

(No Model.)

W. SCHERER, W. MOLL & J. A. MARSH.

VAPOR BURNER.

No. 270,253:

Patented Jan. 9, 1883.

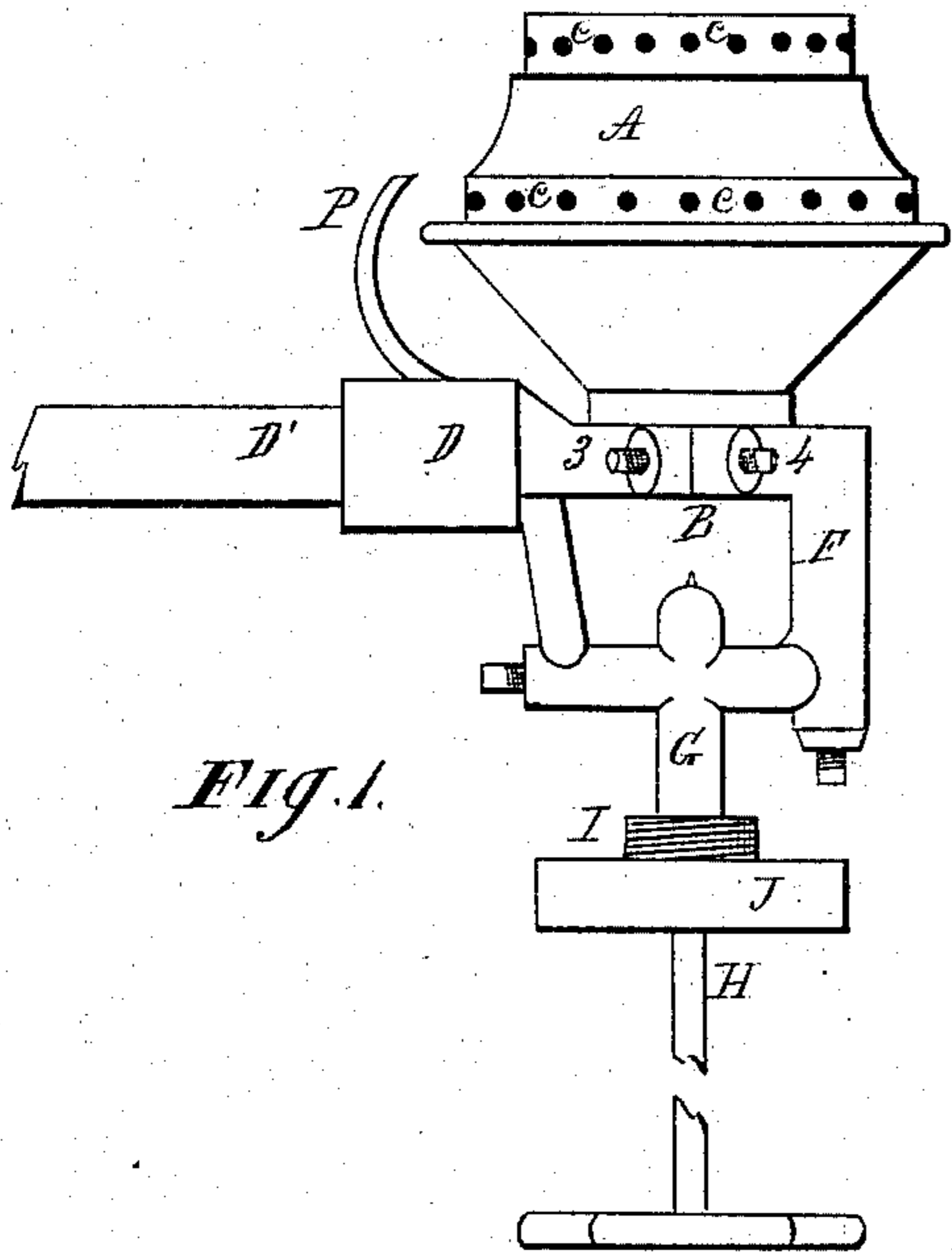


Fig. 1.

