A. FULTON.

Gas Burner.

No. 109,404. Patented Nov. 22, 1870.

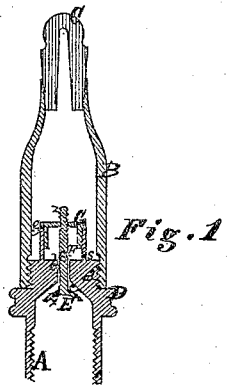


Fig. 1

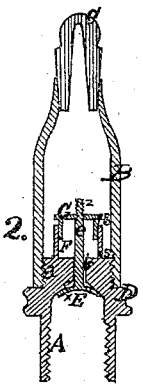


Fig. 2.

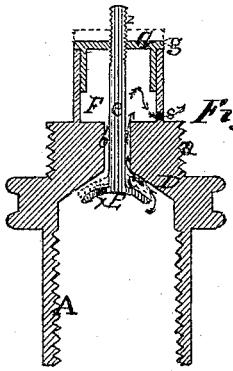


Fig. 3.

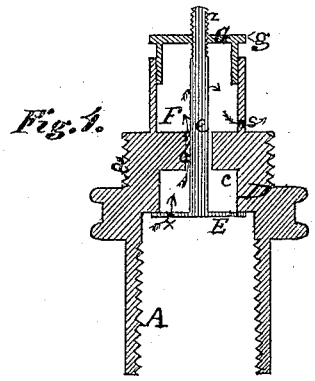
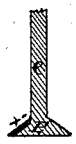


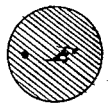
Fig. 4.



5.

6.

7.



8.

Witnesses { Henry A. Mygatt
Charles Selkirk.

Andrew Fulton
Inventor.
Per Alex. Selkirk
Attorney

United States Patent Office.

ANDREW FULTON, OF ALBANY, NEW YORK.

Letters Patent No. 109,404, dated November 22, 1870.

IMPROVEMENT IN GAS-BURNERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ANDREW FULTON, of the city and county of Albany, State of New York, have invented certain new and useful Improvements in Gas-Burners; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a side elevation af a gas-burner embodying the improvements, and illustrates the several parts at rest or in operation under a slight pressure.

Figure 2 represents a side elevation of the same, and illustrates the action of the improvements under pressure.

Figure 3 is a side elevation of the improvements in an enlarged scale.

Figure 4 is a side elevation of the improvements on an enlarged scale, with a valve of a modified form.

Figure 5 is a vertical sectional view of a valve of modified form, with stem attached.

Figures 6, 7, and 8 are vertical views of valves and their ports.

It is well known that, in the common gas-burner, the gas has a free permission for an unobstructed flow through the same, and is liable, under excessive pressure, to blow, thereby discharging an unnecessary amount of gas, a great portion of which is not consumed, but escapes in the room and causing an unpleasant smell.

Many devices have been employed to impede, limit, and check the flow of the gas through the burner, which have been attended with more or less success, such as stuffings of cotton, hair, wire, and other fibrous materials, all of which are liable to objection on account of becoming, in time, more or less impregnated with the sediment or refuse settling from the gas, which renders the said stuffings inoperative to effect the desired results.

Other devices, such as valves, disks, and the like, operated by elastic diaphragms, have been used; also valves, operating by the pressure of the gas directly on the same, have been employed with more or less favorable results.

My invention relates to certain improvements in gas-burners, whereby a valve, located in the under side of the base, is operated to regulate the flow of gas to the body of the burner; and consists in a flanged piston working in a vertical cylinder, placed above the base and within the main chamber of the burner, against which piston the pressure of the gas is exerted to throw the valve against its seat, the said valve being connected to the said piston by means of a screw-cut stem, on which the piston is regulated for a vertical play in its chamber to effect the valve below.

To enable others skilled in the art to make and use my invention I will proceed to describe it in reference to the drawing and the letters of reference marked thereon, the same letters indicating like parts.

In the drawing—

A represents the valve-chamber;

B is the body of the burner;

C is the tip;

D is the base, which connects the shank surrounding the valve-chamber with the body of the burner;

E is the valve;

All of which are old, and have been used in some form or other.

The base D is provided with a central orifice, *b*, which communicates from the valve-chamber A to the cylinder F above.

Attached to the valve E is the stem *e*, of a diameter considerable smaller than the orifice *b*, which stem is provided with a screw-thread, Z, on its upper end. The said stem works vertically in the orifice *b* without touching the sides of the same, and its smaller size affords sufficient space for the flow of gas from the valve-chamber A to the cylinder F above.

Made on the base D and over the orifice *b* is the vertical cylinder F, into which is made a port, *s*, through which the gas may flow from the said cylinder into the body B of the burner, as indicated by arrows in figs. 3 and 4.

I place in the top portion of the cylinder F the piston G, which piston is provided with a flange, *g*, figs. 3 and 4. The said flange *g* rests upon the top edge of the cylinder F, and prevents the piston from dropping down to the bottom of the cylinder.

The top of the piston G is perforated at its center, and cut with a screw-thread to correspond with the screw-thread Z of the stem *e*, which stem the said top of the piston receives.

The screw-thread Z of the stem *e* renders the piston, in which it works, capable of being nicely regulated in its limit for a vertical movement within the cylinder F.

If the average pressure of the gas is but slight, the piston G should be raised on the stem *e*, by means of the screw Z, to such a distance as will permit the valve E, attached to the said stem, to fall from its seat about one-sixteenth of an inch scant; but if the pressure be great, the said piston G will needs be screwed down on the said stem so that the valve E will not have more than one thirty-second of an inch, or less, play to and from its seat.

As the pressure of the gas in the valve-chamber is equal in every direction, and the same on the top side of the valve as well as on the bottom of the same, the pressure of the gas would in no case, by its action on the said valve, throw it up to its seat. But, by the pressure of the gas being exerted on the lower side of the piston G in the cylinder F, where the pressure will be greater than in the body B of the burner, the said piston G will be raised to its full limit, and will

carry with it the stem *e* and the valve E attached thereto, and thereby check or limit the flow of the gas from the valve-chamber to the body of the burner; and in that case the flow of the gas will not be over the upper side of the valve E, as in fig. 3, but through the port *x*, as in fig. 4.

With these improvements any form of valve E may be used, as shown in the several figures.

It is to be understood that I do not claim the use of valves, operating to check or limit the flow of gas from one part of a burner to another, as being new, as such valves have long been known, and have been used in many modified forms to effect such results; but

What I claim, and desire to secure by Letters Patent, is—

In combination with the gas-burner A, B, C, and D, the flanged piston G, attached by the screw-stem *e* to the valve E, and the cylinder F, provided with ports S, all constructed and arranged to operate substantially as described herein.

ANDREW FULTON.

Witnesses:

ALEX. SELKIRK,

CHARLES SELKIRK.