(No Model.)

S. A. BEATTY.

GAS PRESSURE REGULATOR.

No. 333,587. Patented Jan. 5, 1886.

Fig. 1.

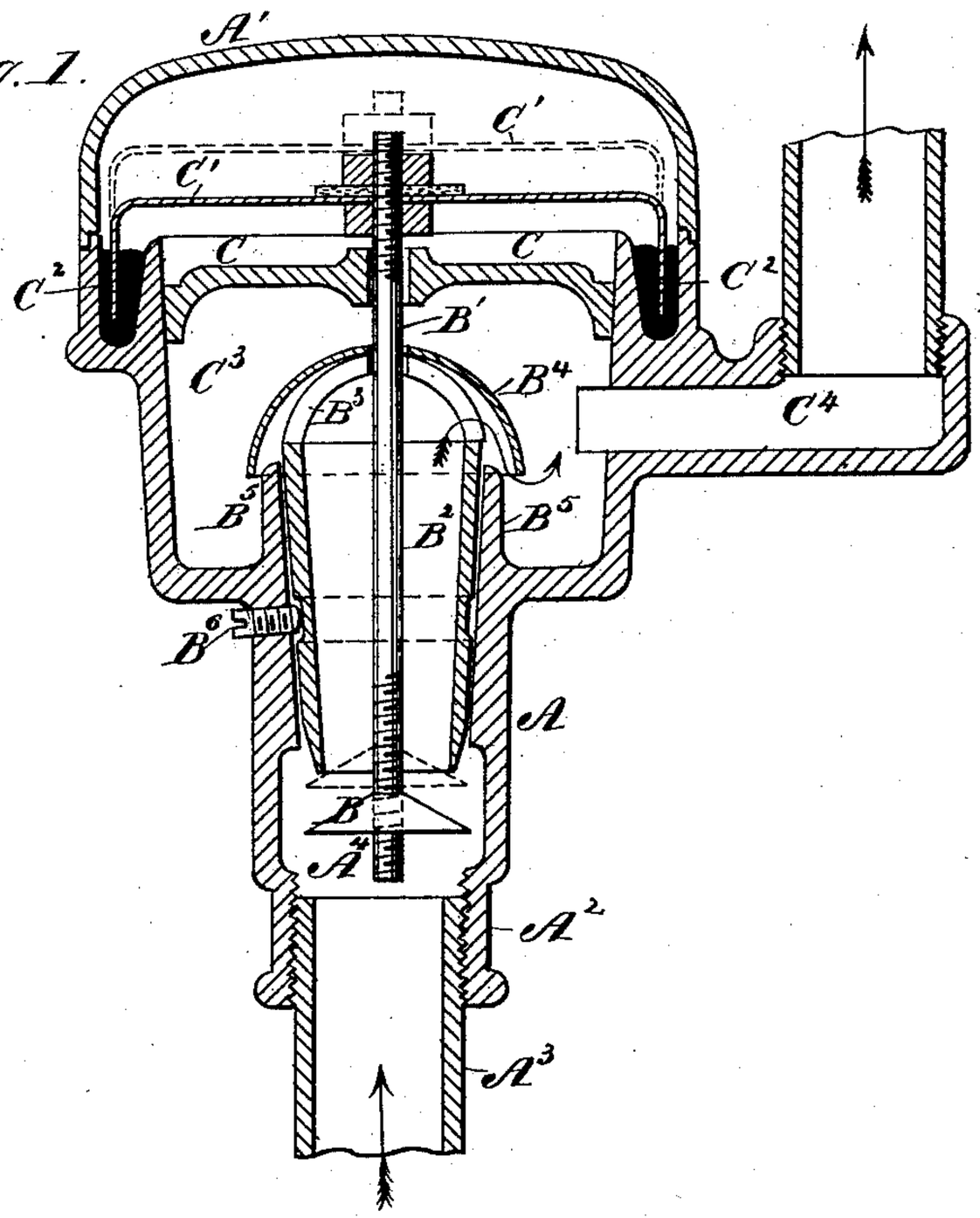
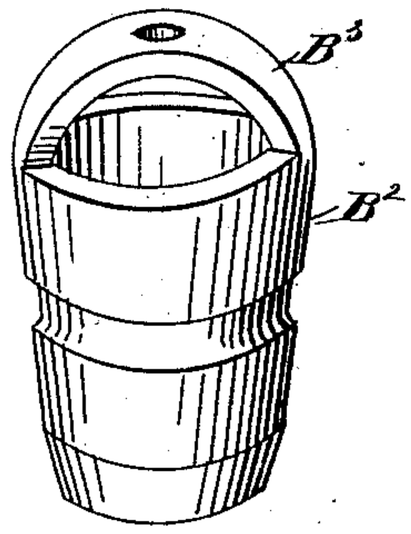


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL A. BEATTY, OF NEW YORK, N. Y.

GAS-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 333,587, dated January 5, 1886.

Application filed May 18, 1885. Serial No. 165,957. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL A. BEATTY, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Gas-Pressure Regulators for regulating the pressure of gas in pipes and other devices, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to governing or regulating valves for controlling automatically the pressure of gas in pipes leading from reservoirs for such gas to a burner or to burners; and it consists in certain devices and combinations thereof for producing the desired results, as will be more fully described hereinafter.

