I. REHN.

Gas-Regulator.

No. 163,255. Patented May 11, 1875.

Fig. 1

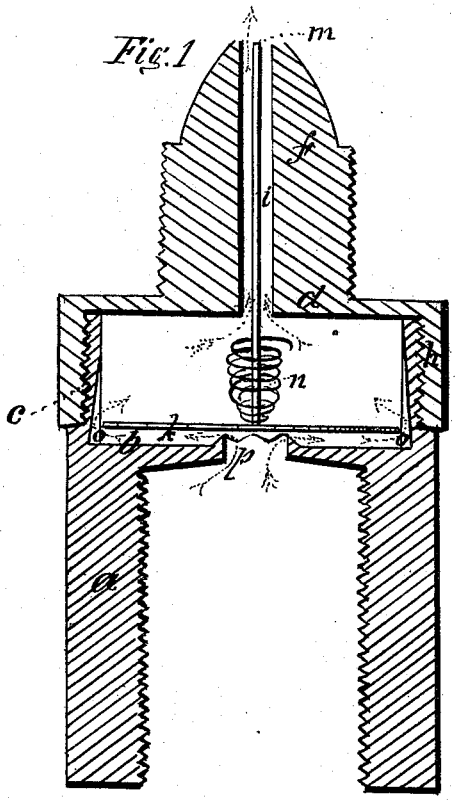



Fig. 2

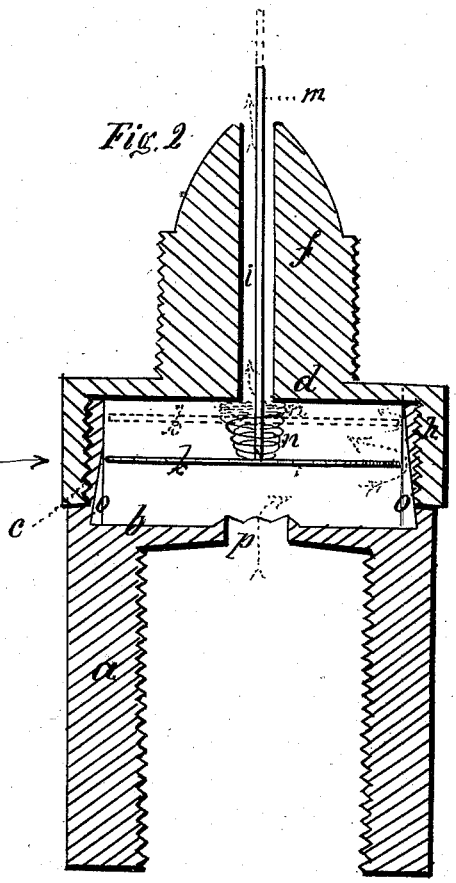
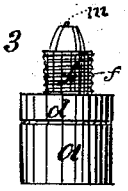



Fig. 3




Witnesses:

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# UNITED STATES PATENT OFFICE.

ISAAC REHN, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN GAS-REGULATORS.

Specification forming part of Letters Patent No. **163,255**, dated May 11, 1875; application filed May 1, 1875.

*To all whom it may concern:*

Be it known that I, ISAAC REHN, of the city of Philadelphia and State of Pennsylvania, have invented a Mode of Regulating the Flow of Gas to Burners, of which the following is a specification, reference being had to the drawing, making part of the same.

The object of my invention is not merely to provide a check to the flow of gas, but such a check that shall be modified by the automatic action of the device itself, and by which any increase above the normal pressure shall correspondingly close the aperture, and so shut off to that extent the supply of gas, and also that when a diminution of pressure occurs from the maximum the aperture shall be enlarged to admit a larger volume of gas.

My regulator is so made that it may be employed with the ordinary burners in use, and the whole attached to the supply-pipe, and also, when they are made of sufficient capacity, be inserted anywhere between the burners and the meter.

Figure 1 of the drawing is a half-section of all parts but the disk, the piston, and the spring. Fig. 2 shows the device in action, and Fig. 3 an external view of the regulator.

Figs. 1 and 2 are drawn on a much enlarged scale, to more clearly reveal the parts. Fig. 3 is natural size.

The same letters indicate the same parts in all the figures.

*a* is the base, provided with the standard inside screw for attachment to the supply-pipe. The upper third of this base is cut out, as at *b*, constituting a chest or valve-chamber, on the outside upper part of which is cut a screw for the attachment of the cap, which thread is marked *c*. *d* is the cap, made in a separate piece. The inside of the flange, at the bottom, is provided with an inside screw to connect the cap with the top of the chest on the base. The cone *f* is connected with the cover *d* and flange *h*, and is provided with the standard outside thread for connecting the cone with the burner. Through the center of the cap and cone is drilled a hole, *i*, of sufficient capacity to allow the play of the piston, and for the flow of gas to the burner. Into the chamber *b* is introduced a disk, loosely fitting the diameter of the chamber, and marked *k*. To the center of the disk is attached a piston, *m*, to keep the disk in position, and around this piston is a spiral spring, *n*, to react upon the lifting power of the gas. The chest or chamber *b* is provided with one or more graduated slots, *o*, two being about the best practicable number, tapering from a capacity sufficient to allow the free flow of all the gas at a pressure up to about two inches, (water-gage,) the broad ends of the slots being at the bottom of the chamber, and tapering gradually to nothing at the top. One of these slots I allow to terminate midway of the height of the chest, and the other to extend nearly to the top of the chamber.

In Fig. 2 the action may be seen. When the pressure of the gas rises above the normal state the disk commences to rise, and when at *x*, (indicated by the arrow,) one slot will have been cut off, and the other diminished in capacity at the point of contact with the disk, and so for all distances will there be a corresponding variation. When the pressure is at the maximum, but a small portion of one slot will be open, which, with the leakage around the disk, supplies sufficient gas at high pressure.

Between the chamber and the screw-orifice, at *p*, is drilled a hole to admit the gas from the supply-pipe to the chamber, and the direction taken by the gas is indicated by the dotted arrows.

I am aware of the previous use of the disk for similar purposes, and do not, therefore, claim that as my invention; but

I claim—

1. The combination of the graduated slots *o* with the movable disk *k*, arranged and constructed as described, or substantially the same, for the regulation of the flow of gas to burners.

2. The combination, in the regulator, of the disk *k*, inlet *p*, and bearings for the disk, arranged to maintain a gas-passage when the disk is at the limit of its lowest motion, substantially as set forth.

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