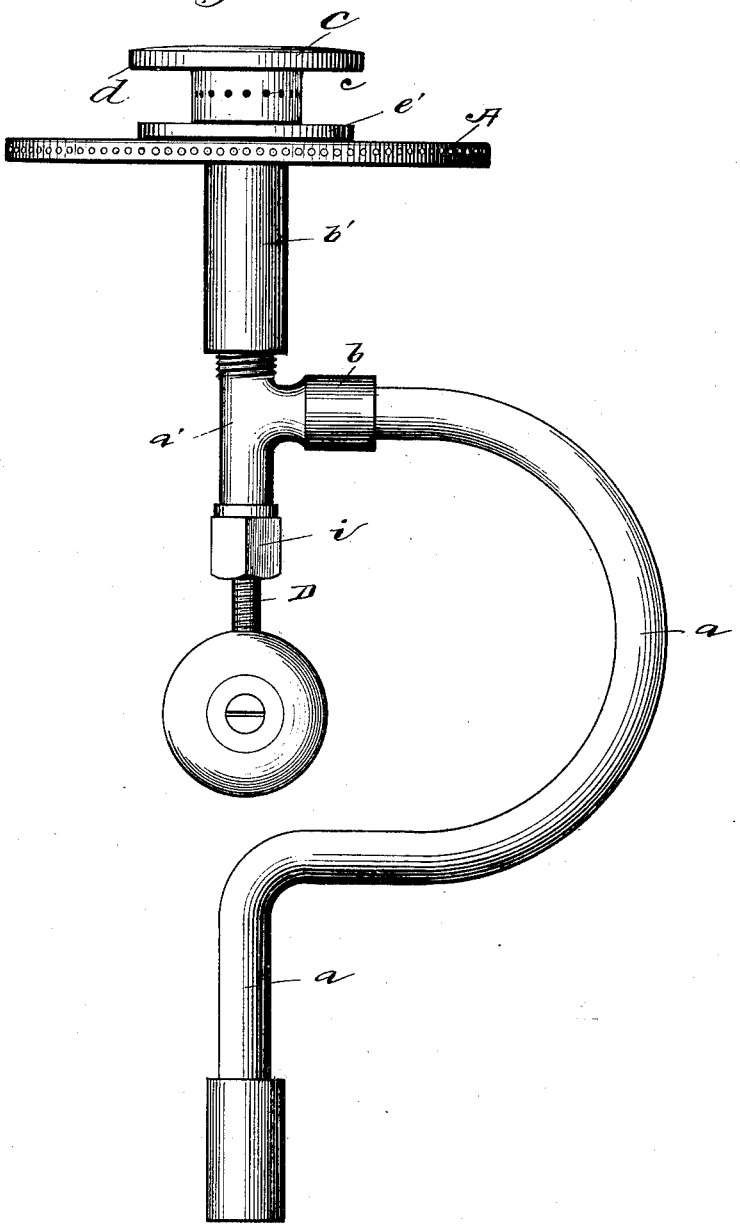
(No Model.) 2 Sheets—Sheet 1.

J. R. SMITH.

GAS BURNING TORCH.

No. 383,154. Patented May 22, 1888.

