

F. Post,
Water Wheel,
No 81,535, Patented Aug. 25, 1868.

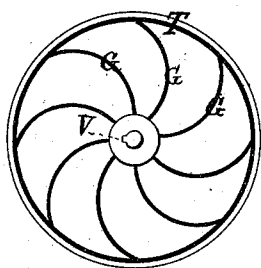


Fig. 2.

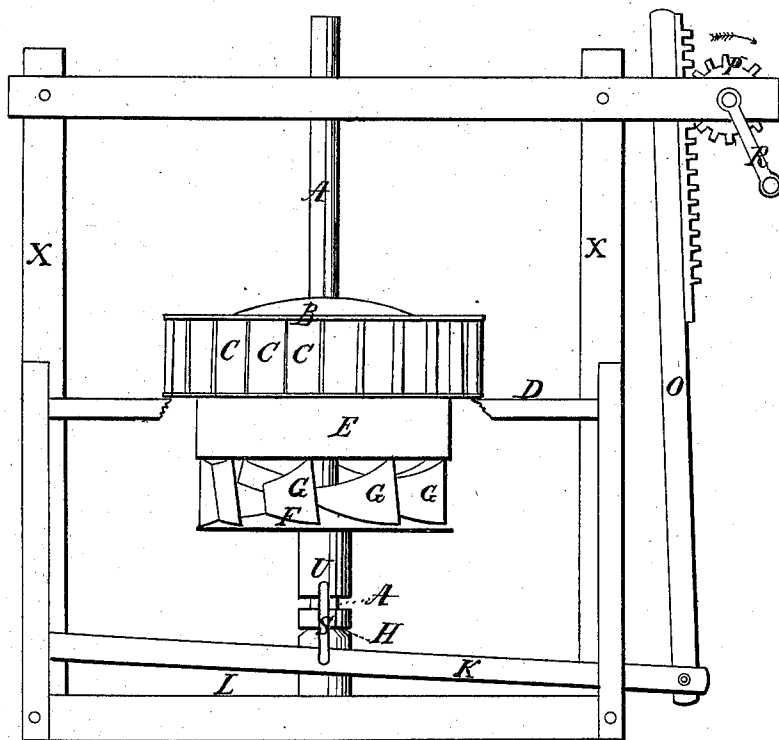


Fig. 1.

Witnesses:

A. Cleveland,
A. W. Beebe

Inventor:

Frederick Post

United States Patent Office.

FREDERICK POST, OF PLANO, ILLINOIS.

Letters Patent No. 81,535, dated August 25, 1868.

IMPROVEMENT IN WATER-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, FREDERICK POST, of Plano, in the county of Kendall, and State of Illinois, have invented a new and useful Improvement in Water-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side view of all the parts connected, and

Figure 2 is a top view of the minor wheel detached.

Parts lettered as follows:

A, shaft.

B, major wheel.

C C, &c., buckets of the major wheel.

D, bottom of flume.

E, flange of major wheel.

F, minor wheel.

G G, &c., buckets of minor wheel.

H, bearing.

K, lever.

L, bed of stream.

O, bar.

P, cog-wheel.

R, crank.

S, connection.

T, flange of minor wheel.

U, sleeve.

V, slot.

X X, posts.

The space between the posts X X represents an ordinary flume, the line at D being the bottom of the same, and the shaft marked A is the shaft to which I attach my wheel. This shaft, standing perpendicular, is held in position by any suitable bearing at its top, and passing through the bottom of the flume, rests upon the bearing H, at or near the bed of the stream; the bed of the stream being shown by the line marked L. I now construct a wheel which is, to a certain extent, the same as now in common use, and place this wheel upon and secure it to the shaft A, as shown in fig. 1, the wheel being shown at B, the parts marked C C, &c., being the buckets of the same. The top of this wheel has a complete surface, that is, without apertures, the water entering the wheel between the buckets C C, &c., and being discharged below the under side of the wheel, having an opening around the shaft for that purpose, the opening being as large as the circle within the inner ends of the buckets C C, &c. This I term the major wheel. This major wheel, it will be seen, is supported by the shaft, at the bottom of the flume, and revolves horizontally. Now, to the under side of this major wheel I attach a thin flange, as shown at E, which extends as far below the bottom of the major wheel as the buckets C C, &c., extend above. This flange is not attached to the circumference of the wheel, but directly underneath the inner ends of the buckets, it being the same size in diameter as the orifice in the bottom of the wheel. This flange, extending downward from the bottom of the major wheel, passes through a hole, made for that purpose, in the bottom of the flume, the hole being just large enough to receive the flange and allow it to revolve without friction. This major wheel may be provided with a cap, covering its upper surface, and surrounded by a series of slats, through which the water may pass before entering the wheel, or the water may be conducted into it through what is called a scroll; but in whatever manner this may be accomplished, the operation of my improvement will be the same.

