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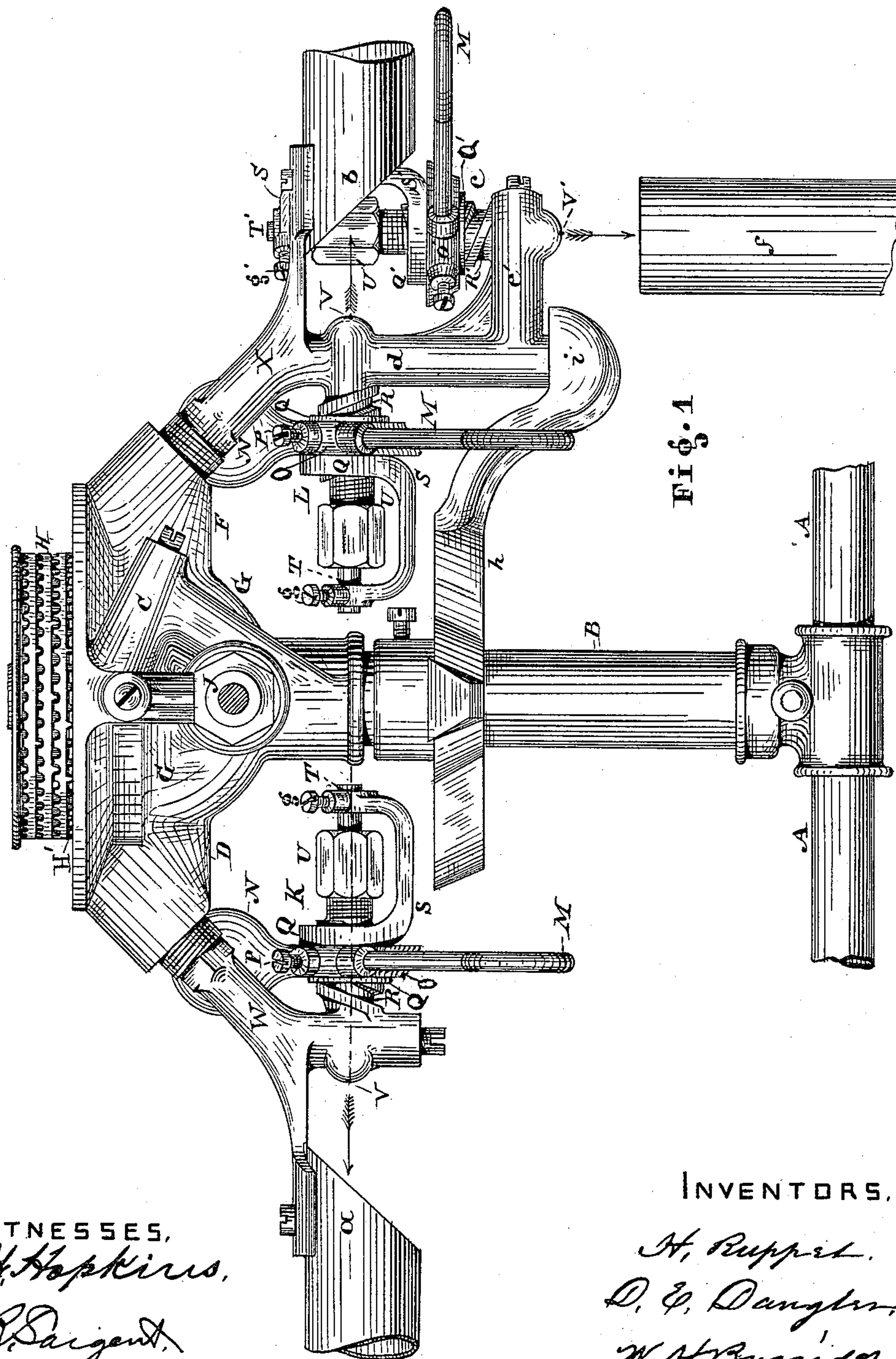
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H. RUPPEL & D. E. DANGLER.

