(No Model.)

A. J. GOULD.

WATER WHEEL.

No. 518,599. Patented Apr. 24, 1894.

Fig. 1.

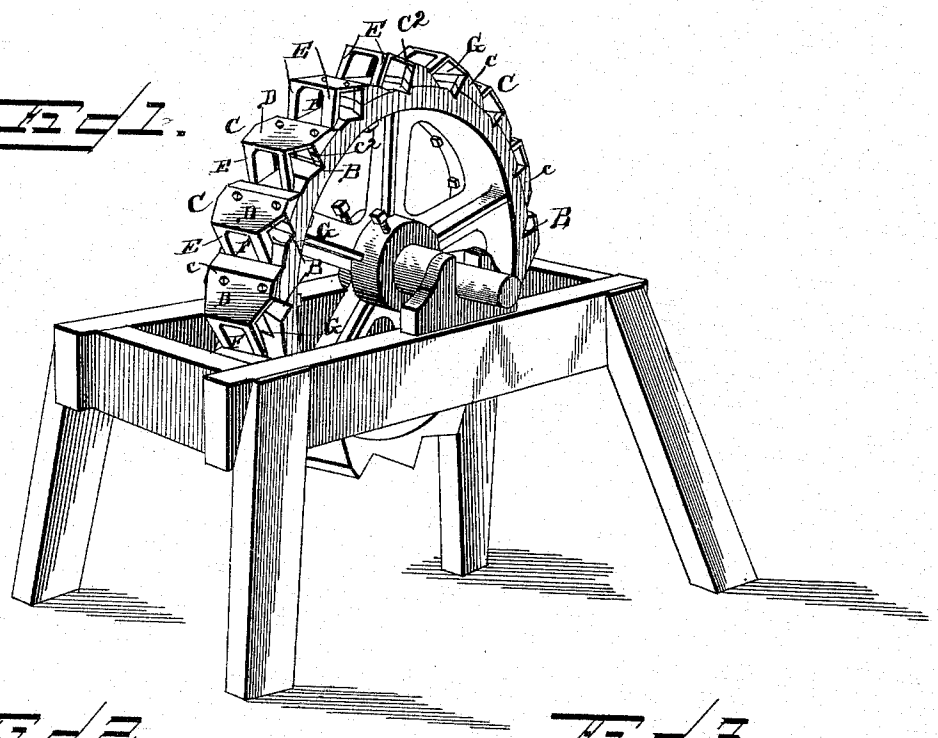


Fig. 2.

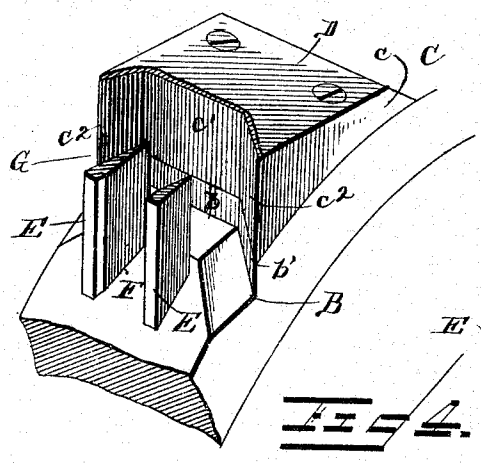


Fig. 3.

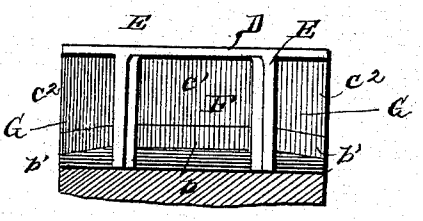
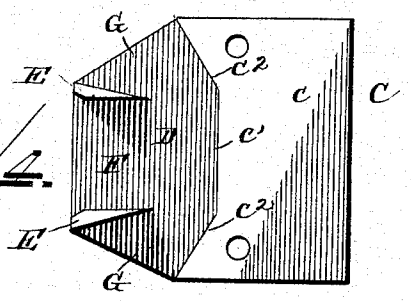


Fig. 4.



Witnesses
W. C. Schneider
D. P. Wolhaupter.

Inventor
A. J. Gould.

By his Attorneys,
C. A. Snow & Co.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ANDREW J. GOULD, OF QUINCY, CALIFORNIA.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 518,599, dated April 24, 1894.

Application filed December 30, 1892. Serial No. 456,813. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. GOULD, a citizen of the United States, residing at Quincy, in the county of Plumas and State of California, have invented a new and useful Water-Wheel, of which the following is a specification.

