

W. G. PERCIVAL.
Water-Wheels.

No. 152,861.

Patented July 7, 1874.

Fig. 1.

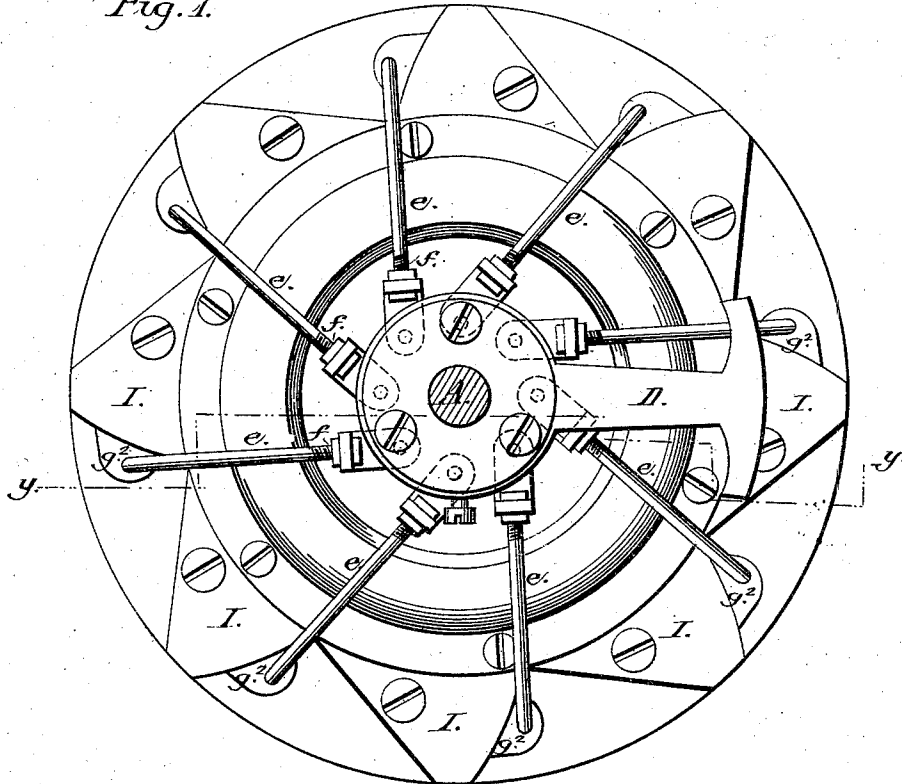
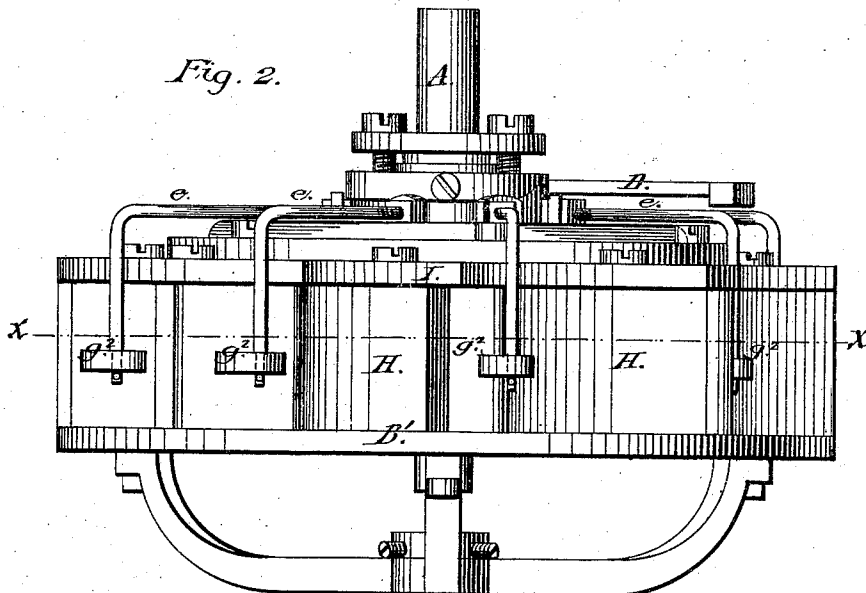


Fig. 2.



