

(No Model.)

G. K. COOKE.
GAS BURNER.

2 Sheets—Sheet 1.

No. 419,183.

Patented Jan. 14, 1890.

Fig. 1.

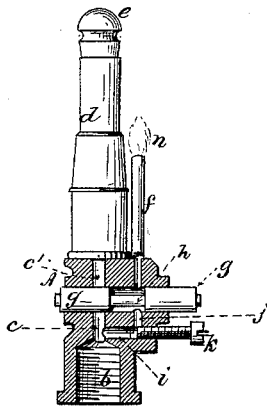


Fig. 2.

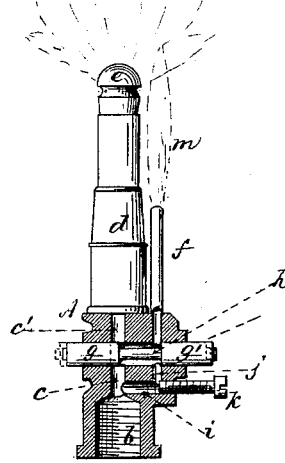


Fig. 3.

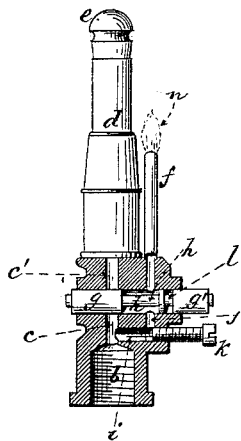


Fig. 4.

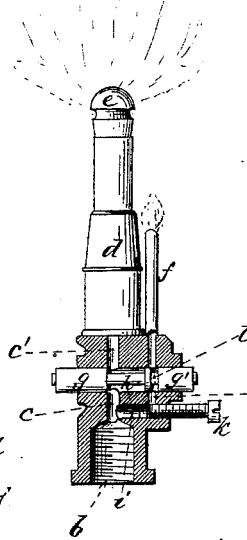
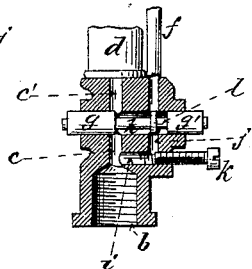


Fig. 5.



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Inventor:
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By his Attorney
A. Livingston Bogart

(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

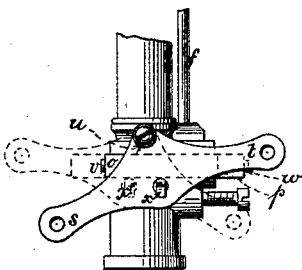


Fig. 8.

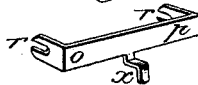
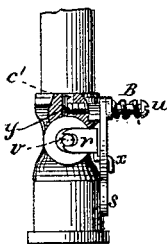


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE K. COOKE, OF JAMAICA, NEW YORK.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 419,183, dated January 14, 1890.

Application filed September 20, 1888. Serial No. 285,906. (No model.)

To all whom it may concern:

Be it known that I, GEORGE K. COOKE, of Jamaica, Queens county, and State of New York, have invented certain Improvements in Gas-Burners, of which the following is a specification.

My invention relates to a class of gas-burners known as "self-lighters," having a main and auxiliary jet. When the main jet (for illuminating purposes) is extinguished, the auxiliary jet continues to burn and serves to ignite the main jet when its supply is turned on by the valve. Heretofore the valve controlling the supply of gas in such burners has been of the common variety known as "conical rotary plug-cocks," such as are employed in gas-fixture work, which require to be carefully fitted and are usually held in place by a spring to keep the valve-plug tightly seated and take up the wear, and are liable either to become loose and leak or to stick and work with difficulty.

My invention has for its object the simplifying of the construction, cheapening the production, and overcoming the objections above mentioned; and it consists, first, in a special construction of valve having a solid sliding or reciprocating valve-plug provided with an annularly-recessed port or ports and passages connecting with the main and auxiliary jets arranged in such relation to one another that the valve-plug will control both jets, so that when the main jet is extinguished the auxiliary jet continues to burn with a small flame, and on the valve-plug being moved in one direction the gas-passage to the main jet will be opened, and at the same time the flame of the auxiliary jet increased in size, so as to ignite the main jet. By a continuation of the motion of the valve-plug the main jet (now ignited) will be turned up to its fullest extent and the auxiliary jet either reduced to its original size or extinguished.

