

(No Model.)

2 Sheets—Sheet 1.

G. WASHINGTON.  
BURNER FOR OIL VAPOR STOVES.

No. 584,569.

Patented June 15, 1897.

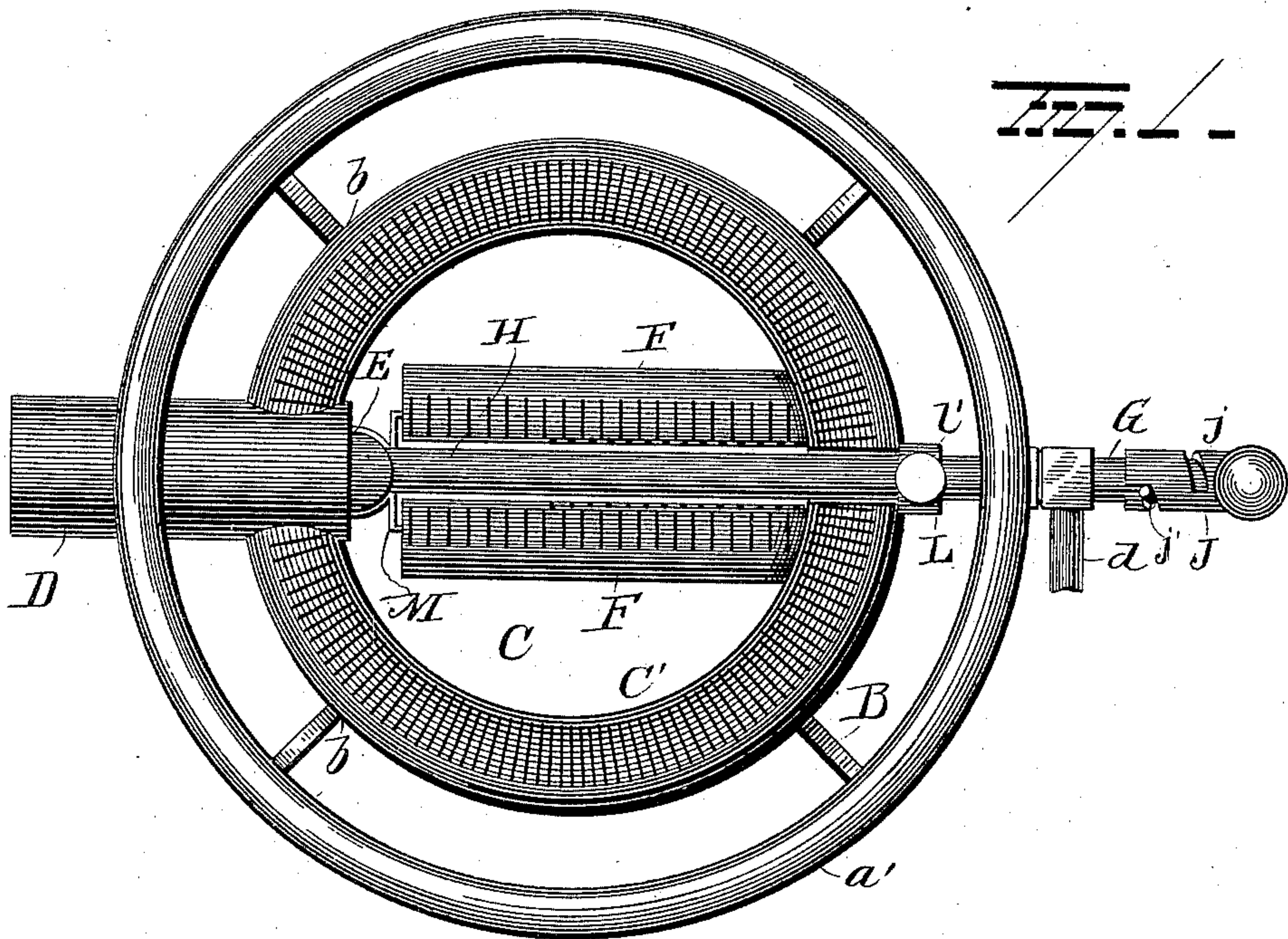
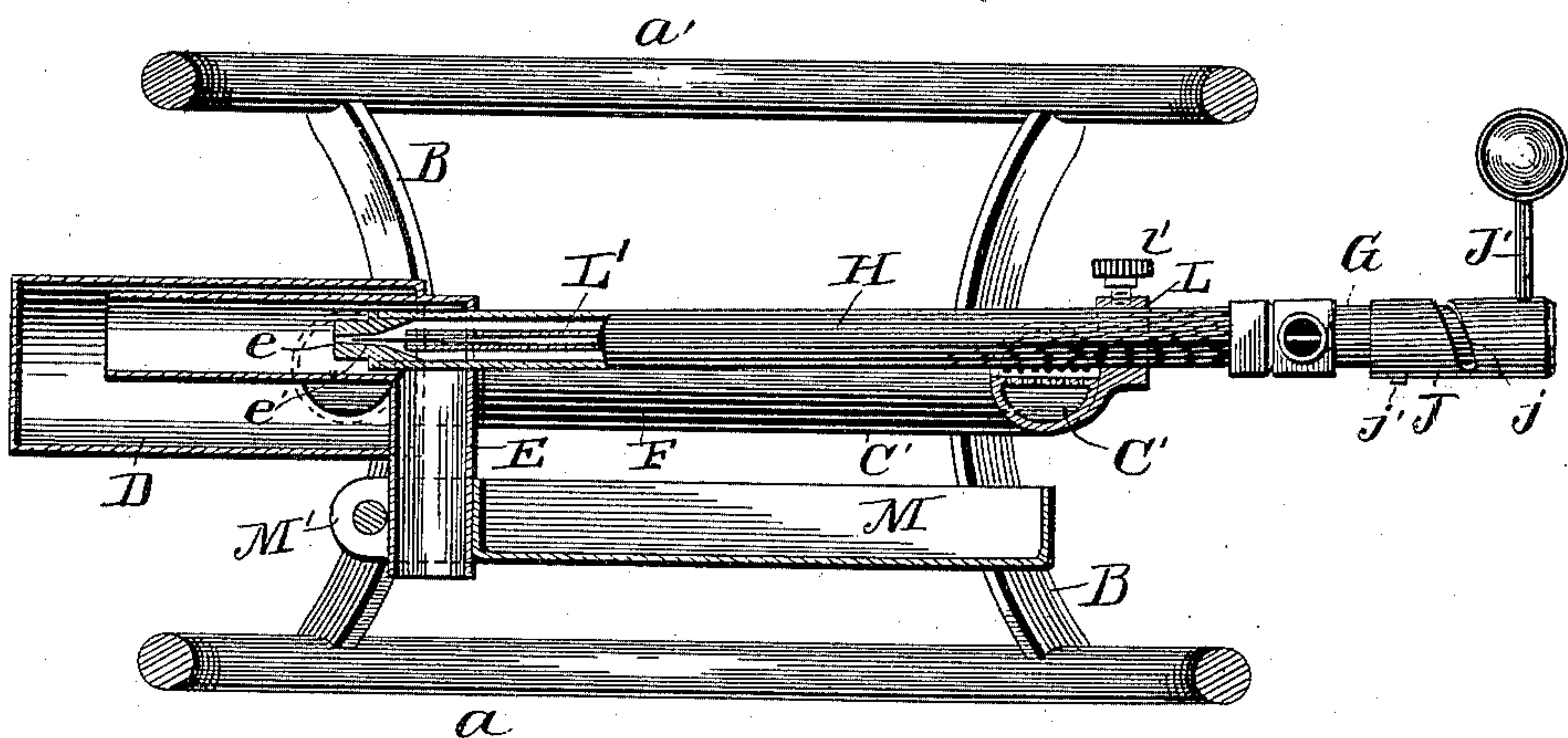