This invention relates to water wheels of that class having buckets secured to the periphery of the wheel and receiving the impact of a stream of water under pressure from a nozzle, and the same is designed as an improvement on Letters Patent No. 291,894, granted to me January 15, 1884; and it has for its primary object to provide a wheel that will effectively prevent any loss of power from back pressure and which is so constructed, as set forth by this improvement, that the same will present a bucket of sufficient capacity to receive a full head of water directed therein.

With these and many other objects in view which will present themselves to those skilled in the art, the invention consists in the novel construction of water wheel buckets hereinafter more fully described, illustrated and claimed.

In the accompanying drawings;—Figure 1 is a perspective view of a water wheel constructed in accordance with my invention. Fig. 2 is a detail in perspective of one of the buckets and a portion of the wheel to which the same is connected, part of the bucket being broken away to expose the interior construction. Fig. 3 is a detail front elevation of one of the buckets and the portion of the wheel to which the same is attached. Fig. 4 is a detail plan view of one of the buckets.

Referring to the accompanying drawings; A represents the water wheel adapted to be mounted upon a horizontal shaft and which is of any suitable construction and material. The flat rim or periphery of said wheel is provided around its entire length with a series of inclined notches or indentations B which are so constructed as to form straight back walls b and the forwardly extending diverging side walls b'.

Located directly over each of the notches or indentations upon the periphery of the wheel are the series of water buckets C which may be either integrally cast with the water wheel proper or are secured thereto as illustrated in the drawings, by a single set of screws passing through the body thereof and entering the periphery of the wheel. Each of said buckets C is provided with a solid portion c having a straight wall c' and forwardly extending diverging side walls c^2, said straight back wall and the diverging side walls registering with the back and side walls respectively formed in the periphery of the wheel and extending above the same, thus forming a single back and side walls having an increased impact surface against which the stream of water plays and is discharged therefrom, being of sufficient size to receive the full head or stream of water directed therein from a nozzle, as illustrated in my former patent. The said buckets are also provided with the forwardly extended inclosing top plates D from the forward end of which depend the integral division walls E bearing or resting upon the periphery of the wheel beyond the indentations B and converging inwardly toward the straight back walls of the buckets, thus forming the central water receiving openings F and the enlarged lateral escape or discharge openings G, the angle of said division walls corresponding to the angle of the side walls in the bottom of the buckets. It can be readily seen, from the construction of the rear or inner walls of the buckets, that an increased impact surface is formed for the stream of water to play against and thereby provides an additional bucket capacity which accommodates a large head of water, while the dispositin of the lateral escape openings provides for a free discharge of water which also at the same time materially assists in turning the wheel and effectually prevents back pressure.

It will be obvious that the construction herein described provides an improved water bucket, a part of which is formed in the solid body of the rim of the wheel, thereby securing several points of advantage over my former patent. In the first place it is to be noted that in the present construction the projecting part of the bucket does not extend beyond the periphery of the wheel a greater distance than the projection of the old form of bucket shown in my former patent, but in the present construction the bucket, as an entirety,

is made much deeper and can therefore accommodate a jet from a nozzle of greater diameter than the nozzle which must be employed to force a jet or stream of water into the old bucket. This advantage is an important one, for the weight and constituent parts of the wheel are not at all increased, while the jet-receiving capacity of the buckets of the wheel is materially increased. Furthermore, since the jet is arranged to strike the entire width of the back wall of the bucket at right angles, the strong rim of the wheel bears its share of the force of the jet, and therefore relieves the projecting part of the bucket of much strain, consequently providing a much stronger bucket than the one claimed in my old patent, and still another point is to be observed in the fact that by reason of the increased depth of the new bucket herein described, the resistance to the discharging water is greatly lessened and the free and easy discharge greatly improved.

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

As an improvement in water wheels, the combination of the solid wheel rim having inclined bucket notches indenting the periphery thereof and provided with straight and inclined back walls or shoulders, and integrally constructed attached bucket portions fitted on the periphery of the rim and having a solid integral body portion provided with straight and inclined back walls registering with those formed by the shoulders of the notches so as to complete bucket shoulders or walls partly formed in the rim of the wheel and partly by the attached bucket portions, integral top plates projected beyond the solid body portion and spanning said notches, and integral division walls depending from the outer ends of the top plates and resting at their lower ends on the periphery of the wheel rim in front of the notches therein, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ANDREW J. GOULD.

Witnesses:
J. H. HOUCK,
J. H. FLETCHER.