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GAS-PRESSURE REGULATOR.

No. 797,587.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL HERBERT LANYON, a subject of the King of Great Britain, residing at the city of Waukegan, county of Lake, and State of Illinois, have invented certain new and useful Improvements in Gas-Pressure Regulators, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The present invention has relation more particularly to that class of gas-pressure regulators in which a balanced valve and a float are employed in order to automatically control the supply of gas through the pipes that lead to the burners.

The object of the invention is to provide an exceedingly simple, cheap, and durable construction of pressure-regulator the parts of which may be conveniently manufactured and readily assembled for use.

The invention consists in the novel features hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a plan view of a pressure-regulator embodying my invention. Fig. 2 is a view in central vertical section on line 2 2 of Fig. 1. Fig. 3 is a view in cross-section on line 3 3 of Fig. 2.

As shown, my improved governor comprises a central portion or body A, a base B, and a cap or cover C. The body A is provided with a contracted lower part a , that is exteriorly screw-threaded to engage the interiorly-threaded upper part of the base B. These several parts A, B, and C are preferably formed of cast metal. The top of the body A is provided with a peripherally-flanged portion a' , having notches a^2 , and the cover C is provided at its bottom edge with one or more inwardly-extending lugs c , adapted to enter the notches a^2 and to interlock with the flanged portion a' of the body A. As shown, the cover C is provided with a boss or offset part c' , through which is formed a hole c^2 , adapted to receive the wire d of a suitable seal or lock D.

By reference to Fig. 1 it will be seen that the depending edge of the cover C is provided with six lugs c , (although manifestly any desired number of such lugs might be used,) and a corresponding number of notches a^2 are formed in the peripheral flange a' of the body A, these lugs c and notches a^2 being out of

vertical alinement when the cover is in closed position and when the boss c' of the cover is opposite one of the notches a^2 . It will be readily understood that in order to place the cover C upon the body A the lugs c will be passed through the notches a^2 and the cover will then be turned a portion of a revolution until the lugs c are intermediate between the notches a^2 , as shown in Fig. 1, after which the wire d of the seal or lock D will be passed through the hole c^2 of the cover and through the coincident notch a^2 of the body A. The cover will then be held securely in position, so that access cannot be had to the interior of the regulator until the wire of the seal D is removed.

The body A of the governor is provided with an upper float-chamber a^4 and a lower chamber a^5 , the lower part of the float-chamber a^4 forming an annular space a^6 to receive mercury or other liquid, into which the depending wall of the bell-shaped float E will dip. The float E forms a movable member or diaphragm that extends transversely of the float-chamber and is exposed upon its under side to the pressure of the gas, and hence serves to shift the controlling-valve that is connected thereto. Upon the top of the float E rests a tray F, adapted to receive a series of weights f , and, as shown, the bottom of the tray F and the central portions of the weights f are cut away to admit the stem g of the controlling-valve G, this valve-stem g passing through float E and being secured thereto by nuts g' and g^2 , that engage the threaded upper end of the stem g . The valve-stem g passes loosely through a hole a^7 , formed in the diaphragm a^8 , that extends across the top of the chamber a^5 of the body A, this hole a^7 being sufficiently larger than the stem g to permit gas to pass from the chamber a^5 up through the hole a^7 and against the under side of the float E.

The controlling-valve G, which is preferably of brass, may be connected in any convenient manner to its stem g . The controlling-valve G is formed with one or more axial openings 2 extending therethrough, four of such openings being shown between the arms 3, that connect the hub or central portion 4 of the valve G with its outer wall. (See Fig. 3.) The valve G may be connected in any suitable way to the stem g —as, for example, by nuts g^3 and g^4 below and above the valve and engaging the lower threaded portion of the stem g , and, if desired, the central portion 4 of the valve G may be similarly screw-

threaded. As shown, the extreme lower end of the valve-stem g passes loosely through a hole formed in metal b , that connects arms b' , that are preferably cast integral with the upper part of the base B.

The base B is formed with an annular raised part f^2 , whereon rests valve-seat block H, the upper part of this valve-seat block H being held within a cut-away space formed in an annular flange a^{10} at the lower end of the body A. It will thus be seen that when the body A and base B are screwed together the valve-seat block H will be securely retained in position. The seat-block H is formed with radial openings h and with arms h' , and the interior of the seat-block H is formed with upper and lower seats h^2 and h^3 , against which close, respectively, the upper and lower bearing-faces g^6 and g^7 of the controlling-valve G. The base B is formed with an inlet-port b^5 , that connects with a channel b^6 , surrounding the valve-seat block H, and is formed also with one or more outlet-ports b^8 , (two of these outlet-ports being shown in the drawings,) to which the supply-pipes leading from the regulator will be connected.

