

J. KUNKLE.
Water-Wheels.

No. 145,740.

Patented Dec. 23, 1873.

Fig. 1.

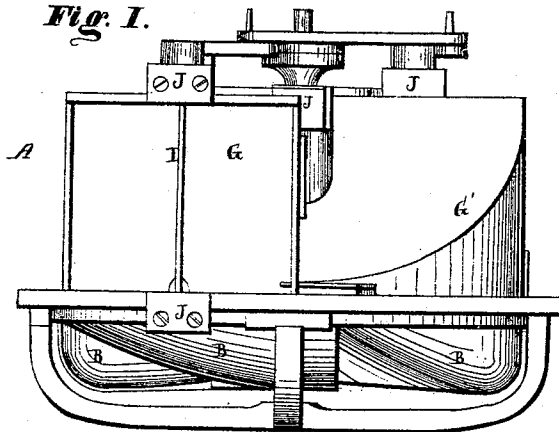


Fig. 2.

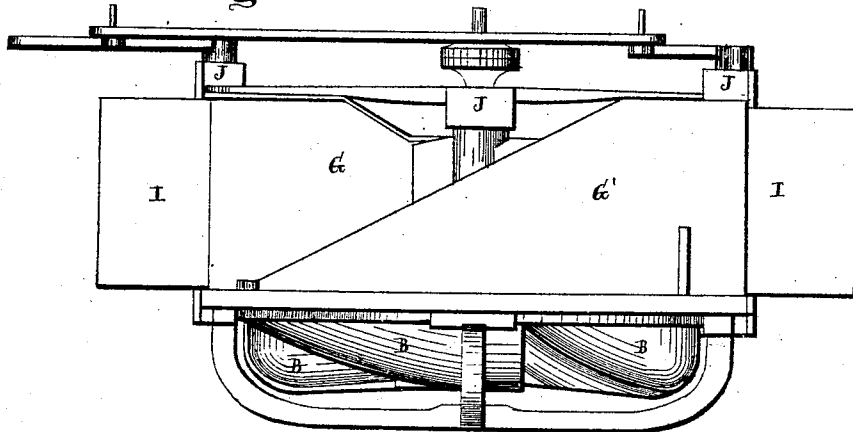
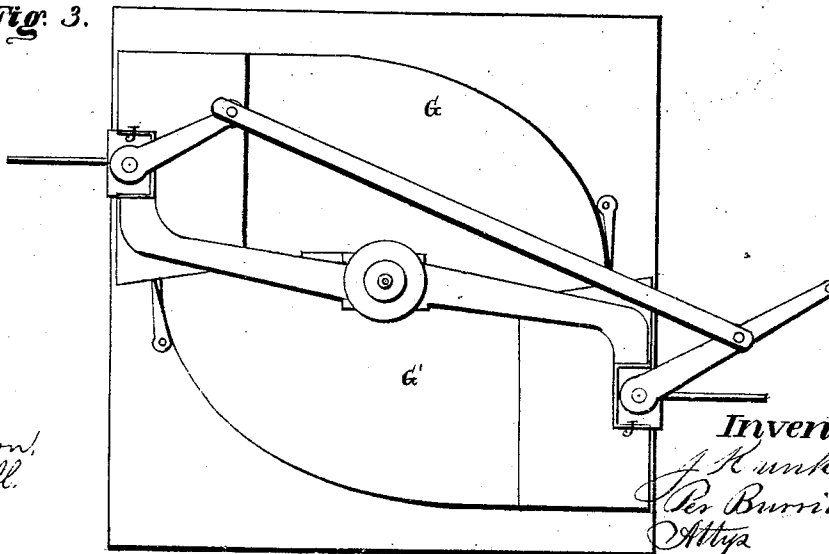


Fig. 3.



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Fig. 4.

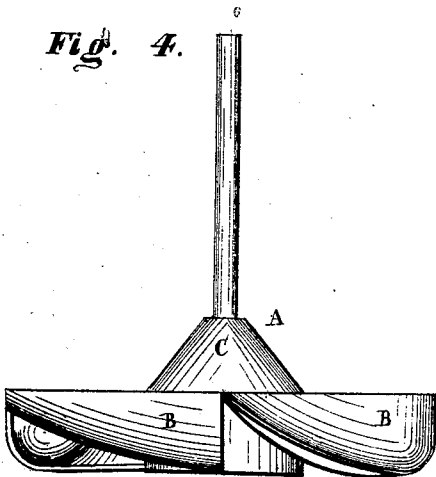


Fig. 5.