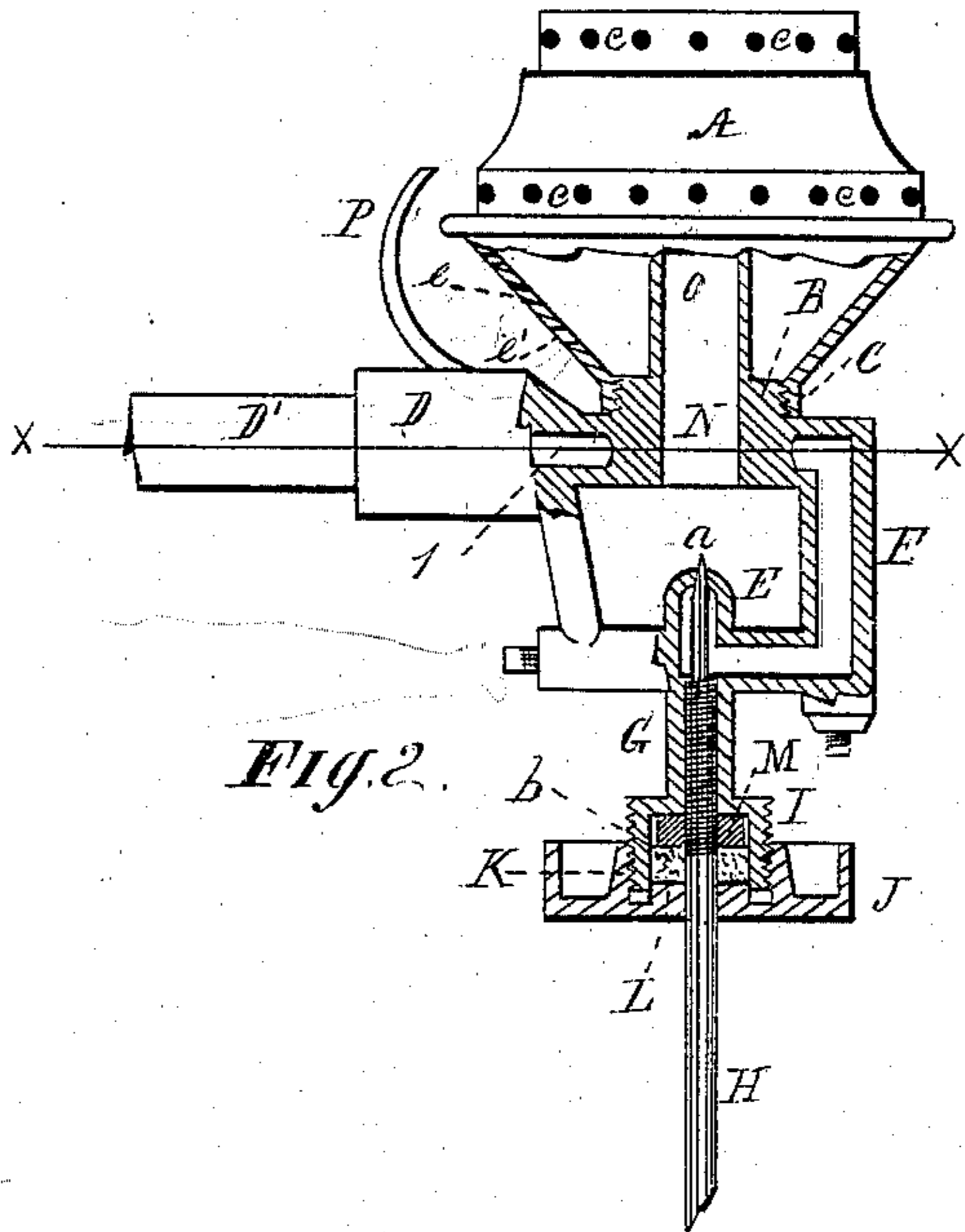


Fig. 2.