Fig. 1



Witnesses.
L. S. Mann,
Frederick f. Goodwin

Inventor.
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

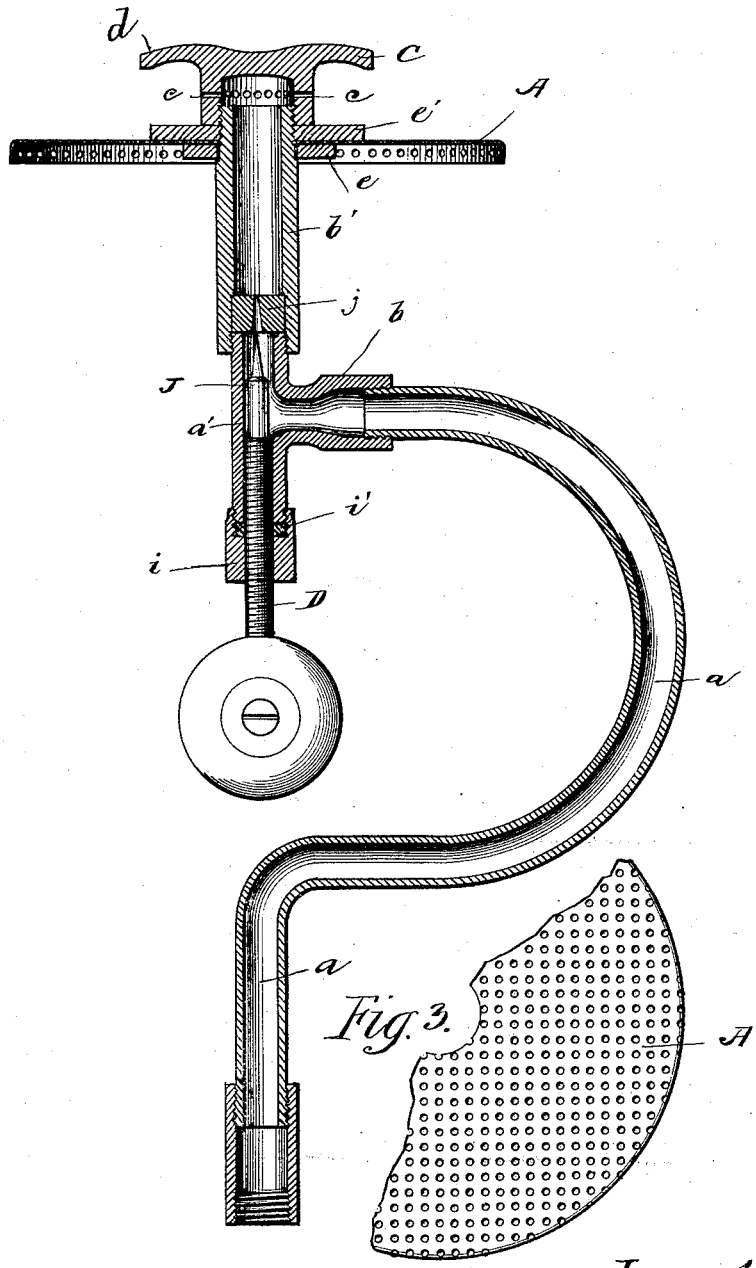

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES R. SMITH, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE STANDARD NATURAL GAS BURNER COMPANY, OF SAME PLACE.

GAS-BURNING TORCH.

SPECIFICATION forming part of Letters Patent No. 383,154, dated May 22, 1888.

Application filed August 3, 1887. Serial No. 246,063. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. SMITH, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Gas-Burning Torches, which I desire to protect by Letters Patent of the United States, and of which the following is a specification.

My invention relates to burners designed especially for obtaining light from natural gas when it is desirable to burn the gas on a more extensive scale than it is ordinarily, and thereby obtain a corresponding increase of light over that usually required for ordinary purposes of illumination.

The special design in constructing my improvement is to obtain a much cheaper, neater, and more effective burner for the purpose than has heretofore been produced.

In the drawings accompanying this specification and forming a part thereof, Figure 1 is an elevation of a burner constructed in accordance with my improvement, embracing a section of pipe and a valve for controlling the flow of gas to the burner. Fig. 2 is a vertical section of the same. Fig. 3 is a sectional plan view of an air-regulating plate.

