

No. 613,990.

Patented Nov. 8, 1898.

P. GUYENOT.

APPARATUS FOR FREEING, LIGHTING, AND EXTINGUISHING GAS BURNERS.

(Application filed Dec. 18, 1897.)

(No Model.)

Fig. 1.

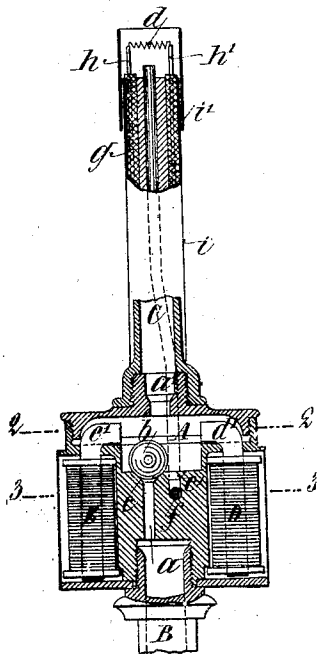


Fig. 4.

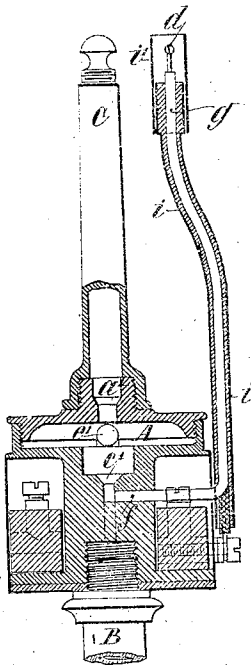


Fig. 6.

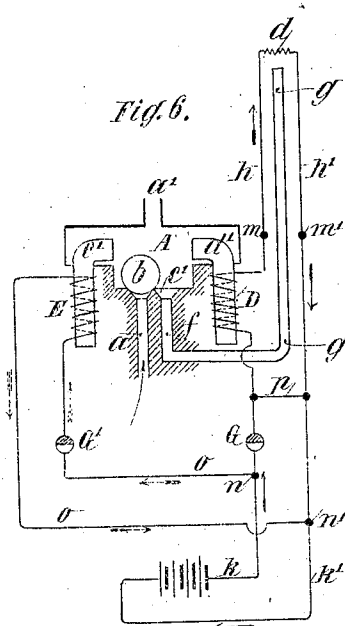


Fig. 2.

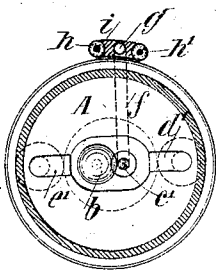


Fig. 3.

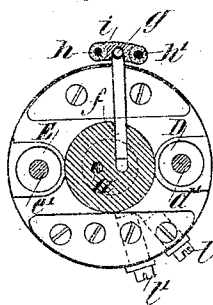


Fig. 7.

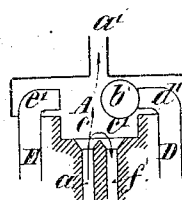


Fig. 5.

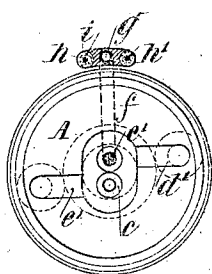
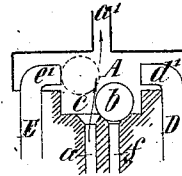


Fig. 8.



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PAUL GUYENOT, OF AIX-LES-BAINS, FRANCE.

APPARATUS FOR FREEING, LIGHTING, OR EXTINGUISHING GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 613,990, dated November 8, 1898.

Application filed December 5, 1897. Serial No. 662,448. (No model.)

To all whom it may concern:

Be it known that I, PAUL GUYENOT, doctor, a citizen of the Republic of France, residing in Aix-les-Bains, (Savoie,) France, have invented certain Improvements in Apparatus for Freeing, Lighting, or Extinguishing Gas-Burners at a Distance by Means of Electricity, (for which I have obtained a patent in France, dated February 25, 1896, No. 254,245, and in Germany, dated March 31, 1896, No. 94,084,) of which the following is a specification.

