A. W. BAILEY.

TIME CONTROLLING MECHANISM.

APPLICATION FILED FEB. 19, 1909.

948,718.

Patented Feb. 8, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

Fig. 2.

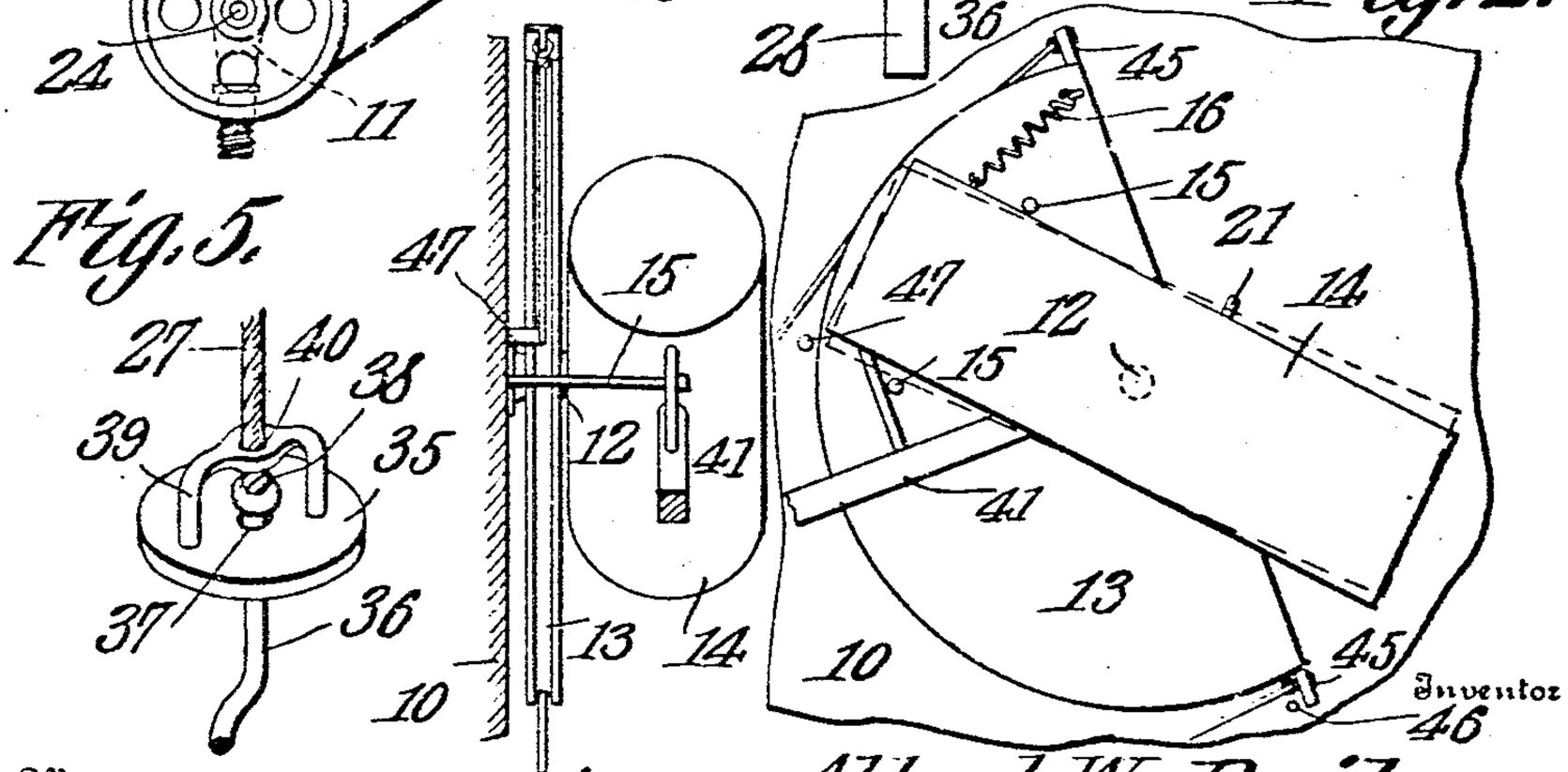

Fig. 4.

