No. 677,171.

Patented June 25, 1901.

C. W. BERNSON.

GAS BURNER TIP.

(No Model.)

(Application filed Feb. 28, 1901.)

Fig. 2.

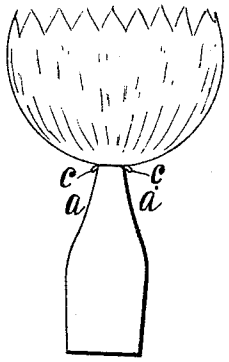


Fig. 3.

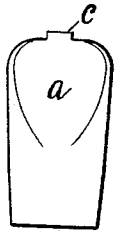


Fig. 1.

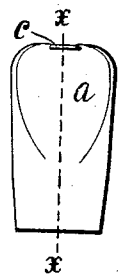


Fig. 4.

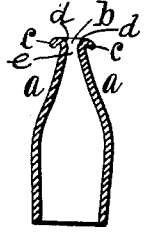


Fig. 5.

Fig. 6.

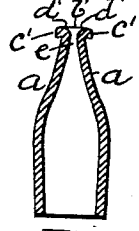


Fig. 7.

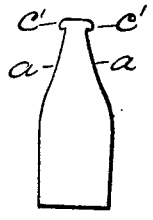
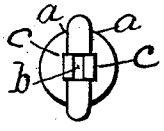


Fig. 8.



Witnesses
Edgworth Bruce
C. Sedgwick

Chas. W. Bernson
Inventor

By his Attorney A. P. Thayer

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES W. BERNSON, OF ELMSFORD, NEW YORK.

GAS-BURNER TIP.

SPECIFICATION forming part of Letters Patent No. 677,171, dated June 25, 1901.

Application filed February 28, 1901. Serial No. 49,205. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. BERNSON, a citizen of the United States of America, and a resident of Elmsford, county of Westchester, State of New York, have invented certain new and useful Improvements in Gas-Burner Tips, of which the following is a specification.

My improved burner is constructed in the form of a metallic hollow cylindrical body with a closed conical end, said closed end being flattened and then perforated by a slit in the plane of the flat end for the escape of the gas-jet, the perforation having a flaring outlet whereby through the tendency of the jet to follow the flaring walls of the issue the jet is expanded with corresponding expansion of the flame, and, together with such expansion of the issue, laterally-projecting lips are provided under the terminal extremities of the expanded slit, whereby the air rushing up to the flame below is caused to form eddies effecting further lateral expansion of the flame, all as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is an elevation of the complete burner-tip as seen when looking at the flat side and as when made of sheet metal. Fig. 2 is an elevation of the same in a view at right angles to that of Fig. 1. Fig. 3 is an elevation same as Fig. 1, but showing the lips of the issue as they appear before being turned down, as in Figs. 1 and 2. Fig. 4 is a sectional elevation on line $x\,x$ of Fig. 1. Fig. 5 is a flat side elevation of the burner-tip as molded in plastic material. Fig. 6 is a central vertical section of Fig. 5. Fig. 7 is an elevation of the molded tip in a view at right angles to that of Fig. 5, and Fig. 8 is a top view.

I prefer to make the said tip of sheet metal, but may of course mold it of plastic material, and in making it of sheet metal I prefer to first draw a hollow cylindrical body of suitable length for the tip with a conical end, then flatten and taper the said end portion for about half the length of the body, more or less, as shown at a, and then punch from the inside and at the center of the flattened end the gas-jet orifice b, so as to produce the upwardly-projecting lips c, at the same time producing the flaring shape of the side walls of the orifice, as seen at d above the contraction e. Then I bend the lips outward and downward, as in Figs. 1, 2, and 4, forming slight obstacles to the direct flow of the air upward along the flat sides a to the flame, the effect of which is to cause eddies of the air producing slight vacuums over the obstacles which induce outward expansion of the flame, as indicated in Fig. 2, to a greater extent than when such projections are not used, although the flaring shape of the walls of the orifice is more effective for such expansion than an orifice not flared, and I may in some cases dispense with the lips; but the best effects are obtained with the flared shape and the projecting lips, the expansion first induced by the flare being amplified by the effect of the obstructive action of the lips, together with the action of the flared shape.

In the molded tip of Figs. 5, 6, and 7 the flared shape d', expanded issue b', and the lips c' are practically the same in form and effect, though differently produced, as demanded by the different nature of the material, and it is preferred to have about the same inner shape, as shown in the metallic tip of Fig. 4—that is, the cylindrical lower part and the flattened upper part—the convergent sides being better adapted for directing the flow of the gas to the issue.

What I claim as my invention is—

1. The improved gas-tip consisting of the hollow cylindrical body having the flattened conical end perforated at the extremity by a narrow central slit parallel with the flat end, the side walls of said slit being flared outward above the narrower part of the slit below the end of the tip.

2. The improved gas-tip consisting of the hollow cylindrical body having flat sides and a flattened conical end perforated at the extremity by a narrow central slit parallel with the flat end, the side walls of said slit being flared outward above the narrower part of the slit below the end of the tip, and said side walls extended so as to form lips projecting outwardly beyond the surfaces of said flat sides.

Signed at New York city this 26th day of February, 1901.

CHARLES W. BERNSON.

Witnesses:

A. P. THAYER,

C. SEDGWICK.