

(No Model.)

C. A. SHAW.
BURNER FOR ILLUMINATING GAS.

No. 522,088.

Patented June 26, 1894.

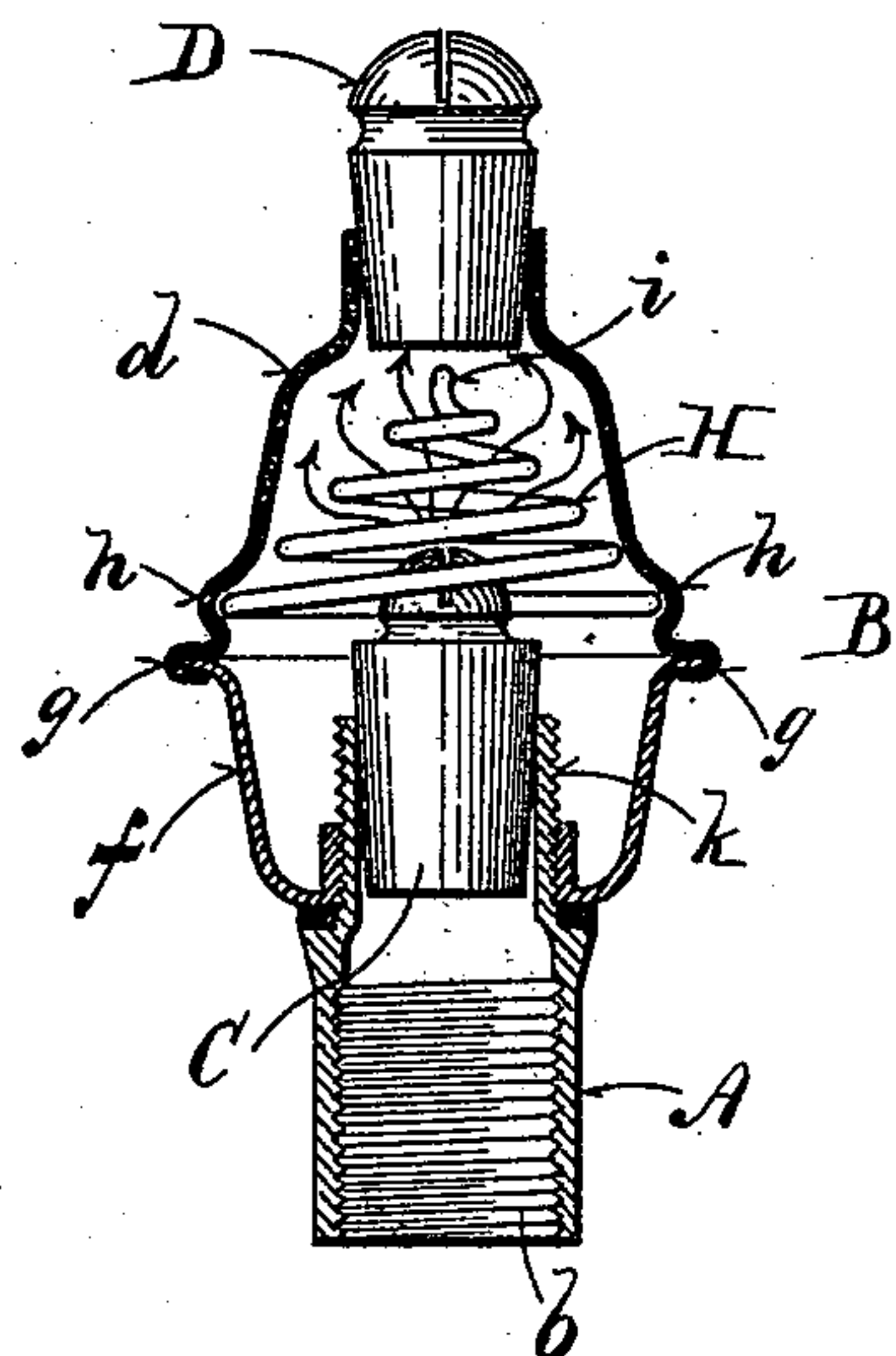


Fig. 1.