Fig. 1.



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FIG. 3.

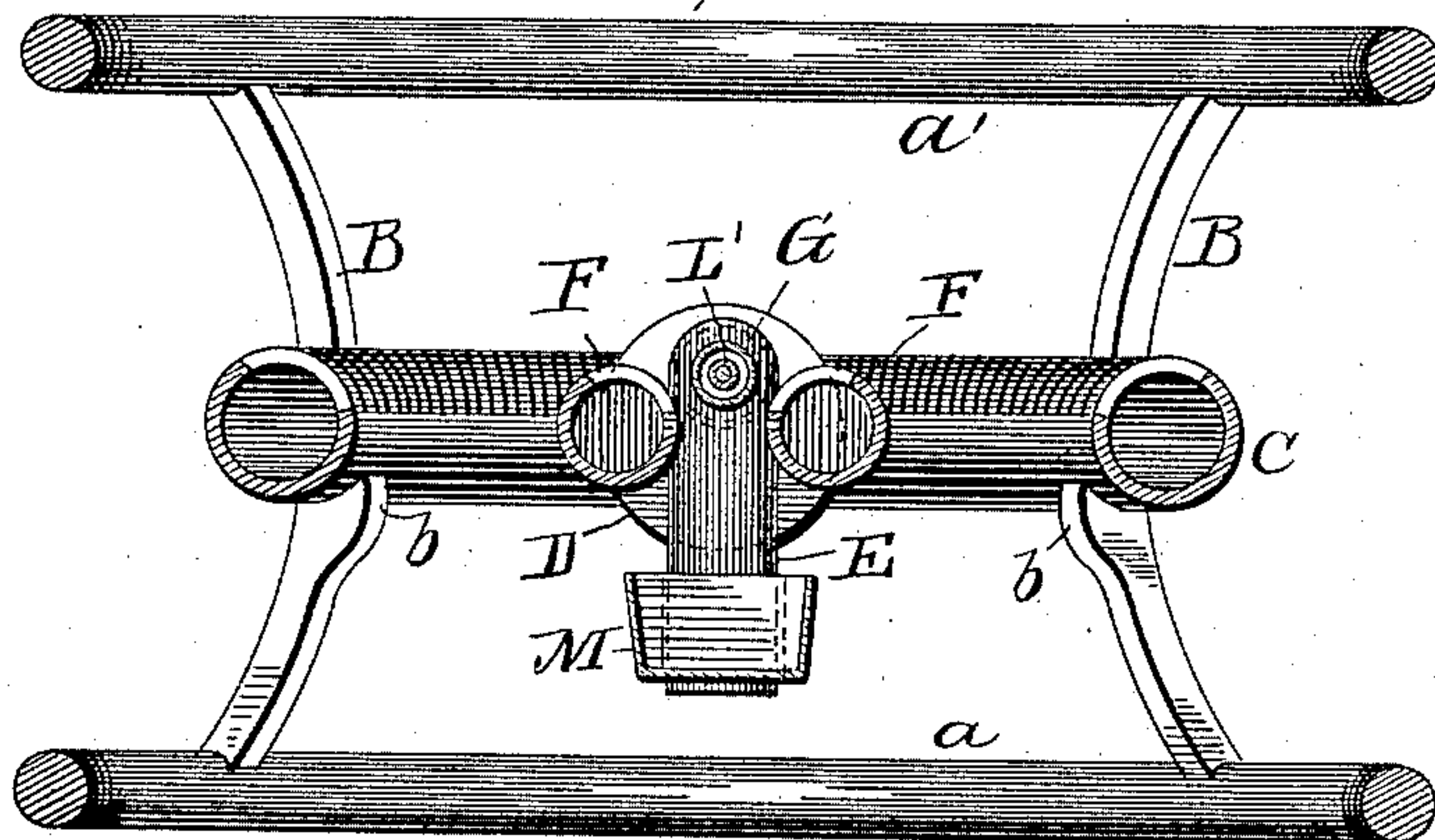
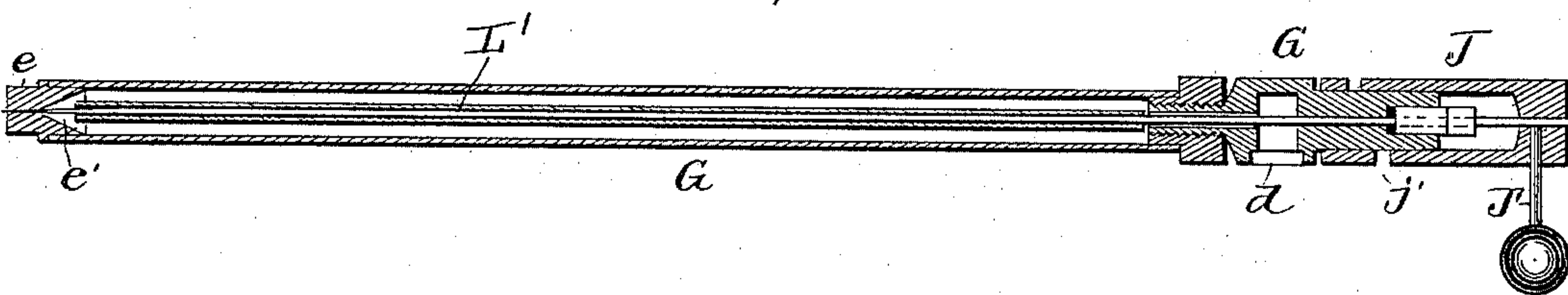


FIG. 4.



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# UNITED STATES PATENT OFFICE.

