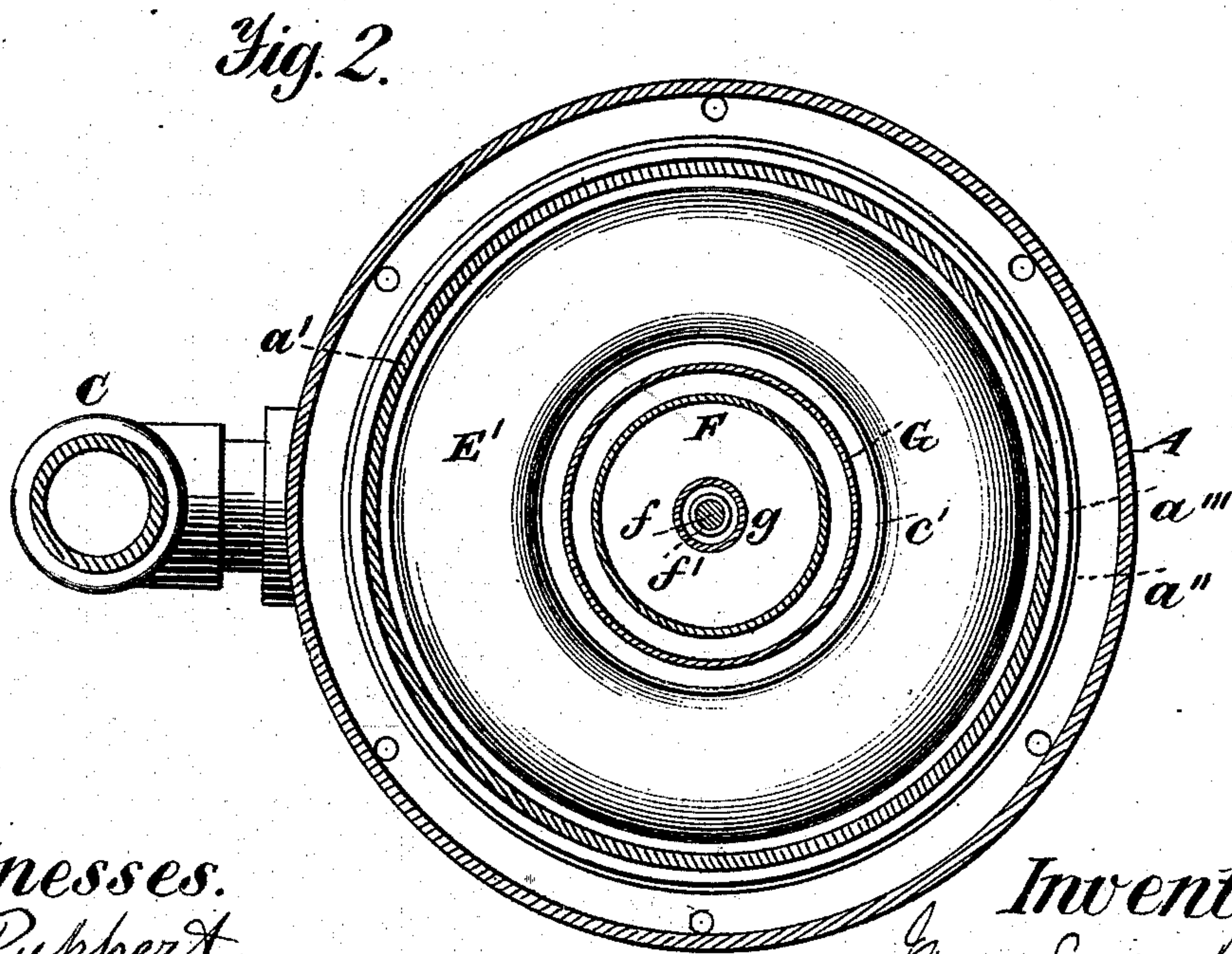
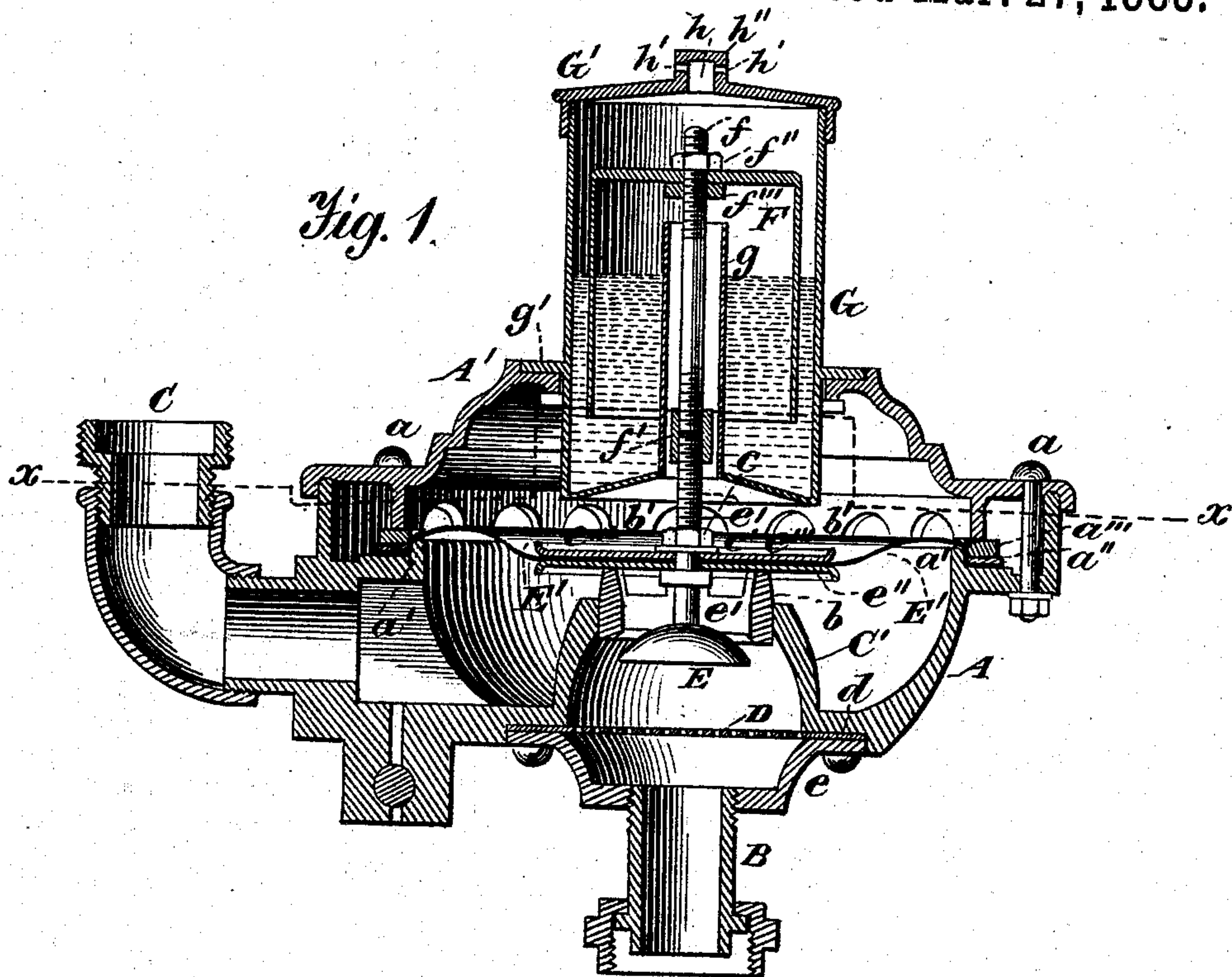


