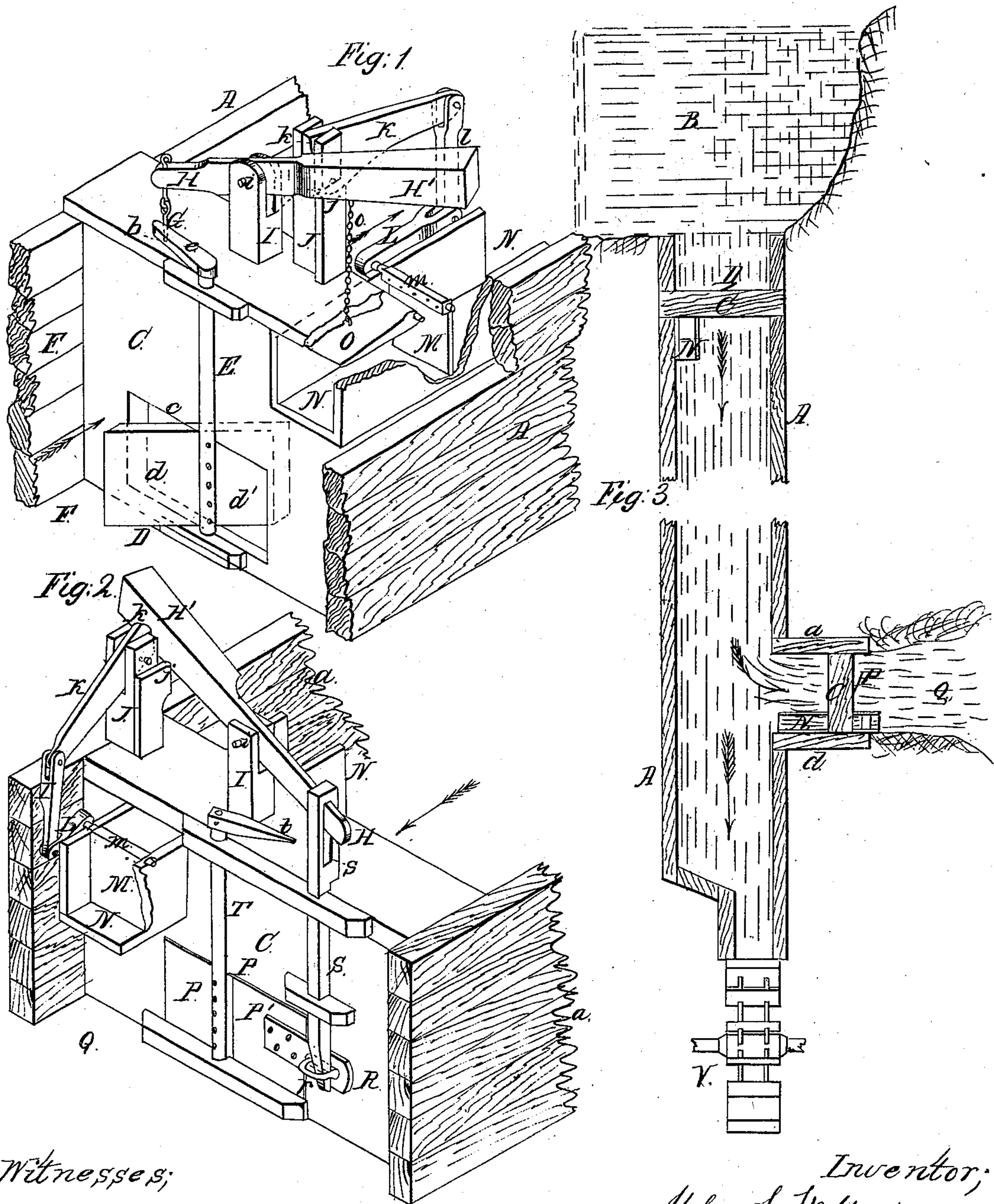


J. S. Wilson.

Water Gate.

N^o 85,048.

Patented Dec. 15, 1868.



Witnesses;

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JOHN S. WILSON, OF HARVEYSBURG, OHIO.

Letters Patent No. 85,048, dated December 15, 1868.

IMPROVED SLUICE-GATE.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, JOHN S. WILSON, of Harveysburg, in the county of Warren, and State of Ohio, have invented certain new and useful "Improvements in Self-Acting Sluice-Gates for Mill-Races;" and do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

The first part of my invention relates to certain devices whereby the flow of water through a mill-race may be automatically shut off, whenever the stream from which the race receives its supply becomes unusually high.

The second part of my invention consists in devices for automatically opening suitable flood-gates, so as to drain the mill-race, and thereby prevent its embankments being bursted by the excessive pressure of water within them.

In the accompanying drawings—

Figure 1 is a perspective view of a "head-gate" provided with my improvements;

Figure 2 is a perspective view, showing my improvements as applied to a "flood-gate;" and

Figure 3 is a ground-plan, showing the location of the head and flood-gates in the mill-race.

A represents a mill-race, which receives its supply of water from the stream B, and this race has placed across it, near its upper end, a stout bulk-head, C, to which are attached the automatic devices for shutting off the supply of water to said race.

The bulk-head C is pierced at c, for the reception of the head-gate D, which is attached to a vertical shaft, E, having an arm, e.

