

(No Model.)

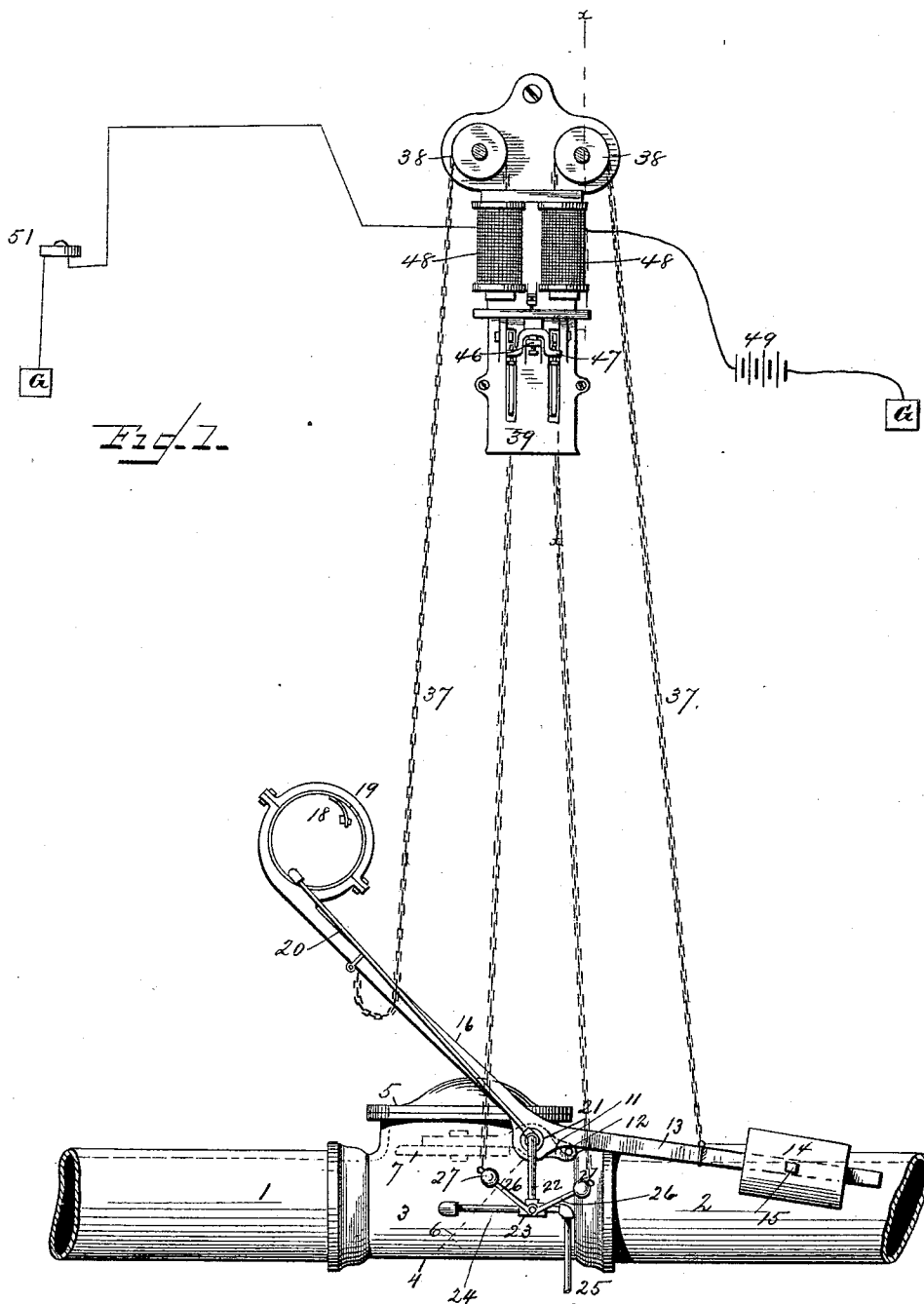
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ELECTRIC VALVE MECHANISM FOR WATER MAINS.

No. 365,040.

Patented June 21, 1887.



