2 Sheets--Sheet 1.

J. H. STAPLES.

Water-Wheel.

No. 161,643. Patented April 6, 1875.

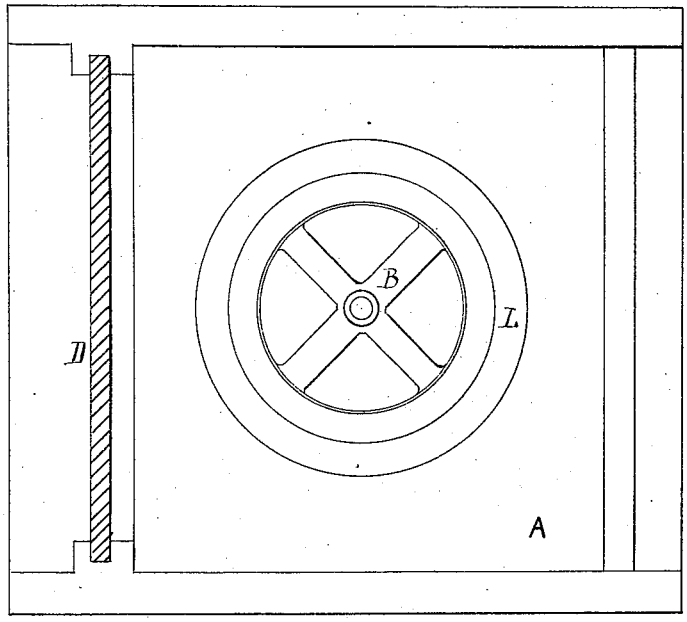

Fig. 1.

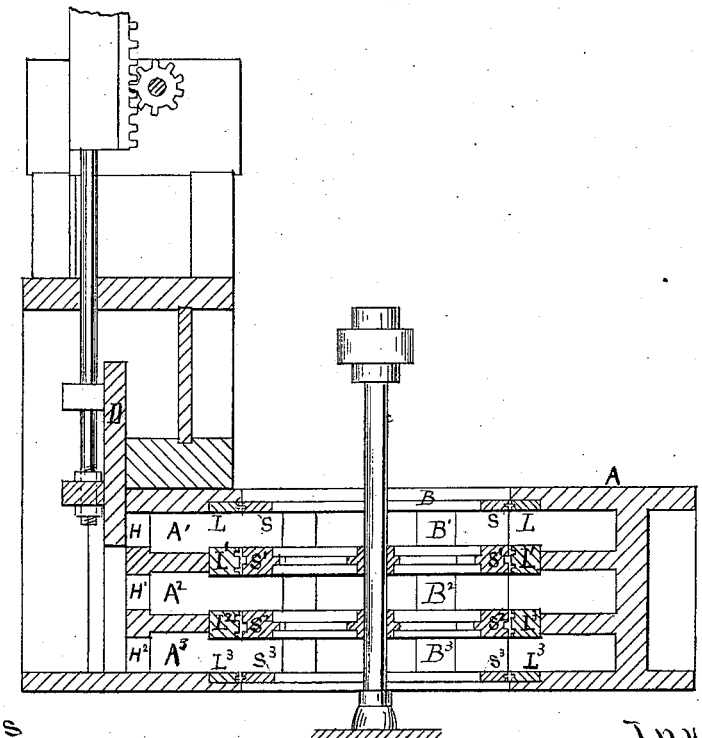

Fig. 2

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per William Edson Atty

2 Sheets--Sheet 2.

J. H. STAPLES.

Water-Wheel.

No. 161,643. Patented April 6, 1875.

