C. GREENAWALT.

WATER WHEEL.

No. 32,131. Patented Apr. 23, 1861.

Fig. 1.

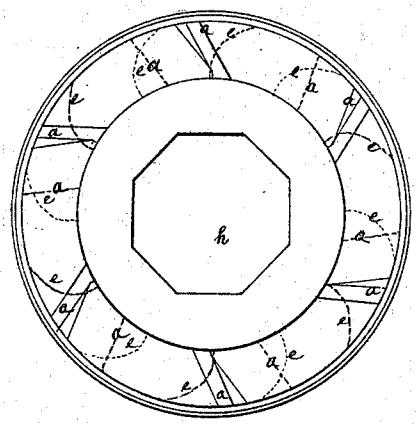


Fig. 2.

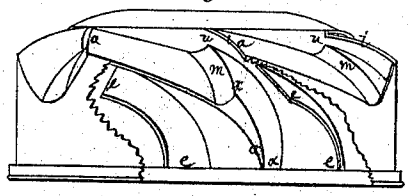
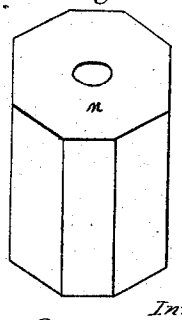


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES GREENAWALT, OF SEIBERLINGVILLE, PENNSYLVANIA.

WATER-WHEEL.

Specification of Letters Patent No. 32,131, dated April 23, 1861.

To all whom it may concern:

Be it known that I, CHARLES GREENAWALT, of Seiberlingville, in the county of Lehigh and State of Pennsylvania, have invented an Improvement in Water-Wheels; and I declare that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, of which—

Figure 1 is a plan of the wheel; Fig. 2 a side elevation of the wheel with part of the casing removed to show the buckets, and Fig. 3 a view of the separate hub piece.

My improvement consists in certain improvements in water wheels described as follows:

Fig. 1 is a plan of the wheel and Fig. 2 is a side elevation of the wheel with part of the casing removed to show the buckets. The wheel is shown in Fig. 2, in the position in which it is used, the water entering from below and escaping at the periphery near the upper part. The position being assumed that a multiplication of reacting surfaces are necessary in many cases I have devised a method of increasing those surfaces to the greatest advantage.

a, *a*, is a bucket extending the whole depth of the wheel and this I call a whole bucket.

e, *e* is a bucket extending a little more than half the depth of the wheel and this I call a half bucket. The half buckets are midway between the whole buckets and the two have a common outlet, so that for twelve reacting surfaces or buckets in this wheel there are six outlets *d*, thus giving in a given diameter of wheel the greatest number of buckets. At the outlet *u* and a little in advance of the oblique termination *i* of the buckets *a*, *a*, is an offset *m* which is made by a gradual thickening of the back of the bucket toward the outlet, this thickening *x x* being shown in Fig. 2, which terminates somewhat abruptly at the outlet. The object of this drop or offset is to remove any resistance to the delivery of the water from the back of the bucket in advance of the outlet and to give the water a free drop as it were at that point. As it often happens in country localities that wooden shafts are the most convenient to use for these water wheels I adapt my wheel to be used with either a wooden or iron shaft. For this purpose I cast a hexagonal hub *n* separate from the wheel fitting the opening *h* in the wheel and this hub has a central bore for the reception of an iron shaft when that is to be used. This hub is removed when a wooden shaft is to be used and the opening *h* is of the proper size for this kind of shaft.

What I claim as my improvement in reaction tub wheels is—

1. The use and arrangement of the half buckets *e* in the manner set forth.

2. The offset *m* when used with the buckets *a*, *a*, arranged and operating as herein set forth.

CHARLES GREENAWALT.

Witnesses:

CHAS. G. PAGE,

WM. H. HARRISON.