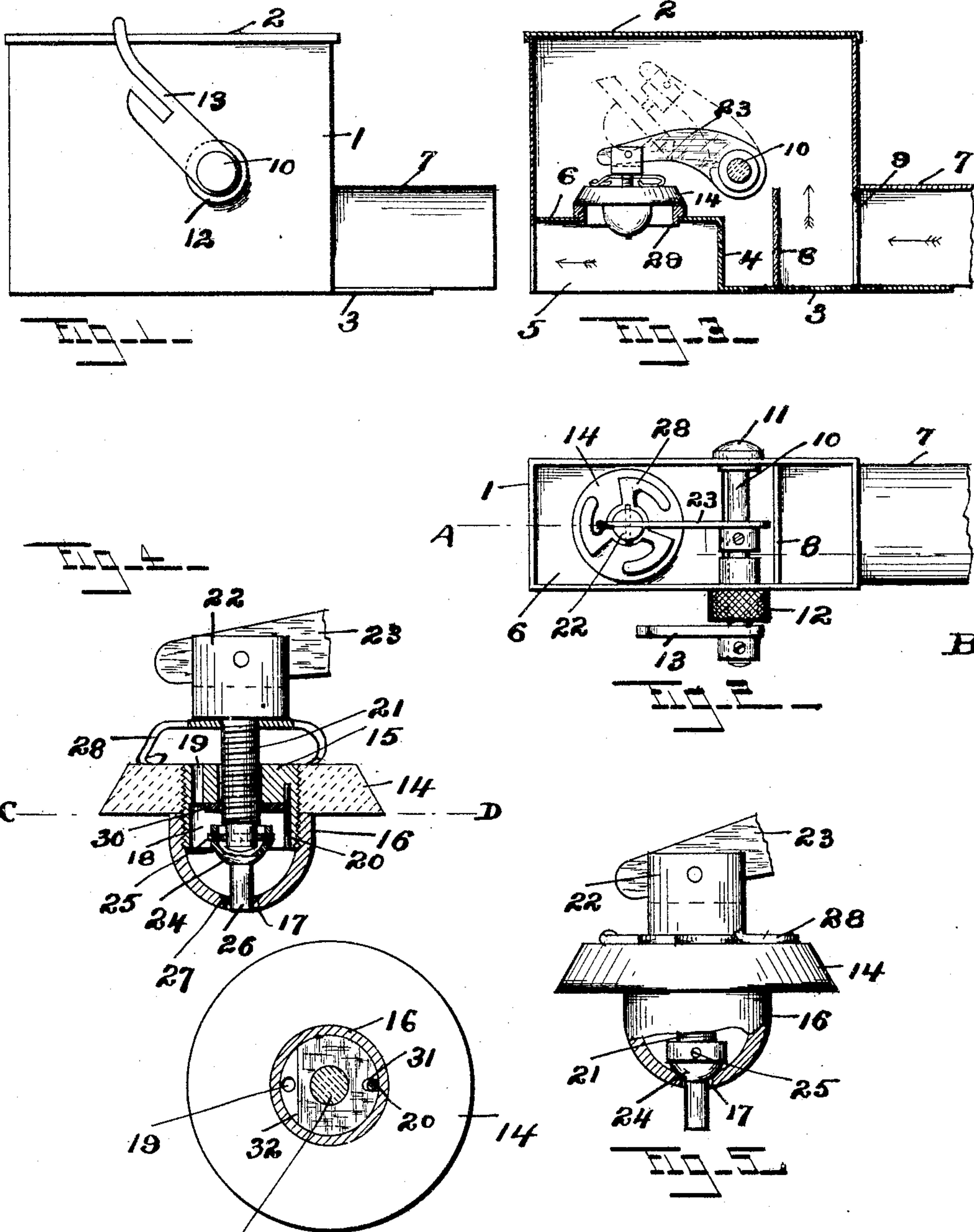


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E. A. REEVES.
VALVE FOR GAS METERS.
APPLICATION FILED APR. 18, 1904.



Witnesses.

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VALVE FOR GAS-METERS.

SPECIFICATION forming part of Letters Patent No. 780,578, dated January 24, 1905.

Application filed April 18, 1904. Serial No. 203,561.

To all whom it may concern:

Be it known that I, EDWIN A. REEVES, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Valves for Gas-Meters, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to new and useful improvements in valves for gas-meters, and refers more particularly to a valve for use upon coin-controlled gas-meters, commonly known as "prepayment-meters."

It is the object of my invention, among other things, to construct a valve in which a materially-diminished supply of gas will be permitted to pass through the meter after the main supply of gas has been shut off and to accomplish this end with mechanism of the fewest possible parts so designed as to be economically constructed and readily assembled.

To these and other ends my invention consists in the valve for gas-meters having certain details of construction and combination of parts, as will be hereinafter described, and more particularly pointed out in the claims.

