(No Model.)

G. TAYLOR.

GAS REGULATOR.

No. 309,260. Patented Dec. 16, 1884.

Fig. 1.

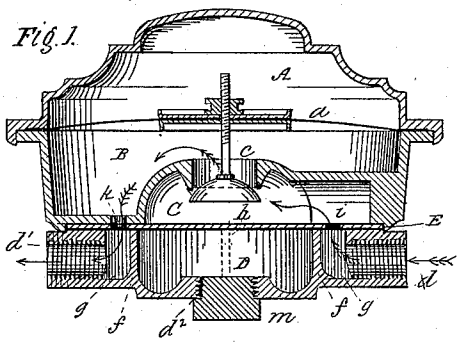


Fig. 2.

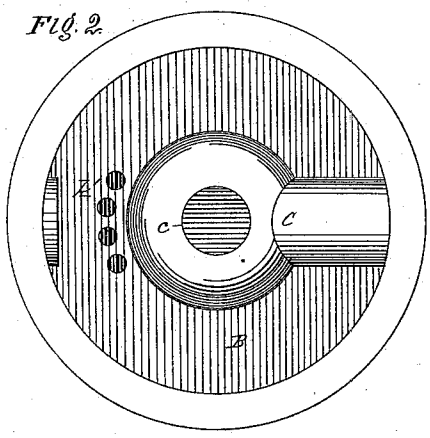


Fig. 3.

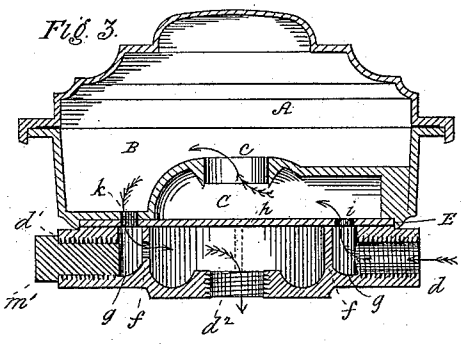


Fig. 5.

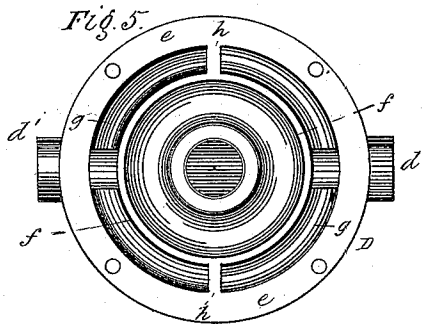


Fig. 4.

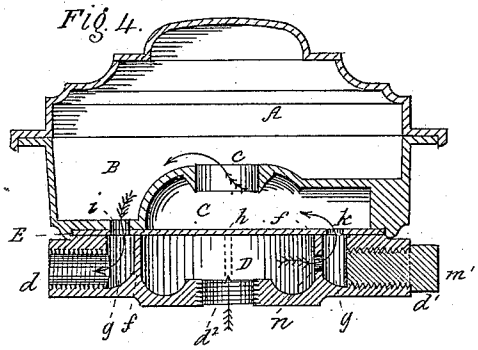


Fig. 6.

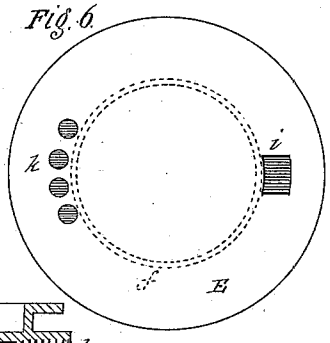
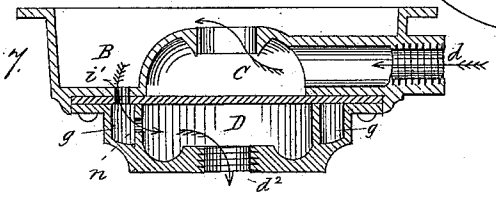


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE TAYLOR, OF JERSEY CITY, NEW JERSEY.

GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 309,260, dated December 16, 1884.

Application filed March 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE TAYLOR, of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in Gas-Regulators; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to an improvement in gas-regulators or apparatus for regulating the pressure and supply of gas delivered to gas-burners, so as to equalize the same under the varying pressures in the mains; and the object of my invention is to construct a gas-regulator in such manner that it will receive and deliver gas either in a horizontal direction from right to left or left to right, or will receive the gas at one side and deliver it from underneath the regulator, or will receive it from below and deliver it at one side thereof, and so that the several directions for the receiving and delivering the gas may be altered or changed at pleasure by means of a simple and easily-made adjustment. This I accomplish by means of a chamber of novel construction in connection with a rigid diaphragm or disk, said chamber and diaphragm being located underneath the valve-chamber, and constructed as hereinafter particularly described.

My said invention is applicable either to a flexible-diaphragm regulator or to a mercury or fluid regulator; and it consists in the novel constructions and combinations of parts of a gas-regulator, as hereinafter particularly set forth.

In the accompanying drawings, Figure 1 represents a vertical central section of my improved gas-regulator. Figs. 3 and 4 are similar views showing the instrument adjusted to receive and deliver gas in other directions. Fig. 2 is a top view of the portion forming the gas-chamber, and Figs. 5 and 6 are respectively top views of the chamber and rigid diaphragm or disk above mentioned.

Similar letters of reference indicate the same parts in all the several figures.

The regulator may be made either of sheet or cast metal, and comprises four chambers—namely, the air-chamber A, the gas-chamber B, the valve-chamber C, and the supplementary chamber D, which latter forms the essential feature of my invention.

