

C. A. PAQUELIN.

APPARATUS FOR AUTOMATICALLY GENERATING AND BURNING
INFLAMMABLE VAPORS.

No. 383,538.

Patented May 29, 1888.

FIG. 3—

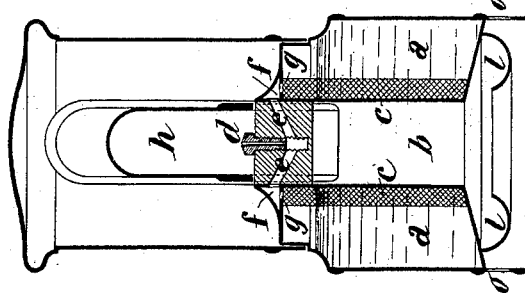


FIG. 2—
1

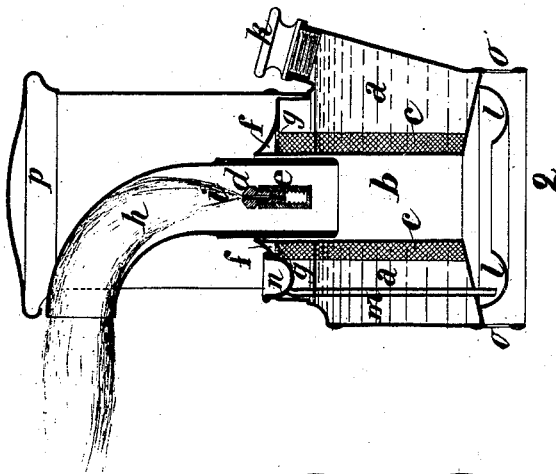
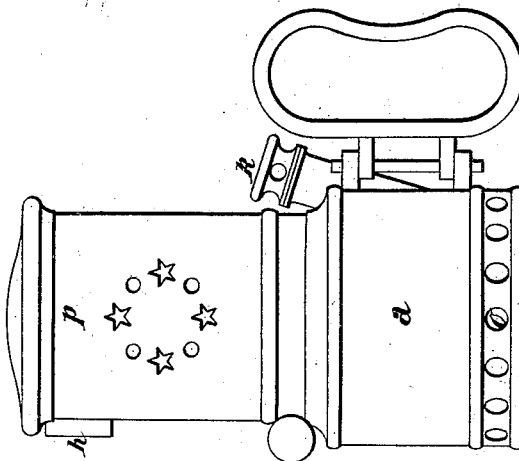


FIG. 1—



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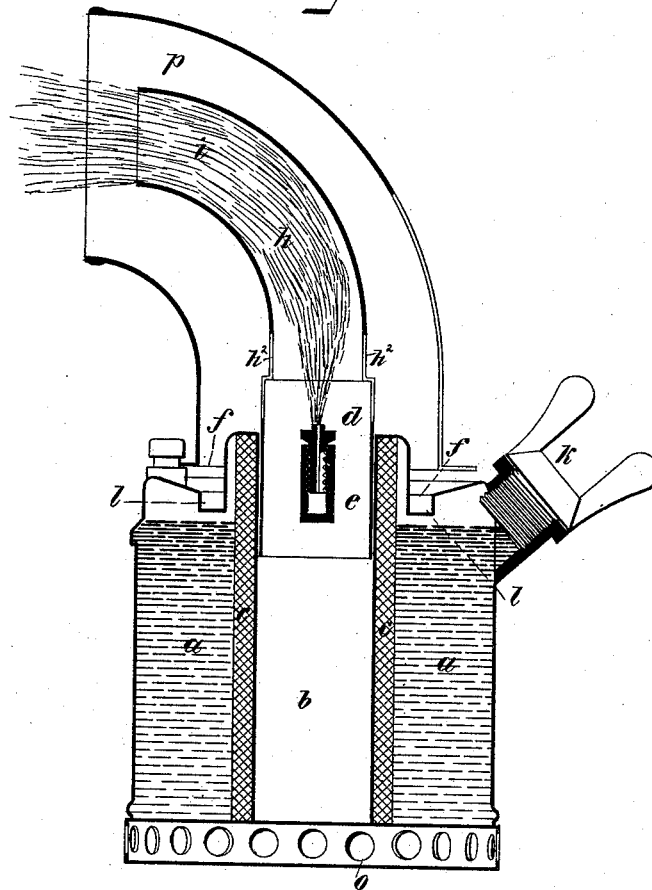
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Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CLAUDE ANDRÉ PAQUELIN, OF PARIS, FRANCE.

