No. 648,312. Patented Apr. 24, 1900.

W. T. TAYLOR.

AUTOMATIC SAFETY GATE.

(Application filed Jan. 17, 1900.)

(No Model.)

FIG. 1.

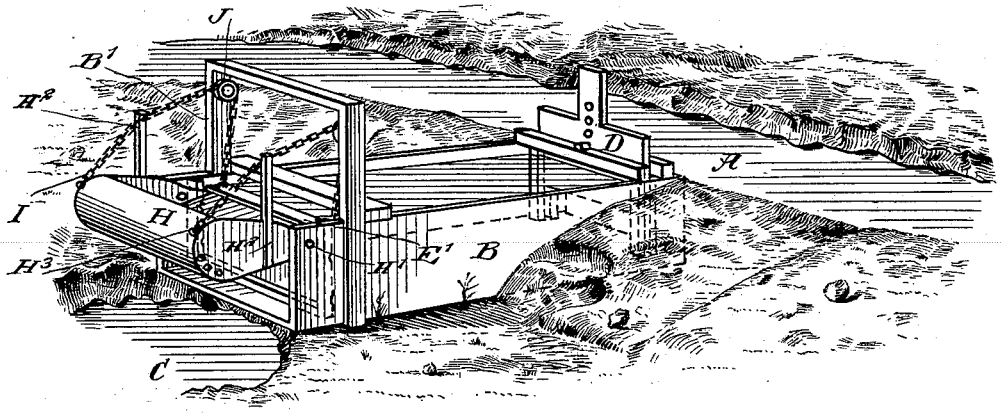


FIG. 2.

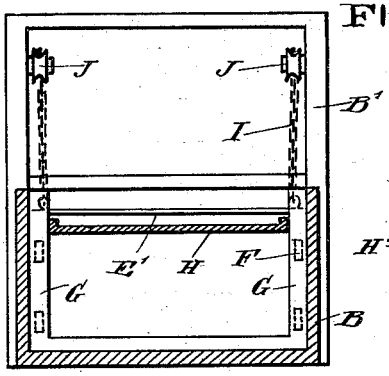


FIG. 3.

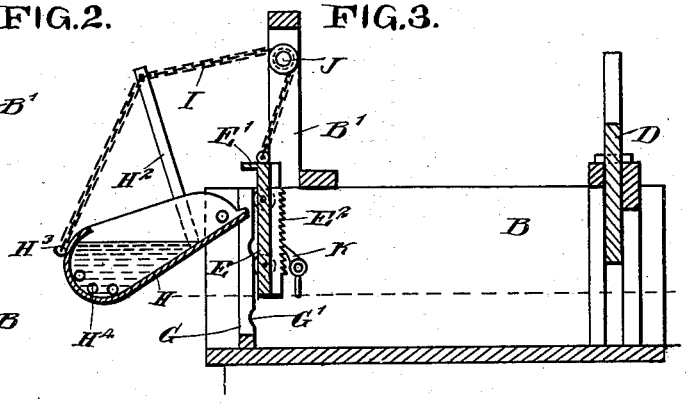


FIG. 4.

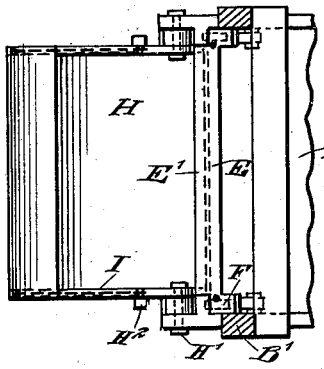
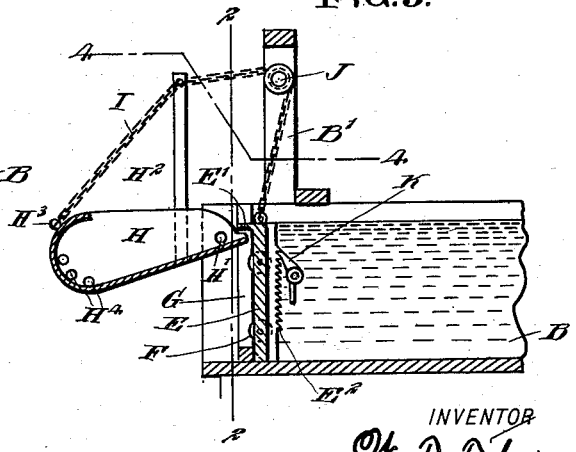


FIG. 5.



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WILLIAM THOMAS TAYLOR, OF EVANS, COLORADO.

AUTOMATIC SAFETY-GATE.

SPECIFICATION forming part of Letters Patent No. 648,312, dated April 24, 1900.

Application filed January 17, 1900. Serial No. 1,755. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM THOMAS TAYLOR, a citizen of the United States, residing at Evans, in the county of Weld and State of Colorado, have invented a new Improved Automatic Safety-Gate, of which the following is a full, clear, and exact description.

My invention relates to devices intended to automatically open a flood-gate or waste-gate in case the water in a ditch, flume, or channel reaches a dangerous level.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view showing my improved safety-gate in position. Fig. 2 is an end view, partly in section, on line 2 2 of Fig. 5, showing the gate closed. Figs. 3 and 5 are longitudinal sections of the improvement, showing the gate open and closed, respectively; and Fig. 4 is a plan showing the gate closed, with parts in section on line 4 4 of Fig. 5.

