

No. 697,881.

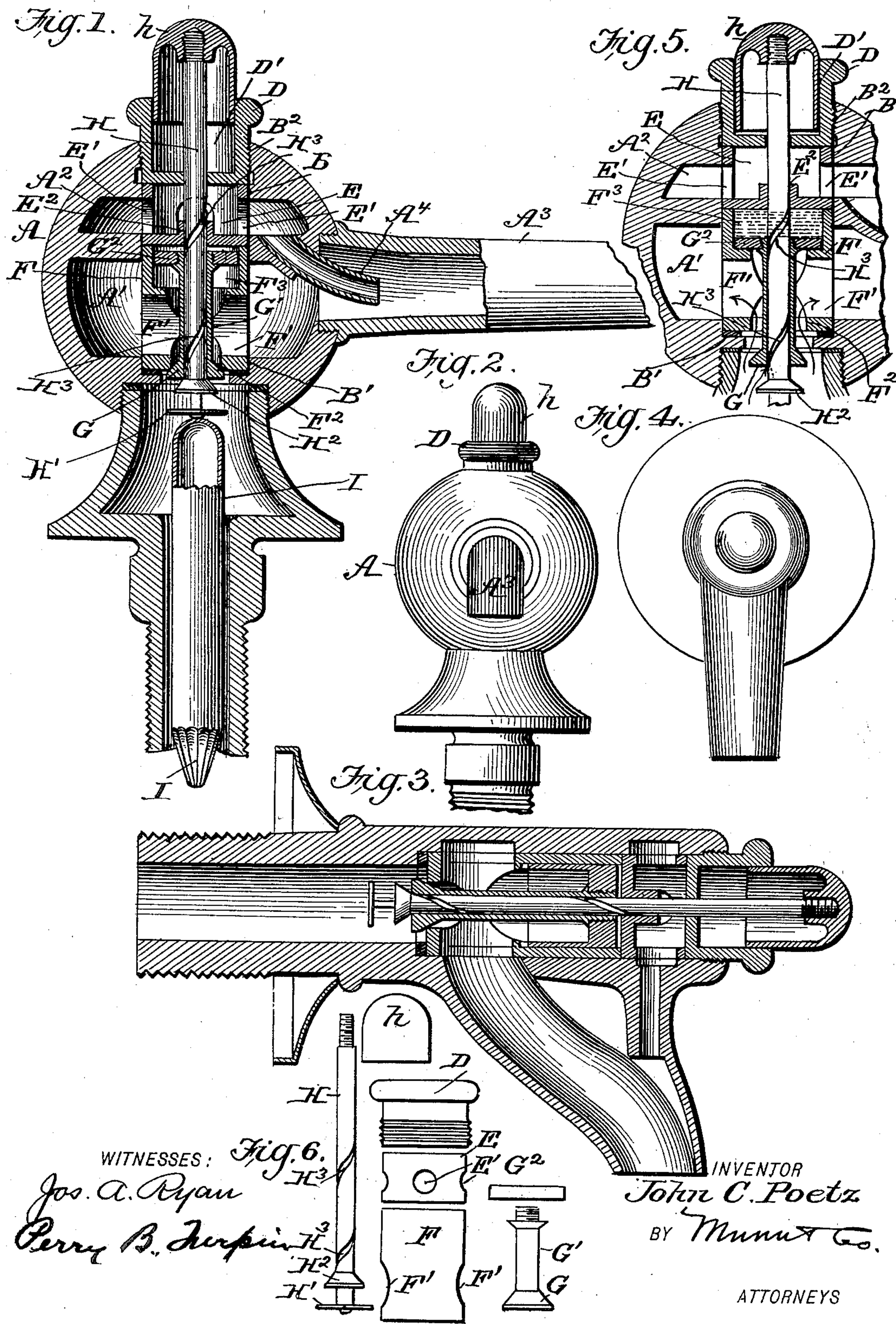
Patented Apr. 15, 1902.

J. C. POETZ.

FAUCET.

(Application filed Dec. 31, 1900.)

(No Model.)





# UNITED STATES PATENT OFFICE.

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## FAUCET.

SPECIFICATION forming part of Letters Patent No. 697,881, dated April 15, 1902.

Application filed December 31, 1900. Serial No. 41,673. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. POETZ, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have made certain new and useful Improvements in Faucets, of which the following is a specification.

My invention is an automatically-operating faucet which may be readily opened to permit the flow of water and will close automatically by the supply-pressure; and the invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a sectional elevation, and Fig. 2 is a front view, of a vertical basin-faucet embodying my invention. Fig. 3 is a longitudinal section, and Fig. 4 an end view, of a horizontal bibb-faucet embodying my invention. Fig. 5 is a detail view showing the faucet opened, and Fig. 6 shows the valve mechanism in detail.

