No. 631,952. Patented Aug. 29, 1899.

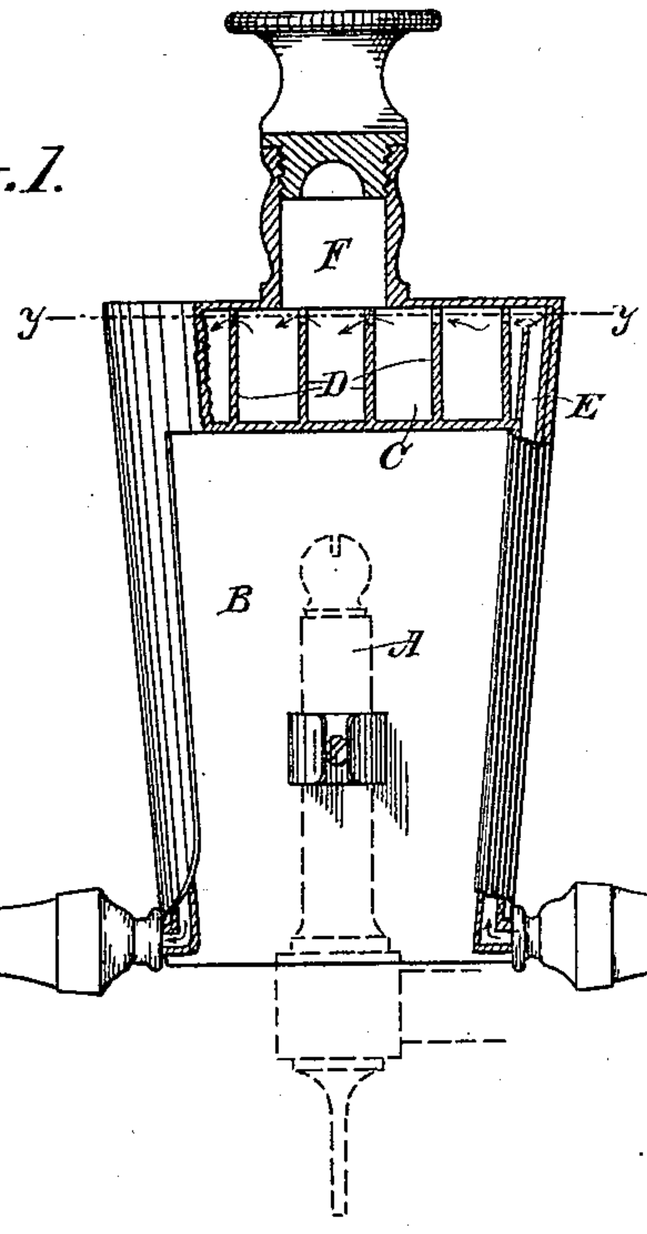
M. L. COOPER.

VAPORIZER.

(Application filed June 14, 1898.)

(No Model.)

Fig. 1.