A is a flume, ditch, or channel, such as is used for mining purposes or for irrigation. Should the water rise enough in said channel to overflow the banks, the overflowing water would be liable to wash away the banks and to damage other property. To prevent this, I provide a box or flume B, through which any dangerous excess of water may be diverted to a suitable place, as C, where it can flow off without doing any damage. This box is preferably provided at the end next to the channel A with a head-gate D of any well-known or approved construction to permit of cutting off the box B from the channel A for the purpose of cleaning the box or of making repairs thereto. Normally, however, the gate D is open, so that water will stand at the same level in the channel A and box B.

At the discharge end of the box B is located the improved safety-gate and the mechanism for opening it automatically when the water reaches a dangerous level. The safety-gate E is capable of a movement which is mainly vertically up and down, the gate being provided on the discharge side with rollers F, arranged to travel on guide-rails G, secured to the box B. These rails have plane surfaces with the exception of notches or recesses G′, forming seats for the rollers F when the gate E is in the lower or closed position, as shown in Fig. 5. The upper portions of these seats, as will be readily understood, are inclined upwardly and rearwardly. Owing to this construction the initial movement of the gate will be not only upward, but rearward as well—that is, against the pressure of the water in the box B—so that a certain force will be required to overcome this resistance and to start the gate. An accidental opening of the gate is thus prevented. When, however, the gate has been started and the rollers F reach the plane portion of the rails G, the movement of the gate will be vertical, and comparatively little force will be required to fully open it.

As a means for opening the safety-gate E I employ a bucket H, pivoted at H′ in front of the gate and having its rear end extending under a lip E′, projecting forward from the upper end of the gate E. Thus should the water rise above the level indicated in Fig. 5 the water will flow over the lip E′ into the bucket H, the bottom of which in its normal position is inclined downward. As the bucket becomes filled its outer end falls. This movement is availed of for the automatic opening of the gate E by connecting the bucket with the gate through the medium of chains I. Each chain is fastened to the top of the gate and then passes upward and slightly rearward to a pulley J and then over an arm H^2, extending upwardly from the bucket, to the attaching-point H^3 on the bucket. The pulleys J are journaled in posts B′, rising from the box B. The portion of the chain between the arm H^2 and the bucket serves mainly as a brace for the arm and might be omitted, the chain being then secured directly to the arm. The object of the arm H^2 is to so direct the chain to the pulley J as to avoid the formation of too sharp a bend or angle. The object of giving a rearward slant to the portion of the chain which is attached to the gate is to create a force counterbalancing in a measure the forward pressure of the water in the box B.

To prevent the bucket from being operated

accidentally by rain or other causes, I provide apertures H^4, through which a small quantity of water may escape.

The bucket and gate are of course made of such dimensions that the weight of the bucket when filled with water will be sufficient to raise the gate, as shown in Fig. 3. The surplus water will then pass out from the box B, preventing the water from overflowing the banks of the channel A.

Generally the weight of the bucket when empty is less than that of the gate, so that the latter will tend by gravity to restore the parts to the position shown in Fig. 5. As the apertures H^4 would soon cause the bucket to become empty when in the position shown in Fig. 3, it follows that the gate E would after a certain time close automatically. In some cases this operation might be satisfactory, since in case one discharge of water from the box B is not sufficient the water would again overflow into the bucket H and cause it to again open the gate E, thus repeating the operation indefinitely as long as the water-level remained high enough to fill the bucket when the gate is closed. In some cases, however, it might be desirable to have the gate remain open after it has been raised automatically, as described, until the gate is closed by an operator. To accomplish this, I provide the safety-gate with racks or toothed bars E^2, preferably on the rear or inner side, said racks being engaged by pawls K, which allow upward movement only while they are engaged with the racks, and thus prevent the gate from dropping until it is released by an operator throwing the pawls K out of engagement with the racks E^2.

It will be seen that the device is simple in construction and reliable in operation.

In the United States patent granted to me on October 17, 1899, No. 635,206, I have shown a bucket which operates the gate by engaging it directly. This construction, however, is suitable only when the gate is hinged, as shown in said patent, or when its sliding movement is very slight. As a rule, however, a sliding gate requires a greater sliding movement than it would receive from a bucket engaging it directly, and for this reason in my present construction the gate is not engaged by the bucket directly, but is raised by a flexible connection, such as a chain, connecting the gate with the bucket.

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

1. The combination of the sliding gate having an outwardly-projecting lip at its top, the bucket pivoted in advance of the gate and having its rear portion (that is, the portion between the pivot and the gate) projected under the lip of the gate, and a flexible connection extending from the top of the gate to the outer portion of the bucket, to raise the gate when the bucket is filled.

2. The combination of the box having guides which are mainly vertical but have portions inclined rearwardly and upwardly, the gate having rollers adapted to run on said guides and to engage said inclined portions at the beginning of its upward travel, the bucket pivoted adjacent to the gate and arranged to receive the overflow, and a flexible connection extending from the gate to the bucket.

3. The combination of the gate mounted to slide up and down, the bucket pivoted to the gate and adapted to receive the overflow therefrom, and a flexible connection secured to the gate and to the bucket, that portion of the chain which is attached to the gate, extending upwardly and rearwardly therefrom, for the purpose set forth.

4. The combination of the box having guides with depressions, the gate having rollers adapted to run on said guides and to rest on said depressions when the gate is in its lowermost position, the bucket pivoted adjacent to the gate and adapted to receive the overflow therefrom, and a flexible connection extending from the gate to the bucket, for the purpose set forth.

5. The combination of the gate mounted to slide up and down, the bucket pivoted adjacent to the gate, and adapted to receive the overflow therefrom, an arm extending upwardly from the bucket at the opposite side of its pivot from the gate, and a flexible connection secured to said arm and to the gate, to raise the latter when the bucket falls.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM THOMAS TAYLOR.

Witnesses:

CHAS. L. AUSTIN,

DAVID D. LUPER.