By my invention I provide a novel construction of faucet-casing A, having a main discharge-chamber A' and a drainage-chamber A<sup>2</sup>, together with valve mechanism including a main valve, which is arranged to be both opened and closed by the supply-pressure, and hand-operating means for admitting the pressure to open said main valve. This result is accomplished by the mechanism more fully described hereinafter and including a main valve, which is directly exposed to the supply-pressure and has a piston of greater area than the said valve, which piston is normally free from the supply-pressure, and means for admitting the supply-pressure to act upon the said piston in opposition to the action of the supply-pressure directly upon the main valve, so the action of the supply-pressure upon the piston of greater area will open the main valve and the pressure upon the main valve will close the said valve when the supply-pressure to the piston connected with the said main valve is cut off. In connection with such devices I provide means whereby the pressure within the chamber in which said valve-piston operates is drained off when the ports are adjusted to admit closure of the main valve by the supply-pressure.

In the construction shown in Fig. 1 the

drainage-chamber A<sup>2</sup> is connected with the discharge-pipe A<sup>3</sup> by a tube or conduit A<sup>4</sup>, and the faucet-casing A is chambered at B, leading to a seat B' for the valve mechanism, which extends across the chambers A' and A<sup>2</sup>, the outer end of the chamber B being threaded at B<sup>2</sup> to receive the outer section or cap D of the valve mechanism, which is threaded into connection with the casing of the faucet and operates to maintain the valve mechanism in position for use, as shown in Figs. 1 and 2. This cap-section D abuts the outer end of the drainage-section E of the valve mechanism, and this in turn abuts the outer end of the inner section F of the valve mechanism, which section seats at its inner end at B', as shown. The section E is provided with lateral ports E', leading into the chamber A<sup>2</sup>, and is also provided in its bottom with an opening E<sup>2</sup>, in which operates the stem or rod of the starting mechanism, presently described. The section F is also provided with lateral ports F', opening into the chamber A', has at its bottom a seat F<sup>2</sup> for the main valve, and is also provided at its upper end with a cylinder or chamber F<sup>3</sup> for the piston of the main valve. The main valve G is fitted to the seat F<sup>2</sup> and has connected with it the tubular portion G', which bears at its upper or outer end the piston G<sup>2</sup>, which operates within the chamber F<sup>3</sup> and is of greater area than the valve G. The stem or rod H of the starting mechanism is provided at its lower end with a disk or button H', exposed to the supply-pressure, and above the said button with a valve H<sup>2</sup>, which closes against the inner end of the main valve, and above the valve H<sup>2</sup> the stem or rod H is grooved at H<sup>3</sup> to a point which will open within the section E when the valve is closed, as shown in Fig. 1. At its outer end the stem or rod H is provided with a push-button h, which operates within the recess D' in the cap D. Now in the operation of the described construction, when the ports are as shown in Fig. 1, the supply-pressure will operate to force the starting mechanism and the main valve to the position shown in Fig. 1. If now the starting mechanism be actuated to the position shown in Fig. 5, by pressing the button h into the recess D' the supply-pressure will pass up the channel H<sup>3</sup>



and be delivered into the piston-chamber  $F^3$  above the piston  $G^2$ . Such pressure will operate to force the piston and its attached valve downwardly, opening the main valve so the water can pass out into the section  $F$  through the ports  $F'$  of said section into the chamber  $A'$  and thence out through the nozzle, and this flow of water will continue until pressure on the button  $h$  is released.

When pressure on the button  $h$  is released, the supply-pressure operating upon the disk or button  $H'$  will force the starting mechanism downwardly and adjust it and the main valve to the position shown in Fig. 1. This operation will be effected gradually, avoiding any shock, and the water within the piston-chamber above the same will pass through the channel in the stem  $H$  into the drainage-chamber of the section  $E$ , thence into the section  $A^2$  of the faucet-casing, and will be siphoned out through the nozzle, as shown. As shown in Fig. 1, the channel  $H^3$  in the stem  $H$  leads into the drainage-section in the closed position of the valve; but the communication of said channel with the drainage-chamber is closed when the starting-stem is pushed to the position shown in Fig. 5. It should be understood that the stem  $H$  fits snugly in the opening in the bottom of section  $E$ , and also within the tube  $G'$  of the main valve.

From the foregoing description it will be seen that the supply-pressure operates the main valve both to open and closed position, the main valve being exposed at all times to the supply-pressure and being provided with a piston of greater area to which the supply-pressure is admitted for the purpose of opening the main valve against the supply-pressure exerted directly thereupon.

It will be noticed that by my construction I avoid the necessity of springs of any kind and automatically close the valve by the supply-pressure and open it by the same force. I also avoid the objectionable feature known as "water ram" or "hammer" by means of the peculiar construction before described. It will also be noticed that by my construction the valves are positively and automatically released whenever the main supply or supply-pressure is cut off, thereby allowing the various drainage supply-pipes to drain no matter what number of faucets are used in the system. When the main supply is cut off, each faucet will automatically open and allow its own supply to drain back through the cut-off and will not require any attention. Further, in the use of the improved faucet no air chambers or cushions will be required in the plumbing system, friction is minimized, reducing the wear, and the faucet will operate equally as well under any pressure.

