

No. 662,324.

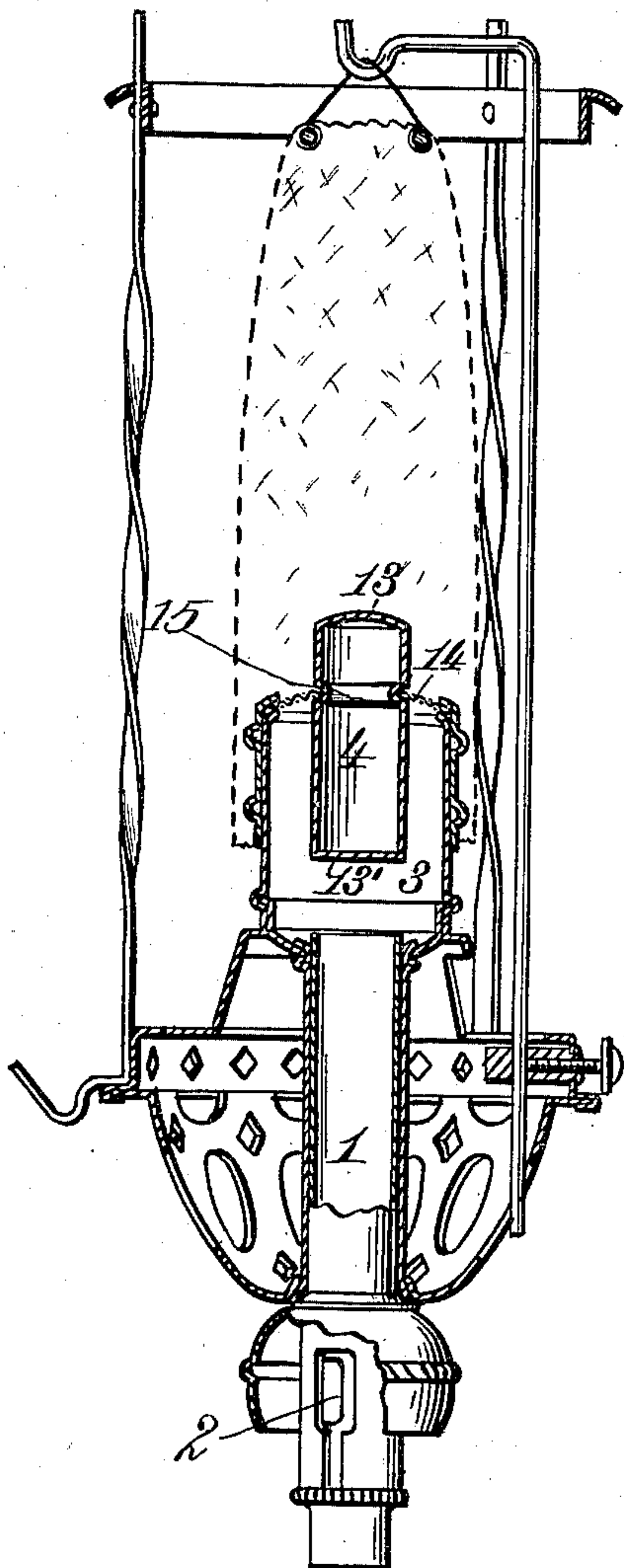
Patented Nov. 20, 1900.

