

(No Model.)

A. KINDERMANN.

VAPOR BURNER.

No. 288,343.

Patented Nov. 13, 1883.

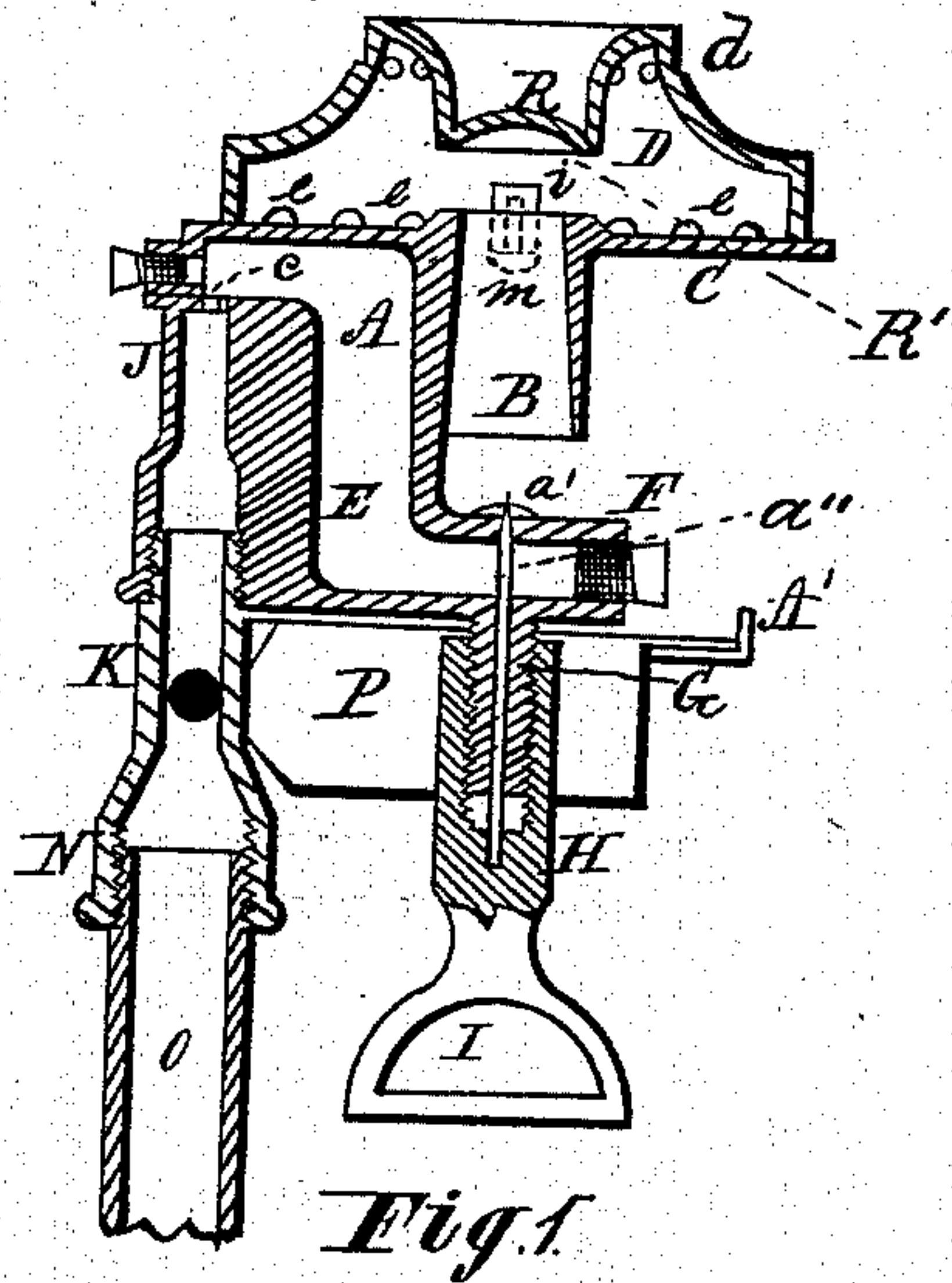


Fig. 1.

