No. 646,995.

Patented Apr. 10, 1900.

E. C. JOHNSON.

SELF MEASURING FAUCET.

(Application filed June 2, 1899.)

(No Model.)

Fig. 1.

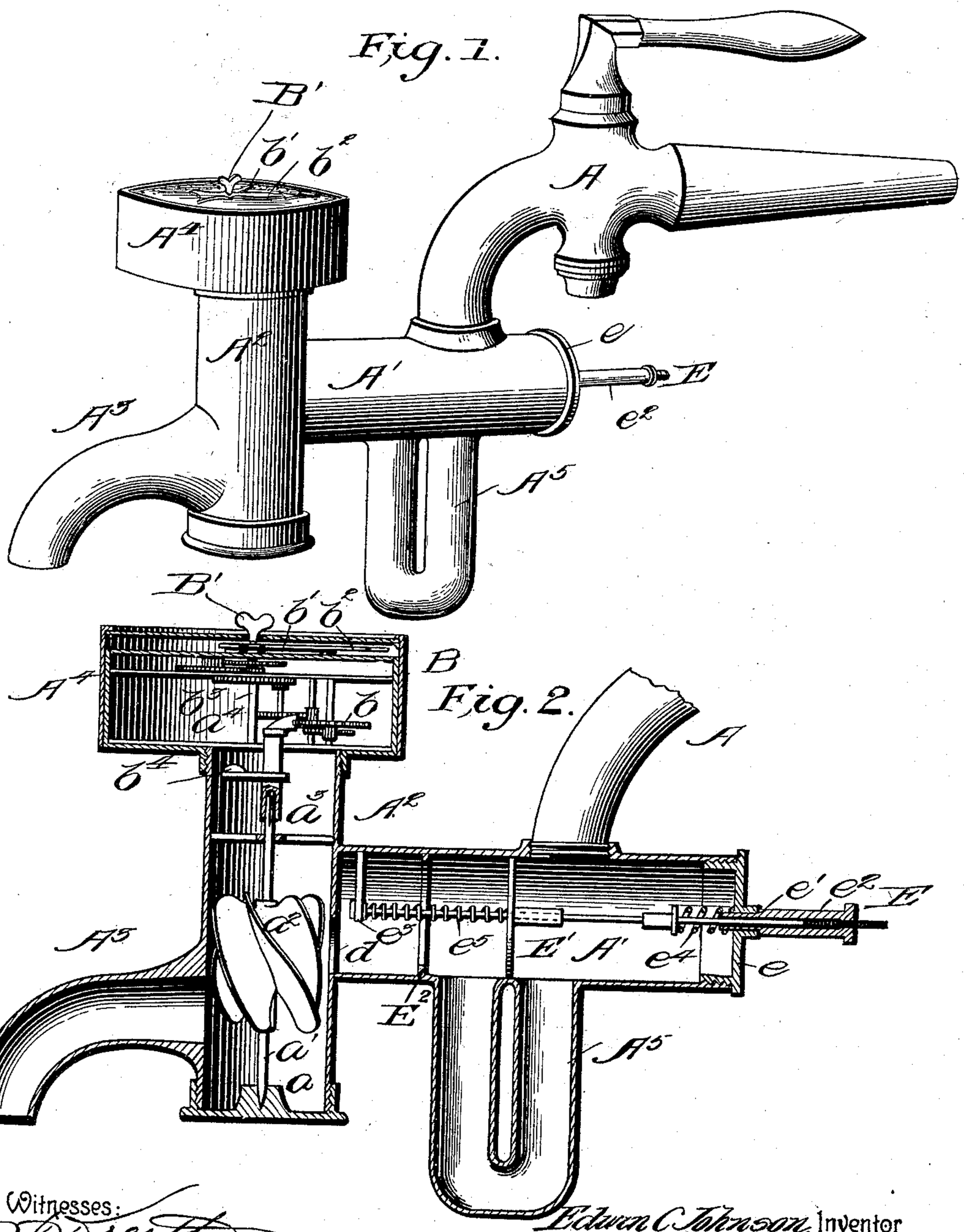

Fig. 2.

