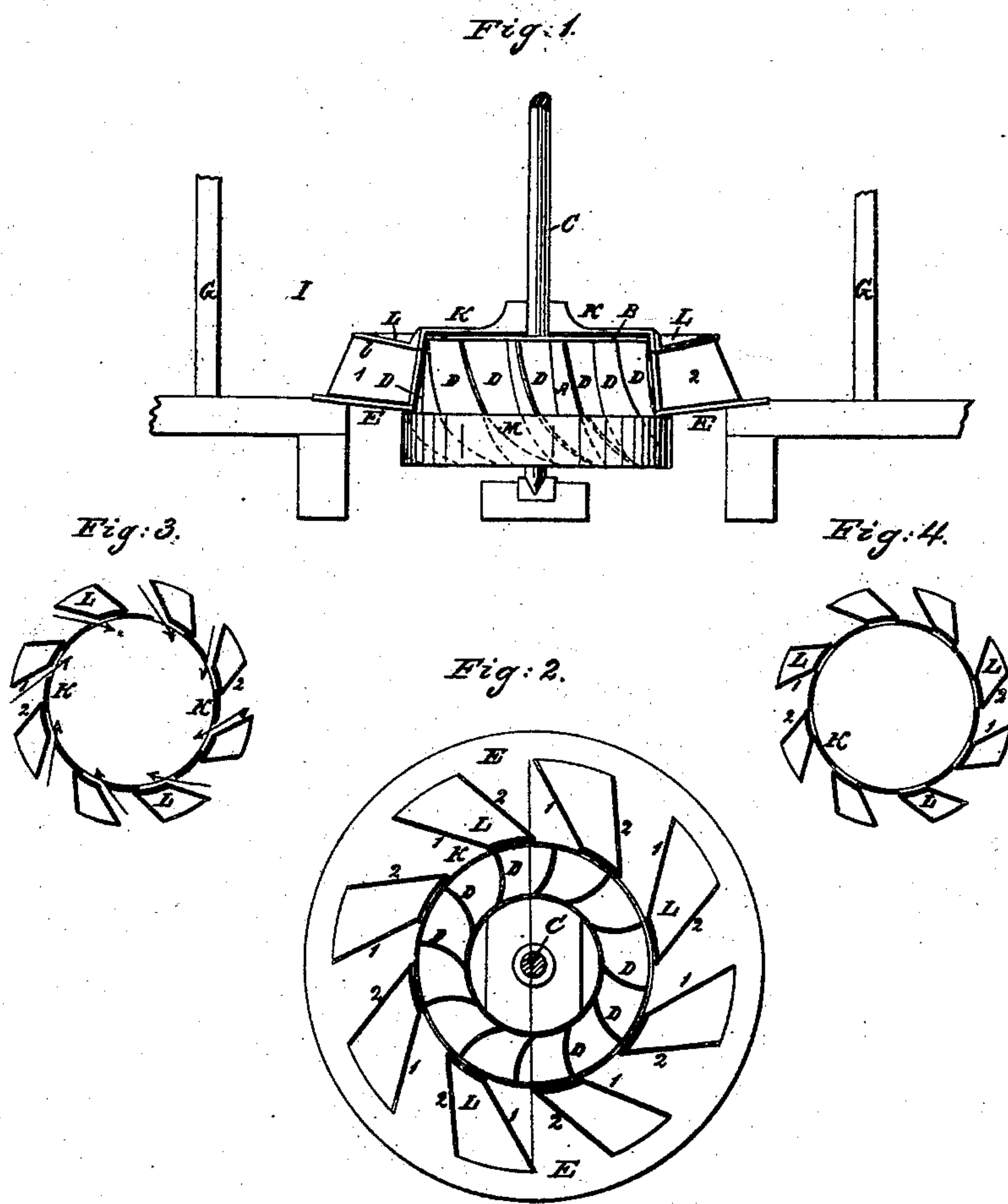


KENYON & BROWN.

Water Wheel.

No. 32,192.

Patented April 30, 1861.



Witnesses.

Christopher Brown.

W. F. Prosser.

Inventors.

Benj B. Kenyon.

Pras E. Brown.

UNITED STATES PATENT OFFICE.

B. B. KENYON AND IRA S. BROWN, OF HOPKINTON, RHODE ISLAND.

WATER-WHEEL.

Specification of Letters Patent No. 32,192, dated April 30, 1861.

