

APPLICATION FILED NOV. 25, 1907.

2 SHEETS—SHEET 1.



W. C. Isel.
A. P. Kitchin

Inventors

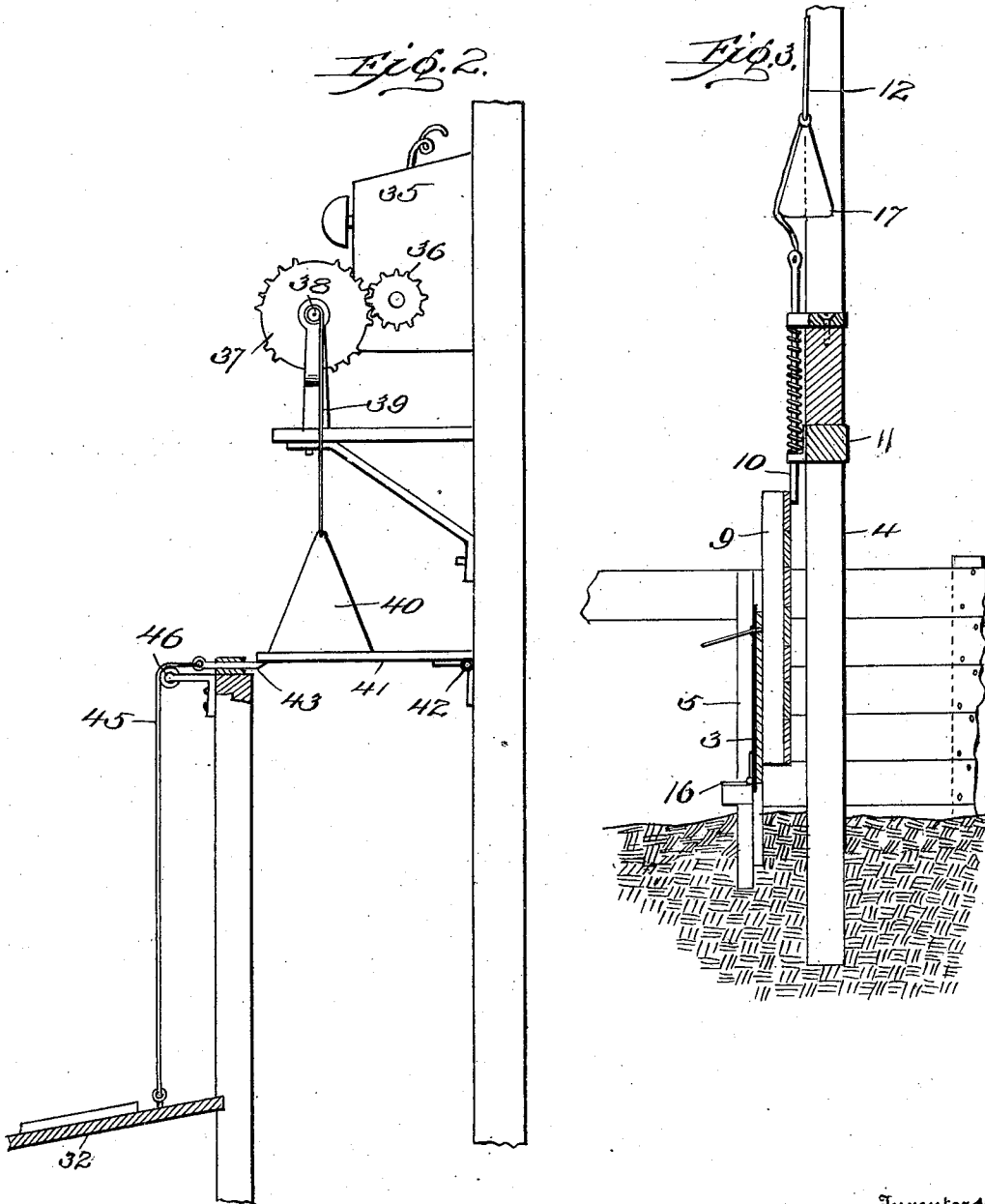
Harry I. Shotwell
and William M. Corb.