Referring to the drawings, in which like numerals of reference designate like parts in the several figures, Figure 1 is a side elevation of a valve-case containing my improved valve. Fig. 2 is a plan view thereof with the cover removed. Fig. 3 is a vertical section thereof upon line A B of Fig. 2. Fig. 4 is an enlarged sectional elevation of the valve mechanism. Fig. 5 is a side elevation of the valve, partly in section; and Fig. 6 is an under side sectional view of the valve mechanism, taken upon line C D of Fig. 4.

In the so-called "prepayment-meters" it is the practice to insert a coin which will operate the meter mechanism and permit the passage of a predetermined quantity of gas therethrough, and the gas-supply is shut off after said predetermined quantity has been exhausted. Substantially instantaneous shutting off of the gas-supply results in much dis-

comfiture aside from causing many deaths by asphyxiation, owing to the fact that the gas continues to burn brightly until the supply is exhausted, when the lights are immediately extinguished without operating the valve at the burner, and if perchance this should occur while a person was asleep and another coin inserted in the meter and the gas-supply turned on again the gas would escape through the open burner and into the room. Under this heretofore common method no warning whatsoever was given of the near approach of the termination of the gas-supply, and I believe that practically all the inconveniences, discomfitures, and disastrous results of the present type of gas-meter would be overcome by providing means whereby some warning would disclose that the gas-supply was substantially exhausted, and to accomplish this end I have invented the valve described herein. This valve is so arranged that a full supply of gas will pass therethrough until substantially the whole of said supply has become exhausted, at which time the valve is closed; but by means of an auxiliary valve connected with the aforesaid valve a much-diminished quantity of gas will continue to pass therethrough, which supply will be of no practical value for lighting purposes, but furnishing, however, a warning to whomsoever may be using the gas and permitting them to place another coin in the meter, and thereby secure a fresh increased supply. The mechanism is arranged and usually adjusted so that this diminished supply will be sufficient to keep the lights burning for at least ten or more hours or longer, if desired, thereby furnishing a practical and successful safeguard against the disadvantages of the old type of meter.

Referring to the drawings, the numeral 1 designates the valve-case, which is secured to one side of the meter, being closed at one end by the cover 2 and at other end by the floor 3, which is turned upwardly at 4 parallel to the ends of the case, so as to leave a compartment 5 below that portion of said floor designated 6. The gas-supply enters said case through the pipe 7, connected therewith. Mid-

way between the end of the pipe 7 and that portion of the floor designated 4 is a baffle-plate 8, which is arranged in front of the opening 9 concentric with the pipe 7, so as to prevent the insertion of a wire rod or other device to interfere with the operation of the valve mechanism.

Within the case 1 is a rock-shaft 10, journaled at one end in the bearing 11 and near the other end in a stuffing-box 12, through which the said shaft projects. Fixed upon said shaft outside of said case is the lever 13.

The main valve comprises a valve-disk 14, with the plug 15 threaded therethrough, upon the bottom end of which is threaded the cup 16, having a port-hole 17 through the bottom thereof. In the under side of the plug 15 is a chamber 18, and extending through the body of said plug, parallel with the axis thereof, is the port-hole 19, and parallel with said port is a fixed pin or stud 20, which is driven into said plug and projects into the said recess. Concentric with the valve-disk 14 and movable longitudinally through the plug 15 is the valve-stem 21, having an enlarged head 22 at one end, that is slotted lengthwise and within which is pivotally secured the end of a lever 23, that is fixed to the rock-shaft 10. Upon one end of the valve-stem 21 is secured the auxiliary valve 24 by means of the pintle 25. Projecting downwardly from the said valve 24 is the plug 26, of less diameter than the port-hole 17 and through which it moves freely. Said auxiliary valve is globular and when in its closed position fits within a globular seat 27 within the interior of the cup 16. Surrounding the valve-stem 21 and between the head 22 and the valve-disk 14 is a spring 28, which normally holds the auxiliary valve 24 off its seat.

In operation the insertion of a coin within the meter causes the valve-disk 14 to be opened, so that it assumes approximately the position shown by broken lines in Fig. 3, at which time the gas will enter the case 1 through the pipe 7 and follow substantially the path of the arrows shown in said Fig. 3, passing through the collar 29, fixed in the floor of the case, that forms a seat for the valve-disk. The lever 13 is connected with the coin mechanism and is operated in one direction by means of said mechanism and in the other direction by the movement of the gas through the meter. As the details of said mechanism is not material to my invention, I have not shown it herein. When the predetermined quantity of gas has become substantially exhausted, the movements of the mechanism cause the valve 14 to be closed, so that it rests upon its seat upon the collar 29, as shown in Fig. 3. The relative position of the parts of this valve when the disk is upon its seat, as just described, is shown in Fig. 4, at which time the main supply of gas is shut off, while a much-diminished supply is per-

mitted to escape through the port-hole 19 into the cup 16 and thence into the compartment 5, through the port-hole 17, this diminished supply being sufficient to keep the lights burning, but not to furnish light of any practical value. The movement of the rock-shaft 10 still continues as when the valve 14 was open, but naturally moves at a lessened speed, owing to the diminished quantity of gas being used; but this continued movement causes the valve-stem 21 to move downwardly through the plug 15 until it has forced the auxiliary valve 24 upon its seat 27, (see Fig. 5,) thus closing the port-hole 17 and shutting off all of the gas-supply. The endwise movement just described of the valve-stem 21 is made against the tension of the spring 28, which is flattened out, as shown in Fig. 5, when the auxiliary valve 24 is closed.