VAPOR BURNER.

No. 389,322.

Patented Sept. 11, 1888.



WITNESSES,
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(Model.)

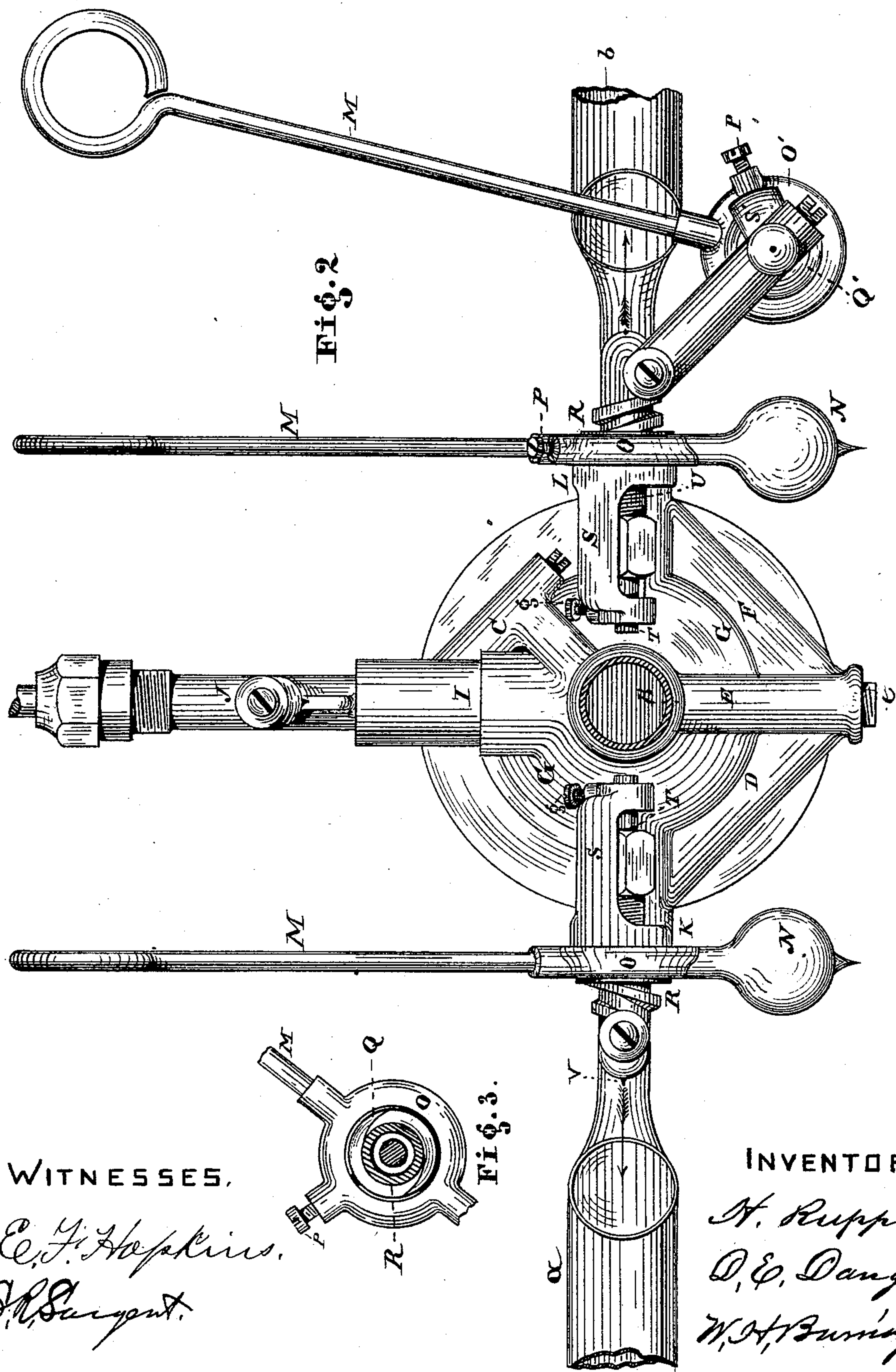
