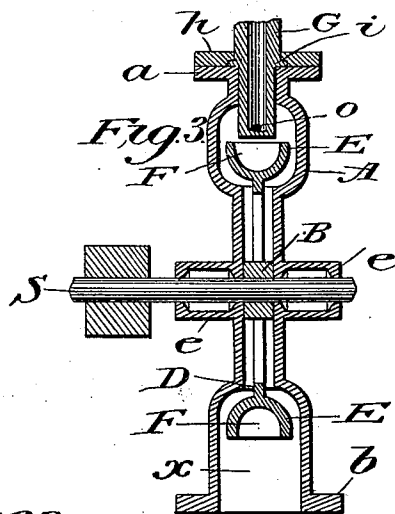
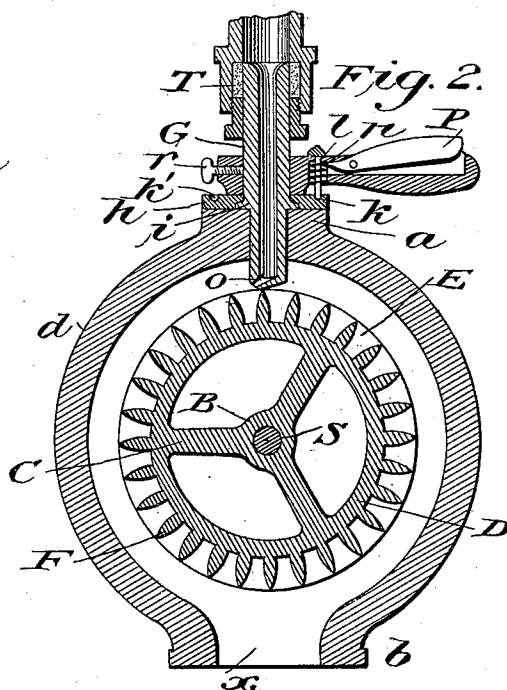
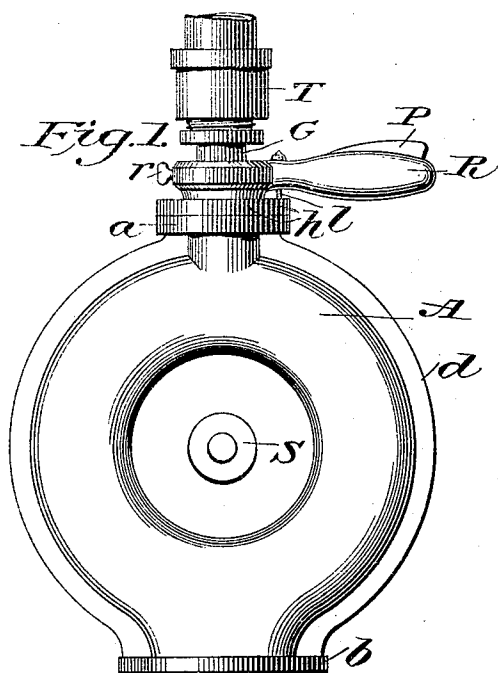


(No Model.)

O. PARENT & J. A. GRENIER.
WATER WHEEL.

No. 551,093.

Patented Dec. 10, 1895.



Witnesses,
E. J. Brissette
J. B. Lumbard

Inventors,
Ovide Parent
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UNITED STATES PATENT OFFICE.

OVIDE PARENT AND JOSEPH A. GRENIER, OF MONTREAL, CANADA; SAID
GRENIER ASSIGNOR TO SAID PARENT.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 551,093, dated December 10, 1895.

Application filed December 7, 1893. Serial No. 493,010. (No model.)

To all whom it may concern:

Be it known that we, OVIDE PARENT and JOSEPH ARTHUR GRENIER, subjects of the Queen of Great Britain, residing at Montreal, in the county of Hochelaga and Province of Quebec, Canada, have invented a new and useful Water-Wheel, of which the following is a specification.

Our invention relates to improvements in water-wheels in which a vertical wheel operated by one or more jets of water rotates within a circular casing; and the objects of our invention are, first, to provide a higher percentage of efficiency of power, and, second, to afford the means of reversing the movement of the wheel at will. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view of the wheel ready for use. Fig. 2 is a vertical longitudinal section of the wheel and casing, and Fig. 3 is a vertical transverse section of the same.

Similar letters refer to similar parts throughout the several views.

The shell A, the flanges *a b d*, and the bearings *c* constitute the casing. It is cast in two halves and bolted together along the flange *d*.

X is an opening at the bottom of the casing to allow the discharge of the water.

The wheel is composed of the hub B, the spokes C, the rim D, the shrouding-plates E, and the pallets F. The pallets F have the shape of a wedge with a convex surface on each side. The curvature of the surfaces of the pallets F is such that the water jet always strikes perpendicularly on them. The wheel is fixed onto the shaft S with a key or pin W. Sufficient space is left between the outer circumference of the wheel and the inner circumference of the casing to allow a free and easy discharge of the water.

The jet-pipe G has the shape of a tube, the lower end of which is closed. It has a flange *i* and a detached flange *h*. At the bottom of the jet-pipe G the opening *o* is bored at such

an angle that the water coming out of it will strike perpendicularly on the curvature of the pallets of the wheel. The jet-pipe G extends upward into the stuffing-box T.

The handle R, which serves to reverse the jet and thereby the movement of the wheel, is made to be slipped over the jet-pipe G and fixed thereto by the set-screw *r*. The handle R and the jet-pipe G are kept in either position by means of the check-pin *l*, which is held down into the recess *k* of the detached flange *h* by a spring *n*. The lever P serves to raise the pin *l* when it is required to reverse the movement. The detached flange *h* is slipped over the jet-pipe G and screwed onto the flange *a* of the casing, thus holding the jet-pipe G into place.

When it is required to reverse the movement of the wheel, take hold of the handle R, at the same time pressing lightly on the lever P; then turn the handle around from right to left until the pin *l* comes over the other recess *k'*.

What we claim as our invention, and desire to secure by Letters Patent, is—

In a water wheel, a wheel located in a suitable casing and having convex pallets F, the jet-pipe G provided with the angular opening *o* and the flange *i* and fitting within said casing, and the plate *h* fitting upon the flange *i* and having recesses *k* and *k'* in its upper surface combined with the handle R rigidly secured to the said jet pipe G, the lever P pivotally attached to the said handle R, the check pin *l* attached to the lever P, the spring *n* surrounding said check pin *l*, and the set-screw *r* for securing the handle R to the jet-pipe G, all substantially as and for the purposes described.

OVIDE PARENT.
J. A. GRENIER.

Witnesses:

EUG. BRISSETTE,
WILLIAM CONNOLLY.