GEORGE WASHINGTON, OF BRUSSELS, BELGIUM, ASSIGNOR TO THE GEORGE WASHINGTON LIGHTING COMPANY, OF NEW JERSEY.

## BURNER FOR OIL-VAPOR STOVES.

SPECIFICATION forming part of Letters Patent No. 584,569, dated June 15, 1897.

Application filed December 12, 1896. Serial No. 615,472. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE WASHINGTON, of Brussels, Kingdom of Belgium, have invented certain new and useful Improvements in Burners for Oil-Vapor Stoves; and I do hereby declare the following to be full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in burners for vapor-stoves, the object being to provide a burner designed for burning a mixture of petroleum-vapor and air that will combine simplicity and economy in construction with durability and efficiency in use.

A further object is to provide a burner for burning petroleum-vapor with a vaporizer removably secured in place, whereby it can be readily and quickly removed from the burner.

With these ends in view my invention consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of a stove embodying my invention. Fig. 2 is a view in vertical section, taken longitudinally through the mixing-chamber. Fig. 3 is a view in vertical section at right angles to Fig. 2, and Fig. 4 is a view of the vaporizing-tube.

The burners herein described are adapted for use on any of the various kinds of oil-stoves now in common use; but for the purpose of convenience I have described my improvement in connection with a simple form of single-burner stove.

The stove shown consists simply of two rings *a a'*, separated and secured in proper position relatively to each other by the inwardly-curved arms B. The lower ring *a* constitutes the base of the stove, while the upper ring *a'* constitutes a rest for a pan, kettle, or other article.

The arms B are provided on their inner faces with the shoulders *b*, which latter form a rest for the burner C. This burner consists of a tube C', bent into circular form and permanently secured at its ends to the mixing-chamber D. This chamber D is cy-

lindrical in form and communicates with the circular burner-tube C' near one end, the main portion of the mixing-chamber being in a plane outside of the periphery of the circular burner C'.

Depending from the inner end of the mixing-chamber is the air-tube E. This tube is L-shaped, the depending or vertical member thereof having its lower end open for the free entrance of the air, while the horizontal member thereof projects within the chamber D and terminates near the outer end of the latter. Secured to the circular tube C', at a point diametrically opposite the mixing-chamber, are the straight tubes F. These tubes communicate with the circular burner C', extend parallel horizontally toward the mixing-chamber, and terminate adjacent to the inner end of said mixing-chamber. The circular burner C' and tubes F are provided on their upper faces with narrow slits or gas or vapor escape apertures of any desired shape and size, and hence it will be seen that any gas or vapor discharged into the mixing-chamber will be mixed with air and escape into the circular burner and from the latter to the straight tubes.

My stove is designed, primarily, for burning a mixture of petroleum-vapor and air, the petroleum being stored in a reservoir remote from the stove and fed thereto through a small tube. This tube (not shown) is coupled up at *d* to the stuffing-box G, which latter is removably secured to the vaporizing-tube H. This tube H is straight throughout its length and is provided at its discharge end with the removable nipple *e*, having the conical bore *e'*, through which the needle-valve L' passes. This needle-valve passes through the tube H and through the stuffing-box G and is secured at its outer end to the sleeve J, which latter is mounted on the stuffing-box. While I can secure the needle-valve to the sleeve in various ways, I prefer to secure it by the lever J', the inner end of which bears against the valve and locks it to the sleeve. The sleeve is provided with a spiral slot *j*, open at the top, which slot is designed to receive the lug *j'* on the stuffing-box G. From this it will be seen that by pressing on lever J' in a di-

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rection to rotate the sleeve the latter is rotated and by means of the spiral slot therein is also moved longitudinally, thus moving the needle-valve longitudinally and opening or closing more or less the discharge-orifice in the end of the vaporizing-tube H. This tube is removably secured in a position between and in a slightly higher plane than the straight tubes F, so that the flames from the combined air and vapor burned in the straight tubes keep the vaporizing-tube sufficiently heated to vaporize the oil therein. The discharge end of the tube passes through an opening in the air-tube E in line with the horizontal portion thereof, and hence the vapor generated in the vaporizing-tube is discharged into the air-tube and, creating a suction therein, draws up air through the vertical portion of the tube E. The air and vapor thus brought together in the air-tube are discharged against the closed end of the air-mixer and deflected thereby, thus causing a thorough commingling of the air and vapor. This mixed air and vapor then passes into the circular burner, and part of it enters the straight tubes and is burned as it issues from the escape-orifices.

