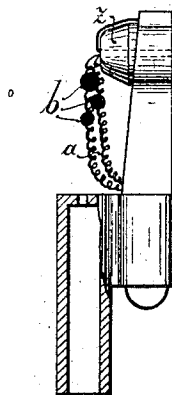


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H. SCHIMMEL.
MEANS FOR AUTOMATICALLY LIGHTING GAS.

APPLICATION FILED DEC. 9, 1897.



Witnesses
Hugh J. Willoughby
Leonard Edmund Haynes

Inventor
Hermann Schimmel
per
Herbert Seftin Jones
Attorney.

UNITED STATES PATENT OFFICE.

HERMANN SCHIMMEL, OF CHARLOTTENBURG, GERMANY, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO GERMANTOWN REAL ESTATE, DEPOSIT AND
TRUST COMPANY, TRUSTEE, OF PHILADELPHIA, PENNSYLVANIA, A
CORPORATION OF PENNSYLVANIA.

MEANS FOR AUTOMATICALLY LIGHTING GAS.

No. 825,764.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed December 9, 1897. Serial No. 661,296.

To all whom it may concern:

Be it known that I, HERMANN SCHIMMEL, a subject of the German Emperor, residing at Charlottenburg, Germany, have invented certain new and useful Improvements in Means for Automatically Lighting Gas, of which the following is a specification.

This invention has reference to that kind of self-igniters for gas which by their own action grow hot when a stream of gas passes over them and which render a fine wire of platinum incandescent, so that it lights the gas. In employing this kind of self-igniters it sometimes occurs that the igniting-wire is not heated enough by the self-heating body so that it can light the gas.

This invention now consists of a preparation of the igniting-wires by which it is caused that the wires become incandescent even in those cases when the heat communicated to them is but small.

The invention takes advantage of the fact that platinum and other substances used for preparing self-igniters grow hot by their own action even in a stream of gas of a very low temperature when they are in a very finely divided form—named “platinum-black” or “platinum-mohr”—while platinum of a less-finely-divided form—named “platinum sponge”—heats itself only in a stream of warmed gas or when the platinum sponge is warmed itself. Now the platinum in its finest form—named “platinum-black” or “platinum-mohr”—must be produced in the pores of a porous material, as is shown by Mr. Duke in his specification No. 554,249 of the year 1896, in order to prevent it from coalescing to platinum sponge, and thus becoming unfit for lighting gas. This is the reason why it is impossible to connect the igniting-body with the igniting-wire so intimately that the heat of the igniting-body is transmitted in every case in such a degree that the gas shall be ignited. On the other hand, there is no difficulty in producing platinum sponge on the igniting-wires themselves, so that quite an intimate connection between the sponge and wires exists. Regarding these circumstances it will be advantageous, and that is the object of this invention, to prepare the igniting-wires near the

igniting-body with a small knob or several small knobs of platinum sponge.

Instead of platinum sponge any other substance may be employed which in a stream of gas becomes hot by its own action when it is somewhat warmed. Even platinum-black may be employed not only for the igniting-body, but also for the small knobs on the wire. However, the little portions of platinum-black fixed on the igniting-wire would in a short time be coalesced to platinum sponge, so that the effect would be the same as in the case of employing platinum sponge directly. When employing igniting-wires of this kind, the process of igniting will be as follows: First, the igniting-body containing platinum-black will grow hot when a stream of gas passes over it. The heat of the igniting-body will partially be transmitted to the igniting-wire, and the heat thus transmitted to the wire, though it is, perhaps, sometimes not sufficient to render it incandescent, will in every case warm the wire to such a degree that the small knob or knobs of platinum sponge will be preliminarily warmed and then be capable of growing hot by their own action in the stream of gas. Now the heat of these auxiliary ignition devices, which are directly fixed to the igniting-wires, will not fail in warming the igniting-wires to such a degree that they become incandescent and light the gas. It is obvious that the auxiliary ignition devices can be very small without reducing the effect. It is only necessary that the surface of the igniting-wires near the igniting-body be roughened a little by a thin layer of platinum sponge, for this thin layer of platinum sponge heats itself in a stream of gas quite in the same manner as a big knob of platinum sponge. In employing the auxiliary ignition devices according to this invention the lighting of the gas would also take place if the igniting-wires should not become incandescent, for platinum sponge possesses by itself the property to light a stream of gas when it is somewhat warmed, and thus rendered capable of growing hot by its own action. Therefore the hereinbefore-described method of preparing the igniting-wires of self-igniters renders it possible to make the same out of any other refractory

material instead out of platinum—for example, out of asbestos. In this case the wires or refractory threads connecting with the igniting-body are not properly igniting-wires, but only serve for holding the auxiliary ignition devices, which latter in this case have their heat transmitted to them by radiation from the igniting-body.