Wm. Mason Fennick Lawrence,
their Attorneys

H. I. SHOTWELL & W. McCOMB.
 ALARM FOR IRRIGATING DITCHES.
 APPLICATION FILED NOV. 25, 1907.

933,856.

Patented Sept. 14, 1909.
 2 SHEETS—SHEET 2.



Witnesses
W. L. Isel
W. L. Kitchen

Inventors
Harry I. Shotwell
and William M. Comb
 By *Mason Farnick Lawrence*,
 their Attorneys

UNITED STATES PATENT OFFICE.

HARRY I. SHOTWELL AND WILLIAM McCOMB, OF WENATCHEE, WASHINGTON.

ALARM FOR IRRIGATING-DITCHES.

933,856.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed November 25, 1907. Serial No. 403,767.

To all whom it may concern:

Be it known that we, HARRY I. SHOTWELL and WILLIAM McCOMB, citizens of the United States, residing at Wenatchee, in the county of Chelan and State of Washington, have invented certain new and useful Improvements in Alarms for Irrigating-Ditches; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in automatic means for turning the water out of irrigation ditches when the same break.

The invention comprises the production of means for sounding an alarm at various points along a canal or an irrigation ditch and for at the same time operating automatically means for turning the water out of the main ditch or canal above the break and for moving a gate or door across the main ditch.

The invention further comprises a float positioned in the canal or ditch and designed to operate a catch for lowering a weight which in turn acting through a suitable cable or wire will disengage the securing means or catch of the waste gate for permitting the water in the canal or ditch to flow in a waste ditch.

The invention further comprises means for drawing across the main canal or ditch a gate at the same time that the gate to the waste ditch is opened so that the water is shut off the main ditch above a break automatically at the same time that the waste gate for accommodating the water is operated.

An object in view is the production of improved means that will not only shut off the water when a break occurs in a canal but will also automatically sound an alarm in proximity to the break or at any number of distant stations that may be desired.

With these and other objects in view, the invention comprises certain constructions, combinations, and arrangements of parts as will be hereinafter more fully described and claimed.

In the accompanying drawings—Figure 1 is a perspective view showing a canal or irrigating ditch with the present invention applied thereto. Fig. 2 is an enlarged detail side elevation of the structure shown in Fig. 1. Fig. 3 is an enlarged detail sectional view taken approximately on line 3—3 of

Fig. 1. Fig. 4 is a view of a modified form of latch for use in the various places in which a latch or trip is required.

In canals, and particularly in irrigating canals or ditches, it has been found very inconvenient at times to repair the same on account of inability to quickly locate the break. Unless some means are provided along the ditch and particularly irrigating ditches for signaling when a break occurs no advice of the break is given until the water in the ditch begins to slacken and finally ceases to flow, and then repairmen are compelled to simply follow the ditch until they come to the break, which oftentimes requires considerable time and labor. Stations along the ditch, and also other means, have been provided for more readily indicating or finding where a break occurs. To the class of devices that are designed to automatically operate when a break occurs, the present invention relates.

The system consists of any number of sets of gates and alarms that may be required, according to the length of the ditch, but generally placed several miles apart, but all connected by the wire carried along the ditch by supporting poles and insulators, the wire being charged by electricity as a telephone system. One end of this wire terminates at the office at one end of the ditch, or in town, as the case may be, and the other at the extreme set of gates. A telephone instrument may also be affixed to the office end of the wire. This telephone wire being also connected to the alarm bells at each station or set of gates. Thus the alarm caused by a break at any particular point acting upon the signal, is sounded instantaneously at each station along the line, as well as at the head office, but each station has its particular and special alarm for its designation, caused by vacant points on the alarm cog wheel.