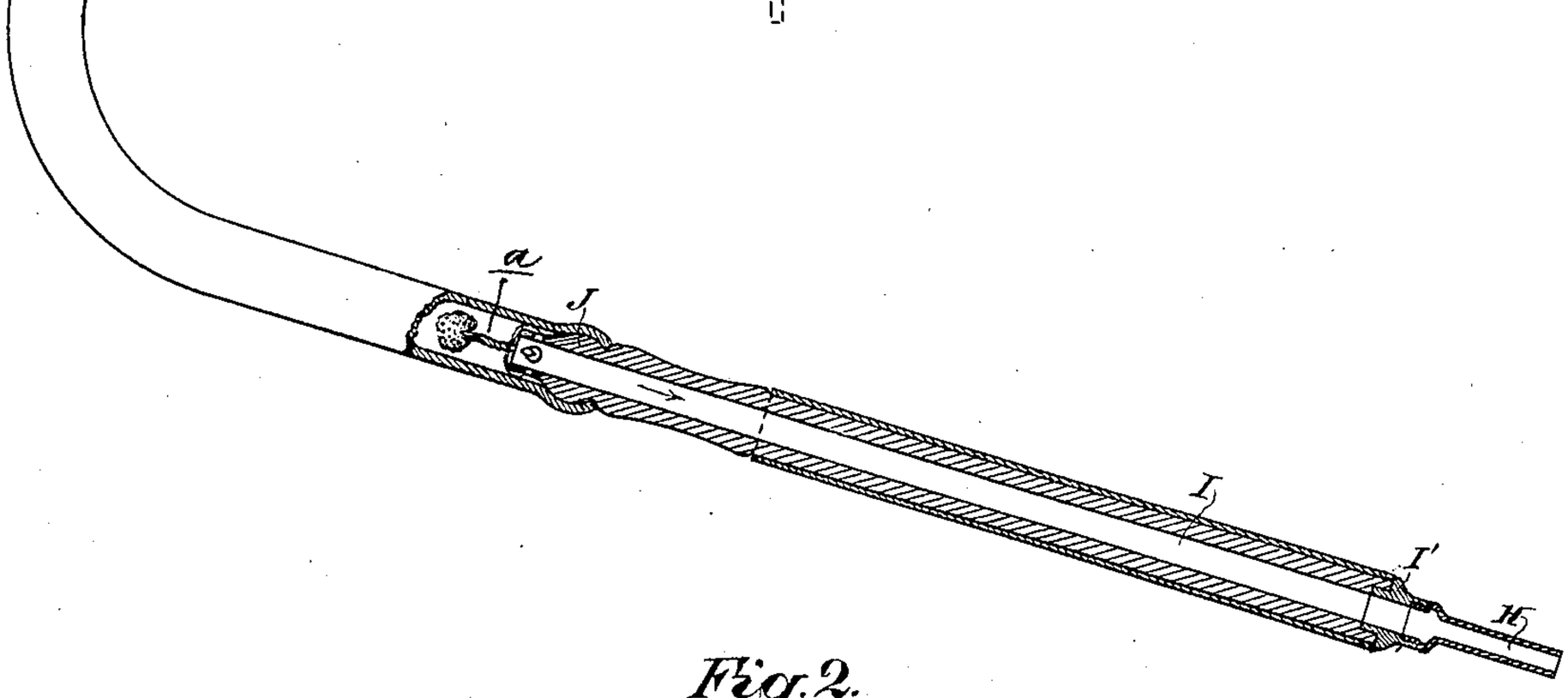
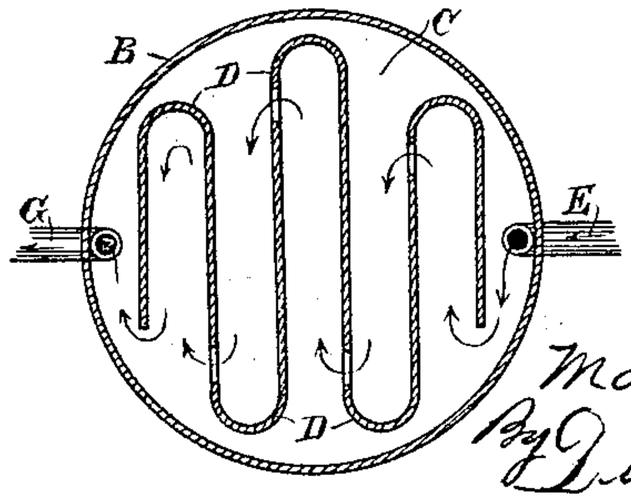


Fig. 2.



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UNITED STATES PATENT OFFICE.

MARTIN L. COOPER, OF MODESTO, CALIFORNIA.

VAPORIZER.

SPECIFICATION forming part of Letters Patent No. 631,952, dated August 29, 1899.

Application filed June 14, 1898. Serial No. 683,391. (No model.)

To all whom it may concern:

Be it known that I, MARTIN L. COOPER, a citizen of the United States, residing at Modesto, county of Stanislaus, State of California, have invented an Improvement in Heating Air-Syringes and Vaporizers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus which is especially designed for heating air and also to vaporize any substance which it is desired to apply or distribute in such condition.

It comprises details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a general view of my apparatus. Fig. 2 is a section of the heating-chamber on line *y y*, Fig. 1.

A is a burner. It may be a gas burner or heater, it may be a lamp of any suitable description, or an electrical heater, and it is projected into a case B, of which it may form an integral part, or it may be made separate therefrom, so that the casing may be lifted off from the burner. In the upper part of this casing is a closed chamber C, with partitions D formed by a continuous strip extending backward and forward across the chamber, so as to divide it into a great number of small channels, and these channels are connected alternately at opposite ends, so that a sinuous passage is formed within the casing for the passage of air, which enters at one end and is discharged at the other, being thus subjected to the heat from beneath, so that air or vapor passing through the passage will be raised to a temperature depending upon the intensity of the heat applied.

