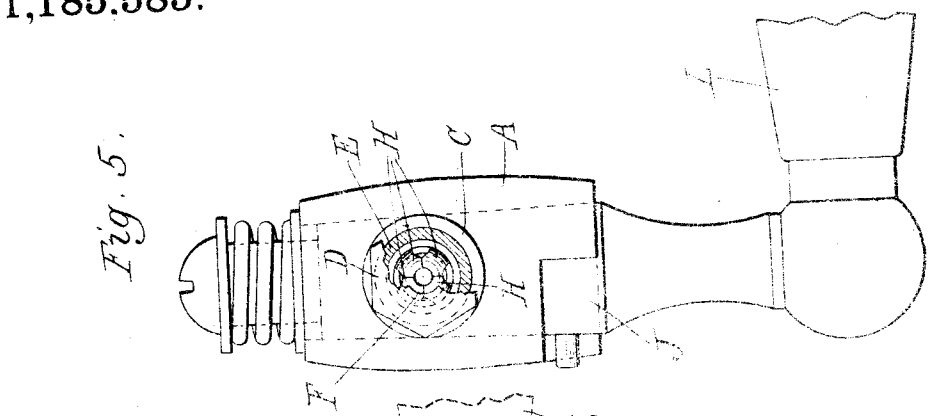
J. A. BOWER.

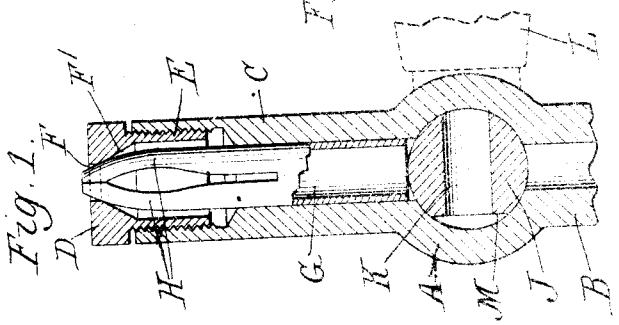
VALVE.

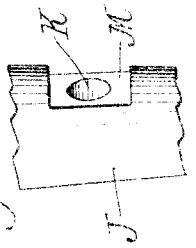
APPLICATION FILED JAN. 2, 1915.

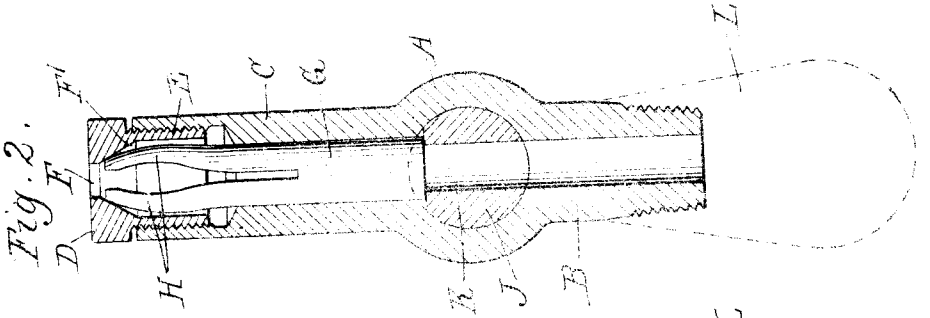
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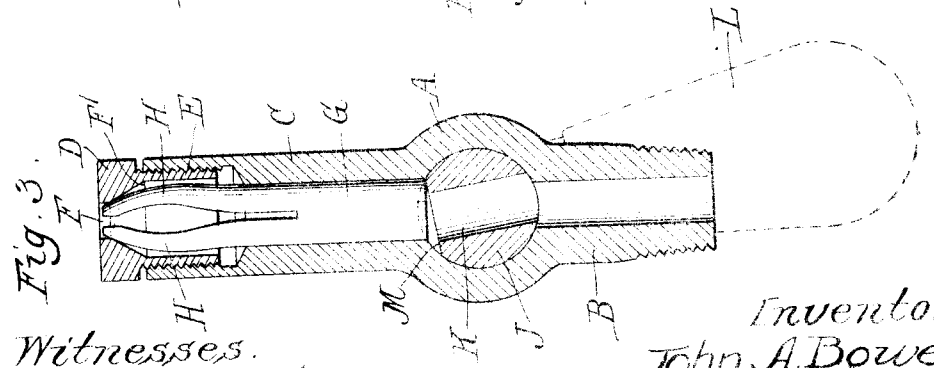
1,185,585.











Witnesses.
Edward T. Wray.
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Inventor.
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Attorneys

UNITED STATES PATENT OFFICE.

JOHN A. BOWER, OF CEDAR RAPIDS, IOWA.

VALVE.

1,185,585. Specification of Letters Patent. Patented May 30, 1916.

Application filed January 2, 1915. Serial No. 90.

To all whom it may concern:

Be it known that I, JOHN A. BOWER, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented a certain new and useful Improvement in Valves, of which the following is a specification.

My invention relates to improvements in valves or gas cocks, for gas ranges, burners and the like, and while I have illustrated it by one particular preferred form, it is perfectly obvious that other detail rearrangements of my device or other exemplifications of it can easily be produced without departing from the spirit of my invention.

One object is to provide a self-cleaning automatic gas cock for retaining constant the velocity of the gas with a varying discharge.

One of the features of my invention is a regulator plug to be thrust into or withdrawn from the gas orifice to vary its cross sectional area responsive to the opening of the gas cock. Yielding means are provided for thrusting this regulator back against the plug normally in the wide open position, and I have preferably shown this yielding means taking the form of spring forms which are a part of the plug and have the twofold function of acting as spring fingers to move the plug and as regulating the fingers to vary the size of the orifice.

