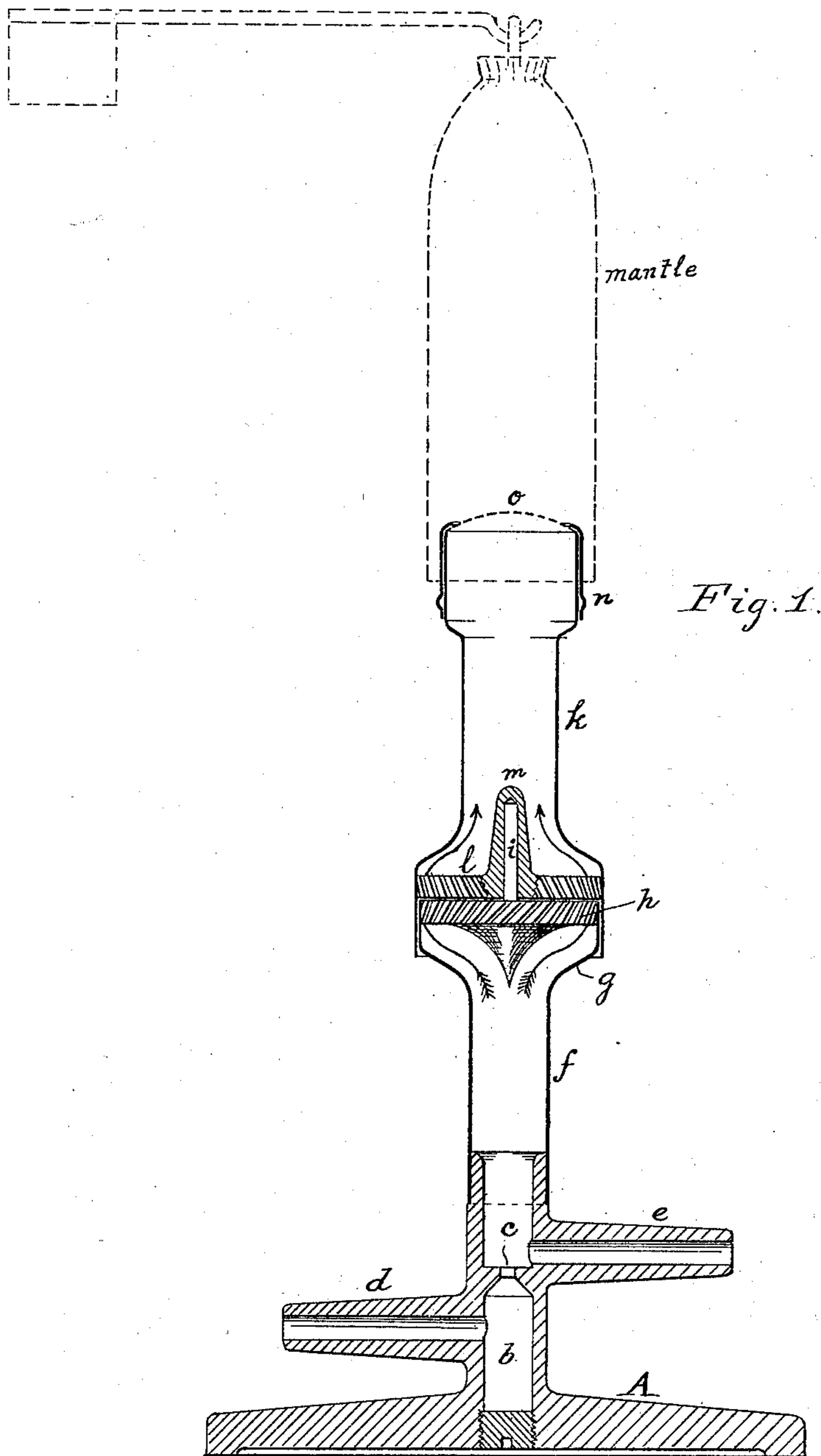


(No Model.)

T. J. McTIGHE.  
METHOD OF INCINERATING INCANDESCENT GAS MATLES AND  
APPARATUS THEREFOR.

No. 604,121.

Patented May 17, 1898



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

THOMAS J. MCTIGHE, OF BROOKLYN, NEW YORK, ASSIGNOR TO CHARLES H. HOYT, OF NEW YORK, N. Y.

METHOD OF INCINERATING INCANDESCENT GAS-MANTLES AND APPARATUS THEREFOR.

SPECIFICATION forming part of Letters Patent No. 604,121, dated May 17, 1898.

Application filed June 11, 1897. Serial No. 640,305. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS J. MCTIGHE, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Methods of Incinerating Incandescent Gas-Mantles and in Apparatus Therefor, of which the following is a specification.

10 This invention relates to atmospheric gas-burners of that class which is especially adapted for use in incinerating the mantles or hoods of incandescent gas-lights and to the method of incinerating the same. As is well known, 15 such mantles are generally made by saturating a piece of knitted tube in a solution of salts suitable for incandescent purposes, then constricting its top, suspending it by the top, and then burning away the material of the 20 original tube, leaving the refractory material, which is generally composed of earthy oxids which become highly incandescent when heated. In the manufacture of these mantles the prepared tube is first fired at the top, allowed 25 to burn or smolder slowly downward till the most of the fiber is consumed, and then an atmospheric burner is introduced within the mantle and the temperature is raised by an air-blast and maintained till the mantle has 30 shrunk to its limit. Great care has to be exercised in the operation, which is a delicate one, so as to keep the mantle in as good a shape as possible; but with the best of care it is difficult to produce a number of mantles 35 which shall be uniform in shape and candle-power, and irregular spots are left, which, while not evident to the eye, develop into points of low power for lighting or prove to be weaker than the remainder. My invention 40 aims at automatically shaping all mantles as much as possible alike and incinerating to exactly the same extent all portions of each mantle.

