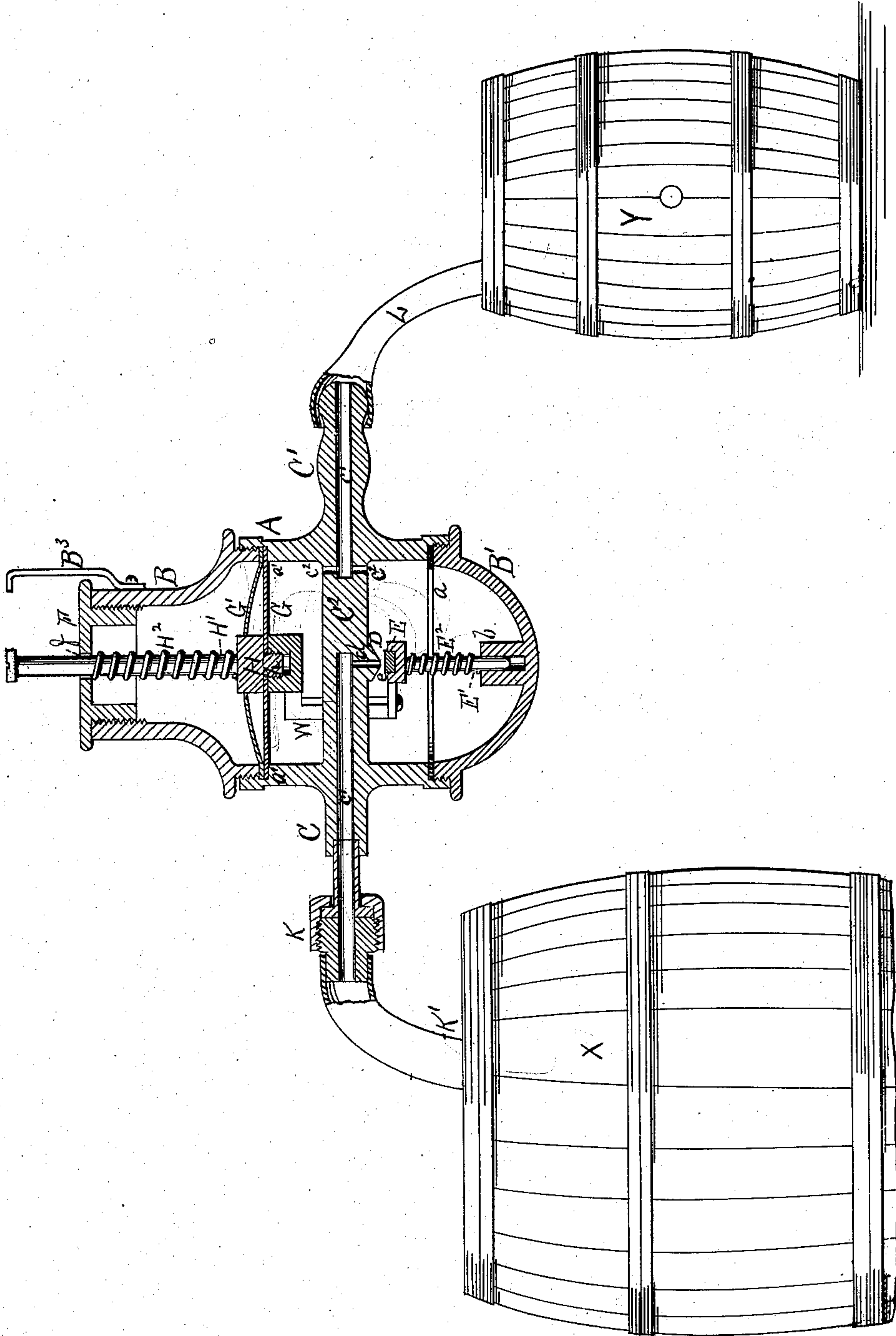


**F. W. WIESEBROCK.**  
**Gas-Governors.**

No. 158,768.

Patented Jan. 12, 1875.



Witnesses;  
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 A. V. Gordon

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# UNITED STATES PATENT OFFICE.

