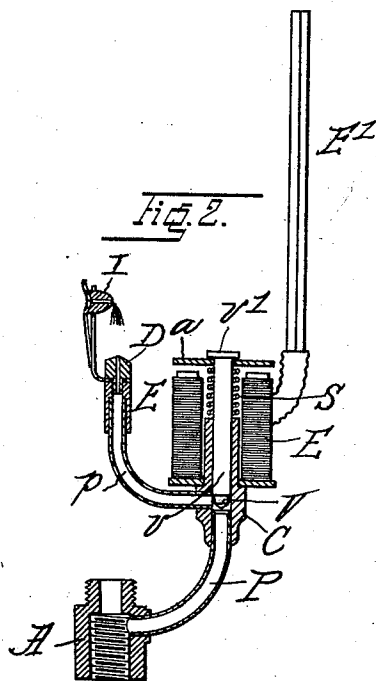
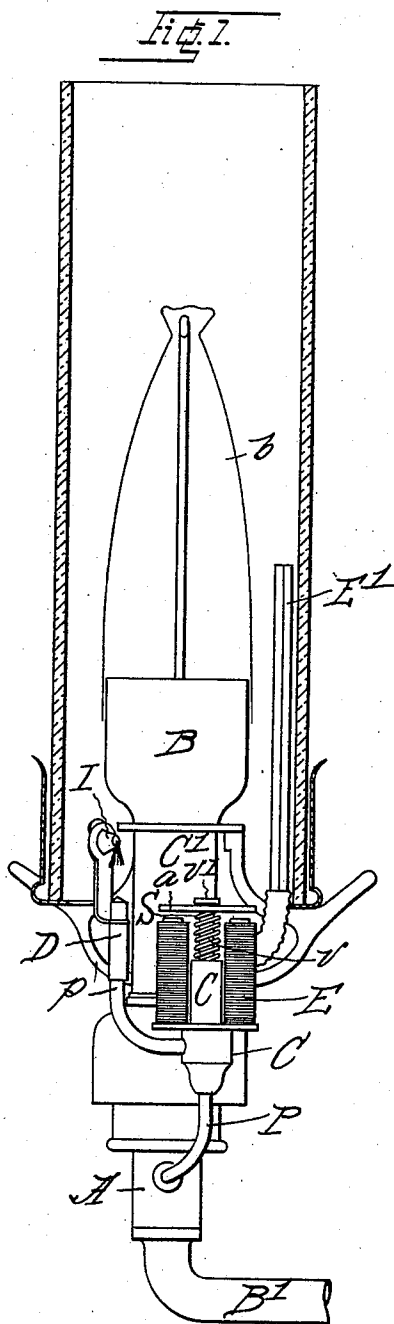


(No Model.)

J. M. CANELLOPOULOS.
SELF IGNITING GAS BURNER.

No. 582,267.

Patented May 11, 1897.



Witnesses:
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By *[Signature]*
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UNITED STATES PATENT OFFICE.

JEAN M. CANELLOPOULOS, OF PARIS, FRANCE.

SELF-IGNITING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 582,267, dated May 11, 1897.

Application filed March 9, 1897. Serial No. 626,656. (No model.) Patented in Luxemburg December 18, 1896, No. 2,700.

To all whom it may concern:

Be it known that I, JEAN M. CANELLOPOULOS, chemist, a subject of the King of Greece, residing at Paris, in the Republic of France, have invented certain new and useful Improvements in Self-Lighting Gas-Burners, (for which Letters Patent have been obtained in Luxemburg, No. 2,700, dated December 18, 1896;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has relation to self-lighting gas-burners in which platinum black or sponge, together with a platinum wire heated to incandescence by the black when brought in contact with an illuminating or heating gas and air, is used as an igniter for the gas issuing from the main burner.

It is well known that platinum-black when subjected to the action of a flame, whether the igniting or main-burner flame, is soon converted into a carbide and becomes useless as a heating medium for the platinum wire.