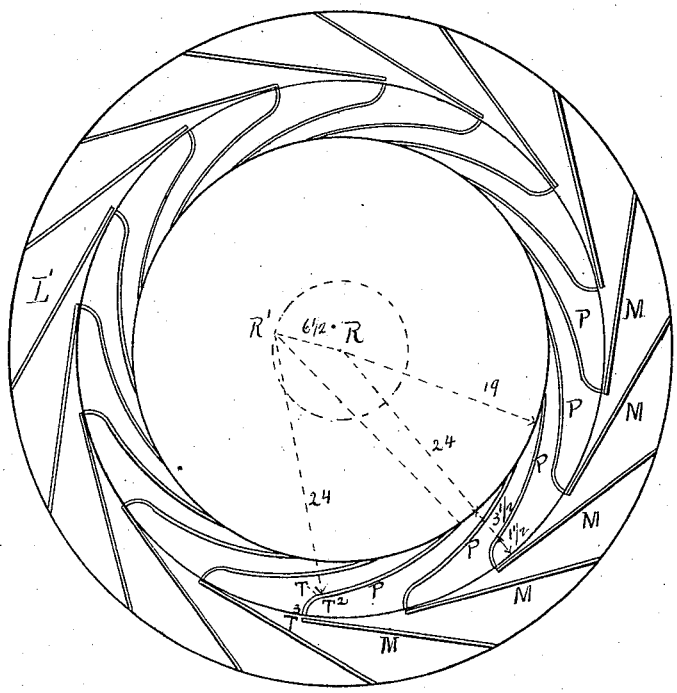

Fig. 3

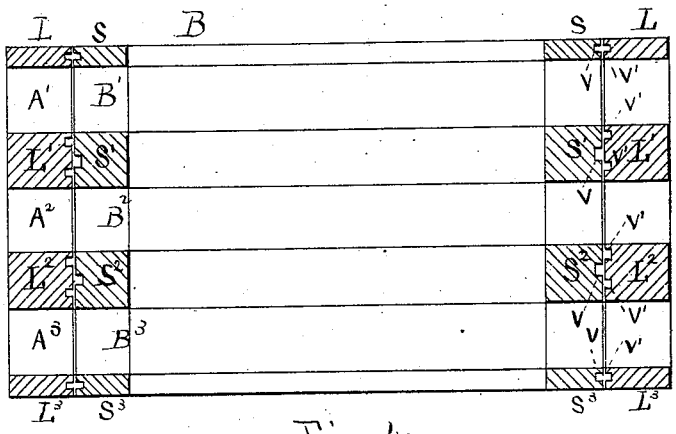

Fig. 4

Witnesses
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H. Floyd Smallwood

Inventor
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per William Edson Atty

UNITED STATES PATENT OFFICE.

JOHN H. STAPLES, OF CHELSEA, ASSIGNOR, BY MESNE ASSIGNMENT, OF ONE-HALF HIS RIGHT TO JOHN J. CLAPP, OF SOUTH BRAINTREE, MASS.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **161,643**, dated April 6, 1875; application filed March 20, 1874.

To all whom it may concern:

Be it known that I, JOHN H. STAPLES, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Water-Wheels, of which the following is a specification:

In my wheel I have a single straight gate, which, when opened more or less, will allow water to flow into one or more horizontal flumes, each horizontal flume inclosing a distinct horizontal section of the wheel, the divisions of sections on the wheel corresponding accurately with the divisions of the flumes, each having an annular groove water-packing.

Figure 1 is a horizontal section, showing the wheel, the casing-disks, and outer casing. Fig. 2 is a vertical section of my invention. Fig. 3 is a horizontal section, showing the position and form of the buckets, and the water-guides; also, illustrating the theory of the water-bucket curves. Fig. 4 is a vertical section of the same.

Let A, Figs. 1 and 2, represent the outer casing of the wheel, and D the gate. L L^1, &c., in all of the figures, shows the ring-casing, which holds the water guides or chutes M M M, &c., Fig. 3. This ring-casing is divided horizontally by the rings L^1 L^2 to correspond with the divisions A^1, A^2, and A^3 of the outer casing. H H^1 H^2, Fig. 2, are divisions of the gateway, all governed by the gate D. The wheel B is divided into sections B^1 B^2 B^3, as shown in Figs. 2 and 4, to correspond to the divisions of the outer case A and the ring-case L, (see Fig. 2,) so that when desirable water may be let onto any one of the divisions of the wheel and not to the others. The rings S S^1 S^2 S^3, Figs. 2 and 4, which form the divisions in the wheel and hold the floats, have upon their peripheries annular grooves V, Fig. 4, which, together with the grooves V′ in the rings L L^1 L^2 L^3, form a water-packing, which prevents leakage.

The brackets or floats P P, Fig. 3, are formed on a new principle—that is, the discharging ends are concave toward the center of the wheel, being laid out as follows: We suppose the wheel to be of the diameter of forty-eight inches. Then I strike a circle from R, Fig. 3, of twenty-four-inch radius. This gives the outside of the wheel and the outer end of the buckets or floats. Then I strike a circle one and a half inch inside, which gives the reversing point of the bucket curve. I next strike a circle of nineteen-inch radius, which gives the inner line of the buckets. Now, to get the form of the buckets I draw a circle from R as a center with a radius of six and a half inches. This circle is indicated by a dotted line, Fig. 3. At any point on this circle, as at R′, I place the compasses, and with a radius, R′ T, of twenty-four inches—that is, the diameter of the wheel—I strike the arc P, which gives the form for the concave part of the bucket. From the point T I strike the reverse curve T T^3, the center of which is at T^2.

In making a wheel of a different diameter all of the dimensions will be changed, but will retain the same proportions to each other.

I claim as my invention—

In a water-wheel, the combination of the gate D, the gateways or flumes A^1 A^2 A^3, provided with water-packed joints between the divisions of the flume and the wheel, with the wheel B divided into horizontal sections B^1 B^2 B^3, all the parts operating together, substantially as described, and for the purpose set forth.

JOHN H. STAPLES.

Witnesses:

WILLIAM EDSON,

FRANK G. PARKER.