W. MALLERD.

Regulator for Gas Burners.

No. 47,362. Patented April 18, 1865.

Fig. 1

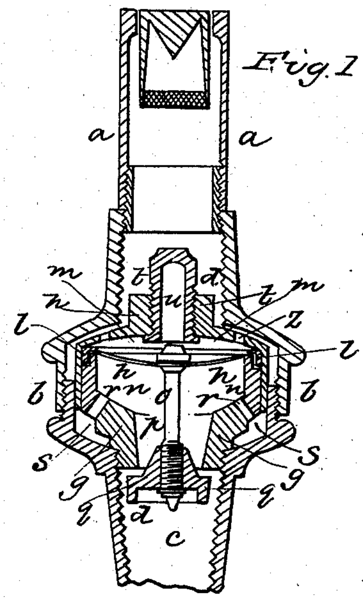

Fig. 2

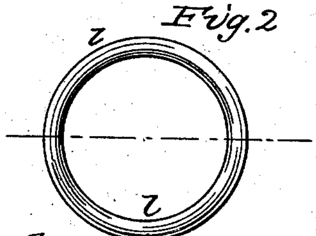

Fig. 3

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WILLIAM MALLERD, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO J. D. ALVORD, OF SAME PLACE.

IMPROVED REGULATOR FOR GAS-BURNERS.

Specification forming part of Letters Patent No. **47,362**, dated April 18, 1865.

To all whom it may concern:

Be it known that I, WILLIAM MALLERD, of Bridgeport, county of Fairfield, and State of Connecticut, have invented a new and useful Improvement in Regulators for Gas-Burners; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The present invention consists—

First. In attaching the flexible diaphragm used in regulators for gas-burners to a ring made either of metal or any other suitable material, which ring is held in and between the joint of the two parts or sections of the regulator, in lieu of having the flexible diaphragm, as heretofore, directly held between and by the same, the edges of which soon cut them, thus causing them to break away, and requiring the frequent insertion of a new one. This, however, is entirely obviated by the use of the ring.

Second. In the use of a screw-rod for setting or limiting the play of the diaphragm within its case at pleasure, said rod being susceptible of adjustment with regard to the diaphragm, so as to allow a greater or lesser vibration of the same, or to entirely stop its movement and hold it stationary, according as may be desired.

Third. In combination with the adjustability of the diaphragm, as above described, a valve susceptible of being adjusted near to or far from its seat, thereby increasing or decreasing the gas-orifice of the same, and consequently allowing more or less to pass through the valve, as may be desired, the valve and diaphragm operating together, as will be presently described.

In the accompanying plate of drawings my improvement is represented. Figure 1 is a central vertical section of a gas-burner with my improved regulator inserted therein, and Figs. 2 and 3 are detail views.

Similar letters of reference indicate like parts.

a a in drawings represent an ordinary gas-burner made with an enlarged part, *b*, and attached by its end *c* to the pipe. In enlarged part *b* my improved gas-regulator *d* is inserted, said regulator being made in two parts, *f* and *g*, fastened together at their joints by riveting, screws, or in any other proper manner to securely hold them together. Between and in the joint formed by the two parts *f* and *g* a thin flexible diaphragm, *h*, made of any suitable flexible material, is inserted and held, its edges first having been fastened to a protecting rim or ring, *l l*, of the form represented in Figs. 2 and 3, whereby the cutting of the diaphragm by the edges of the two sections of regulator joined together as described is prevented, said diaphragm dividing the interior of the regulator *d* into two chambers, *m* and *n*.

o is a vertical rod attached at its upper end to the center of the lower side of the diaphragm *h*, and extending downward from the same through the opening or aperture *p* in the lower end of chamber *n*, communicating with interior of gas-pipe *c*. The lower end of rod *o* is made with a screw-thread, on which is screwed a valve, *q*, having its seat in orifice *p*.

r r are apertures in section *g*, communicating with chambers *s* around the regulator in the pipe. In top plate, *t*, of regulator, and passing through the same, a hollow screw-shaft, *u*, is inserted, by the turning of which either up or down in its bearing its inner end can be adjusted to any desired position with regard to the diaphragm *d*, and thus regulate its upward movement at pleasure; or, when desired, it can be sufficiently brought to bear upon the diaphragm as to prevent any movement of the same.

The regulator constructed and arranged as described, its general operation is as follows: The gas passes from the supply-pipe into the lower chamber of the regulator by the valve and through the orifice *p*, and out from the same through the apertures *r r* into the space between the regulator and interior of the pipe, and then upward to the delivery-openings of the burner *a*, where it issues to the external air.

By the regulator arranged as described, if the set-screw *u* be brought to bear upon the diaphragm so as to hold the same stationary, the gas will pass unobstructed by the valve and out through the burner, as described, the amount of gas so passing being in proportion to the size of the orifice, whether small or large,

according as the valve is screwed up or down on its shaft; but to set the regulator to burn any desired and stated quantity, the set-screw is so adjusted with regard to the diaphragm and the upper end of the valve-rod as to prevent the valve from being entirely closed as the diaphragm vibrates from the varying pressure of the gas, and the valve is then screwed up or down upon its shaft to the proper distance from its seat—that is, either near to or far from the same, according to the quantity of gas desired to be consumed by the burner.

By the use of the adjustable screw-rod for the flexible diaphragm arranged as described the diaphragm can be made, as it were, stationary, or be allowed to play up and down by the pressure of the gas within the regulator and passing into the same, according to the pressure and quantity of gas desired to have pass to the burner, as is evident without further description.

Apertures L L may be made in the top plate of the regulator, through which the gas can pass into and out from the upper chamber above the diaphragm.

The set-screw for the diaphragm is also of advantage in smoothing out the wrinkles in the diaphragm which serve to prevent the diaphragm from working freely and sensitively.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The employment of the independent ring in combination with the inner case and the diaphragm, substantially as herein shown and described.

2. The combination of the diaphragm-regulator with the diaphragm, substantially as herein shown and described.

3. The combination of the said diaphragm-regulator with the adjustable valve, substantially as herein shown and described.

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Witnesses:

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