My invention has for its object to provide simple and efficient means whereby the platinum-black, or, generally speaking, the igniter, is shielded from the action thereon of the heat of the main-burner flame as well as that of the igniting-flame. To shield the igniter from the action of the main-burner flame, I so locate the same relatively to the main burner as not to be influenced by the heat of the flame of such main burner; and to shield such igniter from the action of the igniting-flame I provide means for automatically cutting off the supply of gas to the igniter after the gas issuing from the main burner has become ignited.

In an application for patent filed by me September 29, 1896, Serial No. 607,340, I have shown and described appliances whereby the object sought is effected, such means consisting, broadly, in closing a normally open valve in the passage that supplies gas to the igniter by means of an expansible substance, solid or fluid. I have since discovered that equally

good results can be obtained by other means, as hereinafter described.

In order that my invention may be fully understood, I will describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 shows as an example and by a sectional elevation an incandescent burner with my improvements applied thereto, and Fig. 2 is a sectional elevation of the igniter and automatic cut-off connected with the gas-supply pipe for the main burner.

In the drawings, B' indicates the gas-supply pipe; B, the burner of a well-known type of so-called "incandescent" burners—that is to say, one having an incandescent mantle *b* of the Welsbach type, for instance. The igniting attachment consists of a thimble A, screw-threaded interiorly and having an exteriorly-screw-threaded extension *a*, so as to adapt it to be screwed to the supply-pipe B' and the burner B, respectively.

To the thimble A below its exteriorly-screw-threaded extension is tapped a small pipe P, to which is secured a valve-casing C, said pipe having at its outlet a valve-seat for a cone or ball valve V, formed on or rigidly connected to a valve-stem *v*, that has motion in a tubular extension of the valve-casing C, the said stem being headed or provided with an enlargement *v'* at its upper end. On the valve-stem *v* is loosely mounted an armature *a*, yieldingly supported out of contact with an electromagnet E by a spring S, and to said electromagnet is connected a thermo element E', that extends into the field of influence of the heat of the flame or incandescent body *b* of the burner B. From the valve-casing C above the valve-seat outlet of pipe P leads a small pipe *p*, terminating in a jet-nozzle D, and to said pipe is secured the holder for the igniter body I, as shown, at a considerable distance below the burner-flame or incandescent body *b*—namely, near the mixing-chamber C' of the burner B—that is to say, the chamber wherein air is admitted to and mixed with the gas coming from pipe B', said chamber emitting, therefore, but little heat.

In Fig. 2 I have shown the valve in its normal or unseated position under the action of the spring S. If the controlling-cock of the

gas-supply pipe B' is open, gas will flow to the burner B and through pipe *p* to the igniter I, which may be a piece of platinum black or sponge having a platinum wire embedded therein and projecting therefrom, as usual, the igniter being of course supported in the path of the stream of gas issuing from the igniter-nozzle D, which stream of gas is ignited, and the flame-jet so produced ignites the gas issuing from the burner B. The heat of the burner flame or mantle *b* is communicated to the thermo element E', an electric current being set up whereby the armature *a* is attracted by the electromagnet E, so the valve-stem *v* will fall under its own weight and seat its valve V in the outlet of pipe P, thereby cutting off the supply of gas to the igniter-pipe *p*. This condition of course prevails so long as the burner is in operation, but should the burner flame become accidentally extinguished the thermo element E' will cool down, and as no electric current will then be set up the armature *a* will be free to move the valve-stem *v* upward under the action of the spring S, thereby unseating the valve V and admitting gas to the igniter-pipe *p*, whereby the gas issuing from the burner will again be ignited.

From the above description it will be seen that the igniter and automatic cut-off therefor constitutes an attachment that can be connected with any gas-supply pipe and burner. The construction of the device is simple, durable, and efficient in its operation, consequently not very expensive, and not liable to become inoperative.