I now construct a wheel, which I term a minor wheel, as shown at F, the buckets of which are shown by G G, &c. This wheel is of just sufficient size to pass within the circumference of the flange E of the major wheel.

Now, to the tops of the buckets G G, &c., of the minor wheel, I also attach a flange of the same length as the flange upon the major wheel, and the same size in circumference as the minor wheel, the top of this flange being shown by the circular line marked T in fig. 2. This minor wheel is constructed with a hub at the centre, having a perpendicular hole through it, large enough to pass on to and slide up and down upon the shaft A.

I also cut lengthwise within this hole a slot, as shown at V, in fig. 2, for the purpose of receiving a spur upon the shaft, not shown, to prevent the wheel from turning upon the shaft. This minor wheel I also place upon the shaft A, underneath the major wheel, with the spur upon the shaft within the slot V, and the flange T of the minor wheel within the flange E of the major wheel, and the bottom of the hub supported by the sleeve U; the sleeve U forming a bearing outside of the shaft A, upon which the minor wheel turns.

The sleeve U is supported by the lever K and the connection S. This lever I operate by means of the bar O, the cog-wheel P, and the crank R, by which means I am enabled to slide the sleeve U up or down upon the shaft A, and to raise or lower the minor wheel by the operation.

The operation of my wheel is as follows:

The water enters the major wheel between the buckets C C, &c., and is discharged below through the flange E, and also through the flange, not shown, of the minor wheel, within the same, and passing downwards comes in contact with the bottom of the minor wheel, when its course is changed, and it passes outward from the centre between the buckets G G, &c.

The major wheel being secured to the shaft A, and turning with it, and the minor wheel being prevented from turning upon the shaft by the slot and spur before described, whatever force is given to either the major or minor wheel, is imparted to the shaft A, the two wheels being, when thus connected, in effect one wheel.

The minor wheel being smaller in circumference than the major wheel, has fewer buckets, and those farther apart, to admit of the passage of the same quantity of water as the major wheel, but no more, rather a little less, than the minor as well as the major wheel, when in operation, may be filled to its full capacity.

It will be seen that the water, in its passage through the combined wheels, imparts force to the major wheel by its action upon the buckets C C, &c., and also to the minor wheel by its action upon the buckets G G, &c.

Now it is often necessary to run a water-wheel when its full power is not required, as in grist-mills, factories, &c., sometimes a larger quantity of machinery is required to be driven by a wheel than at others, and it is desirable to avoid the waste of water incurred by running a wheel to its full capacity, when but a small amount of the power obtained by doing so is needed.

To accomplish this, I turn the cog-wheel P in the direction indicated by the arrow, by means of the crank R, which, by its action upon the bar O, raises the lever K, which, connecting with the sleeve U, by means of the connection S, slides the sleeve U, and also the minor wheel, upwards on the shaft A, the minor wheel entering within the circumference of the flange E of the major wheel, and the flange of the minor wheel passing up within the circle formed by the inner ends of the buckets C C, &c., of the major wheel, and partially closing the aperture between these buckets, the buckets G G, &c., of the minor wheel also passing the same distance within the flange E of the major wheel, diminishing the space through which the water escapes from the minor wheel to the same extent that the flange of the minor wheel has diminished the space through which the water passes in entering the major wheel.

If I wish to close the wheel, and prevent entirely the passage of the water, I continue the motion of the crank R, until the buckets G G, &c., of the minor wheel pass entirely within the flange E, of the major wheel, and the bottom of the minor wheel, which has a slight projection for that purpose, presses against the bottom of the flange E, making as near as may be a water-tight joint, and secure the crank to hold the minor wheel in that position, the wheel thus also answering the purpose of a gate.

The movement of this minor wheel upon the shaft may be accomplished by means of the lever K, the bar O, the crank R, or any other convenient device.

Now, by the adjustment of this minor wheel upon the shaft, as described, it will be seen that any quantity of water may be used, from just enough to overcome the friction of the shaft which supports it, to the fullest capacity of the wheel, and power obtained just in proportion to the quantity of water used, as occasion may require.

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

1. The combination of the major wheel B and the minor wheel F, constructed and operating substantially as and for the purposes specified.
2. The sleeve U, in combination with the wheels B and F, substantially as and for the purposes described.

FREDERICK POST.

Witnesses:

A. STEWARD,
A. N. BEEBE.