H. Brown,

Water Wheel,

No. 54,288. Patented May 1, 1866

Fig. 1.

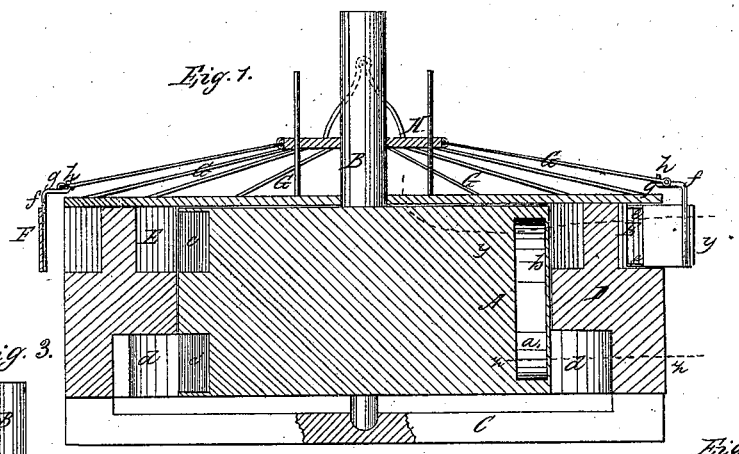


Fig. 3.

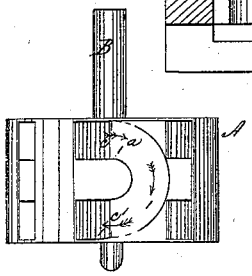


Fig. 4.

Fig. 5.

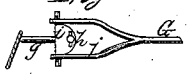
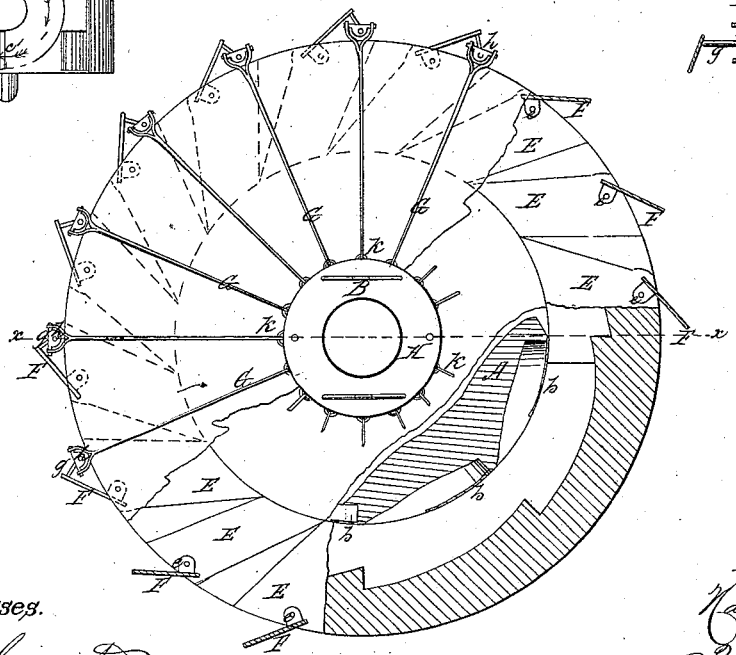


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

HARVEY BROWN, OF CHALFANT, OHIO.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **54,288**, dated May 1, 1866.

To all whom it may concern:

Be it known that I, HARVEY BROWN, of Chalfant, in the county of Champaign and State of Ohio, have invented a new and Improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical central section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan sectional view of the same, *y y* and *z z*, Fig. 1, showing the lines of section; Fig. 3, a detached and diminished view of the wheel; Figs 4 and 5, views of the joints by which the gate-rods are connected to the gates.

Similar letters of reference indicate corresponding parts.

This invention relates to certain new and useful improvements in horizontal water-wheels; and it consists, first, in an improved arrangement of gates and the mode of operating the same, and in an improved form of buckets, as hereinafter fully shown and described, whereby it is believed that a large percentage of the power of the water is obtained.

A represents the wheel, placed on a vertical shaft, B, the lower end of which is stepped in a cross-bar, C, attached to the under side of the circular case D, in which the wheel works.

The buckets of the wheel are formed by having semi-annular recesses *a* made in the periphery of the wheel, as shown in Fig. 3, and having the rear parts of these recesses covered by metal plates *b*, the water entering at *c* and being discharged at *c'*, as indicated by the arrows 1 in Fig. 3.

The case D has a series of horizontal chutes, E, made in it. These chutes have an oblique position relatively with the buckets of the wheel, as shown in Fig. 2, so that the water may strike or act upon the buckets about at right angles. There are twice as many chutes as there are buckets, so that there will be a continuous action of the water upon or against the buckets, and the lower part of the case D, next the wheel, has a recess, *d*, made in it to allow of the free escape of the water from the wheel.

In the outer part of each chute E there is a gate, F, which works on joints *e*, so placed or arranged that the gates when open will bear against, or be in contact with, one side of the chutes, so as to offer no obstruction to the free passage of the water into the chute, as shown in Fig. 2. These gates F, at their outer ends, have rods *f* attached, which extend upward, and are curved or bent over at right angles at their upper ends, as shown at *g*, and the ends of the parts *g* are bent upward to form pintles or pins *h*, on which plates *i* are fitted to turn loosely, the ends of the plates being provided with tenons, which fit loosely in forks *j*, at the outer ends of rods G, the inner ends of the latter being attached by joints *k* to a ring, H, which is fitted loosely on the wheel-shaft B, so that it may rise and fall freely thereon.

From the above description it will be seen that by raising and lowering the ring H the gates F may be opened and closed, all the gates moving simultaneously. The water, in passing through the chutes, acts by impact against the upper parts of the buckets, and in descending by gravity and force through the lower parts of the buckets, reacts upon said parts. The annular shape of the buckets admits of the water passing through them without the current or stream being broken, and the water is allowed to act in the most efficient manner upon or against the buckets, passing through smoothly and freely, so as to give its effect and then leave the wheel without serving as a drag to the latter. The manner of attaching the rods G to the gates F admits of the latter being opened and closed with the least possible degree of friction.

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

1. A water-wheel provided with semi-annular buckets *a*, arranged, as shown, in connection with a series of chutes, E, in the case D, which encompasses the wheel, substantially as described.

2. Operating, opening, and closing the gates F by means of rods G, attached at their outer ends, by gimbal or equivalent joints, to crank-rods secured to the outer ends of the buckets, and attached at their inner ends to a ring, H, fitted loosely on the wheel-shaft B, substantially as shown and described.

HARVEY BROWN.

Witnesses:
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