WITNESSES

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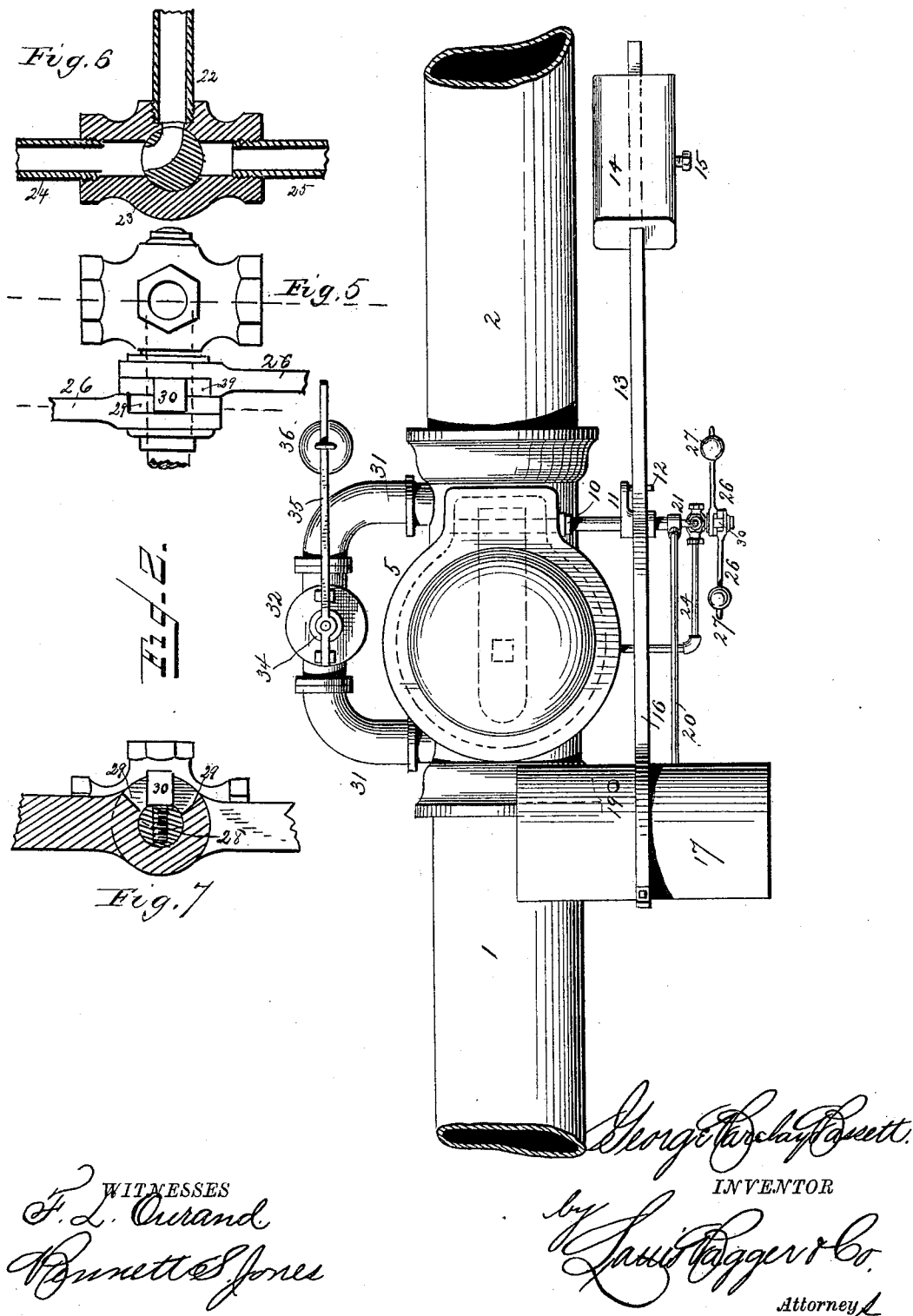
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Fig. 3.

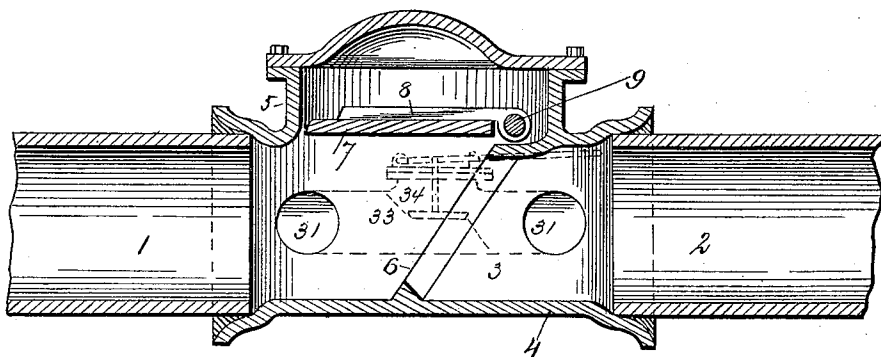
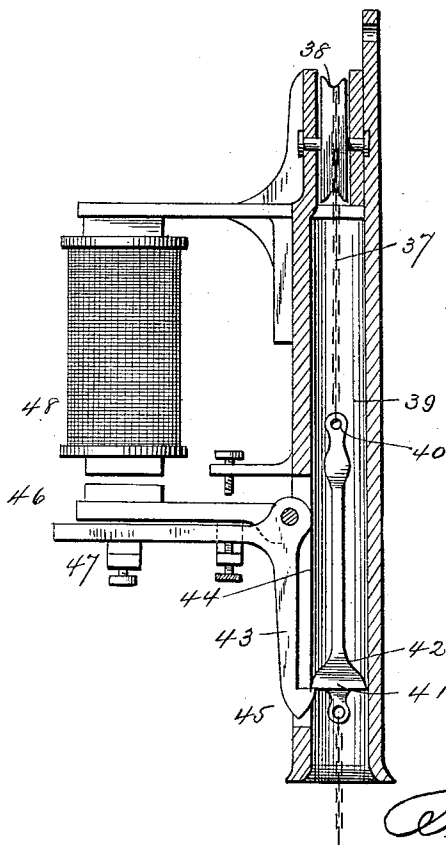