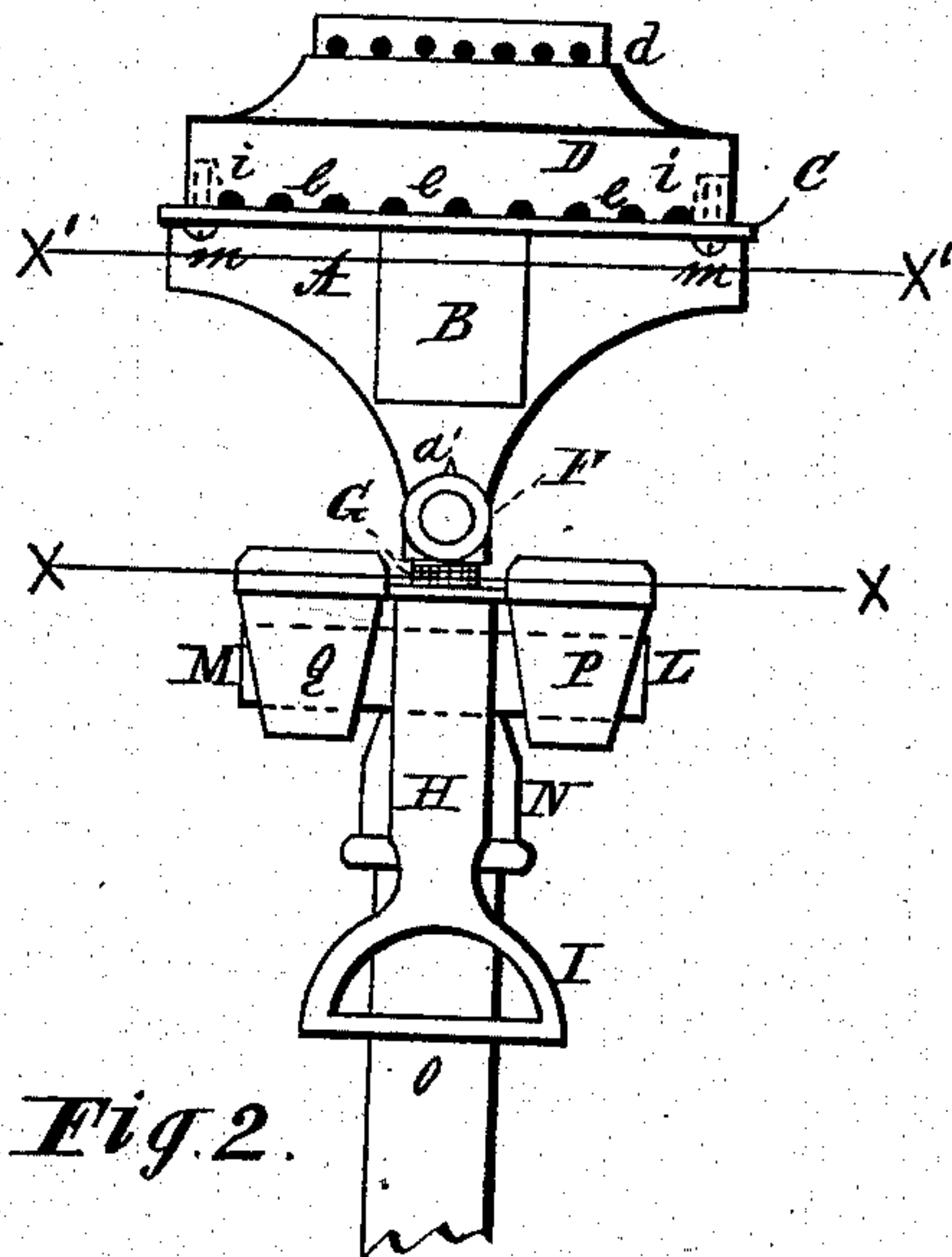


Fig. 2.

