S. Diehl,

Water Wheel

No. 2,606. Patented May 4, 1842.

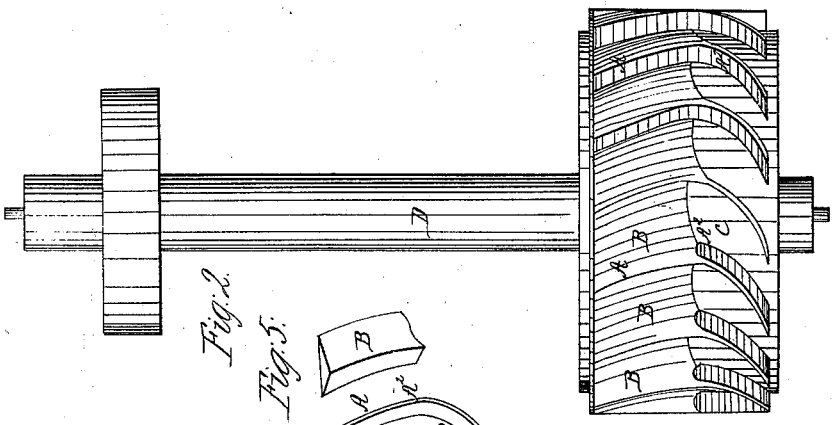

Fig. 2.

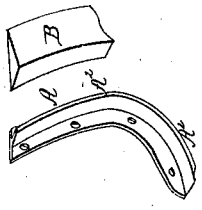

Fig. 3.

Fig. 5.

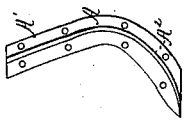

Fig. 4.

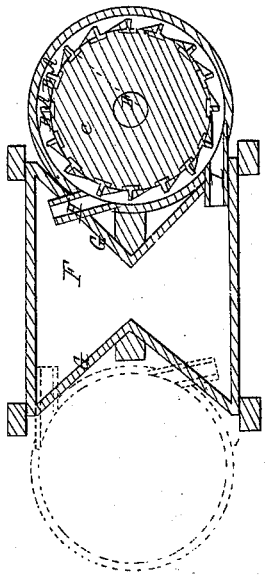

Fig. 1.

UNITED STATES PATENT OFFICE.

SAMUEL DIEHL, OF MENALLEN, PENNSYLVANIA.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **2,606**, dated May 4, 1842.

To all whom it may concern:

Be it known that I, SAMUEL DIEHL, of Menallen township, Adams county, State of Pennsylvania, have invented a new and useful Improvement in the Horizontal Percussion and Reaction Water-Wheel for Propelling Machinery, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification, of which—

Figure 1 is a horizontal section through the center of the wheel, chutes, and penstock, showing the forms of these parts. Fig. 2 represents a side elevation of the wheel, showing the form and arrangement of the buckets. Fig. 3 is a perspective view of one of the buckets detached, showing the flanges and apertures in the same for screws by which they are secured to the core of the wheel. Fig. 4 is a section showing several straight buckets. Fig. 5 represents the form of one of the blocks arranged behind the buckets.

This water-wheel generally is made like other wheels in use, the improvement being in the form of the buckets A and in the arrangement of certain convex blocks B behind the buckets, for the purpose hereinafter stated, and in the penstock.

The buckets and flanges by which they are secured to the core C are cast in a single piece. The surface against which the water strikes is made concave, of segments of two circles A′ A^2. The upper portion A′, or that against which the water strikes or acts by percussion, is a segment of a circle of about six feet diameter, or that part of bucket may be made straight encircling toward the chute, forming an angle of about seventy degrees. The lower portion A^2, or that on which the water reacts, is a segment of a circle of about two feet diameter, and extends from the lower end of the upper section. The flanges extend at right angles from either side, following the curvature of the bucket, and are perforated for the screws which fasten it to the core, being countersunk therein.

Behind each bucket is fastened a block B, of wood, of convex figure, filling the space behind the bucket, which would otherwise be filled by water, which would counteract the motion and add to the dead-weight of the wheel and thus impede its progress. The wheel is fixed to a vertical shaft D, which turns in a step and cap in the usual manner.

The penstock F is made so as to admit the wheel to receive the force of the water in the most effectual manner. For this purpose its ends are closed by boards G, arranged at right angles to each other, so as to form a right-angled space in which the tub for the wheel to turn in is placed, the sides inclosing said space being perforated with oblique apertures H I to admit the water through corresponding apertures in the tub to the buckets of the wheel, one of said apertures being made in one side of the head of the penstock, &c., running parallel thereto, and the other, which is made in the opposite side, running at right angles to said last-mentioned aperture. The other end of the penstock is closed in a similar manner, forming a similar space for another tub and wheel, to which the water is admitted in like manner, by which arrangement two wheels and four buckets are acted on simultaneously from the same head of water with similar issues, which issues may be increased in number or diminished, according to the head of water. A circular rim K is fastened on the top of the core, and buckets projecting to the outer edges of the latter to prevent the rising of the water above them.

What I claim as my invention, and which I desire to secure by Letters Patent, is—

1. The combining with the back of each bucket of the kind set forth an inclined surface, constructed in the manner and for the purpose specified.

2. The mode of combining the wheel with the penstock by constructing the latter with a recess or cavity into which the wheel is received, and two or more openings for letting on the water, as set forth.

SAMUEL DIEHL.

Witnesses:

WM. W. PAXTON,

E. M. ZIEGLER, Jr.