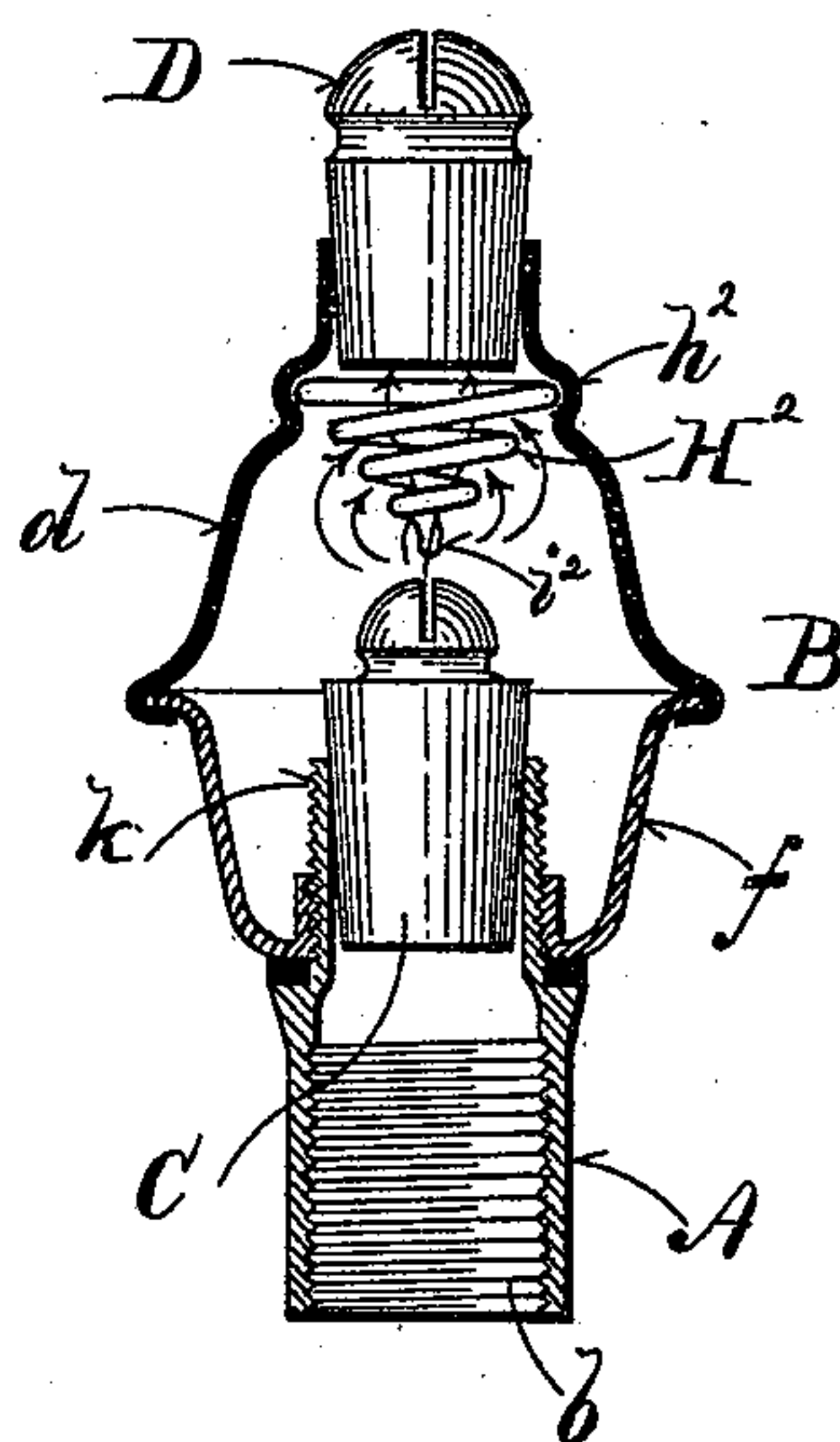


Fig. 2.