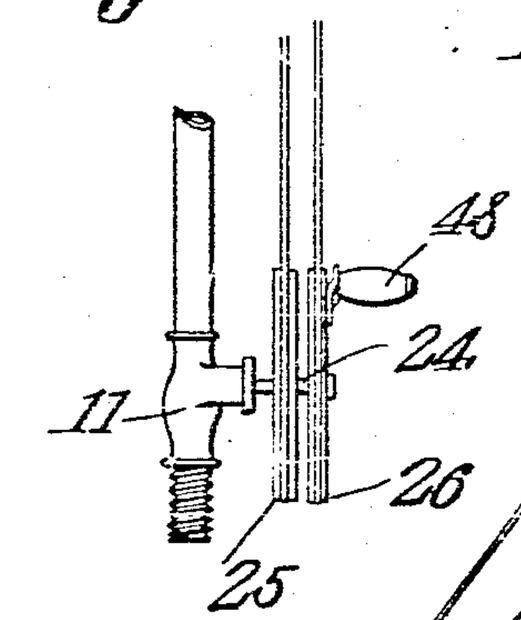

Fig. 5.

Fig. 3.

Witnesses

E. J. Edwards

M. A. Schmidt

Inventor

Albert W. Bailey.

By C. A. Snow & Co.

Attorneys

A. W. BAILEY.

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2 SHEETS—SHEET 2.

Fig. 9.

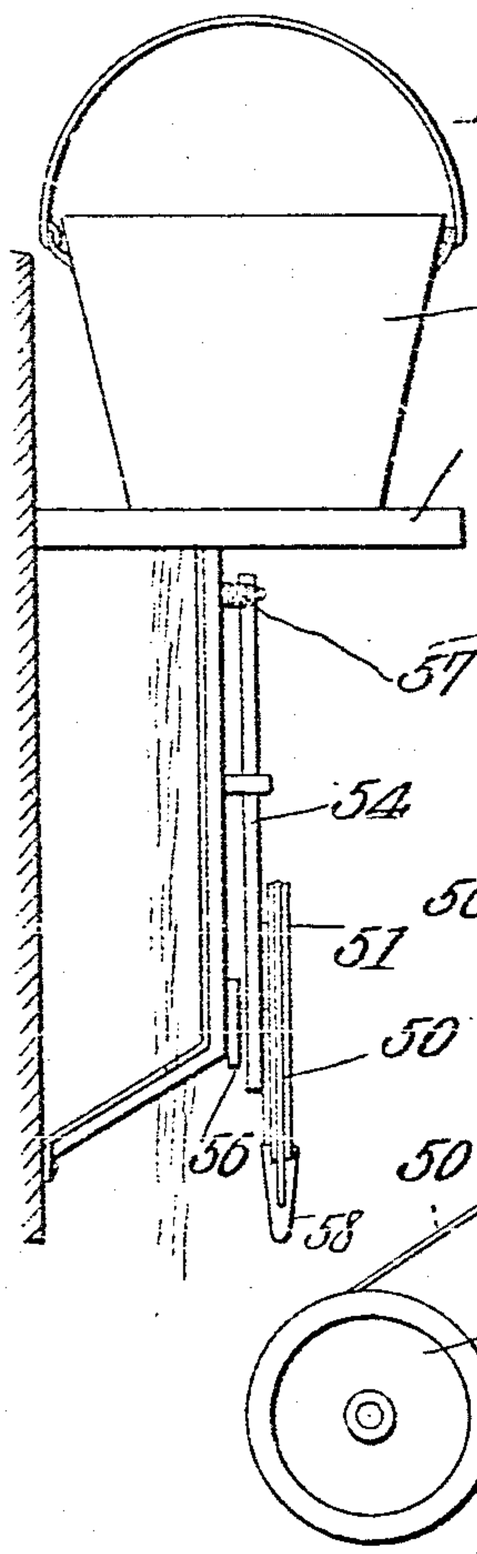


Fig. 8.

