

(No Model.)

O. M. SHANNON.
GAS AND AIR BURNER.

No. 429,798.

Patented June 10, 1890.

Fig 1.

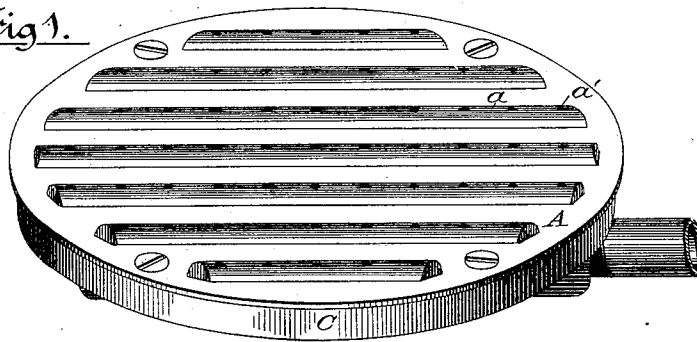


Fig 2.

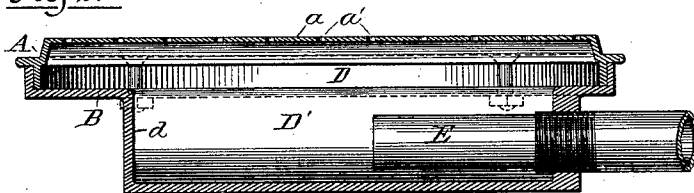


Fig 3.

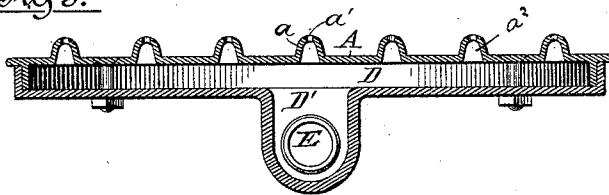
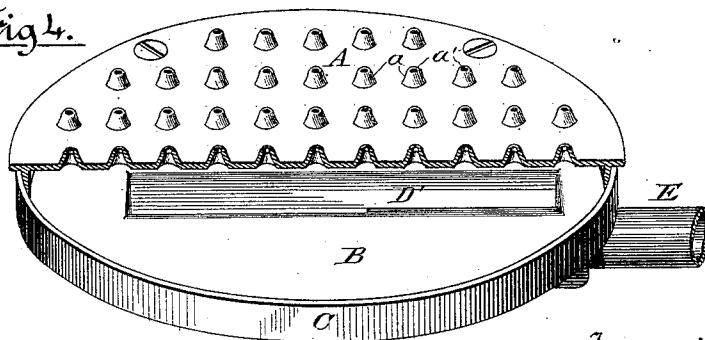


Fig 4.



Witnesses

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UNITED STATES PATENT OFFICE.

OSCAR M. SHANNON, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO
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GAS AND AIR BURNER.

SPECIFICATION forming part of Letters Patent No. 429,798, dated June 10, 1890.

Application filed November 9, 1888. Serial No. 290,364. (No model.)

To all whom it may concern:

Be it known that I, OSCAR M. SHANNON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Gas and Air Burners; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon,
10 which form a part of this specification.

This invention relates to improvements in that class of burners which are employed for the combustion of mingled gas and air in cooking-stoves and other domestic appliances, the gas being the article supplied to houses
15 usually for illuminating purposes and therefore at a moderate pressure. In the use of burners of this class the flames should be small, and such as may result from the issuance of the commingled gas and air through numerous small and closely-placed orifices, the article to be heated being placed in close
20 proximity to the burner. Under these circumstances it is of the highest importance that the jet flames be of uniform height or size, and also that the combustion at each of said orifices be as perfect as possible. These conditions are desirable in order that the burner may be operated with the most direct
25 heating effect without waste, without odor, and without smoke, and in order, also, that they may be regulated in size to meet the requirements of the article being cooked or heated.

The present invention has for one of its primary objects to provide a practical and successful construction in burners of this class, by which the area of the burner may be extended to any desired size, and substantially the entire upper surface thereof appropriated to flame-jets without passages through
30 the burner at which cool air may rise into contact with the article to be heated.

To make such a burner practically successful three things are needful—first, there must be a uniform and thorough commingling of the gas and air within the burner; second, each flame-jet must be subject to substantially the same pressure from the interior, and,
35 third, all the jets or flames must be subject to substantially the same influence of the

external air freely admitted to them, all these conditions being necessary to uniformity in the size and force of the flame and to perfect combustion.

Referring to the drawings which illustrate my invention, Figure 1 is a perspective view of a burner of circular form. Fig. 2 is a horizontal section in the direction of the gas and air-inlet pipe. Fig. 3 is a section transverse
40 to the direction of the inlet-pipe. Fig. 4 is a perspective view of a burner of circular form, partly in section, provided with nipples upon the upper surface of the top plate instead of continuous ribs, as shown in Fig. 1.

A represents the top plate, and B the bottom plate, of the burner.

C C are the side walls thereof, and D is the chamber embraced by these parts.

E is an inlet-pipe, which is supposed to be provided externally to the burner with the usual or any desired form of device for simultaneously introducing gas and external air, such device not being here shown. The burner is also to be understood as being so
45 placed for use as to give to the external air free access to the sides of the burner, so that it may readily reach the flames.

The top plate A is provided with a series of elevations a , which may have the form of ribs, as shown in Fig. 1, or the form of nipples, as shown in Fig. 4. Through the apices of these elevations the jet-orifices a' are formed. Opposite the elevations, or in the under surface of the top plate, are desirably provided corresponding recesses a'' , so that the nipples or ribs are hollow. The object of the elevations a is to raise the flame above the general surface of the top plate, so that external air, to which the burner is laterally exposed, may flow inward over said top plate and rise about each of the jet flames in proper quantity to give the aid to combustion desired from this source. I prefer that the elevations shall be in the form of ribs, as shown in Figs. 1, 2, and 3, in order that the inflowing air may have a definite direction and may be in the least practicable degree impeded in its flow to the flames. If, however, said elevations are given the form of nipples, it is desirable that they be arranged in straight rows, rather than otherwise, for the same purpose.

The chamber D is shown as being without partitions, and the inlet-pipe E as having a horizontal direction at its entry into the burner. In front of the mouth of the inlet-pipe E is placed a deflecting-surface *d*, which in this instance forms the end of a sub-chamber D' in communication with the chamber D, which is immediately beneath the top plate. By means of this deflecting-surface *d* the flow of gas is broken or impeded, the gas and the air are thoroughly commingled, and the pressure throughout the chamber D or at all of the orifices *a* is rendered practically uniform. As a result the flames at all of the orifices are uniform in size and the combustion is equally perfect at each of said orifices, and in consequence of such uniformity of pressure and completeness of admixture of the gas and air the flames may be varied from the greatest to the least altitude possible under the conditions of supply and valve regulation without destroying the uniformity

and without producing offensive odors. The burner is therefore more perfectly adapted to satisfactory use for culinary and other domestic purposes.

I claim as my invention—

The combination, with the chamber D, inclosed by the top plate A, having perforated elevations formed therein, and the bottom plate B, formed with a depending portion affording the sub-chamber D', having an end wall *d*, serving as a deflector, of an inlet-pipe E for gas and air arranged to direct its contents toward the deflecting-wall *d* of said sub-chamber, substantially as described.

In testimony that I claim the foregoing as my invention, I affix my signature in presence of two witnesses.

OSCAR M. SHANNON.

Witnesses:

M. E. DAYTON,
C. CLARENCE POOLE.