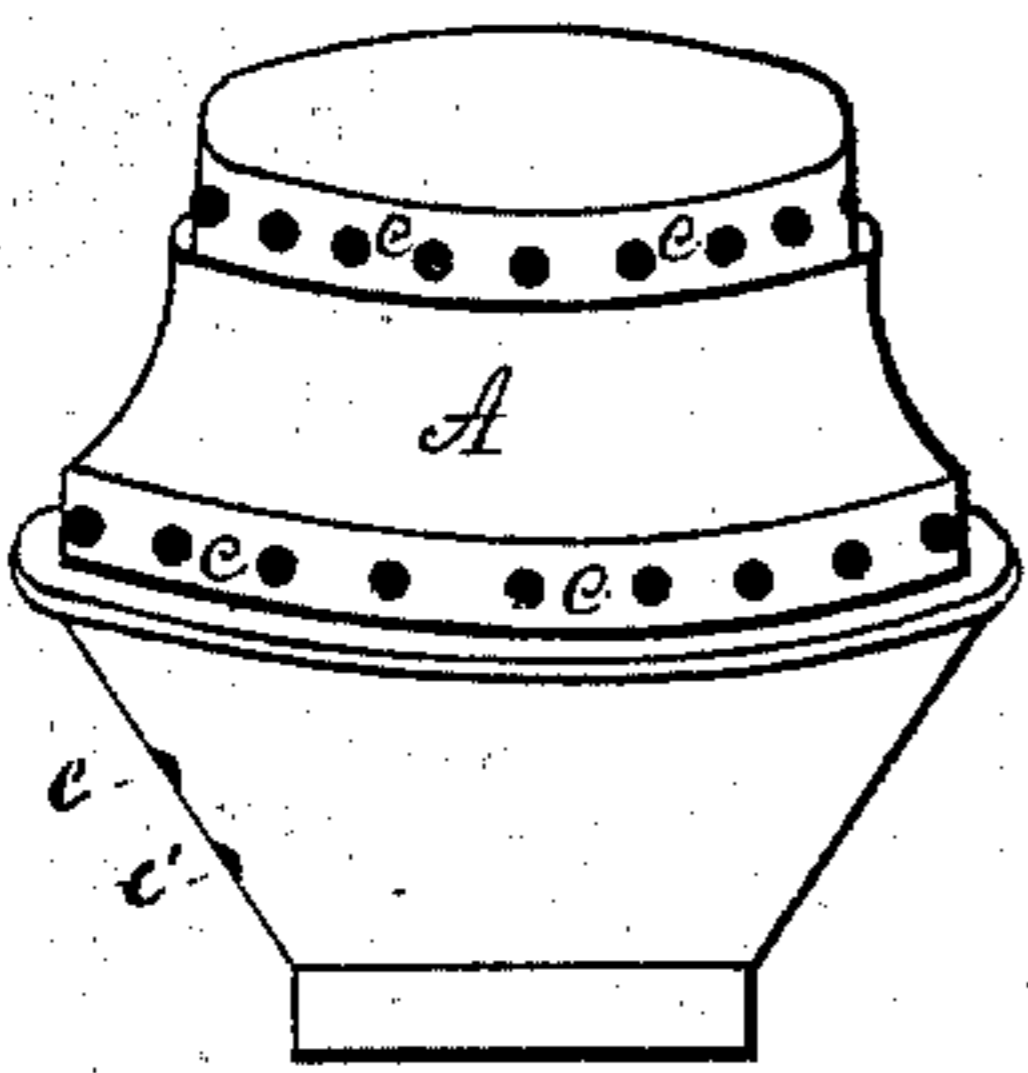


Fig. 4.