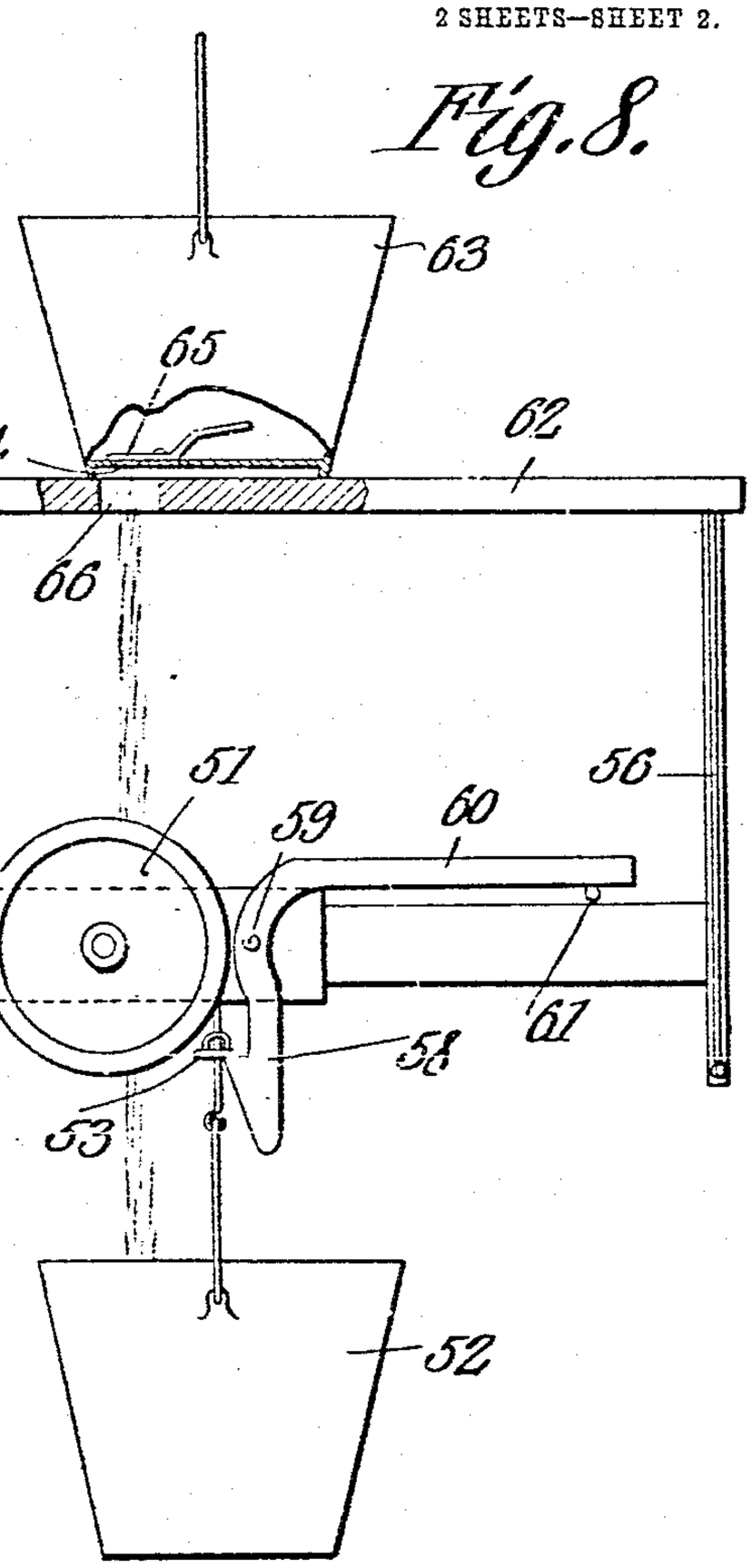


Fig. 6.