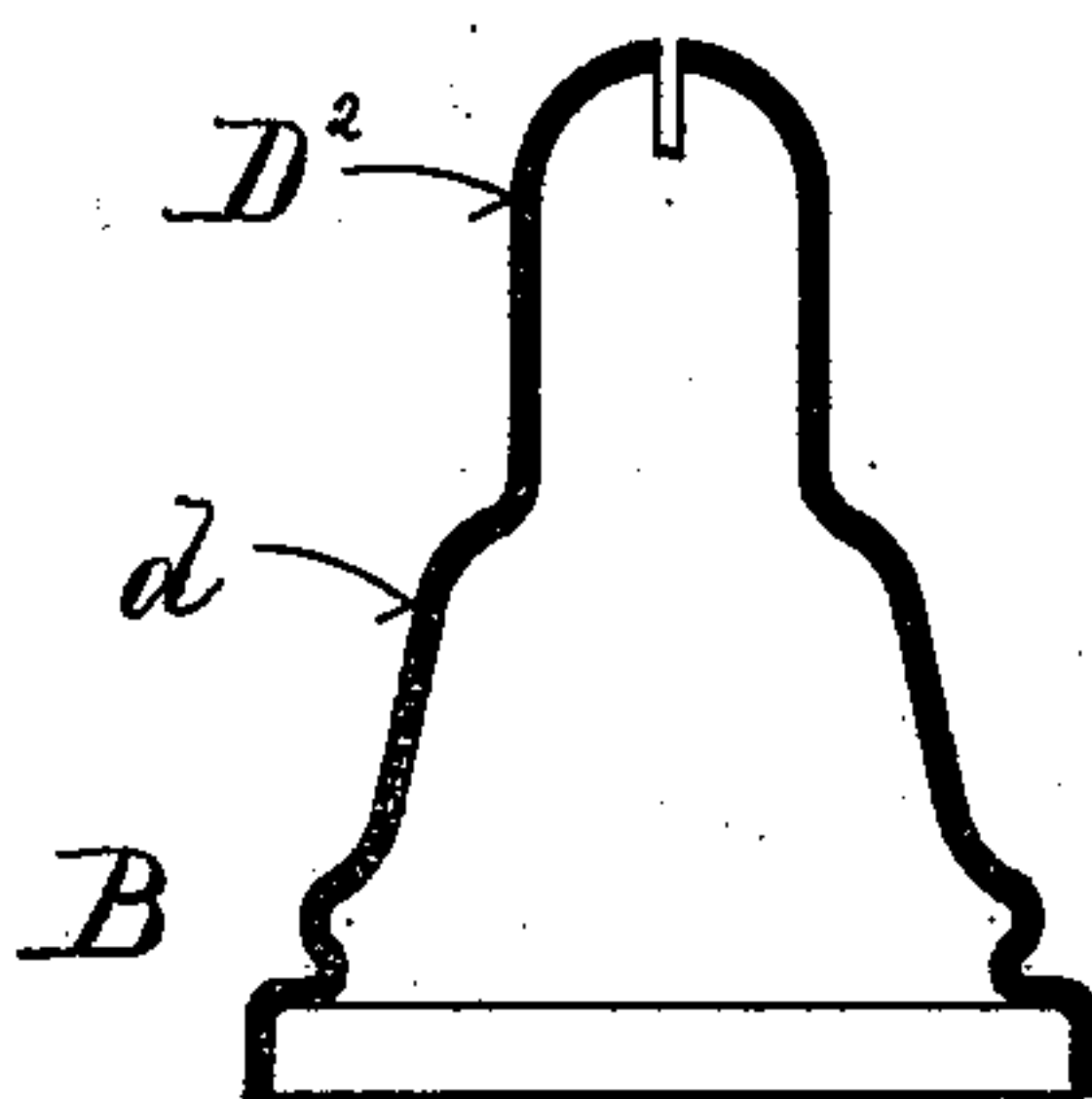


Fig. 3.

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CHARLES ALBERT SHAW, OF REVERE, MASSACHUSETTS.

BURNER FOR ILLUMINATING-GAS.

SPECIFICATION forming part of Letters Patent No. 522,088, dated June 26, 1894.

Application filed January 4, 1894. Serial No. 495,670. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ALBERT SHAW, of Revere, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Burners for Illuminating Gas, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an enlarged vertical transverse section of my improved gas burner, the tips and coil being shown in side elevation; Fig. 2 a like view illustrating a modification; and Fig. 3 a vertical longitudinal section of the upper member of the expansion chamber, showing the outer or larger tip formed integral therewith.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to burners for illuminating gas, the object being particularly to reduce the pressure at the tip while improving combustion and thereby effecting a saving of the gas.

In the drawings, A represents the socket piece which is tubular in form and interiorly screw-threaded at, *b*, to enable it to be attached to a nipple or pipe; and B the expansion chamber. The expansion chamber is preferably formed of two members, *d*, *f*, connected by a gas-tight joint or seam at, *g*, and may be of any suitable shape. The upper portion of the socket piece, A, is turned down to form a shoulder at, *z*, and exteriorly screw-threaded at, *k*, the lower member, *f*, of the chamber, B, being provided with an opening at, *m*, and interiorly screw-threaded to receive said socket-piece.

A tip, C, is disposed in the upper end of the socket-piece, A. This tip has a small orifice or is of small capacity, usually of the ordinary "one foot" size or smaller, and when in position projects into the chamber, B. The chamber is provided with an opening at, *x*, in the ordinary manner; and inserted in this opening there is a tip, D, which has a larger orifice or is of greater capacity than the tip, C, the relative proportions of the tips being

preferably as four to one, this being varied, however, according to circumstances.

