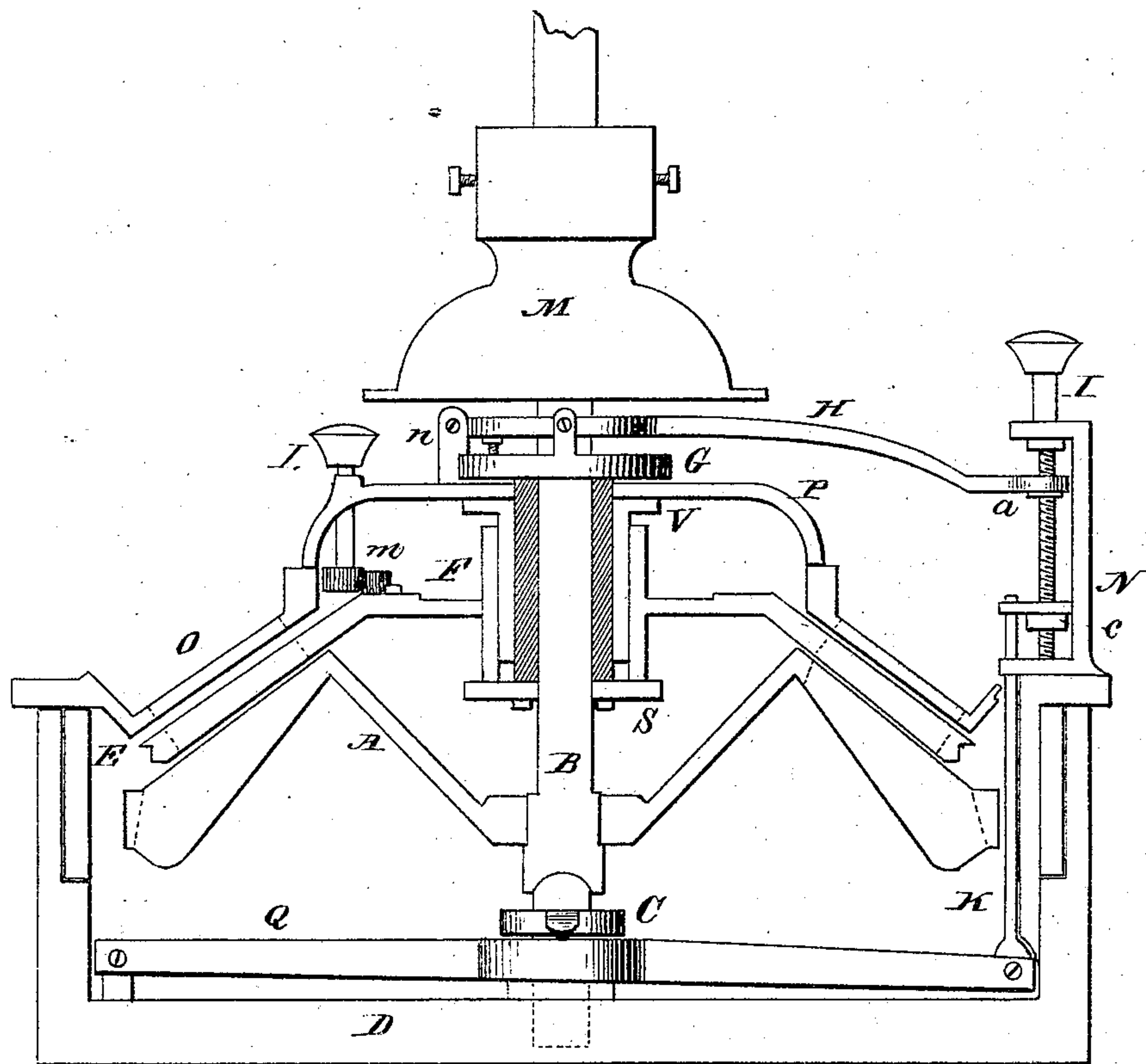


J. HOLTVOIGT.
Water-Wheels.

No. 153,712.

Patented Aug. 4, 1874.



Witnesses:
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JOHN HOLTVOIGT, OF DAYTON, OHIO.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **153,712**, dated August 4, 1874; application filed May 25, 1874.