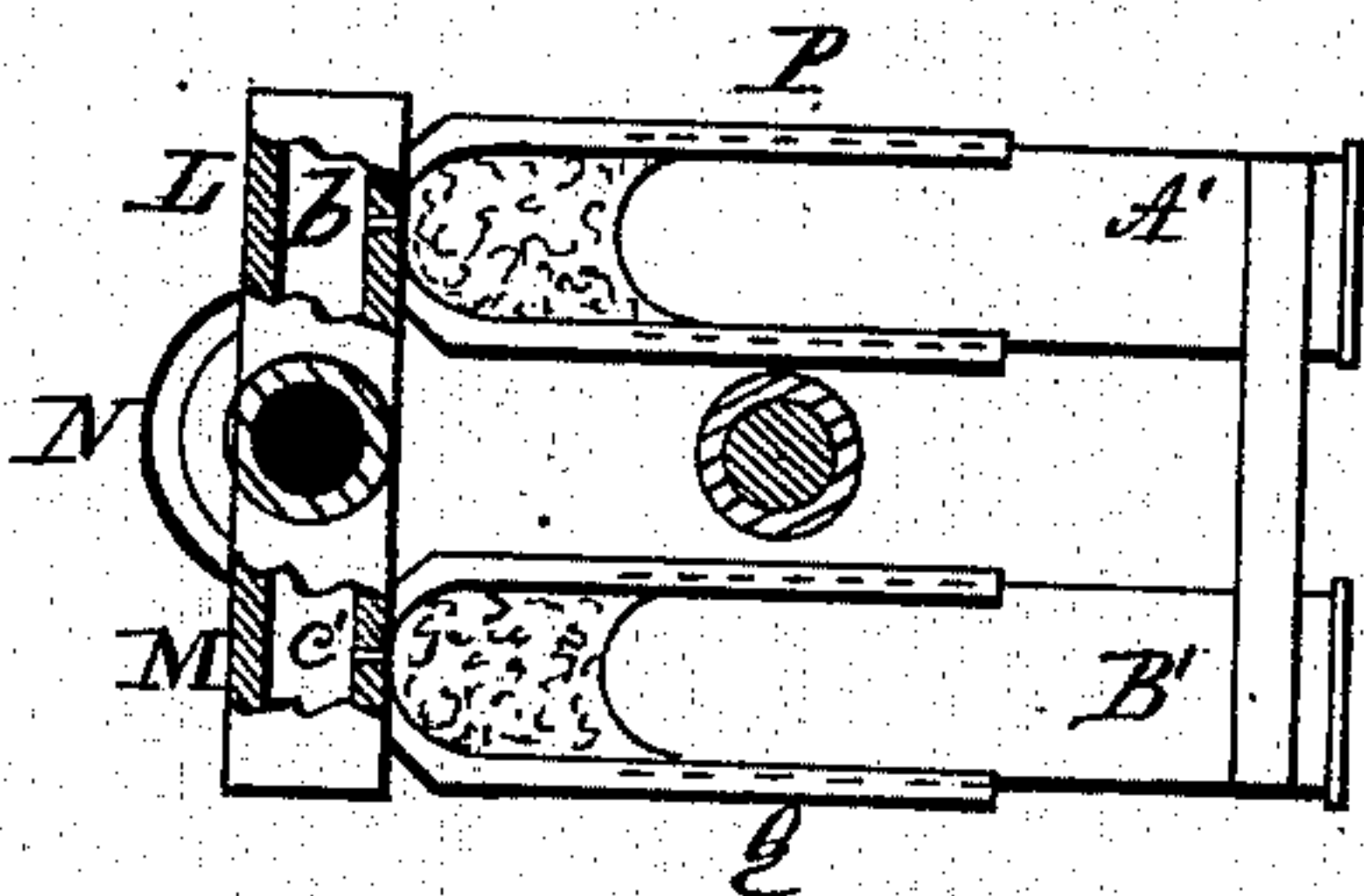


Fig. 3.