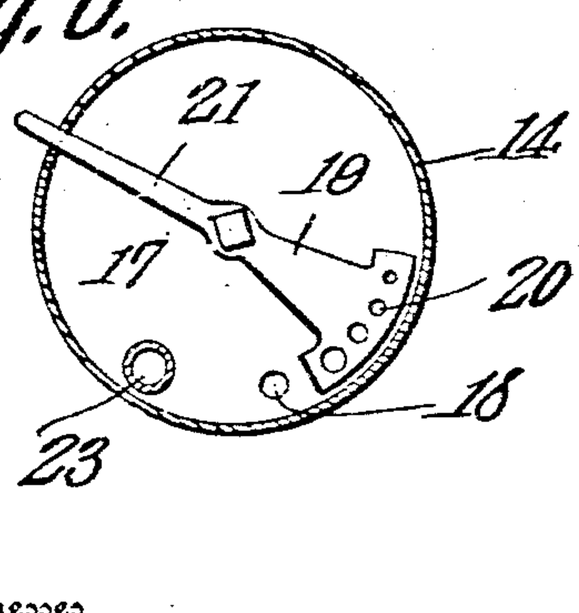
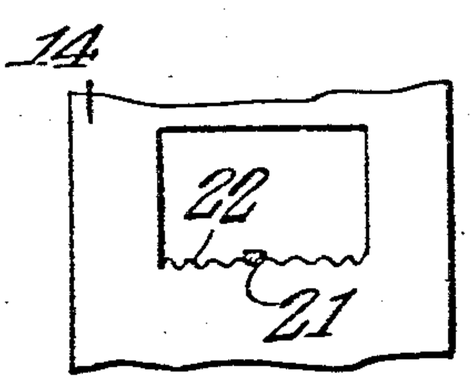


Fig. 7.



Witnesses

E. F. Ellwart

M. A. Schmidt

Inventor

Albert W. Bailey.

By C. A. Snow & Co.

Attorneys

UNITED STATES PATENT OFFICE.

ALBERT WHITON BAILEY, OF SPOKANE, WASHINGTON.

TIME-CONTROLLING MECHANISM.

948,718 Specification of Letters Patent. Patented Feb. 8, 1910.

Application filed February 19, 1909. Serial No. 478,914.

To all whom it may concern:

Be it known that I, ALBERT WHITON BAILEY, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented a new and useful Time-Controlling Mechanism, of which the following is a specification.

This invention is a time controlling mechanism for actuating a valve, and it is intended primarily for shutting off a flow of water after it has run for a predetermined length of time.

In communities where, by reason of a limited supply of water, or otherwise, its use for sprinkling lawns, etc., is permissible only for a certain length of time, it is desirable to provide for an automatic shut-off of the water at the expiration of the time allowed, and it is the object of the present invention to provide simple and efficient means for accomplishing this.

The invention is also useful where water meters are used in order to prevent a waste of water, and its structure is such that it may be employed wherever a time controlled valve actuating mechanism is desired.

The invention also has for its object to provide means whereby the mechanism may be set for different periods of time, thus adapting it for different local conditions.

Another object of the invention is to provide a mechanism of the kind stated which is simple in structure, and reliable in operation, and also devoid of complicated parts to get out of order.

With the foregoing objects in view, as well as others which will be apparent when the nature of the invention is better understood, the same consists in a novel construction and arrangement of parts to be hereinafter described and claimed, reference being had to the drawings hereto annexed in which—

Figure 1 is an elevation of the mechanism. Fig. 2 is a fragmentary elevation showing the parts in another position. Fig. 3 is an end view of the parts shown in Fig. 2. Fig. 4 is an elevation of the valve and the parts of the mechanism immediately associated therewith. Fig. 5 is a perspective detail. Fig. 6 is a transverse section of the tilting tank hereinafter refered to. Fig. 7 is a fragmentary plan view of said tank. Fig. 8 is an elevation of a modified form of mechanism. Fig. 9 is an end view thereof.