Referring more particularly to the drawings, 1 indicates an irrigating ditch or canal of any desired kind and of any desired length, and 2 a waste ditch or canal for accommodating any superfluous water. Positioned at the point where the ditch 2 meets ditch 1 is a gate 3 mounted in a framework 4. Positioned at one side of gate 3 in the framework 4 are braces or posts 5 and 6 that are designed to have secured thereto cushioning means 7 and 8 made of any desirable material that will make a tight joint between

gate 3 and posts 5 and 6, as for instance a rubber packing. Gate 3 is designed to be slightly below the top of the sides of ditch 1 so that in case the water in ditch 1 attempts to rise it will flow over the same into ditch 2. Secured to gate 3 is an extension or auxiliary gate 9, that is designed to engage a catch 10, so that gate 9 and also gate 3 are held in an upright position against the pressure of water in ditch 1. Catch 10 is mounted upon a cross member 11 and is designed to be spring-pressed, so as to be normally forced downward for engaging gate 9. Connected to catch 10 is a rod or cable 12 that extends upwardly and passes through a pulley or sheave 13 which is secured in the framework 4. From sheave 13 cable 12 passes along the canal for any desired distance and eventually is secured to a weight 14. Cable 12 is supported in pulleys or sheaves along the ditch in any desired way, preferably by having pulleys mounted upon poles 15. By this construction, whenever weight 14 is lowered as will be hereinafter fully described cable 12 is pulled and catch 10 is raised and disengaged from gate 9. This will permit the water pressing against gate 3 to force open gate 3 and also gate 9 upon their hinges 16. The weight 17 is secured to cable 12 between catch 10 and pulley 13 and tends at all times to keep taut cable 12. The weight 17 is simply of sufficient size for taking up the slack in cable 12, so that any movement in weight 14 will substantially instantly act upon the catch 10 for operating the same.

Weight 14 is designed to be comparatively heavy and to rest upon a door or swinging platform 18. The door or swinging platform 18 is pivotally mounted in a frame 19, which carries pulleys or sheaves 20 and 21. Pulley 20 is designed to accommodate cable 12 and pulley 21 to accommodate a rope or cable 22 that is secured to a windlass 23. The windlass 23 is designed to wind up cable 22 and consequently raise weight 14 to the position shown in Fig. 1, after it has been dropped. Secured to frame 19 is a brace 24, of any desired description, that has positioned in the outer end thereof a pulley or sheave 25. Sheave or pulley 25 is designed to project out over the ditch 1 so as to permit cable 26 that passes therethrough to pass directly down and engage a float 27. Float 27 is held in position by suitable securing means, as cables 28, that prevent the float from moving from the immediate vicinity, but do not prevent any vertical movement, so that in case water in the ditch should become exhausted or should decrease, the float will gradually fall or sink downward and pull upon cable 26. Cable 26 passes from float 27 over pulley 25 and engages a catch 29 that is designed to pass beneath platform 18 for holding the same in a horizontal position.

Weight 14 is designed to rest upon platform 18, and whenever catch 29 is pulled out from underneath the platform 18 the weight will drop toward the earth and will consequently pull upon the cable 12, as heretofore described, and operate catch 10. When the water in the ditch 1 decreases, float 27 will fall or move downward and consequently cable 26 will pull catch 29 from beneath platform 18 and weight 14 will be lowered, as just set forth.

When the float 27 is lowered and weight 14 falls, catch 10 will be operated and gates 3 and 9 lowered, for permitting the water from ditch 1 to enter waste ditch 2. As gate 3 moves downward it will pull cable 30 and operate catch 31 so that catch 31 is moved out from beneath gate 32. When gate 32 is thus released it will swing downward upon its hinges 33—33 and take a position across the main ditch or canal 1 and prevent any water from passing downward to the ditch below the same. It will be understood of course that float 27 will be lowered upon the decrease of water in the ditch whether a break occurs in that section of the ditch or the water is decreased by other means. The float 27 is designed to operate together with the remaining mechanism upon the decrease of water, for whatever cause, for eventually causing gate 32 to be moved down across the main ditch, for permitting all the water in the main ditch to pass out the auxiliary or waste ditch 2. Secured to gate 32 is a cable or rope 34 that is in turn attached to a drum 35 which is used for winding the cable and consequently raising gate 32 to the position shown in Fig. 1.

