

No. 637,269.

Patented Nov. 21, 1899.

T. J. LITTLE, JR.
ATMOSPHERIC BURNER.

(Application filed Jan. 19, 1899.)

(No Model.)

FIG 1

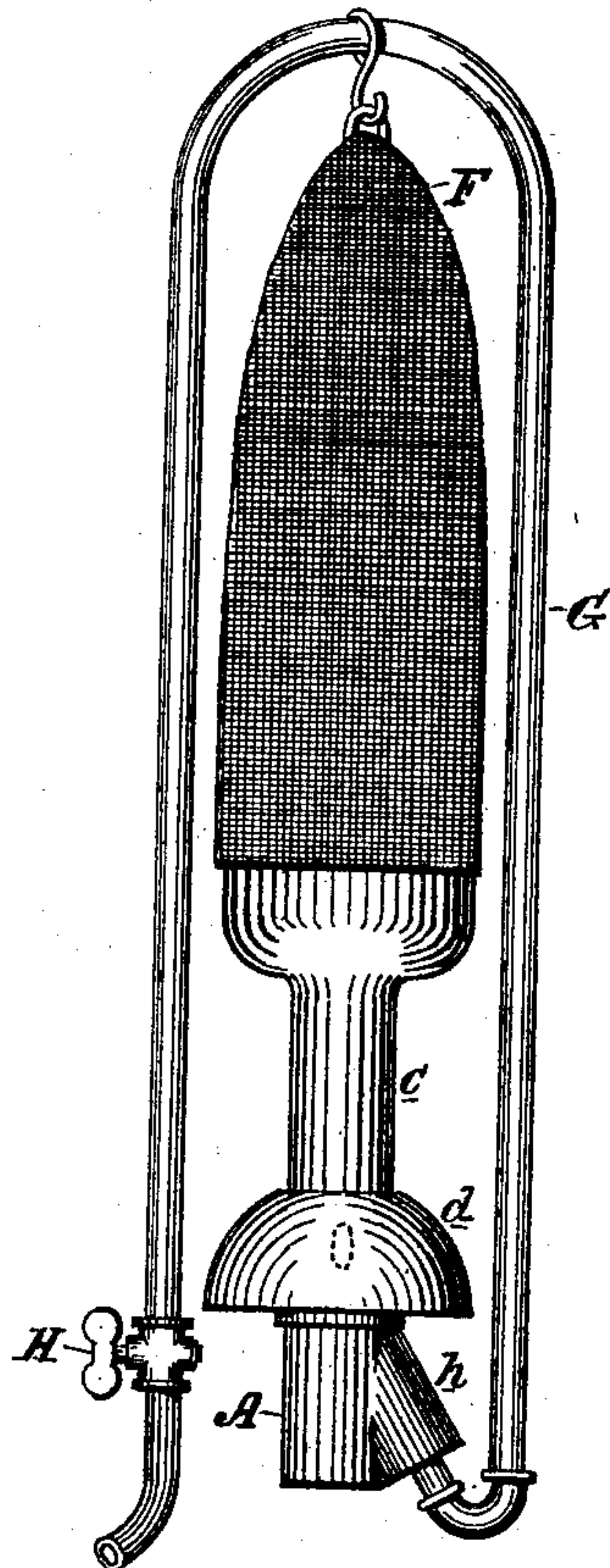
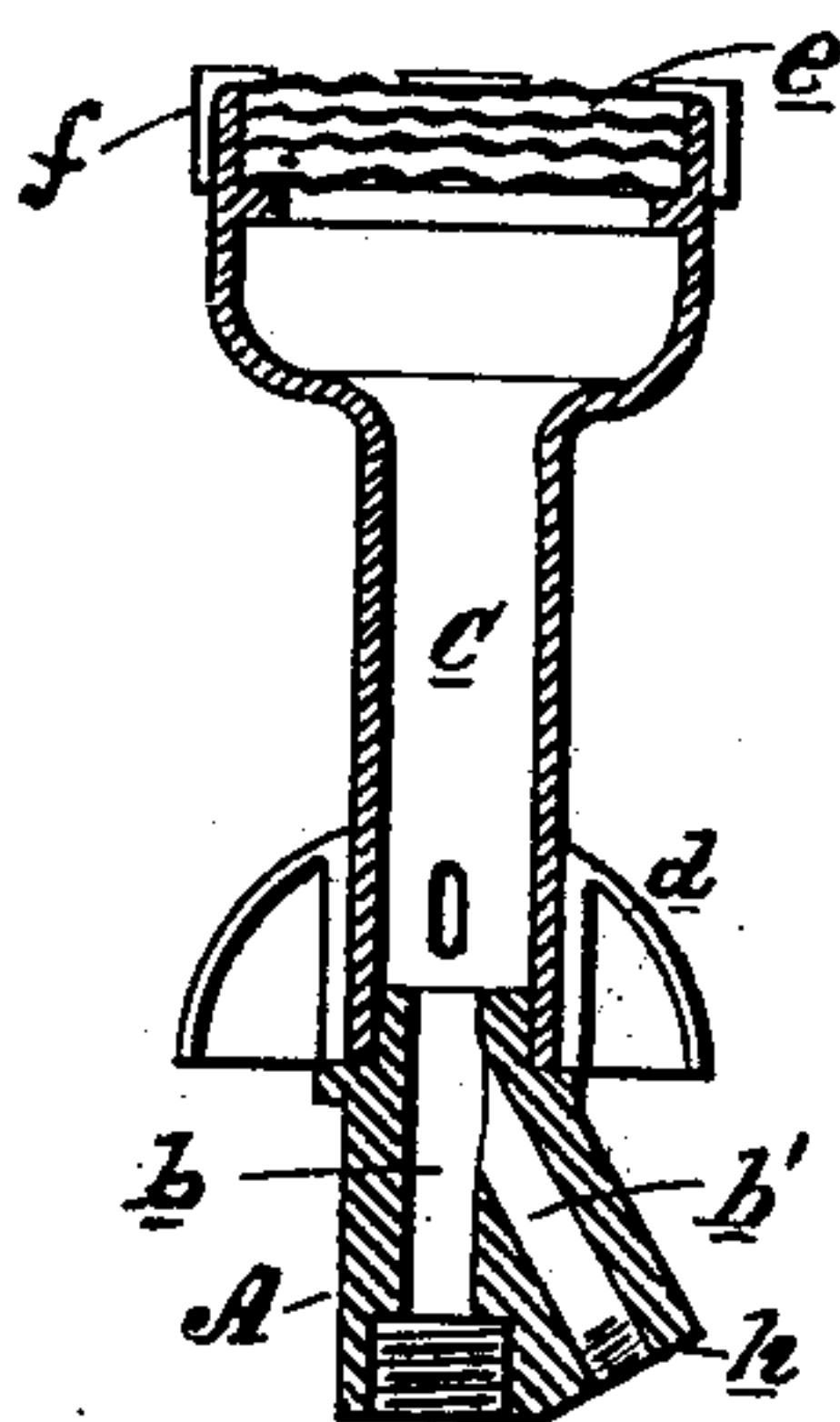