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE BARCLAY BASSETT, OF WATERTOWN, NEW YORK.

ELECTRIC VALVE MECHANISM FOR WATER-MAINS.

SPECIFICATION forming part of Letters Patent No. 365,040, dated June 21, 1887.

Application filed October 12, 1886. Serial No. 216,023. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BARCLAY BASSETT, of Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Electrical Valve Mechanism for Water-Mains; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of my improved valve mechanism for water-mains. Fig. 2 is a top view of the same. Fig. 3 is a longitudinal vertical sectional view of the same. Fig. 4 is a vertical sectional detail view of the electric releasing mechanism, taken on line *x x*, Fig. 1; and Figs. 5, 6, and 7 are detail views of the three-way cock and connections.

Similar numerals of reference indicate corresponding parts in all the figures.

My invention has relation to gates or valves for water-mains; and it consists in the improved construction and combination of parts of a check-valve for a water-main which will shut off the flow of water in one direction while admitting of a flow in the opposite direction, and of the mechanism for operating the valve, the valve and operating mechanism being especially intended for the system of water-distribution for which another application for Letters Patent has been made, the said system consisting, in short, of a reservoir or water-tower supplying pressure in the water-mains for ordinary service and a pumping mechanism for supplying an increased pressure in the main, and of the valve, which may be closed and opened instantaneously, and may cut off the supply from the pumping mechanism to the reservoir while admitting of a supply from the reservoir into the main, as hereinafter more fully described and claimed.

For the purpose of avoiding a reference to the above-mentioned system, and for the purpose of thus rendering this description more easily understood, I will give a short description of the system, as well as of its advantages, which will enable this description and the aim of this invention to be understood without the necessity of referring to the other application

and to the description of the system of which this valve mechanism forms a part.

In systems of water-distribution in cities and towns a reservoir or water-tower may furnish a sufficient pressure for the purpose of supplying water at all points under an ordinary pressure and for ordinary purposes; but in the case of a fire or other incident, when a large supply of water is desired at a high pressure, it is necessary to add an extra pressure to the water-supply in the mains, which is accomplished by means of a suitable pumping mechanism. If the main, however, is connected to the reservoir, the water will simply rise in this reservoir and overflow without allowing the pressure in the main to be raised to the desired height, and it is therefore necessary to close the connection with the reservoir, which may be accomplished by lowering a suitable gate. This gate will close the communication between the main and the reservoir; but if, for one reason or other, the pressure from the pumping mechanism is stopped, the main will have no water-supply and no pressure until the gate is opened, which may be connected with considerable trouble; and the main must therefore be provided with a check-valve or gate which will cut off the flow from the pumping-engine into the reservoir, while it will allow the water to flow from the reservoir into the main when the pressure ceases, and this check-valve must be provided with means whereby it may be closed in a moment of time when the pressure is let into the main from the pumping mechanism and again be opened when free communication is desired, the said closing and opening to take place from the pump-house or from any other central station distant from the valve or gate; and to accomplish this I construct the valve and its operating mechanism in the manner which I shall now proceed to describe.

In the accompanying drawings, the numeral 1 indicates the portion of the main which passes from the pumps, and to which the service-taps and fire-plugs are connected, and 2 indicates the portion of the main which passes to the reservoir or water-tower. A valve-casing, 3, is secured to the meeting ends of these main portions, and consists of a cylindrical body, 4, having an enlargement, 5, upon its upper side, and having an inclined valve-

seat, 6, within it, upon which the valve 7 may rest, the said valve swinging up into the enlargement in the top of the casing.