I do not desire to limit my invention to the construction of the device as described, as it is obvious that it may be connected with the burner or with the gas-supply by tapping the pipe P directly thereto, while the thermo element may be arranged relatively to the electromagnet in any other manner, provided it is located within the influence of the heat from the burner-flame. Inasmuch as the pressure in the branch pipe P is comparatively very slight when the gas is turned on and is flowing to the burner B, a valve-stem and valve sufficiently light to be held in its retracted or open position by a comparatively weak spring can be used in conjunction with a single thermo element, as the current set up thereby will excite the electromagnet sufficiently to compress such spring and allow the valve to drop to its seat. If necessary, however, a relay may be so arranged as to be actuated by an expansible body to close a battery-circuit, including the electromagnets E, and maintain such battery-circuit closed so long as the said expansible body is influenced by the heat of the burner-flame or incandescent mantle *b*.

I am aware that it has been proposed to shield the igniting body (platinum-black) from the more or less intense heat of the burner-flame and at the same time provide

means for admitting the gas to the igniter first and after ignition of the igniter-jet to the burner, means being also provided to cut off the supply of gas to the igniting body after the gas issuing from the burner has been ignited. In this arrangement the element that controls the flow of gas to the igniter and burner is an expansible body, as a more or less flexible case, which may contain air, gas, or a liquid; but this body is to be influenced by the heat of the igniter-flame and not by the heat of the burner-flame. Inasmuch as the igniting body must be sufficiently removed from the influence of the heat of the burner-flame, and in view of the fact that the igniting-flame is but a small jet-flame, emitting but a comparatively small amount of heat, and in view of the further fact that the controlling expansible body must necessarily be remote from the burner-flame and more or less remote from the igniter-flame and must be inclosed in a casing through which the gas flows from the supply-pipe to the burner and igniter, a considerable time will elapse before said expansible body becomes sufficiently heated to unseat the valve that normally closes the gas-passage leading from the supply-pipe to the burner and to seat the normally-unseated valve and cut off the supply of gas from said supply-pipe to the igniter. As is readily seen, this is a very serious disadvantage, which is effectually avoided by my invention.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a self-lighting gas-burner, the combination with the gas-supply pipe, the burner, the igniter, and passages communicating with said pipe, burner, and igniter, respectively; of an electrically-operated and normally open valve in the passage leading to the igniter, controlled by the heat emitted at the burner to close said valve under the influence of such heat upon the electric devices, for the purpose set forth.

2. In a self-lighting gas-burner, the combination with the gas-supply pipe, the burner, the igniter, and passages communicating with said pipe, burner, and igniter, respectively; of a normally open valve in the passage leading to the igniter, an electromagnet, its armature, a retracting-spring for said armature and the valve to hold the latter open, and means controlled by the heat emitted at the burner and controlling the operation of the armature to close said valve under the influence of such heat, for the purpose set forth.

3. In a self-lighting gas-burner, the combination with the gas-supply pipe, the burner, the igniter and passages communicating with said pipe, burner and igniter, respectively; of a normally open valve in the passage leading to the igniter, an electromagnet, its armature, a retracting-spring for said armature and the valve to hold the latter open,

and a thermo element in circuit with said electromagnet and exposed to the heat emitted at the burner, for the purpose set forth.

4. In an igniter for self-lighting gas-burners, the combination with a gas-jet nozzle, a gas-supply passage leading thereto, a self-igniter in the path of the gas issuing from said nozzle and a gravity-valve adapted to close said passage; of an electromagnet, its armature loose on the stem of the valve, a spring acting on the armature and valve-stem to hold said armature retracted and the valve normally open, and a thermo element in circuit with the electromagnet, for the purpose set forth.

5. A self-lighting attachment for gas-burners, consisting of an interiorly-threaded coupling having an exteriorly-threaded extension for connection with a gas-supply pipe and burner respectively, a valve-casing, a pipe

connected thereto and to said coupling, a jet-nozzle, its supply-pipe connected with the valve-casing, and a self-igniter supported from said pipe in the path of the gas issuing from its nozzle; of a gravity-valve adapted to cut off the flow of gas to the jet-nozzle, said valve provided with a headed stem, an electromagnet, its armature loose on said valve-stem, a retractor-spring for said armature and a thermo element in circuit with the electromagnet, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name in the presence of two subscribing witnesses.

JEAN M. CANELLOPOULOS.

Witnesses:

EDWARD P. MACLEAN,
DAVID T. S. FULLER.