In the drawings, 10 denotes a base plate on which the mechanism is mounted, said plate being secured to the side of the building adjacent to the sill cock 11. On this plate is pivoted at 12 a semi-circular plate 13 on which is pivotally mounted to tilt in a vertical plane, a cylindrical receptacle or tank 14, the tilting movement of said tank being limited by the stops 15 on opposite sides thereof, between which stops the tank swings. The tank is normally held against the upper stop 15 by a spring 16 connected at its ends to the tank and to the plate 13 respectively. Within the tank is a partition 17 which divides the same into two compartments. In this partition is an opening 18 which establishes communication between the two compartments. The area of this opening is controlled by a pivoted damper 19 having a series of graduated openings 20. The damper is provided with an operating stem or handle 21 which projects through an opening in the wall of the tank to the outside thereof. One of the edges of said opening is toothed or serrated as indicated at 22 in Fig. 7, and the handle 21 is adapted to engage said teeth or serrations whereby it is locked and the damper thereby held at adjustment. In the partition is also an opening from which a pipe 23 projects, said pipe also establishing communication between the two compartments formed by the partition, and being for a purpose which will presently be made clear.

On the stem 24 of the sill cock 11, are fastened pulleys 25 and 26. Passing over the pulley 26, and having one of its ends secured thereto, is a cable 27, to the other end of which is connected a weight 28. This cable also passes over a guide pulley 29 mounted on the plate 10 by a strap 30. To this strap is also pivoted, as indicated at 31, a bell-crank lever 32 to one of the arms of which is pivoted at 33ª, a catch 33ª. There is a lug 33ᵇ formed on the catch which engages the lever and serves as a stop to limit the forward swing of the catch. From the plate 10 project stops 34 between which the other arm of the bell-crank lever is adapted to swing. On the cable 27 is rigidly fastened a button 35 engageable by the catch 33, whereby said cable is locked and prevented from being unwound from the pulley 26 by the weight 28.

To the free end of the cable 27 is tied or otherwise secured, a hook 36 by means of which the weight 28 is connected to said

cable. On the shank of the hook is mounted a button 35, said button having a central perforation 37 to receive said shank. The shank is provided with an eye 38 by means of which the connection with the cable is made. To the button 35 are riveted or otherwise secured the two branches of a yoke 39 provided with a central opening 40 through which the cable passes, the yoke being located above the knot whereby the cable and the hook are connected. By the hereindescribed construction the button 35 is securely fastened on the cable, and when it is engaged by the catch 33 the cable will be securely locked and prevented from unwinding by the weight 28, as already described.

Fastened to the tank 14, and projecting therefrom is a stem 41 on the outer end of which is mounted a roller 42. The stem is so located that the roller 42 may engage the bell-crank lever 32 which carries the catch 33. When the roller is in engagement with the lever, as stated, the latter is held against the lower stop 34, and is thus prevented from swinging on its pivot, and as the catch is in engagement with the button 35, the cable 27 will be securely locked, as already described.

Over the pulley 25 passes a cable 43 which is connected at its ends to the plate 13 at opposite ends thereof. In this cable is interposed a spring 44 for holding the same taut. On plate 13 are projections 45 to which the cable 43 is connected. From the plate 10 project stops 46 and 47 between which the plate 13 swings, its swinging movement being limited by said stops. The pulley 26 is fitted with a crank-handle 48.

