No. 832,844.

PATENTED OCT. 9, 1906.

A. J. COLLAR.

WATER GATE VALVE.

APPLICATION FILED AUG. 9, 1906.

Fig. 2.

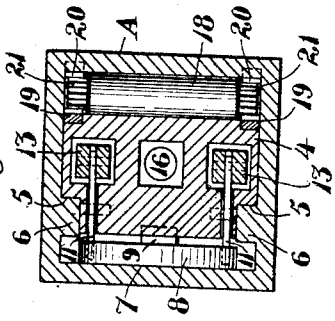


Fig. 3.

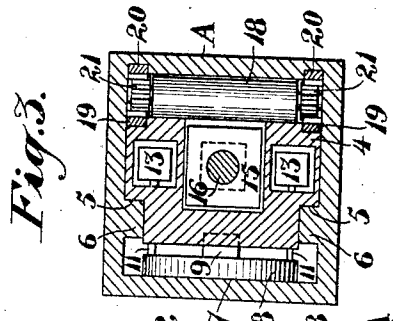


Fig. 4.

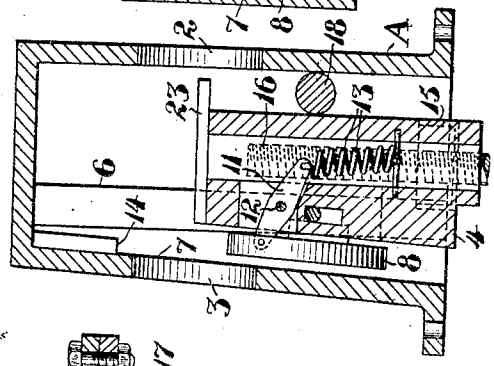
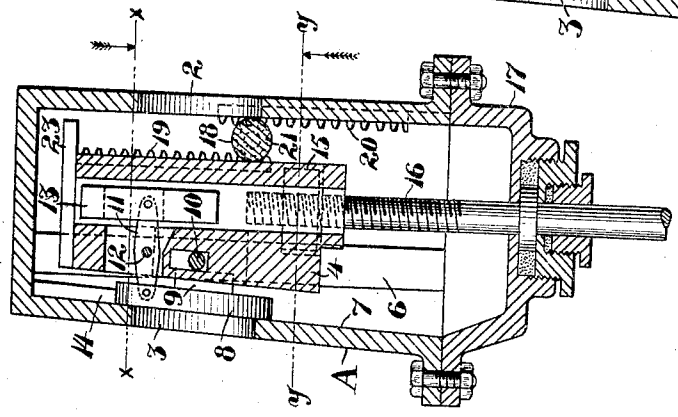


Fig. 1.



Witnesses:-

F. C. Fliedner

J. H. Inmse

Inventor;

Adoniram J. Collar

By Geo. H. Strong. Atty

THE NORRIS-PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ADONIRAM J. COLLAR, OF YREKA, CALIFORNIA.

WATER GATE-VALVE.

No. 832,844. Specification of Letters Patent. Patented Oct. 9, 1906.

Application filed August 9, 1905. Serial No. 273,385.

To all whom it may concern:

Be it known that I, ADONIRAM J. COLLAR, a citizen of the United States, residing at Yreka, in the county of Siskiyou and State of California, have invented new and useful Improvements in Water Gate-Valves, of which the following is a specification.

My invention relates to improvements in devices for controlling the flow of water in pipes.

It consists in a combination of mechanism and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a sectional view of my device. Fig. 2 is a section on line *x x* of Fig. 1. Fig. 3 is a section on line *y y* of Fig. 1. Fig. 4 shows the counterbalance-weight removed and a spring substituted.

My present invention is designed to provide improvements in the construction and operation of gates and valves which it is desired shall move transversely across the path through which the water passes.

My present invention is especially designed to be used in places where it is desirable to operate the valve from below or from one side, so that it may be operated in either a vertical, horizontal, or inclined position, and for this purpose I employ counterbalance weights or springs which serve to maintain the valve in a position opposite to the water-passage until the compressive force by which it is closed has been released and also to place the valve in the closing position before the closing pressure is brought upon it.

A is a casing of any suitable or desired shape adapted to contain the gate mechanism. This case has openings 2 and 3 at opposite sides. These openings are in line with the conducting-pipes through which the water flows. Within this casing is a shell 4, which is fitted to slide transversely to the path of the water. The shell has shoulders 5, which travel against guides 6, these guides being disposed within the casing parallel with one of the sides of the casing, so that the movements of the shell during the opening and closing are properly guided.