The head-gate is attached to the shaft in such a manner that its longest side, d, may be presented to the water in the forebay F, while its shortest side, d', opens into the mill-race A.

The arm e impinges against a rod, G, which depends from a lever, H, and the lower and free end of this rod enters an aperture, b, in the bulk-head.

The lever H is fulcrumed at i to a standard, I, and the loaded end, H', of said lever is supported upon a shoulder or ledge, j, of post J.

Pivoted to the post J is a lever, K, having a cam, k, at one of its ends, and the other end of the lever is united to an arm, L, by a rod, l.

The arm L is secured to a shaft, m, which is placed athwart the flume N, and this shaft has attached to it the regulating-valve or gate M, which is placed in the flume in such a manner that it will operate whenever the water becomes dangerously high.

The flume is also provided with a stop-valve, O, which valve is connected to the lever H' by a chain, o.

The flood-gate, shown in fig. 2, is provided with the devices C, H, H', I, i, J, j, K, k, L, l, M, m, and N, the same as exhibited in fig. 1, but the flood-gate P is fitted in the bulk-head in a reverse manner to what the head-gate is; or, in other words, the short side, p,

of said gate P opens into the mill-race, and the long side, p', opens into the waste-way Q.

This flood-gate is provided with a hasp, R, which engages over a staple, r, that is driven into the bulk-head, and said gate is prevented from opening, when the water in the race is at its usual stage, by means of the bolt S, whose lower end is inserted in the staple r.

The upper end of this bolt is slotted at s, for the reception of one end of the lever H, which lever is similar, in construction and operation, to the one exhibited in fig. 1.

The flood-gate P has a shaft, T, and an arm, t, which permit of said gate being opened by hand, when necessary.

The operation of the head-gate will be readily understood by referring to fig. 1, in which said gate D d' is represented as opened, and the water from the forebay F is supposed to be flowing through the opening, c, in the direction indicated by the blue arrow.

It will be seen that as the long side, d, of the head-gate opens into the forebay, the tendency of the current is to close said gate; but this cannot be effected as long as the arm e bears against the rod G.

The flume N is placed in the bulk-head, at such an elevation as to be above any ordinary stage of water, but when the stream B becomes unusually high, the water commences to flow through said flume, thereby causing the regulating-valve M to turn with the current, by which means the arm L, rod l, and lever K, are simultaneously raised.

The elevation of the lever K causes its cam k to force the lever H H' from off of the shoulder j, and the loaded end, H', of said lever instantly drops, thereby raising the other end, H, and withdrawing the rod G from the aperture b, and, as the support has thus been removed from the arm e, the current of water at once closes the head-gate D, so as to cut off communication between the forebay and mill-race.

As the stop-valve O is maintained in its elevated position by being connected to the loaded end H' of the lever, said valve closes as soon as the lever falls, and thereby prevents water from passing through the flume into the race; and it will be seen that the greater the pressure of water upon the stop-valve, the more securely it will be held in its closed condition.

The flood-gate P is employed for the purpose of draining the mill-race whenever the water in it becomes so high as to endanger the embankments, and this gate is automatically opened by devices similar to the ones which operate the head-gate.

It will be seen, by referring to fig. 3, that the flood-gate is situated in a branch-race, a, which is located near the mill V, and the pressure of water in said branch has a tendency to open the gate, but it is prevented from opening by the bolt S, which passes down through the staple r, and in front of the hasp R, thereby retaining said gate in its closed condition, as shown in fig. 2.

When the water in the race A and branch a becomes

unusually high, and begins to flow through the flume N, the regulating-valve M, levers K *k* and H H' operate in the same manner as described for the head-gate D, and as soon as the end, H, of the lever H H' is elevated, it draws the bolt S out of the staple *r*, and the pressure of water in the branch *a* immediately opens the flood-gate P, and the contents of the mill-race are discharged into the waste-way Q.

The flood-gate opens readily, because its long side, *p'*, is presented towards the waste-way, and as soon as the bolt S is withdrawn, the gate swings around towards said waste-way, by the action of the current of water.

A mill-race may be provided with both head and flood-gates, or with either, as may be found necessary, but in case the mill should be situated some considerable distance from the stream, it will be advisable to use both of the gates.

In situations where the mill receives its supply of water from a canal or other stream which is not liable

to become unusually high, the head-gate may be dispensed with, and the flood-gate employed alone.

I claim herein as new, and of my invention—

1. The head-gate D *d* *d'*, shaft E, arm *e*, bolt G, levers H H' and K *k*, supporting-shoulder *j*, connecting-rod *l*, arm L, and regulating-valve M *m*, all combined and arranged to operate substantially as and for the purposes specified.

2. The combination of the stop-valve O *o* with the gravitating-lever H H' and tripping-apparatus *j*, K, *l*, L, M, for the object stated.

3. The combination of the flood-gate P, releasing-devices R, S, H, tripping-devices K *k*, *j*, rod *l*, arm L, and valve M *m*, all arranged to operate in the manner and for the purposes explained.

In testimony of which invention, I hereunto set my hand.

Witnesses:

JOHN S. WILSON.

GEO. H. KNIGHT,

JAMES H. LAYMAN.