

O. J. BACKUS.

CENTRIFUGAL WATER-WHEEL.

No. 171,256.

Patented Dec. 21, 1875.

Fig. 1.

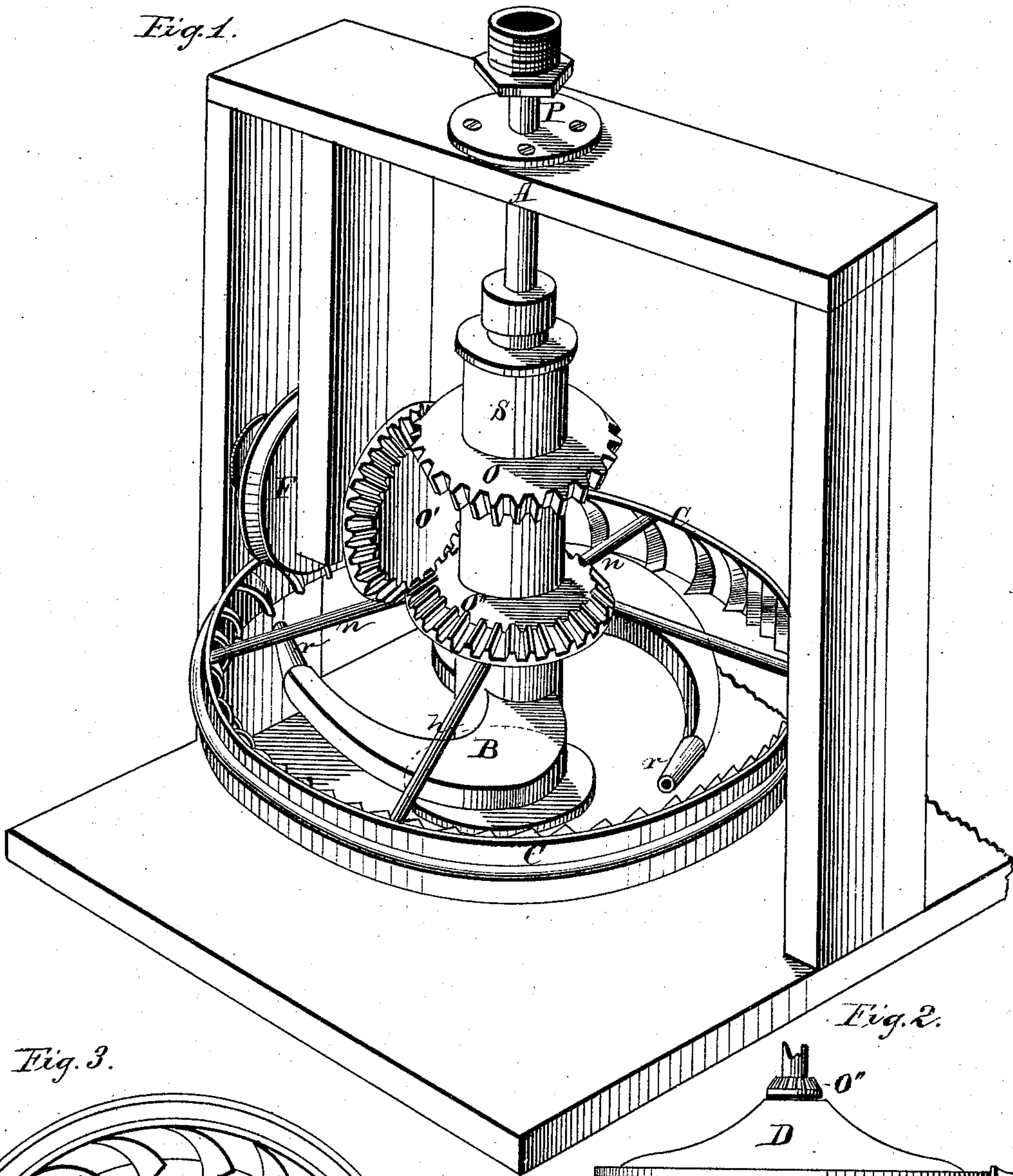


Fig. 2.

