

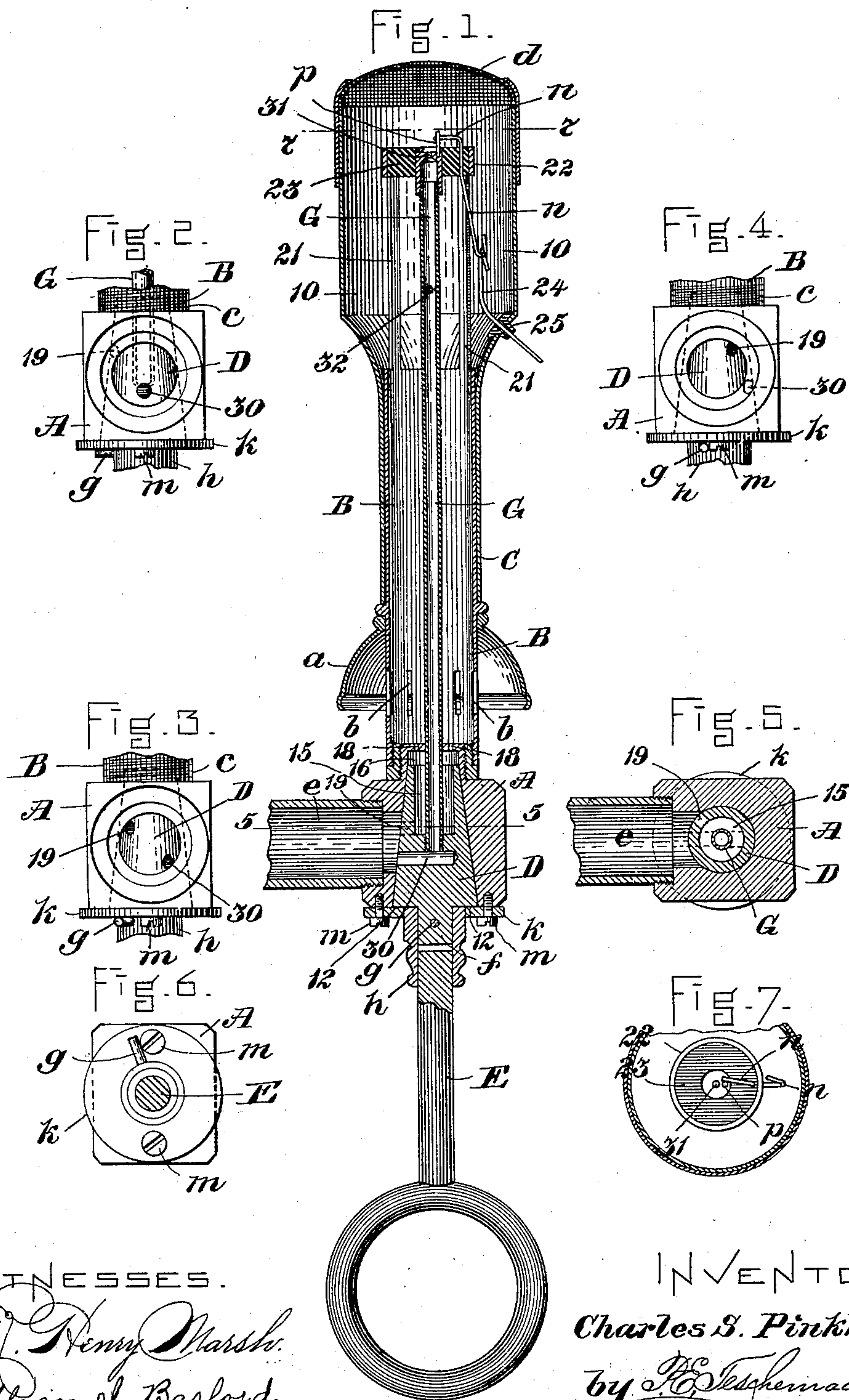
**No. 671,610.**

**Patented Apr. 9, 1901.**

**C. S. PINKHAM.**  
**INCANDESCENT GAS BURNER.**

(Application filed Aug. 6, 1900.)

(No Model.)





# UNITED STATES PATENT OFFICE.

CHARLES S. PINKHAM, OF BOSTON, MASSACHUSETTS.

## INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 671,610, dated April 9, 1901.

Application filed August 6, 1900. Serial No. 26,076. (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 specification.

