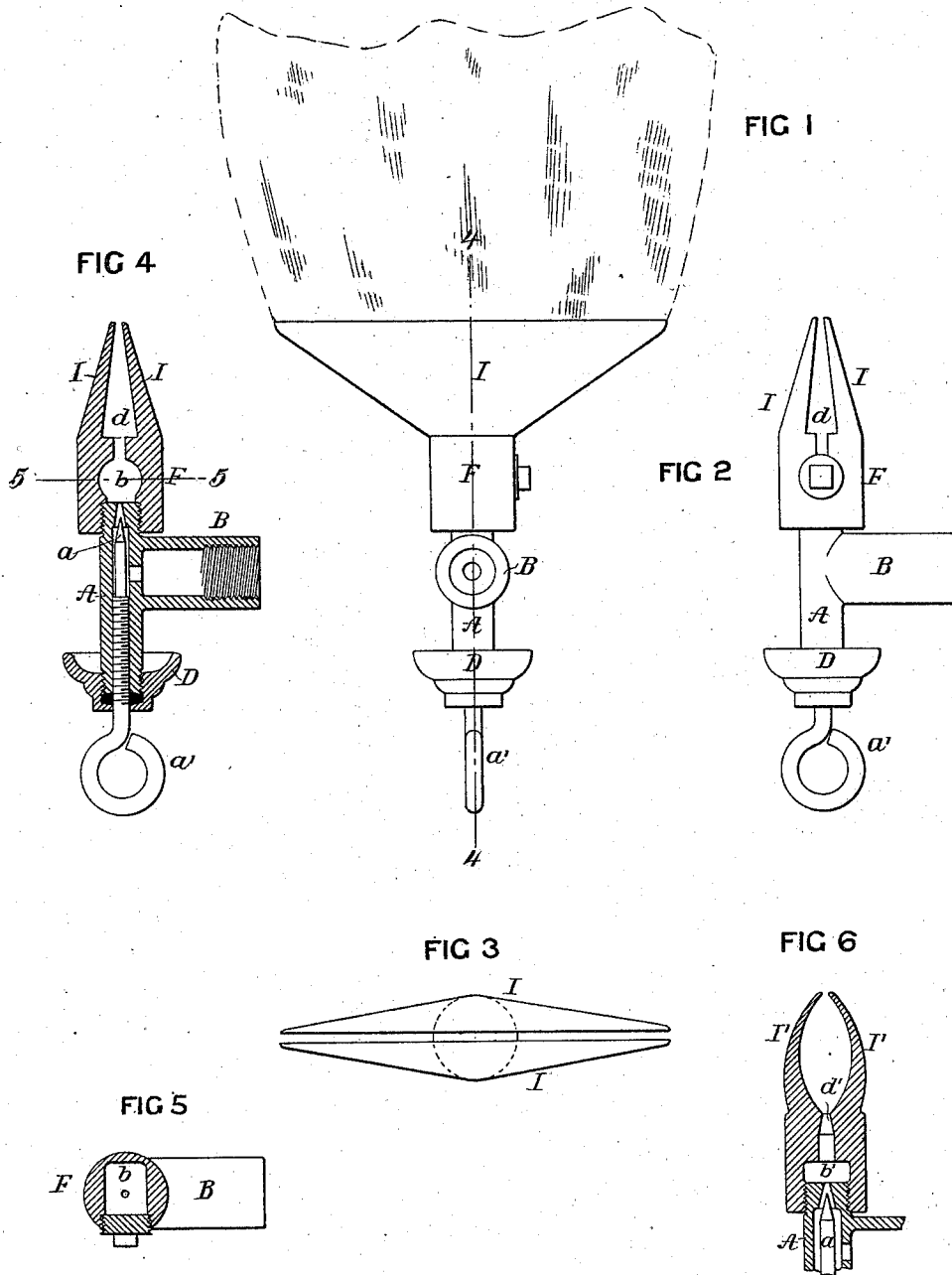


(No Model.)

H. F. SMITH.
SELF GENERATING BURNER.

No. 576,478.

Patented Feb. 2, 1897.



WITNESSES

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HARPER F. SMITH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO WILLIAM F. McCULLY AND GEORGE MCGOWAN, OF SAME PLACE.

SELF-GENERATING BURNER.