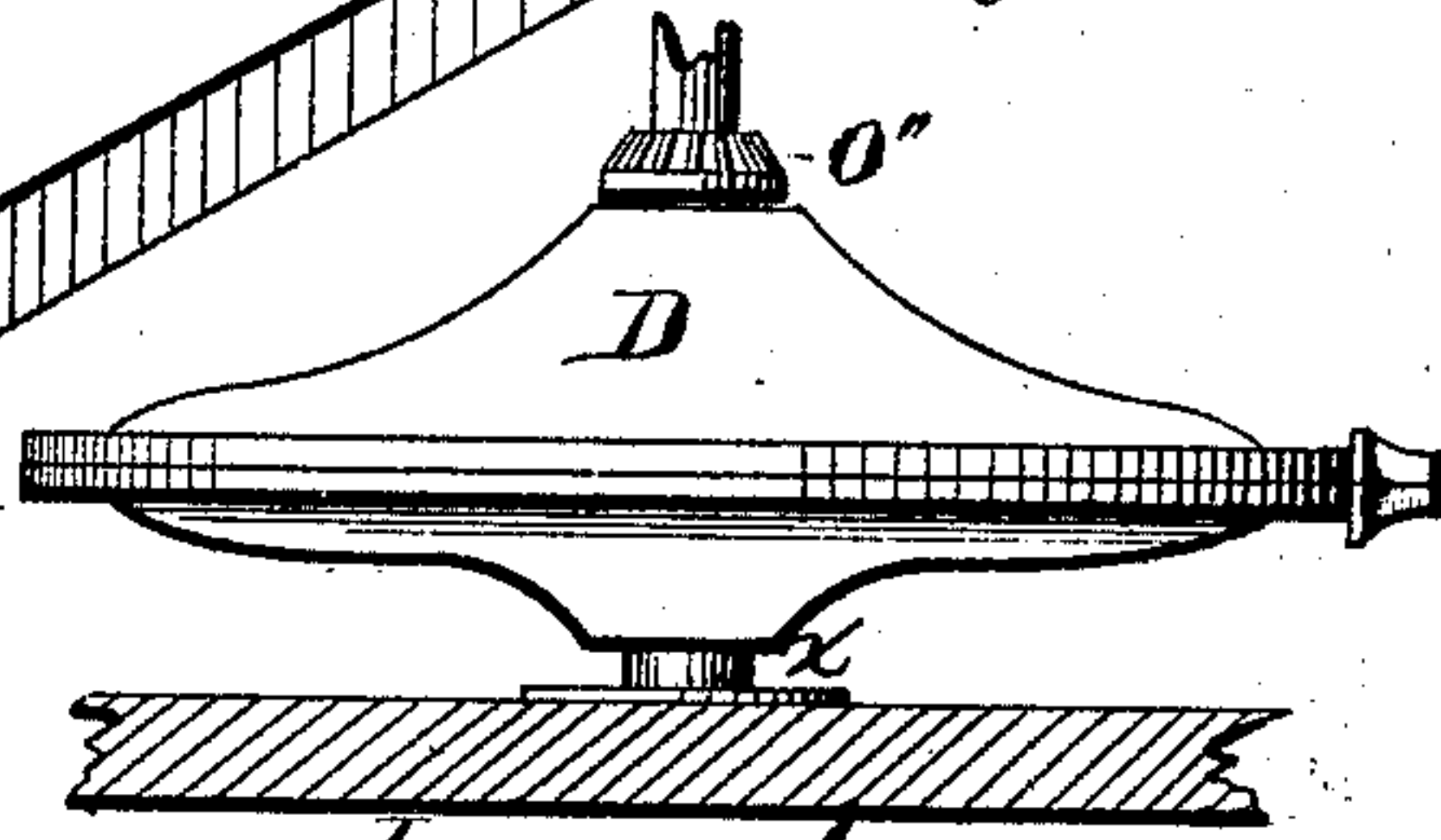
