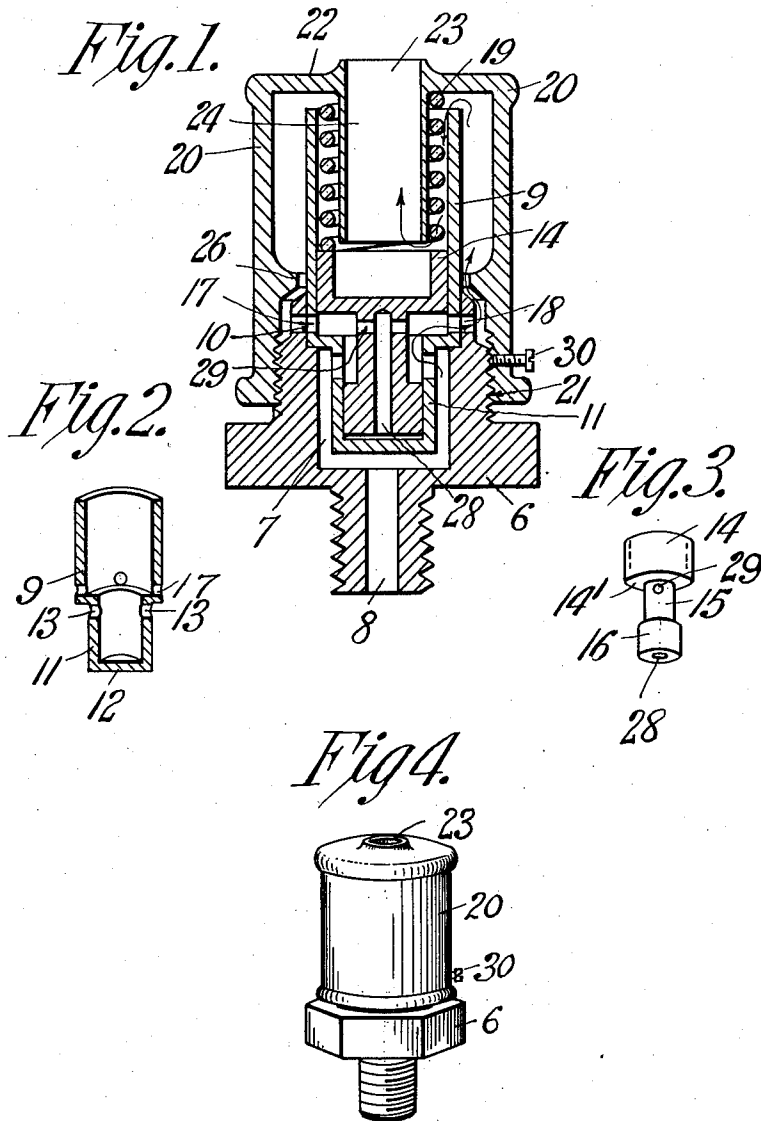


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 FLUID DELIVERY AND PRESSURE GOVERNING DEVICE.
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1,050,763.

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WITNESSES:
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UNITED STATES PATENT OFFICE.

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FLUID-DELIVERY AND PRESSURE-GOVERNING DEVICE.

1,050,763.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LESLIE A. COOPER, a citizen of the United States of America, and resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Fluid-Delivery and Pressure-Governing Devices, of which the following is a full, clear, and exact description.

10 This invention has for its object to provide an improved form of bubbler for drinking fountains, wherein the water is caused to pass through a tortuous passage with obstructions therein to reduce the pressure, and in which the means forming the obstruction is automatically regulated by the pressure of the water, forming a governor which will result in the water flowing out at the outlet opening in a steady and even stream.

In the accompanying drawing showing one embodiment of my invention:—

25 Figure 1 is a vertical axial section through the device; Fig. 2 is a sectional view of the bubble sleeve member. Fig. 3 shows the valve device detached, and Fig. 4 is a perspective view of the device.

The device is shown as comprising a body member 6 having a bore 7 extending down from the top, which has an outlet 8 in the bottom thereof. A sleeve member 9 is secured at the upper part of the body member, being shown as fitted in an enlarged portion 10 of the body and secured therein by a suitable means such as by soldering; which sleeve is provided with a reduced extension 11 having the lower end 12 closed, and projecting down into the bore 7 but offset from the side walls and bottom thereof. The extension 11 is provided with openings 13 at the upper portion leading into the bore 7 and permitting the water which will pass up through the inlet 8 and between the sleeve extension and the bore, to enter the interior of the sleeve. It will be seen that the sleeve 9 projects upward some distance above the casing 6, and in the lower part of the sleeve slides a valve 14 provided with a stem 15 extending downward and connecting with a head portion 16 which slides in the sleeve extension 11 below the opening 13 therein. The sleeve 9 at its lower portion where secured to the casing is provided with lateral openings 17 registering with openings 18 in the

casing; which will permit the water entering the sleeve projection through the opening 13, to pass upward around the valve stem 15 and then outwardly below the valve 14, and through these registering openings 17 and 18; when the valve head 16 is in its lowermost position as shown, but should the valve rise the head 16 will throttle the opening 13 and restrict the flow of the water upward. But the water flowing upward and engaging the lower face 14' of the valve will tend to move the valve member upwardly; and this tendency will be the stronger as the pressure of the water increases; therefore, suitable opposing means for the valve must be provided, and a coil spring 19 is shown engaging the top of the valve, and a casing 20 is shown adjustably secured on the body at the threaded portion 21 thereof, whereby the casing can be turned to raise or lower it and vary the tension on the spring, whose upper end engages the top 22 of the casing. It will be seen that the casing is offset some distance from the sleeve member 9 at the side and at the top, and the casing has an outlet opening 23 at the top from which portion a depending annular extension 24 projects downwardly inside of the said sleeve 9, and offset a short distance therefrom to permit free movement of the spring between these sleeves.

