

(No Model.)

C. E. HOLLEY
WATER WHEEL.

No. 535,829.

Patented Mar. 19, 1895.

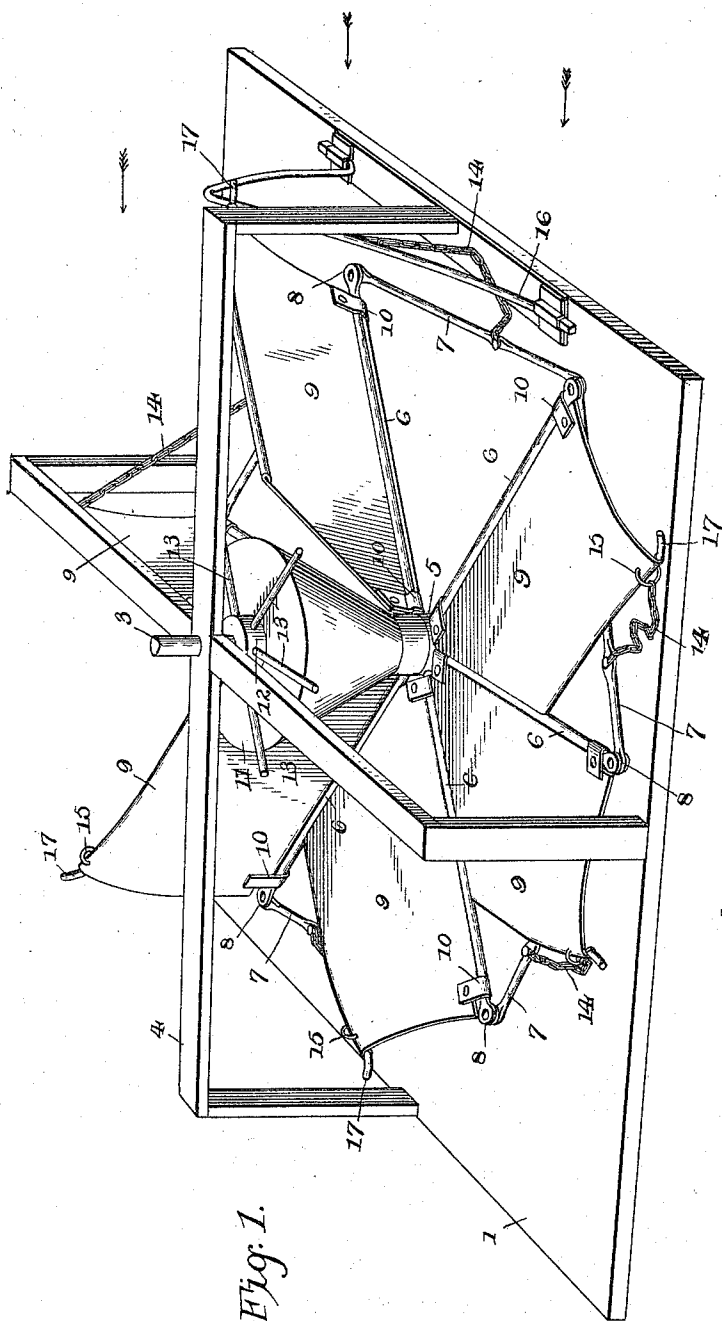


Fig. 1.

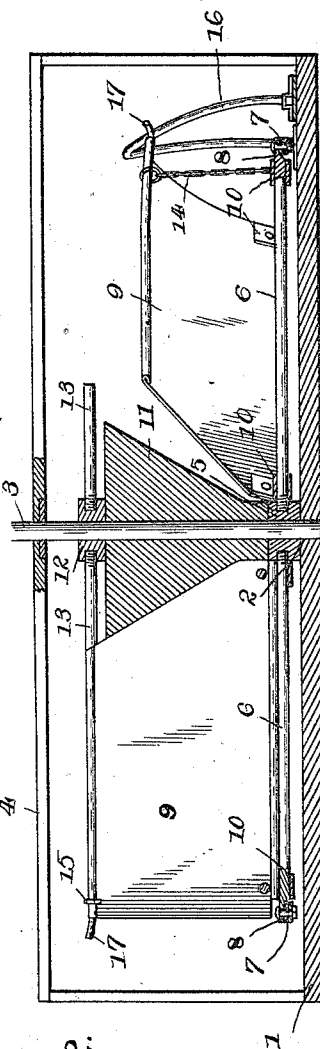


Fig. 2.

Inventor

Clarence E. Holley,

By his Attorneys,

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Witnesses

Chas. Ford.
C. E. Holley

UNITED STATES PATENT OFFICE.

