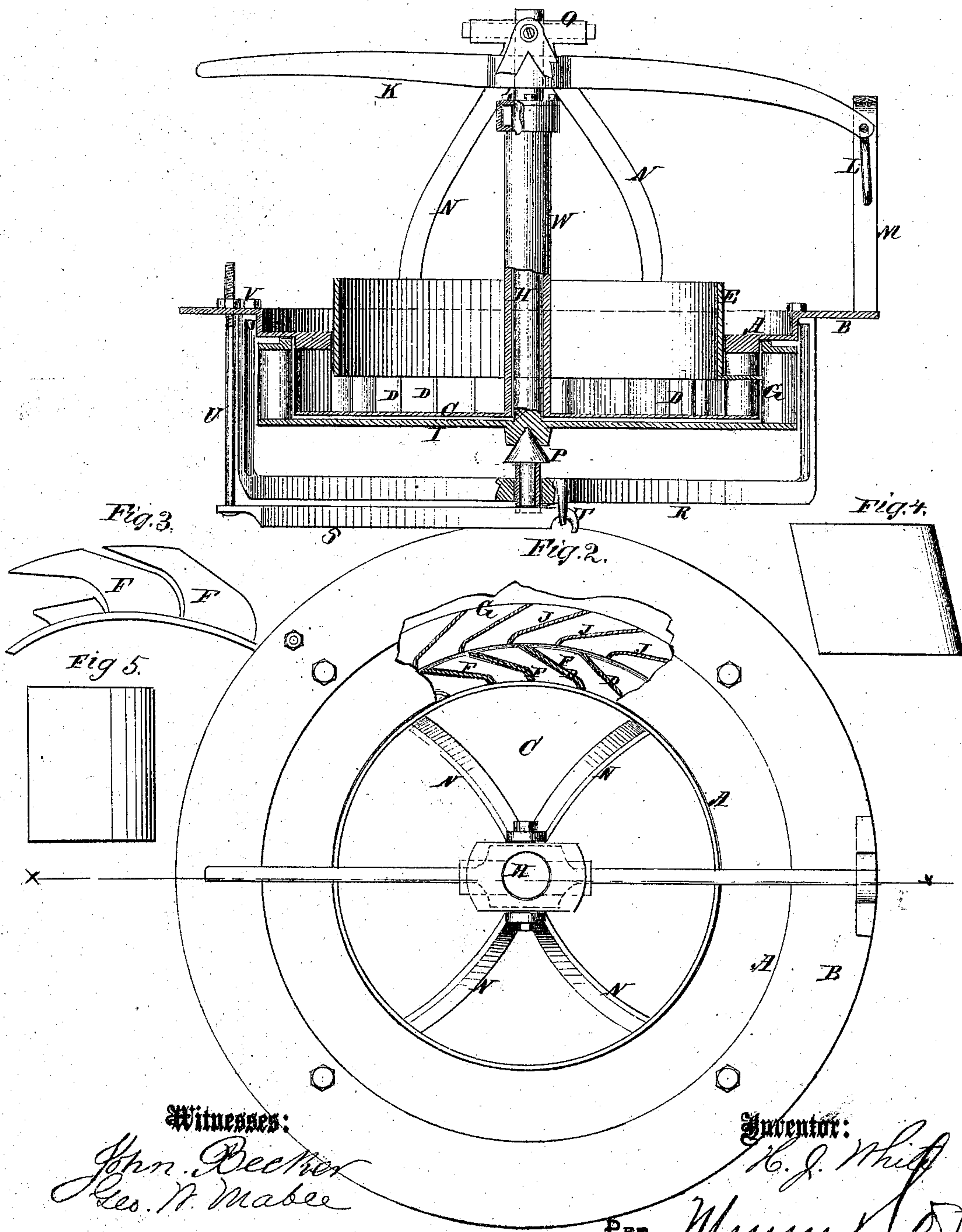


H. J. White,

Water Wheel.

No 105,532,

Patented July 19, 1870.



Witnesses:

John Beecher
Geo. W. Mabee

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HENRY J. WHITE, OF CHATHAM, IOWA.

