No. 617,044. Patented Jan. 3, 1899.

C. S. PINKHAM.

INCANDESCENT GAS BURNER.

(Application filed Dec. 17, 1897.)

(No Model.)

Fig. 1.

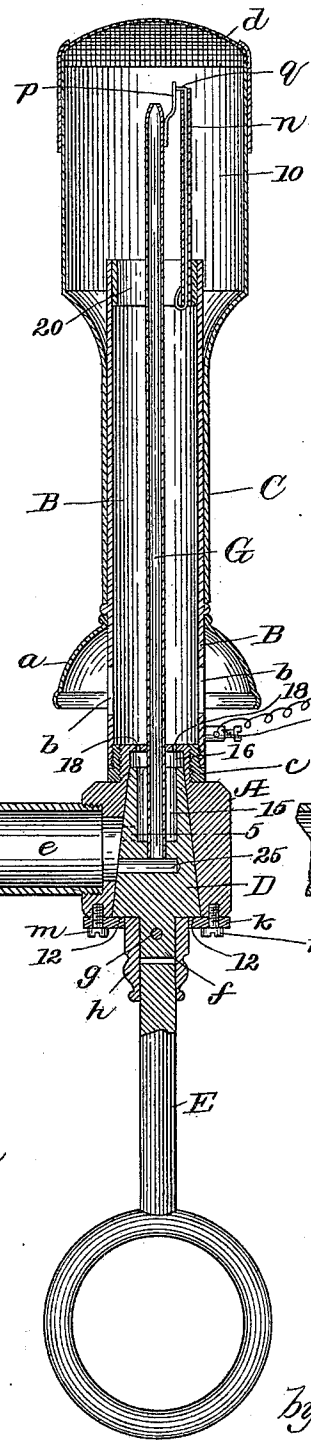


Fig. 2.

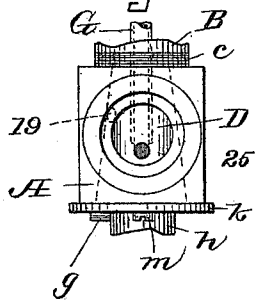


Fig. 4.

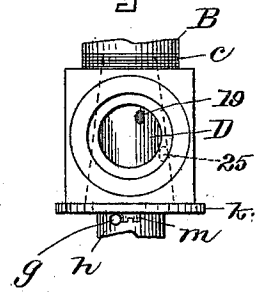


Fig. 3.

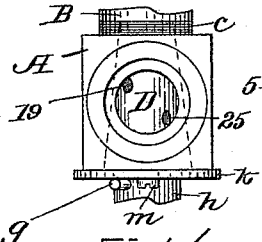


Fig. 5.

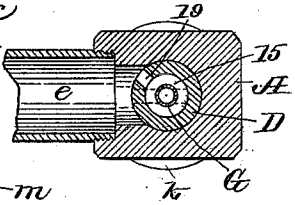
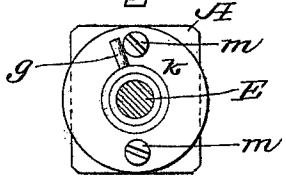


Fig. 6.



WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES S. PINKHAM, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ELBERT H. BROCK, OF QUINCY, MASSACHUSETTS.

INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 617,044, dated January 3, 1899.

Application filed December 17, 1897. Serial No. 662,331. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. PINKHAM, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Incandescent Gas-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a central vertical section of an incandescent gas-burner constructed in accordance with my invention. Figs. 2, 3, and 4 are elevations of a portion of the same, showing the plug of the gas-cock in different positions. Fig. 5 is a horizontal section on the line 5 5 of Fig. 1. Fig. 6 is a plan of the bottom of the burner.

Considerable difficulty has hitherto been experienced in lighting incandescent gas-burners by means of an auxiliary jet ignited by an electric spark for the reason that the auxiliary burner has always been located outside the tubular chamber in which the gas is mixed with the proper amount of air for combustion, the ignition of the gas taking place outside the mixing-chamber and between the latter and the glass chimney. This is objectionable for the reason that the explosion produced in igniting the gas was liable to destroy the chemically-prepared hood or "mantle" used with burners of this description or else break the chimney.

My invention has for its object to overcome these difficulties; and it consists in locating the auxiliary gas-burner within the upper portion of the tubular mixing-chamber, whereby the main body of gas is ignited above the screen at the top of said chamber and the destructive explosion heretofore produced avoided.

My invention also consists in certain novel features of construction and combinations of parts, as will be hereinafter fully set forth, and specifically pointed out in the claims.

In the said drawings, A represents the shell of the stop-cock of the burner, to which is secured a vertical tube B, provided near its bottom with inlet-openings *b* for the admission of the air necessary for combustion, said tube being electrically insulated from the shell A by means of a collar or bushing *c*, composed of a suitable non-conducting substance. Over the tube B is tightly fitted a removable sleeve C, the upper end of which is enlarged to form a chamber 10, the top of which is covered, as usual, by a wire screen *d*. The lower end of the sleeve C is enlarged, forming a deflector *a* for directing the air-currents into the openings *b*.