The face 7 of the casing, against which the valve closes, is inclined, as shown, and the movements of the casing from the widest end thereof toward the narrower end gradually brings the valve into position to be closed against the seat.

The valve or gate 8 is connected with the side of the shell, which is contiguous to the inclined face 7 of the casing. The central portion of the valve has a projecting bar 9, which travels in a slot in the inclined face of the shell and rests against a roller 10. This roller extends transversely through a slot in the shell and forms an antifrictional support against which the valve or gate moves when subjected to pressure. More than one roller may be used, if desired.

11 represents levers fulcrumed in the casing, as shown at 12. One end of each of the levers is pivotally connected with the gate. The other ends of the levers extend into open channels, within which weights or equivalent springs 13 are movable.

When the apparatus is in a vertical position, the operation of the valve may be very well effected by counterbalance-weights; but if the valve is to be employed in any other than a vertical position springs may be substituted for the weights. The tendency of these weights is to drop toward the lower end of the shell and through the levers the gate or valve will be raised toward the upper and narrower part of the shell.

Within the casing is a stop 14 upon the inclined face 7 and located above the opening against which the valve closes on this side. When the shell is raised, the upper edge of the valve or gate contacts with this stop when the valve has arrived at a substantially central position or coincident with the opening, so that when pressure is applied the valve will always be closed fairly against the opening. The inclined face of the casing and that of the shell thus allow the valve to be free from pressure against its face when the valve is moved toward the wider part of the casing, and when this movement is effected the weights or springs retain the valve in contact with the stop and cover the opening in the casing until the shell has been moved so far as to relieve the valve from transverse pressure. The remaining movement of the shell then withdraws the valve from its closing position and opens the passage for the water, which passes across the end of the shell when the gate is fully opened.

When the valve is to be closed, as the weights or springs hold it up, as shown in Fig. 4, it will be seen that the upper edge of the guard will strike the stop 14 before the shell has arrived at its highest position. The

further movement of the shell causes the inclined surface to move against the valve, and the levers by which the valve is suspended pivoting on their fulcrum-points will raise the weight or extend the springs, as the case may be, so as to allow the shell to continue its movement after the valve has come in contact with the stop, and by this movement the inclined face gradually acts to force the valve closely against its seat.

For the purpose of operating the shell and the valve I have shown a loose nut 15, which is here shown as located in a transverse opening made near the end of the shell. A screw 16 passes through the cap 17 of the casing, and its threaded end enters the nut. The screw-shank has a suitable collar turnable in the cap without advancing, so that the rotation of the screw will act to move the shell and valve.

In order to relieve the moving parts of the frictional pressure, which would otherwise be caused by the force of the water acting to press the shell against the opposite side of the casing to that in which the water-inlet is located, I employ one or more rollers 18. In the present drawings I have shown but one of these rollers; but it will be manifest that a plurality may be employed, if desired. The face of the roller travels against the side of the casing, which is parallel with the guides 6, and in order to insure a rolling movement I have shown racks 19, fixed upon each side of the shell, and similar racks 20, fixed in the face, against which the roller travels and beyond the ends of the smooth portion of the roller. These ends are reduced and carry upon them pinions 21, which pinions travel in the racks before described, and thus prevent the roller from changing its position, maintaining the roller transverse to the line of movement of the shell.

When the shell has been moved within the casing to such a point as to close the valve, the roller or rollers will lie in such position with relation to the valve as to direct a central pressure so as to close the valve evenly against its seat. When the shell is moved in the direction to open the valve, the roller 18, by reason of its movement between the inner face of the casing and the contiguous face of the shell, will travel between the two, and when the shell is moved to open the valve at the limit of its opening the roller will come in contact with lugs 23, carried by and projecting from the smaller end of the shell and thus limit the movement of the roller and prevent its getting out of position.

While this gate may be used in any position, it is particularly designed to be used in an inverted position or with the larger end downward when employed where the opening of the valve must be effected from below. It is also adapted to be used in a horizontal or inclined position by the use of springs to counterbalance the valve and insure its proper movements with relation to the shell and water-opening.

The guides 6 prevent the shell from tilting and also maintain the shell in its proper line of travel if pressure is brought upon it from the roller side of the gate. The pinions 21 are loosely journaled on the ends of the roller 18, and the valve or disk 8 is loosely connected with the shell by the lever 11, and its movement is limited by the play allowed to the levers. The stop on the shell serves to hold the roller in place while assembling, but may be omitted if the racks are extended with reference to the shell and casing.