In the drawings I have shown my invention applied to an ordinary flexible-diaphragm regulator; but, as before stated, it may also be applied to a fluid or mercury regulator, as will be readily understood by those skilled in the art.

a is the flexible diaphragm, constructed and arranged in the ordinary manner. *b* is the valve, operated through the medium of the diaphragm to diminish or increase the pressure and supply of gas delivered to the burners; and *c* represents the valve-seat and opening through which the gas passes from the inlet into the gas-chamber.

My supplementary chamber D is located immediately underneath the gas-chamber B and valve-chamber C, and contains the inlet and outlet openings *d d' d²*, which latter are used interchangeably, as hereinafter described, according to the particular directions in which the gas is to be received and discharged. The rigid diaphragm or disk E, which may be of sheet metal or thick card-board, is interposed between said chamber D and the gas and valve chambers and fitted thereto by close joints. The construction of said chamber D is as follows: *e* is a flange, by which it is attached to the case of the regulator by means of screws or other suitable means. *f* is an annular wall or partition, which forms an annular chamber, *g*, between said partition and the inner surface of the case, and the upper edge of which makes close contact with the under side of the diaphragm E. *d* and *d'* are side openings communicating with the annular chamber *g*, and forming, respectively, the inlet and outlet for the gas, and *d²* is a central opening at the bottom of the chamber. The annular chamber *g* is divided into two parts or compartments by partitions *h*. Immediately over that portion of the annular chamber *g* which communicates with the inlet *d* is an opening or perforation, *i*, through the diaphragm E to admit the gas into the valve-chamber, and on the opposite side of said diaphragm, above the other portion of the annular chamber *g*, are perforations *k*, to allow the gas to pass from the gas-chamber to the outlet *d'*.

The operation is as follows: Supposing the

gas is to be received at the right side and discharged at the left of the regulator horizontally, as shown in Fig. 1, the various parts are arranged as shown in said figure, the opening *i* in the diaphragm E being placed over that portion of the annular chamber *g* which communicates with the inlet *d*, the openings *k* being then over the portion of said annular chamber *g* which communicates with the outlet *d'*, and the opening d^2 is stopped by a plug, *m*, of any suitable form. In this case the gas enters at *d*, passes through *i*, thence through the valve *c* into the gas-chamber to act upon the flexible diaphragm *a*, (or upon the float in the case of a fluid-regulator,) thence through the perforations *k* to the outlet *d'*. If the gas is to enter at the left and be discharged at the right, the relative positions of the parts remain unchanged, and the regulator is turned bodily one-half around. When the gas is to be received at one side and discharged from the bottom, as indicated in Fig. 3, the relative positions of the parts remain the same, but the opening *d'* is stopped by a plug, *m'*, and a perforation, *n*, provided in the partition *f* to form a communication between the opening d^2 and that portion of the annular chamber *g* which is underneath the openings *k*, in which case the gas enters at *d*, thence passes through *i*, thence through the valve, thence through *k* and *n*, and out at d^2.

When the gas is to be received at the bottom of the regulator and discharged at one side thereof, as indicated in Fig. 4, relative positions of the parts are changed by turning the chamber D and the diaphragm E one-half way around, so that the openings *d* and *d'*, and *i* and *k*, are each on opposite sides of the regulator to those which they occupied in the former cases. The gas then enters at d^2, thence passes through *n* and *k* into the valve-chamber, thence through the valve into the gas-chamber, and thence through *i* and out at *d*.

From the above description it will readily be understood that the direction of the flow of gas may be changed at pleasure by simply removing the plug from one opening to another, or by moving the diaphragm E and chamber D one-half way around relatively to the body of the regulator, and that my improved regulator can therefore be fitted and adapted to be used in various different positions without necessitating the expense of providing extra fittings. This is an advantage which, so far as I am aware, is not possessed by any other gas-regulator.

If the regulator is to permanently receive the gas at one side and discharge it at the bottom, the modification shown in Fig. 7 may be employed. In that the inlet *d* is formed on the portion of the case which forms the gas-chamber B, and the supplementary chamber D has only the central opening, d^2, at its bottom. In this case the gas enters at *d*, thence passes through the valve into the gas-chamber, thence through the perforation *i'* in the diaphragm E, thence through the perforation *n*, and out at d^2.

k' in Fig. 2 are openings in the bottom of the gas-chamber which coincide with the perforations *k*.

What I claim as my invention is—

1. A gas-regulator provided with a supplementary chamber, D, constructed substantially as described, and a perforated rigid diaphragm, E, operating conjointly therewith, in the manner set forth, for the purpose of changing the directions of the flow of the gas through the regulator by changing the relative positions of the parts.

2. The supplementary chamber D, having an annular partition, *f*, forming an annular chamber, *g*, and upright partitions *h h*, dividing said groove into two parts, in combination with a rigid diaphragm or disk, E, having perforations which form communications between said annular chamber *g* and the gas and valve chambers of a gas-regulator, as shown and described, for the purpose set forth.

3. In combination with the valve-chamber *c* and gas-chamber B of a gas-regulator, the rigid diaphragm or disk E, perforated as described, and the supplementary chamber D, having the annular partition *f*, the chamber *g*, divided into two compartments by partitions *h h*, and the inlet and outlet *d* and *d'*, the whole constructed substantially as shown and described, for the purpose set forth.

GEORGE TAYLOR.

Witnesses:
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