D is the tapering plug of the gas-cock, which is arranged vertically within the shell A, on one side of which is the gas-supply pipe *e*. At the bottom of the plug D is a short stem *f*, to which is secured by a pin *g* a short sleeve *h*, within the lower portion of which is firmly secured by solder or otherwise the stem or handle E, which may be of any suitable length. The plug D is held up securely in place within its seat in the shell A by means of a washer or collar *k*, which encircles the sleeve *h* and fits up snugly against the shoulder 12 of the plug, as shown in Fig. 1, the screws *m m*, by which the collar *k* is secured to the shell A, serving also as stops for the pin *g*, Fig. 6, projecting from the plug D, to limit its movement in either direction when turned to admit the gas to the burner or shut it off therefrom. Within the upper end of the plug D is formed a chamber 15, communicating with a smaller chamber 16 at the top of the shell A, the latter communicating through holes 18 in the top of the chamber 16 with the interior of the tube B. The gas enters the chamber 15 through the inlet-passage 19, Fig. 5, in the plug D and thence passes up through the holes 18 into the tube B and chamber 10, where it is mixed with the air entering through the inlet-openings *b*.

To a removable sleeve 20, fitting closely within the open upper end of the insulated tube B, is secured the fixed electrode *n* of the electric-lighting device, which is connected with one pole of the battery by means of a binding-post 21 at the lower end of the said tube and a wire 22, as shown in Fig. 1.

Secured to the center of the plug D is an auxiliary burner G, consisting of a tube of small diameter which extends up within the tube B and nearly to the top of the enlarged

upper portion 10 of the mixing-chamber and communicates at its bottom with an independent gas-inlet passage 25, formed in the plug D beneath and on one side of the passage 19, through which the gas is supplied to the tubular mixing-chamber. This auxiliary burner G, which is connected through the plug D and gas-pipe with the other pole of the battery and forms the movable electrode, is provided close to the orifice at its tip with an upright wire *p*, which when the tube G is turned axially with the plug D is wiped past the flexible laterally-extending terminal *q* of the stationary electrode *n* to produce the spark to ignite the gas issuing from the tip of the auxiliary burner, which has been let on by the turning of the plug. As the plug D is first turned by means of the handle E the passage 25 is brought into communication with the supply-pipe *e*, as shown in Fig. 2, when the gas will at once pass to the tip of the auxiliary burner G and be ignited at that point by the spark produced by the separation of the electrodes as the gas-cock is turned, the flame issuing from the said auxiliary burner passing up through the screen *d*. As the plug continues to be turned the passage 19 is brought into communication with the supply-pipe *e*, as shown in Fig. 3, and the gas then passes up into the chambers 15 16 and through the holes 18 into the main burner or tube B, where it is mixed with the required quantity of air, after which it passes through the screen *d*, above which it is ignited by the flame from the auxiliary burner without any noticeable explosion or shock, thus avoiding the liability of breaking the hood or mantle, (not shown,) suspended above the screen, or the cracking of the glass chimney, desiderata hitherto unattained in burners of this description. As soon as the main body of gas has been ignited the further turning of the plug D to the limit of its movement will cause the passage 25 to be carried out of line with the supply-pipe *e* and closed, as shown in Fig. 4, thus extinguishing the auxiliary burner and leaving the passage 19, by which the main burner is supplied with gas, wide open, as required.

Although I prefer to light the gas in my improved burner by means of an electric-spark-producing device, as described, I do not wish to confine myself to such method, as the gas issuing from the auxiliary burner may be ignited by means of a match or torch and the immunity from explosion in lighting resulting from locating the auxiliary burner within the mixing-chamber still retained.

Where no electric-spark-producing device is employed, the gas-inlet passage 25 may, if desired, be so arranged that it will not be entirely shut off from the supply-pipe *e* when the plug D has been turned to shut off the gas from the main burner, thus leaving a small jet at the tip of the auxiliary burner ready to again light the main burner when the plug D is turned in the proper direction.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an incandescent gas-burner, the combination with the tubular mixing-chamber provided at its top with a screen, and a gas-cock having a separate passage for admitting gas to said mixing-chamber, of an auxiliary burner located within the said mixing-chamber near its top and communicating with the supply-pipe through an independent passage in the plug of the gas-cock through which the gas is admitted in advance of its entrance into the mixing-chamber of the main burner, substantially as described.

2. In an incandescent gas-burner, the combination with the tubular mixing-chamber provided at its top with a screen, and a stop-cock through which the gas is admitted to said chamber, of an auxiliary burner located within the said mixing-chamber and having its tip or orifice near the top of said chamber, and movable and fixed electrodes also located within the mixing-chamber, and arranged to produce a spark to ignite the gas issuing from said auxiliary burner in advance of its entrance into the mixing-chamber, whereby the gas is ignited above the screen at the top of said chamber by the jet from the auxiliary burner, substantially as set forth.

3. In an incandescent gas-burner, the combination with the tubular mixing-chamber provided at its top with a screen, and a gas-cock having a separate passage for admitting gas to said mixing-chamber, of an auxiliary burner located within the said mixing-chamber near its top and communicating with the supply-pipe through an independent passage in the plug of the gas-cock through which the gas is admitted in advance of its entrance into the mixing-chamber of the main burner, said auxiliary burner forming a movable electrode adapted to be wiped past a fixed electrode to produce the spark to ignite the gas issuing from said auxiliary burner, substantially as described.

4. In a gas-burner, the combination with the shell of the gas-cock, of the plug having a pin or projection for limiting its movement, and provided at its bottom with a stem of smaller diameter, forming a shoulder, combined with a washer or collar fitting over the stem and against said shoulder to hold the plug within its seat, and fastening-screws for securing the collar to the shell, said screws also forming stops for the pin or projection which limits the movement of the plug in either direction, substantially as described.

Witness my hand this 15th day of December, A. D. 1897.

CHARLES S. PINKHAM.

In presence of—

P. E. TESCHEMACHER,

LOUISE A. CHACE.