I attain the objects sought to be accomplished by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of my improved valve, showing the casing thereof, the induction-pipe, the pressure-regulating valve and disk, the chamber underneath said disk, the rod for uniting the valve and disk, the shield for preventing any mercury from coming in contact with the regulating-valve, a chamber for containing mercury, a cup carried on the rod of the regulating-valve, and an outlet-passage for the gas. Fig. 2 is a perspective view of the conical or tapering plug, upon the lower end of which the seat of the regulating-valve is formed, while its upper portion forms a guide for the valve-rod.

In constructing gas-pressure-regulating valves having my improved devices and combinations embodied therein I employ a casing, A, which may be of an approved form, that shown in the drawings giving satisfactory results, it being made of cast-iron, or any other material that will not be injuriously affected by the mercury used as a seal, or by the gas. The upper end of this case is provided with a cover, A′, which may be hinged to the body A and held in position by screws; or it may be allowed to simply rest thereon, as shown in the drawings. The induction end of the case A is provided with a nozzle, A^2, which has a female thread formed in it for the reception of the gas-induction pipe A^3. Just above the nozzle A^2, or in any convenient portion of case A, there is formed a chamber, A^4, within which there is located a valve, B, which is adjusted vertically on the rod B′, in order that the position of the valve with reference to its seat and the distance between it and the disk on the upper portion of the rod may be regulated, and thus the opening between the valve and its seat be controlled, so as to allow only a sufficient amount of gas to pass the valve for supplying the number of burners to which it is for the time adapted. The seat of the valve B is formed upon the lower end of a conical or tapering sleeve or plug, B^2, which is fitted snugly in the case A, above the lower portion of the enlarged portion of which it extends, as shown in Fig. 1, and below which it extends sufficiently far to cause it to enter the chamber A^4, and thus allow a seat to be formed upon its lower end for the valve B to rest upon when said valve is entirely closed. Upon the upper end of the plug B^2 there is formed or placed a bail or cross-bar, B^3, in which there is an opening, through which the valve-rod B′ passes, said plug and its bail serving as a guide for the rod. Just above the bail B^3 of the plug there is placed an inverted cup, B^4, the diameter of which is sufficient to cause its lower portion to extend below the upper end of the plug, and outward beyond its outer surface, and also beyond the outer surface of an upwardly-extending flange, B^5, formed in the case A. The office of the shield B^4 is to conduct any mercury that may by any means be caused to enter the gas-chamber, soon to be described, from coming in contact with the plug B^2 or the valve B. The plug above alluded to has an annular groove formed in its periphery, as shown, into which a set-screw, B^6, passes, by which it is held in position even when the case is turned bottom upward. Above the bail B^3 there is a disk, C, which is of such diameter as to cause it to nearly or quite fill the space between the walls of the case A at the point where it is placed, and this disk and the walls of the case form a chamber, C^3, into which the gas enters through the plug B^2. In the lower portion of such chamber there is an annular space, into which the shield B^4 will direct any mercury that may accidentally find its way thereto, from which it may be drawn by inserting a screw-plug in the case A, which may be removed

for that purpose. Upon the rod B′, and above the disk C, there is secured a sheet-metal cup-shaped disk, C′, which is adjustable on said rod, its downwardly-projecting portion entering an annular recess, C^2, formed in the upper portion of the case A. This annular space is designed for the reception of mercury, which acts as a seal and prevents any gas that may pass through or around the disk C from escaping, and thus cause it to press against the under surface of said cup and support the weight thereof, and of the rod B′ and valve B. The cup-shaped disk C′, the rod B′, and valve B, acting within the case A, constitute the regulating mechanism, the parts being so constructed and arranged that the pressure of gas upon the under side of the cup-shaped disk C′, when greater than is required to keep the valve B in the proper position for allowing just the amount of gas to pass it that is required for the number of burners which the particular governor is adapted to supply, will cause it to be carried upward, thus reducing the flow to the burners; but when the pressure is reduced will fall down, and thus allow a greater amount of gas to pass the valve, the parts of each individual governor being proportioned with direct reference to such result. From the chamber between the stationary disk C and the lower wall of the enlarged portion of the case A the gas passes through an outlet-pipe, C^4, to any desired locality.

I am aware that governing-valves for regulating the pressure of gas at different points have been made and used, in which an annular chamber has been formed for the reception of mercury, glycerine, and different kinds of liquids, and in which the cup-shaped disk has been placed for operating the valve for controlling the pressure of the gas. I do not therefore claim these devices separately; but,

Having described the devices employed by me, what I claim, and desire to secure by Letters Patent, is—

1. In a gas-pressure regulator having a casing containing two annular chambers, as described, the combination of a tubular valve-seat, B^2, provided with bail B^3, and having an outer annular groove for the reception of a screw for holding it in position, the adjustable rod B′, valve B, shield B^4, disk C, and cup-shaped disk C′, all arranged and operating substantially in the manner and for the purposes specified.

2. In a gas-pressure regulator, the combination of the rod B′, carrying at its lower screw-threaded end a valve, B, adjustable upon said screw-thread, the valve-seat B^2, having perforated bail B^3, serving to guide the rod B′, the disk C, and the cup-shaped disk C′, adjustable upon the upper screw-threaded end of the rod B′, substantially as and for the purpose specified.

3. In a gas-pressure regulator, the combination, with the body A, having a portion of its interior tapering, of a conical tubular valve-seat, B^2, provided with a perforated cross-bail, B^3, and an outer annular groove for the reception of a screw for holding it in position, substantially as shown and described.

SAMUEL A. BEATTY.

Witnesses:

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