My invention consists, secondly, in a special form of mechanism for imparting motion to the valve-plug in either direction and in the details and combination of other parts particularly described.

The drawings illustrating this specification are eight in number—viz., Figure 1, eleva-

tion of burner with the valve, valve-plug, and passages in section; Fig. 2, the same, showing the valve partly turned on; Fig. 3, sectional elevation of the valve in modified form; Fig. 5, the same partly turned on, and Fig. 4 when full open; Figs. 6 and 7, side and front elevations of mechanism for actuating the valve-plug and the regulating-screw for the main jet; Fig. 8, a perspective view of detail of actuating mechanism.

Similar letters apply to similar parts in each figure.

In Fig. 1, A represents one form of my improved valve shown in section. It is provided at its base with a screw-thread *b* for attachment to the gas-pipe. *c* is the main gas-inlet, and *c'* the gasway to the burner *d*, with its gas-tip *e*. *f* is the auxiliary or igniting jet-tube. The valve or stop-cock body is provided with a transverse passage, which may have any desired form of cross-section, but which I prefer to make circular. In this passage is located the sliding or reciprocating valve-plug *g g'*, fitting the transverse passage gas-tight, but capable of a motion in either direction along its main axis. A portion of the valve-plug is cut away at *h* to serve as a port or gasway.

In the normal position of the parts, as shown in Fig. 1, the main gasway *c'* is closed by the plug, the port *h* being in position under the auxiliary jet-tube *f*, which is therefore in connection with the gas-inlet *c* by means of the horizontal duct *i* and the vertical duct *j*. The amount of gas issuing from the auxiliary jet, and consequently the size of the flame, may be regulated by means of an adjusting-screw *k*, which would entirely close the duct *i* if screwed in to its fullest extent. If now the valve-plug be given a motion to the left as soon as it assumes the position shown in Fig. 2, the gas will have access to the gasway *c'* and issue through the tip *e*. At the same time the supply of gas to the auxiliary jet *f* will be increased by the port *h* making a connection directly with the inlet *c*, thereby causing a lengthening of the auxiliary flame, as shown by the dotted lines *m*, so that the gas issuing from the tip *e* will become ignited thereby. On the continued further movement of the valve-plug *g g'* to the left to the dotted

lines, Fig. 2, the gasway to the tip *e* will be completely opened, while the right-hand abutment of the port *h* will entirely cut off the gas-supply to the auxiliary jet *f* and extinguish its flame. On returning the valve-plug to its original position, as shown in Fig. 1, in its movements to the right the operations above described will be reversed, the auxiliary jet being first put in connection with the gas-inlet *c*, causing the gas to issue in a stream from the auxiliary jet *f*, which will then become ignited from the main jet at *e*, after which the main flame will be extinguished and the auxiliary-jet flame diminished to its original size, as shown at *n*, Fig. 1, being supplied with gas only by the ducts *i* and *j*, according to the degree of regulation of the screw *k*.

In operation, the plug being pushed in to the right and occupying the position shown in Fig. 1, the gas is first ignited at the auxiliary jet *f* by hand, and the size of the flame regulated by means of the adjusting-screw *k*. If now it be desired to ignite the main flame at the tip *e* at any time, it is only necessary to move the plug to the left, when the auxiliary-jet flame will become extended upward, ignite the main-jet flame, and then become extinguished, leaving the main flame fully developed for use. To extinguish the main flame, the plug is returned to its original position, which movement simultaneously relights and turns down the auxiliary flame.

The auxiliary flame may be protected against extinguishment from drafts of air by means of a screen, cylinder, or globe, in the manner common to such apparatus.

In my improved form of burner just described it will be seen that the auxiliary flame is extinguished during the period when the main flame is burning, thus resulting in economy in gas-consumption. It is sometimes, however, desirable that the auxiliary jet shall continue burning at all times. Figs. 3 and 4 present a modification of my invention by which the last-mentioned result may be achieved.

