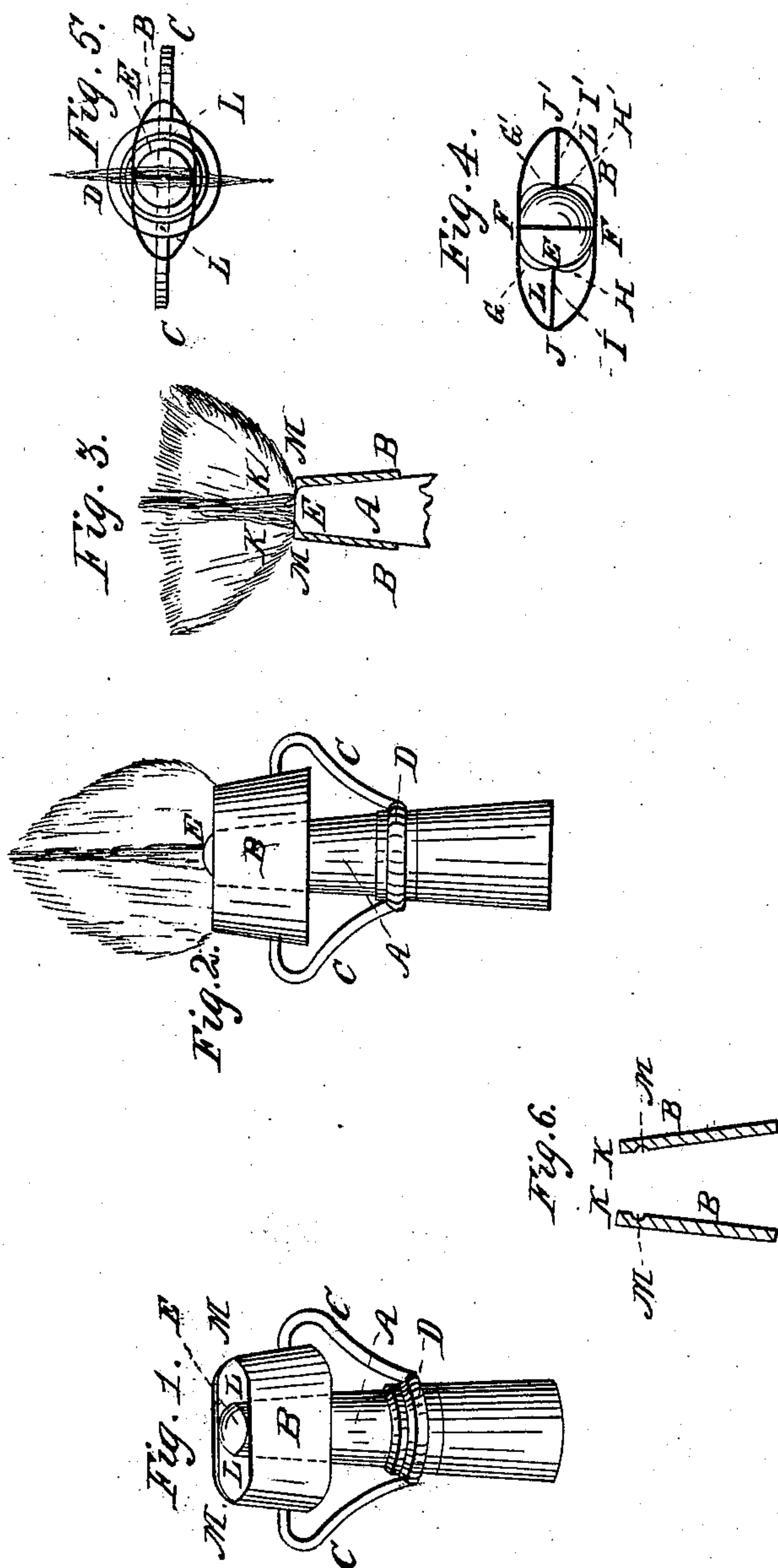


WEBSTER & SPENCER.

Gas Burner.

No. 10 529.

Patented Feb. 14, 1854.



UNITED STATES PATENT OFFICE.

J. WEBSTER AND O. SPENCER, OF CLEVELAND, OHIO, ASSIGNORS TO JOHN WEBSTER.

GAS-BURNER.

Specification of Letters Patent No. 10,529, dated February 14, 1854.

