B. DONOHUE.

Gas-Burners.

No. 157,278. Patented Dec. 1, 1874.

Fig. 1.

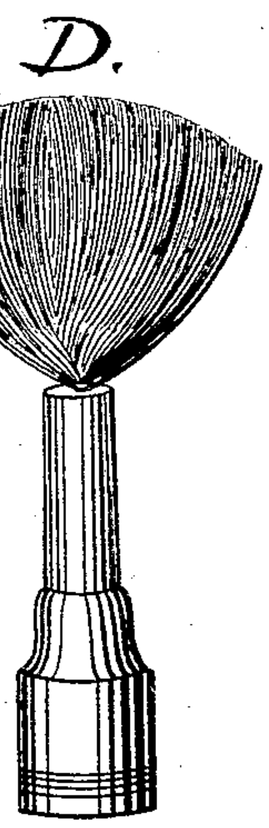


Fig. 2.

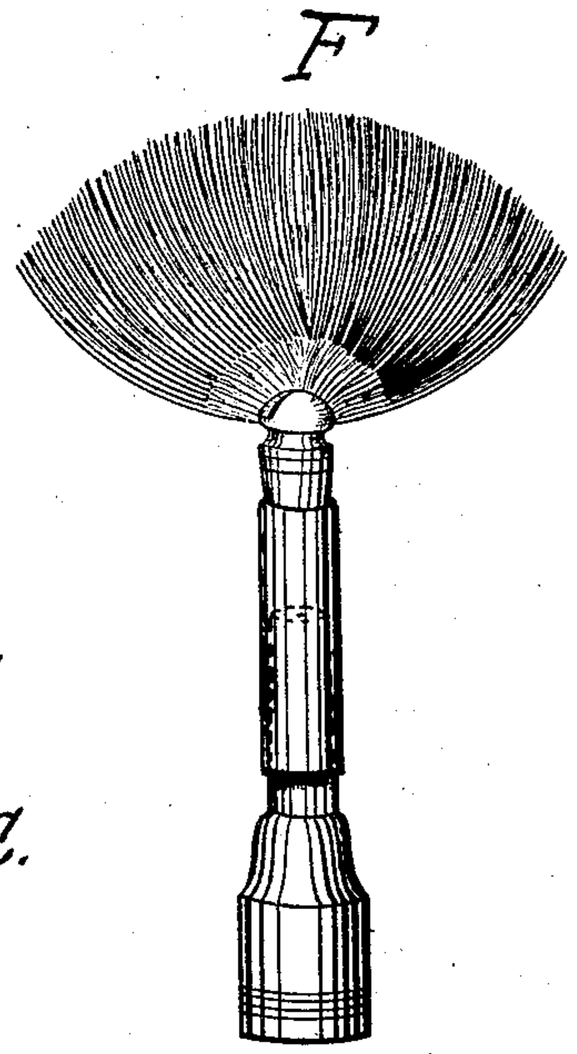
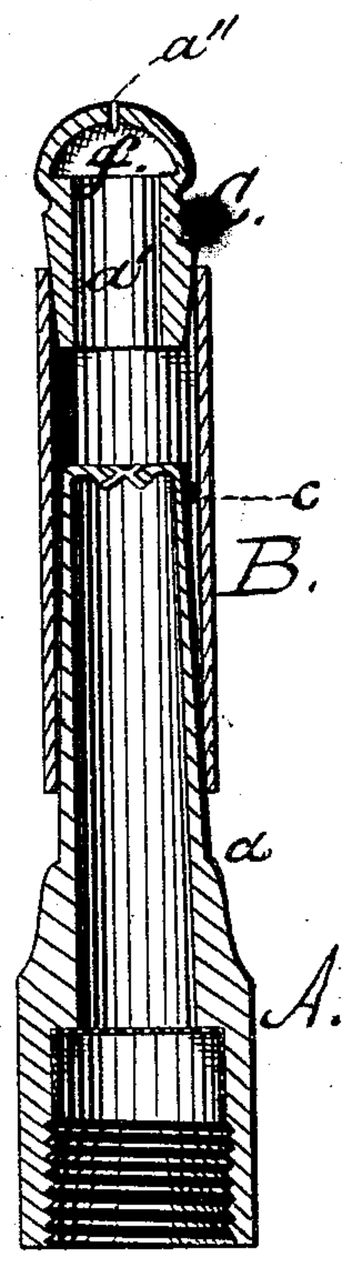


Fig. 3.



Witnesses;

James A Whitney

W M Edwards

Inventor;

B Donohue

UNITED STATES PATENT OFFICE

BERNARD DONOHUE, OF YONKERS, NEW YORK.

IMPROVEMENT IN GAS-BURNERS.

Specification forming part of Letters Patent No. **157,278**, dated December 1, 1874; application filed March 3, 1874.

