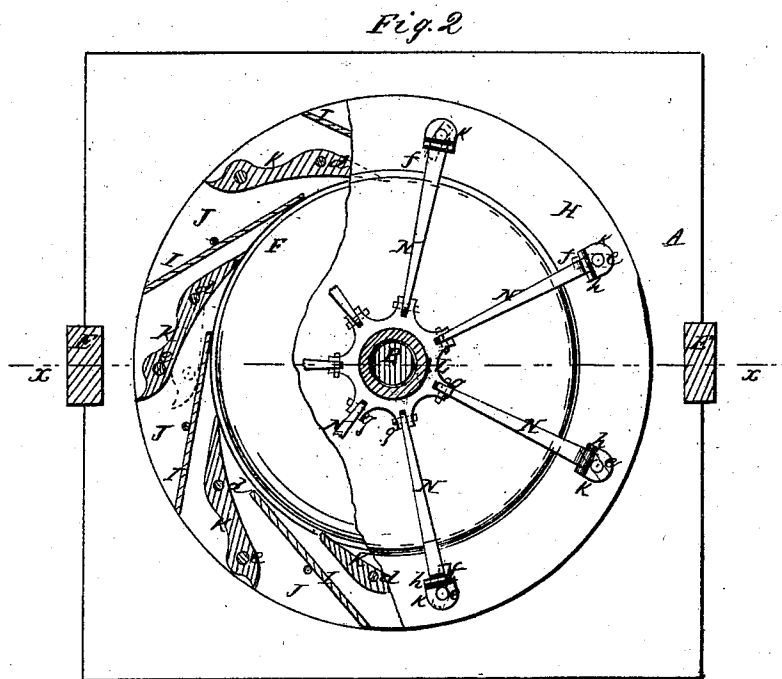
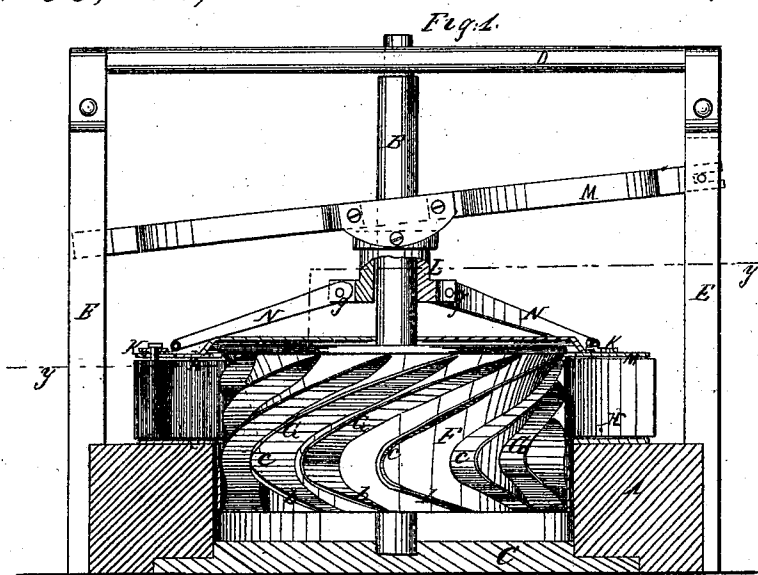


*G. Cox,*  
*Water Wheel,*  
*No 83,044, Patented Oct. 13, 1868.*



*Witnesses:*  
*Wm A Morgan*  
*A C Cotton*

*Inventor:*  
*Gauner Cox*  
*per Minniflo*  
*Attorney*

# United States Patent Office.

GARDNER COX, OF PIERPONT, NEW YORK.

Letters Patent No. 83,044, dated October 13, 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, GARDNER COX, of Pierpont, in the county of St. Lawrence, and State of New York, have invented a new and improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved water-wheel, of that class which are secured to a vertical shaft, and consequently rotates in a horizontal plane.

The invention consists in a peculiar construction of the buckets, and a novel application of them to the wheel, whereby a large percentage of the power of the water is obtained.

In the accompanying sheet of drawings—

Figure 1 is a vertical central section of my invention, taken in the line *x x*, fig. 2.

Figure 2, a plan or top view of the same, partly in section, as indicated by the line *y y*, fig. 1.

Similar letters of reference indicate corresponding parts.

A represents a suitable base, in which the lower part of the wheel is fitted and works.

B is the shaft of the wheel, the lower end of which is stepped in a cross-bar, C, fitted in the under surface of the base, and the upper end of said shaft having its bearing in a cross-bar, D, which is secured to the upper ends of standards E E, attached to opposite sides of the base. (See fig. 1.)

The wheel is composed of a hub or body, F, having buckets G attached to its exterior.

This hub or body has a concave periphery, as shown clearly in fig. 1, so that the hub or body gradually decreases in diameter, in a curve from its upper to its lower end.

The buckets G are composed each of three parts, *a b c*, the upper and longer parts, *a*, being inclined at an angle of from fifteen to twenty degrees with a horizontal plane, or the plane of rotation of the wheel, while the lower parts *b* are inclined in the opposite direction, and about at the same angle, the two parts *a b* being connected by the part C, which is a quick curve, forming nearly a semicircle, as shown in fig. 1.

The lower portions of these buckets, which include the parts *b c*, are similar to those now employed in the ordinary turbine water-wheels, the extension or prolon-

gation of the upper parts *a*, and the gradual increase of the buckets from their upper to their lower ends, caused by the concave exterior of the body F, constituting one portion of my improvement.

The lower part of the wheel is fitted and works within the base, A, as shown in fig. 1, and the upper part of the wheel is encompassed by two fixed annular plates H H, placed one above the other, between which there are secured vertical fixed plates I, the latter having a tangential position relatively with the wheel, as shown clearly in fig. 2.

The spaces between the plates I, form chutes J, through which the water is admitted to the wheel, and in these chutes, gates K are placed, and work on rods *d*, the outer parts of the gates being connected by pivots *e* to plates K, above or on the upper surface of the top plate H, the pivots *e* passing through oblong curved slots *f*, in the top plate H, which slots are parts of circles, having the rods *d* of the gates as centres.

L is a sleeve, fitted on the wheel-shaft B, so that it may be raised and lowered thereon.

This sleeve is connected to a lever, M, the ends of which are fitted in the standards E E, as shown clearly in fig. 1.

N represents arms, one end of which is connected to the sleeve L by joints *g*, and the opposite ends connected, by joints *h*, to the plates K.

By this arrangement, it will be seen that the gates K may be opened and closed by adjusting the lever M.

By having the buckets G constructed and applied to the concave exterior of the hub or body F of the wheel, as shown and described, the full benefit of the force of the impact of the water is obtained, and also the force or power due to the gravity of the water in its discharge from the wheel, the gradual expansion of the buckets admitting of the free discharge of the water, so that the latter cannot serve as a drawback to the wheel.

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

The buckets G, composed of three parts, *a b c*, arranged as shown, when said buckets are attached to the concave periphery of the hub or body F of a wheel, as and for the purpose herein set forth.

GARDNER COX.

Witnesses:

MARTIN WELCH,  
FRANCES L. WELCH.