H. Fellows,

Water Wheel,

No. 29,261. Patented July 24, 1860

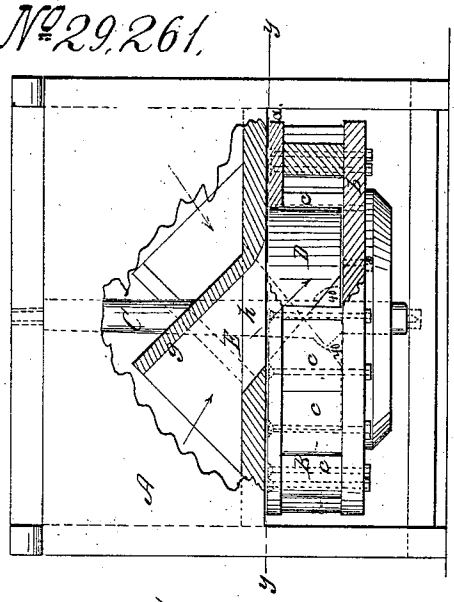


Fig. 1

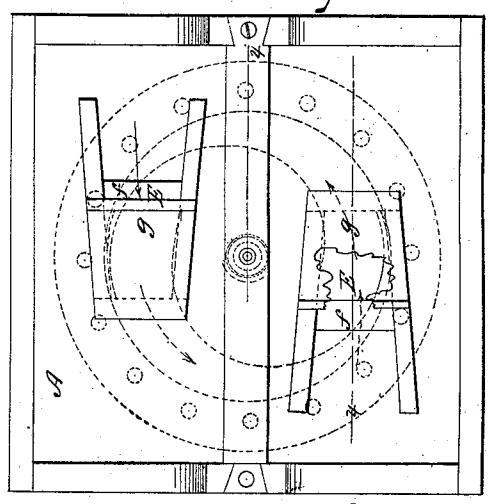


Fig. 2

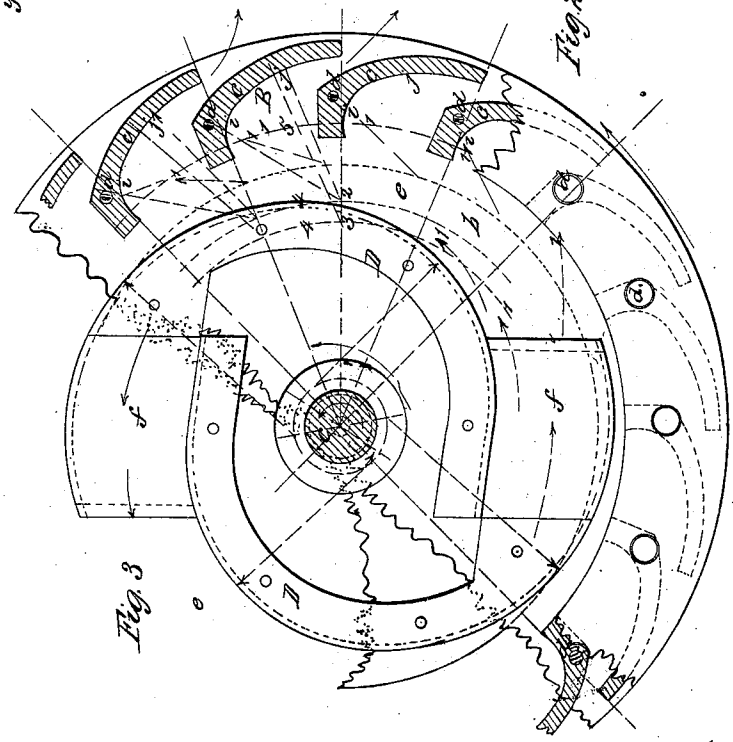


Fig. 3

Witnesses;
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UNITED STATES PATENT OFFICE.

HENRY FELLOWS, OF BLOOMFIELD, INDIANA.

WATER-WHEEL.

Specification of Letters Patent No. 29,261, dated July 24, 1860.

To all whom it may concern:

Be it known that I, HENRY FELLOWS, of Bloomfield, in the county of Greene and State of Indiana, have invented a new and Improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x*, *x*, Fig. 2. Fig. 2 is a plan or top view of the same. Fig. 3 is a horizontal section of the same, taken in the line *y*, *y*, Fig. 1.

Similar characters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in that class of water wheels, in which the water is made to act upon the buckets both by impact and reaction.

The object of the invention is to obtain a better combination than hitherto of the two forces or powers aforesaid, and consequently a more efficient wheel. To this end I employ buckets of a peculiar form in connection with scrolls and chutes arranged substantially as hereinafter described.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A represents a penstock which may be of rectangular form, and B is the wheel placed underneath it, said wheel being on a vertical shaft C, which passes up vertically through the penstock and is fitted in proper bearings. The wheel B is formed of a top flanch or plate *a*, of annular form, and a circular bottom *b*, between which flanch and bottom the buckets *c*, are secured by bolts *d*, the outer edges of the buckets extending nearly to the peripheries of the flanch *a*, and bottom *b*. The buckets *c*, may be described as having their face sides formed of curves struck from the centers 1, 2, in circles 4, 5, concentric with the wheel, the back sides of the buckets being formed of curves struck from the centers 2, 3, in the circles 4, 4′,—see Fig. 3. The circle 4′, is described by a radius equal to about one-half the diameter of the wheel; and the circle 4, has a radius about one-ninth greater than the circle 4′. The circle 5, has a radius equal to about three quarters the diameter of the wheel.

At the under side of the bottom *d*, of the penstock there are two flanches D, D, which project down within the wheel B, and nearly touch its bottom *b*. These flanches D, D, are so shaped as to form scroll passages *e*, *e*, and regulate the action of the water on the wheel. The form of the passages *e*, is shown clearly in Fig. 3, and by dotted lines in Fig. 2. At the induction end of each passage *e*, there is an inclined plane *f*, and a similar inclined plane *g*, is placed over each opening *h*, in the bottom *d*, of the penstock. The planes *f*, *g*, are inclined at an angle of about 40°, and they form chutes E, to direct the water properly into the scrolls or passages *e*, *e*.

The operation is as follows:—The water passes from the penstock A, through the chutes E, E, into the scrolls or passages *e*, *e*, and acts upon the buckets *c*, first by impact at *i*, and then by reaction at *j*, in passing out between the buckets—see arrows 1, Fig. 3. By having the flanches D, D, placed within the wheel, the centrifugal force of the water is obtained, and made subservient as a power in propelling the wheel. Those wheels (center vent) which are fitted within scrolls, and have the water directed toward the buckets and to the center of the wheel lose this effect, and those which have the water pass from the center outward, and are provided with scroll shaped buckets, work wholly by reaction, no power being obtained by impact.

My invention has been practically tested, and has been found to operate well.

I wish it to be distinctly understood that I make no claim to the employment or use of scrolls in themselves considered and without reference to the particular application or arrangement herein shown and described to effect the end desired, for scrolls have been used to direct the water toward the buckets and the center of the wheel as herein alluded to. But

I do claim as new, and desire to secure by Letters Patent—

The attaching of the curved flanches D, to the bottom of the penstock A, so as to project within the wheel, and form scrolls and water-passages *e*, *e*, at the inner sides of the buckets, or between the same and the shaft C, and chutes E; all being constructed, arranged and operated in the manner and for the purpose set forth.

HENRY FELLOWS.

Witnesses:

JAMES D. KNAPP,

JAMES R. BAXTER.