In Fig. 3 I show my improvements embodied in a horizontal bibb-faucet, the construction being substantially the same, and it does not seem necessary to describe it in detail herein.

In Fig. 1 I show a tube  $I$ , arranged to oper-

ate in the supply-pipe beneath or in advance of the stem  $H$  and which is intended to operate as a float and close the faucet when there is no pressure in the flow of water or insufficient pressure to operate satisfactorily in the manner described. The tube may preferably be made very light, of metal, and be corrugated at its lower end  $I'$ , so that the water may back-drain when supply is cut off.

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

1. The combination, substantially as described, of the main valve provided with a tubular portion and with a piston thereon, a casing-section having a chamber in which the said piston operates and provided with a seat for the main valve and with ports opening into the faucet, a drainage-section abutting the upper end of the piston-chamber and provided with ports communicating with the faucet and also having a central guide for the starter-rod, the threaded cap for securing the valve mechanism in the said faucet and provided with an opening for the starter-rod and with a recess for the push-button or head thereof, the starter-rod having the push-button or head at its outer end and provided at its inner end with a valve, and above said valve with a channel for conducting pressure to the piston-chamber and thence to the drainage-chamber and the head or disk on said starter-rod for operation by the supply-pressure, substantially as set forth.

2. The combination of the main valve, a seat and piston, a chamber in which the piston operates, a drainage-chamber, and means for admitting pressure to the piston-chamber for opening the main valve and for establishing communication between said chamber and the drainage-chamber when the main valve is closed, substantially as set forth.

3. A faucet provided with a valve mechanism comprising a main valve provided with a tubular portion and a piston held thereto, a seat for said valve and a chamber in which its piston operates, a starting-rod operating in the tubular portion of the main valve and grooved forming a channel for the passage of water to the cylinder-chamber and a valve for shutting off the supply of water to said channel, and a disk or button connected with the starting-rod and arranged for operation by the supply-pressure, substantially as set forth.

4. The combination of the faucet-casing having a discharge-chamber and a drainage-chamber, and the valve mechanism fitted to the casing, and comprising a main valve provided with a piston, a chamber in which the piston operates, and starting mechanism by which to admit pressure to operate upon the piston for opening the main valve and for establishing communication between the piston-chamber and the drainage-chamber when the valve is closed, substantially as described.

5. A self-closing faucet provided with a



valve and with means for operating the same and with a float having a channeled lower end and arranged in the supply-pipe in advance of said valve, and adapted to operate, substantially as shown and described.

6. In an automatic faucet, the combination of the main valve, the starting mechanism having a channeled stem or rod through which pressure may be supplied to open the main valve, the outer end of the stem being arranged for manipulation by hand, substantially as described.

7. The combination, in a faucet, of the main valve and its piston, the drainage-section, the section having the chamber in which the valve-piston operates, and the stem extending through the main valve and channeled for the passage of pressure to the piston-chamber, said stem being removable longitudinally whereby its channel may open into the drainage-chamber when the main valve is closed, substantially as described.

8. The valve mechanism, substantially as described, comprising the cap-section, the drainage-section, the section provided with a chamber for the piston, the main valve having a tubular portion and a piston at the end thereof, and the starting mechanism having a longitudinally-removable stem provided with a channel, and the valve and the disk or button, all substantially as set forth.

9. A valve arranged to be opened and closed by the water-pressure and having a starting mechanism including a rod grooved spirally for the passage of the water substantially as set forth.

10. The combination of the faucet-casing

having a main discharge-chamber and a drainage-chamber and a partition between the same having an opening for the valve mechanism and having in line with said opening a seat B' for such mechanism, and the valve mechanism including the inner section fitting in said seat and in the opening in the partition, the section abutting said inner section and having ports opening into the drainage-chamber, the valve and starting device and means for securing the valve mechanism in the faucet-casing substantially as set forth.

11. The combination of the faucet-casing having an opening for the insertion of the valve mechanism and a seat for the inner end of the valve mechanism, the valve mechanism having a casing fitted at its inner end to the faucet-casing, devices threaded into connection with the faucet-casing and bearing against the outer end of the valve-casing and securing the latter firmly to its seat and the valve and starting devices substantially as set forth.

12. A self-closing faucet consisting of a valve mechanism comprising a main valve a piston for opening the same, and a cylinder for said piston, a starting mechanism arranged to be operated by hand to admit pressure to said piston-chamber to operate the piston and means independent of said starting mechanism for limiting such pressure-operated movement of the piston substantially as set forth.

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Witnesses:

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