

No. 609,034.

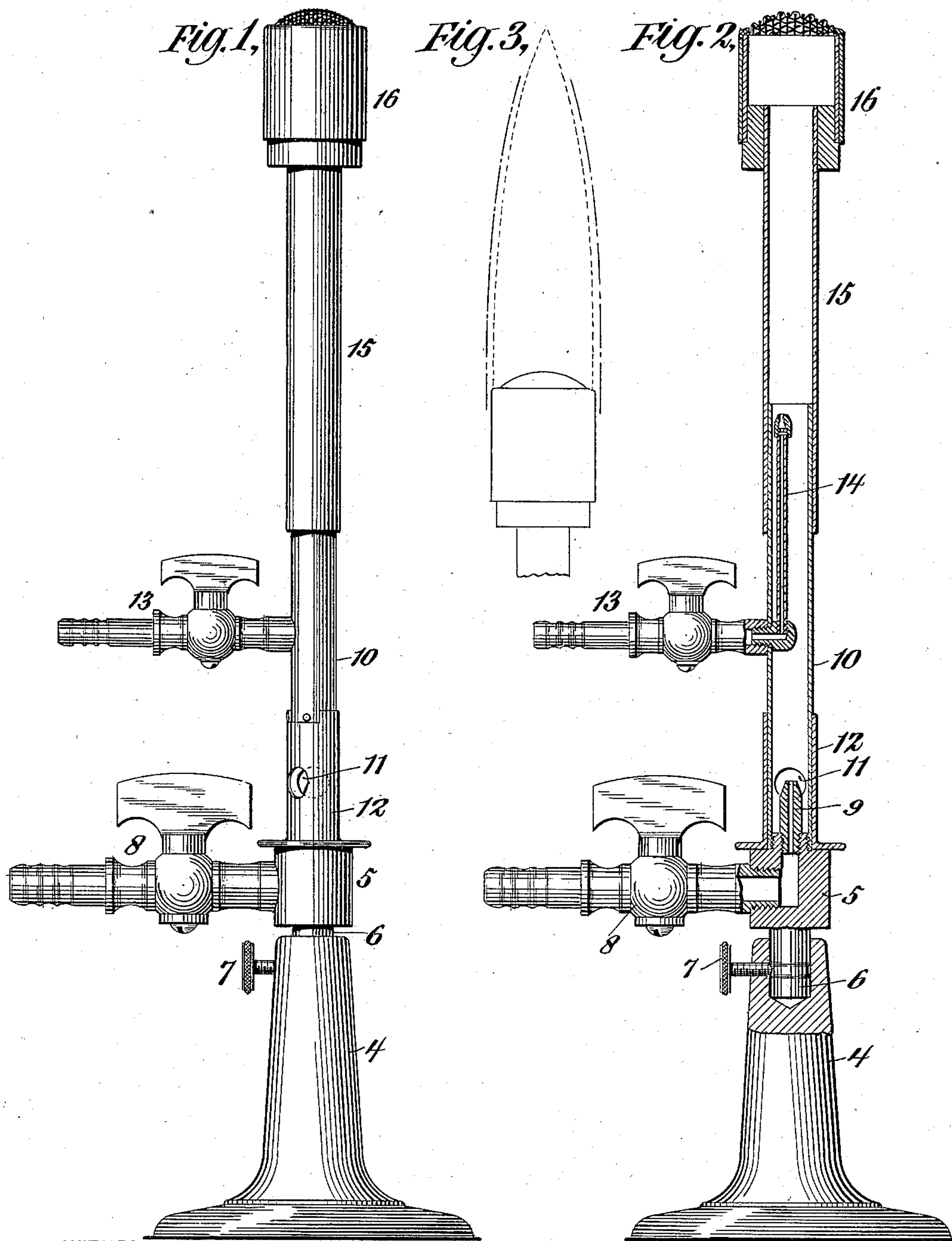
Patented Aug. 16, 1898.

W. MAHLER.

APPARATUS FOR FORMING AND BAKING INCANDESCENT LIGHT MANTLES.

(Application filed July 10, 1897.)

(No Model.)



WITNESSES:

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APPARATUS FOR FORMING AND BAKING INCANDESCENT-LIGHT MANTLES.

SPECIFICATION forming part of Letters Patent No. 609,034, dated August 16, 1898.

Application filed July 10, 1897. Serial No. 644,156. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MAHLER, a citizen of Austria, residing at New York, in the county and State of New York, have invented a new and useful Improvement in Apparatus for Forming and Baking Incandescent-Light Mantles, of which the following is a specification.

My invention relates to apparatus used in the manufacture of mantles for incandescent lighting; and it consists in a burner having a suitable support, a gas-inlet, a compressed-air inlet, and a mixing-chamber between the said gas and compressed-air inlets and the burner; and my invention further consists in certain novel details of construction and combination of parts, as will hereinafter be more fully set forth.

The object of my invention is to facilitate the manufacture of mantles as aforesaid and to perform both operations of forming and baking with one apparatus without removing the mantle.

I will now proceed to describe my invention in detail, with reference to the accompanying drawings, and then point out the novel features in claims.

Figure 1 is an elevation of an apparatus embodying my invention. Fig. 2 is a central longitudinal section of same. Fig. 3 is a diagram.

Similar reference characters denote corresponding parts in all the diagrams.

Numeral 4 designates a stand or pedestal; 5, a socket-piece having a stem 6 fitted into said pedestal and secured thereto by a set-screw 7.