(No Model.)

J. S. DE PALOS.
GAS REGULATOR.

No. 274,733.

Patented Mar. 27, 1883.



Witnesses.
A. Ruppert.
W. T. Cole.

Inventor.
James S. de Palos,
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att'y.

UNITED STATES PATENT OFFICE.

JAMES S. DE PALOS, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN
GAS SAVING COMPANY, OF NEW YORK.

GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 274,733, dated March 27, 1883.

Application filed February 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. DE PALOS, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Gas-Regulators, of which the following is a specification.

It is well known that in certain diaphragm gas-regulators it is necessary, in order that the diaphragm shall have free movement, to provide an opening above the upper surface of the diaphragm to allow the proper movement or displacement of air, and that in such regulators the air escaping from within carries with it a disagreeable odor, resulting from its contact with gas-tainted interior surfaces, or with the oil or grease used in connection with the diaphragm, or with other extraneous matter.

In Patent No. 268,368 granted November 28, 1882, to Griffin S. Lacey, is found an invention intended to permit the air above the diaphragm, and in contact therewith, to have the requisite movement, the tainted air being separated from the air of the room or apartment by means of a seal comprising an inverted cup covering an aperture leading from above the diaphragm, the cup rising and falling within a body of liquid, after the manner of the ordinary gas-ometer used by gas-works. The invention described in the said patent to Lacey effects most of the valuable results sought for in a regulator of this class; and the object of my invention is to obtain the same advantageous results in an increased degree by means which shall be more positive in their action and dependent upon the movement of the valve governing the inflow of gas to the regulator, which provisions are found in practice to produce a flame of greater steadiness, and to give other desirable effects.

In the accompanying drawings, Figure 1 represents a vertical central section of the invention. Fig. 2 is a sectional plan on the line *x x* of Fig. 1.

Similar letters of reference indicate similar parts in both views.

A represents the lower portion of the case of the gas-regulator, and A' the upper portion, these parts being united by screws *a*.

B is the gas-inlet pipe, connecting with the meter, and C the outlet leading to the burners.

D is a plate having perforations, the aggregate area of which is sufficient to admit the requisite supply of gas to the valve under the maximum pressure exerted in the mains.