The curved pipe *a*, which is provided with a suitable coupling for connection with the main pipe, serves for the induction of gas to the burner, the supply to which is controlled by a cock in the main joint in the usual manner. The section *a* is connected with a short T-joint, *a'*, having a horizontal tubular stem, *b*, into which pipe *a* is screwed. For convenience in the construction and application of interior portions an enlarged tube or section, *b'*, is screwed on joint *a'*. Upon the upper end of section *b'* is screwed the burner C, which is provided near its vertical and tubular portion with small lateral orifices *c* for the escape of gas, at which points ignition takes place, and at its top is provided with a flange portion, C. Resting upon a shoulder of section *b'*, and preferably from a half to three-fourths of an inch beneath the orifices *c*, is located a perforated circular air-regulating plate, A. The application of a perforated plate in this connection, I am aware, is not new; but heretofore plates of heavy metal, perforated by punching or drilling for the occasion and duplicated, have been used. The character of the latter is such as to necessitate considerable expense in the matter of construction, and they also when in use absorb and radiate an amount of heat that, under certain frequent conditions, is undesirable. To obviate these objections I have adopted the use of perforated tin or other sheet metal that is well known as an article of commerce and suited to various purposes.

In the preparation for my purpose it becomes only necessary to cut the blanks from the sheets as obtained in the market, and at the same time provide the central aperture for their adaptation to the burner.

I have shown plate A in the present example with a narrow rim or flange extending downwardly, which is struck or formed from the blank and integral therewith, necessitating but little additional expense. This flange or rim is designed to stiffen the plate. I find, however, a plain disk is sufficient. It has been the practice in the use of these perforated plates to continue the perforations inwardly to the tube and to a position beneath the burner-orifices, or nearly so. I find better results by obstructing the air from beneath the flame within a certain radius about the points of ignition. To this end I provide collars *e* and *e'* above and below plate A, that, in addition to the foregoing function, serve to firmly secure said plate in position. To regulate the flow of gas to the burner, I have provided a needle valve or governor, J, adapted to close an orifice of suitable size and shape in a plug, *j*, which, for convenience in the matter of construction, is inserted within section *b'* near its lower end. Needle J, as seen, is the diminished end of the vertical thumb-screw D, which latter is threaded to engage with suitable threads within the lower branch of section *a'*. To provide against leakage by wear resulting from use of thumb screw D, the cap *i*, inclosing the lower end of section *a'*, is adapted to receive a packing, *i'*, preferably of asbestus. As obvious, by advancing or retracting screw D the flow of gas to the burner may be regulated to an exactness not attainable by ordi-

nary methods, which is important, owing to the subtilty and force of flow of natural gas, and also permits the induction of gas to be nicely proportioned to the capacity of the burner-orifices, which is also important. In the present example I have shown the pipe *a* so curved as to admit the insertion and operation of the vertical screw D in section *a'*, and at the same time bring the lower or remote portion of the said pipe *a* and the upper or burner sections diametrically across the curve and on a line one with the other. This presents a symmetrical contour, and thereby obviates the usual unattractive appearance of this class of gas appliances. This feature, however, only pertains to appearance, and for a successful performance of the burner the pipe *a* may be a straight arm or be of any desired shape. The single plate A, of metal, as set forth, permits the rays of light to descend, and thus illuminate the space beneath as well as above the burner, which would not be true of several plates in which the perforations of one overlie another, while the prime object—*i. e.*, the controlling of the flow of air to the flame—is as fully subserved in the single plate as when there are more.

The importance of my invention lies in the fact that I am enabled to use the perforate plate of commerce by protecting it with the collars above and below, by which the required stability is given it, and, added to this, the fact that the collars so used serve also in excluding the air from the flame at the burner. By the character of said plate, in connection with the curved pipe *a* and other portions, as shown, an apparatus is produced unequaled in appearance.

Having thus described my invention, what I claim, and desire to protect by Letters Patent, is—

In a gas-burning torch, the combination, with a burner having lateral orifices *c* and flange C, of a single perforated plate as an air-controlling medium, and collars *e* and *e'*, respectively above and beneath said perforate plate, that serve in securing the latter in position, and also serve to exclude the air from the flame-jets near the burner, substantially as set forth.

JAMES R. SMITH.

Witnesses:
JOSEPH RIDGE,
FREDERICK C. GOODWIN.