It will be seen that as the water flows out of the openings 18 in the top of the body portion it will pass upwardly between the body and the casing, and thence between the casing and the sleeve 9 to the upper part of the casing; thereupon the water must pass down between the sleeve 9 and the depending annular extension 24 and around or through the spring, in order to reach the opening at the inner lower end of the said annular extension. This of itself will form an obstruction to reduce the force and flow of the water, which will emerge at the top of the passage 23 in a slow and steady stream. But further restricting means are provided which can be adjusted to varying pressures of the water, the casing being provided with an internal flange 26 having its lower face inclined and the upper edge of the body member is similarly inclined, and as the water must flow between these inclined faces up through the casing, it will be understood that screwing the casing up or

down will vary the distance between these inclined faces and more or less throttle the passage of the water.

In order to prevent a resistance at the bottom of the valve head 16, the head and stem are provided with a small bore 28 leading upward from the lower end and having a lateral opening 29 at one or more sides through the stem, permitting the water to flow in and down this bore to pass below the head as the valve moves upward; but this will not interfere with the action of the water on the face 14' of the valve 14.

In the operation of the device, the water flows up through the inlet 8 and around the sleeve extension 11, through the openings therein around the valve stem to press on the lower face of the valve 14; and thence the water passes out the lateral openings 17 and 18, and then up between the inclined faces 26, and upwardly between the casing end 23, thence down around the coil spring to the lower end of the outlet opening 24 and then out through the same. The water will tend to force the valve upwardly and compress the spring until these pressures counterbalance, and the proper adjustment of the spring is accomplished by turning the casing 20; so that only an abnormal pressure will elevate the valve and restrict the opening 13 and reduce the flow of the water. It will be seen that the adjustment of the spring can be done at any time without taking the device apart or employing any tools, it being only necessary to turn the casing 20.

While the invention is shown applied to a bubbler for drinking fountains, it is manifest that it can be used as a means for regulating the pressure or flow of the water for any purpose, and an outlet conduit can be applied at the opening 23 to lead the water to any desired place.

The casing may be locked in adjusted position by the screw 30.

If the bore 28 and outlet portion 29 in the valve member were not provided, the water that might leak down past the cylinder head in the lower sleeve 11 would tend to accumulate under the lower end of the valve head as it moves upwardly, and form a strong resistance to the subsequent downward movement of the head, and thereby interfere with the proper operation of the device. But by having these openings such accumulation of water can find exit through these passages.

I claim:—

1. In a device of the class described, a body having a bore extending down from the top with an inlet in the bottom thereof, a sleeve fast at the upper part of the body and extending upward, the sleeve having a reduced extension with a closed end that projects down into said bore and is offset therefrom and having openings in the side

walls near the upper portion of such reduced extension, the sleeve also having lateral openings above the reduced portion and the body having lateral openings registering therewith, a valve having its upper portion slidable in the said sleeve above said registering openings therein, the valve having a stem extending downwardly and terminating in a head slidable in the lower part of the sleeve extension below said openings, and a casing on the body member having an outlet opening at its top in communication with the said lateral openings in the body, with a depending annular extension projecting from the top opening of the casing and into the sleeve and offset therefrom, a spring located between the sleeve of the casing and the depending annular extension, engaged by said casing and engaging the valve to press it down, the valve being subject to the water pressure against the upper portion thereof to cause the head to move upwardly and throttle the said openings in the reduced extension of the sleeve according to the pressure of the water, the casing being adjustable on the body to vary the tension of the spring.

2. In a device of the class described, a body having a bore extending down from the top with an inlet in the bottom thereof, a sleeve fast at the upper part of the body and extending upward, the sleeve having a reduced extension with a closed end that projects down into said bore and is offset therefrom and having openings in the side walls near the upper portion of such reduced extension, the sleeve also having lateral openings above the reduced portion and the body having lateral openings registering therewith, a valve having its upper portion slidable in the said sleeve above said registering openings therein, the valve having a stem extending downwardly and terminating in a head slidable in the lower part of the sleeve extension between said openings, and a casing on the body member having an outlet opening at the top in communication with the said lateral openings in the body, and having a depending annular extension projecting from the top opening of the casing and into the sleeve and offset therefrom, a spring located between the sleeve of the casing and the depending annular extension and engaging the valve to press it down, the valve being subject to the water pressure against the upper portion thereof to cause the head to move upwardly and throttle the said openings in the reduced extension of the sleeve according to the pressure of the water, the casing being adjustable on the body to throttle the flow of the water therethrough.

3. In a device of the character described, a body having a bore extending down from the top with an inlet in the bottom thereof, a

sleeve fast at the upper part of the body and extending upward, the sleeve having a reduced extension with a closed end that projects down into said bore and is offset therefrom and having openings in the side walls near the upper portion of such reduced extension, the sleeve also having lateral openings above the required portion and the body having lateral openings registering therewith, a valve having its upper portion slidable in the said sleeve above said registering openings therein, the valve having a stem extending downwardly and terminating in a head slidable in the lower portion of the sleeve extension below said openings, a casing on the body member having an outlet at its top in communication with the said lateral openings in the body, the casing having a depending annular extension projecting from the top opening thereof down into the sleeve and offset therefrom, and a spring located between the sleeve of the casing and the depending annular extension and engaged by said casing and the valve to press the valve down, the valve being subject to the water pressure against the upper portion thereof to cause the head to move upwardly and throttle the said openings in the reduced extension of the sleeve according to the pressure of the water.

Signed by me at Springfield, Mass., in presence of two subscribing witnesses.

LESLIE A. COOPER.

Witnesses:

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Wm. S. BELLOWES.