

G. F. Wright

Water Wheel,

N<sup>o</sup> 18,613.

Patented July 4, 1865.

Fig. 1.

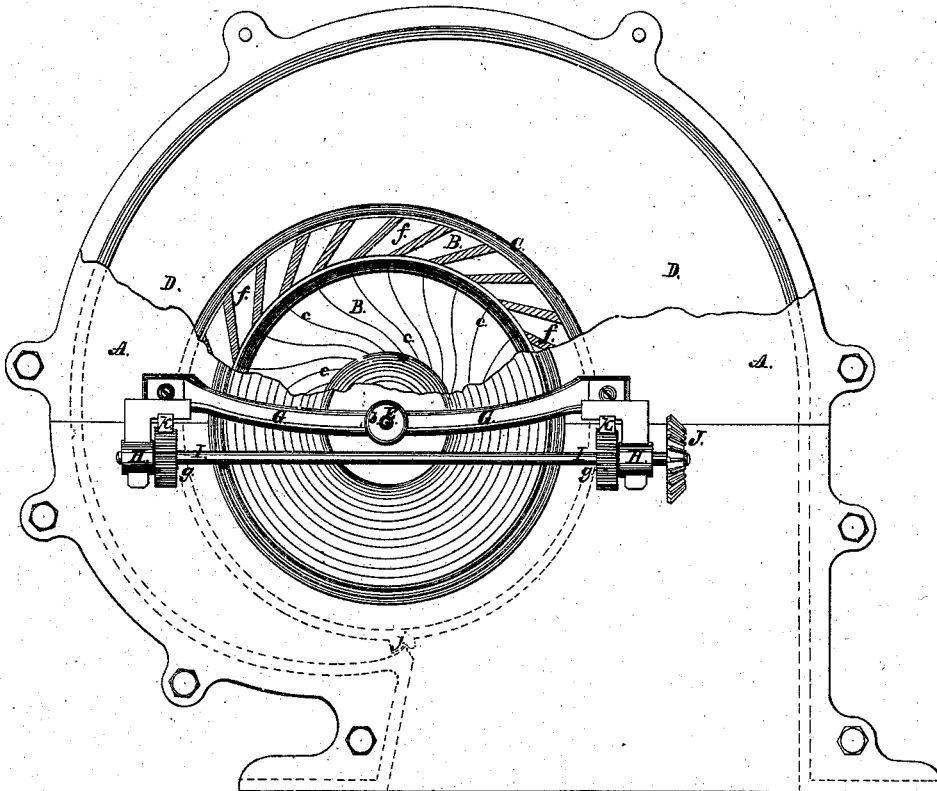
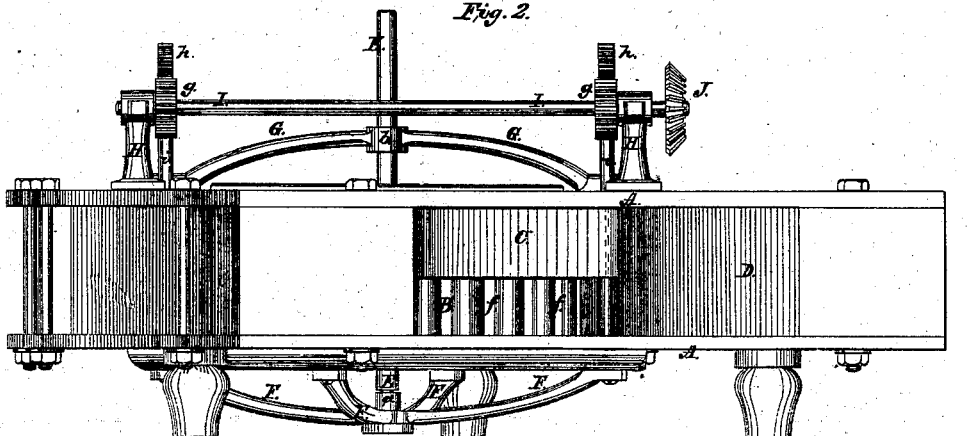


Fig. 2.



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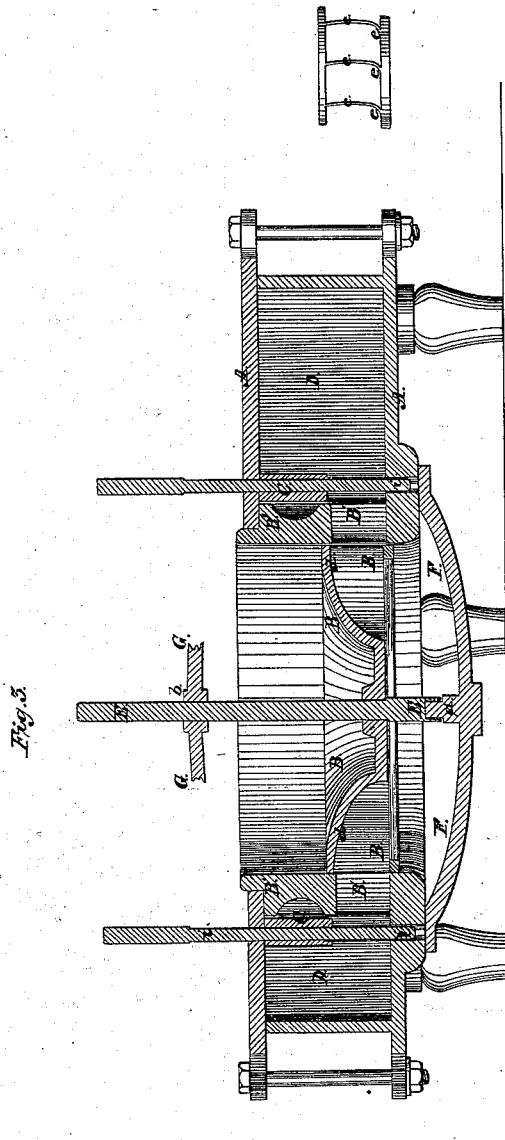
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Water Wheel,