APPARATUS FOR AUTOMATICALLY GENERATING AND BURNING INFLAMMABLE VAPORS.

SPECIFICATION forming part of Letters Patent No. 383,538, dated May 29, 1888.

Application filed June 9, 1886. Serial No. 204,591. (No model.) Patented in France May 19, 1886, No. 176,243; in Belgium May 20, 1886, No. 73,203; in Germany May 20, 1886, No. 38,194; in England May 21, 1886, No. 6,859; in Austria-Hungary October 2, 1886, No. 21,522 and No. 52,032; in Spain December 2, 1886, No. 10,168, and in Italy December 31, 1886, XLI, 124.

To all whom it may concern:

Be it known that I, CLAUDE ANDRÉ PAQUELIN, of the city of Paris, France, have invented a new and useful Apparatus for Automatically Generating and Burning Inflammable Vapors, (for which I have obtained Letters Patent in France for fifteen years, dated May 19, 1886, No. 176,243; in Belgium for fifteen years, dated May 20, 1886, No. 73,203; in England for fourteen years, dated May 21, 1886, No. 6,859; in Germany for fifteen years, dated May 20, 1886, No. 38,194; in Austria-Hungary for fifteen years, dated October 2, 1886, No. 21,522 and No. 52,032; in Spain for twenty years, dated December 2, 1886, No. 10,168, and in Italy for fifteen years, dated December 31, 1886, volume 41, No. 124,) of which the following is a full, clear, and exact description.

This invention relates to an automatic blow-pipe apparatus for generating and burning inflammable vapors for the production of high temperatures.

The apparatus may be employed in its simple form for heating kettles, cauters, soldering, branding, and goffering irons, and the like; and it may be combined with other parts so as to form a single apparatus or instrument of which it constitutes the heater. The heat developed by the apparatus may also be utilized for producing light by rendering a refractory material incandescent.

In order that the invention may be more readily understood, I have illustrated an example thereof in the accompanying drawings, and will proceed to describe it with reference thereto.

Figure 1 is an elevation, Fig. 2 a vertical section, and Fig. 3 a similar section taken on line 1 2, Fig. 2, of a lamp constructed according to this invention; and Fig. 4 is a central vertical sectional view of a modification.

The same letters of reference indicate the same parts in all the figures.

The apparatus essentially comprises, first, a closed vessel for the inflammable liquid traversed by a tube open at bottom, and which is preferably central, but may be at one side, the tube being surrounded by a wick or other porous substance, which is immersed in the

liquid contained in the vessel; second, a jet-nozzle within the tube in communication with the space for inflammable vapors generated in the vessel; third, a chimney forming an extension of the tube wherein the gaseous mixture produced by the commingling of the jet of inflammable vapor with an induced current of air is burned, and from which the burning mixture issues with force.

The invention is based on the combination of these several parts, whatever may be the additions made for the purpose of adapting them to the various uses for which they are applicable. This combination permits of obtaining a large surface for heating the combustible liquid, and of utilizing the conductivity of the metal of which the apparatus is constructed, and of employing for the purpose of vaporizing the liquid only the heat concentrated in the chimney without exposing the vessel to the direct heat of a fire, whereby the practical results hereinafter described are obtained.

a is the closed vessel, which may be made of cylindrical or other form; and *b*, the central tube passing up through it and surrounded by porous material, *c*. The jet-nozzle *d* is placed within the tube *b*, near the upper end, and communicates by a duct, *e*, with a chamber, *f*, at the upper part of the vessel *a*. The chamber *f* is separated from the vessel *a* by a diaphragm having perforations *g* to permit the inflammable vapors to pass to the nozzle *d*. This diaphragm may, however, be omitted, the vapors being contained between the top of the vessel *a* and the upper end of the wick or porous body *c*. In Fig. 4 the wick *c* is shown extending into the chamber *f*, the diaphragm *g* being dispensed with.