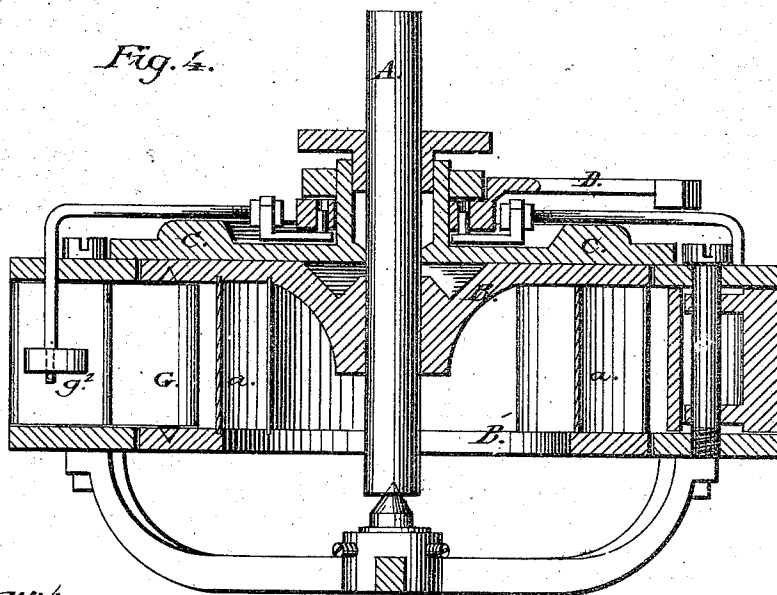
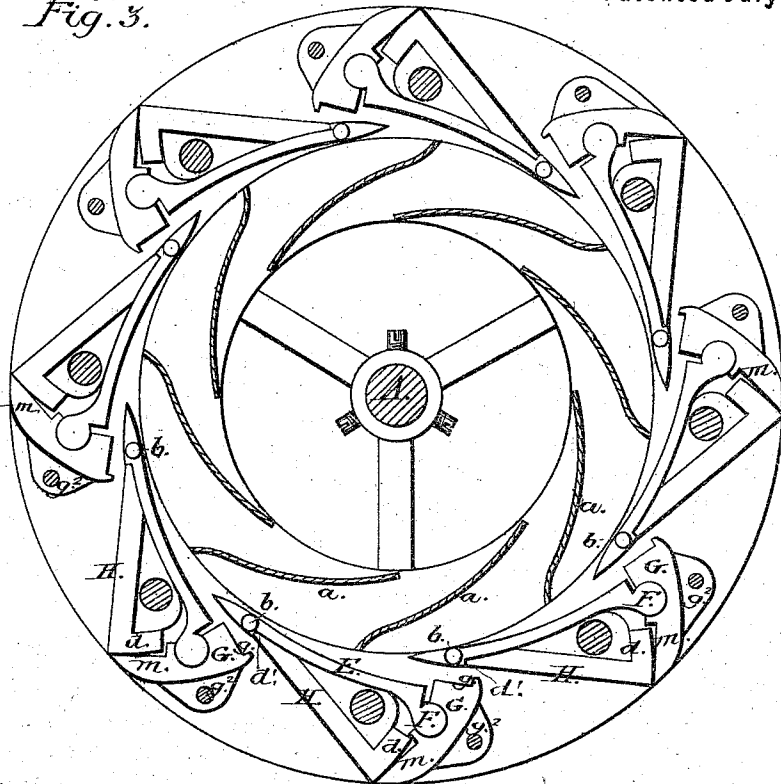
Witnesses:
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Inventor:
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Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM G. PERCIVAL, OF CAMDEN, NEW YORK.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **152,861**, dated July 7, 1874; application filed June 12, 1874.