To all whom it may concern:

Be it known that I, BERNARD DONOHUE, of Yonkers, in the county of Westchester and State of New York, have invented an Improvement in Gas-Burners, of which the following is a specification:

In this, my invention, an ordinary gas-burner is furnished with a surrounding shell, which provides an annular chamber around the burner, and sustains above the said burner a lava-tip, internally excavated in a peculiar manner, and slitted for the issue of the gas while burning, it being found, by careful and long-continued experiment, that this combination of parts secures in the production of a given degree of light, for any stated time, a very great economy of gas as compared with the burners ordinarily in use.

Figure 1 is a side view, including a burner made according to my invention; and Fig. 2 shows one of the common variety, thus representing the comparative magnitude of the two flames from the consumption of equal volumes of gas per hour. Fig. 3 is a vertical transverse section, on an enlarged scale, of a burner made according to my invention.

A is a common fish-tail or bat's-wing burner, attached of course to any usual or suitable gas-fixture, when in use. This burner A has, externally, the ordinary tapering form from its top or upper extremity to the shoulder *a*. B is a cylindrical shell, of such diameter that, when placed over or upon the burner A, its lower end will clasp tightly upon the enlarged portion of the burner above the shoulder *a* just mentioned, and thereby insure the retention of the shell, with its axis coincident with that of the burner, the tapering form of that portion of the burner within the shell causing an annular chamber, *c*, to be formed between the burner and the shell. The top of the shell is, ordinarily, about one-half inch above that of the burner, and has fitted into it the lava-tip C. This tip is of tapering form, in order to fit readily into the shell; is hollow, as shown at *a'*, and has the usual slit *a''* for the issue of the gas to the flame, and is received or excavated internally, as shown at *f*, an annular groove extending quite around the interior of the tip at the junction of the concavo-convex top thereof and the sides of the same. The gas, issuing from the burner A, passes into the chamber *c*, and into the interior of the lava-tip, including the excavation or groove *f* of said tip, and thence outward through the slit *a''*, above which it is ignited to give the requisite illuminating-flame.

In this description I accurately set forth the construction and operation of my invention, without elaborating theories to account for the unquestionably advantageous results I have obtained by its use. For example, the Fig. 1 shows, at D, the size of the flame from an ordinary burner, without any improvement as compared with the flame F of such a burner when fitted or furnished with my invention.

In practice, I have found the economy of gas, resulting from the adoption of my invention, to be so considerable that a two-foot burner fitted with my said improvement may be substituted for a four-foot ordinary burner without the same, a three-foot burner of the one for a five-foot, and a four-foot for a six-foot, without any appreciable difference in the quantity or intensity of the light emitted.

I believe that the ascertained utility of my said invention is very largely, and perhaps wholly, dependent upon the relative positions of the parts described, especially that of the excavation or groove *f*, with reference to the orifices of the burner A, the space afforded within the lava-tips, and the slit *a''* of the latter, the material of which the latter is made also having an important bearing upon the utility of the device, inasmuch as it resists that tendency to corrosion and change in the minute and delicate proportion of the parts, upon which, as aforesaid, the efficacy of the invention is believed to depend.

It must be particularly borne in mind that, in the practice of my invention, the tip must be a lava-tip, must be formed with a slit, must be provided with the internal groove *f*, and must be held in place in the shell by friction or simple compression therein, and that, furthermore, the shell must be made so as (when the device is applied to use) to simply pass upon or around an ordinary burner, and be held thereon by friction. Inasmuch as the omission of any one of these features, by detracting from the operation of the burner, by rendering it difficult to apply and liable to

get out of order, by seriously increasing its cost, or incurring change in the tip from corrosion, will practically debar the improvement from sale as an article meeting a popular demand, and capable of effecting, as hereinbefore explained, a saving of at least twenty per cent. in the quantity of gas consumed.

Such being the nature of my invention, I wish it particularly understood that I do not claim a burner screwed upon a cylinder, which is itself screwed to a support, and arranged over an adjustable gas-check, as shown in the patent of Wm. B. Stofer, dated October 3, 1871. Neither do I claim a shell screwed to its place upon a burner, and having a tip in like manner screwed into its upper end, as shown in the rejected application of Henry B. Myers, filed February 20, 1868. Neither do I claim a cylindrical sleeve fitted upon a burner, and provided at top with a chamber perforated with two or more orifices for the passage of the gas to the flame, as shown in the rejected case of P. F. Jonté, filed September 14, 1968. Neither do I claim a shell screwed to the top of a burner, and furnished with a tip devoid of an internal groove, as shown in the patent of H. B. Myers, dated November 10, 1868. Neither do I claim a chamber, pear-shaped or enlarged, fitted upon a burner, and provided with a tip devoid of the internal groove, as shown in the abandoned case of M. B. Dyott, filed April 14, 1873, and in the withdrawn application of Edward Jones, filed April 30, 1860, as none of these embrace my combination, and none of them subserve the purpose of my said invention, as hereinbefore set forth; but

What I claim as my invention is—

The sheet-metal tube B, constructed with a plain exterior surface, in combination with the burner-tip C, having excavation *f* and opening *a''*, said parts being constructed and adapted to be applied by a slip-joint to the stem of an ordinary gas-burner, substantially in the manner herein shown and described.

B. DONOHUE.

Witnesses:

JAMES A. WHITNEY,

W. M. EDWARDS.