From the foregoing description the operation of my improved gas-pressure regulator will be readily understood by those familiar with this class of devices. By removing the cover C one or more weights f can be inserted into or withdrawn from the tray F when the valve is to be adjusted. By forming the valve-seat block H radially open and by forming one or more axial openings in the valve G the construction of the parts is much simplified and the consequent expense is materially reduced. The gas passing into the base B through the admission-ports b^5 and to the channel b^6 passes through the openings of the valve-seat block and exerts pressure against the bottom and top, respectively, of the upper and lower bearing-faces g^6 and g^7 of the valve G, and inasmuch as the bottom of the bearing-face g^6 is substantially equal in area to the top of the bearing-face g^7 the pressure of the gas upon the valve G itself is at all times balanced. When, however, by the flow of gas through any of the burners upon the discharge side of the pressure-regulator the pressure within the chamber a^5 , and consequently beneath the float E, is slightly reduced, the valve G will descend, whereupon the gas will pass through the radial openings of the valve-seat block H up around the bearing-face g^6 and down through the axial openings of the valve G and at the same time will pass directly down over the bearing-face g^7 of the valve G and through the base B to the outlet-ports b^8 .

I am well aware that various forms of gas-pressure regulators having float-controlled valves have been heretofore employed; but none of these prior devices have embodied so simple and effective a construction as that which characterizes my present invention.

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

1. In a gas-pressure regulator, the combination with a body having therein a movable member exposed upon one side to the gas-pressure, and with a base united to said body, suitable admission and discharge ports being provided for the gas, of a valve-seat block formed separate from and interposed between the base and body and radially open and provided with upper and lower valve-seats, and a controlling-valve connected to said movable member and having upper and lower bearing-faces to engage said valve-seats and a stem for said valve connected to said movable member.

2. A gas-pressure regulator comprising a body having a screw-threaded portion and having a movable member exposed upon one side to the gas-pressure, a base screw-threaded and united to said body, suitable admission and discharge ports being provided for the gas and a valve-seat block formed separate from and interposed between said base and body, said block being radially open, and a controlling-valve having a stem connected to said movable member.

3. In a gas-pressure regulator, the combination with a body having therein a movable member exposed to the gas-pressure and with a base united to said body and provided with admission and discharge ports, of a valve-seat block formed separate from the base and body and radially open and having upper and lower valve-seats, and a valve connected to said movable member and having upper and lower bearing-faces to engage said valve-seats, the bottom of the upper bearing-face being substantially equal in area to the top of the lower bearing-face.

4. In a gas-pressure regulator, the combination with a body having a movable valve-controlling member therein, of a valve-seat block formed separate from the base and the body and radially open and having upper and lower valve-seats, a base provided with admission and discharge ports and having a channel extending about the periphery of said valve-seat block, the outer and inner walls of said channel being formed integral with said base and a valve connected to said movable member and having upper and lower faces to engage said valve-seats.

5. In a gas-pressure regulator, the combination with a body having therein a movable valve-controlling member, of a valve-seat block open radially to admit the passage of gas therethrough and having upper and lower valve-seats, a base provided with admission and discharge ports and with a raised flange between which and the bottom of the body the valve-seat block is held, and a valve connected to said movable member and having upper and lower bearing-faces to engage said valve-seats.

6. In a gas-pressure regulator, the combina-

tion with a body having a movable valve-controlling member therein and with a base united to said body, suitable admission and discharge ports being provided for the gas, of a valve-seat block formed separate from the base and body and having its inner portion arranged to receive the bearing of a valve and a valve connected to said movable member, said valve being axially open for the passage of gas therethrough.

7. In a gas-pressure regulator, the combination with a body having therein a movable valve-controlling member, and with a base united to said body and provided with admission and discharge ports, of a valve-seat block formed separate from the base and body and having upper and lower valve-seats, and a valve connected to said movable member and having upper and lower bearing-faces to engage said valve-seats, said valve being axially open for the passage of gas therethrough.

8. In a gas-pressure regulator, the combination with a body having a movable valve-controlling member therein, and with a base united to said body and provided with admission and discharge ports, of a valve-seat block formed

separate from the base and body and radially open and having upper and lower valve-seats, and a valve having upper and lower bearing-faces to engage said valve-seats, said valve being axially open, and a valve-stem connected centrally to said valve and to the movable member.

9. In a gas-pressure regulator, the combination with a body having a float-chamber and a float therein, of a base united to said body and provided with admission and discharge ports, said base being formed in its upper part with a guide-frame, a valve-stem having its lower end passing through a hole in said guide-frame and having its upper end connected to the float, a valve-seat block located intermediate between the base and body and having upper and lower valve-seats, and a valve connected to said valve-stem and having upper and lower bearing-faces to engage said valve-seats.

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Witnesses:

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