This invention relates to improvements in controlling apparatus for gas-burners at a distance; and it consists of electrical means for freeing, lighting, and extinguishing such burners.

My invention has for its object to provide an apparatus of the greatest simplicity, producing at the time of freeing or opening of the burner the lighting of the same, and it also prevents all outward escape of gas during the shutting off or closing of the burner.

In this apparatus I use an assistant lighting-tube working in combination with a platinum wire or lighter, and one of its characteristics consists of a ball-valve formed of a sphere, which is caused to pass alternately from the admission-inlet of the gas to the exit leading the gas to the self-lighter.

For a fuller explanation of my invention I refer in the following description to the annexed drawings, on which—

Figure 1 is a vertical section of a self-lighting gas device constructed according to my invention. Fig. 2 is a horizontal section on line 2 2 of Fig. 1. Fig. 3 is another horizontal section on line 3 3 of the first figure. Fig. 4 is another vertical section made at right angles to that of Fig. 1. Fig. 5 is a modification of one of the portions of the apparatus shown on Figs. 1 to 4. Fig. 6 is a diagram showing the arrangement of the self-lighting device in an electrical circuit obtained, for example, from an electrical battery. Figs. 7 and 8 are diagrams explanatory of the working of the apparatus.

The apparatus shown by Figs. 1 to 4 consists of a closed chamber A, communicating in one direction by means of a tube *a* with any suitable service-pipe B and in the opposite direction with any suitable gas-burner C by a channel *a'*. In this chamber is a cap *b*,

formed, for instance, of a ball or sphere which can fall either into the seat *c* at the end of the tube *a* to close the same or into a recess *c'*, arranged at the side of the seat *c*, so as to free the before-mentioned pipe *a*. From the recess *c'* a pipe *f* is continued to a small tube *g*, placed vertically at the side of and approaching the burner C almost at the same level. Above the upper opening or the outlet of this tube *g* is a platinum wire or bridge *d*, joining two electrical wires or cables *h* and *h'*, suitably insulated and connected with the said tube *g* in a metallic sheath or casing *i*, surmounted by a guard or socket *i'*, rising above the opening of the tube *g* and the platinum wire *d* to form around them a sort of protective chamber, closed, except at the top, to keep the platinum wire from burning in contact with the air.

The movements of the ball-valve *b* are obtained by the attraction of two electromagnets D and E, arranged in such a manner that their respective cores project into the interior of the closed chamber A and are more or less in line with the seat *c* and the recess *c'*. The one, D, when magnetized is intended to draw the ball-valve *b* toward the recess *c'*, while the other, when magnetized, attracts the said ball-valve *b* toward the seat *c*. These two electromagnets or bobbins D and E are preferably arranged parallel to the gas-admission inlet *a*, and between them are the different terminals, &c.; necessary to the joining and conduct of the wires or electric cables. These joints are indicated by the diagram Fig. 6.

The wire *k*, leading from one of the poles of the source of electricity, extends to the bobbin D, passing the terminal *l*, on which bobbin it is wound. Thence it is connected at *m* to the wire *h* of the platinum bridge *d*. The wire *k'*, leading from the opposite pole, is connected at *m'* to the wire *h'* of the platinum bridge *d*, passing by the terminal *l'*. From a given part *n* of the wire *k* another wire *o* branches off, leading to and being wound around bobbin E and connected at *n'* to the wire *k'*.

It will be remarked that the same source of electricity will send a current into the bobbin D or into the other, E. For this purpose a commutator or a switch G is placed at a

point situated between the bobbin D and the point of junction *a*, and another commutator or switch G' is placed at any suitable position in the wire *a*. These two commutators or switches are of any suitable system or pattern and maintain in due course the circuit opened for the bobbin D, as also for the bobbin E.