C. W. TAYLOR.  
INCANDESCENT GAS BURNER.

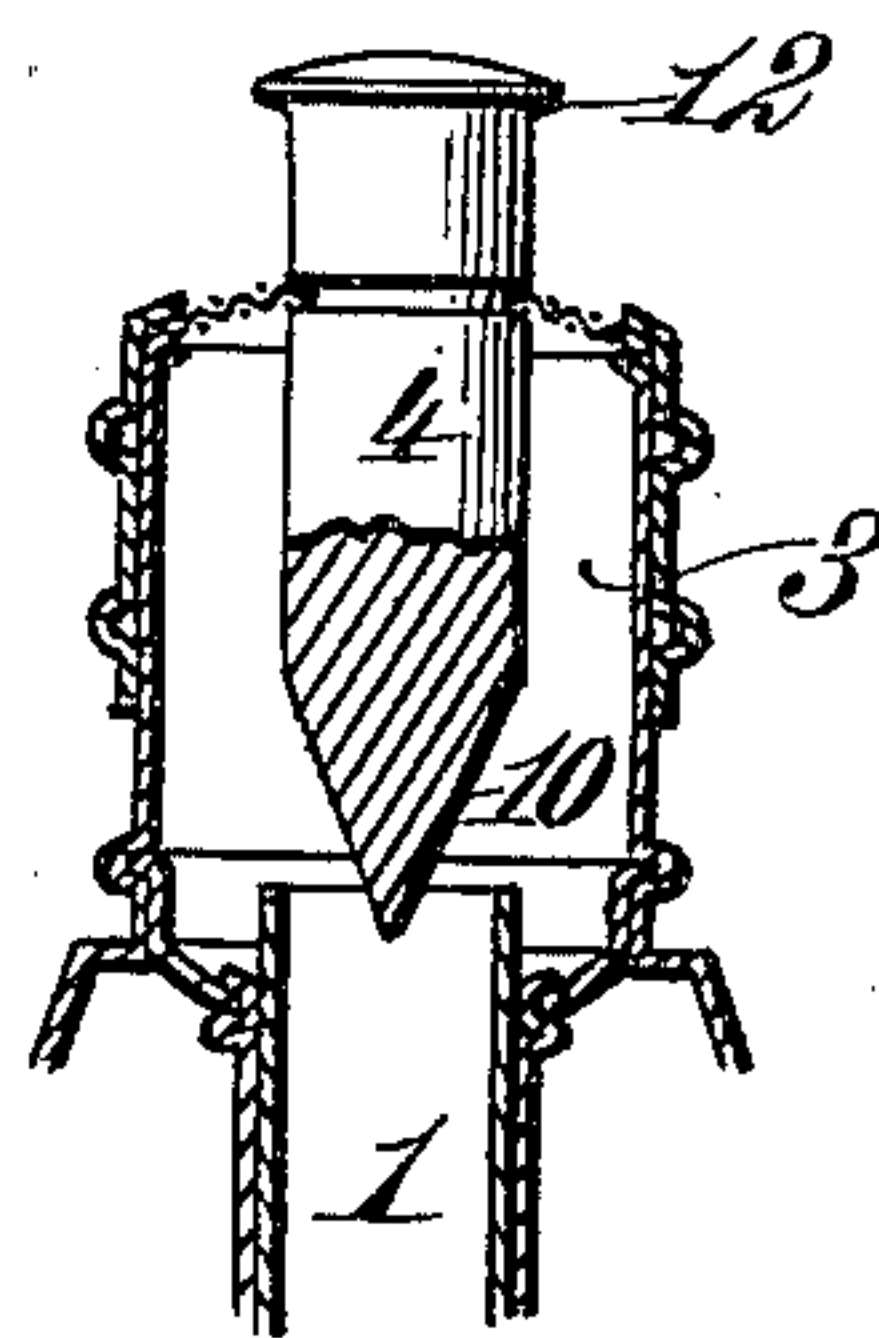
(Application filed June 18, 1900.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



Witnesses,  
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# UNITED STATES PATENT OFFICE.

CLARENCE W. TAYLOR, OF SIOUX CITY, IOWA.

## INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 662,324, dated November 20, 1900.

Application filed June 18, 1900. Serial No. 20,762. (No model.)

*To all whom it may concern:*

Be it known that I, CLARENCE W. TAYLOR, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented new and useful Improvements in Incandescent Gas-Burners, of which the following is a specification.

My invention relates to incandescent gas-burners, and its purpose is to provide simple and comparatively inexpensive means by which the air and gas are heated simultaneously before coming in contact with the incandescent mantle, whereby a more perfect combustion is obtained, together with an increase of temperature, which produces a more perfect and uniform incandescence of the mantle and a more brilliant and powerful light. It is my purpose, in other words, to provide an incandescent gas-burner of any type with simple and economical means for improving the quality and increasing the power of the light and at the same time reducing the cost of operating such a light. I aim by my invention to effect a more intimate and uniform mixture of the gas and air, to obtain by their combustion a more complete and perfect incandescence of the entire mantle, or nearly so, and to maintain such incandescence at a practically - uniform point throughout, whereby I am able to produce a better and stronger light with a smaller consumption of gas than that yielded by this type of gas-burners prior to my invention, besides effecting a material economy in the consumption of gas and mantles.

The invention consists to these ends in the several novel features of construction and in the new combinations of parts hereinafter fully explained and then particularly pointed out and defined in the claims at the end of this specification.

