M. MILLARD.

Water-Wheels.

No. 126,562. Patented May 7, 1872.

Fig. 1.

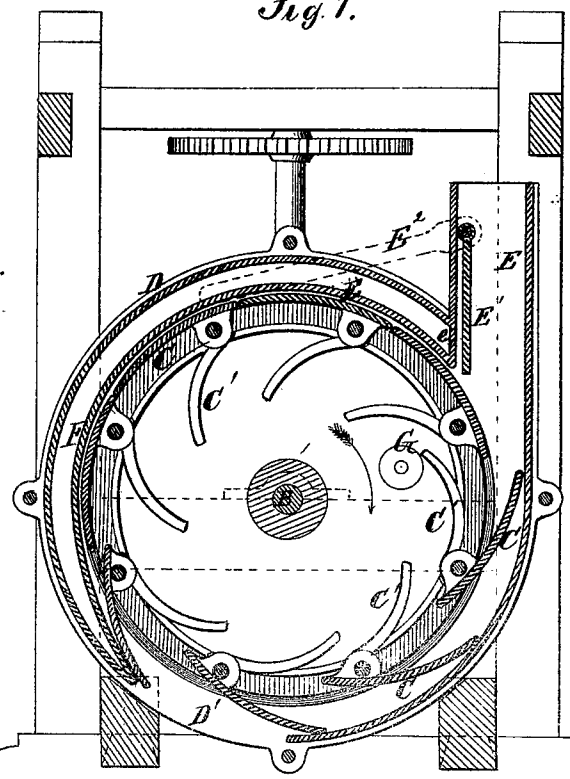
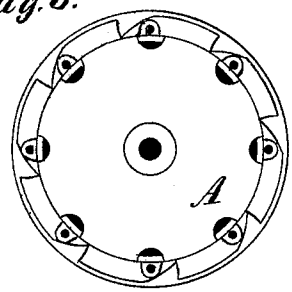


Fig. 3.



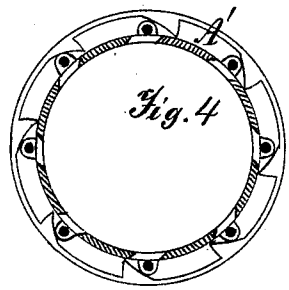


Fig. 4

Fig. 2.

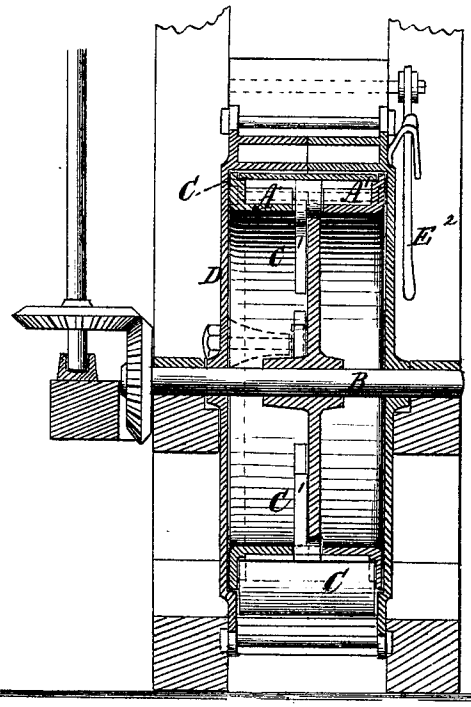
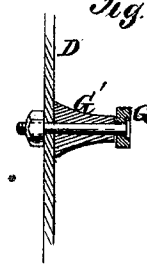


Fig. 5



Witnesses.
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UNITED STATES PATENT OFFICE.

MORDECAI MILLARD, OF FRANKLIN, OHIO.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 126,562, dated May 7, 1872.

Specification describing a certain Improvement in Water-Wheels, invented by MORDECAI MILLARD, residing at Franklin, in the county of Warren and State of Ohio.

This invention relates to that class of water-wheels in which the buckets are pivoted to the rim of the wheels, and so arranged that in coming opposite to the flume they will be turned outward or projected and exposed to the action of the water, but after passing the discharge-opening in the case they will be again turned inward and closely hug the rim of the wheel to prevent the water from being carried beyond the said discharge-opening. My improvement consists in the employment of an eccentric plate within the case, which extends from the discharge-opening to the flume, and is for the greater portion of its length in very close proximity to the rim of the wheel. This plate serves the twofold purpose of closing the buckets in against the rim of the wheel and preventing the water by its reaction to flow in the opposite direction to that in which the wheel is turning, which would necessarily retard the movement of the wheel and diminish its power. My improvement further consists in the combination, with inwardly-projecting arms on the buckets, of a stationary anti-friction roller, so arranged in relation to such arms that the moment the outer end of the bucket escapes from under the eccentric plate into the flume the roller will turn the arm and cause the bucket to be projected against the rim of the case.

Figure 1 is a sectional elevation of my improved water-wheel arranged to receive the water vertically. Fig. 2 is a transverse section thereof. Figs. 3, 4, and 5 are detail views.

The same letters of reference are used in all the figures in the designation of identical parts.

In the example shown the water enters the wheel vertically; but it may, if desired, be received horizontally.

The wheel may be formed of two parts, A and A′, suitably bolted together, the part A being provided in the center of its disk with a suitable hub for fastening it to the shaft B, by which the power is transmitted. The buckets C are curved to correspond with the curvature of the rims A and A′, between lugs *a* and *a′* of which they are pivoted upon bolts, serving at the same time to fasten said rims together. The buckets are so arranged around the wheel that when turned to lie nearly in contact with the wheel the toe of one will touch the heel of the next one. The wheel revolves in a concentric case, D, constructed with a flume, E, on one side and a discharge-opening, D′, near the bottom of its rim. The flume is controlled by a gate, E^1, operated by a lever, E^2, or in any other preferred manner. One side of the flume extends down into the case to near the periphery of the wheel, as at *e*, and is connected to the end of a plate, F, which is curved around the wheel, and is at its other end connected to the rim of the case at the upper edge of the discharge-opening therein, as clearly illustrated in Fig. 1. This plate, being for the greater portion of its length in close proximity to the wheel, keeps the buckets close to it, preventing water from being carried around after its force is spent, and also prevents the water by reaction to rise on the wheel in rear of the flume.

It is believed that the centrifugal force developed by the rotation of the wheel will cause the buckets to be projected as soon as they successively escape from under the plate F into the flume; but to make this action certain I propose to construct each bucket with an inwardly-projecting arm, C′, which is acted upon by an anti-friction roller, G, turning upon a stationary stud, G′, fastened to the case and projecting into the rim A′ of the wheel so as to bring the roller in line with the arms of the buckets, as shown in Fig. 2, the said roller being so arranged that it will turn the buckets outward, by means of their arms, the moment they escape from under the plate F.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The buckets C pivoted to the rim of the wheel, in combination with the scroll or plate F, which is arranged as specified, and operates only upon the buckets opposite to it by folding them against the wheel, substantially as set forth.

2. The combination of the arms C′ on the buckets C, and the roller G, arranged to operate substantially in the manner specified.

MORDECAI MILLARD.

Witnesses:

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