For the purpose of heating air I have shown pipes E, connected in any suitable manner with the opposite ends of the heating-passage. In the present case these pipes enter the lower part of the casing and extend upwardly on either side of the heater, connecting at the upper end with the heating-passage above described. A suitable blast or forcing device is connected with the pipe, so that air may be delivered through it through the heating-passage. In some cases it is desirable to vaporize a disinfectant or other substances to be diffused into the air of a room. In such cases a chamber F is connected with the heating-passage in such a manner that the substance to be vaporized can be introduced into it and heated and mingled with the air which passes through the heater. The air thus charged may either be delivered directly from the heater or it may pass into a conducting-pipe of greater or less length, as shown at G. Such a pipe will be used where the apparatus is to be employed for heating air or other substances for local application, such as oral, nasal, or aural uses.

It will be manifest that the heater may be made, as previously stated, of any suitable or well-known form. It may be tubular or constructed with passages, as here shown, or the air may impinge against a series of hollow drums, or it may be directed against a heating-plate of carbon or other material, the object being in any case to provide a sufficient heat for the air or other substances to be heated. The air thus heated may be conducted through any suitable opening or passage, the length depending upon the point where it is to be used. If of considerable length, it is preferred to make the conveying-passage so that the heat may not be dissipated in passing through it.

H is a nozzle or tip of any suitable form or description through which the heat may be applied. These tips are adjustably fixed in the end of a holder I, which is made non-conducting for the convenience of the operator.

I have here shown the non-conducting holder as covered with an exterior casing of metal, which protects the holder from being soiled by frequent use, and in order to prevent the transmission of heat from the nozzle to this casing and to the hands of the operator I have shown non-conducting sections I′ interposed between the nozzle and the metallic casing.

In many cases it is found desirable to apply a substance to be vaporized directly through the holder and the nozzle without conveying it through the heater or the conveying-pipe. In order to accomplish this, I have shown the end of the holder opposite the nozzle as formed with a bulb or head J. It is adapted to slip into and be clasped by the flexible convey-

ing-pipe, and the end and sides of this bulb are sufficiently perforated to allow the heated air readily to pass into it and thence to the nozzle. It is also provided with an attachment, herein shown as a wire support *a*, fixed to and projecting in line with the inner end of the holder and forming a support for a piece of absorbent cotton or other substance which is thus fixedly secured to the bulb and which may be dipped into any substance, medicated or otherwise, which it is desired to use. This is done by simply withdrawing the bulb from the conveying-tube and inserting it in the substance, then reintroducing the bulb into the tube, so that the hot air passing through and over the absorbent substance will vaporize the contained material, which will thus be applied directly through the nozzle to the part where it is to be used. This construction renders it easy to renew the substance by simply dipping the absorbent into it and returning it to the conveying-tube.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A heating device consisting of a casing having a closed chamber in its upper portion said chamber having a strip extending across it and forming a sinuous passage, said strip having openings made transversely through the opposite ends of each passage, an air-inlet pipe connecting with one end of the sinuous passage and a discharge-pipe leading from the opposite end of said passage, and a conducting-pipe and holder.

2. An apparatus for heating and vaporizing, consisting of a hollow casing, inlet and outlet pipes connecting with opposite sides extending upwardly within the casing, a closed chamber in the upper part of the casing having a sinuous passage formed by strips of metal extending alternately from side to side with openings at the opposite sides and transversely through the opposite ends of each passage, whereby air is transmitted through the chamber and heated, a flexible non-conducting, conveying-pipe through which the heated air is carried to the point of application, a holder connected therewith, and nozzles applicable to the end of the holder with an interposed non-conducting section to prevent the holder being heated.

3. The combination with a heater and its discharge-tube, of a holder fitted to said tube, a metallic casing for the holder, a nozzle or tip fitted to the holder and a non-conducting section interposed between the nozzle and metallic casing to prevent transmission of heat from the nozzle to the hands of the operator.

In witness whereof I have hereunto set my hand.

MARTIN L. COOPER.

Witnesses:
S. H. NOURSE,
J. B. LEE.