To these and other ends my invention consists, primarily, in incinerating the mantles by 45 a rotating flame; further, in an incinerating-burner so arranged that a rotary motion can be maintained as between the burner-tip and its flame and the surrounding mantle; further, 50 in an incinerating-burner provided with

a rotating tip controlling the flame; further, in an incinerating-burner capable of rotation and having means for automatically rotating when burning; further, in a gas-burner supplied with air under pressure, a rotary burner-tip provided with means of rotation by the 55 passage therethrough of the air to be used in combustion, and, finally, in the construction and combination of parts, all substantially as hereinafter fully described and claimed. 60

In the drawing forming part of this specification the figure is a vertical section of a simple and effective form of my incinerating device.

The invention is capable of a considerable 65 variety of forms; but I will confine my description to a simple form, as other forms and modifications will readily suggest themselves to those skilled in the art.

A is a base having the cavity *b* and jet- 70 nozzle *c*, with the air and gas inlet nozzles *d* and *e*, respectively, as shown. On this base I fix a tube *f*, which I prefer to enlarge at its upper end to form the chamber *g*, which is closed by the disk *h*, whose periphery is constructed with spiral or inclined grooves or 75 openings for the passage of the air and gas rising from below, and to assist in guiding the mixture to the grooves I prefer to make the disk *h* with a guide-cone on its bottom, as 80 shown. From the disk *h* rises a pin *i*, which serves as a support for the rotating portion of the burner. The tube *k* is expanded at its lower end to fit easily down over the chamber *g*, and has firmly fixed in its interior a disk 85 or wheel *l*, having the upwardly-extending bearing *m* for the pin *i*. The disk or wheel *l* has its periphery formed with grooves or openings for the passage of the gas and air; but the direction of these is opposite to the 90 direction of those in the stationary disk *h*. It will be seen that the disk *h* and the wheel *l* form substantially a turbine, and on admitting air under sufficient pressure from below 95 through the disk *h* the wheel *l* will revolve at a speed dependent upon the amount of air sent through, and with it will revolve the tube *k* and its upper cap *n* and wire-gauze top *o*.

Air and gas having been admitted to the required extent the top begins spinning, after 100

which the mixture issues from the gauze and may be ignited. It is to be observed that the action of the wheel and disk causes a thorough mixture of the air and gas, producing an almost colorless and intensely hot flame to rise from the burner, and as the burner determines the form of the flame the flame rotates with the burner. Upon now arranging a mantle, as shown by the dotted lines, so as to have it suspended above the apparatus the hot flame whirling around inside reaches all parts of the mantle and insures complete incineration, and at the same time the pressure can be so regulated that the flame will exert a gentle outward pressure on the mantle-body, smoothing out all wrinkles and other irregularities of form, leaving it quite symmetrical and having all parts of its surface properly tempered for use. The operation is completed in a very few moments and requires little or no attention once the mantle is properly suspended.

The apparatus can also be used in the combustion of the fiber of the mantle before the incineration proper, and in that case it is desirable to admit a greater proportion of air, so as rapidly to cause the burning out of the fiber. A few seconds suffice where ordinarily as many minutes are needed.

The particular size or location of the rotating wheel is not of the essence of my invention, as both may vary between wide limits. Obviously where it is not advisable to have the rotation automatic and the device self-contained other means of rotation can be adopted without departing from the spirit of my invention so far as relates to a whirling flame for the mantle. I may also state that by making the rotating parts very light, so as to be adapted to low pressures, the device may be used for the production of light with incandescent gas-mantles.

The invention can also be applied to other

uses than those mentioned, such as burners for various heating apparatus.

I claim as my invention—

1. The method of incinerating the mantles of incandescent gas-burners, consisting in suspending or supporting the mantle and subjecting it to the heat of an internal flame while the latter is caused to rotate about the axis of the mantle.

2. An apparatus for incinerating the mantles of incandescent gas-burners, consisting of a support for the mantle, and means for subjecting the mantle to the heat of an internal rotating flame.

3. A gas-burner having a vertical flame-forming tip adapted to rotate around its own center, in combination with a stationary support and means for rotating the tip, whereby in operation the flame is caused to rotate on its own center.

4. A blast gas-burner consisting of a vertical flame-forming tip adapted for rotation around its own center, a base provided with inlet-ports for air under pressure and gas, and a rotating device interposed between the base and tip and adapted to cause the rotation of the latter around its own center by the movement of air and gas through the apparatus.

5. An apparatus for incinerating incandescent gas-mantles, consisting of a stationary support for the mantle, and an atmospheric burner having its tip adapted to rotate and produce axial rotation of the flame when ignited within the mantle.

Signed at Brooklyn, in the county of Kings and State of New York, this 8th day of June, A. D. 1897.

THOMAS J. MCTIGHE.

Witnesses:

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