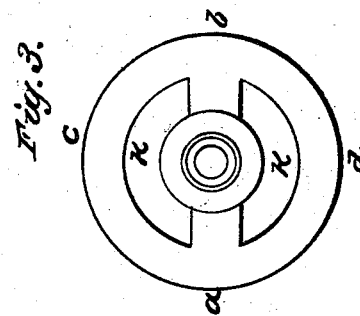
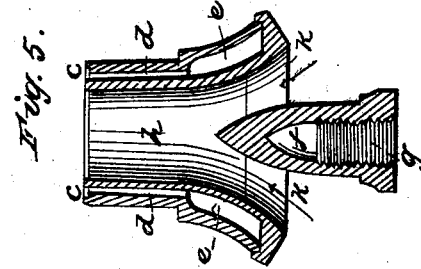
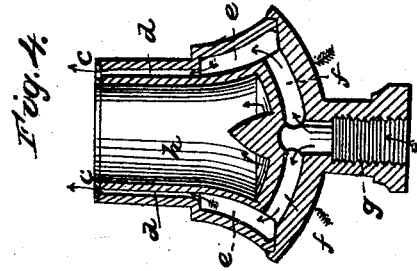
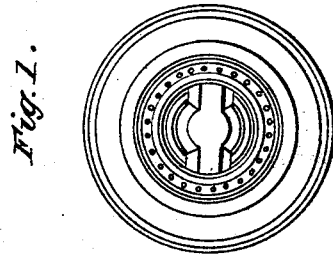
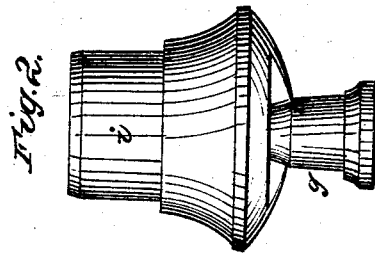


W. BLAKE.

Gas Burner.

No. 4,141.

Patented Aug. 9, 1845.



UNITED STATES PATENT OFFICE.

WILLIAM BLAKE, OF BOSTON, MASSACHUSETTS.

GAS-BURNER.

Specification of Letters Patent No. 4,141, dated August 9, 1845.

To all whom it may concern:

Be it known that I, WILLIAM BLAKE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and
5 useful Improvement in Gas-Burners; and I do hereby declare that the object of my invention and the manner in which the same is constructed and operates are fully set forth and represented by the following descrip-
10 tion and accompanying drawings, letters, figures, and references marked thereon—that is to say, the object of my invention is to produce a gas burner to each and all of whose orifices of discharge the gas may be
15 introduced under an equal or very nearly equal pressure and to whose interior air-passage a full supply of air shall be admitted, in order that the inflammation of the gas may be regular in its height above the top
20 of the burner, complete, and with little or no smoke as it issues therefrom.

Of the aforesaid drawings, Figure 1 denotes a top view of my improved gas burner; Fig. 2, a side elevation; Fig. 3, a bottom
25 view of it or its appearance when turned bottom upward; Fig. 4, a central and vertical section, taken on the line from *a* to *b*, Fig. 3, and Fig. 5 is another vertical and central section, taken on a line from *c* to *d*
30 Fig. 3.

In order to effect an equality of pressure and supply of gas, at the orifices *c c*, of discharge, at the top of the burner, I form immediately below the narrow annular space
35 *d d*, through which the gas is conducted to the orifices *c c*, what I term an expansion chamber *e e*, Figs. 4, 5, as seen in the drawing, and so that the top of the said chamber may freely communicate with, or open into,
40 the whole of the bottom of the circular conductor *d, d*. From the lower part of the expansive chamber, two branch tubes *f, f*, extend toward, and are connected to and open into the vertical screw tube *g*, through
45 which the gas is supplied to the burner.

For a short distance below the top of the burner, the inner and outer cases *h, i*, thereof, are made cylindrical or nearly so, and from thence they spread outward as they
50 are produced downwards, and are shaped as denoted in section in Figs. 4 and 5. The extent or amount of curvature should be

such as to admit of an opening *k, k*, between the sides of the branch and vertical tubes *f, f, g*, of greater area than the opening at
55 the top of the tube *h*; or in other words, so that the area of the two spaces, *k, k*, through which the air for supplying oxygen to the interior of the flame, rushes, may be greater in extent, than that of the opening at the
60 top of the burner, through which it is discharged against the flame. The particular bell mouth shape, which is thus given to the lower part of the inner case of the burner, causes the air to be received into, and to
65 rush upward through the interior of the case, with great regularity, and without, or with very little of that irregular action, which commonly produces what is termed
70 "flickering or pointed flame."

The gas which enters the chamber *e*, through the tubes *f f* circulates and expands within the chamber, before it rushes upward into the space *d*; the chamber thus constituting, as it were, a reservoir, from which the
75 gas is expelled with an equality of pressure; whereas, in other burners, and especially where the space *d d* is supplied by a series of small tubes, proceeding from one common tube or space beneath them, the gas rises and
80 rushes in streams or currents, against the ring of orifices of discharge, thereby producing a flickering flame or one having several points. Such a flame, it is well known, is productive of smoke or imperfect combustion of the
85 gas.

I shall therefore claim,

1. The combining with the space (*d d*) directly beneath the orifices of discharge, of the gas, and with the supply or branch tubes
90 *f, f*, an expansive chamber *e, e*, so as to operate in the manner, and for the purpose hereinbefore set forth.

2. I also claim, making the lower part of the inner case of the burner, with a bell
95 shaped opening or mouth, in the manner and for the purpose as above specified.

In testimony whereof, I have hereto set my signature, this twenty-third day of May, A. D. 1845.

WM. BLAKE.

Witnesses:

R. H. EDDY,
S. W. WALDRON, JR.