8 is a hose-cock of ordinary form, connecting at one end with the hollow interior of the socket-piece 5 and at its other end adapted to receive a flexible pipe connected to a suitable gas-supply.

9 is a nozzle forming the gas outlet or discharge, which is fitted to the socket-piece and communicates with the interior thereof, and hence with the gas-supply, through the hose-cock.

10 is a vertical tube surrounding the nozzle 9 and is provided with air-inlet orifices 11 and sleeve 12 for regulating the supply of air drawn through the orifices 11 by induction,

all of which is common in the well-known Bunsen burner.

Communicating with the vertical tube at a point above the gas-inlet is another hose-cock 13, and in connection therewith a nozzle 14, which projects upwardly within the vertical tube 10, here shown as almost to the top thereof. The hose-cock 13 is adapted to receive a flexible pipe in connection with a compressed-air supply.

15 is a mixing-chamber, and 16 is a burner-head. The mixing-chamber, as will be seen by reference to the drawings, extends above the compressed-air and gas inlets and forms a chamber in which the said gas and air may mix prior to being burned at the burner-head 16.

In the manufacture of mantles for incandescent lighting a tubular tissue or webbing woven of a single or several cords or bundles of combustible organic fiber is arranged in suitable form and is then saturated in a prepared solution of certain oxids, the principal ingredient being, as a rule, thorium oxid. It is then dried, usually in an oven or hot-air chamber, and is then ignited and the original fabric is totally burned away; but the oxids remain as an exact duplicate in form of the original fabric and retain the shape of the tissues or cords. It is then formed over a flame of not too great an intensity. After this forming it is subjected to a greater heat and baked.

In the manufacture of mantles hitherto for the purpose of forming such mantles quickly it has been the practice to use compressed gas and two apparatus, one for the purpose of forming the mantle and the other for the purpose of baking it. The flame used in these two apparatus differed materially in shape, because the flow of gas used in forming the mantle was much less than that used in baking it. Thus after the mantle had been formed over a flame produced by a comparatively slight flow of gas it was then placed, for the purpose of baking it, over a flame produced by a greatly-increased flow of gas. The mantle would lose the shape given it in the process of forming and would assume the shape of the flame used in the process of baking it and unless handled in a very skilful man-

ner would present an uneven surface, caused by the variation in the shape of the flames.

By the use of my appliance I am enabled to perform both operations at once without removing the mantel. This is not only a great saving in time and labor, but also valuable in reducing the loss by destruction of the mantle while in process of manufacture, for while in such process they are exceedingly delicate and are often broken through handling.

In the manufacture of the mantles I proceed as follows: Having prepared the fabric by dipping same in suitable solution, I dry the same and ignite it, burning off the fabric, and then for the purpose of "forming" the mantle suspend it over the burner, as shown in diagram Fig. 3, having previously turned on and lighted the gas and turned on the compressed air. The air and gas mix together and then burn in a flame of the correct shape, as shown in this diagram, the flame always burning evenly because of the mixing-chamber 15. It is of course very essential that during this process of forming the flame should be of the correct shape and should maintain its shape steadily, as a mantle assumes substantially the shape of the flame, and a badly-shaped flame or an unsteady one will produce a mantle that is almost valueless. It is also very essential that in the baking of the mantle, which is the next step in the process, the flame should be of the same shape as that used in forming it. Otherwise the mantle will lose its shape or, in other words, assume the shape of the flame used in baking it. For the purpose of baking the mantle it is not removed from the flame, but remains suspended over the apparatus, and I then rotate the sleeve 12, so as to open the air-orifices into the vertical tube 10. I now get a flame of great force and intensity and bake the mantle until it is reduced to a sufficient hardness.

By the use of my apparatus I am enabled to entirely dispense with the use of compressed gas, which has hitherto been invariably used when the mantle was to be baked quickly. This is not only a great saving in expense, but also the elimination of an element of danger in the manufacture of this article. Moreover, in the use of compressed gas the flame varied in its shape whenever the flow

of gas was increased or diminished, as it necessarily was increased or diminished during the different steps of forming and baking the mantle.

Another great advantage I obtain in the use of my apparatus over that in the use of compressed gas is the shape of the flame produced by my apparatus, which more nearly approaches that of a cone, while the flame produced by compressed gas is more bulbous in its contour. Thus the mantles formed and baked on my apparatus are much nearer the desired shape for mantles than those formed and baked on a flame produced by compressed gas. Another great advantage is that the shape of the flame never varies, for the reason that there is never any variation in the flow of gas and air, the only variation necessary being in the intensity of the flame, which is absolutely under the control of the operator through the sleeve opening and closing the air-orifices in the vertical tube.

What I claim is—

1. The combination in an apparatus for the manufacture of mantles for incandescent lighting of a gas-inlet, an inlet for air at atmospheric pressure, a burner-head having perforations through which the gas passes prior to ignition, a compressed-air inlet having a contracted nozzle and a mixing-chamber, the nozzle of said compressed-air inlet being located in the mixing-chamber between said first-mentioned air-inlet and the said burner-head, substantially as specified.

2. The combination in an apparatus for use in the manufacture of mantles for incandescent lighting of a gas-inlet, an inlet for air at atmospheric pressure, a regulator for said air-inlet, a burner-head having perforations through which the gas passes prior to ignition, a compressed-air inlet having a contracted nozzle, and a mixing-chamber, the nozzle of said compressed-air inlet being located in the mixing-chamber between said first-mentioned air-inlet and the said burner-head, substantially as specified.

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

WILLIAM MAHLER.

Witnesses:

MORRIS HILLQUIT,
FRANK M. HILL.