In Fig. 3 all of the parts are similar to those shown in Fig. 1 and already described, with the exception that the valve-plug *g g'* is supplied with a second port *l*, so disposed in relation to the first port *h* that the distance between the two ports shall be less than the diameter of the gas-passage to the auxiliary jet *f*. In Fig. 3 the parts are in their normal positions, the main jet being closed and the auxiliary jet supplied with gas by means of the ducts *i* and *j* through the main port *h*. If now the valve-plug be moved to the left, when it assumes the position shown in Fig. 5 the passage to the gasway *c'* will be opened and at the same time the auxiliary jet will be put in connection with the gas-inlet *c* through the port *h*, thus increasing the supply and lengthening the auxiliary flame, so as to ignite the main jet at *e*. A further movement of the plug to the left will leave the parts as in Fig.

4, fully opening the supply to the main jet, but leaving the auxiliary jet supplied by the ducts *i* and *j* only through the second port *l*, such supply being regulated by the adjusting-screw *k*. Thus the auxiliary flame will continue to burn while the main flame is in use. In returning the plug to its original position the main jet will be extinguished and the auxiliary flame, after being first increased, will be reduced to its normal size, the parts all being left as shown in Fig. 3.

Figs. 6 and 7 show one method by which motion may be imparted to the plug of the valve. A yoke *o p* is provided with openings *r*, Fig. 7, (shown in perspective in Fig. 8,) which embrace the ends of the valve-plug *v w*. This yoke moves with the plug, and is supplied with an extension *x*. *s t* is a double-armed lever, which is pivoted to the body of the burner at *u*, and has an aperture in its face, through which passes freely the extension *x*. The parts being in the position shown in Fig. 6, it will be clearly understood that if the right-hand end of the lever *t* be depressed until it assumes the position of the dotted lines the extension *x* will be given a movement to the left to *x'*, carrying with it the yoke *o p* and valve-plug, as shown by the dotted lines. By depressing the left-hand end of the lever, the lever, yoke, and plug will be returned to their original positions. Chains or wires may be attached to the ends of the double lever for convenience in manipulating. The screw *u*, Fig. 7, which serves to pivot the lever *st* may also be employed as a means of regulating the extent of gas-supply to the main jet *c'*, the thread in the body of the burner extending into the gas-passage *c'* at *y*, as shown in section in Fig. 7. In order to permit of varying the distance to which the screw *u* is advanced to regulate the flow of gas in the passage *c'*, and at the same time that the screw *u* shall hold the lever *st* to its position with sufficient freedom to permit of its easily moving when oscillated, a spiral spring *B* surrounds the body of the screw *u*.

I would not be understood as confining myself to this or any other special device for imparting motion to the valve-plug.

Having fully described my invention, what I desire to claim and secure by Letters Patent is—

1. In a gas-burner, the combination of a main jet, an auxiliary jet, and a solid sliding or reciprocating valve annularly recessed to control the gas-supply to both main and auxiliary jets, substantially as and for the purpose specified.

2. In a gas-burner, the combination of a main jet, an auxiliary jet, and a sliding or reciprocating valve, with one port arranged to control the gas-supply to both main and auxiliary jets by one movement, substantially as and for the purpose specified.

3. In a gas-burner, the combination of a main jet, an auxiliary jet, and a solid sliding or reciprocating valve with two annularly-re-

cessed ports, arranged to control the gas-supply to both main and auxiliary jets by one movement, substantially as and for the purpose specified.

- 5 4. In a gas-burner having a main and auxiliary jet controlled by a sliding valve, mechanism for actuating said valve, consisting of a lever pivoted to the side of the burner, provided with a slot or recess, and a yoke attached to the sliding plug with an extension
10 or its equivalent fitting in said slot or recess of the pivoted lever, substantially as and for the purpose specified.

5. In a gas-burner having a main and auxiliary jet controlled by a sliding or reciprocating valve, and mechanism for actuating the valve, the spring B, and the screw *u*, serving to pivot the actuating-lever, and as a means of regulating the maximum flow of gas to the jet. 15

GEORGE K. COOKE.

Witnesses:

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