(No Model.)

C. H. COLQUHOUN.

HYDRAULIC GATE OR WATER REGULATOR.

No. 348,266. Patented Aug. 31, 1886.

Fig. 1.

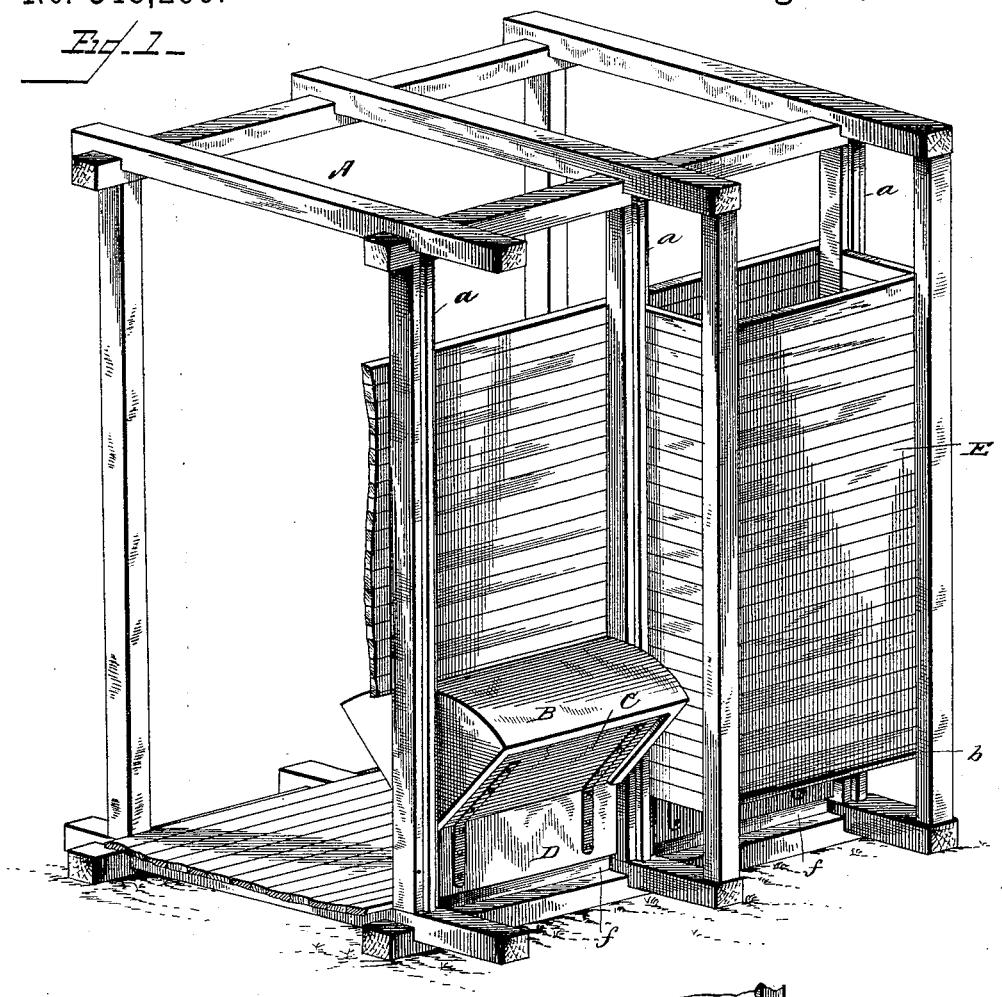
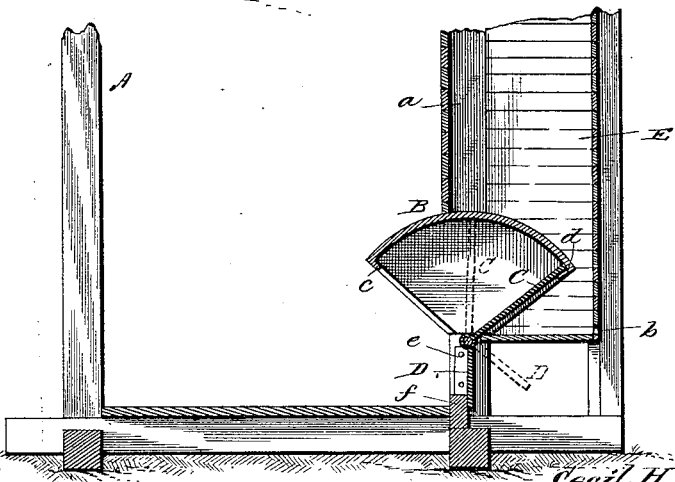


Fig. 2.



Witnesses
Wm. Leidel,
L. L. Miller.

Inventor
Cecil H. Colquhoun.
By his Attorney
Chas. H. Fowler

UNITED STATES PATENT OFFICE.

CECIL HUGH COLQUHOUN, OF ST. ANDREW'S BAY, FLORIDA.

HYDRAULIC GATE OR WATER-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 348,266, dated August 31, 1886.

Application filed July 8, 1886. Serial No. 207,424. (No model.)