Letters Patent No. 105,532, dated July 19, 1870.

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, HENRY J. WHITE, of Chatham, in the county of Buchanan and State of Iowa, 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 thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

The object of my invention is to provide an improved water-wheel, of the class provided with circular gates, having horizontal guides or arms, which project outward into the spaces between the chutes for the purpose of regulating the amount of water discharged against the outer revolving portion of the wheel; and

The invention consists in the particular construction and arrangement of parts composing the wheel, as hereinafter described.

In the accompanying drawing—

Figure 1 represents a vertical section of the wheel, with the parts connected therewith, as when in use, the section being on the line *xx* of fig. 2.

Figure 2 is a top or plan view, with parts broken away, to show the form of the stationary chute and wheel-buckets.

Figure 3 is a detached section of the gate, showing the form of the water-guides attached thereto.

Figure 4 is a detailed view, showing the side of one of the buckets.

Figure 5 is also a detailed view, showing the side of one of the chutes.

Similar letters of reference indicate corresponding parts.

A is the cap, which contains the chutes and chute-floor, from which the water is discharged onto the wheel.

This cap is confined to a suitably-constructed frame, by means of bolts through its surrounding flange B.

C is the floor, and

D, the chutes, the bottom edges of which are confined to the floor.

These chutes stand in a vertical position, and in height correspond with the buckets of the wheel. Their inner edges are curved, as seen in fig. 2, and in number they correspond with the buckets of the wheel.

E is the gate, which is cylindrical in form, working vertically within the cap A, and down onto the floor C, forming a water-joint with the cap around its outer surface, and on the floor with its lower edge.

F represents the water-guides, which are attached

to the lower edge and outer surface of the gate, and occupy the spaces between the chutes, as indicated by double lines in fig. 2, where the drawing is broken.

These guides form horizontal partitions, which move up and down with the gate, and control the flow of water through the chutes to the height of the gate.

This is a novel and very important feature of my invention.

By thus confining the water to the rise or position of the gate, its effect upon the wheel is much increased, as various tests and experiments have proved.

G represents the water-wheel proper attached to the vertical shaft H.

I is the floor of the water-wheel.

J represents the buckets. These buckets are rhomboids in outline, as seen in fig. 4, with their inner edges curved, as seen in fig. 2.

When these rhomboids are placed upright their inner and outer edges will, of course, be inclined, or in the position seen in fig. 4.

The gate is raised and lowered by means of the lever K, whose fulcrum is on the swinging and self-adjusting stirrup L, operating in the stand M.

N are arms attached to the upper edge of the gate, and to the opposite sides of the self-adjusting collar O, by means of pivots.

The lever is divided into two longitudinal parts at the center, and surrounds the shaft.

These parts of the lever extend up and are connected with the collar O, by the same pivots which confine the arms N.

This arrangement gives a central upward draft on the gate, allowing it to play up and down, without binding in the cap or causing undue friction on the shaft.

P is the step, which is adjustably confined in a socket to the frame R.

This step extends down through the socket, and rests on the top of the lever S.

T is the fulcrum of the lever.

U is a rod attached to its outer end, extending up through the flange B, where it is raised or lowered by means of the screw-nut V.

By this means the step may be raised, and the wheel adjusted in regard to the water-joints, and to secure it in its proper position.

W is a tube around the shaft, attached to the chute floor at its lower end, with box-packing at its upper end, as seen at X, for securing a water-tight joint around the shaft.

Having thus described my invention,

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

1. The gate E, provided with the guides F, completely filling the space between the chutes D, the arms N, pivoted to the collar O, the swinging fulcrum L, stand M, and lever K, each of said parts being constructed and all relatively arranged as and for the purpose specified.

2. The improved water-wheel, consisting of the lever S, screw-rod U, conical step P, bridge R, wheel

G I, buckets J, shaft H, tube W, chutes T, cap A, gate E, guides F, arms N, collar O, lever K, fulcrum L, and stand M, all relatively constructed and arranged as shown and described.

HENRY J. WHITE.

Witnesses:

E. O. LITTLE,

B. W. TABOR.