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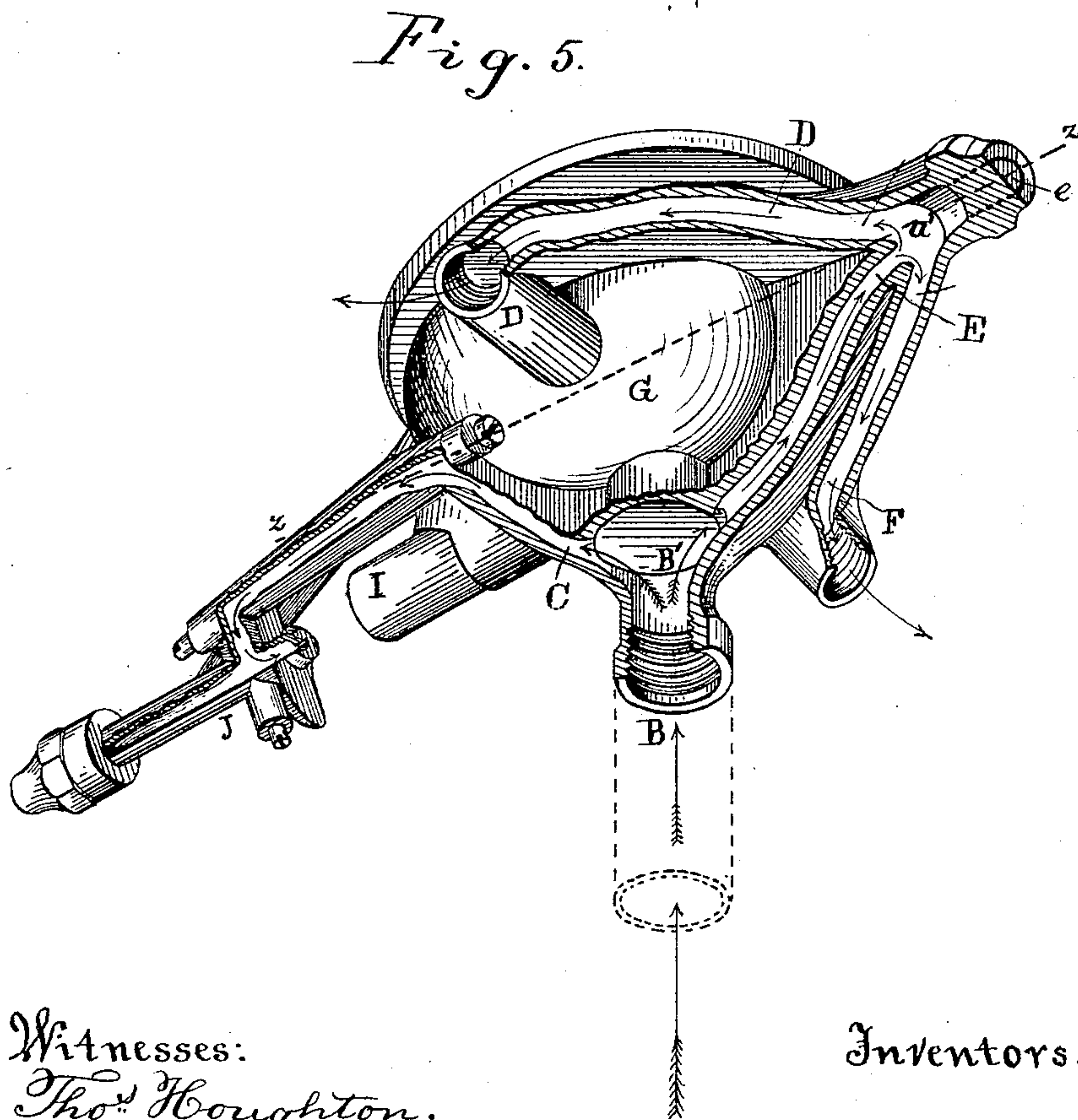
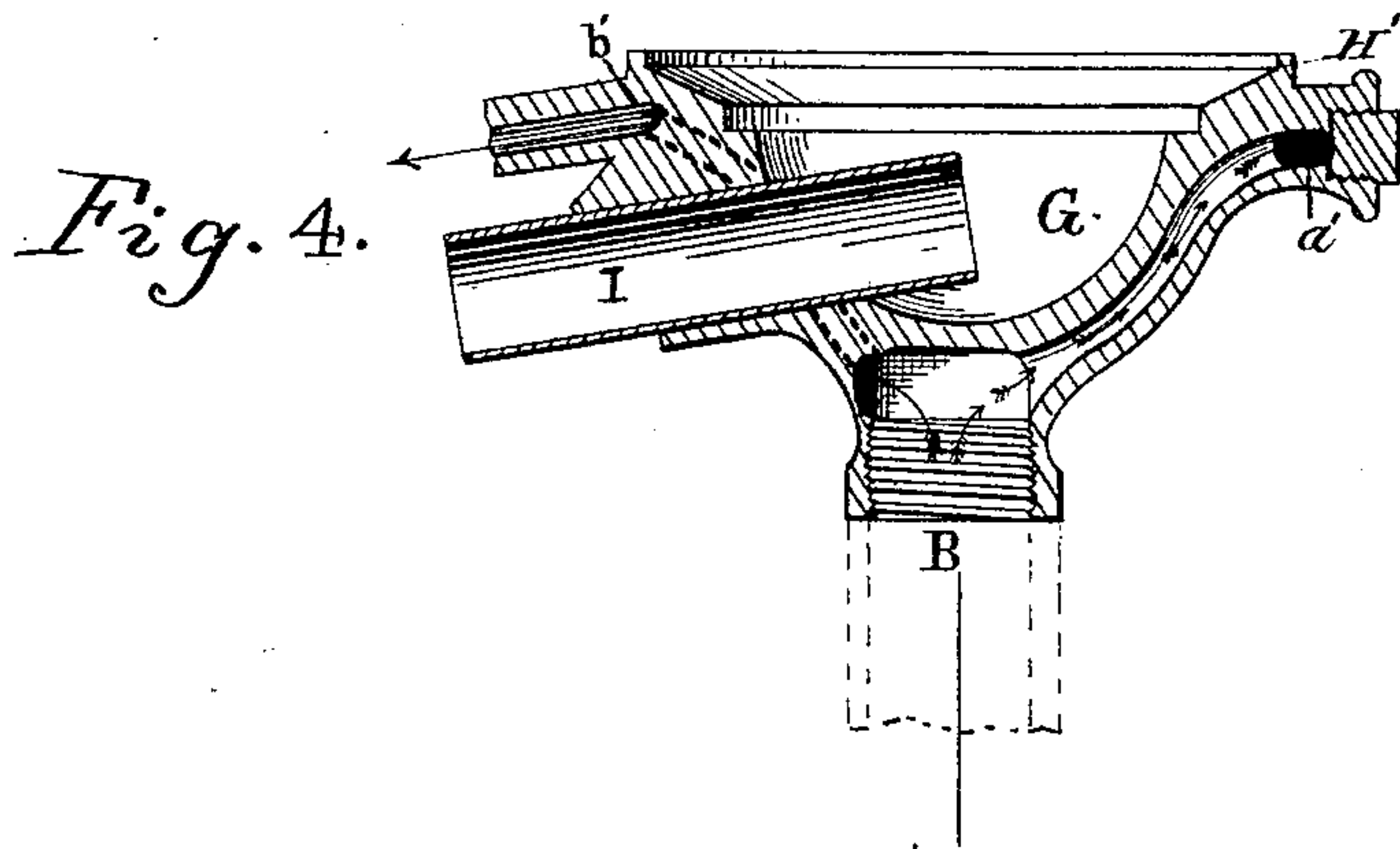
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Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY RUPPEL AND DAVID E. DANGLER, OF CLEVELAND, OHIO.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 389,322, dated September 11, 1888.