Positioned at any suitable place in proximity to gate 32 is an alarm mechanism 35. The alarm mechanism 35 may be of any desired construction that will give forth various signals according to the operation of the same, but preferably I provide a magneto construction having a gear 36 connected thereto for operating the same. In relation with gear 36 is another gear wheel 37 that is designed to have one or more of the cogs or teeth removed as shown in Fig. 2 so that as the same rotates it will not continuously rotate gear 36. One or more cogs or teeth may be removed in succession at several places around the periphery of the wheel 37 so that during a single rotation of wheel 37, wheel or gear 36 will cease to rotate for a short time. Gear 37 is mounted upon a shaft 38 that is designed to project a considerable distance from wheel 37, for forming a kind of drum upon which is designed to be wound a cable 39. The cable 39 is fastened rigidly to shaft 38 at one end so that whenever weight 40 descends it will act upon shaft 38 and revolve the same, which in turn will revolve gear wheel 37, rigidly secured thereto. Gear wheel 37 in its revolution will

in turn rotate gear wheel 36 for operating the alarm mechanism 35. Weight 40 is designed to normally rest upon a gate or pivotally mounted support 41 that is held in position by a suitable pivot or hinge 42 and a catch 43. Secured to one end of catch 43 is cable 45 that passes over a suitable pulley 46 and from pulley 46 extends to door or gate 32, so that when gate 32 is lowered, as heretofore described, cable 45 will be pulled and catch 43 disengaged. It will be observed that catch 43 will entirely leave its position as shown in Fig. 2, as the cable 45 is normally tight and any considerable movement of gate 32 will remove catch 43. The catch is arranged in this manner so that this removal from beneath the support 41 will be positive when gate 32 acts, so as to insure the falling of weight 40 and the sounding of an alarm.

In regard to the sounding of the alarm, it is designed to have the cable 39 wound around shaft 38 sufficiently to revolve the same once, though if desired it may be wound two or more times around the shaft 38, which will cause the signal to be repeated in proportion to the number of times that the cable is wound around the shaft. Ordinarily however, one revolution is sufficient. As seen in Fig. 2, in case the water should decrease in volume and float 27 be lowered and the gates be operated as heretofore set forth, weight 40 will be lowered and gear wheel 37 rotated once. This will give two comparatively long rings and two comparatively short rings as there are two sets in which the cogs or teeth are comparatively numerous, and two in which they are comparatively few in number. If it is desired to give simply two long rings two comparatively short blank spaces are provided on the wheel 27, instead of four as shown in Fig. 2. Any other desired combination may be provided as will be evident; for instance if four long rings should be desired two blank spaces will be left in wheel 37 and cable 39 will be wound twice around shaft 38. When weight 40 drops under these circumstances, wheel 37 will rotate twice and give two long rings on the first revolution and two more on the second rotation. In establishing the present invention upon an irrigating ditch it is desirable to arrange all of the signaling devices as shown in Fig. 2 so as to give a distinct or individual signal as one long ring, and one short ring, or two long rings or any other combination as desired, so that when any particular signal is heard the repairman will know exactly what part of the ditch is broken and may proceed to that part directly without any delay or guess work as to where he is needed. The signal device 35 is connected by a wire 44 to a telephone wire 45 so that signals from any of the signal sets 35 will be conveyed to any receiving

station for said signals, as for instance at the main office at the end of the ditch. The telephone wire 45 is also designed to be used for telephoning to any desired place along the ditch and for this purpose various telephone sets as the ordinary telephone repair sets used by telephone repairmen may be used. When using a magneto in the signal device 35 the same will ring all the telephone bells that are connected to wire 45 so that every station along the ditch is notified that there is a break in the ditch and also notified of the exact position of the break by the number of rings. After having once sent in a signal, the signal device 35 will not interfere with the use of the wire as an ordinary telephone circuit.