In order that the supply of gas at the diminished volume may be varied, I have provided the nut 30, which is slotted in one edge at 31 to engage the pin 20 and prevent its rotation and cut away upon the opposite side at 32 to uncover the port 19. Engagement of the nut 30 with the pin 20 permits of the endwise movement of the nut within the recess 18, but prevents its rotation therein. It is apparent that the nearer the auxiliary valve 24 is to its seat before the movement of the stem 21 begins within the valve-disk 14 the shorter the period of time that the gas will escape through the port-hole 17, and hence by rotating the valve-disk 14 the nut 30 is moved lengthwise upon the valve-stem 21, causing the auxiliary valve 24 to be moved toward or away from its seat, whereby a greater or less auxiliary movement, as desired, will be required to close the same.

There are many minor changes and alterations that can be made within my invention aside from those herein suggested, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of my invention.

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

1. In valve mechanism for a gas-meter, the combination with a valve-disk; means for moving the same on and off its seat; an auxiliary valve; and means for positively operating the same after said valve-disk is seated.
2. In a valve mechanism for a prepayment-meter, the combination with a valve-disk; of a cup or chamber connected therewith; an auxiliary valve operative in said chamber; and means for operating said valve-disk and auxiliary valve successively.

3. In a prepayment gas-meter; valve mechanism for permitting a supply of gas to pass therethrough, said valve mechanism consisting of two successively-operated valves, the

first of said valves permitting the maximum supply of gas to pass therethrough and the second of said valves a supply of gas of greatly-diminished quantity.

5 4. In valve mechanism for a gas-meter, the combination with a valve-disk; of a cup or chamber connected therewith and upon one side thereof; a port opening into said chamber through said valve; an endwise-movable
10 valve-stem passing through said valve into said cup or chamber; an auxiliary valve connected with said valve-stem within said cup or chamber; and means for operating said valve-stem whereby both of said valves will
15 be successively seated.

5. In valve mechanism for a gas-meter, the combination with a valve-disk; of a cup or chamber connected therewith and upon one side thereof; a port opening into said chamber through said valve; an endwise-movable
20 valve-stem passing through said valve into said cup or chamber; an auxiliary valve connected with said valve-stem within said cup or chamber; means for operating said valve-stem whereby both of said valves will be successively seated; and spring mechanism for normally holding said auxiliary valve off its
25 seat until said valve-disk is seated.

6. In valve mechanism for a gas-meter, the combination with a valve-disk; of a plug within said disk having a port-hole therethrough; a cup or chamber secured to said plug and having a port-hole therethrough; a valve-stem operative through said plug; an auxiliary
30 valve connected with said stem; a spring for normally holding said auxiliary valve off its seat; and positively-actuated means connected with said valve-stem for operating both of said valves successively.

40 7. In valve mechanism for a gas-meter, the combination with a valve-disk; means for moving the same on and off its seat; an auxiliary valve; means for varying the position of said auxiliary valve relative to its seat when
45 said auxiliary valve is at rest; and means for

positively operating said auxiliary valve after the said valve-disk is seated.

8. In valve mechanism for a gas-meter, the combination with a valve-disk; of a cup or chamber connected therewith and upon one
50 side thereof; a port opening into said chamber through said valve; an endwise-movable valve-stem passing through said valve into said cup or chamber; an auxiliary valve connected with said valve-stem within said cup
55 or chamber; means for operating said valve-stem whereby both of said valves will be successively seated; and means for varying the length of stroke of said auxiliary valve, said means comprising threaded mechanism con-
60 nected with said valve-stem.

9. In valve mechanism for a gas-meter, the combination with the valve-disk 14; of the cup or chamber 16 connected therewith; auxiliary valve 24 operative in said cup or cham-
65 ber; the spring 28 for normally holding said auxiliary valve off its seat; and the lever 23 connected with said valve-stem and the movement of which successively operates said valve-disk and auxiliary valve. 70

10. In valve mechanism for a gas-meter, the combination with the valve-disk 14; of the plug 15 therein and having a port-hole 19 therethrough; cup or chamber 16 with a port-hole 17 therethrough connected with said plug; 75 valve-stem 21 movable through said plug; an auxiliary valve 24 connected with said valve-stem; spring 28 for normally holding said auxiliary valve off its seat; and means for varying the stroke of said auxiliary valve, said
80 means comprising the nut 30 threaded onto said valve-stem and engaging a fixed part 20 in said plug.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN A. REEVES.

Witnesses:

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WILLIAM REEVES.