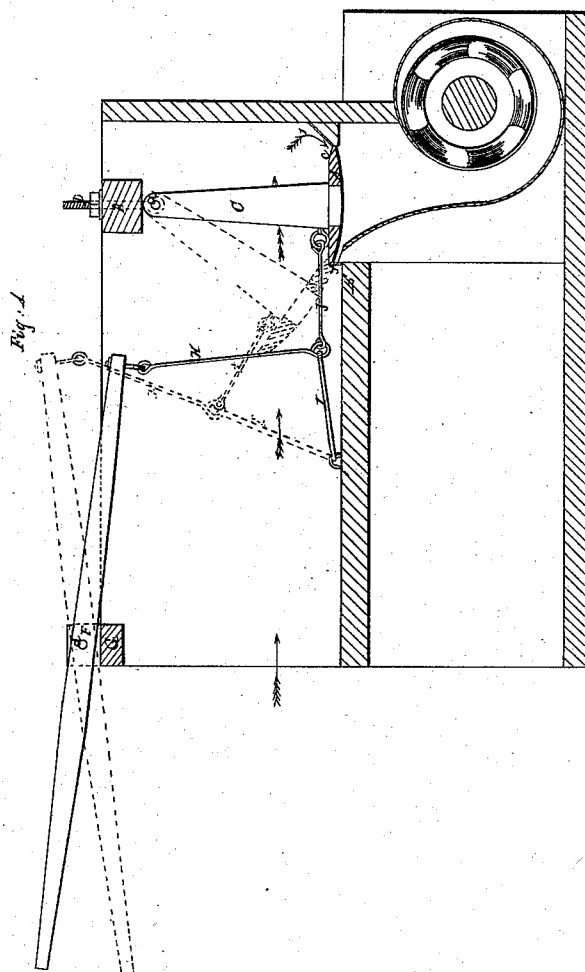
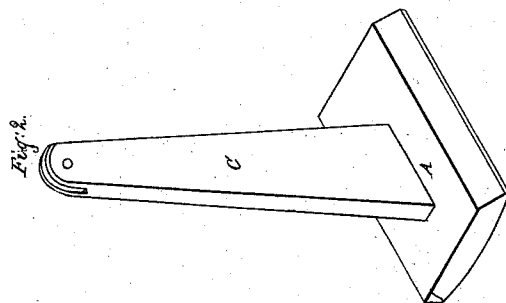


H.L. Turner.

Water Wheel Gate.

No 11,183.

Patented June 27, 1854.



UNITED STATES PATENT OFFICE.

HARTWELL L. TURNER, OF STRYKERSVILLE, NEW YORK.

IMPROVED HEAD-GATE FOR WATER-WHEELS.

Specification forming part of Letters Patent No. 11,183, dated June 27, 1854.

To all whom it may concern:

Be it known that I, HARTWELL L. TURNER, of Strykersville, in the county of Wyoming and State of New York, have invented a new and useful Improvement in the Manner of Arranging and Opening and Closing the Head-Gates of Reaction Water-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of a flume-pitch, &c., for two reaction water-wheels arranged on a horizontal shaft for driving a saw-mill. Fig. 2 is a perspective view of my improved balance head-gate.

Similar letters of reference in each of the two figures indicate corresponding parts.

The nature of my invention consists in a new and simple manner of arranging and operating the head-gates of reaction water-wheels, whereby the great difficulty in hoisting, lowering, and keeping in order and preventing leakage can be perfectly overcome, and gates of any size opened and closed with facility and great ease.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A in the accompanying drawings represents the head-gate of a water-wheel. It is attached firmly to the cross-head B by the jointed bar C D, as represented in Fig. 2, and swings freely as it is raised and lowered on the pin *a*, which connects the eyebolt D and bar C together. The eyebolt D passes through the cross-head and has a thread formed on it and a nut screwed on the same. By this nut and screw the gate can be adjusted so as to clear the fall-block E about a quarter of an inch, as occasion may require. The bar C is placed in nearly the center of the gate, and the gate is beveled at *c* down to one-half or one-quarter of an inch thick at the back edge, said bevel commencing about three inches forward of the back edge, as shown in the drawings. By thus hanging the gate and beveling its back edge it will be almost perfectly balanced, and consequently it can be hoisted with ease and also lowered without jarring, for it may be evident that as the water rushes over the gate and cannot

escape, it must necessarily exert a pressure upon the same, and as the back edge is inclined or beveled at *c*, this pressure will come in contact with the said beveled part in the manner indicated by the arrow *l* and balance the same, and also aid the operator in hoisting the same, as the pressure is exerted in the direction in which it is moved when being hoisted. The bevel also serves to prevent the gate closing too hard, for the resistance of the water against said bevel-surface will be much greater than if the whole surface of the gate was even. The bottom of the gate is made concentric with the hinge-joint *a*. A strip of leather *f* is nailed on the front edge of the gate and laps over the space between the fall-block and gate and serves to prevent leakage.

F is a lever attached to the front cross-head G by a fulcrum-pin *d*. The back end of this lever is hinged to a connecting-rod H, which is jointed to another similar rod I, hinged to the fall-block E. These two rods form a knee-joint.

J is a rod for connecting the gate to said knee-joint and lever. This rod is hinged loosely to the bar of the gate and to the joint of the rods I J. By means of the lever, knee-joint, and connecting-rod the gate can be raised with ease to the position shown in red and lowered without jarring to the position shown in black, the lever being depressed to the position shown in red when the gate is hoisted and elevated to the position shown in black when the gate is lowered or closed.

It is by hanging the gate on a hinge at *a* and making it beveling at *c* that I am enabled to overcome the difficulties heretofore experienced in opening and closing the ordinary gates of water-wheels, and it is these features, in connection with the raising and lowering contrivance, that constitute my invention.

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

The manner herein described and shown in the drawings of constructing, arranging, and operating head-gates of reaction water-wheels, for the purposes herein specified.

HARTWELL L. TURNER.

Witnesses:

JOSEPH STANTON, Jr.,
JAMES HALL.