SPECIFICATION forming part of Letters Patent No. 576,478, dated February 2, 1897.

Application filed May 8, 1894. Serial No. 510,489. (No model.)

To all whom it may concern:

Be it known that I, HARPER F. SMITH, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Self-Generating Burners, of which the following is a specification.

My invention relates to that class of burners in which gasoline or other highly-volatile hydrocarbon is converted into a gas before
10 issuing from the burner-tip, the object of my invention being to construct a cheap and simple form of such burner whereby a flame of large area will be produced. This object I attain in the manner hereinafter set forth,
15 reference being had to the accompanying drawings, in which—

Figure 1 is a side view of a burner constructed in accordance with my invention. Fig. 2 is an end view of the same. Fig. 3 is
20 a plan view. Fig. 4 is a transverse section on the line 4 4, Fig. 1. Fig. 5 is a sectional plan view on the line 5 5, Fig. 4; and Fig. 6 is a transverse section of part of a modified form of the burner.

25 A is a vertical tube containing a needle-valve *a*, adapted to a seat at the upper end of the tube and having a threaded stem with operating-handle *a'* at the lower end, said tube A having a lateral branch B, threaded
30 for application to the hydrocarbon-supply pipe, and the tube A also having at the lower end a cup D for receiving a small supply of alcohol, by the ignition of which the burner is heated in the first instance in order to
35 vaporize the first volume of hydrocarbon entering the same. This construction is common in various known forms of hydrocarbon-burners, and hence forms no part of my invention, the latter being restricted to the
40 burner proper, which is screwed upon the upper end of the tube A. This burner comprises a cylindrical body F, having a central chamber *b*, closed at both ends and receiving a fine jet of hydrocarbon vapor issuing from
45 the valved opening at the top of the tube A.

The chamber *b* communicates at the top with a longitudinal slot *d*, extending across the body of the burner, and on the top of
50 said burner-body are a pair of lips I I, which flare abruptly from bottom to top in a longitudinal direction and converge from bottom

to top in a lateral or transverse direction, these lips being preferably tapered in thickness from bottom to top, as shown in Figs. 2 and 4, so that while there is a considerable
55 bulk of metal at the base of each lip where it joins the body of the burner the upper edges of the lips are comparatively thin and close together.

The body of the burner and its projecting
60 lips contain a large mass of metal, and when the burner is in action this mass of metal, as well as the tube A and its neck B, become intensely heated, the oil becoming vaporized in its passage through the neck B and tube A
65 and the vapor issuing from the valved opening at the top of said tube A and entering the chamber *b* of the burner, where it is subjected to a high degree of heat and forms a gas which escapes through the slot *d* into the
70 chamber between the lips I. As this chamber is at its base considerably wider than the slot *d* the gas has an opportunity to expand in said chamber, and air entering the chamber from the ends is mixed with the gas, so that
75 the latter, when it escapes from the top of the burner, is in sufficient volume to fill the burner from end to end of the longitudinally-expanded lips, and hence forms a flame of exceedingly large area, as indicated by dotted
80 lines in Fig. 1.

In Fig. 6 I have shown a modified form of burner in which both the internal and external outline of the lips I' is curved instead of straight, this form of burner providing an
85 expansion-chamber of larger area than that shown in Fig. 4. In the modified form of burner also the shape of the chamber *b'* differs from that of the chamber *b* of the burner shown in Fig. 4, the upper end of the tube A
90 screwing directly into the lower portion of said chamber and the latter communicating with the chamber between the lips I' through a passage *d'* closed at the ends.

Having thus described my invention, I
95 claim and desire to secure by Letters Patent—

A self-generating gas-burner consisting of a burner-body closed at the ends and having a contracted outlet at the top, a supply-pipe
100 having a valved opening of small area discharging into said chamber and flaring wings

surmounting the burner-body and inclosing
the space above the contracted outlet of the
chamber, but of much greater capacity,
whereby there is an expansion of the vapor
5 as it issues from the valved opening into the
enlarged chamber above the same, and a
second expansion of vapor mixed with air as
the latter emerges from the contracted open-
ing above the chamber and enters the enlarged

space between the burner-wings, substan- 10
tially as specified.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

HARPER F. SMITH.

Witnesses:

FRANK E. BECHTOLD,
JOSEPH H. KLEIN.