

No. 712,156.

Patented Oct. 28, 1902.

A. SIMONINI.  
GAS LIGHTING DEVICE.  
(Application filed Feb. 15, 1900.)

(No Model.)

FIG. 1

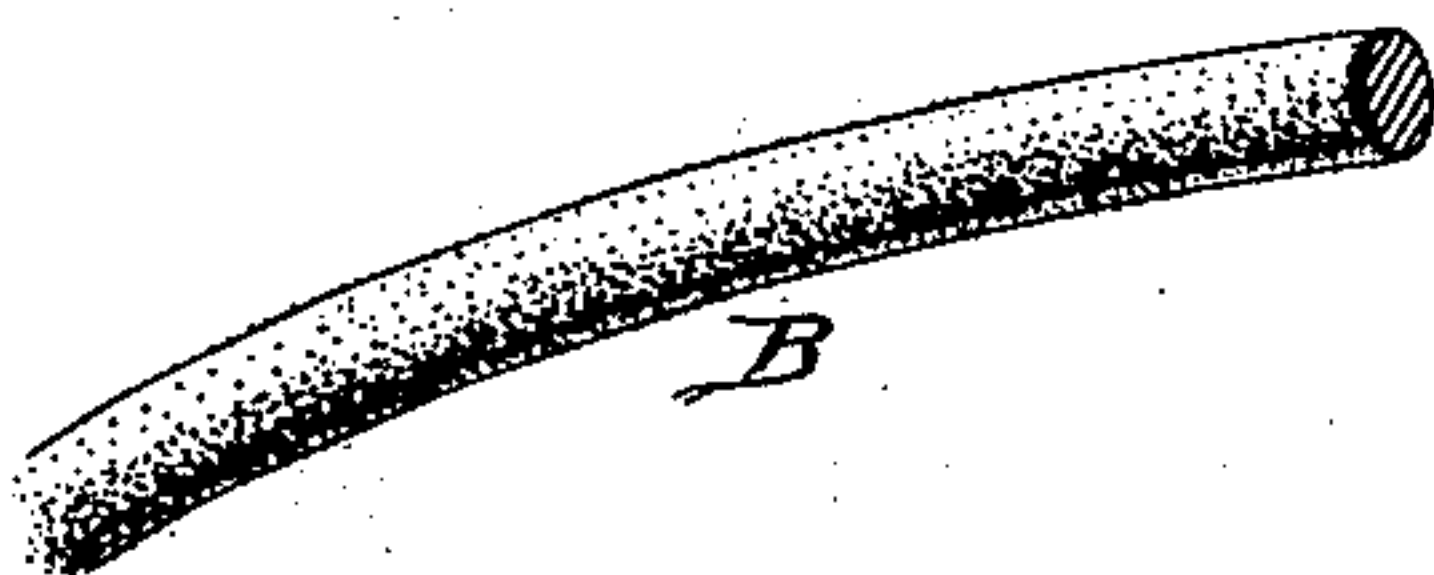


FIG. 2

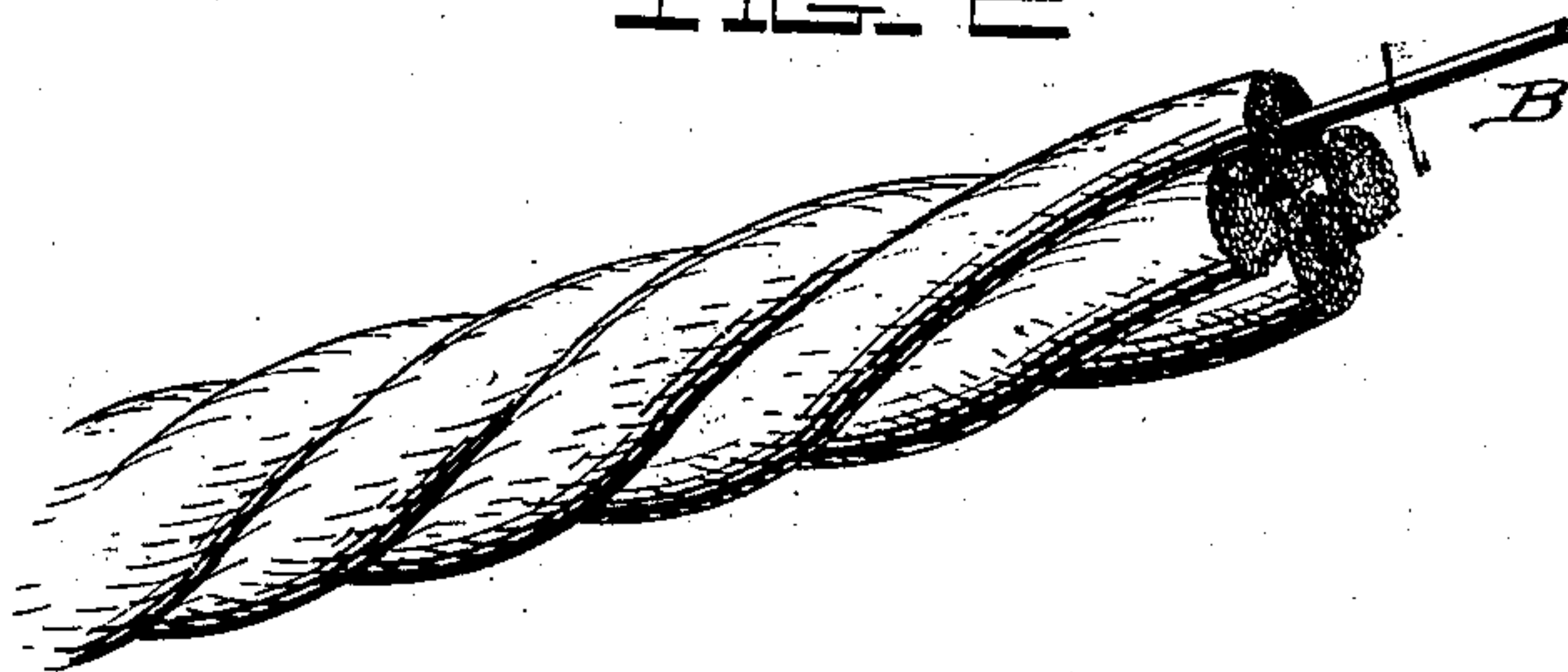
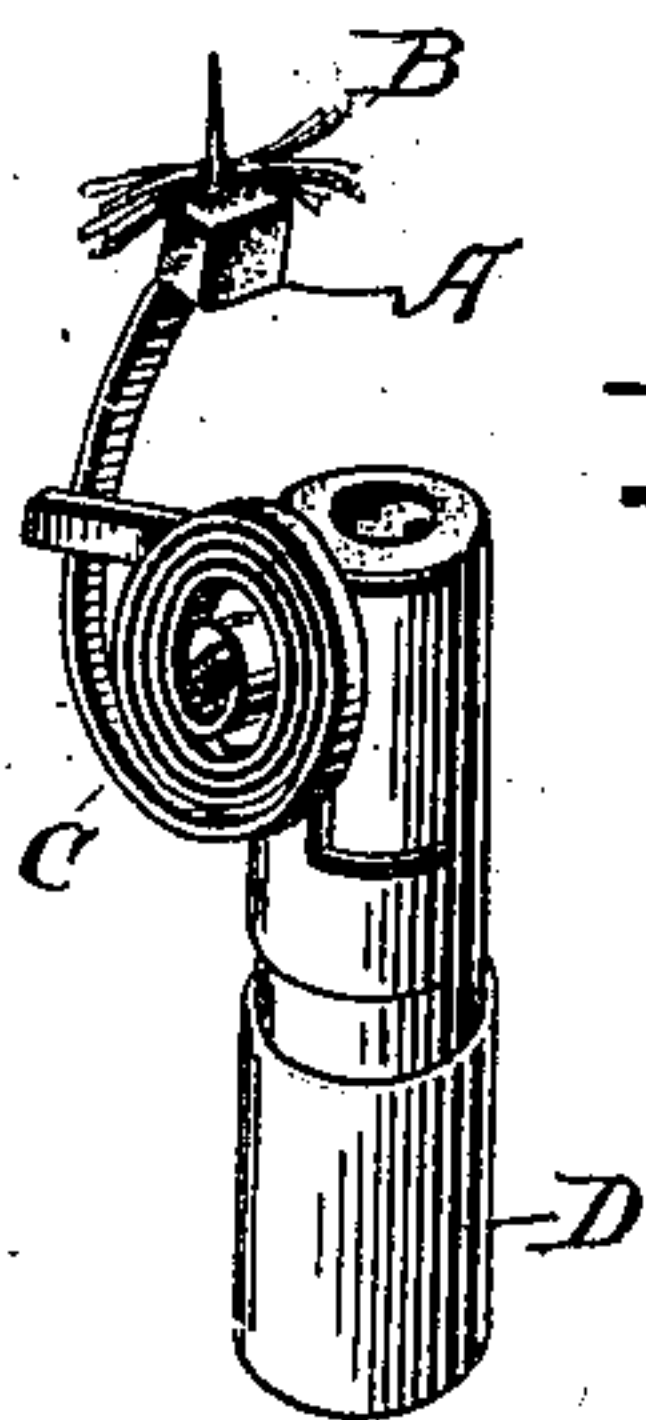


FIG. 3



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## GAS-LIGHTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 712,156, dated October 28, 1902.

Application filed February 15, 1900. Serial No. 5,369. (No model.)

*To all whom it may concern:*

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

My invention pertains to lighting devices for causing the ignition of illuminating gases and vapors; and it consists, essentially, in a wire of platinum or of the platinum group having a rough or porous surface or coating of platinum or metal of the platinum group. This prepared wire is intended particularly as the secondary heater or the igniter of a lighting device comprising a primary and a secondary heater.

