

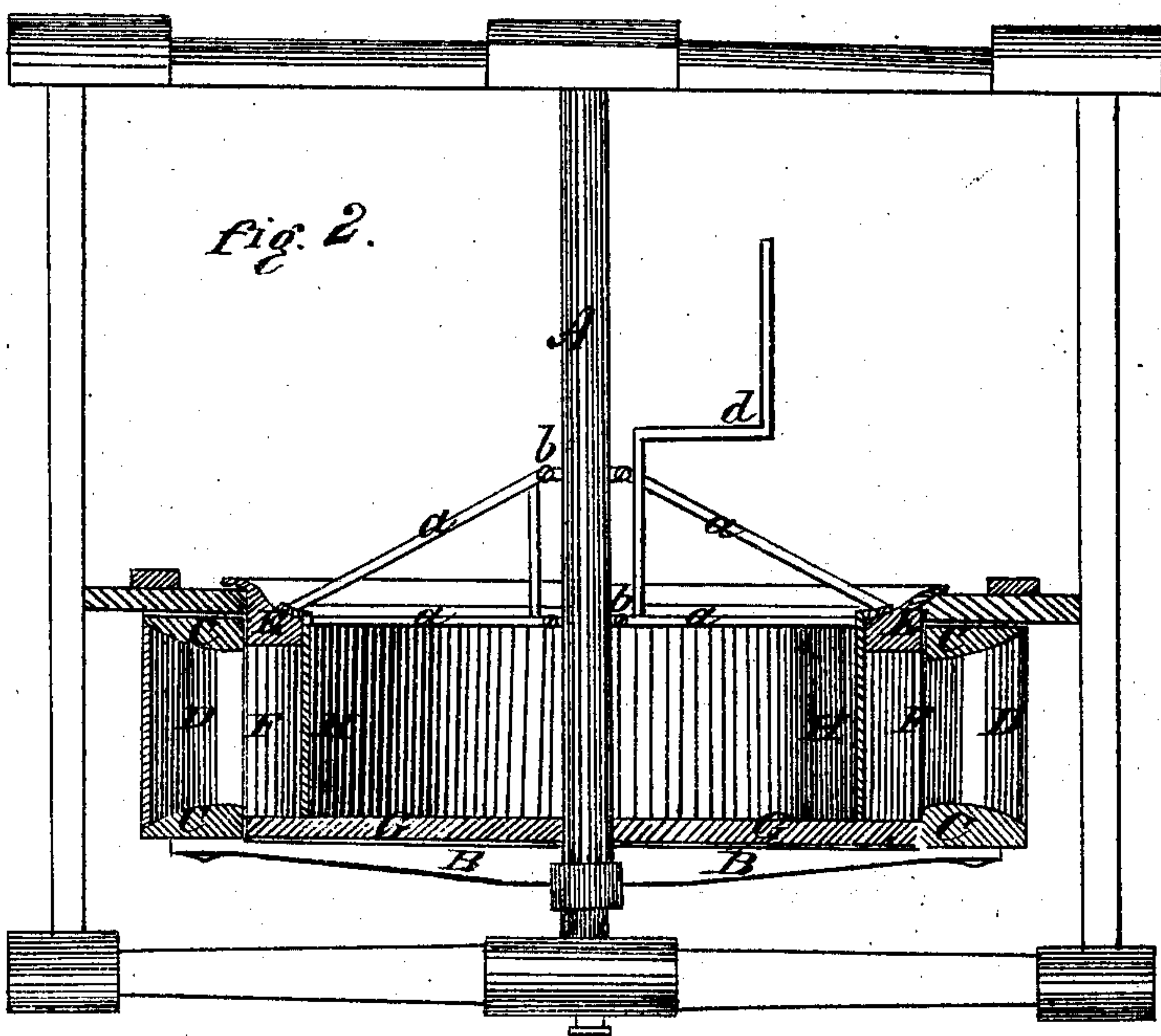
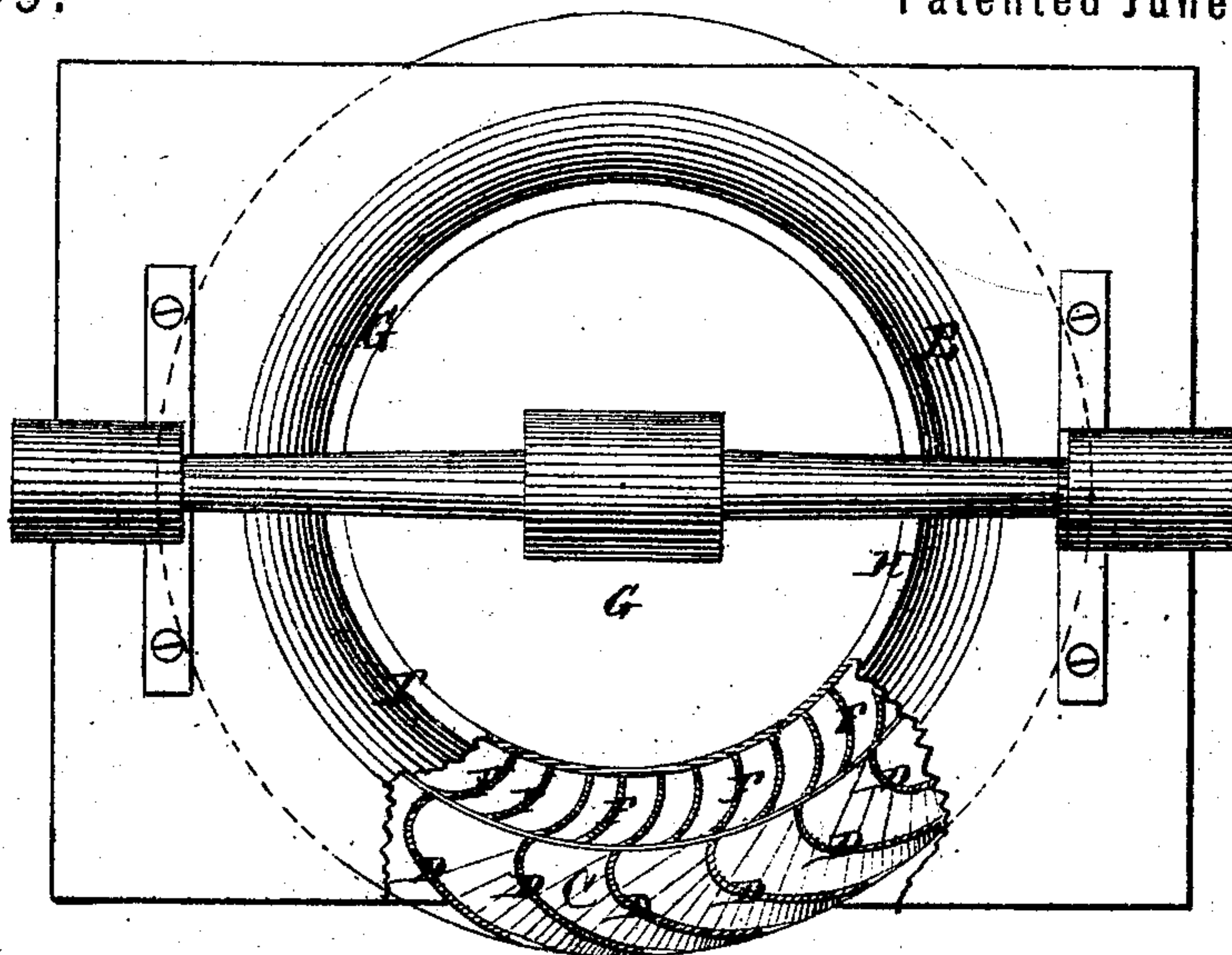
R. BUCHANAN.