FREDERIC W. WIESEBROCK, OF BROOKLYN, NEW-YORK, ASSIGNOR TO  
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## IMPROVEMENT IN GAS-GOVERNORS.

Specification forming part of Letters Patent No. 158,768, dated January 12, 1875; application filed  
December 28, 1874.

*To all whom it may concern:*

Be it known that I, FREDERIC W. WIESEBROCK, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Gas-Regulators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing and the letters of reference marked thereon, making part of this specification, in which is represented a cross-section of my improved regulator in position.

The nature of my invention consists in arranging in a suitable shell, provided with an inlet and discharge opening or tube, a valve, which is provided with a stem having a spring arranged therein in such manner that its tension shall be constantly employed in so acting on the valve as to cause the same to close the vent or orifice through which gas is supplied to the shell. My invention also consists in connecting the valve, through suitable gearing, with an elastic diaphragm, and to which is secured a plunger working through an adjustable screw-cap, and in arranging in said plunger a spring, and which so acts in connection with said screw-cap as to regulate at pleasure the supply of gas that shall be fed to the shell, and this, too, entirely irrespective of the amount of pressure in the gas-containing vessel. My invention also consists in providing the valve with a rubber head or washer, and which, in connection with the conical-shaped wall which surrounds the gas-supply vent or orifice, provides a most secure means of entirely closing said orifice when it is desired to completely shut or cut off the supply of gas.

The construction and operation of my invention are as follows:

A is the shell, and is constructed out of any suitable material, and may be of any desired form and dimensions. The shell A has a detachable head, B, and end piece or bottom, B<sup>1</sup>, and is provided with inlet and outlet tubes C C<sup>1</sup>, and by means of which the gas is fed to the shell and discharged therefrom, or supplied to the vessel which it is designed to charge, as occasion requires. While the lateral channels c c<sup>1</sup> of these tubes C C<sup>1</sup> are on a line, yet they do not form one continuous channel,

but the same is interrupted or broken by a solid wall-piece of metal, C<sup>2</sup>, and which serves to arrest the passage of gas as it flows in through the channel c, and causes it to pass down and out, through the orifice d in the nozzle D, into the interior chamber of the shell, and from which, as occasion requires, through the vertical orifices c<sup>2</sup>, it is fed to the channel c<sup>1</sup> of the outlet or discharge pipe C<sup>1</sup>. The bottom or end piece B<sup>1</sup> is screwed onto the shell so as to form a tight joint, and which may be further protected by means of a washer, a. The interior surface of the bottom or end piece B<sup>1</sup> is of a concave form, and has at its center a cup-bearing, b, in which the valve-stem E<sup>1</sup> of the valve E rests and has its bearing. The upper face of the valve E is recessed so as to provide suitable bearings in which to secure the washer e, and which may be formed of rubber or any other suitable material. This washer e, in connection with the cone shape of the nozzle D, provides a most reliable means, when desired, of so closing the orifice d as to entirely, and in the most effectual manner, shut or cut off all communication between the gas-containing vessel and the interior chamber of the shell. E<sup>2</sup> is a coil or other spring, so arranged, in connection with the valve E and its stem E<sup>1</sup>, that its tension shall be constantly exerted to drive the washer e against the nozzle or, as it were, valve-seat D, and thus close the vent or orifice d. The top or upper-end piece B is of the form shown in the drawing, and is provided with an adjustable screw-cap, F. When this end piece is screwed on, it serves to secure the elastic diaphragm G, which has its bearing on an annular shoulder, a', on the interior surface of the shell A. To this diaphragm G, and which may be constructed of rubber or any other material possessing the requisite elasticity, is secured the plunger H, by means of the screw-thread h on the stem or rod H<sup>1</sup>. Thus it will be seen the diaphragm G has a double function—first, it serves as a washer to form a tight joint between the shell A and its upper-end piece B, and then of allowing sufficient play to the plunger H, to open and close the valve. This rod or stem H<sup>1</sup> of the plunger H is provided with a coil-spring, H<sup>2</sup>, one end of which has