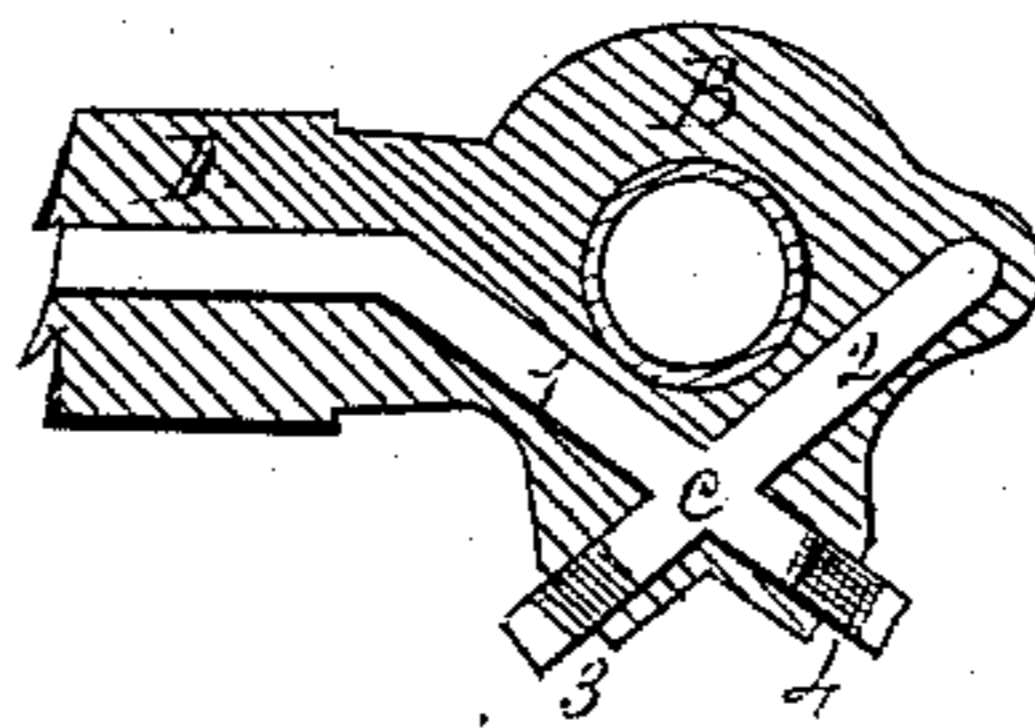


Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

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VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 270,253, dated January 9, 1883.

Application filed January 30, 1882. (No model.)

To all whom it may concern:

Be it known that we, WM. SCHERER, WM. MOLL, and JAMES A. MARSH, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Vapor-Burners, of which the following is a description.

The improvement in vapor-burners alluded to consists in providing the stem of the needle-valve with a stuffing-box and packing to prevent leakage of gas around the valve-stem, and a stay-nut screwed onto the stem to prevent the valve from being forced too hard into the valve-seat to avoid enlarging the valve-opening.

A further improvement consists in providing the burner with a curved deflecting-plate, whereby the heat from the combustion-chamber is thrown upon the gas-generator, causing a rapid vaporizing of the fluid, and by a reflected action heating the said chamber and igniting the lower generating-flames from the upper series of perforations.

The above-specified improvements and others hereinafter described are fully set forth in the following specification and illustrated by the accompanying drawings, making a part of the same, in which—

Figure 1 represents a side view of the improved burner. Fig. 2 is a side view, partially in section. Fig. 3 is a horizontal section through the line *xx*, Fig. 2. Fig. 4 is a detached view of the combustion-chamber.

Like letters of reference refer to like parts in the views presented.

A in Fig. 1 represents the combustion-chamber, which is of one piece and cast with a core. Said chamber is connected to the head B of the burner by being screwed thereon, as seen at C, to permit of its removal for cleaning and to prevent it from being displaced accidentally.

D, Fig. 2, is the gas-generator, and put in communication with the needle-valve *a* and seat E by a tubular connection consisting of the conduits 1 and 2, Fig. 3, bored into the head B from the points 3 and 4. The conduit 1 communicates with the generator and intersects the conduit 2 at *c*, Fig. 3, with which it is in open relation, and by which and the tubular elbow F the said generator is put in com-

munication with needle-valve mechanism, as shown in Figs. 2 and 3, thereby forcing the fluid through small orifices, causing a more thorough atomizing and vaporizing of the same.