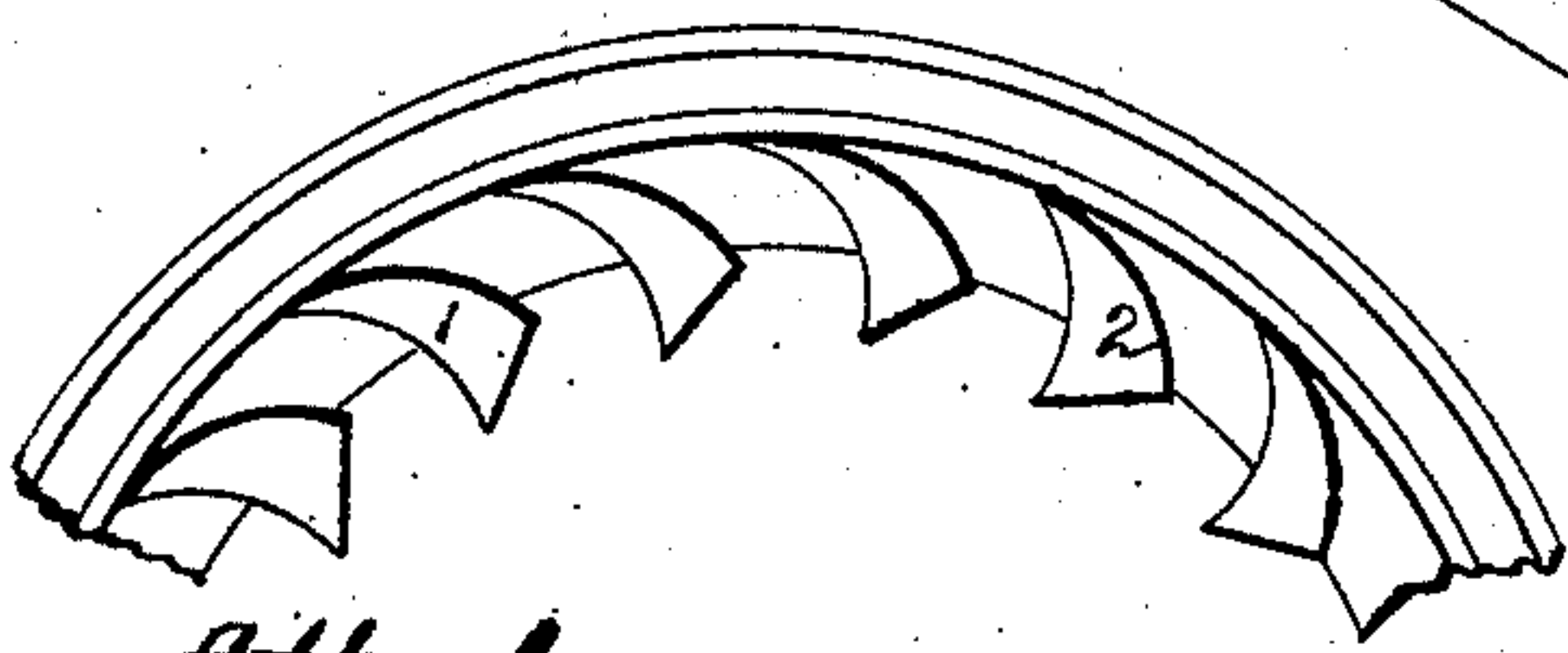