Application filed February 7, 1887. Serial No. 226,782. (Model.)

To all whom it may concern:

Be it known that we, HENRY RUPPEL and DAVID E. DANGLER, of Cleveland, in the county of Cuyahoga and State of Ohio, have
5 invented a certain new and Improved Vapor-Burner; and we do hereby declare that the following is a full, clear, and complete description thereof.

The nature of our invention consists in an
10 arrangement of devices for generating the vapor and distributing the same in various directions from vapor-generators to the combustion-chambers by a peculiar needle-valve mechanism and adjusting device connected with said
15 mechanism.

That the said invention may be more fully seen and understood, reference will be had to the following description and to the annexed drawings, making part of this specification.

20 Figure 1, Plate 1, is a side elevation of the said invention. Fig. 2, Plate 2, is an under side view with the induction-pipe and drip-cup removed. Fig. 3 is a detached section showing an end view of the valve-regulator.
25 Fig. 4 is a vertical section on line *zz* of Fig. 5. Fig. 5 is a perspective view of the under side of the central part of the burner, having the shell partially broken away to show the several generators.

30 In Fig. 1, A represents the supply-pipe, which is to be extended to the gasoline-holder. (Not shown.) Attached to the supply-pipe A is a stand-pipe, B, which conveys the gasoline from the supply-pipe to the vapor-generators
35 C, D, F, and E, Figs. 1 and 2. Each of these vapor-generators is formed upon the exterior wall of the combustion-chamber G, Fig. 2. The upper part, H', of the combustion chamber is flanged out, within which and over the
40 said chamber is a perforated cap, H, Fig. 1. The tube I opens into the combustion-chamber. The outer end of tube I is in open relation with the needle-valve mechanism at J. The vapor from the generator C passes there-
45 from into the conduit of the needle-valve, thence into the combustion-chamber through the pipe I, Fig. 2. On each side of the combustion-chamber G, in proximity therewith, are two other needle-valve mechanisms, K and
50 L, of different construction from the one before referred to at J, Fig. 2. The devices in

K and L are essentially the same, only adjusted in different locations. The description of one is the equivalent of the other—viz., to the opposite end of the handle M is attached
55 a counter-weight, N. The said handle and counter-weight are connected with the adjusting ring or strap O, which by means of a set-screw, P, is fastened to a nut, Q, threaded upon the valve-casing R of the needle-valve, 60
Figs. 1 and 2. To the nut Q is connected one end of a yoke, S, and the other end of the yoke S is attached to the needle-valve rod T by a set-screw, *g*. The rod T extends through the
65 stuffing-box U, while at the end is the needle-valve V, provided with its valve-seat in the usual way.

On moving up or down the handle M, attached to the adjusting-ring O, the needle-valve V will be moved correspondingly in its
70 seat, so as to open or close the valve more or less for the passage of vapor from the generator to the burner. By means of the counter-balance N the handle M will remain in any
75 position required for the opening of the needle-valve, which handle by its weight alone would drop down when raised if the counter-balance were not provided and change the position of the needle-valve, so as to open or close
80 the valve, depending upon the arrangement of the screw-threads in relation to the handle. The counter-weight causes the handle to remain in the position required for holding the
85 needle-valve, thereby securing a uniform supply of vapor through the valve.