To all whom it may concern:

Be it known that I, CECIL HUGH COLQUHOUN, a citizen of the United States, residing at St. Andrew's Bay, in the county of Washington and State of Florida, have invented certain new and useful Improvements in Hydraulic Gates or Water-Regulators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a perspective view of my invention, and Fig. 2 a sectional elevation thereof.

The present invention has for its object to provide a simple and effective means for regulating the water in water-mills, and also applicable to water-wheels, reservoirs, tanks, water-channels, canals, and other locks whereby the expensive tumbling-dams and water-escapes are dispensed with, as is also the tedious watching at night in bad weather, and danger from overflow and defective draw-gates is avoided; and the invention consists in the details of construction, substantially as shown in the drawings and hereinafter described and claimed.

In order to clearly illustrate the application of my invention, I have shown it in connection with a water-mill, A representing the framing of the lower breastwork of the mill, where the water is to be vented in case of overflow, said frame being of any desirable form and construction, and provided with a hood, B, in position between the posts *a* of the mill-frame. A gate is suitably pivoted to the sides of the posts *a*, and consists of a major wing, C, and minor wing D, disposed at an angle to each other, as shown, to allow greater scope for pressure of water on major wing of gate, it being in this instance placed at very bottom of head.

To the outside of face of breast of mill opposite to the water is a reservoir, E, which extends only to the level of breast upward and to level of axle or pivotal connection of gate downward, thereby leaving the minor wing D of gate open to the outer air, as this is the part of gate by which the water is to be vented. The reservoir E is closed in on outer face at both sides and bottom, but left open on top, it having a small opening, *b*, on outer face at bottom, to allow of a small amount of leakage. The hood B, in which the major wing C of the gate works, is segmental in shape or quadrant of a circle whose radius on inner side is equal to the length of gate from center of axle thereof to extreme end of major wing, except just sufficient space to prevent friction, and the width of the hood on inner side is equal to major wing, except enough space is left to avoid friction of the parts, this construction being essential to insure a perfect working of the gate by the action of the water thereon. The hood is provided with flanges *c d*, the purpose of which is to arrest the motion of the gate beyond the side extremities of the hood in either direction, thus forming a perfectly-even water-tight face for it to abut against.

To the frame, at the sides thereof, are attached flanges or projections *e*, and at the bottom a flange or projection, *f*, for the minor wing D to abut against when closed perfectly true, thereby making a water-tight joint with gate when in a closed position. It should be understood that the discharge at bottom of a head of water is much greater than over a breast of weir, and increases in proportion with the head. It is therefore evident that the pressure on major wing C of gate will be much greater than on minor wing D, and will force the major wing outward through the hood until arrested by the flange *d*, and as it is forced outward the minor wing would be forced inward until arrested by the flanges *e f* between the posts *a* of frame A, as shown in full lines, Fig. 2, thus closing the gate and stopping all vent to the water. When, however, the water (as in a freshet) rises inside the breast of mill and runs over it, it would fill the reservoir E, which is open at top, and in proportion as the reservoir fills with water the major wing C of the gate would lose its power over minor wing D, as there would now be water on both sides of it, the water on one side in reservoir neutralizing water-pressure on inner side. The pressure of water against minor wing D of the gate would then assert itself and open it downward and vent the water, the gate opening slowly, without jar, as the water ran into reservoir and filled it.

As will be seen, the reservoir E controls the gate and makes the working of it automatic, as many hoods, gates, and reservoirs therefor being used as found necessary, this depending on the amount of water (flood) necessary to be discharged—a matter of calculation depending on height of head in breast and size of gate. When the water ceased to flow over breast into reservoir, it having sunk below level of breast, by discharge through gate or cessation of freshet, the reservoir would soon become empty again by discharge through small slot or opening *b* at lower end of outer face of reservoir. The pressure of water on inside of breast would again assert itself, forcing the major wing of gate outward until arrested by the flange *d* in the hood B, and also force minor wing inward until arrested by the flanges *e f*, thereby shutting the gate and stopping all vent. This would be accomplished slowly, without jar, in proportion as the water vented from reservoir, always keeping the water in the water-house of mill level with top of breast, or, in other words, preserving a full head of water.

The gate may be constructed of any suitable material or shape, as may also the reservoir, and, if found preferable, the hoods may be dispensed with, the use to which my invention is applied determining the construction and arrangement of the devices herein described, and the water may either flow over into the reservoir or be admitted by small slide-gates, according to the purpose for which they may be required—that is, they may be fixed to work automatically, as in the case illustrated in the drawings, or be operated by small slide-gates when applied to water-wheels and lock-gates.

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

1. In a hydraulic gate or water-regulator, the combination, with a pivoted gate consisting of two wings disposed at an angle to each other, of a reservoir for automatically controlling the gate by the action of the water therein, substantially as and for the purpose set forth.

2. In a hydraulic gate or water-regulator, the combination of a pivoted gate consisting of two wings disposed at an angle to each other, a hood inclosing the upper wing of said gate, and a reservoir for controlling it by the action of the water therein, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

CECIL HUGH COLQUHOUN.

Witnesses:
LAMBERT M. WARE,
W. H. PACKER.