

No. 670,334.

Patented Mar. 19, 1901.

A. SIMONINI.
GAS LIGHTER.

(No Model.)

(Application filed May 28, 1900.)

FIG. 1

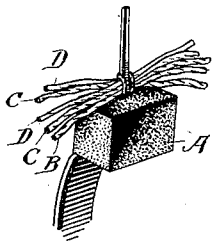


FIG. 2

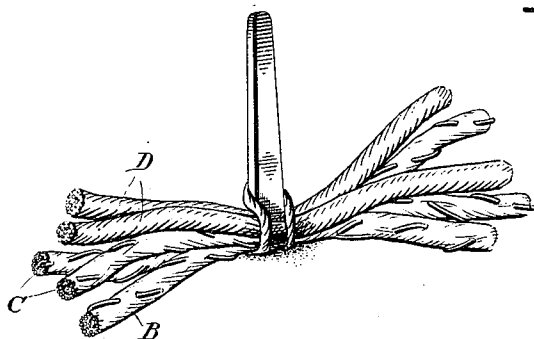
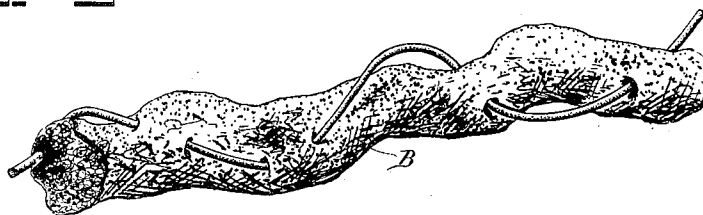


FIG. 3



WITNESSES

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UNITED STATES PATENT OFFICE.

ANGELO SIMONINI, OF BROOKLYN, NEW YORK.

GAS-LIGHTER.

SPECIFICATION forming part of Letters Patent No. 670,334, dated March 19, 1901.

Application filed May 28, 1900. Serial No. 18,276. (No model.)

To all whom it may concern:

Be it known that I, ANGELO SIMONINI, a subject of the Emperor of Austria-Hungary, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Gas-Lighters, of which the following is a specification.

My present invention pertains to an improved lighter for gases, the construction, composition, and operation of which will be hereinafter set forth, reference being had to the accompanying drawings, wherein—

Figure 1 is a perspective view of the igniter complete; Fig. 2, a similar view showing the threads or strands thereof, and Fig. 3 a perspective view of one of the strands.

The primary object of my present invention is to produce an active and stable self-igniter for gases, while the specific object is the production of a highly superior igniter proper and also a similar intermediate heater.

The invention in its breadth comprises a preliminary heater of any suitable form and a secondary heater and igniter consisting in part or in whole of threads or webbing or other fibrous bodies impregnated with a solution of rare earth or earths, together with platinum chlorid or any metal of the platinum group. The percentage of the component parts varies with its use, the secondary heater having a high percentage of platinum chlorid—say from ten to twenty-five per cent.—whereas in the case of the igniter the percentage of platinum present is quite low, not exceeding, say, one and one-half per cent., and in many cases may be lower.

The effect of platinum chlorid mixed with rare earth is as follows, the mixture being absorbed by a fibrous body and afterward ashed or burned out: An addition of twenty-five per cent. or more of platinum chlorid to the rare earth enables the combination to produce a glow if placed in the path of mingled air and combustible gas. If less than ten per cent. of platinum chlorid is used the combination does not produce a glow unless preliminarily heated. Lessening the percentage of platinum chlorid to one per cent. or to one-half of one per cent. it will be found that the glow, though traveling slower, becomes brighter and the temperature much higher,

and in the use of ninety-nine and one-half per cent. of thorium nitrate and one-half of one per cent. of platinum chlorid the compound will readily ignite the gas if preliminarily heated.

Instead of thorium nitrate I may use other rare elements—as, for instance, zirconium nitrate, lanthanum nitrate, or a mixture of two or more nitrates—a very effective mixture for an igniter consisting of ninety-eight and one-half per cent. thorium nitrate, one per cent. cerium nitrate, and one-half of one per cent. platinum chlorid.

