J. Bastion,

Water Wheel.

No. 105,163. Patented July 12. 1870.

Fig. 1.

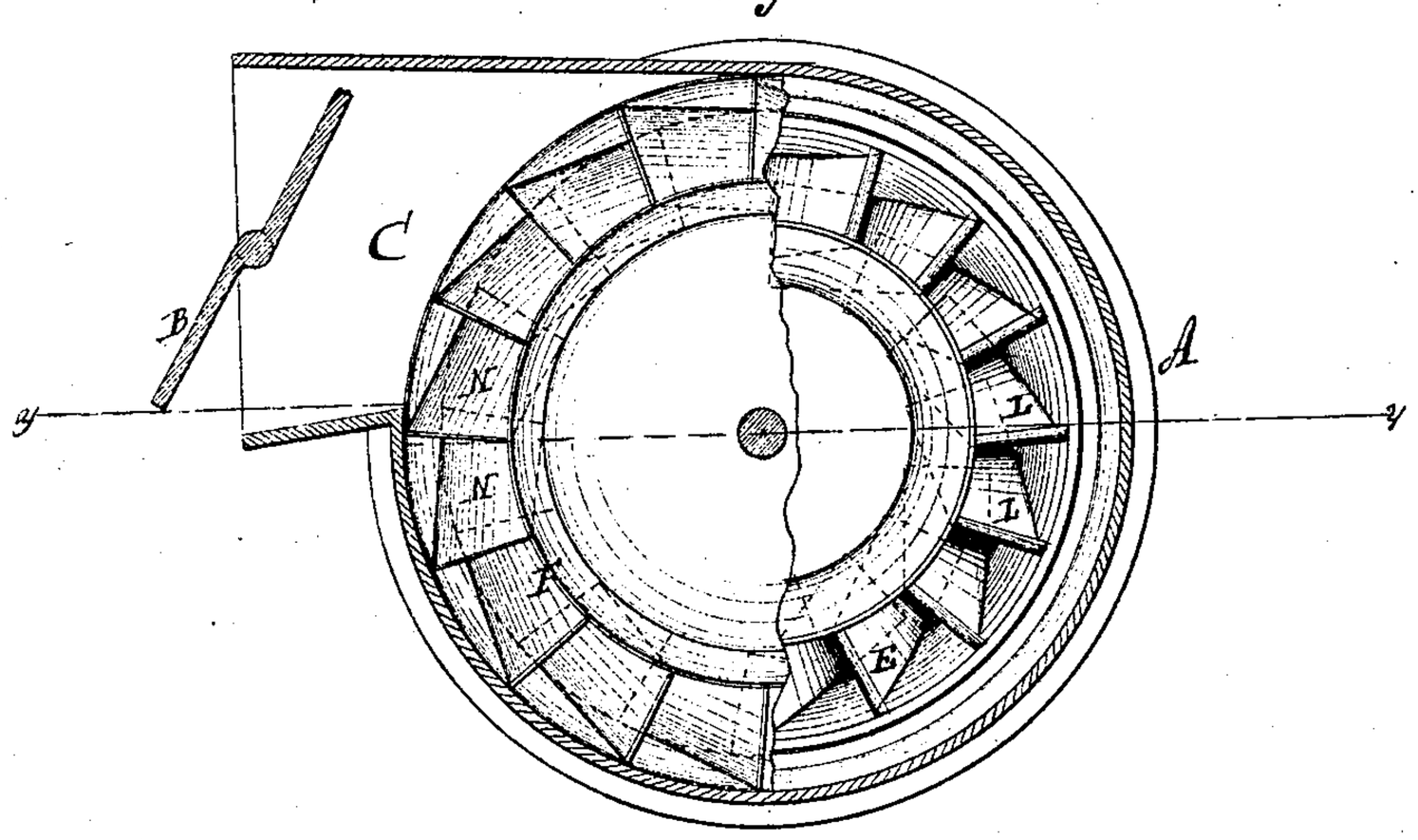
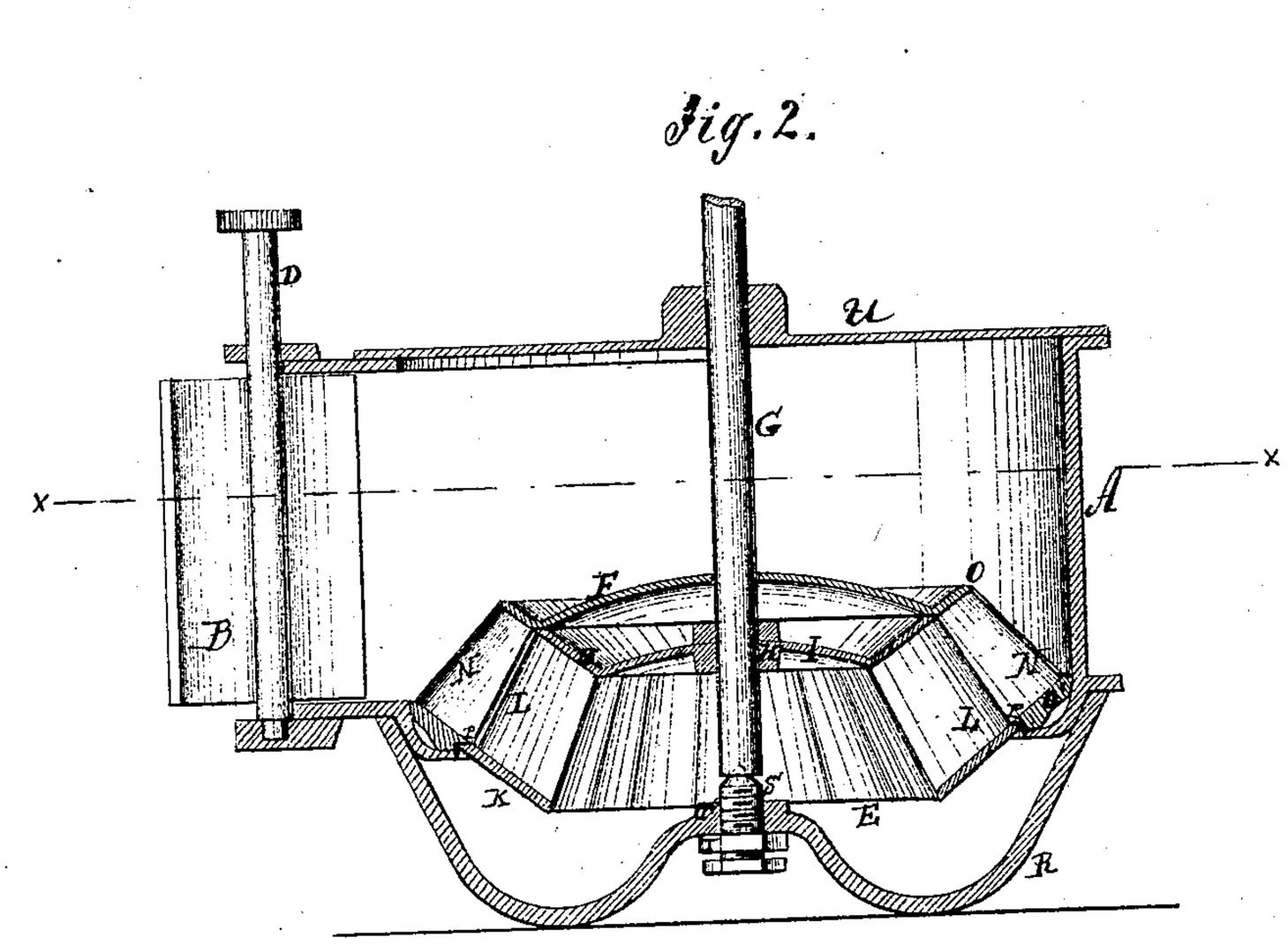


