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Inventor

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United States Patent Office.

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IMPROVEMENT IN GATES FOR TURBINE 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, SAMUEL A. PRESCOTT, of Sutton, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Gates for Turbine Water-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms a part of this specification, in which—

Figure 1 represents a side view of a wheel-curb provided with my improved gate device;

Figure 2 represents a half plan half sectional view of the same with the sluices open; and

Figure 3 represents a similar view with the sluices closed.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

The nature of my invention consists in certain improvements in gates for regulating the flow of water for turbine wheels, as hereafter explained.

In the drawing—

The part marked A represents the curbing, by which the wheel is inclosed or surrounded.

It is provided with suitable openings to admit the water to the wheel, and is also provided with an annular horizontal flange, *a*, which rests upon the bottom of the flume, and supports the curbing and wheel when set up for service.

B indicates a cap, which covers the top of the wheel; and

b, the opening for the shaft or spindle.

The cap B is secured to the curbing A by means of a series of screw-bolts, C, arranged through the flange *c* of the cap B and the flange *a* of the curb, as indicated.

A series of guide-plates, D, is rigidly secured in a vertical position between the flanges *a* and *c*; said plates D extend in through the curb A, to which their inner ends are attached.

The plates D form one side of the sluice-ways, and are set at such an inclination as to direct the streams of water against the buckets of the wheel at the proper angle.

The plates D may be made thick enough to receive the bolts C, and said bolts may be passed down through the plates instead of at one side, as indicated.

The gate is made in the form of a ring, which surrounds the curb A between the flanges *a* and *c*. It

consists of two annular flanges, E and F, joined to each other at their inner edges, next to the curb A, by vertical bars, *e*, so as to leave openings to correspond in number with the openings in the curb A.

The guide-plates D are reduced at top and bottom, to allow space for the flanges E and F, and permit of the latter being moved around for opening or closing the sluices.

Beveled or inclined lugs, I, are secured to the outside of the vertical bars *e* by means of screws or bolts J.

These lugs I are provided with inward-projecting tongues, *w*, which extend into the openings in the curb A and form the backs of the sluice-ways.

The inclination of the end of the lugs I and their tongues is such that, when moved up against the plates D, the lugs and plates fit accurately together and close the sluices, as indicated in fig. 2 of the drawing.

The gate-ring can be moved around for opening or closing the sluices by means of the stud K, which projects up through the flange *c*, and any suitable device may be connected therewith to facilitate the operation.

The water is admitted to the wheel between the faces of the lugs I and guide-plates D, which parts form smooth rectangular prismatic orifices, through which the water flows, and is directed against the buckets of the wheel in clear compacted streams, whether the sluices be opened much or little, and always at the same angle of impingement.

Thus it will be seen that the effect is proportionately the same with the gate partially opened as it is with the gate opened to its full extent.

From the foregoing description it will be seen that by my improvement an important result is accomplished, while at the same time the devices of my gate are simple and are not liable to get out of order.

Having described my improvements in gates for turbine water-wheels,

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

The combination, with the curb A, and cap B provided with flanges *a* *c*, of the gate-ring E F *e*, stationary guide-plates D, and tongued lugs I *w*, substantially as and for the purposes set forth.

SAMUEL A. PRESCOTT.

Witnesses:

CHAS. H. BURLEIGH,
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