The vapor from the generators D and E passes to the valve-casing of the needle-valves through pipes W and X, and from the openings of the needle-valves through the pipes *a*
90 and *b* to the respective burners. The described valve mechanism, as shown, is designed to be in a horizontal line, or nearly so. The mechanism may, however, be placed in a perpendicular arrangement without departing from
95 the essential features of the invention, as shown at *c*, Fig. 1, in which handle M is in a horizontal plane and the counter-weight is not required.

The general construction of the valve-casing R', yoke S', ring or strap O', valve-rod T',
100 valve V, and stuffing-box U', as arranged with their respective attachments for operation,

are, as stated, for a perpendicular movement of the needle-valve. The vapor passes to the valve-casing of the needle-valve V' through the pipes *d e'* from the vapor-generator, and through the pipe *f* to a burner (Not shown in the drawings.)

In Fig. 5 the several generators are shown passing up from the pipe B at B'. The fluid passes to the valve-casing through the generator C, and through the generator E to the branching generators D and F, in direction of the arrows. The port *a'* is shown as being closed by the plug *e*; but a pipe can be attached to lead to a burner. The several generators C, D, E, and F are shown in Fig. 5, and to each of these can be attached a pipe leading to a burner. Each vapor-burner has its respective needle-valve mechanism and generator, as shown.

The yoke S is attached to the valve-stem T by the set-screw *g* and adjusting-ring O, to which the handle M and counter-weight N are connected, and is also attached to the nut Q by set-screw P. This mode of attachment of the ring O and yoke S, in connection with the valve-stem T and nut Q, admits of the needle-valve and handle being adjusted and set in relation with each other, so as to place the handle in proper position for operating the needle-valve by the handle, and its connections secured by the set-screw in the required position for operation. The ring O is arranged to lap around the nut Q, and is fastened to the outside of the nut by a set-screw or its equivalent. On loosening the set-screw the adjusting-ring is free to turn on the nut, which admits of the handle M being moved in relation to the yoke S and valve-stem T, to operate the needle-valve by adjusting the handle in convenient position for use.

The apparatus is provided with a drip-cup, *h*, Fig. 1, for the reception of oil for first vaporizing the oil in the generators. The overflow of oil will run into cup *i*, for assisting the generation of vapor in the pipes *d* and *e'*, which vapor passes from the needle-valve V' down through the pipe *f*, as before described.

The vapor is primarily developed in the generators C D E F, connected with the com-

bustion-chamber G, by firing the oil in the drip-cup, so as to inflame the cap H, which is kept constantly burning, so long as vapor is required to supply one or more burners connected with the horizontal pipes *a* and *b* and vertical pipe *f*.

The supply of vapor to the burner H' from the generator C is controlled by the needle-valve mechanism at J, from which it passes through the pipe I, Fig. 1, into the chamber G, and is ignited at the cap H, for heating and generation of vapor, for the purposes before stated.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a vapor-burner, the nut Q, threaded upon the valve-casing of the needle-valve and attached to a yoke extending to and connected with the valve-stem, in combination with the handle M, attached to the ring O, and counter-balance, valve-stem, and valve, arranged substantially as described, and for the purpose specified.

2. In combination with a vapor-burner, the yoke S, having one end fastened to the needle-valve stem and the other end connected with a nut threaded upon the valve-casing of the needle-valve, and a ring or strap adjustably attached to said nut and provided with a handle, valve-stem, and valve, arranged substantially as and for the purpose set forth.

3. In a vapor-burner, the adjustable yoke S, movably fastened at one end to the valve-stem, with the other end attached to a nut threaded on the needle-valve casing, in combination with an adjustable ring or strap, O, fastened to said nut and provided with a handle and counter-weight, with the stuffing-box arranged between the nut and end of the yoke attached to the valve-stem and the valve, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY RUPPEL.
DAVID E. DANGLER.

Witnesses:

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