It will be understood that when the float 27 actuates the various mechanism and eventually causes the gates 9 and 32 to operate that the same will require to be reset in any desired way, preferably by hand, and the system reestablished after the break in the ditch has been repaired, when a break occurs, and in any event after the water has risen to the predetermined level.

In Fig. 4 we have illustrated a form of latch or trip different from that shown in the other figures, for use in the various places in which such a device is required. It consists of a latch proper, indicated by 50, held in position by guards 51, said latch being engaged by the end of a lever 52, pivoted at the point 53. This device is designed to permit of positive operation, notwithstanding the fact that the end of the lever 52 may be subjected to considerable lateral pressure.

What we claim is:—

1. In a system of the class described, a main ditch, a waste outlet leading from the said ditch, a flow stopping means in said main ditch, means for closing said flow stopping means upon the opening of the said outlet, and means for opening said waste outlet when water in said ditch beyond the flow stopping means and waste outlet is below a predetermined level.

2. In a system of the class described, a main ditch, a waste outlet for the said ditch, means for opening said outlet when water is below a predetermined level in the main ditch, and means for stopping the flow in said main ditch when the outlet is opened.

3. In a system of the class described, a main ditch, a waste outlet for the said ditch, a gate for closing said outlet under normal conditions, a gate adapted to move to position to close the flow in the main ditch, a float, a weight adapted to be tripped by the fall of the float, connection between the weight and the gate for the waste ditch, and connection between the said gate and the gate for the main ditch whereby when the first mentioned gate is opened, the last mentioned gate will be closed.

4. In a system of the class described, a main ditch, a waste ditch, a gate normally closing the entrance to the waste ditch, a gate adapted to move to position to close the flow in the main ditch, means for opening the first mentioned gate when the level in the main ditch falls below a predetermined point, and connection between the two gates whereby opening of the first mentioned gate will act to close the last mentioned gate.

5. In a system of the class described, a main ditch, a waste outlet for the said ditch, a gate for closing said outlet under normal conditions, a gate adapted to move to position to stop the flow in the main ditch, a float, a weight adapted to be tripped by the fall of the float, connection between the weight and the gate for the main ditch whereby when the first mentioned gate is opened the last mentioned gate will be closed, means for restoring such weight, and means for restoring the gate in the main ditch to its normal position.

6. In a system of the class described, a main ditch, a waste outlet for the said ditch, a gate for closing said outlet, means for positively holding said gate closed under normal conditions, a gate adapted to move to position to close the flow in the main ditch, a float, a weight adapted to be tripped by the fall of the float, connection between the weight and the gate for the waste ditch, and connection between the said gate and the gate for the main ditch, whereby when the

first mentioned gate is opened the last mentioned gate will be closed.

7. In a system of the class described, a main ditch, a waste outlet for the said ditch, a gate for closing said outlet under normal conditions, means for positively holding said gate closed, such means comprising a spring held catch and a weight, a gate adapted to move to position to stop the flow in the main ditch, a float, a weight arranged to overbalance the weight spring held catch first mentioned and adapted to be tripped by the fall of the float, connection between the weight and the gate for the waste ditch, and connection between the said gate and the gate for the main ditch, whereby when the first mentioned gate is opened the last mentioned gate will be closed.

8. In a system of the class described, a main ditch, a waste outlet for the main ditch, means for opening said outlet when the water is below a predetermined level in the main ditch, a device for stopping the flow in the main ditch when the outlet is opened, and means for sounding an alarm at substantially the same instant.

In testimony whereof we affix our signatures in presence of two witnesses.

HARRY I. SHOTWELL.
WILLIAM McCOMB.

Witnesses:

LILLIAN M. MARR,
ARTHUR GUNN.