FIG 2



WITNESSES:

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ATMOSPHERIC BURNER.

SPECIFICATION forming part of Letters Patent No. 637,269, dated November 21, 1899.

Application filed January 19, 1899. Serial No. 702,648. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. LITTLE, Jr., a citizen of the United States of America, and a resident of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Atmospheric Burners, of which the following is a specification.

The object of my invention is to introduce a current of highly-heated compressed air into the illuminating-gas to commingle with the same before it reaches the point of ignition, so as to insure a proper combustion while the gas is burning, thereby increasing the temperature of the flame, heating the mantle to a higher degree, and thus increasing the illuminating effect or value of the light.

My invention consists of a tube extending vertically on each side and curved or bent over the top of the mantle suspended therefrom, one end of which is attached to and opens into the lower part of a Bunsen burner and the opposite extremity leads to the receiver of an air-compressor, so that the compressed air in its passage through the tube takes up heat radiated from the mantle and in this highly-heated condition is discharged into and commingles with the gas. The admission of air from the receiver is controlled by a valve or key connected with the tube, and several layers of wire-gauze are placed over the upper end of the burner to prevent the flame flashing down while the compressed air is turned on.

I am aware that compressed air and gas have commingled before; but the practice has been to carry the same upon concentric tubes, the inner tube being the shorter, thus causing the gas issuing from the one to produce an injecting or sucking effect upon the air in the other. This effect I do not desire, as a very powerful blast is injurious to the mantle. Hence I employ an inverted-Y connection or passage at the base of the burner. Should a greater amount of compressed air be admitted than is desirable, the same would crowd back the gas, as the cross-sectional area at the junction of the two inlets is not of sufficient size to admit a powerful blast of the mixture. Thus this inverted-Y connection becomes a check or safeguard to a danger-

ously high pressured blast, which would destroy the mantle. This inverted-Y connection mixes the heated compressed air and gas long before the point of ignition is reached, thus insuring an equal heating of said mixture.

