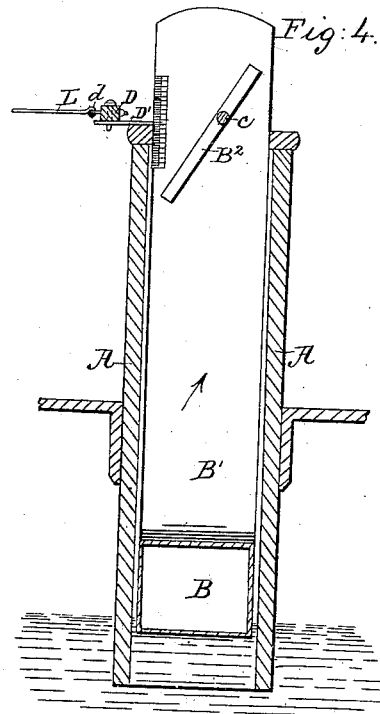
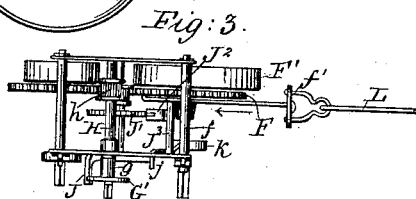
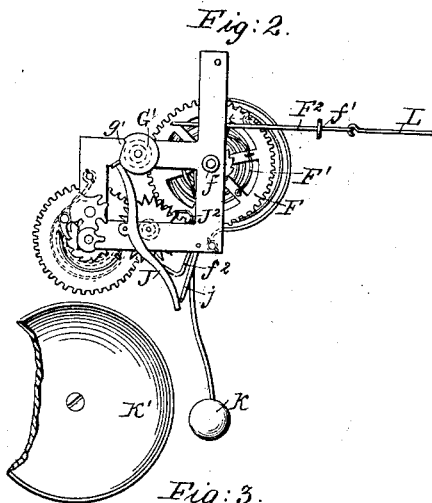
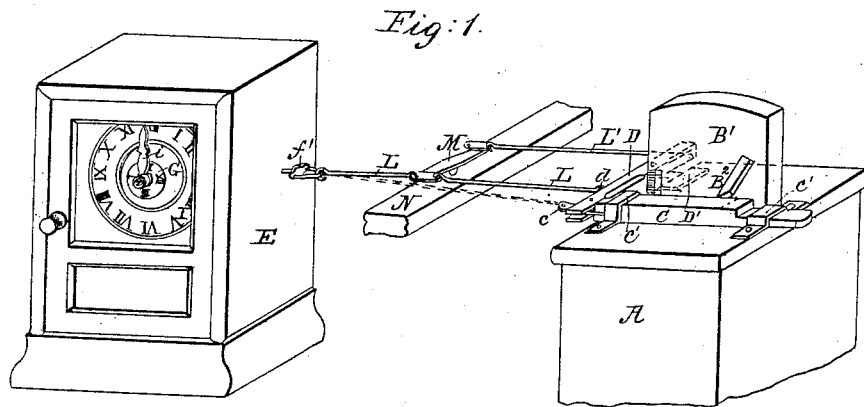


R. D. BRADLEY.
Hydraulic Indicator.

No. 44,931.

Patented Nov. 8, 1864.



Witnesses

R. D. Smith
J. G. Smith

Inventor.

R. D. Bradley
By H. M. Smith
Attorneys

UNITED STATES PATENT OFFICE.

ROBERT D. BRADLY, OF PRESTON, MARYLAND.

IMPROVED HYDRAULIC INDICATOR.

Specification forming part of Letters Patent No. **44,931**, dated November 8, 1864.

To all whom it may concern:

Be it known that I, ROBERT D. BRADLY, of Preston, in the county of Caroline and State of Maryland, have invented a new and Improved Hydraulic Indicator and Alarm; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved apparatus in condition for use, and Fig. 2 is a front sectional view illustrating more clearly the operating parts. Fig. 3 is a horizontal section of the indicator, hereinafter described.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an apparatus of novel construction, whereby a miller or other person interested in the condition of streams may be informed as to the height of water or forewarned of danger in consequence of the rising of water in time to enable him to prevent injury to a dam or other property, the indication being given in such a manner as to obviate the necessity for outdoor observation, as will be hereinafter fully explained.

In order that others skilled in the art to which my invention appertains may be enabled to fully understand and use the same, I will proceed to describe its construction and operation.