To all whom it may concern:

Be it known that we, JOHN WEBSTER and ORSON SPENCER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in the Construction of Gas-Burners; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making part of this specification.

Like letters refer to like parts in the different views.

The nature of our invention consists in the construction of a gas burner so formed that on each side of it, is an air chamber, at right angles to the slit in the nipple, through which passes the gas from the burner, and on the upper interior edge of these sides of these chambers is a slight flange, and below it a groove, by which means the atmospheric air, is brought into direct contact with the gas jet escaping from the slit in the nipple, and also with the two minor jets, resulting from the deflection of the outer portions of the main jet, by the sides of the chambers, in combination with the flange and groove.

When the pressure of the gas is heavy, the groove may be dispensed with; consequently the chambers may be used with, or without the groove, according to the pressure of the gas, and in some cases where the pressure of the gas is low, a burner without the flange or groove may be used, the air chambers alone, in such cases, being sufficient to deflect the minor jets from the main current. By means of these air chambers, a crossed flame is produced, which exceeds in brilliancy the usual bat's wing flame, thus a higher illuminating power, is produced at the same expense of gas.

Figure 1 is a perspective view, of an ordinary gas burner, with our improvement attached. The other views will be referred to in a further description.

A, is the burner; B, the outside surface of the air chambers; C C, the brackets which support the air chambers. D, the collar to which the bottom of the brackets are secured; E, the nipple, or top of the burner, in which is seen the slit, for the escape of gas.

In the ordinary method of burning gas, the gas escapes through the slit in the nipple E, Figs. 1 and 2, and produces what is termed the bat's wing flame; but in our

improved gas burner, the outer portions of the gas jet escaping from the slit, strike the sides of the chambers at F, and F', Fig. 4; and by the peculiar conformation of these surfaces, each of the small jets, thrown from the main jet, are reflected back in two currents, these minor currents preserving themselves distinct from the major current, escaping from the slit, and flowing around the circumference of the nipple E, until they meet at a point, equidistant from the sides of the chambers; the currents G, and H, meeting at I, (Fig. 4,) and the currents G' and H' meeting at I'. The two minor currents, when they have reached the points I and I', attempt to meet the main current, but are thrown back, by the expansive force of the large current of gas, toward J and J'. Thus the two minor currents of gas, formed by the reflection of the outer portions of the main current, form in a line at right angles to that main current and a crossed flame is produced, as shown by the red lines in Figs. 2 and 5.

K K, Fig. 3, shows the flange, upon the interior surface of the chambers, and the manner in which it overhangs the nipple, thus aiding in the separation and deflection of the jet of gas thrown upon it; M M, the groove below the flange Figs. 1, 3, and 6.

In order to obtain the greatest quantity of light, from a given quantity of gas, it is necessary to admit to the flame such a draft of atmospheric air, as will give a sufficient heating power, to separate and precipitate the carbon, and also to impart to the precipitated particles, a bright, white heat; for the illuminating power of flame, depends entirely upon the number of carbonaceous particles precipitated, during the process of combustion, and the heating of these particles to whiteness. If the supply of atmospheric air be inadequate, some of the gas will pass away unconsumed in smoke, and there will not be sufficient heating power in the flame, to render all the precipitated particles incandescent or, if the supply of air be too abundant, the carbon is consumed, too rapidly to allow time for the separation and ignition of its carbonaceous particles; hence, although the heating power is greatly increased, the illuminating power is very feeble, and the flame is of a dull blue color.

The advantage that our improved gas burner, has, over the ordinary gas burner,

is, that by the reflection of the outer portions of the main current of gas, and the meeting of the reflected currents, in a line at right angles to that main current, a
5 greater draft of air is admitted to the flame, through the air chambers L L, so that no gas escapes in smoke, and also so that all the ascendible particles are heated to whiteness; thus securing a more perfect and brilliant flame, at the same expense of gas.
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What we claim as our invention and desire to secure by Letters Patent is,—

Affixing or applying to a gas burner an

oblong or elliptical shaped tube, so constructed and arranged as to deflect a portion 15 of the gas escaping from the burner into the draft of air which passes up between the burner and the tube so as to produce a more brilliant flame and more light from a given quantity of gas, substantially as described. 20

JOHN WEBSTER.
ORSON SPENCER.

Witnesses:

ERASTUS SMITH,
G. W. LYNCH.