J. H. ASHTON.

VALVE.

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1,201,237.

Patented Oct. 17, 1916.

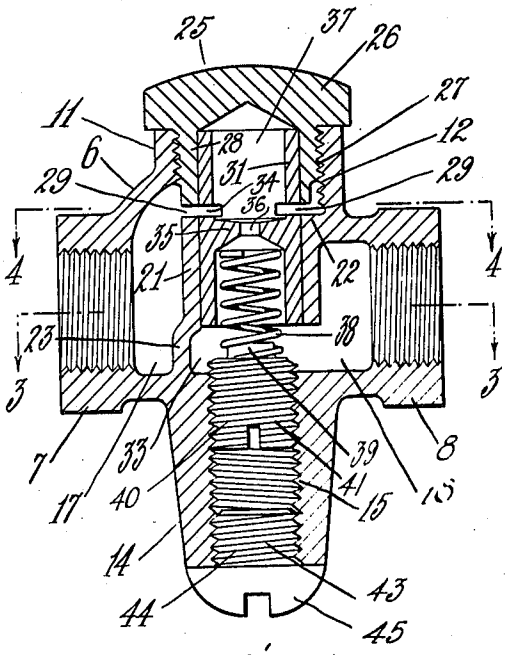


Fig. 1

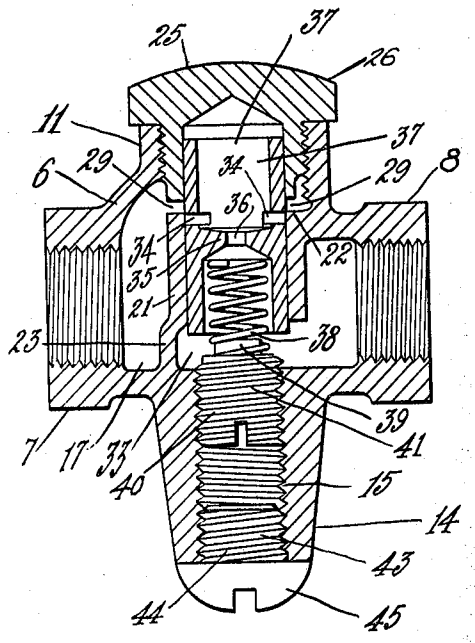


Fig. 2

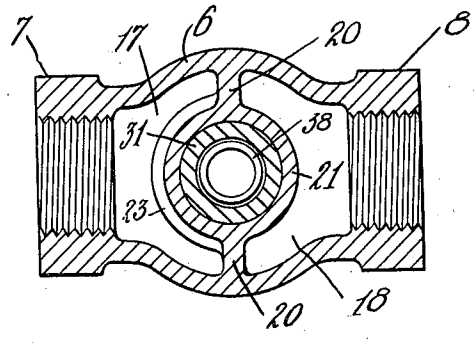


Fig. 3.

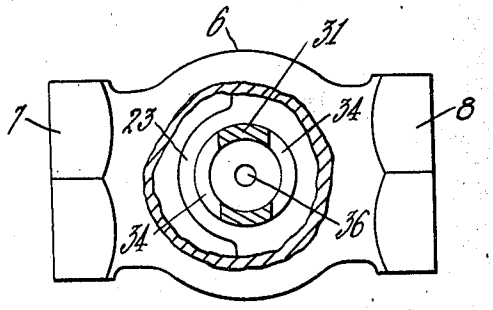


Fig. 4.

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UNITED STATES PATENT OFFICE.

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VALVE.

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To all whom it may concern:

Be it known that I, JOHN H. ASHTON, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates to pressure regulating valves, and is primarily intended for use in conjunction with fountains and other discharge devices wherein a substantially constant air, fluid, or liquid pressure is desirable.

The essential objects of my invention are to automatically maintain a constant pressure at the fountain or other point of discharge to regulate the degree or standard of pressure; and to attain these ends in a simple, accurately operating, light, compact and inexpensive structure.

To the above ends essentially my invention consists in such parts and in such combinations of parts as fall within the scope of the appended claims.

In the accompanying drawings which form a part of this specification, Figures 1 and 2, are longitudinal central sections of my device showing the parts in open and closed positions respectively, and Figs. 3 and 4, sections of the same on line 3—3 and 4—4 respectively of Fig. 1.

Like reference characters indicate like parts throughout the views.