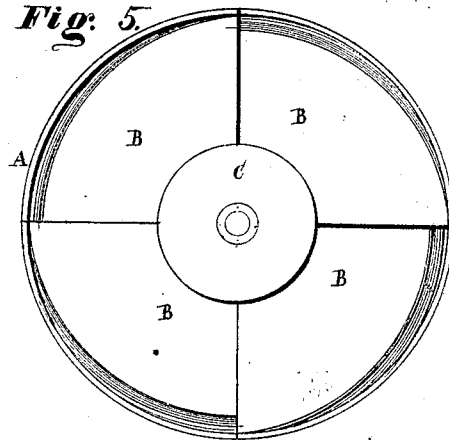
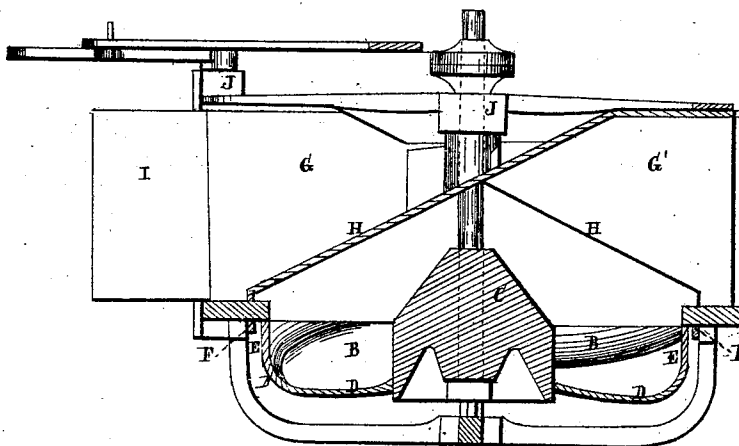


Fig. 6.



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JOHN KUNKLE, OF NEWTON FALLS, OHIO.

IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. **145,740**, dated December 23, 1873; application filed November 4, 1872.

To all whom it may concern:

Be it known that I, JOHN KUNKLE, of Newton Falls, in the county of Trumbull and State of Ohio, have invented a certain new and Improved Water-Wheel, of which the following is a description:

Figure 1 is an end view of the wheel and curb. Fig. 2 is a side view. Fig. 3 is a plan view. Fig. 4 is a detached side view of the wheel. Fig. 5 is a plan view of Fig. 4. Fig. 6 is a transverse vertical section.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to a water-wheel of the class turbine; and the improvement consists in the shape given to the hub and buckets, whereby are obtained an increase of effective power and a free escape of the water from the wheel. The improvement also consists in the construction of the scroll or flume, and of a flange in which the rim of the wheel runs, and of the journal seats or boxes of the wheel and gates, all of which are more fully described, as follows:

In the drawing, Fig. 1, A represents the wheel, of which Figs. 4 and 5 are detached views. Said wheel has four buckets, B, attached to and projecting from the conical hub C. It will be seen, on examination of Fig. 6, that the mouths D of the buckets are deep, with curving corners D', and that the outer side is closed up by the side E to the top of the wheel, so that no water can escape from the wheel at the side; hence, all the escaping water reacts directly upon the wheel in the line of rotation, thereby increasing its effective power. Also, the enlargement increases the discharging capacity of the bucket, so that the water does not remain upon the wheel to obstruct its movement after impinging thereon. The upper side of the hub of the wheel is conical from the buckets upward; hence, the water cannot lodge upon it, but will flow at once therefrom down to the buckets and escape. The upper edge of the periphery of the wheel is surrounded by a band or curb, F, Fig. 6. Said curb descends a short distance below the edge of the wheel, the purpose of which is to

continue to keep the upper edge of the wheel close as fast as it may sink down by the wearing off of the step on which the wheel runs, and thus prevent the water from escaping in that direction—i. e., over the edge of the wheel. G G' are the scrolls or flumes through which the water is conveyed to the wheel. The roofs H of the flumes, as will be seen in Fig. 6, are built at considerable height above the wheel, thereby obtaining a large space or roominess above the top of the wheel, the purpose of which is to allow ample room for flood-wood, cakes of ice, &c., that may find their way into the wheel, so that they shall not be caught between the wheel and roof, and stop or break the wheel, as they would be likely to do if the roofs of the flumes were low down near the face of the wheel. The scroll or flumes of this class of wheels are constructed of iron, and the journal-seats of the wheels and of the gates I are made of the same material, the consequence of which is that the journals and their seats soon wear out, and all the more rapidly for the reason that they soon become rusted by the water. To avoid this rapid wearing I make the journal-seats J of wood, which is found to answer a much better purpose, as it wears longer and is more easily replaced when worn out than are the iron seats which form a part of the flumes, and therefore can be replaced only at great expense.

The several improvements above described render the wheel more efficient in its practical operations and in its sufficiency of power.

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

1. The wheel A, having its buckets constructed with closed sides E and deep open mouth D, curved corners D', and conical hub C, in the manner as described, and for the purpose set forth.

2. The wheel A, scroll or flume G, curb F, and wooden boxes J, all constructed, arranged, and combined in the manner as described, and for the purposes specified.

Witnesses: JOHN KUNKLE.
JOHN H. BURRIDGE,
A. F. CORNELL.