To all whom it may concern:

Be it known that I, WILLIAM G. PERCIVAL, of Camden, in the county of Oneida and State of New York, have invented a new and useful Improvement in Water-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming a part of this specification.

My invention relates to an improvement in horizontal or turbine water-wheels. It consists, first, in an improved top plate or head of wheel so fashioned, taking, as nearly as may be, the form or horizontal contour of the chutes, and the associate parts composing the same. It consists, secondly, in the improved form of the chute, the same having its gate pivoted at two points, one of the points forming a hinge or axis to control the general movement of the gate, and the other forming an axis to control especially the movement of the cut-off or gate proper, causing it to self-pack.

Figure 1 is a plan or top view of the water-wheel, showing the mechanism for opening and closing the gates. Fig. 2 is a side elevation of the same. Fig. 3 is a horizontal section on line *xx* of Fig. 1. Fig. 4 is a vertical section on line *yy* of Fig. 1.

Similar letters of reference refer to like parts throughout the figures.

A is the main shaft and axis of the wheel, composed of the buckets *a a a* and upper and lower plates of same, B B'. A plate, C, which fits snugly over the head of the wheel, surrounds the shaft, and is provided with a stuffing-box, formed in the usual manner, to make a tight joint about the main shaft above the water-wheel.

Surrounding the stuffing-box is a collar, into which are secured the several rods extending to the gates, and which, when actuated by the lever, serve to open and close the same.

The lever D should be provided with a rack to engage a pinion fixed on a suitable shaft to be moved from above; but as this is no

part of my invention, I have omitted it from the drawings.

The swing-piece E of the gate, which moves about its pivot-joint *b*, is so fashioned that water entering the gate will be deflected in the most economical way against the buckets of the moving wheel; and it will be observed here that the pivot is nearly, but not quite, at the end of the swing-piece E, the point extending beyond the swing-piece being formed designedly to assist the deflection, avoiding at the same time crooks or recesses in the chute.

The knuckle-joint F, which attaches the gate proper to the swing-piece, allows said gate to swing freely as it is opened, being limited in its motion by shoulders *d d*, against which it fits snugly when opened or closed, forming a perfect self-packing gate.

The rods *e e e*, &c., are adjustable at the points *f f f*, &c., and are attached permanently to lugs *g² g² g²*, formed on the gates. When the rods are, by the action of the lever, drawn to close the gate proper, the rabbit *g* fits snugly over the shoulder *d*. The trail *m* of said gate, bearing the while against the return of the pitch-plate, assists in keeping it in place to form a perfect packing when closed.

The pitch-plate H is intended to be directly in line with the tip end of the swing-piece, allowing the water to enter freely to the buckets, and forming a perfect pitch of the water to all the buckets in the moving wheel.

The rim I, as before stated, follows the contour of the chutes, and allows the water to fall unobstructed to them, which makes a gain for my wheel over that of any other in the market.

I am aware that wheels have been invented, and are now in use, with many of the features shown in my drawings, and I wish to confine my claim to the form of the scalloped plate, and the peculiar form of the chute and the construction of the self-packing gate.

I am aware of the patent granted Temple, Stout & Mills, No. 22,701, of February 8, 1859,

and I do not claim anything shown in said patent; but

What I do claim, and desire to secure by Letters Patent, is—

The self-packing gate composed of the swing-piece, with its pivot-joint *b* hanging in the top and bottom rims close to the buckets of the running wheel, causing no recess or

crook in the chute when partly open, and knuckle-joints *F*, in combination with a turbine or horizontal water-wheel, as and for the purpose set forth.

WILLIAM G. PERCIVAL.

Witnesses:

A. G. WOOD,

W. R. PADDOCK.