The expanding-chamber may be filled with mineral wool or other similar substance to moderate the blowing effect or pressure of blast and to clean the gas through its passage, or this chamber may be left open.

The exact details of my invention will be fully understood by the following description and appended claims in connection with the accompanying drawings, in which—

Figure 1 is a view in elevation of my invention. Fig. 2 is a vertical section of the burner, the mantle and pneumatic tube being removed.

A is a burner of the Bunsen form, provided on the lower end with an inverted-Y connection *h*, one inlet *b* of which is for the admission of gas and the other, *b'*, compressed air, a mixing-tube *C*, with air-openings and shutter *d* to regulate the amount of air drawn from the surrounding atmosphere, a chamber *e* at the upper end containing several layers of wire-gauze, a cap *f* for holding the same in position, and the infusible mantle *F*, supported over the same.

The pneumatic tube *G* is attached in the usual manner at one end to the inverted-Y connection or angular projection *h*, formed on one side and at the lower end of the burner, through the center of which the inlet or opening *b'* is made. From this point the tube extends up the proper height to accommodate the mantle *F* and is then curved downward on the opposite side of the burner and leads to the receiver of an air-compressor located in any convenient position. A valve or key *H* to regulate the discharge of compressed air from the receiver into the burner for proper combustion is connected with the tube and placed so as to be in easy reach.

The mantle *F* is suspended from the curved portion of the tube in any suitable manner directly over the burner, between and in close proximity to the duplex members of the tube *G*, so that the compressed air in passing through the tube becomes highly heated.

The gas-inlet *b*, Fig. 2, which extends

through the burner, is in communication with the inlet *b'*, through which compressed air is introduced after it has become heated in passing through the tube *G*, and in this condition
 5 the compressed air commingles with and imparts heat to the illuminating-gas within the mixing-tube *C*. The compressed air may be discharged directly into the burner without becoming heated; but better results have been
 10 obtained by heating it and the gas to such a degree as to insure proper combustion, thereby increasing the temperature of the flame. The compressed air mixed with gas when
 15 turned on and burning creates a blast as it issues at a pressure of about one and a half pounds to the square inch and draws up air from the surrounding atmosphere in proper quantities to support combustion, thus heating the mantle to an intense incandescence.
 20 The upper end of the gas-burner *A* is provided, as stated, with a chamber *e*, in which is inserted several layers or sheets of wire-gauze or other suitable material, instead of a single layer, as commonly used. Where one
 25 sheet of gauze is used in connection with compressed air, the flame is liable to flash down below the gauze, burning and destroying it, and small particles of molten metal are carried up through the incandescent mantle to
 30 such an extent as to destroy the efficiency of same. The extreme lower end of the burner is furnished with a screw-threaded socket for attaching it to a gas-bracket, gaselier, or other support.
 35 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an atmospheric burner, the combination of a hollow conductor in close proximity to the burner-head, to be heated by the flame therefrom, of a tubular *Y* connection between the gas-pipe and the mixing-chamber and to which said conductor is joined, a skirted air-register, a series of wire-gauzes within the burner-head and carrying a deflecting-disk, a retaining-cap for the gauzes, and an incandescent mantle the lower end of which overlaps said cap, and a mantle-support, substantially as described.

2. The combination in an atmospheric burner, of a compressed-air tube placed in close proximity to the burner, to be heated therefrom, a regulating-valve for said tube, an inverted-*Y*-shaped union above the gas-feed pipe, one branch of said union being united to the compressed-air tube by an angular connection, substantially as described.

3. In a gas-burner, a compressed-air tube, and an inverted-*Y* connection between the gas-feed pipe and the burner-tube, said connection having a passage in each branch, these passages merging above into a single chamber within the connection, one of said branches being joined to the gas-pipe and the other branch to the compressed-air tube, substantially as described.

Signed by me at Philadelphia, Pennsylvania, this 18th day of January, 1899.

THOMAS J. LITTLE, JR.

Witnesses:

SAMUEL JONES,
E. WARNER BONSALE.