The body of the valve is secured to an arm, 8, which projects from a shaft, 9, rocking in suitable transverse stuffing-boxes or bearings 10 in the sides of the enlargement of the valve-casing, and one end of this shaft is provided with an arm, 11, having a laterally-projecting pin, 12, at its end. A lever, 13, bent at an obtuse angle is journaled at its bend to rock upon the end of the shaft, and bears with one arm against the pin upon the arm of the shaft, the said arm projecting in the direction opposite to the valve, and the arm of the lever, which rests against the pin, is provided with a weight, 14, sliding adjustably upon the lever-arm, having a set-screw, 15, for the purpose of adjusting it, and the other arm, 16, of the lever is provided at its outer end with a water-tank, 17, having a valve, 18, in its upper side, which will allow air to pass out of the tank until the tank is filled, when it will close, preventing water from passing out, having a float, 19, and opening inward, so as to allow air also to enter the tank when the water is emptied out of it. The tank has a pipe, 20, passing from a movable joint, 21, at the fulcrum of the lever and entering the tank, and another pipe, 22, passes from the joint to a three-way cock, 23, having an inlet-pipe, 24, passing from the water-main forward of the valve, and at a right angle to the pipe from the joint, and having an outlet-pipe, 25, likewise at a right angle to the pipe from the joint, so that by turning the plug of the three-way cock one-fourth of a revolution to either side, the pipe from the joint may be connected either to the inlet-pipe or to the outlet-pipe. Two arms, 26, having poises 27 at their ends, are secured to the plug of this three-way cock, serving to turn it in either direction, the arms turning with their eyed inner ends, 28, upon the end of the plug, and each having a slot, 29, of about one-fourth of their periphery in the said eyes, into both of which slots a headed bolt, 30, projects, so that if one end of the slot of one arm engages the bolt and turns it to one side, rocking the plug, the bolt will be brought to bear against the opposite end of the slot of the opposite arm, ready to be rocked by that arm when the said arm is tilted, while the former arm may be raised, describing one-fourth of a circle, and so forth.

A by-pass or curved pipe, 31, has its ends opening in the sides of the valve-casing at both sides of the valve-seat, and is provided at its middle with a valve-seat, 32, upon which a valve, 33, is seated, which valve is provided with an upwardly-projecting stem, 34, having a lever, 35, bearing against it, the said lever having a sliding and adjustable poise, 36, the said valve being of the construction of a usual safety-valve and opening toward the reservoir, the poise being capable of being adjusted to be raised at the maximum pressure to which

the main may be subjected, so as to prevent any possible bursting of the mains when the pressure in them is increased by the pressure of the pumps. Chains 37 or cords are secured to the ends of the weighted arms and to the arms of the valve-operating lever, so that the weighted arms may be raised by the respective lever-arms being tilted down. The chains pass over two pulleys, 38, journaled at the upper ends of two tubes, 39, and the portions of the chains which are within the tubes are provided with links 40, from which links the chains pass down to the weighted arms. These links are formed with shoulders 41 at their lower ends, the said shoulders having beveled sides 42 above them, so that they may slip by catches when moving upward, while they will be engaged by the same when moved downward.

Bell-crank-shaped catches 43 are pivoted at their knees in slots 44 in the sides of the tubes, and have hooked lower ends, 45, upon their downwardly-projecting arms, which hooks may engage the shoulders of the links.

An armature-lever, 46, is pivoted concentric with the catches, and has arms 47 projecting under the outwardly-projecting arms of the catches, and the armature of the lever is placed below the lower ends of two electro-magnets, 48, so that when the armature is attracted by the magnets the arms projecting laterally from the lever may tilt the outwardly-projecting arms of the catches upward, releasing the shouldered links of the chains and allowing that link to drop with its weighted arm which is upon the chain attached to the lever-arm, which is in its upward position.

One of the wires from the electro-magnets passes to the batteries 49, and thereupon to the ground, while the other wire, 50, passes to a suitable key or button, 51, and from that to the ground, completing the circuit.

