E. MACCAUD.

Gas Burner.

No. 4,913. Patented Dec. 28, 1846.

Fig. 2

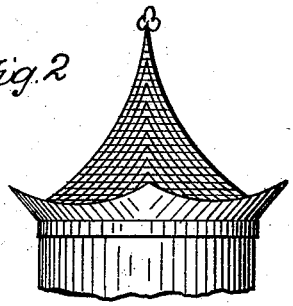
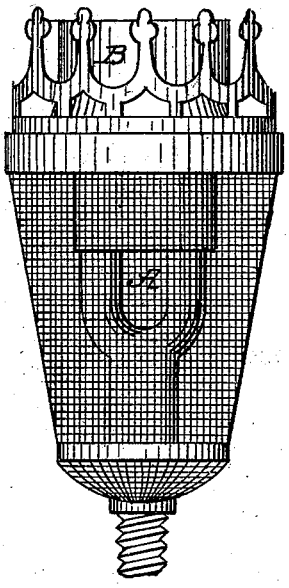


Fig. 1.



WITNESSES

Gaillet

Otto Lambert

INVENTOR

E Maccaud

UNITED STATES PATENT OFFICE.

ETIENNE MACCAUD, OF ECHALLENS, SWITZERLAND.

GAS-BURNER.

Specification of Letters Patent No. 4,913, dated December 28, 1846.

To all whom it may concern:

Be it known that I, ETIENNE MACCAUD, engineer, of the city of Echallens, in the Canton of Vaud, in the Republic of Switzerland, have invented a new and useful Improvement Applicable to Gas-Burners, called the "Phlogostatic Apparatus," of which the following is a full and exact description.

The phlogostatic apparatus applicable to the gas burners.—The object of this apparatus is to fix the flame, to prevent the smoke and its inconveniences, by producing a complete combustion of the gas.

The phlogostatic apparatus consists in a reservoir, which envelops completely the bottom part of the burner. (See A Figure 1.) The object of this reservoir is to isolate the portion of air necessary to feed the combustion, from the external air. This reservoir is made of a metallic web, or any sort of web or texture suitable to keep the flame from the currents of the outside-air, (whatever small or feeble they may be) without however intercepting the air completely, so that the flame may sufficiently be fed. By these means, not a particle of air is coming to the focus of the light or jet, but that which is called by the soft aspiration produced by the flame itself. This reservoir gradually fed by the external air passing smoothly through the web, according to the call of the flame, is a store of hot air constantly kept up by the heat of the focus of the light. Its effect is the quickening of the decomposition of the gas, which is an important condition of a good combustion. For it is essential to avoid and oppose all sorts of currents or streams of cold air, coming suddenly and with force to the flame. For that reason, it is necessary also that the glass be closely adapted and exactly fitted to the gallery that supports it. The dimension of this reservoir must be as large as will permit the exigencies of taste and locality, for the more distant the focus of the light will be from the external cold air (the currents being then impossible) the more perfect will be the combustion of the gas, for it will be then effectuated in a quiet and hot atmosphere. Another advantage resulting from the use of the phlogostatic apparatus, is that the flame, burning in an atmosphere perfectly quiet, is completely free from gusts and jerks, which ordinarily exist in all other gas-burners.

I shall now state which are the essential conditions for the structure of my apparatus. It is absolutely necessary that the interstices of the web of the reservoir be not larger than the third of $\frac{1}{12}$th of an inch, so that a square of a side of $\frac{3}{12}$th of an inch will contain 40 meshes. For if the meshes (space between the threads) of the web were wider, so that the outside air could find an easier way through the web, the results would be just opposite to the object of my apparatus. Evidently if the interstices were larger, the web, though it might, in some measure restrain and divide the current of air, would leave the focus of the light accessible to small currents or streams of cold air, which would agitate the flame, and then the reservoir of hot air, which is indispensable, could not exist. My experiments have convinced me to the utmost evidence, that all sorts of holes that may give way to the currents of the external air, whatever feeble and regular they may be (no matter if the holes be placed at the inferior part of the glass, or under the gallery which supports the glass, as may be seen in common use,) have no other effect but to introduce with rapidity and in superabundance cold air to the focus of the combustion, so that the flame is agitated and diminished.

The object of my apparatus, on the contrary, is to intercept all current or stream of cold air, whatever feeble it may be, by the means of my web-reservoir, so that the flame burning amidst a quiet and hot atmosphere will procure a steady and full light.

When the burner is exposed to the open air, it is necessary to employ for the reservoir two superposed webs, or a thinner web. It may be likewise necessary, when the burner is exposed to a great current of air from above, to employ a similar web on the top of the glass as represented at Fig. 2, in the drawing.

The phlogostatic apparatus has an accessory part or tube of a cylindrical form, called *ambouti*, which encircles the burner (see B, Fig. 1,) which is extended from $\frac{4}{12}$ths to $\frac{5}{12}$ths of an inch above the mouth of the burner; for the purpose of furthering, in a more immediate manner, the combustion of the gas.

Having now explained in what my apparatus consists, I now proceed to state in what my claims to novelty consist, and before doing so, I would state that I do not claim anything new in the construction of burners, or anything which may have been before in use; but

What I do claim is—

1. The creation, around the burner, of a hot air reservoir (by the means of my metallic or other web, Fig. 1, A,) heated by its proximity to the focus of the combustion, which keeps the flame from all cold air and from all streams of the external air, whatever feeble they may be; so that the air which feeds the flame comes to it by the single aspiration of the heat and not by the external force of the atmospherical currents.

2. I claim, the placing of a similar web, as represented with regard to Fig. 1, on the top of the glass, when a current of air is found to proceed from above and beat down upon the glass and this second part of my invention, I claim only in conjunction with the first part thereof.

In testimony whereof I, the said ETIENNE MACCAUD hereto subscribe my name, in the presence of the witnesses whose names are hereto subscribed, on the twelfth day of October, A. D. 1846.

E. MACCAUD.

Witnesses:
GAVILLER,
C. H. LAMBERT.