My invention has for its object to improve the construction of the incandescent gas-burner for which Letters Patent of the United States No. 617,044 were issued to me January 3, 1899. In my said burner the mixture of gas and air which first enters the mixing-chamber above the top of the Bunsen or main tube and is brought into contact with the auxiliary jet contains too large a proportion of air and when ignited is liable to produce an explosion which will extinguish the said auxiliary jet without lighting the burner. To overcome this difficulty is the object of my invention, which consists in admitting gas to the mixing-chamber located above the top of the main tube previous to the admission of gas to the base of said tube, said mixing-chamber being thus supplied with pure gas, with which is subsequently mixed the gas and air rising through the Bunsen tube, a compound sufficiently enriched with pure gas being thus formed which will ignite from the auxiliary jet without explosion, thus preventing the extinguishing of the said auxiliary jet and insuring the lighting of the burner.

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

In the accompanying drawings, 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. Fig. 7 is a horizontal section on the line 7 7 of Fig. 1.

In the said drawings, A represents the shell of the stop-cock of the burner, to which is secured a vertical Bunsen tube B, provided near its bottom with inlet-openings *b* for the admission of the air necessary for combustion. Over the Bunsen tube B is tightly fitted a re-

movable 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 main tube B, where it is mixed with the air entering at the inlet-openings *b*.

From the top of the tube B rise three bars 21, to the upper ends of which is secured a ring 22, within which is placed a ring 23, of insulating material, through which passes a wire *n*, forming the fixed electrode of the electric lighting device, said wire extending down beneath the ring 23, where it is formed into a loop, to which is connected a wire 24, passing down within the chamber 10 and out through an insulating-bushing 25, outside of which it is connected with the battery-wire. By thus detachably connecting the wire 24 with the electrode *n* the burner may be conveniently taken apart without cutting the wire, as would otherwise be necessary.

Secured to the center of the plug 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 chamber 10 and communicates at its bottom with an independent gas-inlet passage 30, formed in the plug D, beneath and one side of the passage 19, through which the gas is supplied to the tube B. 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 31 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 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. Near the base of the enlarged chamber 10 the auxiliary burner G is provided with one or more outlet-apertures 32, through which the gas escapes into said chamber 10 at the same time that it does from the orifice 31 at its tip, pure gas being thus admitted to the chamber 10 near its base for a purpose to be presently explained.

As the plug D is first turned by means of the handle E, the passage 30 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 tip of the said auxiliary burner passing up through the screen *d*, the gas also at the same time issuing, as before, described, from the apertures 32 into the chamber 10. 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 Bunsen tube B, where it is mixed with air entering through the openings *b*, after which it passes up into the chamber 10, there mixing with the pure gas which has previously escaped from the apertures 32 of the auxiliary burner. The compound thus enriched with pure gas then passes through the screen *d*, above which it is ignited by the flame from the auxiliary burner without producing any explosion and without extinguishing the auxiliary jet, thus insuring the proper lighting of the burner. As soon as the main body of gas has been thus ignited the further turning of the plug D to

the limit of its movement will cause the passage 30 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 said auxiliary burner may be ignited by means of a match or torch and the immunity from explosion by reason of admitting pure gas into the chamber 10 immediately above the top of the tube D still retained.

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

1. In an incandescent gas-burner, the combination with a mixing-chamber located above the top of the main or Bunsen tube and provided at its top with a screen, and a gas-cock having a passage for admitting gas to the base of the main tube, of an auxiliary burner located within said mixing-chamber and means for admitting gas to said mixing-chamber previous to the admission of gas to the base of said main tube, said auxiliary burner 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 base of the main tube, substantially as described.

2. In an incandescent gas-burner, the combination with a mixing-chamber located above the top of the main or Bunsen tube, said chamber being provided at its top with a screen, and a gas-cock having a passage for admitting gas to said main tube at its base, of an auxiliary burner located within said mixing-chamber and having in addition to the orifice at its tip an outlet for the escape of the gas into said mixing-chamber, said auxiliary burner communicating with the supply-pipe through an independent passage in the plug of the gas-cock through which gas is admitted in advance of its entrance into the bottom of the main tube, substantially as described.

Witness my hand this 4th day of August, A. D. 1900.

CHARLES S. PINKHAM.

In presence of—

P. E. TESCHEMACHER,  
LILLIAN I. BASFORD.