No. 607,246. Patented July 12, 1898.

G. H. JOHNSON.

MOMENTUM WATER WHEEL BUCKET.

(Application filed July 22, 1897.)

(No Model.)

Fig. 1.

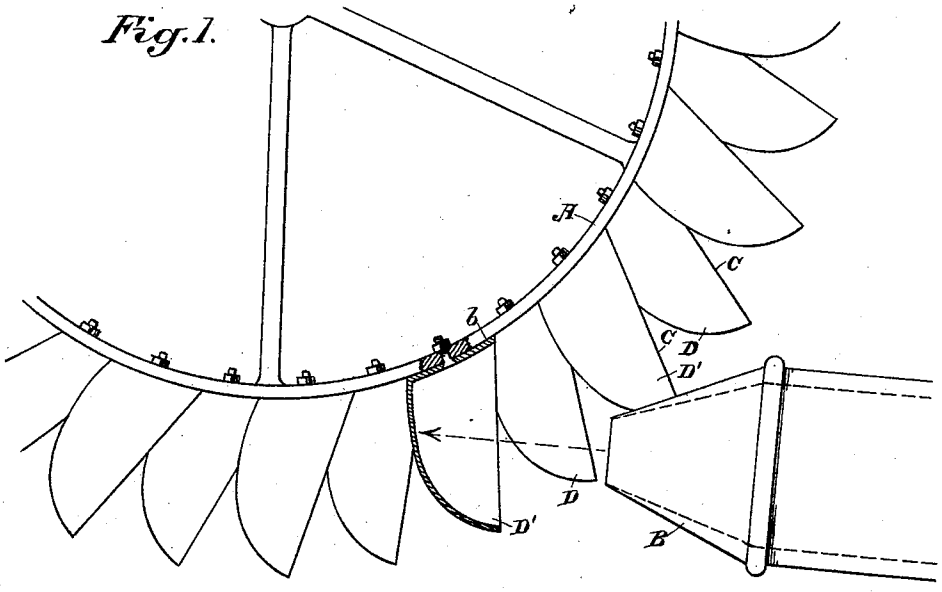


Fig. 2.

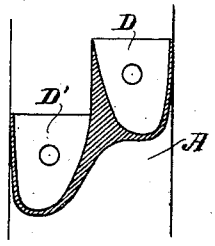
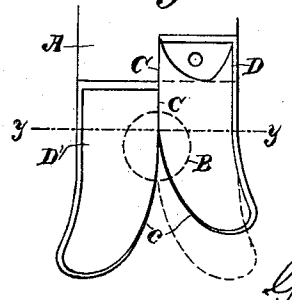


Fig. 3.



Witnesses,
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UNITED STATES PATENT OFFICE.

GEORGE H. JOHNSON, OF SISSON, CALIFORNIA.

MOMENTUM WATER-WHEEL BUCKET.

SPECIFICATION forming part of Letters Patent No. 607,246, dated July 12, 1898.

Application filed July 22, 1897. Serial No. 645,541. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. JOHNSON, a citizen of the United States, residing at Sisson, county of Siskiyou, State of California, have invented an Improvement in Momentum Water-Wheel Buckets; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in buckets for water-wheels of that class in which the water is delivered into the wheel-bucket under a high head or pressure, such wheels being technically known as "hurdy-gurdy" wheels.

My invention consists, essentially, in the novel construction of the buckets whereby the force of the water is applied continuously and alternately to double buckets fixed to the rim of the wheel in pairs, side by side, and one in advance of the other.

It also consists in a means for employing the reactionary force of the stream and in so diverging it from the line of travel that it escapes upon opposite sides and clear of the wheel.

Referring to the accompanying drawings, Figure 1 is an elevation of my water-wheel. Fig. 2 is a cross-section of a pair of buckets on line *y y*, Fig. 3. Fig. 3 is a plan view of a pair of buckets.

A is the rim of a wheel, made of any suitable size and of any suitable or desired construction.

The buckets D and D' are preferably cast, pressed, or otherwise formed from iron or steel and have the inner ends *b* made of such shape as to fit closely against the periphery of the wheel, to which they are bolted successively in pairs, extending all the way around the wheel. These buckets are formed with one bucket approximately the depth of a bucket ahead of or below the other of the pair, and in width they are about once and a half the diameter of the stream which is delivered into them. The buckets project outward from the wheel about two and one-half diameters of the stream, and the intervening edge C between them is made thin and sharp.

The nozzle B, which delivers the water into the buckets, is so placed that the water splits or divides on the intervening edge C. This edge extends out once and one-fourth the diameter of the stream from the face of the wheel, then dividing into two parts, as shown at *c*. These parts gradually diverge from each other, and the outer sides of the buckets also diverge in the same manner, the end forming a continuous curve or oval, as plainly shown. By this construction the water delivered from the nozzle under high pressure is split upon the dividing edge C, one half being delivered into the buckets upon one side and the other into the buckets upon the other side, alternately, so as to act continuously on the wheel.

The bottom of the bucket is a continuous curve with the outer end, so that as the water strikes into the bucket it follows this curvature, and by reason of the diverging ends of the bucket it is discharged over the outer end as the wheel revolves and delivered in planes at an angle outwardly from the plane of rotation of the wheel. By this construction the discharge of the water is so diverted as to be entirely clear of the wheel and all back action or hindrance to its free revolution is avoided.

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

1. Water-wheel buckets formed in pairs with one bucket in advance of the other, said buckets uniting in a common radial plane along the adjacent edges, for approximately one-half the distance from the inner to the outer end, and curving outwardly and independently away from each other for the remainder of the distance.

2. A water-wheel having a double row of buckets fixed upon its rim, so that the buckets of one row stand in advance of those of the other row in the direction of travel, the adjacent edges of the buckets lying in a common plane transverse to the axis of the wheel for approximately one-half of the bucket length outwardly, the buckets separating transversely away from each other for the remainder of the distance to the outer end.

3. A water-wheel having a double row of buckets fixed upon its rim so that the buckets in one row stand intermediate between those of the other row in the direction of travel with the inner edges of both rows of buckets lying in the same plane transverse to the axis of the wheel, said buckets diverging outwardly

from each other from a point about half the length of the bucket from the rim to which they are attached, and a nozzle, the axis of which is in line with the plane of the inner edges of the buckets whereby water therefrom is delivered alternately into the buckets upon each side of the wheel.

In witness whereof I have hereunto set my hand.

GEORGE H. JOHNSON.

Witnesses:
ALEX ALBEE,
A. J. KNIGHT.