E is the valve, which has vertical movement above the perforated plate D, and *b* its seat, which is screwed into the part C' of the lower portion, A, of the case.

The perforated plate D is confined between the lower surface, *d*, of the said part A and the upper surface of the detachable flange *e*, into which the inlet-pipe B is screwed. The valve E is provided with a stem, *e'*, to which is attached a disk, *e''*, sustaining the central portion of the flexible diaphragm E'. The outer edge or perimeter of the diaphragm rests upon the annular surface *a'* of the case A. A gasket, *a''*, is placed around the edge of the diaphragm, on which gasket a metal ring, *a'''*, is placed. The projections *b'*, formed upon the under side of the upper portion, A', of the casing, rest upon the metal ring *a'''*, and when the two parts A and A' are held together by the screws *a* the periphery of the diaphragm is held to its seat in a manner preventing any upward escape of gas. Above the center of the diaphragm is a second disk, *e'''*, also slipped over the stem *e'*. The upper end of the stem *e'* is threaded, and the disk *e'''*, having been placed over the stem, is clamped in place and in contact with the diaphragm by means of a nut, *c*, which rests upon a leather washer, *c'*, for forming a tight joint.

F is an inverted cup, through the center of which passes a rod, *f*, having a screw-coupling, *f'*, which connects with the upper threaded end of the valve-stem *e'*. The cup F is held between the nut *f''* and screw-collar *f'''*, and is vertically adjustable.

G is a liquid-receptacle having a central vertical pipe, *g*, and a flange, *g'*, which flange seats upon the top of the upper part, A', of the case.

G' is the screw-cap of the liquid-receptacle, in the top of which is an aperture, *h*, which unites with minute lateral apertures *h'*, formed in the projection *h''* on the cap. The apertures *h'* allow the air confined above the liquid free

movement, while it is apparent that the liquid-seal isolates it from the body of air in contact with any gas-tainted part of the interior of the regulator. The liquid-receptacle G is made
 5 attachable to and detachable from the upper part of the case, A', in any suitable manner. The diameter of the liquid-receptacle is somewhat greater than that of the inverted cup F, so that when the latter is placed concentrically
 10 of the receptacle an annular space is provided between the two parts. The cup may be adjusted to the required depth in the liquid by means of its screw-rod attachment. It will be seen that as the valve E rises and falls on the
 15 variation in pressure of the inflow of gas the inverted cup F rises and falls with it in the liquid-space, giving free movement to the body of air above the diaphragm, the liquid-seal preventing the escape into the room of any air tainted
 20 ed by contact with the interior of the regulator. The movement of the cup F is therefore compulsory with that of the valve, and the movement of the valve, due to variations of pressure under it, is also communicated to the inverted
 25 cup. The displacement or movement of air above the diaphragm is therefore the same as that of the gas below it, thus equalizing and steadying the movement of the valve and diaphragm and preventing any fluttering or irregular
 30 action of the valve.

By employing the devices constituting my invention the steadiness of the flame is insured, this desirable result depending almost exclusively upon the regular movement of the valve.
 35 By placing the inverted cup centrally above the valve the greatest steadiness is obtained, there being thus procured that perfectly-equalized action between the valve and the air sealing and displacing devices which heretofore
 40 has not, as I believe, been reached.

I do not limit my invention to a regulator having a flexible diaphragm, as the appliances hereinbefore described are applicable to diaphragm-regulators of other descriptions well

known. Neither do I limit myself to the carrying out of my invention, or the method forming a part thereof, by the special devices hereinbefore set forth; but,

Having described my invention, I claim—

1. The method hereinbefore described of preventing the escape of gaseous or unpleasant odors from a diaphragm gas-regulator, and of equalizing the action of the valve and steadying the flame, which consists in sealing a body of air above the diaphragm, and effecting its
 50 displacement coincidentally with the movement of the valve, substantially in the manner set forth.

2. In an air-tight dry gas-regulator, a valve and a diaphragm connected therewith, combined with an air-sealing attachment above the diaphragm, connected with the valve and having movement coincidentally therewith, substantially as set forth.

3. In a diaphragm gas-regulator, an air-chamber having a liquid-space, and an inverted cup entering the same, combined with a gas-regulating valve, and devices connecting the valve and inverted cup, substantially
 65 as set forth.

4. In a diaphragm gas-regulator, a casing having a liquid-receptacle with a perforated cap, combined with an inverted cup, a gas-regulating valve, and a connection between said cup and valve, substantially as set forth.

5. In a diaphragm gas-regulator, the combination, with a regulating-valve and its stem, of a liquid-receptacle, and inverted cup entering the same, and an adjustable connection between said valve and cup, substantially as set
 70 75 80 forth.

In testimony whereof I have hereunto set my hand this 12th day of February, 1883.

JAMES S. DE PALOS.

Witnesses:

F. B. SQUIRE,
 GEORGE E. HYATT.