In use, one of the compartments of the tank 14 will receive a suitable quantity of water, sand, or other material of a nature which will flow freely and readily through the opening 18. The damper 19 wil be set according to the rate of flow desired, which governs the time when the mechanism is actuated. Fig. 1 shows the operative position of the parts. The sill cock is supposed to be open, and the material in the tank 14 to be transferred from one compartment thereof to the other, is in the compartment uppermost in said figure. The tank is held against the upper stop 15 by the spring 16, which gives it an inclined position. The material in the uppermost compartment flows into the other compartment through the opening 18, and when the weight of said material in the last-mentioned compartment overcomes the tension of the spring 16, the tank tilts in the direction of the lower stop 15 as shown by dotted lines in Fig. 1. The tilting movement of the tank swings the stem 41 in a direction to disengage a roller 42 from the bell-crank lever 32, whereupon the latter is free to swing on its pivot. The catch 33 swings with the lever in a direction to release the button 35. The cable 27 now being released, the weight 28 unwinds the same from the pulley 26 and as said cable is fastened to said pulley, the stem 24 is turned in a direction to shut off the water. The rotation of the valve stem, through the pulley 25 and the connection 43 with the plate 13, swings the latter on its pivot until one of the extensions 45 engages the stop 46. When the plate 13 swings as stated, the tank 14 is reversed and assumes the position shown in Fig. 2, whereupon the water flows back into the original compartment through the opening 18 and also through the pipe 23, the latter being provided in order that a quick transfer may be had. If it is now desired to again use the water for a certain period of time, it is turned on by the crank-handle 48, which, by reason of the connection of the pulley 25 with the disk 13 restores the latter to the position shown in Fig. 1, which also restores the tank 14 to the position shown in said figure. The opening of the sill cock winds the cable 27 on the pulley 26, and upon engagement of the catch 33 with the button 35, and the engagement of the roller 42 with the bell crank lever 32, the parts are in a position to repeat the operation heretofore described. The catch is pivoted to the bell-crank lever so that it may swing out of the path of the button when the parts are reset as described.

In the modification shown in Figs. 8 and 9, a single pulley 49 is secured to the stem of the sill cock. To this pulley is secured a cable 50 in the same manner as the cable 27, and this cable passes over a guide-pulley 51, and carries at its free end a bucket or other suitable receptacle 52, the bucket being connected to the cable in the same manner as the weight 28, and said cable also being provided with a button 53 similar to the button 35. The pulley 51 is mounted on one arm of a bell-crank lever 54 pivoted at 55 to a bracket 56 which is mounted on the side of the building adjacent to the sill cock. To the other end of the bell-crank lever is fastened one end of a spring 57, the other end of the spring being made fast to the bracket. A catch 58 similar to the catch 32 is pivoted to that branch of the bell-crank lever which carries the pulley 51, said pivot being indicated at 59. This catch is also provided with a lateral extension 60 in the path of which is a stop 61. A pair of brackets 56 are provided, and these brackets support a shelf 62 on which is placed a bucket or other suitable receptacle 63 in the bottom of which is an opening 64 similar to the opening 18 and controlled by a damper 65 similar to the one heretofore described. In the shelf is an opening 66, and the bucket 63 is so positioned on said shelf that the openings 64 and 66 register. The guide-pulley 51 is

suitably located so that the contents of the bucket 63 passing through the openings 64 and 66 will drop into the bucket 52. As in the first instance, the rate of discharge from one receptacle into the other is controlled by the damper 65, and this rate of discharge governs the time when the sill cock is actuated to shut off the water.

The operation of the apparatus disclosed in Figs. 8 and 9 is as follows: When a sufficient quantity of water or other suitable material has dropped into the bucket 52 from the bucket 63, to overcome the tension of the spring 57, the bell-crank lever 54 swings on its pivot 55, and all the parts supported by said bell-crank lever swing downwardly. Inasmuch as the extension 60 of the catch 58 is in engagement with the stop 61, it will be seen that the downward spring of said catch will also result in said catch swinging on its pivot in a direction to release the button 53, whereupon the cable 50 is released, and the weight of the contents of the bucket 52 unwinds said cable from the pulley 49 and operates to shut off the water as in the first instance.

In both structures herein described, a quick shut-off is had. The arrangement shown in Figs. 8 and 9 would operate without the catch 58, as the increasing weight in the bucket 52 would gradually overcome the resistance of the valve, but inasmuch as a quick shut-off is preferred, I have devised the hereindescribed arrangement of catches.

In Fig. 1 is also shown an alarm which is actuated when the water is shut off. The alarm is an ordinary rotary bell 66 which may be mounted on the back of the plate 10, and is actuated by a pulley 67 loosely mounted on the bell shaft 68, and carrying a pivoted pawl 69 which is engageable with a ratchet 70 fast on the shaft 68. The cable 27 is in contact with the pulley 67, so that when the parts hereinbefore described move to shut off the water, the movement of the cable 27, through the pawl and ratchet mechanism, actuates the bell. The latter mechanism prevents the bell from ringing when the cable is wound up upon turning on the water.