The valve casing in this instance comprises a body 6 with extending screw threaded necks or nozzles 7 and 8 disposed in longitudinal alinement with each other on opposite sides of the casing, and serving as an inlet and outlet respectively. A neck or boss 11 integral with the top of the casing has an internal thread 12; and a boss or extension 14 integral with the bottom of the body has a thread 15. A high pressure or inlet chamber 17 and an outlet chamber 18 adjacent the necks 7 and 8 respectively, are formed by a transversely disposed vertical partition wall 20 integral with the body and with a centrally located cylinder or bearing 21, which has a horizontal web or wall 22 connecting its top to the casing, and a vertical web or wall 23 connecting its bottom to the casing. A screw cap 25 has a head 26 adapted to rest on top of the boss 11, and a wall or body 26 provided with an external thread 27 engaging the thread 12. The wall 26 has a bore of the same diametrical dimension as the bearing 21 and coöperates with the latter member to complete the cylinder. These two members are, however, spaced from each other to form a circular channel 29 communicating with the chamber 18.

Slidably mounted in the members 21 and 26 is a tube 31 extending from the cap head 26 to the lower end of the member 21, the latter member being spaced from the bottom of the casing as at 33 to constitute a part of the chamber 18. The tube, in an intermediate portion, has arcuate slots or ports 34 diametrically opposite each other and normally registering with the channel 29. Immediately below these ports the tube has an internal annular shoulder 35 forming a passage 36, and a resultant chamber 37 in the upper portion of the tube. Against the wall or shoulder 35 abuts the upper end of a helical spring 38 whose lower end embraces the reduced end 39 of a screw 40 whose thread 41 engages the thread 15 of the boss 14. In the present instance the boss 14 is of extended length to admit a screw 43 in its end whose thread 44 also engages the thread 15, and whose head 45 abuts against the end of the boss. The screw 43 protects the screw 40 and is amply spaced therefrom to permit a wide extent of travel of the latter.

The operation of my device is as follows: The air, fluid, or liquid enters the chamber 17 under pressure and passing through the channel 29 and ports 34 enters the compression chamber 37, whence it passes through the passage 36 and the lower end of the tube into the chamber 18 and out of nozzle 8 to operate the fountain or other device. When the pressure of the element in the chamber 17 becomes excessive the pressure of such element in the chamber 37 exerted on the upper face of the wall or shoulder 35 depresses the tube 31, as shown in Fig. 2, gradually or completely cutting off the ingress of the element through the ports 34 whose descent carries them out of alinement with the channel 29, whereupon the upward pressure of the spring 38 becomes effective to raise the tube sufficiently to permit the ingress therethrough of a greater or less amount of water determined by the adjustment of the spring. Hence by this automatic counterbalancing operation the passage of the element is uniform in quantity and pressure. The degree of pressure at which the element flows is

predetermined and regulated by turning the screw 40 which compresses the spring 38.

I claim:—

1. In an automatic controlling valve, a valve casing having an inlet chamber, an outlet chamber, a tubular valve slidably mounted in the casing between the chambers, a transverse partition in the valve provided with an opening communicating with the outlet chamber, said valve being provided with inlets to communicate with the inlet chamber, and a spring in the casing engaging the partition.

2. In an automatic controlling valve, a valve casing having an inlet chamber, an outlet chamber, a valve bearing in the casing between the chambers provided with a channel, a tubular valve slidably mounted in the bearing and opening into the outlet chamber, a transverse partition in the valve provided with an opening, said valve being provided with inlets normally registering with the channel located on the same side of the partition, and resilient means in the outlet chamber engaging the partition for maintaining the inlets in registration with the channel.

3. In an automatic controlling valve, a valve casing having an inlet chamber, an outlet chamber, a valve bearing in the casing between the chambers, a tubular valve slidably mounted in the bearing, a transverse partition in the valve provided with an opening, said valve being provided with inlets at one side of the partition communicating with the inlet chamber to admit an element under pressure, and resilient means in the outlet chamber operating upon the side of the partition opposite the inlets for counteracting the pressure of the element entering the valve through the inlets.

4. In an automatic controlling valve, a valve casing having an inlet chamber, an outlet chamber, a tubular valve slidably mounted in the casing opening into the outlet chamber and provided with inlets communicating with the inlet chamber, a transverse partition in the valve provided with an opening and located at one side of the inlets, an adjusting screw in the casing in alinement with the valve, and a spring on the adjusting screw extending into the valve longitudinally thereof and abutting against the face of the partition opposite from the inlets.

In testimony whereof I have affixed my signature.

JOHN H. ASHTON.