G is a neck into which is screwed the stem H of the needle-valve. The lower end of the neck terminates in a stuffing-box, I, of which the catch-cup J forms the gland or follower. By means of the collar K said cup is screwed onto the outside of the stuffing-box, whereas the hub L enters the box to the packing *b*, whereby the said packing is forced around the stem of the valve.

A serious defect in vapor-burners as ordinarily constructed consists of a continued enlarging of the aperture in the valve-seat, owing to forcing the valve too hard and too far therein; also, there is more or less leakage around the stem of the valve, caused by wearing of the screw, and when a nut has been used to prevent an enlarging of the opening in the valve-seat no stuffing-box has been used conjointly with the nut, whereas in using a stuffing-box in connection with a stay-nut, as shown in the drawings, and the box packed with a suitable non-combustible material, the valve-seat is not only prevented from undue wearing and enlargement, but also leakage around the valve-stem is avoided, thereby making the needle-valve mechanism durable and secure.

In the head B, above alluded to, is a central opening, N, in alignment with the needle-valve. Said opening N is extended by means of the pipe O up into the combustion-chamber, and terminates therein near the top, which admits of the tube N being reamed out, and the top of the neck G to be smoothly rounded, giving a free opportunity for air to unite with the gas on entering the commingling-chamber.

It will be observed that the generator-head B, opening or induction pipe O, tube F, and the needle-valve chamber and the stuffing-box are all in one piece, insuring the needle-point orifice in the center of the opening N, there being no joint-connections of the several specified parts. The combustion-chamber, being directly attached to the head B, dispenses with the use of a base-plate, thereby rendering the burner more simple in structure and

less expensive to make. The catch or drip cup, being made tight in its connection with the stuffing-box, and by its peculiar construction, is made to perform two offices—viz.,
5 drip-cup and gland for the stuffing-box.

We are aware that catch or drip cups, stay-nuts, and packing are not new elements in vapor-burners; but it is believed that the construction and arrangement of the several parts
10 specified are new and important in the structure of vapor-burners.

The deflector P, being curved and located as shown in the drawings, and so arranged in relation to the jet-openings *e* and *e'* in the side
15 of the combustion-chamber, retains the heat of the said jets longer about the generator, and assists in making the jets self-lighting from the upper series of flames, and reflects the heat
20 commingled air and gases, augmenting and expanding them and thoroughly vaporizing the fluid, producing more heat to the amount of fluid used than in ordinary burners.

The operation of the burner is simply as follows: The fluid to be burned is conducted into the generator D through the induction-pipe D'. To light the burner open the valve *a*. This
25 will allow a jet of fluid to pass through and run down into the drip-cup, which, when full, the valve is closed again. Light the fluid in
30 the cup and let it burn out. This operation does the initial vaporizing of the fluid. Now, when the needle-valve is opened again the vaporized fluid passes into the combustion-chamber and issues from the jet-openings *e* and *e'*,
35

which latter flames impinge upon the generator D and deflector, which reacts and heats the combustion-chamber containing air and gas, augmenting and expanding the same, producing a clear blue flame, free from spits of
40 yellow flame, as often seen in ordinary burners.

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

1. In vapor-burners for gasoline-stoves, the combination of the needle-valve stem and stay-nut, a stuffing-box inclosing said stay-nut,
45 packing *b*, and gland consisting of the catch-cup, substantially as described, and for the purpose set forth.

2. In combination with a stuffing-box in gasoline-stoves, a catch-cup adapted to fit said
50 box to form a gland or follower for the box, substantially as and for the purposes set forth.

3. The combination, with the combustion-chamber having converging sides, of a generator, D, and a curved deflector, P, extending up
55 from the head B on the side of said chamber in proximity with the jet-openings *e*, with a tube projecting from the head B into the combustion-chamber in alignment with the needle-
60 valve, arranged substantially as and for the purpose set forth.

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

WM. SCHERER.

WM. MOLL.

JAMES A. MARSH.

Witnesses:

J. H. BURRIDGE,

W. H. BURRIDGE.