I have shown one form of alarm mechanism, but it will be understood that the same may be altered or modified in a number of ways, it being necessary only to provide a suitable alarm, and to connect the same to some moving part of the shut-off mechanism in such a way that the alarm is actuated when the shut-off takes place.

It will be seen from the foregoing that I have produced a device of comparatively simple construction which in practice will admirably perform its function for the attainment of the end in view, and it is to be understood that I do not limit or confine myself to the precise details herein shown and described, inasmuch as minor changes may be made therein without departing from the spirit or scope of the invention.

What is claimed is:

1. In a time controlling mechanism, the combination with the parts to be actuated, of an inclined tilting tank operatively connected thereto, a partition in the tank, and having an opening, and a pipe extending from the space on one side of the partition to said partition, and opening into the space on the other side thereof.

2. In a time controlling mechanism, a cable, a hook carried by one end thereof, a weight hung on said hook, a disk having a perforation to receive the shank of the hook, and a yoke provided with a perforation through which the cable passes, and having its branches secured to the disk.

3. In a time controlling mechanism, the combination with the parts to be actuated, and means for locking the same including a bell-crank lever and a catch carried thereby, of a tilting tank actuated by the transfer of its contents from one end to the other, and a stem projecting from the tank, and engageable with the lever, said stem riding off the same when the tank tilts.

4. In a time controlling mechanism, the combination with the parts to be actuated, of a tilting tank operatively connected thereto, said tank being actuated by the transfer of its contents from one end to the other, and means connected to the parts to be actuated for automatically returning said contents to its original position in the tank after the said parts have been actuated.

5. In a time controlling mechanism, the combination with the parts to be actuated, of a tilting tank operatively connected thereto, said tank being actuated by the transfer of its contents from one end to the other, and means connected to the parts to be actuated for automatically inverting the tank after the said parts have been actuated.

6. In a time controlling mechanism, the combination with the parts to be actuated, of a support, a plate pivotally mounted on the support, a tilting tank mounted on the plate and operatively connected to the parts to be actuated, said tank being actuated by the transfer of its contents from one end to the other, and a connection between said parts to be actuated and the aforesaid plate, for swinging the latter on its pivot to invert the tank.

7. In a time controlling mechanism, the combination with the parts to be actuated, of an inclined tilting tank operatively connected thereto, a partition in the tank, and having an opening, a pipe extending from the space on one side of the partition to said partition, and opening into the space on the opposite side thereof, and means connected to the parts to be actuated for automatically

inverting the tank after said parts have been actuated.

8. In a time controlling mechanism, the combination with the parts to be actuated, and means for locking the same including a bell crank lever and a catch carried thereby, of a tilting tank actuated by the transfer of its contents from one end to the other, a stem projecting from the tank and engageable with the aforesaid lever, said stem riding off the same when the tank tilts, and means connected to the parts to be actuated for automatically returning the contents of the tank to its original position therein after the aforesaid locking means have been released.

9. In a time controlling mechanism, the combination with the parts to be actuated including a pair of pulleys having a common axis, of a support, a plate pivotally mounted on the support, a tilting tank mounted on the plate, said tank being actuated by the transfer of its contents from one end to the other, a cable wound on and secured at one end to one of the aforesaid pulleys, a weight connected to the other end of the cable, a catch for locking the cable, means operated by the tilting of the tank for releasing the catch, and a cable passing around the other pulley and connected at its ends to the aforesaid plate.

10. In a time controlling mechanism, the combination with the parts to be actuated, of a support, a plate pivotally mounted on the support, stops on the support between which the plate swings, a tilting tank mounted on the plate, and operatively connected to the parts to be actuated, said tank being actuated by the transfer of its contents from one end to the other, stops on the plate between which the tank swings, a spring for normally holding the tank against one of said stops, and a connection between the plate and the parts to be actuated for swinging the plate on its pivot to invert the tank.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ALBERT WHITON BAILEY.

Witnesses:

J. W. WHEATLEY,

R. S. GORRILL.