Fig. 3.



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IMPROVEMENT IN CENTRIFUGAL WATER-WHEELS.

Specification forming part of Letters Patent No. **171,256**, dated December 21, 1875; application filed August 20, 1875.

CASE A.

To all whom it may concern:

Be it known that I, OSCAR J. BACKUS, of the city of Newark, in the county of Essex and State of New Jersey, have invented a certain novel and useful Improvement in the Construction and Mode of Operating Centrifugal Water-Wheels, to be applied as motor-powers either in the horizontal or vertical position; and I hereby declare in what manner the same is to be constructed, arranged, and operated, reference being had to the accompanying drawings, which are lettered to correspond with and form a part of the specification.

To enable the public to understand the nature of my said improvement, and those who are skilled in the mechanic arts to construct and operate the same, I will describe it as follows, to wit:

Figure 1 is a perspective view of my improved centrifugal water-wheel or motor-power, which consists of a new combination of the well-known Whitelaw archimedean tapering spiral hollow arms B, forming a part of the revolving water-cylinder S and independent wheel C. These arms B are put in motion by the centrifugal force of the water passing through the same from the cylinder S, which is supplied through pipe P. Said cylinder is secured to and forms a part of the upper bevel-gear *o*, to operate the vertical gear *o'* upon the horizontal shaft F.

The wheel C revolves around the stationary seat or bearing of the pointed or conical lower end of the revolving water-cylinder S, while the upper arms (or spokes) *n n n n* of said wheel form a part of the lower gearing *o''*, which revolves around the cylindrical shaft S when operated by the vertical bevel-gear *o'*, and by the centrifugal force of the water thrown out of the arms B at the jets *r* upon the buckets 1 2. These arms are constructed so that their capacity is increased as they approach the center of rotation, so as to contain a quantity of water at every section thereof inversely proportionate to their velocity at that section. Hence, little of the centrifugal force is lost. These arms increase in breadth

from their jets at the small ends thereof to the center or axis of the machine.

The water, being introduced through the supply-pipe P into the revolving cylindrical water-chamber S, passes directly into the hollow arms B, from whence it is thrown, with all its weight and centrifugal force, out of the openings or jets *r*, at the tapering small end thereof, against the curved linear buckets 1 2, (shown upon the vertical plane of the inner periphery of the wheel C;) or the buckets 1 2 may be arranged upon the outer periphery of the said wheel, and receive the water at an increased leverage.

Fig. 2 is a vertical view of my compound water-motor, inclosed in a case, D, showing the water-cylinder S and supply-pipe P, discharging-nozzle N, when employed or used vertically; but, when horizontally arranged, as shown in the drawings, the water may discharge around the shaft at X, or otherwise.

Fig. 3 is a section of the wheel C, showing the buckets 1 2 on an enlarged scale, which may be varied in form, if desired.

I do not confine myself to any specific form of the case D, Fig. 2, nor to the bevel-gearing *o o' o''*, but prefer to construct those parts to suit the exigencies of the situation, as they do not constitute the novel portions of this invention; but the novelty of my invention consists in the combination of the revolving arms B with wheel C, provided with suitable buckets 1 2, arranged upon the outer or inner periphery thereof, to receive the whole force of the water from the revolving jets *r r*, which causes the wheel C to revolve in opposite directions with great force; also, the mode of hanging the wheel C, to operate in opposite directions, independently of the revolving arms B, by means as above set forth, I believe to be new, and of great value to the public. Therefore,

What I claim as novel and useful, and wish to protect by Letters Patent of the United States, is—

1. The hollow arms B, revolving inside of the wheel C, to operate said wheel in an opposite direction by the force of the discharging

water from the jets *rr* upon the buckets 1 and 2, thereby effecting a double use of the water as a motor-power.

2. A reversible centrifugal water-wheel, C, provided with suitable buckets 1 and 2, operating by means of centrifugal revolving hollow arms B, substantially in the manner and for the purpose set forth.

3. The archimedean hollow arms B upon the water-cylinder S, revolving in opposite di-

rection to the wheel C, which rotates upon the stationary bearing of and around the adjustable cylinder S, arranged substantially as specified.

In testimony whereof I hereunto subscribe my name in the presence of two witnesses.

OSCAR J. BACKUS.

Witnesses:

LEONARD KALISCH,
JNO. J. KING.