Suppose the apparatus in the position of rest, the ball or sphere *b* being situated on the seat *c*, Figs. 1 and 6, and see how the operation of freeing the burner and lighting it is performed, as also the closing and extinguishing of the same.

When it is desired to free the burner and light the gas then escaping therefrom, the commutator or switch G is actuated in such a manner as to allow current from the battery to be transmitted to the bobbin D and into the platinum bridge or wire *d*. This passage of the current is shown by arrows on Fig. 6. Under its influence the cord *d'* is magnetized and attracts the sphere *b*, which remains adhering thereto, and the platinum wire *d* is rendered incandescent. Under these conditions, Fig. 7, the pipe *a* is free and gas proceeds to the main burner C, but at the same time a certain quantity passes into the pipe *f*, and consequently into the tube *g*. The gas escaping from this tube is lighted by the incandescent platinum wire and acts as a lighting-burner for the same purpose as a by-pass to in its turn light the gas escaping from the main burner C. Once the gas of this latter is lighted, this taking place practically instantaneously, the commutator or switch G is suitably actuated to cut off the current, and the core *d'*, being now demagnetized, allows the sphere *b*, Fig. 8, to fall into the recess *c'*, situated underneath the said sphere, thus closing the pipe *f*, communicating with the lighting-tube *g*. This auxiliary lighting arrangement is extinguished and the platinum wire *d* ceases to be incandescent, while the burner C continues lighted, the pipe *a* remaining free.

To close and extinguish the burner, the switch G' (or commutator) is actuated in such a manner as to cause the current to pass around the bobbin E, and under the influence of the current the corresponding core *e'* is magnetized and attracts the ball *b*, which adheres thereto until the commutator or switch G' is suitably operated to cut off the current. The sphere then falls down and returns to the seat *c*, preventing the escape of gas. As a modification of the apparatus the two cores *e'* *d'*, the seat *c*, and the recess *c'* need not be placed in line, but, on the contrary, may be arranged as shown on Fig. 5. These modifications allow the dimensions of the appara-

tus to be reduced to a minimum. It is to be understood that the ball or sphere *b* may be made of any suitable material which will be attracted to the cores of the magnets when these latter are magnetized. Preferably I make use of an ordinary steel ball.

When several burners are mounted in a row and lighted from the same source of electricity, two switches or commutators G and G' are sufficient for working; but it is convenient to connect in each apparatus the wires *k* and *k'* by a suitable bridge or wire *p* of greater resistance than the platinum bridge *d*, along which bridge *p* the current would pass in case the platinum wire or bridge *d* of one of the lighting-burners should break from any cause. In this manner the current would pass to the other burners, and only a single main burner would be disabled or put out of service.

I claim as my invention—

1. An apparatus for freeing and lighting gas-burners having a valve-chamber, a lighting-tube, a gas-supply tube, outlet-passages from said valve-chamber to the burner and lighting-tube, and a magnetically-operated ball-valve, controlling said passages, as and for the purpose described.

2. A gas-burner having a valve-chamber, a lighting-tube and a burner-tube leading from said chamber, a ball-valve to control said tubes, magnetic means in said chamber to control the valve, a wire at the outlet of the lighting-tube adapted to be heated by a flow of current through it and means external to the burner to free the gas and light the lighting-tube, thereby igniting the burner, and means for closing the lighting-tube after the burner has been lighted, as and for the purpose described.

3. An apparatus for freeing and lighting gas-burners having a burner-tube, a lighting-tube, and a platinum wire, with a guard forming a chamber around the wire closed except at the top to keep the wire from burning in contact with the air, as set forth.

4. An apparatus for freeing and lighting gas-burners, having a burner-tube and a lighting-tube and a magnetically-operated ball-valve so arranged as to first admit gas to both tubes and after lighting the burner-tube cut off the gas from the lighting-tube, substantially as described.

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

PAUL GUYENOT.

Witnesses:

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EDWARD P. MACLEAN.