In carrying out my invention I make use of a preliminary heater—such, for instance, as a pill or pellet A, composed mainly of platinum black, which is capable of and does glow when placed in the path of mingled air and gas, as is well understood.

A secondary or intermediate heater is built up in the following manner: A thread B, having woven or otherwise secured in it a platinum wire, is treated with a solution of thorium nitrate and platinum chlorid, the proportions varying from seventy-five to ninety per cent. of thorium nitrate and from twenty-five to ten per cent. of platinum chlorid. In connection with the thread so treated there are employed two or more threads C, having platinum wire embodied in them, which are impregnated with a solution of platinum chlorid alone. It is manifest that after ashing these threads the platinum wire is left covered by a coating of spongy or porous platinum.

The igniter proper is composed of two or more threads D, which are treated with a solution comprising approximately thorium nitrate ninety-eight and one-half per cent., cerium nitrate one per cent., and platinum chlorid one-half of one per cent. The threads thus treated are secured together in conjunction with the preliminary heater A, the whole being supported or carried by any suitable device which will properly hold them in the path of the issuing gas, as is well understood. The threads are of course ashed, changing the nitrates into oxids, as is usual.

The operation of the lighter thus described is as follows: The preliminary heater A glows and transfers the glow to the thread B, which, owing to the high percentage of platinum

chlorid added to the rare earth, glows from end to end at a relatively low temperature, transmitting said glow in turn to the threads C, consisting of platinum wire and very porous metallic platinum. Said threads C glow at a somewhat higher temperature than threads B. The glow from threads C is transmitted to and taken up by the threads D, which become highly incandescent and ignite the gas. It is owing to the relatively low percentage of finely-divided platinum present in said threads D that they become so highly heated. From this it will be seen that there is a gradual building up or accretion of temperature from the preliminary heater through the component parts of the intermediate heater to the igniter. It is also a fact to be noted that where a large percentage of platinum is employed the glow travels quickly from end to end of the thread with a low resultant temperature, while, as in the case of the igniter, where a very small percentage of platinum is present, the temperature is high, but the glow does not travel so fast.

While the composition and arrangement just described give most satisfactory results, still I do not desire to be understood as limiting my invention strictly thereto. In some instances the percentage of platinum chlorid present may be as low as one-fourth of one per cent.

It is to be noted that the lighter herein described is independent of and distinct from any mantle, although it may be used for igniting the combined air and gas passing into a mantle.

Having thus described my invention, what I claim is—

1. A lighter for gas or vapors comprising a preliminary heater; an intermediate heater composed of a body of fibrous material im-

pregnated with a solution of rare earth and platinum chlorid, the platinum chlorid being present in such quantity as to produce a glow when the body is heated, and a second fibrous body carrying or supporting a platinum wire and treated with a solution of platinum chlorid; and an igniter consisting of a fibrous body impregnated with a solution of rare earth and platinum chlorid, the platinum chlorid being present in a percentage not to exceed one and one-half per cent.

2. A secondary heater for lighters for gas and vapors, consisting of a fibrous body impregnated with a solution of rare earth and platinum chlorid, the chlorid being present in a percentage not less than ten per cent.; and a second fibrous body or bodies carrying or supporting platinum wire, which body or bodies are treated with a solution of platinum chlorid.

3. A lighter for gases or vapors consisting of a preliminary heater; an intermediate heater comprising thread B having a platinum wire embedded therein and treated with a solution of thorium nitrate and platinum chlorid in substantially the proportions specified; a secondary heater consisting of threads C carrying or supporting platinum wires, said threads being treated with a solution of platinum chlorid; and an igniter comprising a fibrous body impregnated with a solution consisting substantially of ninety-eight per cent. thorium nitrate, one per cent. cerium nitrate, and one per cent. platinum chlorid.

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

ANGELO SIMONINI.

Witnesses:

GEO. L. WILLIAMS,
P. A. CONSTANTINE.