Witnesses:

William B. Roberts.

Edwin C. Johnson, Inventor

By Marion & Marion

Attorneys

UNITED STATES PATENT OFFICE.

EDWIN COLFAX JOHNSON, OF SHUTESBURY, MASSACHUSETTS.

SELF-MEASURING FAUCET.

SPECIFICATION forming part of Letters Patent No. 646,995, dated April 10, 1900.

Application filed June 2, 1899. Serial No. 719,106. (No model.)

To all whom it may concern:

Be it known that I, EDWIN COLFAX JOHNSON, a citizen of the United States of America, residing at Shutesbury, county of Franklin, State of Massachusetts, have invented certain new and useful Improvements in Self-Measuring Faucets and Regulators Therefor; and I do hereby declare that the following is 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 self-measuring faucets, and is particularly adapted for use in connection with gasolene and other explosive or inflammable fluids; and one object is to provide a faucet of this character in which the liquid is automatically measured and the quantity indicated as it flows therethrough and which is simple in construction, efficient, and reliable in operation and which may be manufactured at a moderate cost.

A further object is to provide a faucet of this character in which the flow of the liquid is automatically controlled.

To these ends the invention consists in a self-measuring faucet and an automatic pressure-regulator therefor constructed substantially as hereinafter illustrated and described, and defined in the appended claim.

Referring to the drawings, in which similar letters of reference refer to similar parts in both views, Figure 1 is a view in perspective of the improved faucet, and Fig. 2 is a vertical central longitudinal section thereof.

In the drawings, A represents a faucet of any ordinary or preferred form adapted to be connected with a barrel, tank, or other receptacle containing gasolene or other dangerous fluid. To the lower end of the faucet is attached a casing A′, containing the pressure-regulating mechanism. To the casing A′ is secured the casing A^2, containing the measuring apparatus. The lower portion of this casing is provided with the usual spout or outlet A^3, and to the upper portion of the casing is removably secured a box or receptacle A^4, containing the recording mechanism.

The casing A^2 is provided with a removable bottom having a central hub a, which provides a bearing for the shaft a' of the turbine wheel a^2, which shaft is sleeved at its upper portion in the spider a^3. The upper end of the shaft a' is provided with a transversely-extended lug or striker a^4, which is adapted to contact with the escapement-wheel b of the clock mechanism B at every revolution of the shaft a' and correspondingly rotate said escapement-wheel b. The upper portion of the casing A^4 is provided with a dial of any usual or preferred construction having suitable symbols thereon, and suitable pointers or hands b' b^2 are mounted upon the main spindle b^3 of the clock mechanism for indicating in connection with the said symbols the quantity of fluid which has flowed through the measuring-chamber of the casing A^2. A suitable balance-bar b^4 is fixed upon the shaft a' below the striker a^4.

The main spindle b^3 of the clock mechanism B is provided with a turn-button B′ or other suitable device, whereby the dial-pointers b' b^2 may be returned to the point of beginning after a quantity of the fluid has been measured. In the side of the casing A^2 is provided a fluid-inlet d, communicating with the interior of the casing A′. This inlet d is located on the opposite side of the casing A from the outlet A^3 and somewhat above said outlet and is of smaller diameter than the outlet, so as to prevent the flooding of the measuring-chamber of the casing A^2. The turbine wheel a^2 is arranged in the path of the fluid flowing through the measuring-chamber and is forced to rotate at a speed corresponding to the flow of the fluid.