The vaporizing-tube is supported at its discharge end by the air-tube E and near its outer end by the bearing L, carrying thumb-screw V', adapted to bear against the tube and hold it in position. The bearing L is attached to and supported by the circular burner C', and the portion of the latter immediately under the tube is recessed for the reception of the tube, the concave face of the recessed portion being provided with orifices for the escape of the vapor immediately below at the sides of the tube, thus causing the end of the tube adjacent to the oil-supply pipe to be highly heated.

By locating the vaporizing-tube well down on the burner and by heating it throughout its length all the oil entering the same is vaporized, and as the mixing-chamber is also heated by its proximity to the burner all danger of condensation is overcome, and by making the vaporizing-tube straight and removably securing it in position it can be readily detached and deposits of carbon, either external or internal, removed.

M is a cup designed to hold oil or alcohol, which when ignited heats the vaporizing-tube and starts the vaporization of the oil. After the vaporization of the oil commences the mixed air and vapor escaping from the orifices in the straight burner-tubes is ignited by the flame from the starting-cup and in turn ignites the vapor escaping from the circular tube. This starting-cup is secured in place under the vaporizing-tube by the yoke M', secured to the cup and embracing the air-tube.

It is evident that numerous slight changes might be made in the general form and arrangement of parts herein shown and described without departing from the spirit and scope of my invention, and hence I would have it understood that I do not limit myself

to the precise details herein shown and described; but,

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

1. In a vapor-stove, the combination with a burner and a mixing-chamber connected with the burner, said mixing-chamber being provided with an air-inlet and constructed with a return-passage through which the mixed air and vapor is conducted to the burner, of a vaporizing-tube located adjacent to the burner so as to be heated thereby and provided at one end with a discharge-nozzle which is located within the mixing-chamber, and a valve for regulating the discharge of vapor, substantially as set forth.

2. In a vapor-stove, the combination with a burner and a mixing-chamber connected with the burner, said mixing-chamber being provided with an air-inlet and constructed with a return-passage through which the mixed air and vapor is conducted to the burner, of a removable vaporizing-tube located adjacent to the burner so as to be heated thereby and provided at one end with a discharge-nozzle adapted to discharge into the mixing-chamber, and a valve for regulating the discharge of vapor, substantially as set forth.

3. A burner for oil-stoves comprising an endless tube, a mixing-chamber in direct communication with said tube, an air-pipe leading into said mixing-chamber, parallel burner-tubes each closed at one end, and communicating at their other ends with the endless tube, and a vaporizing-tube located between and in a plane slightly above the parallel tubes, and communicating with the mixing-chamber.

4. A burner for oil-stoves comprising an endless tube, a mixing-chamber in direct communication with said tube, an air-pipe leading into said mixing-chamber, parallel burner-tubes each closed at one end and communicating at their other ends with the endless tube and a removable vaporizing-tube located between and in a plane slightly above the parallel tubes and communicating with the mixing-chamber.

5. In a vapor-stove the combination with a burner, a mixing-chamber connected with the burner, said mixing-chamber being provided with an air-inlet, and constructed with a return-passage through which the mixed air and vapor is conducted to the burner, of a vaporizing-tube extending across the burner and provided with a discharge-nozzle which is located within the mixing-chamber, and a valve for regulating the discharge of vapor, substantially as set forth.

6. In a vapor-stove the combination with a burner, a mixing-chamber connected with the burner, said mixing-chamber being provided with an air-inlet and constructed with a return-passage through which the mixed air and vapor is conducted to the burner, of a straight vaporizing-tube located adjacent to the



burner so as to be heated thereby and provided at one end with a discharge-nozzle which is located within the mixing-chamber, and a needle-valve extending entirely through the vaporizing-tube and provided at its outer end with means for regulating it, substantially as set forth.

7. In a vapor-stove the combination with a main burner, parallel burner-tubes each closed at one end and communicating at their outer ends with the main burner, a mixing-chamber connected with the main burner and provided with an air-inlet, of a vaporizing-tube located over and in a plane between the parallel burner-tubes and provided at one end with a discharge-nozzle which is located within the mixing-chamber, and a valve for

regulating the discharge of vapor, substantially as set forth.

8. In a vapor-stove, the combination with a detachable vaporizing-tube provided with a needle-valve for regulating the discharge of vapor, and a mixing-chamber within which the vapor is mixed with air, of an endless burner provided with parallel extensions arranged to heat the opposite sides of the vaporizing-tube, substantially as set forth.

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

GEORGE WASHINGTON.

Witnesses:

R. D. ALLIGER,  
HUBERT HOWSON.