N<sup>o</sup> 18613.

Patented July 4, 1865.



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# UNITED STATES PATENT OFFICE.

GILMAN F. WRIGHT, OF GRANITEVILLE, MASSACHUSETTS.

## IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 48,613, dated July 4, 1865.

*To all whom it may concern:*

Be it known that I, GILMAN F. WRIGHT, of Graniteville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Water-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a top plan of the wheel, with a portion of the case broken away to show the interior. Fig. 2 represents a front elevation of the wheel and hoisting mechanism and the case inclosing the wheel. Fig. 3 represents a vertical central section through the wheel, guides, case, and hoisting mechanism.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

My invention consists in combining with the inlet water-way of a water-wheel a ring curb or gate, stationary guides, and a water-wheel, as will be hereinafter described, and so that the curb or gate may be raised and lowered vertically, for the purpose of increasing or diminishing the quantity of water let onto the wheel.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents the case inclosing the water-wheel B, the stationary guides B', and the ring curb or gate C. There is also within this outer case a scroll water-way, D, through which the water is admitted to and through the stationary guides B', and thence to the buckets of the wheel B.

E is the shaft of the water-wheel, from which its power may be transmitted to the machinery to be driven by it. The step of the water-wheel shaft is at *a*, and is supported in the curved arms F, which are secured to the case A. The upper bearing of the shaft is made in the curved arms G, as at *b*, said arms G being secured to the upper side of the case A. The general curve or shape of the buckets *c* of the wheel B is seen in Fig. 1, and in addition to this general form they are arched or curved at their top, as seen at *d*, Fig. 3, and have a lip, *e*, turned on their lower and outer edge, as seen in the detached figure to the right of Fig. 3.

The ring gate or curb C is made so as to snugly fit and move over or past the openings *f* of the stationary guide in a vertical direction, to open or close said water-ways at pleasure and to such extent as may be desirable. The inclination of the water-ways in the guide, and the curvature or general inclination of the buckets, with regard to each other and to the center of the wheel, are shown in Fig. 1. The arched form of the tops of the buckets and of the water-way between them is designed for lifting the wheel from its lower support in the step *a*, and thus relieving it of much of its friction, and the lips *e* on the lower and outer edges of the buckets are to afford a bearing for the water or its gravity, and thus act as an adjunct in driving the wheel, as well as to balance it, and cause it to run truly and smoothly. The double curvature of the buckets from the rim toward the center of the wheel is for getting all the available force of the water upon the buckets before it escapes from the wheel, or, as it is termed by mechanicians, "a double action of the water on the wheel."

On top of the case A are two pillars or supports, H H, in which a horizontal shaft, I, rests and may be turned, said shaft having a bevel-gear, J, on one of its ends, into which another bevel-gear on the end of a vertical shaft may work to turn the shaft when necessary. Upon this shaft I are two spur-gears, *g g*, that work into the racks *h h* on the upper ends of the rods *i i*, said rods being united to the gate or curb C, and by which means the curb or gate may be raised, lowered, and held at any desired position, and so that the head of water shall be the same whether the wheel be running with, say, four inches of water or with double that amount, as it is always admitted to the lower part of the wheel, and whatever amount of water is cut off is thus taken off from the top of the wheel.

The scroll water way or inlet D being filled with water, the ring-gate C may be raised, and the water is at once admitted through the stationary guide B' to the wheel. The gate C, to prevent it from turning around, but still allow it to move in a vertical direction, may be mitered or braced to the case A, as seen by the dotted lines at *j*, Fig. 1; and the rods *i i* may also move in stationary supports to keep themselves, as well as the gate, from leaving their

positions. The stationary guide is kept from turning by dowels or pins of any kind holding it to the case. When necessary to open up the wheel for repairs the inclosing or surrounding parts are readily removed, and the whole construction of the wheel is of such a nature as to make it very cheap, very strong, and very efficient. Though the openings in the guide are of the same height only as the buckets of the wheel, yet the guide itself may extend up to the upper case, A, and form above the wheel a guide and support for the gate when it is raised up above the wheel or any distance above the lower part of the wheel.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

In combination with the scroll water-way D, the ring gate or curb C, the stationary guide B', and the wheel B, the whole being constructed, arranged, and operated in the manner and for the purpose substantially as herein described and represented.

GILMAN F. WRIGHT.

Witnesses:

LUTHER PRESCOTT,  
NORMAN H. BRUCE.