In carrying out my invention I preferably take an igniter of the well-known kind to ignite the gas—for example, the igniter of Mr. Duke, above referred to—consisting of an igniting-body containing platinum-black, having connected with it a simple wire of platinum. The igniting-wire will now be treated with a solution of a salt of platinum or of another metal of the platinum group—say chlorid of platinum—in such a manner that a drop or two adheres to the wire near the igniting-body. This being done, the solution adhering to the igniting-wire will be evaporated and the remaining salt of platinum reduced to platinum.

When employing chlorid of platinum, it is sufficient to heat the igniting-wire. For this purpose it is advantageous to place the igniter in a stream of gas, so that it heats itself by its own action. Then the fluid evaporates and the chlorid of platinum is reduced to platinum only by the action of the heat. The platinum originating from the reduction of the salt of platinum has the form of platinum sponge and is fixed on the igniting-wire or refractory thread, so as to be capable of being warmed, as above described.

In order to clearly show the object of this invention, I have illustrated the same in the accompanying drawing, the figure showing an igniter the igniting-wires of which are furnished with little igniting-knobs in accordance with this invention.

In the drawing the letter *z* designates the principal igniting-body; *a* represents the igniting-wires, and *b* represents the little igniting-knobs fixed upon the igniting-wires. With respect to those parts of the devices herein illustrated—namely, the relatively large knobs or balls *b* and the part *z*—it will be further seen that they can be regarded as being two autoheating elements, one of which is capable of generating (through the action of the occluded and the impinging gases) a relatively low heat and the other of which is capable of generating by the action of the same gases a relatively high heat, both of these bodies being of a relatively large diameter—that is, constructed in masses of appreciable size and to be contradistinguished from thin films or minute layers on reticulated fabrics, such as have been proposed by others and which I have found to be inefficient for the purposes aimed at. When two such relatively large autoheating bodies are employed, they can be arranged so as to deliver heat from one to the other in the way

described and to such an extent that the ignition of the gas shall occur very quickly after the gas is first delivered, whereas with those devices which have been heretofore proposed to have an auxiliary or secondarily-acting heater of the sort referred to considerable time necessarily elapses and much gas escapes before that part which is expected to act as an auxiliary heater has been raised in temperature sufficiently to effect the ignition of the gas.

My device can be readily distinguished from the old and common self-lighters, which comprised only a body of primary heating material, together with one or more hard metallic platinum wires connected to the heater, for in such earlier lighters the second body (the wire) is not an autoheating device in the sense herein intended, but merely a conductor for carrying and distributing the heat that is generated by the primary body.

What I claim, and desire to secure by Letters Patent, is—

1. An igniting device for gas-burners consisting of the combination of a block or body adapted to become hot in a stream of gas, igniting-wires fastened to said block, and platinum sponge on said wires, and directly carried thereby independently of other support, whereby the heat conducted to said platinum-sponge and the heat generated thereby are prevented from dissipating by conduction and is caused to radiate into the said stream of gas, substantially as set forth.

2. An igniting device consisting of a self-heating block or body containing platinum-black in contradistinction from platinum sponge, an igniter consisting of a ball-like body or knob in contradistinction from a film of platinum sponge immediately adjacent to the heating-body and a refractory support for said igniting-ball.

3. A self-igniting device for gas, containing two autoheating elements, substantially as set forth, one being a body of platinum-black in contradistinction from platinum sponge adapted to generate a relatively low heat when impinged upon by the gas, and the other being a body of platinum sponge adapted to generate a relatively high heat when impinged upon by the same gas, both of said bodies having relatively large diameters and adapted to deliver heat one to the other, as described.

4. A self-igniting device for gas substantially as set forth, having two autoheating bodies connected together by a heat-conducting wire of platinum, one being a body containing platinum-black in contradistinction to platinum sponge and adapted to generate a relatively low heat, and the other being a body of relatively large diameter containing platinum sponge adapted to generate a relatively high heat, and both said bodies

being arranged to deliver heat from one to the other, substantially as set forth.

5 5. A self-igniting device for gas, consisting of a porous body containing a preparation adapted to generate a relatively high heat when exposed to the gas at a moderate temperature, another body adapted to generate a relatively high heat only when heated and

exposed to the gas, and a refractory connection between such bodies, substantially as set forth.

• HERMANN SCHIMMEL.

Witnesses:

L. TELL,
A. HOFFMANN.