In the accompanying drawings, A may represent a rectangular box, which may be permanently and immovably placed within the stream whose height is to be made known to a person charged with the duty of opening flood-gates or otherwise preventing injury to a dam or other property which might be endangered by a rise of the water. Within this box A is a float, B, which has free vertical play within the box A, in order that it may rise and fall with the stream.

B' is a graduated slide, which is attached to and moves with the float B, said slide moving within a corresponding opening formed in the top of the box A. In the slide B' is formed an oblique or diagonal groove, B², into which projects a pin, c, which latter is secured to or formed on an arm, C, which rests upon and is adapted to move across the top of the box A, said arm being secured by metallic guide-straps C' C'. To the arm C is jointed a

lever D, which is also pivoted or fulcrumed upon a short metallic arm, D', which projects from the top of the box A. When the water rises, the float B, moving upward within the box A, elevates the slide B', and the groove B², acting upon the pin c, causes the arm C to move and the lever D to turn upon its pivot.

E represents an indicator or alarm, the entire mechanism of which need not be described in detail, inasmuch as the striking or alarm apparatus operates upon the same principle as alarm clocks in common use; therefore I will omit reference to such parts as are not necessary to an intelligent description of my invention.

F is a cog-wheel keyed upon a shaft, f, which has wound upon it at a point behind the wheel F' a main spring, F', the latter having a constant action, whose tendency may be to turn the wheel F in the direction indicated by the arrow. The wheel F, operates a graduated disk, G, and a cam, G', (the two latter being conjoined or formed in one piece,) through the medium of a pinion, h, secured upon the same shaft, H, as the cam-disk G G'. The disk is secured in position by means of a sleeve, g, which, while it causes the disk G and cam G' to move with the shaft H, adapts said cam and disk to be turned independently of the shaft H, in order that the point of alarm on the disk may be varied as required by circumstances. The disk is set with relation to a hand, i, and when the depression or notch g' in the cam G' comes in contra position with the end of a pivoted arm, J, said arm will move into the notch g', which movement is caused by pressure from an arm, j, and permits the detent J² to be actuated by the escapement J'. The movement of the detent J² puts in motion the hammer K, which acts upon the alarm-bell K', said hammer being attached to the shaft J³, with which the detent turns. From the wheel F extends a wire or rod, F², which is caused to retain the hand i at zero, or rather at the point XII on the dial I, by being connected with either the arm C or lever D, the rod F² having its inward movement limited by the connecting eye or link f'. If the distance between the points at which the indicator and float are located be small, the connection may be made by a suitable wire or cord, L, as shown in red in Fig. 1, said wire being attached to the links f' and c; but when the dis-

tance between the float and indicator is such that the efficiency of the above connection might be interfered with, I employ a connecting medium, consisting of cross heads M, Fig. 1, which may be driven into the stakes or supports N, placed at various points between the float and indicator. These cross heads M are adapted to support the wires L L', which may be employed by having at each side an aperture, through which the respective wires are inserted, as shown in Fig. 1. The wires L L' are both attached to the lever D by means of staples *d d*, but the wire L' terminates within a suitable distance of the link *j*, in order that the wire L may, by the rising of the float B, be permitted to be drawn in the direction of the indicator E by the main spring F' acting through the rod F². To permit this movement of the wires, the cross-heads M, are adapted to turn readily upon their axes.

The operation may be thus briefly stated: As the stream rises, the float B ascends within the permanent box A, and produces the described movement of the arm C and lever D. By this movement the wheel F is allowed to turn in the direction indicated by the arrow, and said wheel, being actuated by the spring F', rotates the shaft H, and brings the depression *g'* in such position that the end of the arm J may be moved therein by the arm *j*, which releases the detent and operates the hammer K in the manner explained.

By so constructing and arranging the ma-

chine that the rising of the water will relax the chain and permit the spring to turn the index, it will be manifest that any stretching of the chain will cause the indication of a greater depth of water than actually exists, whereas if the chain were drawn out by the rising of the water the stretching of the chain would cause the indication of a less depth than actually existed, and thus might lead to disastrous consequences. It will further appear that in the event of the wire breaking, the spring will cause the sounding of the alarm, and thus indicate that something is wrong.

The indicator E may be placed in the mill or dwelling.

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

1. The float B, slide B', arm C, and lever D, employed in connection with the indicator E, substantially as and for the purpose set forth.

2. The employment of a spring, F', and wheel F, operating in connection with the float B, to turn the cam G' and operate an alarm apparatus, in the manner explained.

3. The cross-heads M and wires L L', employed in combination with a float and indicator, as and for the purpose set forth.

ROBERT D. BRADLY.

Witnesses:

WM. S. BRADLEY,
THOS. F. COX.