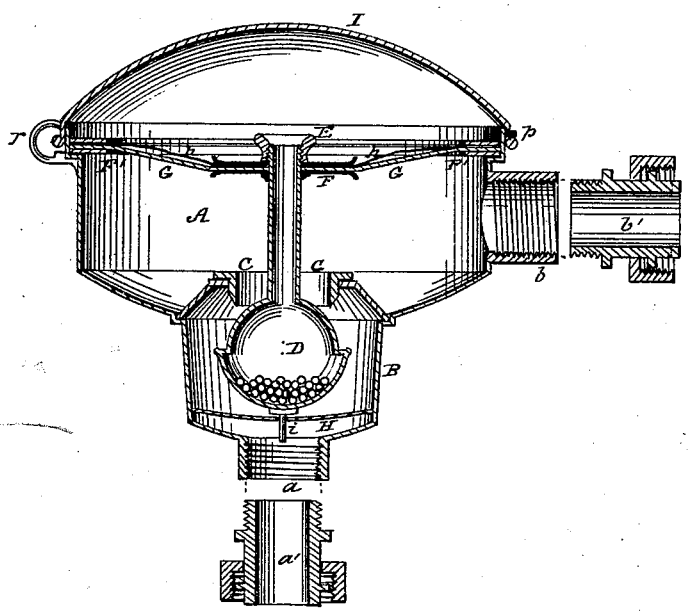
G. TAYLOR.

GAS-REGULATOR.

No. 184,482. Patented Nov. 21, 1876.



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IMPROVEMENT IN GAS-REGULATORS.

Specification forming part of Letters Patent No. **184,482**, dated November 21, 1876; application filed October 11, 1876.

To all whom it may concern:

Be it known that I, GEORGE TAYLOR, of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Gas-Regulators; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming a part of this specification.

This invention relates to improvements in gas-regulators or apparatus for equalizing and regulating the pressure under which coal-gas is supplied to the burners, so as to prevent waste by an undue amount of pressure; and its object is to construct such an apparatus in such a manner that it will be very efficient in its operation, and very durable, and not liable to get out of order.

My invention consists in the combination, with a flexible diaphragm and the valve-seat, of a valve and balance cup, constructed to receive the necessary amount of loading, and arranged so that the center of gravity is brought below the point of contact of the valve and valve-seat, for the purpose of insuring an even and uniform expansion, or rise and fall of the diaphragm; also, in an improved construction of the diaphragm and the arrangement of the same in relation to the stem and valve and balance-cup; and in the combination and arrangement of the several parts, in the manner and for the purposes hereinafter set forth.

In the accompanying drawing is shown a vertical transverse section of a gas-regulator provided with my improvements.

A is the main body of the instrument or the gas-chamber, and B is the valve-chamber. *a* is the inlet, which is attached to the outlet of the gas-meter, and *b* is the outlet, which is connected with the service-pipe that conducts the gas to the burners. G is the main diaphragm, which is made from leather or other suitable material, and is secured within the instrument in the usual manner by means of the binding-plates F and F′ and the tubular binding-nut E. D represents my improved valve and balance-cup, which is secured to the lower end of the stem P, the upper end of the latter being secured to the binding-plates F and binding-nut E.

This valve D is constructed substantially in the form shown in the drawing, so that it will serve the double purpose of a valve and a balance-cup, by means of which arrangement the center of gravity is brought below the point of contact of the valve with its seat C, and steadiness of motion is secured in a vertical line, which cannot be done when the loading is applied above the diaphragm, as has hitherto been the practice.

The valve-seat C is brought to a sharp edge at the lower portion thereof, which comes in contact with the valve, for the purpose of presenting the most limited surface possible of contact with the valve, and thereby preventing any accumulation of bituminous deposit, which would cause the valve to adhere to the seat.

H is a cross-bar located within the valve-chamber, immediately underneath the valve, for the purpose of supporting the same when at rest, and relieving the diaphragm of the weight. At the center of this cross-bar is provided an opening or perforation, *m*, to receive a guide-pin, *i*, secured to the under side of the valve and balance-cup D, for the purpose of guiding and steadying the latter in its upward and downward movements.

For the purpose of preventing the valve D from becoming corroded by the vapors contained in the gas, and thereby caused to fit unevenly to its seat, I nickel-plate the same, by which means it is kept in proper form, and fits perfectly to the seat, and renders the instrument much more durable and efficient in its operation.

a′ and *b′* are bushes, provided with screw-threads which correspond with those on the inlet *a* and outlet *b*, respectively, and fit into the same, and are for the purpose of adapting the regulator to be used on gas-meters of different sizes. For the purpose of preventing any unpleasant smell being emitted by the regulator when the diaphragm has become impregnated with gas, I secure an auxiliary diaphragm, *h*, made from parchment paper, or other thin and impervious material, between

the binding-plates F and F′ and above the main diaphragm G, by which means the escape of any effluvia is effectually prevented.

I is the lid or cover, which is made to fit closely over the main body A of the instrument, and which I usually secure in position by means of a pin, *p*, secured to the upper edge of the shell of the main body A, which passes through a perforation in the rim of the cover, and rings *r* secured, respectively, to the shell and the rim of the cover, which admit of its being fastened by a padlock.

It will be understood from the above description that my improvements are intended to be applied to a gas-regulator having a flexible diaphragm, and that by means of the construction and arrangement of the several parts, as above set forth, uniformity and precision of movement and action are secured, and the instrument is rendered very durable, and not liable to get out of order.

What I claim as my invention is—

1. In combination with the flexible diaphragm G and valve-seat C, the valve and balance-cup D, constructed as described, to receive the necessary amount of loading, the said several parts being arranged, in relation to each other, substantially as set forth.

2. The double diaphragm G *h*, composed of one layer of leather and one layer of parchment paper, and arranged in relation to the stem P and valve and balance-cup, as set forth.

3. The combination, in a gas-regulator, of the flexible double diaphragm G *h*, stem P, valve-seat C, bar *h*, guide-pin *i*, and valve and balance-cup D, the said several parts being constructed and arranged in relation to each other substantially as herein set forth.

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