The invention is illustrated on a greatly-enlarged scale in the accompanying drawings, in which—

Figure 1 is a perspective view of a wire having the porous surface or coating; Fig. 2, a view representing the wire spun with or into and constituting part of a thread or yarn preparatory to treatment to produce the rough or porous surface or coating; and Fig. 3, a view of a complete lighter, comprising the primary and secondary heater embodying the present invention.

To better explain the present invention or improvement, it may be stated that at the present time igniting devices of this character comprise a primary and a secondary heater, the primary heater adapted to be acted upon at normal temperature by the gas or mingled gas and air and to become sufficiently heated to act upon and prepare the secondary heater, while said secondary heater is of such character that it will not ordinarily and certainly be rendered incandescent by the gas or mingled gas and air, but will do so and reach a far higher degree of incandescence if preliminarily heated to a moderate degree.

In all self-lighters of the class mentioned the preliminary heater involves as an essential part platinum-black or spongy platinum. For secondary heaters, which are, in fact, the igniters, platinum wire has been used, as have also rare earths, with an addition of finely-divided platinum or platinum metal,

the latter applied in the form of a solution of platinum chlorid. Still other igniters or secondary heaters have consisted of rare earths only—as, for instance, a combination of thorium oxid, didymium oxid, and cerium oxid. Of the various types of secondary heaters or igniters platinum wire is the most generally or extensively used; but such wire is unreliable and unsatisfactory, for the reason that it does not readily and certainly take up the glow from the preliminary heater, or, in other words, become sufficiently heated to give it that great avidity for the gas or mingled gas and air essential to its efficient and reliable action as an igniter, or when it does so act it acts but slowly and in a short time becomes wholly incapable of performing its function. I have found after extended experiments and tests that the platinum wire may be rendered exceedingly efficient and prompt in action and that its capacity for so acting may be greatly prolonged or made practically continuous by giving to it a rough or very porous surface or coating of platinum. This porous surface or coating may be produced in a variety of ways, the simplest and most satisfactory being the following: Very small or fine platinum wire is spun with cotton filaments into a thread or yarn, the cotton serving as an absorbent body to hold a solution with which the thread or yarn is subsequently treated. The thread or yarn thus formed is impregnated or saturated with a solution of platinum chlorid and dried. When thus prepared, the thread or yarn is burned or ashed in a Bunsen or other suitable flame or by any sufficient heat, leaving the wire with a coating of very porous platinum, which absorbs oxygen with great avidity. This absorption is so great that it is difficult to determine whether the resulting product of the treatment is a chemical combination of platinum and oxygen, which might be termed a “low oxid” of platinum, for instance, or the oxygen is only mechanically combined with the platinum. Whatever the fact may be as to the nature of the combination, it is definitely known that a porous surface or coating is produced, which absorbs oxygen with remarkable avidity, causing the wire to become promptly incandescent or heated to a very



high degree, in consequence of which it causes ignition of gases and vapors with great promptness and certainty.

While I have above spoken of platinum wire and of platinum chlorid, it is to be understood that the wire may be of any metal of the platinum group capable of withstanding the requisite heat and that the chlorid may be of other metals of the platinum group than platinum itself. In other words, the invention comprehends the use of a wire or filament of metal of the platinum group having a porous surface or coating also of metal of the platinum group. So, too, while I have above described the preferred method of producing the porous surface or coating, it is possible to produce the same in other ways—as, for instance, through electrical deposition or electrolytic action, throwing down a precipitate of platinum or metal of the platinum group.

In Fig. 3 I have shown a complete lighter comprising a primary heater A, a secondary heater B in proximity thereto, and a coiled bimetallic strip C, serving to support the lighter normally in the path of the gas issuing from the burner D, but adapted when warmed or heated by reason of its proximity to the flame to move the lighter out of the path thereof.

A clear distinction is to be observed between a wire of the platinum group the body of which is itself roughened or made porous or which is so treated that a porous surface is produced thereon of metal of the platinum group and the mere deposit of platinum or other metal of the platinum group in a wrap-

ping lying about the wire and liable at all times to be detached therefrom.

So far as I am aware it is broadly new to produce a rough or porous surface upon or in a wire of the platinum group, and by such treatment I am enabled to produce a lighter which is extremely efficient and reliable in action and which is not destroyed or rendered comparatively or wholly worthless through slight jarring or contact.

Having thus described my invention, what I claim is—

1. A lighter for gases and vapors comprising a preliminary heater of any suitable character; and a secondary heater or igniter consisting of a wire of the platinum group having a rough surface of metal of the platinum group.

2. A secondary heater or igniter for gases and vapors, consisting of a wire or filament of the platinum group having a rough surface of metal of the platinum group.

3. In a lighter or heater for gases and vapors, an igniter consisting of a wire of the platinum group having a rough surface of metal of the platinum group.

4. An igniter for gases and vapors consisting of a platinum wire having a rough surface of platinum.

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

ANGELO SIMONINI.

Witnesses:

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