(No Model.)

C. J. GREEN.

WATER WHEEL.

No. 417,865. Patented Dec. 24, 1889.

Fig. 1.

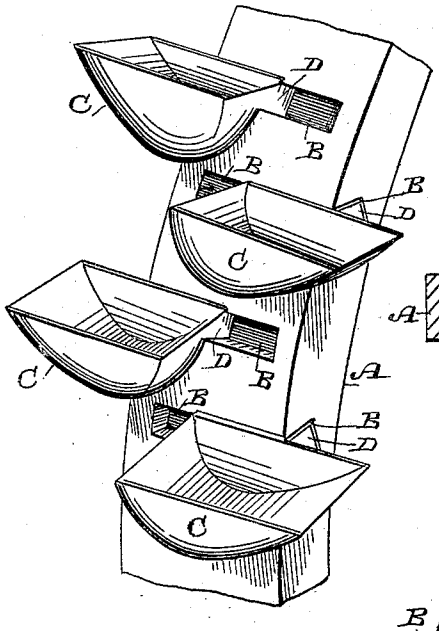


Fig. 3.

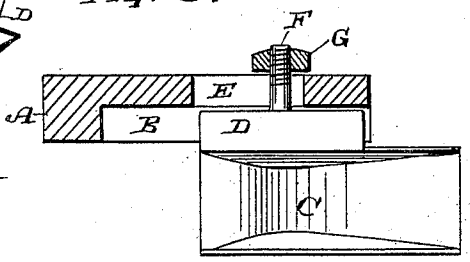
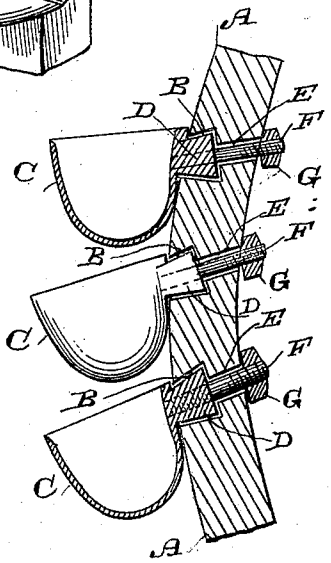


Fig. 2.



Witnesses,
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UNITED STATES PATENT OFFICE.

CHARLES J. GREEN, OF PLACERVILLE, CALIFORNIA.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 417,865, dated December 24, 1889.

Application filed September 11, 1889. Serial No. 323,668. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. GREEN, of Placerville, El Dorado county, State of California, have invented an Improvement in Water-Wheels; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in that class of wheels known as "momentum" or "hurdy-gurdy" wheels; and it consists in buckets adjustably arranged upon the wheel-rim, and so placed with relation to each other that a certain proportion of water from the nozzle is discharged into the bucket nearest to the nozzle, while the remainder strikes the bucket just behind the first one, and in a means for adjusting these buckets so as to change the proportion of water which is discharged into the first and second buckets.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a view showing a portion of the rim of a wheel with my buckets arranged thereon. Fig. 2 is a vertical section of the rim with its buckets. Fig. 3 is a transverse section.

In this class of wheels the buckets are made of such form that the water which is discharged from the nozzle under a high pressure is received into the buckets so as to pass around the concavity of the bottom and be discharged at the outer edges, this being a common form of construction in several well-known wheels.

In my invention I have improved the construction of the wheel by making these buckets transversely adjustable to and from the center of the rim of the wheel and placing them with relation to each other so that the stream of water is always divided between two buckets, one of which is behind the other.

A is the rim of the wheel, which is formed with transverse dovetailed slots B in its periphery at such a distance apart that the buckets C may be fixed to the rim by means of dovetailed projections D, which are cast upon the buckets and adapted to slide in these horizontal dovetailed slots. The inner face of the wheel-rim has slots E beneath and parallel with the dovetailed slots in the outer face, and through these slots screws F project. The inner ends of these screws are fixed in the dovetailed slides of the buckets, and the ends which project through the slots are screw-threaded, so as to receive nuts G, by which the buckets are clamped in any position in which they may be placed, or the bolts F may screw directly into the slides of the buckets, the heads abutting upon the sides of the slots E. The slots in the outside wheel-rim, into which the slides of the buckets fit, are made alternately from the right and from the left edges, so that the buckets are set in alternately from one side and the other. The inner edges of the buckets are made thin, and the interiors of these buckets are curved and made concave, so that the water striking into either of the buckets passes around the curved bottom of the concavity, thence up the outside, and discharges over the outer edge of the bucket, as is usual in this class of buckets.

In my construction I fix each alternate bucket in its transverse slot so that the inner edges of the buckets stand at such relation to each other that the water from the nozzle will strike partly in the bucket which is presented nearest to the nozzle and the remainder in the bucket which is just behind the first one. By this relative arrangement and alternation of the buckets I am enabled to place them closer together than when the buckets are placed upon the wheel one directly behind the other. The object of this construction is to enable the operator to start the wheel with less delay than in the ordinary arrangement of the buckets.

This class of wheels is very largely used for hoisting purposes, and are connected directly with the hoisting mechanism, it being usual to start and stop the wheel with the rest of the machinery, and consequently this operation takes place very frequently during the day.

If the bucket is at a considerable distance from the nozzle, as would be the case in the ordinary construction of the wheels, it is often necessary to put the foot on the wheel to assist it in starting, and some delay and loss of water occur with each operation of this

sort. By my construction one bucket is always as close to the nozzle as possible, and ready to receive water therefrom, and by discharging a portion of the water into the bucket behind it I have found that the wheel will start more readily and that a better result is attained.

By means of the transverse adjustment of the buckets I can set the buckets so that the first and second ones will receive each one-half of the water from the nozzle; or the first one may be set so as to receive two-thirds or any other proportion of water from the nozzle, the remainder discharging into the bucket behind, as above described.

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

1. In a water-wheel, the rim having the buckets secured alternately upon its outer periphery and having their inner edges standing with relation to each other and to the nozzle so that a portion of the water discharged from the nozzle is received by the bucket nearest to the nozzle and the remainder by the bucket just behind this first one, substantially as described.

2. In a water-wheel, the rim having transverse slots made alternately from the opposite sides of its periphery, buckets having tongues or slides fitting in said slots, and movable so as to adjust the buckets to or from the center, substantially as described.

3. In a water-wheel, the rim having the outer periphery formed with transverse grooves or slots, corresponding slots extending through the bottom of these outer slots to the interior of the rim, in combination with concave buckets adapted to receive water at the inner edges and discharge it from the outer edges, said buckets being provided with tongues or slides fitting into the transverse slots, and screws and nuts whereby they may be adjusted with relation to each other and locked upon the rim of the wheel, substantially as described.

In witness whereof I have hereunto set my hand.

CHARLES J. GREEN.

Witnesses:
S. H. NOURSE,
H. C. LEE.