No. 809,810. PATENTED JAN. 9, 1906.

J. F. W. JOST.

INCANDESCENT GAS LAMP.

APPLICATION FILED NOV. 29, 1904.

Fig. 1

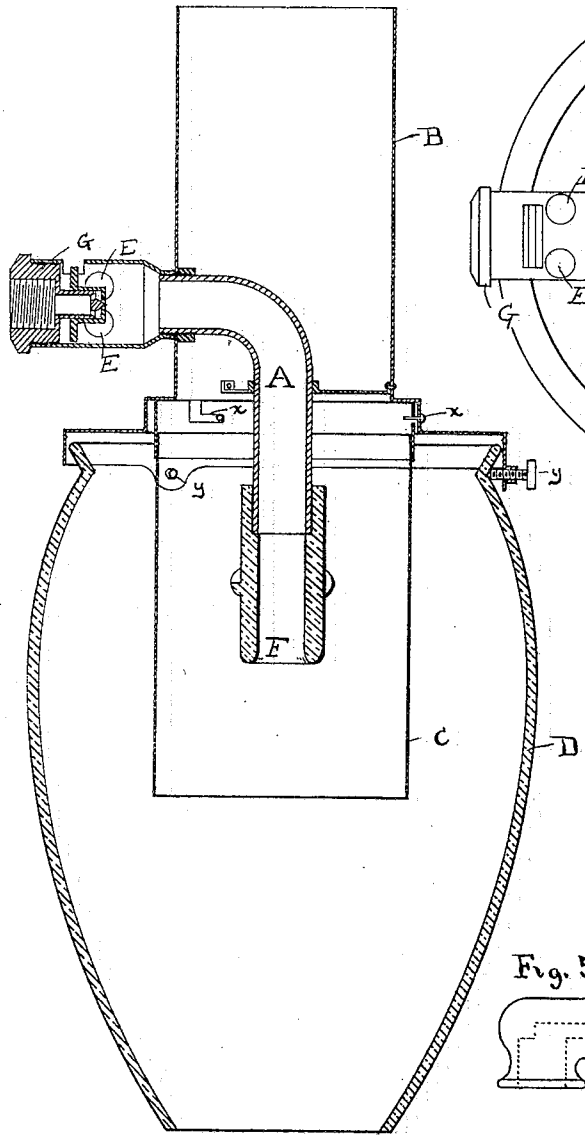


Fig. 2

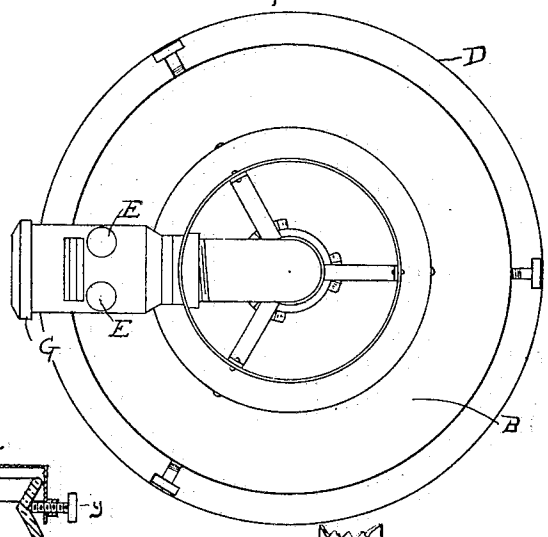


Fig. 3

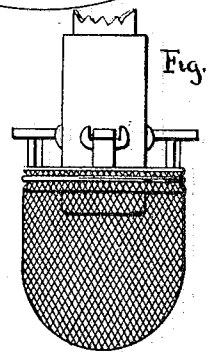


Fig. 4

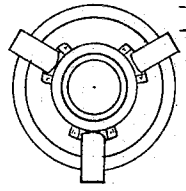
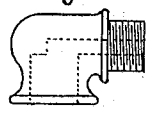


Fig. 5



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INCANDESCENT GAS-LAMP.

No. 809,810. Specification of Letters Patent. Patented Jan. 9, 1906.

Application filed November 29, 1904. Serial No. 234,721.

To all whom it may concern:

Be it known that I, JOHN FREDERICK W. JOST, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Incandescent Gas-Lamps, of which the following is a specification.

My invention relates to incandescent gas-lamps of the class known as "inverted," in which the mantle is suspended below the mouth of the Bunsen tube and is designed to give a more efficient burner, which is not so sensitive to changes and outside conditions as those heretofore in use. At present such burners are generally constructed with an inverted or reversed Bunsen—that is, with the tube vertical, the mouth or burner-head pointing downward, and the air-ports and gas-inlet at the top and over the flame, thus requiring the gas and air to take a downward course in its path from its entrance of the Bunsen tube to the burner-mouth, while the position of the air-ports over the flame causes the products of combustion arising therefrom to envelop the ports and the air entering these ports to be so diluted with these combustion products as to materially interfere with the true Bunsen flame and results in a decrease of efficiency, for while gas mixed with air diluted with combustion products will produce a blue flame which will incandesce a mantle such a flame will be weak in power and very liable to smoke, due to the small amount of oxygen which is mixed with the gas. The supply of oxygen in this construction which the gas obtains through the air-ports is further reduced by the fact that the diluted air above the flame is hot, and therefore expanded and contains fewer molecules of oxygen per unit volume than the same mixture cool. As this mixture of gas and air issues at the burner-mouth the flow is checked by the mantle, and the updraft created in the surrounding air by the heat of the flame is insufficient to feed the flame with the adequate amount of air necessary for complete combustion or to carry off the products of the flame rapidly enough, which thus form a barrier to additional air reaching the mantle, and the entire combustion process is thereby clogged. Another drawback to a Bunsen of this style is that it becomes more or less heated from the flame and rising gases and forms a chimney to the gas within it, whose natural path therefore would be upward, and against this chimney effect of the tube the injector effect of the Bunsen tube must work, thereby reducing the power of the latter. Evidence of this smothered and throttled effect is shown in such burners by the delicacy of adjustment required for both air and gas and the impairment of the working of the Bunsen which outside conditions cause.