its bearing on the upper surface of the plunger H, while its opposite end has its bearing on the under surface of the adjustable screw-cap F. The plunger rod or stem has its guide-bearing in an opening, *f*, at the center of the screw-cap F. The plunger H is connected with the valve E by means of a yoke or other suitable gearing, W. To prevent the overstraining of the flexible diaphragm G a convex metallic diaphragm, G<sup>1</sup>, may be placed on the upper surface of the same, its upward curved form allowing free movement or play to the diaphragm G. This metallic diaphragm G<sup>1</sup> has a suitable opening through which freely passes and works the plunger and its rod. This diaphragm also acts, as it were, as a brace to prevent the elastic diaphragm from being twisted by the screwing on of the end-piece B<sup>1</sup>. The upper section, B, may be provided with a check-arm or lever, B<sup>3</sup>, so constructed and arranged as to prevent the cap F from being entirely unscrewed or detached from the end piece B<sup>1</sup>.

Having now given a full and detailed description of my improved carbonic-gas regulator, I will proceed to describe its mode of operation.

Carbonic-acid gas being supplied to a suitable vessel, X, at a high pressure, so as to carry the largest quantity in the smallest volume, the apparatus is attached to this vessel X, as shown at K and K', or by any other convenient means. The pipe O<sup>1</sup> is then, by hose L, or otherwise, attached to the keg Y containing the lager-beer or other liquid which it is designed to charge. The screw-cap F, being screwed up so as to leave the spring H<sup>2</sup> free from any pressure which would have the effect to develop its tension, even if the gas is turned on, it will not pass to the interior chamber of the shell A, as the tension of the spring E<sup>2</sup> will so act on the valve E as to effectually close the orifice *d*. So soon as the lager begins to be drawn off the cap F is screwed down, compressing in its downward movement the spring H<sup>2</sup>, and which, overcoming the tension of the spring E<sup>2</sup>, will depress the diaphragm G, and which, carrying with it the plunger H, will, through the gearing W, cause the valve E to fall, and which leaves the orifice *d* free for the egress of gas, and which, rushing therethrough, soon fills the chamber until its density, acting on the plunger H, aided by the tension of the spring E<sup>2</sup>, will overcome the pressure of the spring

H<sup>2</sup>, and thus close the valve. This plunger H or the dimension of the same is according to the character or nature of the purpose for which the regulator is designed to be used. So soon as any of the contents of the keg or vessel Y is drawn off the space left vacant in the vessel thereby is instantly filled by gas passing down or up through the channel *c*<sup>2</sup> into and out through the channel *c*<sup>1</sup>. When the pressure being lessened in the vessel the tension of the spring H<sup>2</sup> will again open the valve, when more gas rushes in until the density or pressure of the same again closes the valve, as before, and thus the valve is automatically opened and closed as occasion requires. When the screw-cap F is screwed down to such a position that the pressure on the liquid is sufficient to draw off the same with the desired sparkling, it is left in that position, and the apparatus will continue to discharge just this desired amount of gas automatically. By the screwing down of said screw-cap F the pressure of gas can be adjusted at will. The screw-cap is so arranged that, if it is screwed down to the lowest point, only a perfectly safe quantity of gas can pass through the apparatus.

By the use of my apparatus I can use a gaseous or liquid medium at any desired pressure, and entirely irrespective of the pressure of the gas in the gas-containing vessel, of either side of the valve, a result obtained by none of the present regulating apparatus.

The simplicity of the apparatus also is a guard against it becoming easily out of order. What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In connection with a suitable shell, the pipe O and cone-shaped nozzle D, the channels *c*<sup>1</sup> *d*, each of which being connected as shown, in combination with the valve E, washer *e*, stem E<sup>1</sup>, and spring E<sup>2</sup>.

2. The plunger H, having a rod H<sup>1</sup>, spring H<sup>2</sup>, screw-cap F, diaphragm G, and valve E, the latter being connected to the plunger by any suitable gearing, the whole being combined and arranged to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

F. W. WEISEBROCK.

Witnesses:

FRANK W. PERRY,  
JOHN B. BAKER.