When it is desired to close the check-valve, it being supposed to be normally open, the button or key is touched, closing the circuit and drawing the armature toward the magnets. The lever upon the valve-shaft is normally tilted with the end having the weight down, and the shouldered links upon the chains, passing from the lever-arms to the weighted arms operating the three-way cocks, rest upon their stops, the chain from the weighted arm being stretched tight, while the other chain is loose between the catches and the arm having the tank. As now the armature is drawn toward the magnets, the catches will both be tilted so as to allow the shouldered link having the slack chain to drop, the weight of the arm to which it is attached drawing it down, tilting the three-way cock in such a manner that the water will pass from the main through the inlet into the tank, filling the same. The armature has in the meantime been again dropped from the magnets and the catches occupy their normal positions, one supporting the link which was supported by the taut chain, and the other pending ready to support the other link when

it is again raised. The weight of the tank upon the lever-arm will overcome the weight of the counterpoise, tilting the tank-arm down, which will allow the valve to drop with the arm, and as the tank-arm is tilted down it will draw upon the chain, drawing the link upward to be again engaged by the catch, and raising the weighted arm operating the three-way cock, adjusting it ready for another operation, while the chain secured to the arm having the poise will be slackened, so that the link and the weighted arm attached to that chain may be released when the armature is again attracted by the closing of the circuit. When, therefore, the circuit is again closed, for the purpose of again opening the valve, the weighted arm upon the slack chain is tilted down, throwing the three-way cock so as to empty the water out of the tank, which will cause the poise upon the other arm to raise the tank-arm and thus to raise the valve, the poise-arm bearing down upon the pin upon the arm of the valve-shaft, the link and weighted arm for operating the three-way cock being set in their normal position in the same manner as before.

It will be seen that, on account of the valve-shaft having the arm with the pin, the valve may be tilted from the reservoir by the force of water passing from the same when the weighted lever-arm is raised and the valve rests upon the seat, thus allowing water to pass from the reservoir into the main if the pressure from the pumps stops before the valve can be raised by the raising mechanism, preventing the possibility of the mains becoming emptied if the pumps should stop or the valve-operating mechanism should get out of order, or not be operated by neglect.

If the pressure from the pumps becomes greater than the main can stand, the safety-valve at the side of the valve-casing will be raised and allow the water to flow into the reservoir, so that there will be no danger of too much pressure being brought to bear upon the main, the weight upon the safety-valve being adjusted at the pressure desired to be the maximum within the main.

It will be seen that all the component parts of the mechanism are constructed with such simplicity that they may be made very durable and, consequently, not liable to get out of order or to be worn or broken, the entire construction being made with the view of providing a practical and cheap mechanism for operating the valve, which will not be liable to get out of order, and which will not require constant attention, but which may be operated at all times and be in working order at all times.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a valve mechanism for water-mains, the combination of a check-valve having a

transversely-journaled operating-shaft, a lever secured upon the end of the said shaft and provided with a water-tank at one end and a counterpoise at the other end, a horizontal pipe tapped into the valve-casing forward of the valve and having a three-way cock upon its end provided with an outlet, and a pipe passing from the three-way cock to the water-tank, connected alternately with the inlet or outlet of the horizontal pipe, as and for the purpose shown and set forth.

2. In a valve mechanism for water-mains, the combination of a check-valve having a transversely-journaled shaft, a lever secured at its middle to the said shaft and having a water-tank at one end and a counterpoise at the other end, a pipe leading from the tank to a joint at the fulcrum of the lever, a three-way cock below the said joint, having a horizontal inlet-pipe tapped into the valve-casing forward of the valve-seat, and a horizontal outlet-pipe, and having a vertical pipe passing into the pipe-joint, and means for distributing the water from the inlet-pipe to the pipe leading to the tank or from the tank to the outlet-pipe, as and for the purpose shown and set forth.

3. In a valve mechanism for water-mains, the combination of a check-valve having a transverse shaft provided at one end with a lever having an adjustably-sliding counterpoise at one arm and having a water-tank at the other arm, a three-way cock having two weighted arms secured to it, projecting in opposite directions and operating independently of each other, admitting water to the tank or from the tank, chains passing over pulleys from the arms of the lever to the weighted operating-arms, links upon the said chains having downwardly-facing shoulders beveled upon their upper sides, bell-crank-shaped catches engaging the links and pivoted at their bends, an electro-magnet in a circuit having a suitable key or button for closing it, and an armature-lever having arms projecting laterally under the outwardly-projecting arms of the bell-crank-shaped catches, as and for the purpose shown and set forth.

4. In a valve mechanism for water-mains, the combination of a plug for a three-way cock having a square-headed bolt projecting from its under side with two weighted arms pivoted with their eyed inner ends upon the plug and having slots in the eyes of one-fourth of their periphery, fitting upon the bolt and sliding upon the same, and having means for raising and releasing their weighted ends, as and for the purpose shown and set forth.

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

GEORGE BARCLAY BASSETT.

Witnesses:

L. J. DORWIN,
E. C. DORWIN.