The aim of the present invention is to do away with these defects and to produce a more perfect combustion in the lamp, and thus increase its range of efficiency, rendering the lamp less sensitive to changes of condition and an easier manipulated article in the hands of the novice, and consequently to increase its value as a commercial article. By increasing the current of air around the burner-mouth and above it, thus obtaining a sufficient quantity of air for combustion and a rapid enough removal of the combustion products and by preventing contamination by the combustion products of the air entering the air-ports, there is attained, as I have found, not only an increased effect on the mantle, but a more stable operation of the lamp. To attain these results, I employ a Bunsen with the usual downwardly-projecting mouth and means for suspending the mantle below it. Surrounding this vertical part of the Bunsen tube is a chimney or flue to carry off the waste products of combustion from the flame and to supply it and the mantle with an ample supply of air. The vertical end of the Bunsen extends to a reasonable distance upward and within this flue, where it takes a bend and passes through the wall of and without the flue, and on this part without the flue it is provided with air-ports, checks, and connections for attaching it to the gas-supply. The flue therefore will carry off the waste products of combustion above the air-ports, which are thus insured a plentiful supply of relatively cool pure air, and the gas thus receives an ample supply of oxygen, both mixed with it in the Bunsen and also at the place of combustion. This construction also reduces the vertical length of the Bunsen and does away with it entirely where the injector effect is greatest—*i. e.*, at the air-ports—and the chimney effect against which the injector effect of the Bunsen has to work is thereby greatly reduced. These improvements show readily an increase in the perfection of combustion by an increased candle-power of the mantle and an absence of any tendency to smoke when the lamp is working normally.

In the accompanying drawings, which form part of this specification, Figure 1 is a sectional elevation of the lamp. Fig. 2 is a plan view of same. Fig. 3 is a side elevation of the burner-mouth, showing the mantle attached. Fig. 4 is a plan view of same, and Fig. 5 is an attachment to adapt the lamp to ordinary upright fittings.

In Fig. 1, A designates the Bunsen tube as a whole. F is the burner-mouth, preferably of some fire-resisting material. E E are the air-ports, and G the check. B is the upper part of the chimney or flue, to which the Bunsen is fixedly attached. C is the lower part of the chimney or flue, of transparent material, as mica or glass, and preferably removably attached to the upper part B, as by bayonet-joints *x x*, to allow easy access to the burner-mouth to attach and remove the mantle. D is a globe having air-openings and inclosing the burner-mouth, mantle, and lower part of the chimney or flue C and attached to the upper part of the chimney or flue B by any suitable method, as by set-screws *y y*. The gas entering through G enters the Bunsen tube, entraining air through the air-ports E E in passing from the check G, and passing through the tube issues at F, where it burns. The waste products of the flame pass upward through C and B, issuing at the upper end of B into the open air. The air-ports E E are insured a plentiful supply of cool fresh air by being without the path of the rising products of combustion, while the mantle suspended at F is also insured a similar supply by the suction of B and C, the necessary air being supplied by the openings of D.

What I claim is—

1. In an incandescent gas-lamp, a Bunsen burner having a downwardly-opening mouth and provided with air-inlets, and a chimney surrounding the lower portion of said burner and extending below the level of said mouth and having an air-inlet below said level so as to cause the mantle carried at said burner-mouth to be struck by an upward current of air which envelops the outside of the mantle, the tube of said burner passing through the wall of said chimney with a tight fit, and the air-inlets of the Bunsen burner being located exteriorly of the chimney which thus forms a shield interposed between said air-inlets and the path of the combustion products.

2. In an incandescent gas-lamp, a Bunsen burner having a downwardly-opening mouth and provided with air-inlets, and a chimney surrounding the lower portion of said burner and having an air-inlet at the bottom, so as to cause the mantle carried at said burner-mouth to be struck by an upward current of air which envelops the outside of the mantle, the tube of said burner passing through the wall of said chimney with a tight fit, and the air-inlets of the Bunsen being located exteriorly of the chimney which thus forms a shield interposed between said air-inlets and the path of the combustion products.

3. In an incandescent gas-lamp, a chimney for creating a current of air, a Bunsen burner having a downwardly-opening mouth located in said air-current so that the mantle located at said mouth will be struck and enveloped by said upward current of air, the tube of said burner passing through the chimney-wall and being provided with air-inlets exteriorly thereof, so that the chimney forms a shield interposed between said air-inlets and the path of the combustion products.

In witness whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN FREDERICK W. JOST.

Witnesses:
OTTO V. SCHRENK,
JOHN LOTKA.