The outer end of the casing A′ is provided with a removable cap e, having a central perforation e', in which is rotatably sleeved the adjusting-nut e^2, through the central bore of which is received the rod E, the inner end of which rod is supported in suitable bearings formed in the lower end of the hanger e^3, fixed to the casing A′. A suitable spring e^4 is sleeved upon the rod E and bears at one end against the cap e and at the other against a lug fixed upon said rod. The interior of the nut e^2 is threaded to engage the threaded end of the rod E, whereby the tension of the spring e^4 may be adjusted and the nut e^2 firmly held against its seat in the cap e.

At a suitable point on the rod E is loosely sleeved the disk E′, which closely fits the interior of the casing A′ and operates as a pis-

ton, being moved along the rod E by the pressure of the fluid upon one face against the pressure of the returning-spring e^5, which is sleeved upon the rod E and bears at one end against the face of the piston E′ and at the other end against the hanger e^3. A suitable by-pass A^5 is arranged on the casing A′ and serves to connect the interior of said casing on both sides of the piston E′, thus providing a passage for the fluid around said piston when in its normal position.

The faucet A communicates with the interior of the casing A′ back of the said piston, so that the said piston is normally between the inlet and outlet openings of said casing.

When the faucet-cock is turned, the fluid passes through the inlet-opening into the casing A′ and flows through the by-pass A^5 around the piston E′ and through the inlet-opening d of the casing A^2, where it falls upon the blades of the turbine wheel a^2, causing it to rotate and, by means of the connections with the clock mechanism, measure the quantity of fluid that flows through said chamber to the spout A^3.

The piston E′ is adjusted so as to remain in its normal position as long as the pressure of the fluid is not too strong to permit the quantity to be accurately measured. When the pressure of the fluid becomes excessive, the piston moves against the pressure of the spring e^5 and partially closes the opening of the by-pass A^5, thus reducing the quantity of fluid flowing to the chamber of the casing A^2.

The operation of the measuring mechanism is thought to be obvious and is not set forth in detail. The operation of the pressure-regulating mechanism will be clearly understood by the statement that the movement of the piston E′ is controlled solely by the pressure of the inflowing liquid and the spring e^5. When the liquid-pressure becomes greater than will produce the best possible working of the registering mechanism, the piston E′ will be moved toward the left in Fig. 2 against the tension of the spring e^5, which serves to partially close the by-pass A^5, causing a restricted flow of liquid from said by-pass. In this position the pressure on the left side of the piston is solely that exerted by the spring e^5, the liquid-pressure being relieved by the opening d, through which the liquid passes from the by-pass, the opening from the by-pass and the opening d being of substantially the same size. It will therefore be understood that the movement of the piston E′ is controlled solely by the tension of the spring e^5, the piston remaining in the position shown in Fig. 2 as long as the liquid-pressure on the opposite side of said disk is equal to or less than the pressure exerted by the tension of the spring e^5; but as soon as the liquid-pressure exceeds the tension of the spring said piston will be moved toward the left and cuts off the supply of liquid from the by-pass opening to the opening d, preventing the passage of too great a quantity of liquid to the measuring mechanism.

An annular ring E^2 is formed in the chamber A′ and serves as an abutment or stop for the piston E′, thus limiting its forward movement.

While I have herein shown a preferred form of carrying my invention into effect, yet I do not desire to limit myself to such preferred details of construction, but claim the right to use any and all modifications thereof which will serve to carry into effect the objects to be attained by this invention in so far as such modifications and changes may fall within the spirit and scope of my said invention.

I claim—

An automatic measuring and regulating faucet, comprising a casing having an inlet-opening; a fluid-pressure regulating device arranged in said casing; a casing communicating with the regulating-chamber through the said outlet-opening and having an outlet-opening; a turbine wheel revolubly mounted in said casing and located between said outlet-opening and the outlet of said casing in the path of the flush; and a registering device mounted on said casing and operated by the rotation of said turbine wheel, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

EDWIN COLFAX JOHNSON.

Witnesses:

SUSAN M. FIELD,

HARRIET M. GLOVER.