It will be understood that, while I have described a screw by which the shell is reciprocated, any suitable or well-known power mechanism may be substituted therefor without changing the operation of the device.

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

1. In a water-gate, the combination of a casing interposed in the conductor, said casing having an inclined seat upon one side, a guided shell or carrier having one side corresponding with the inclined side of the casing, a gate or valve carried upon the shell and adapted to close the passage in the casing, said valve being counterbalanced and movable with relation to the shell.

2. In a water-gate, the combination of a casing interposed in the conductor and having passages corresponding therewith, a guided shell reciprocable within the casing, said shell and casing having contiguous inclined sides, a valve or gate carried by the inclined side of the shell and movable with relation to the shell, counterbalancing devices located within the shell and connections between the said devices and the valve.

3. In a water-gate, the combination of a hollow casing interposed in the conductor having passages coincident therewith, one of the sides of the casing being inclined, a shell or carrier having a corresponding inclined face and a valve or disk carried thereon, guides within the casing parallel with the opposite face thereof and shoulders upon the shell adapted to travel upon the guides, chambers within the shell with counterbalance devices contained therein and lever connections between said counterbalance and the valve.

4. In a water-gate, the combination of a casing, a shell or carrier guided and slidable therein, levers fulcrumed in the shell, a valve or disk connected with one end of the levers and counterbalance devices carried by the opposite ends.

5. In a water-gate, the combination of a casing interposed in the conductor having an inclined seat upon one side, a shell or carrier, means by which it is movable vertically

within the casing, ribs upon the shell and guides fixed within the casing parallel to the vertical side of the shell, fulcrumed levers and a valve or disk suspended from the outer ends thereof, counterbalance devices by which the valve is normally held at one end of its travel, a stop located above the water-passage and in the line of movement of the valve, said stop arresting the movement of the valve, and the levers moving the counterbalance in unison with the continued movement of the carrier.

6. In a water-gate, the combination of a casing interposed in the conductor having an inclined seat and guides parallel with the opposite vertical sides of the casing, a shell or carrier with ribs guided and slidable against the guides and having an inclined face contiguous to the inclined face of the casing, levers fulcrumed in the shell, a valve or disk carried upon the inclined face, levers fulcrumed in the carrier having the outer ends connected with the disk, counterbalances with which the inner ends of the levers are connected and by which the valve is normally held at one end of its travel, a stop located above the water-passage against which the valve is arrested when opposite its seat, means by which the movement of the carrier is continued to compress the valve against its seat.

7. In a water-gate, the combination of a casing interposed in the conductor having an inclined seat upon one side and a substantially vertical face upon the opposite side, guides parallel with the vertical face, a shell or carrier with ribs slidable upon the guides, a counterbalanced valve mounted upon fulcrumed levers by which movement of the valve is allowed in the direction of the travel of the carrier, a rib upon the back of the valve and a transverse roller within the shell against which the rib is supported.

8. In a water-gate, the combination of a casing interposed in the conductor having an inclined seat and an opposite vertical side, guides within the casing parallel to the vertical side, a shell or carrier with ribs slidable upon the guides, a counterbalanced valve or disk and fulcrumed levers by which it is loosely connected with the counterbalance, a rib upon the back of the valve, a transverse roller carried by the shell against which the rib is supported, a roller located between the vertical face of the casing and the contiguous face of the carrier, racks fixed upon each side of the carrier, corresponding racks upon the vertical face of the shell and pinions carried by the roller and engaging the racks.

9. In a water-gate, the combination of a casing with a vertical and an inclined side, with water-passages therethrough, a guided transversely-movable shell or carrier, an antifrictional support within the shell, a valve or disk with a rib adapted to move upon said support, said disk being closable upon the discharge-passage of the casing, counterbalances movable within the shell, and connections between said counterbalances and the valve whereby a movement of the valve is effected independent of the movement of the shell.

10. In a water-gate the combination of a casing, with water-passages therethrough, a guided shell or carrier and means for reciprocating it transversely of the water-passages, a valve loosely suspended from the shell and closable against the water-passage, racks fixed in contiguous faces of the shell and casing on the opposite side from the valve, a roller contacting with said surfaces and pinions loosely journaled on the roller and engaging the racks.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ADONIRAM J. COLLAR.

Witnesses:
L. H. NOURSE,
D. B. RICHARDS.