The tips are detachable, and may be constructed of either lava or metal; but, if desired, the tip, C, may be formed integral with the socket-piece, A, and the tip, D, integral with the member, *d*, of the chamber, B, the latter construction being shown at, D², in Fig. 3.

Near the joint, *g*, an annular groove, *h*, is formed in the member, *d*, of the chamber, B. A wire, H, coiled spirally in the form of a hollow cone, has its base inserted in the groove, *h*, its apex, *i*, being disposed centrally near the inner end of the tip, D. The coils of the wire are sufficiently separated to permit the passage of the gas between them. The small tip, C, when in position preferably projects slightly into the coil, H, as shown in Fig. 1.

For convenience of reference I designate the tip, C, the "inlet tip" and the tip, D, the "outlet tip."

In the use of my improvement, the current or stream of gas passing through the inlet tip, C, strikes the coil, H, being thereby deflected or turned outwardly between the sections of the coil and caused to impinge against the inner walls of the chamber, B, as shown by the arrows in Fig. 1. The gas being ignited at the tip, D, the chamber, B, is heated therefrom and the heat is imparted to the gas within said chamber. The coil, H, being disposed within the chamber and connected therewith, also has heat imparted to it which, in turn, is imparted to the gas, thus greatly assisting in heating and expanding the same. The coil also serves to retard the flow of gas through the chamber and assist in reducing the pressure at the point of combustion. The gas passes through the inlet tip at its normal pressure, but being diffused in the chamber, B, its flow retarded by the coil, H, and also additionally heated and expanded by said coil, as described, is delivered to the outlet tip, D, under less than the normal pressure, but in a condition to ignite more readily and produce a given amount of light with less gas than when it is not so diffused, retarded, heated and expanded; and hence an outlet tip of much greater capacity than the inlet tip may be employed and yet be properly

supplied with sufficient gas to maintain a large flame or jet corresponding in its size with the capacity of the outlet tip.

In the form shown in Fig. 2, a groove, h^2 , is formed in the member, d , of the chamber B adjacent to the tip, D, and the base of a wire coil, H^2 , is disposed therein in an inverted position with its apex, i^2 , near the discharge orifice of the inlet tip, C; but this form of the burner effects substantially the same results as are accomplished by that shown in Fig. 1.

It will be obvious that the interior heat-radiating surface of the burner chamber will be greatly increased by the employment of the coil as described; also that the coil may be supported within the chamber by any suitable means, as for instance, indentations may be made in the chamber to form projections on its interior by which the coil may be supported instead of the groove.

Having thus explained my invention, what I claim is—

1. A gas burner comprising an expansion chamber, an outlet tip therefor, an inlet tip projecting into said chamber, and of less capacity than said outlet tip and a cone-shaped wire coil disposed between said tips and extending substantially from one tip to the other, substantially as described.

2. In a gas burner, the combination of an expansion chamber provided with an outlet tip, an inlet tip of less capacity than the outlet tip disposed in said chamber, and a cone-shaped wire coil disposed between said tips, substantially as described.

3. In a gas burner, the combination of an expansion chamber provided with an outlet tip, a socket piece, an inlet tip of less capacity than the outlet tip disposed in said socket-piece and detachable therefrom, and a metallic auxiliary-heater for the gas disposed between said tips, substantially as described.

4. A gas burner comprising an expansion chamber having an inner annular groove and provided with inlet and outlet tips, and a cone-shaped wire coil disposed between said inlet and outlet tips, the base of said cone resting in said annular groove and the apex thereof being disposed centrally in said chamber adjacent to the inner opening of one of said tips, substantially as described.

5. In a gas burner, the combination of an expansion chamber provided with an outlet tip, a detachable socket-piece, an inlet tip at the inner end of said socket-piece of less capacity than the outlet tip and normally disposed within said chamber, and a cone-shaped wire coil disposed in said chamber between said tips and terminating at its opposite ends adjacent to said tips, substantially as described.

6. In a gas burner, the combination of an expansion chamber having an annular groove and provided with inlet and outlet tips, the inlet tip being of less capacity than the outlet tip, and a cone-shaped wire coil disposed between said tips, the base of said cone resting in said annular groove and the apex thereof being disposed centrally near the inner end of the inlet tip, substantially as described.

7. In a gas burner, the combination of an expansion chamber provided with an outlet tip, an interiorly disposed annular groove and an interiorly screw-threaded opening; a tubular socket-piece interiorly and exteriorly screw-threaded, said socket-piece being turned into said opening in the body and provided with an inlet tip at its inner end of less capacity than said outlet tip, and a cone-shaped wire coil disposed between said tips, substantially as described.

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Witnesses:

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