h is the chimney into which is discharged the gaseous mixture formed by the vapor from nozzle *d* and the air drawn in at the open bottom end of tube *b*, or at any other inlet which may be provided for it. The chimney may be a fixture; but it is preferable to make it separately and fit it upon the cross-tube *e*, carrying the jet nozzle. The vessel *a* is provided with a filling-orifice closed by a screw-plug, *k*, and also with a circular channel or gutter, *l*, at

bottom, for a purpose hereinafter described, into which dips a pipe, *m*, passing down through the vessel *a* and terminating at top in a funnel-mouth, *n*. The apparatus is supported upon a perforated bottom ring, *o*, and the chimney is protected by a cap, *p*.

To use the apparatus, the vessel *a* being filled with inflammable liquid and the plug *k* screwed down tight, a small quantity of petroleum spirit or other inflammable liquid employed in the apparatus is poured into the circular gutter *l* through *n* and *m*, and is ignited beneath the vessel *a* to heat the vessel and start the generation of inflammable vapors, which, rising into space, *f* issue under pressure at the nozzle *d*. By the inductive action of the jet air is drawn through the tube *b*, and the mixture thus formed constituting a forced jet, which ignites of itself in the chimney if a sufficient quantity of priming liquid has been used. The priming liquid in the gutter *l* being now consumed, the apparatus will continue to work automatically until the supply of liquid in vessel *a* is exhausted, this automatic action being due to the heat of the flame *i*, conducted by the metal of which the chimney *h*, tube *b*, and vessel *a* are made to the liquid contained in said vessel and the porous substance enveloping the tube. The vapor is generated as fast as it is consumed at the nozzle *d*, so that the apparatus continues to be supplied.

The apparatus when once started acts with great regularity, and there is no risk of explosion, inasmuch as in the event of the jet-nozzle becoming obstructed the flame would be thereby extinguished.

The several parts of the apparatus may be varied without departing from the invention, and, for example, the container may be made of any form and the tube *b* be either open or closed at bottom, as before explained, the mixing of the air with the inflammable vapor being effected in the latter case at the base of chimney *h* only.

The air may also be introduced partly through the tube *b* and partly through the chimney *h*, in which case there may be holes, *h'*, Fig. 4, in the lower part of *h*. The nozzle *d* may also be placed at any suitable height of

the central tube, but preferably at its upper end, in order that the vessel *a* may not be exposed to the direct heat of the flame, but only to the heat transmitted by the metal. The gutter *l* may also be displaced by one of a similar kind placed at the top of the container *a*, (see Fig. 4,) in which case one or more openings would be required at the base of the chimney for igniting, or the gutter may be entirely dispensed with and the apparatus be heated by placing it on a separate stand.

In order to supply the gutter *l* in the apparatus shown with the exact quantity of petroleum required a drop-bottle or pipette, graduated, if desired, may be provided.

All the accessory parts of the apparatus would vary according to the purpose for which the apparatus is to be used, and the essential parts, consisting in the combination of the container, central tube, nozzle, and chimney, may be applied to all kinds of apparatus—such as soldering, branding, or goffering irons, &c.—and would therefore vary in form and dimensions.

When once started, this apparatus will act with a single flame without any secondary source of heat, and it will also act in any position, whether upright, inclined, horizontal, or even inverted. It admits of using petroleum spirit; but any other liquid-producing inflammable vapors may be employed.

I claim—

1. The reservoir *a*, traversing tube *b*, wick *c* around tube *b*, in combination with the jet-nozzle *d* and chimney *h*, substantially as described.

2. The jet-nozzle *d* in tube *b*, having duct *e*, in combination with chamber *f*, reservoir *a*, and diaphragm having perforation *g*, substantially as herein shown and described.

3. The gutter *l*, pipe *m*, and tube *b*, passing through reservoir *a*, in combination with said reservoir *a*, nozzle *d* in tube *b*, chamber *f*, and chimney *h*, all arranged and operating substantially as herein shown and described.

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