In the accompanying drawings Figure 1 is a longitudinal section showing the cock closed. Fig. 2 is a like section showing the cock open. Fig. 3 is a like section showing the cock partially open. Fig. 4 is a detail. Fig. 5 is a view of the valve looking toward the discharge end.

Like parts are indicated by the same letter in the drawings.

A is the body of the case from which projects at one side the inleading pipe B, and at the other the discharge pipe C. These together form the casing. For the convenience of manufacture, this discharge pipe is here shown with a removable end D, having a screw-threaded thimble E, whereby it is adjustably secured in the end of the pipe, an opening F, and a recess F^1 with retreating inner walls.

G is the outlet valve tubular in form, fitting the pipe C, and provided at its outer end with separated spring fingers H, H, formed by slotting the end of the tubular valve and tempering the parts so that they will have a tendency to separate, but can be compressed together to make a minimum opening. These spring fingers are inwardly inclined and adapted to slide on the inclined walls of the recess in the end piece D, so as to approach each other when forced outwardly as shown in Fig. 1, or to recede from each other by their own spring action as they retreat due to such action, as indicated in Fig. 2. In one case they form a minimum outlet, and in the other case a maximum outlet for the fluid flowing through the outlet valve.

J is a rotary valve or plug in the body A, having a transverse opening K, and a handle L.

M is a notch, with flat bottom, formed by cutting across the plug valve J at one end of the transverse opening K.

The use and operation of my invention are as follows: When the parts are in the position shown in Fig. 1, the discharge pipe is closed at its inlet end, and there in a minimum outlet. If, now, the plug be rotated, as soon as the transverse opening K is partially in line with the opening in the outlet valve, the end of the tubular valve will gradually engage the flat surface of the notch and the valve will retreat, and there will be an opening from the inlet pipe through the transverse opening of the rotary valve through the tubular valve and out through the opening of the latter, and this opening will be slightly larger than its minimum. The parts will then be in some such position as shown in Fig. 3. A full movement of the handle will bring the parts into the position shown in Fig. 2 when there is a full passageway from the inlet pipe to the outlet opening, and the outlet valve has its maximum discharge opening. A large variety of intermediate positions can be used to get the desired result. The tubular valve is not connected with or coupled to the rotary valve or handle, but is its own motor, due to its spring fingers and the relation between the same and the walls of the recess. The tubular outlet valve recedes of its own motion, and this it does because of the slot in the rotary valve or plug. The variation in the effective cross section and shape and direction of the channel from the inlet pipe to the outlet opening results in a self-cleaning operation, whereby the valve is more or less effectually cleaned from scale or dirt, or the formation of both prevented. This

is due to the tortuous form of the channel or passageway, and to the fact that it is frequently varied, because the plug valve and therefore the tubular valve will be varied in position from time to time as the requirements of use demand.

An important feature is that in this gas cock or valve, the operation of the handle which controls the plug permits the discharge valve to move under its own motive power, so as to vary its discharge opening. It will be noted that there is no direct connection between the regulating plug and the valve cock, but that yielding means are provided which press the plug against the cock, so that the movement of the plug is caused by the movement of the cock, together with the peculiar shape of a portion of the cock which may react upon the plug to permit it to be moved by the yielding means which take the form of a spring which may be, and as here shown, is preferably a part of the plug, though it is obvious that this is not essential, and that some other spring arrangement might be used. It will be understood, of course, that the plug valve is the outlet valve, and the gas cock is the inlet valve, and that the flat surface on the gas cock is, to all intents and purposes, a cam surface, having the normal functions of a cam in its relation with the outlet valve.

I claim:

1. A gas cock comprising a housing, an inlet valve movable to vary its effective opening, an outlet valve having an approximately circular opening and movable to vary the diameter of said opening, a means interposed between the two valves to move the outlet in response to the movement of the inlet valve to reduce the outlet valve to its minimum before the inlet valve is completely closed.

2. A gas cock comprising a housing, an inlet valve movable to vary its effective opening, an outlet valve having an approximately circular opening and movable to vary the diameter of said opening, a means interposed between the two valves to move the outlet in response to the movement of the inlet valve to reduce the outlet valve to its minimum before the inlet valve is completely closed, said means comprising a slidably mounted hollow sleeve upon which the outlet valve is mounted, and a cam surface on the inlet valve in engagement with the end of the sleeve.

3. A gas cock comprising a housing, an inlet valve movable to vary its effective opening, an outlet valve having a fixed minimum opening and movable to vary its effective opening, a means interposed between the two valves to move the outlet in response to the movement of the inlet valve to reduce the outlet valve to its minimum before the inlet valve is completely closed, the outlet valve comprising a nozzle having an interiorly tapered surface in coöperation with spring fingers which are adapted to be thrust into said nozzle to force them together, said fingers being centrally apertured at their mutual contact point.

4. A gas cock comprising a housing, an inlet valve movable to vary its effective opening, an outlet valve having a fixed minimum opening and movable to vary its effective opening, a means interposed between the two valves to move the outlet in response to the movement of the inlet valve to reduce the outlet valve to its minimum before the inlet valve is completely closed, the outlet valve comprising a nozzle having an interiorly tapered surface in coöperation with spring fingers which are adapted to be thrust into said nozzle to force them together, said fingers being centrally apertured at their mutual contact point, said fingers being adapted to yieldingly force the outlet valve toward the open position.

In testimony whereof, I affix my signature in the presence of two witnesses this 24th day of December, 1914.

JOHN A. BOWER.

Witnesses:
E. J. CROSBY,
M. D. PUGH.