(No Model.)

E. & F. W. HEYMANN.

GAS BURNER.

No. 576,311. Patented Feb. 2, 1897.

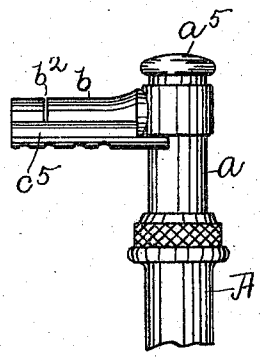

Fig. 1

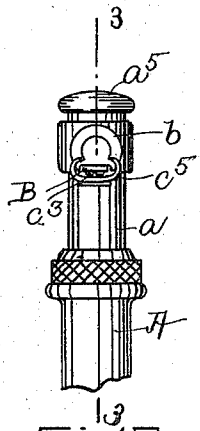

Fig. 2.

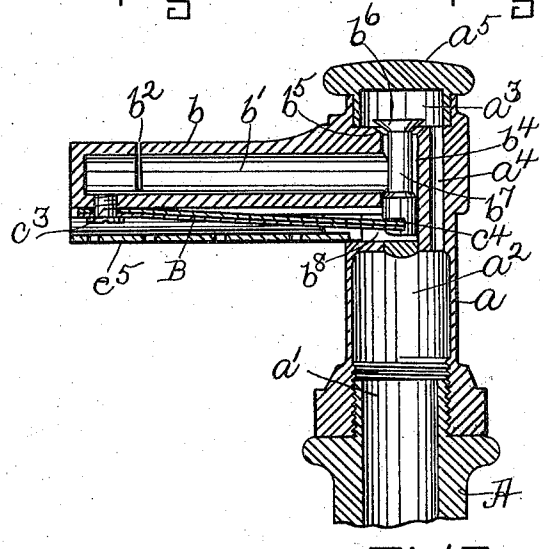

Fig. 3.

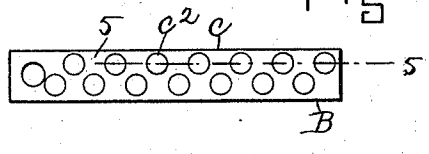

Fig. 4.

Fig. 5.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 576,311, dated February 2, 1897.

Application filed February 19, 1896. Serial No. 579,888. (No model.)

To all whom it may concern:

Be it known that we, EDWARD HEYMANN and FRANK W. HEYMANN, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Gas-Burners, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to gas-burners of that class automatically operated by the withdrawal of the heat to close a valve controlling the outflow of gas from the burner, and has for its object to provide a simple, efficient, and reliable burner which can be made and sold at a low cost to the user. In accordance with this invention the burner is provided with a chamber in direct communication with the gas-supply pipe and with an outlet pipe or passage adapted to communicate with the said chamber through a suitable port which is controlled by a valve automatically operated by a thermostat, preferably of a construction as will be described and which when heated removes the valve from its seat to permit the gas in the chamber referred to to flow to the tip or burner proper, and which when not heated seats the said valve and cuts off the supply of gas from the said tip, the valve when seated being acted upon by the pressure in the supply-pipe to more effectually close the valve. The thermostat referred to is preferably made of aluminium and steel strips secured together by rivets and fastened at one end to the burner-tip and having its other end in engagement with the valve, as will be described. The thermostatic strip will preferably be protected from injury by a covering, as will be described. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is an elevation of a sufficient portion of a gas-outlet pipe provided with a burner embodying this invention to enable it to be understood; Fig. 2, an end elevation of the burner shown in Fig. 1, looking toward the right; Fig. 3, a vertical longitudinal section, with parts in elevation, of the burner shown in Figs. 1 and 2, the section being on an enlarged scale and taken on the line 3 3, Fig. 2; Fig. 4, a plan view of the thermostatic strip; and Fig. 5, a detail in section of the strip shown in Fig. 4, the section being taken on the line 5 5, with the rivets in elevation.

Referring to the drawings, A represents a gas-outlet pipe such as now commonly found in buildings and like places and to which is detachably secured the gas-burner forming the subject of this invention. The gas-burner referred to consists, essentially, of a casing or pipe a, provided at its lower end, as herein shown, with screw-threads to engage the screw-threaded end a' of the gas-supply pipe A, the casing a being divided or separated to form the chambers a^2 a^3 by an intermediate solid portion or partition-wall, through which is extended a gas-conducting passage a^4, which effects direct communication between the chambers a^2 a^3 for a purpose as will be described.

The chamber a^3 is designed in practice to be closed by a removable cap a^5, which may be of any suitable construction. The casing A has extended from it an arm b, which may be secured to or form part of the casing and which constitutes the burner-tip, the said arm being provided with a gas-outlet passage b', communicating with the atmosphere through a slit b^2 in the arm or tip b.

The gas-outlet passage b' is adapted to communicate with the chamber a^3 through a passage b^4 in the solid portion or divisional wall of the casing a, the passage a^4 communicating with the chamber a^3 through a port or opening b^5, which, in accordance with this invention, is controlled by a valve b^6, having a stem b^7 extended through the passage b^4 and of reduced diameter, so as to permit of the flow of gas from the chamber a^3 through the passage b^4 into the passage b' when the valve b^6 is lifted to uncover the port b^5, as represented in Fig. 3. The valve-stem b^7 is extended through the bottom of the arm or tip b and into an open space b^8, formed in the casing, the lower portion of the stem b^7 fitting its opening in the bottom of the tip or arm b gas-tight and being connected to a thermostatic strip B, which is preferably composed of two layers or pieces c c' of steel and aluminium united by metal rivets c^2, the said strip B being removably secured to the under side of the arm b, at one end thereof, by

a set-screw b^3, as shown in Fig. 3, and having its opposite end extended into a suitable slot c^4 in the lower end of the valve-stem b^7.