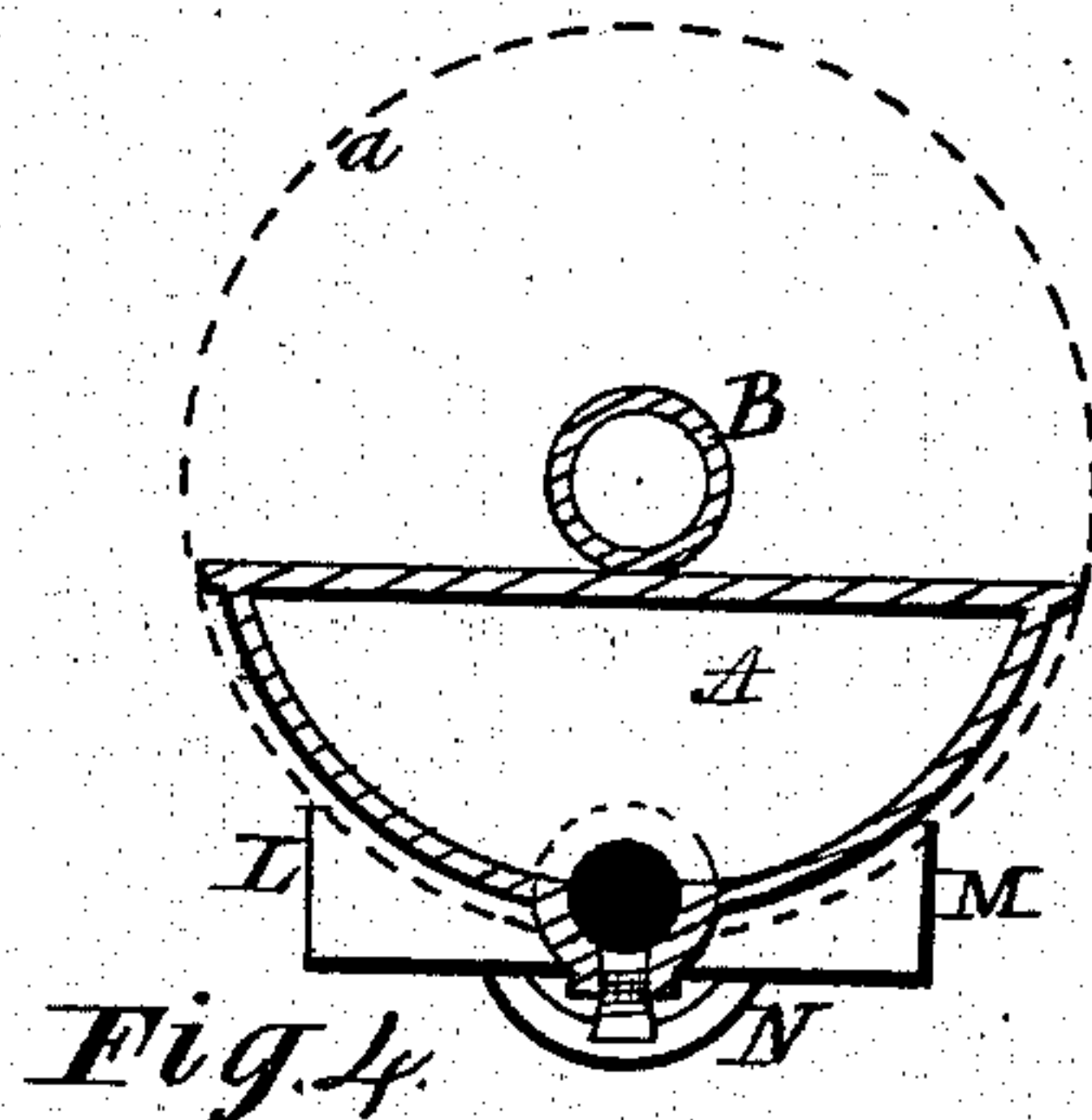


Fig. 4.

Witnesses.

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VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 288,343, dated November 13, 1883.

Application filed March 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, AUGUST KINDERMANN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Vapor-Burner; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical transverse section of the burner. Fig. 2 shows a front view of the burner. Figs. 3 and 4 are horizontal transverse sections taken, respectively, through the lines xx and $x'x'$.

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

A is the gas-generating chamber of the burner, arranged on one side of the induction gas-tube B, below the bottom C of the combustion-chamber D, which bottom C forms the top of said gas-generator, as seen in Fig. 1. An interior view of the generator and the shape thereof are shown in Fig. 4, in which the broken line a indicates the heater plate or bottom C of the combustion-chamber above alluded to.

E is a conduit leading from the generator to the needle-valve orifice a' , passing upward through the arm F of the conduit, the needle-valve a'' being shown in position therein, all as seen in Fig. 1. From the lower side of said arm F depends a tubular screw, G, up through which the stem of the needle-valve passes. The lower end of the stem is fixed in the bottom of a socket, H, provided with an internal thread adapted to fit and screw onto the tubular screw G, operated for that purpose, and for opening and closing the needle-valve by a finger-piece, I, terminating the end of the socket. It will be observed that the said screw and socket are of considerable length. This extreme elongation of the threaded orifice is made for the purpose of diminishing the loss resulting from leakage of the oil when the burner is not lighted.

The generator is supplied with oil through the induction-tube J and the small opening c in the upper end thereof, as shown in Fig. 1. Said tube is an integral part of the generator and conduit. Into said induction-pipe is

screwed a sectional pipe, K, from two opposite sides of which project, respectively, the tubular arms L and M, Figs. 3 and 4. The said pipe K, below the tubular arms, is enlarged, as seen at N, and is provided with an internal thread, into which is screwed the oil-supply pipe O, connecting the burner to the oil-reservoir. (Not shown in the drawings.)

To the tubular arms L M are connected, respectively, the cups P and Q, which are put in open communication therewith by openings b and c' , Fig. 3. Said openings are of small caliber, to allow a very little oil only to percolate through into the cups to saturate the asbestos placed therein. That too much oil may not flow into the cups, the openings may be filled with soft porous wood, or with other material pervious to oil, that it may soak slowly through into the cups for saturating their contents without overflowing, as only so much oil is required therein as will burn for a few minutes for lighting the burner, as hereinafter shown.