To enable others to understand and practice my said invention, I will proceed to explain the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a central section taken in the axial line of an incandescent gas-burner, showing the air and gas mixing chamber and the Bunsen tube with my invention combined therewith. Fig. 2 is a view showing a slight modification in construction.

The reference-numeral 1 in said drawings

indicates the Bunsen tube of an incandescent gas-burner of any preferred form, the lower end of said tube being provided with a female thread to enable it to be screwed upon an ordinary gas-tip or gas-supplying pipe. Said tube is provided with air-inlets 2 of the usual construction, and it extends upward into the lower end of a mixing-chamber 3. This mixing-chamber lies partly within the lower part of the mantle, by which it is surrounded.

In the central or axial line of the mixing-chamber 3 I arrange a heat-radiator 4, which may be either a hollow cylinder closed at its upper and lower ends or a cylindrical solid body having a tapered lower end, the latter being a modified form of my invention. (Shown in Fig. 2.) In both forms the radiator extends above or projects out of the top of the mixing-chamber 3 for a portion of its length, the exposed portion lying within the surrounding mantle, where it is exposed to a high degree of heat. The other end of said heat-radiator extends well down into the gas and air mixing chamber 3, and if the hollow cylindrical form shown in Fig. 1 is used its lower end is disposed above the end of the Bunsen tube 1. If the solid heater shown in Fig. 2 is used, its lower end is tapered to a point 10, which hangs centrally over the open mouth of said Bunsen tube. The upper end is preferably, though not necessarily, formed with an outwardly-projecting flange or collar 12. In the hollow cylindrical radiator 4 the upper and lower ends are closed by diaphragms 13 and 13', respectively, and the annular opening between the heat-radiator and the upper edge of the mixing-chamber is covered by a foraminous diaphragm 14, having suitably small perforations and engaging in the peripheral groove 15 of the radiator for suspending the latter within and above the mixing-chamber.

The upper portion of the radiator above the diaphragm 14 is heated by radiation from the mantle, which also acts upon the thin walls of the mixing-chamber 3. The air and gas receive this heat, and their temperatures are raised simultaneously to a point at which their mixture will produce a homogeneous result. Moreover, as the air and gas are consumed at a high temperature the heat produced by their



combustion is correspondingly increased, beside being rendered more nearly uniform. It is evident, therefore, that the flame produced by such a mixture will give an increased  
5 heat to the mantle, which will have a more perfect incandescence and give a more brilliant and powerful light. Moreover, the mantle will be heated to incandescence throughout its entire area, or nearly so, and will give a  
10 steady white light without flickering. When gas and air are used at normal temperatures in these lamps, their first contact with the mantle reduces the temperature of some portion of more or less extent, and this produces  
15 a flickering of the light or a want of uniformity which closely resembles flickering and which is extremely unpleasant and injurious to the eyes. Besides, these constant and rapid variations in temperature cause corresponding expansions and contractions of the mantle, by which its structure is rapidly weakened and disintegrated and its term of usefulness materially abridged.

Having thus described my invention, what  
25 I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In an incandescent gas-burner, the combination with a Bunsen tube adapted to connect with a gas-supply pipe, of a mixing-chamber, connected to said tube and adapted  
30 to receive the air and gas therefrom, a mantle having the lower portion thereof surrounding said mixing-chamber, a cylindrical heat-radiator made in one piece and extending up-

wardly into said mantle and downwardly into  
35 said mixing-chamber and provided with a peripheral groove a short distance from its upper end, and a foraminous diaphragm connected to the top of said mixing-chamber and connected within the groove in said radiator  
40 for suspending the latter in the mixing-chamber, the cylindrical portion of said radiator extending above said diaphragm, substantially as described.

2. In an incandescent gas-burner, the combination with a Bunsen tube adapted to connect with a gas-supply pipe, of a mixing-chamber for the air and gas received through  
45 said tube, a mantle, the lower portion of which surrounds said mixing-chamber, a heat-radiator consisting of a solid cylindrical body  
50 having a pointed lower end, said radiator having an annular groove a short distance from its upper end and arranged to lie partly in and partly above the top of said chamber,  
55 and a foraminous diaphragm over the annular space between the radiator and the top of the mixing-chamber and engaging the annular groove in said radiator, the cylindrical part of said radiator projecting above said  
60 diaphragm, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CLARENCE W. TAYLOR.

Witnesses:

A. F. PUCK,  
G. J. ROSS.