To all whom it may concern:

Be it known that I, JOHN HOLTVOIGT, of Dayton, in the county of Montgomery and State of Ohio, have invented certain Improvements in Water-Wheels, of which the following is a specification:

The first part of my invention relates to an adjustable device, by which the gate may be raised and lowered as the circumstances may require. The second part of my invention relates to an adjustable device connected with the gate adjustment for the purpose of lowering or raising the wheel at pleasure.

Figure 1 is a side elevation of the water-wheel with the improvements attached, and parts of which are shown only in section.

D represents a spider with four arms arranged at a right angle to each other. To this spider is bolted the outer rim or case E. A circular orifice at the center of the spider supports the step C. The step is provided with a feather to prevent its turning within its orifice. Near the top is a flange, and on either side of which are lugs, which rest against the lever Q. In other respects the step is constructed in the usual manner. The wheel-shaft B has its lower bearing upon the step, and its upper bearing within the pedestal M, which is provided with pads adjusted to bear snugly against the shaft. In the drawing, Fig. 1, the pedestal is shown elevated above its true position, which is on the crown-plate P, to which it is securely bolted. The lever H passes through a slot in its side, and which orifice should be protected by a diaphragm connected to this lever. The crown-plate P is bolted onto the chute-case O. To one side of the crown-plate is a bearing for the gate-rod L. To the lower end of this rod is attached a pinion, which gears into the rack m, which is bolted onto the register-gate F. By this means the gate is opened and closed. On the top of the crown-plate is attached the post n, to which the lever H is hinged. The opposite end of the lever rests on the nut a, which is carried by the rod I. The inner end of the lever is circular, embracing the shaft, and to this circular part is suspended, by posts on either side, the sleeve G. The upper end of this sleeve has a journal fitted to the shaft. By means of screws passing through

the flange of the sleeve, and their ends coming in contact with the crown-plate, the descent of the sleeve to a given point is readily adjusted. To the lower end of the sleeve is attached the plate S, which supports the register-gate. The gate has a sleeve at its center, which embraces the intermediate sleeve V, which is bolted to the under side of the crown-plate. This arrangement prevents any lateral deflection of the gate. The wheel A is secured to the lower end of the shaft, as shown in section at Fig. 1, the buckets being shown in outline. The outer line of the buckets is at angle of forty-five degrees, and the gate, which is intermediate between the wheel and the chute-case, all have parallel surfaces. The chute-case and the register-gate have corresponding openings, and these openings direct the water so as to act favorably on the wheel. Q is a lever having a central circular orifice embracing the step, which it supports. The left end of the lever is supported by a post fastened to an arm of the spider, and the right end is sustained by the rod K, to which it is jointed. This rod passes through a hole in the standard N, and to the top of which a plate is attached, which embraces the rod I. The nut c rests within a square slot of this plate, thus preventing the nut turning when the rod is turned. The standard is bolted onto the chute-case, and gives support at the top and bottom to the rod, which is so held that it cannot move vertically. Thus, by turning the rod, the nut is moved up or or down, carrying with it the lever and the impending parts; and by this means the wheel is raised or lowered at pleasure, and the gate is carried by the same movement.

The connection with the step may be broken, and the raising and lowering device used only to move the gate vertically, a small space only being allowed between the chute-case and the wheel for the purpose.

In the operation of lowering the gate and wheel, the gate is only lowered until the adjusting-screws in the flange of the sleeve come in contact with the crown-plate, then as the rod is turned the wheel continues to descend, leaving the gate supported by the crown-plate, and the nut a moves down within the slot of the lever. The movement of

a register-gate is obstructed by the accumulation of sand between the surfaces that come in contact, and as by this device the surfaces are separated the gate is always moved without difficulty.

What I claim as my invention is—

1. The combination and arrangement of the rod I, with its nut *a*, standard N, lever H, sleeve G, plate S, sleeve V, crown-plate P, and

register-gate F, substantially as described, and for the purpose specified.

2. The rod I, with its nuts *a* and *c*, in combination with the operating mechanisms for raising and lowering the wheel and gate, substantially as set forth.

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