Fig. 2.



Witnesses:

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JOSEPH BASTION, OF CANTON, NEW YORK.

Letters Patent No. 105,163, *dated July* 12, 1870.

IMPROVEMENT IN WATER-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOSEPH BASTION, of Canton, in the county of St. Lawrence 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 thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to a new and useful improvement in water-wheels, whereby they are made more powerful and useful than they have hitherto been; and

The invention consists in the manner of arranging the buckets in the wheel, and in a self-adjusting chute and cone, and arrangement of the chutes, combined and operating as hereinafter more fully described.

In the accompanying drawing—

Figure 1 represents a horizontal section, looking down from the line *x x* of fig. 2, with a portion broken away to show the wheel below the chutes.

Figure 2 is a vertical cross-section of fig. 1 on the line *y y*.

Similar letters of reference indicate corresponding parts.

A represents the curb or casing, into which the water is discharged.

B is the gate, arranged in the sluice passage-way C, on the vertical shaft or spindle D, so that it is balanced, or nearly balanced, and easily operated.

E represents the water-wheel.

F is the chute-cone.

G is the water-wheel shaft.

H is the hub of the water-wheel, in the center of the flanged plate I.

J is the upper flange, and K the lower flange, between which the buckets L are confined.

The difference in the diameters of the upper and lower flanges causes the outer edge of the buckets L to stand at an angle of forty-five degrees with the shaft.

It will be perceived that the buckets are curved, so as to form a hook, and that the line of this hook, running from the outer to the inner rim, if prolonged, will always be in front of the center of the wheel as it rotates. The effect of this is to carry the water toward the center of the wheel, and to counteract the centrifugal power, which usually acts with great retarding force against the outer rim.

A very large percentage of the power imparted by the water has been hitherto wasted by the great weight of water carried at the circumference.

The weight which has been thus thrown on the rim at the longest radius, and therefore at the most unfavorable leverage to carry around, is, to a great extent, removed by my invention, and the water compelled to discharge itself more centrally.

The cone-chute F is constructed in a manner similar to that of the wheel, but the chutes N, which correspond in number with the buckets of the wheel, are straight plates, inclined and confined between an upper flanged plate, O, and a lower flange, O', so arranged that the outer edges of the chutes stand at the same angle of forty-five degrees, while their inner edges just clear the face of the wheel as the latter revolves.

The lower flange of the chute-cone is fitted to the wheel, as seen at P, so that no water can escape between the flanges. In this position the chute-cone may be fastened to the case or allowed to revolve with the wheel.

R represents the bridge-tree, attached to the bottom of the curb, by means of which the shaft and wheel are supported.

S is the step upon which the shaft runs, which step is adjustable in the bridge-tree by means of screw-threads.

The step may be raised or lowered, so as to adjust the wheel to the curb in a proper manner, and is held in position by means of jam-nuts T above and below the bridge-tree.

U is a removable cover on the case A, the center of which guides and supports the shaft.

It will be seen that the weight of the water is sustained by the wheel, and that the water is discharged centrally, and exerts a powerful reactive force on the wheel.

Having thus described my invention,

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

1. The buckets L, having curved overhanging hooks inclining forward in a line from the outer to the inner rim, to cause a reaction of the water under the hook, and to lessen the centrifugal force of the water against the outer rim, as set forth.

2. The buckets L, curved and arranged in a line, which, if extended, will always pass in front of the center of motion, combined with chutes N, constructed and arranged as shown and described.

JOSEPH BASTION.

Witnesses:

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