Improvement in Water-Wheels.

No. 116,149.

fig. 1

Patented June 20, 1871.



Witnesses.

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a a feaman

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UNITED STATES PATENT OFFICE.

ROBERT BUCHANAN, OF WINSLOW, ILLINOIS.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 116,149, dated June 20, 1871; antedated June 15, 1871.

To all whom it may concern:

Be it known that I, ROBERT BUCHANAN, of Winslow, in the county of Stephenson and in the State of Illinois, have invented certain new and useful Improvements in Water-Wheel; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a water-wheel, as will be hereinafter fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view, and Fig. 2 is a longitudinal vertical section of my water-wheel.

A represents the shaft. B B are the arms attached to the shaft A for the purpose of supporting the rims C C. D D are the buckets held by rims C C. E is the rim for the purpose of holding the chutes F F. G is a plate held by the chutes F F and fitted around the shaft A, for the purpose of preventing the water from escaping through the bottom of the wheel. H is the gate, with arrangement for hoisting. The buckets D D are so shaped as to receive the water upon the inner diameter of the rims C C, with a curve just large enough to turn in a curve all the water applied by the chutes, the curve then enlarging until it is the same as the outer circumference of the wheel. The buckets are also a little wider at the inner end than nearer the middle of the rims C C, giving them a funnel shape by this means; and from the middle of the rims to the outer ends of the buckets they also increase in width so as to give the same number of inches for discharge as would be in the water after leaving the wheel, and running at the same speed as the outer diameter of the wheel when checked and used. This may be applied to other wheels. The chutes F F are shaped so as to form a true curve pointing nearly to the cen-

ter of the wheel on the inside, and nearly with the circle of the rim E on the outside. They are wider on the inside than at the outside, giving them a funnel shape.

I have applied, as shown in Fig. 1, two chutes to each bucket, thereby keeping the water directed nearer in a circle with the wheel; it also allows the chutes to be much shorter for the water to pass through; it also makes more room for the water to get into the center from the reservoir.

The plate G is attached to the lower ends of the chutes F F. The chutes hang on the rim E, and the rim hangs upon the planking in the bottom of the reservoir, as shown in Fig. 2, by which arrangement the plate G is prevented from coming in contact with or bearing upon the arms B B. The gate H consists of a cast or wrought-iron band turned slightly inward at its lower edge, and the upper edge turned outward so as to fit snugly. Rods or bars *a a* connect the gate H with collars *b b*, placed loosely on the shaft A, and a rod, *d*, extends from said collars and connecting-rods, by means of which the gate is raised and lowered at will.

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

1. The combination of the curved buckets D D with the rims C C, curved so as to form water-passages which increase in width from the center each way toward the outer and inner ends, substantially as and for the purposes herein set forth.

2. The combination of the curved buckets D D, the inner curved rims C C, and the plate G with the chutes F F, all constructed and arranged substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of October, 1871.

ROBERT BUCHANAN.

Witnesses:

J. A. TURNBULL,
B. D. McCOMBER.