The cap of the combustion-chamber has a central depression, forming an internal boss, R, Fig. 1, terminating near to and directly over the induction gas-tube B. This boss R terminates at its lower extremity in a curved recess or cavity, R', the concavity having the effect of giving such deflection to the flame as will, in connection with the perforations and the serrations in the burner-cap, produce the best practical results. In the upper part of the cap is an annular series of holes, d , and in the lower edge of the cap is an annular series of notches, e , and through these orifices the jets of flame pass when the burner is lighted. The cap is secured to the plate by screws, which may pass through the same and into threaded lugs, which project from the inner surface of the cap; or, instead of this, perforations may be formed in the burner-plate—two being sufficient—on opposite sides of the same, near the edge thereof, to receive a corresponding number of pins, which, being attached to lugs on the inner surface of the wall of the burner-cap, depend therefrom and extend through these orifices; and this latter construction is preferred, as being more simple and economical. Said screws are shown at m in Fig. 2,

the dotted lines indicating the lugs on the inside of the cap, into which the screws are driven. In Fig. 1 one of the lugs is shown.

Practically the operation of the above-described vapor-burner is as follows: In order to light the burner, the covers A' and B' of the cups are drawn out so far as to expose their whole contents, (said covers being shown in Fig. 3 as partly drawn out.) The oil-saturated contents are then fired, the heat of which quickly vaporizes the oil in the conduit E and arm F, at the same time heating the oil in the generators above. The needle-valve is then opened and the gas or vapor ascends therefrom into the combustion-chamber through the induction-pipe B. As the vapor issues from the perforations in the cap it burns in jets, the heat of which is communicated by the heater-plate and cap to the generator, in which the already-heated oil is at once vaporized. The covers of the cups are then pushed in, thereby extinguishing the flames arising from the burning oil therein. The vapor produced in the generator passes therefrom down the conduit to the needle-valve, and from thence through the tube B into the combustion-chamber, from which it issues in burning jets, and continues to heat the generator for vaporizing the oil therein for supplying the jets of consuming vapor.

The burner-cap in ordinary burners is not provided with the boss R, having the recess or cavity R', and usually the entire space above the induction-tube is clear, so that the vapor passes directly out of the upper perforations, and with more force and proportionate volume than out of the lower series of perforations. This, as a consequence, causes more heat at the top of the dome than at the bottom, where the heat is mostly needed for vaporizing the oil in the generator, as well as for other heating purposes. This defect in the ordinary burner is corrected by the boss R, provided with the deflecting-cavity R', by which, as the vapor enters the chamber, it is deflected down upon the bottom of the chamber and issues more abundantly from the jet-openings e, causing more heat near and about the generator, thereby facilitating the vaporization of the oil, and at the same time supplying the upper perforation with an abundance of vapor.

In having notches in the edge of the cap instead of perforations, instead of orifices at a short distance above it, the flame of the jets is brought into immediate contact with the heater-plate, producing a greater degree of heat for heating the generator, and causing a more rapid vaporizing of the oil therein. Furthermore, the notches in the edge of the cap are made in casting the cap, thereby saving the

time, labor, and expense of drilling the holes for the jets.

In providing the cups P and Q for starting the burner, the danger is avoided of allowing a quantity of oil to run from the needle-valve into a drip-cup, which not unfrequently flows over the cup to the floor, taking fire and enveloping the stove in smoke and flame, to the imminent danger of the persons near by. The percolation of the oil into the cups is so slow that they are not likely to overflow, but at the same time it is sufficient for the purpose required. As hereinbefore said, oil is prevented from leaking around the valve-stem by the great length of the screw-socket and the tubular screw through which the stem of the valve passes, closely fitting, but free to move therein. This particular feature of the burner is not only safe against leaking, but it is simple and durable in structure and neat in appearance.

A burner-cap provided at its base with serrations is in itself not new, and I make no broad claim thereto.

It is apparent that the function of the central concavity is the same whether serrations or perforations be employed at the base of the cap.

What I desire to claim and secure by Letters Patent is—

1. A burner-cap having within it a central downward projection, which at its lower extremity is provided with a concavity, substantially as and for the purpose set forth.
2. A burner-cap having a central recessed downward projection, a series of orifices near the top, and a series of orifices at the base thereof.
3. The combination of a burner-cap having a projection which is provided with a concavity, and an upper and a lower series of perforations, and a central vertical passage, substantially as described.
4. The combination of the interiorly-threaded socket or sleeve H, carrying the needle-valve, and the tubular screw or exteriorly-threaded projection G, substantially as and for the purpose set forth.
5. In vapor-burners, the cups P and Q, provided with covers, and respectively arranged on each side of the needle-valve mechanism, and in open communication with the oil-supply pipe O by the intervention of the arms L and M and perforations b and c', in the manner substantially as described, and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUST KINDERMANN.

Witnesses:

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