To all whom it may concern:

Be it known that we, BENJAMIN B. KENYON and IRA S. BROWN, of Hopkinton, in the county of Washington and State of Rhode Island, have invented certain new and useful Improvements in Water-Wheels; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1, is a vertical section through the curb and gate, showing the wheel in elevation. Fig. 2, is a horizontal section on the line S, S, in Fig. 1. Fig. 3 is a similar section of the gate nearly closed. Fig. 4 is a similar section with the gate entirely closed.

Similar characters of reference denote like parts in all the figures.

Our invention relates to the form and construction of the lower portion of the wheel.

To enable others skilled in the art to make and use our invention we will proceed to describe its construction and operation by the aid of the drawings.

The wheel is composed of a hollow cylinder A, joined at its upper edge to a disk B, which latter is fixed at its center on the upright shaft C and projects beyond A as represented. A second hollow cylinder M, shorter and of larger diameter than A, is fixed concentrically to the lower portion of A and is rigidly connected therewith by the floats. The floats or buckets are represented by D. They are curved in both directions and are fitted to the under side of B, the exterior of A, and the interior of M. The width of the buckets, measured in the direction of the radius of the wheel, is equal to the internal diameter of M from the base of the wheel up to the upper edge of M. At this elevation the width is contracted, as represented, and the form of the wheel from thence to the plate A is slightly conical the edges of each bucket lying in the surface of a cone as is indicated in Fig. 1.

E, E, is a flooring of iron or other proper material, supported upon suitable standards F and fitted closely to the upper edge of M.

G represents the exterior of a flume I, which flume surrounds the wheel above M and receives water through any suitable means not represented.

K is a strong casting, attached to the inner edge of E, having a conical form corresponding with and fitting closely to the upper portion of the wheel, and supporting the

upright shaft C. Rectangular openings are provided around its entire circumference, of a height nearly equal to the conical portion of the wheel and of an aggregate width of about one half of the circumference of K, as shown in the horizontal sections Figs. 2, 3, 4. Through these openings the water is admitted to the wheel from the flume.

On the exterior of K is tightly fitted a hollow conical gate L having openings corresponding with those in K. From both edges of each opening vertical webs, 1, 2, extend outward into the flume in a direction tangent to a cone or cylinder somewhat smaller than K and longer than A. These webs are sustained in position by a broad flange l on the top of L and guide the water in its passage to the openings in K. The gate, L, l, with its webs 1 and 2 is capable of turning around K to such extent as to uncover the openings in the latter fully or partially, or to close them entirely, as may be desired, and is capable of adjustment in any of these positions by means of gearing or other suitable mechanism not represented.

The water in the flume I, flowing to the wheel through the passages in K, is guided by the webs or directors 1, 2, and striking the upper portion of the buckets imparts its momentum to the wheel. It then flows downward and escapes through the lower face of the wheel giving the latter an additional impulse, due to its inertia and gravity in a manner common to many other wheels.

The floats being greatly inclined from the vertical at their lower edges, afford a thinner space for the passage of the water between each float and the next than in the upper portion of the wheel. This is partially compensated for by the increased width of the buckets which are here extended to the diameter of the ring M, as above intimated. This enlargement of the diameter of the wheel below the receiving point, not only tends to compensate for the decreased space between the floats, but also serves to prevent leakage by reason of the rim M being farther from the center of the wheel than the inner edge of E thus allowing the water to spread freely, to a small extent, on passing that point, and causing little or no pressure at the joint between the wheel and E. This enlargement also permits the water to flow more nearly in the direction which the combined action of centrifugal force and gravity would require in

order to give the best effect. By the peculiar action of K in connection with 1, when the gate is partly closed, the water which flows through the opening is caused to impinge upon the wheel in a solid stream the entire width of the gate, and with the full force due to the head, and thereby to exert as great a proportional effect as the larger quantity flowing through the entire opening.

10 Our improved wheel will give out nearly the full effective power of the water, whatever quantity may be used.

We do not claim broadly making the buckets or floats wider at their lower than their upper ends, for the purpose of giving an increased opening for the escape of the water, as we are aware that they have been made to extend inward toward the center of the wheels for that purpose, and have

20 also been constructed of a gradually increasing width from the top to the bottom; neither do we claim the employment of di-

rectors for giving the the water; neither do we buckets D in both directions, or a decreasing pitch, so as to produce a reactive effect, but

Having now fully described our invention what we claim as new therein and desire to secure by Letters Patent is—

Increasing the diameter of the wheel and the width of the buckets D immediately below the casing or curb, K, E, in combination with the exterior rim or cylinder M substantially as, and for the purposes herein set forth.

In testimony whereof we have hereunto set our names in presence of two subscribing witnesses.

BENJ. B. KENYON.
IRA S. BROWN.

Witnesses:

CHRISTOPHER BROWN,
W. F. PROSSER.