CLARENCE E. HOLLEY, OF PRESQUE ISLE, MAINE.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 535,829, dated March 19, 1895.

Application filed July 10, 1894. Serial No. 517,115. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. HOLLEY, a citizen of the United States, residing at Presque Isle, in the county of Aroostook and State of Maine, have invented a new and useful Water-Wheel, of which the following is a specification.

My invention relates to water wheels, and has for its object to provide a simple and efficient horizontal water wheel adapted to offer the least resistance upon the side which is moving against the current and to present an effective surface for pressure upon the side which is moving with the current and to which the power of such current is applied, said wheel being wholly submerged. Furthermore, to provide simple and efficient means for throwing the blades into position to receive pressure by the water as they approach the side of the wheel which is moving downward or with the current; and, furthermore, to provide means for preventing waste of power by the passage of any portion of the water between the inner ends of the blades and the axis of the wheel when said blades are in their operative positions.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a perspective view of a water-wheel and attachments embodying my invention. Fig. 2 is a vertical transverse section.

Similar numerals of reference indicate corresponding parts both figures of the drawings.

1 designates a platform or supporting frame, in a bearing 2 at the center of which is mounted the lower end of a vertical spindle 3, the upper end of said spindle being mounted in a suitable bearing formed in the superstructure 4. Radiating from a hub 5 attached to said spindle near the plane of the platform are the arms 6, the extremities of which are connected by brace-rods 7, said brace-rods being provided with terminal eyes, which are fitted between twin eyes 8 formed by bifurcating the outer extremities of the radial arms. Swiveled upon these radial arms are the folding blades 9, preferably provided at

suitable points with bearing sleeves 10, which encircle the radial arms, and fixed to the spindle above the plane of the hub by which the inner ends of the radial arms are connected is an inverted conical block 11, the inner ends of the blades being beveled to fit snugly against the surface of said block when they are arranged in their elevated or operative positions. Attached at their inner ends to a hub 12 fixed to the spindle above the plane of the upper end of said inverted conical block are the radial stop-arms 13, which project beyond the side surface of the block in position to engage the inner ends of the blades adjacent to their upper edges when the blades are extended to prevent deflection of such inner ends of the blades. Deflection of the outer ends of the blades is prevented by limiting chains 14 attached to rings 15 near the outer angles of the blades and to intermediate points of the brace-rods connecting the extremities of the radial arms upon which said rings are fulcrumed.

The blades are adapted to be closed or folded by gravity after passing beyond the direct action of the downwardly moving current, and in order that their free edges may be elevated to receive the pressure of the current as they reach the downwardly moving side of the wheel, I employ an inclined guide 16 fixed to the platform or supporting frame in the path of projections 17 at the outer extremities of the blades, and in order that the current may at once engage and open the blades to their operative positions, said blades are preferably concavo-convex in shape, their concave surfaces facing up-stream. This concavo-convex construction also provides for the action of the current upon each blade for a longer period by preventing the deflection or sliding off of the water at the outer extremity thereof.

As soon as a blade passes out of the reach of the direct downward current of the water it drops by gravity to the folded position shown clearly in the drawings, and passes upward or against the current in a horizontal position, thus affording the least resistance to the downward or forward movement of the opposite side of the wheel.

It will be understood that in practice vari-

ous changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

5 Having described my invention, what I claim is—

1. In a water-wheel, the combination with a frame, of a vertical rotary spindle, and an
10 inverted conical block fixed to the spindle, radial arms secured at their ends to the spindle and connected at their extremities by interposed rods, blades fulcrumed upon said radial arms and adapted to swing upward at
15 their free edges from the plane thereof, the inner ends of said wings being beveled to lie parallel with and contiguous to the surface of said conical block, pins carried by the spindle at the upper end of the conical block to
20 engage the inner upper angles of the blades, when the latter are in their vertical or operative positions, and limiting chains connected to the upper outer angles of said blades and to the rods which connect the extremities of
25 the radial arms, to prevent deflection of the

said upper outer angles of the blades, substantially as specified.

2. In a water-wheel, the combination with a vertical spindle, and a horizontal rotary frame carried by the spindle and having radial arms, of blades fulcrumed upon the radial arms of the said frame and provided at their upper outer angles with pins 17, means for limiting the pivotal movement of the blades, and an inclined guide-bar 16 arranged
30 contiguous to the side of the wheel which moves downward, or with the current in the path of the pins 17, whereby as the blades reach the downwardly moving side of the wheel they are elevated at their free edges to
35 allow the pressure of the water to reach their under surfaces, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CLARENCE E. HOLLEY.

Witnesses:

J. G. HILT,

JOSEPH I. ROBERTS.