The arm or tip b is preferably made substantially flat on its under side, and the thermostatic strip B may be protected against injury by a shield or covering c^5, which may be made of wire-gauze or other suitable material and which is adapted to be attached to the tip or burner b by providing the latter on its sides with grooves, into which extend the edges of the shield c^5, as clearly shown in Fig. 2. The thermostatic strip B is made so that when expanded by heat it will elongate and curl upward in the present instance, thereby moving the valve-stem b^7 upward, and consequently raising the valve b^6 from its seat, so as to uncover the port b^5. In the normal condition of the burner the valve b^6 is seated and is held upon its seat by the contraction of the thermostatic strip assisted by gravity and the gas-pressure in the chamber a^3, for by an inspection of Fig. 3 it will be seen that the chamber a^3 is in direct communication with the gas-supply pipe A by the passage a^4 and the chamber a^2. It will thus be seen that the valve b^6 may constitute the sole valve for the gas-outlet pipe A, whereby the usual cock or valve in the gas-supply pipe A may be dispensed with, if desired. When it is desired to light the gas, the operator holds a lighted match or other flame under the tip b and the heat from the said flame expands the thermostatic strip B in a few seconds, which expansion lifts the valve b^6 from its seat and permits the gas to flow out through the slit b^2, where it is ignited, and as soon as ignited the metal tip b is heated sufficiently to maintain the valve b^6 open by the heat conducted to the strip B from the metal tip b.

If for any reason the gas flame should be extinguished, as, for instance, by the pressure in the gas-main falling below a predetermined point, the thermostatic strip B becomes cooled substantially in an instant and responds to this change, and consequently contracts and seats the valve b^6, which latter, as above explained, closes the port b^5, and it will be noticed that the seating of the valve b^6 by the contraction of the thermostatic strip is assisted by the gas-pressure in the gas-chamber a^3 and also by gravity, so that if the thermostatic strip should be accidentally broken or become deranged in any manner the valve b^6 would be apt to be seated by gravity assisted by the gas-pressure in the chamber a^3, which construction imparts to the burner an additional feature of safety in case of accident.

The thermostat B is preferably secured to the under side of the arm or tip b, as it is thereby removed from the flame and does not interfere with the light emitted by the same.

We claim—

1. In an automatically-operated gas-burner, the combination of the following instrumentalities, viz: a casing adapted to communicate with a gas-supply pipe and provided with a gas-chamber in direct communication with the said gas-supply pipe, a tip or arm extended at an angle from the said casing and provided with a gas-outlet passage and with a gas-outlet communicating with the atmosphere, a port or passage adapted to connect the gas-chamber of the casing with the gas-outlet passage of the tip or arm, a valve controlling said port or passage and normally seated by the gas-pressure in said casing, and a thermostatic strip secured at one end to the said tip or arm and operatively connected at its other end to the said valve, substantially as described.

2. In an automatically-operated gas-burner, the combination of the following instrumentalities, viz: a casing adapted to communicate with a gas-supply pipe, an arm or tip extended from said casing at an angle thereto and provided with a gas-outlet passage communicating with the atmosphere, a valve controlling the passage of gas from said casing to said tip or arm, and a thermostatic strip connected at one end to the arm below the gas-outlet thereof and at its other end to said valve to operate, substantially as described.

3. In an automatically-operated gas-burner, the combination of the following instrumentalities, viz: a casing adapted to communicate with a gas-supply pipe, an arm or tip extended from said casing at an angle thereto and provided with a gas-passage adapted to communicate with the said casing, a valve controlling the passage of gas from said casing to said tip or arm, and a thermostatic strip connected to the under side of the tip or arm and having its other end connected to the said valve, substantially as described.

4. In an automatically-operated gas-burner, the combination of the following instrumentalities, viz: the casing a provided with the chambers a^2 a^3 and the connecting-passage a^4, the arm or tip b provided with a gas-outlet passage, the gas-passage b^4 connecting the said gas-outlet passage with the chamber a^3, a valve movable in the passage b^4, and the thermostatic strip B secured at one end to the tip or arm b and at its other end to the said valve, substantially as described.

5. In an automatically-operated gas-burner, the combination of the following instrumentalities, viz: the casing a provided with the chambers a^2 a^3 and the connecting-passage a^4, the arm or tip b provided with a gas-outlet passage, the gas-passage b^4 connecting the said gas-outlet passage with the chamber a^3, a valve movable in the passage b^4, and the thermostatic strip B secured at one end to the tip or arm b and at its other end to the said valve, and a removable covering for the thermostat B secured to the said tip or arm, substantially as described.

6. In an automatically-operated gas-burner, the combination of the following instrumentalities, viz: a casing provided with a par-

tition-wall forming chambers on opposite sides thereof, a passage connecting said chambers, a second gas-passage in the said partition-wall adapted to communicate with only one of said chambers, a valve to close said second passage, an arm or tip extended from the casing at an angle thereto and provided with a gas-passage communicating with the valve-controlled passage in the partition-wall, a gas-outlet in the said arm or tip connecting the passage therein with the atmosphere, and a thermostatic strip secured at one end to the tip away from the gas-outlet therein and having its other end connected to said valve, substantially as and for the purpose specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDWARD HEYMANN.
FRANK W. HEYMANN.

Witnesses:
JAS. H. CHURCHILL,
J. MURPHY.