(No Model.)

W. HESTON.

VAPOR BURNER.

No. 270,587. Patented Jan. 16, 1883.

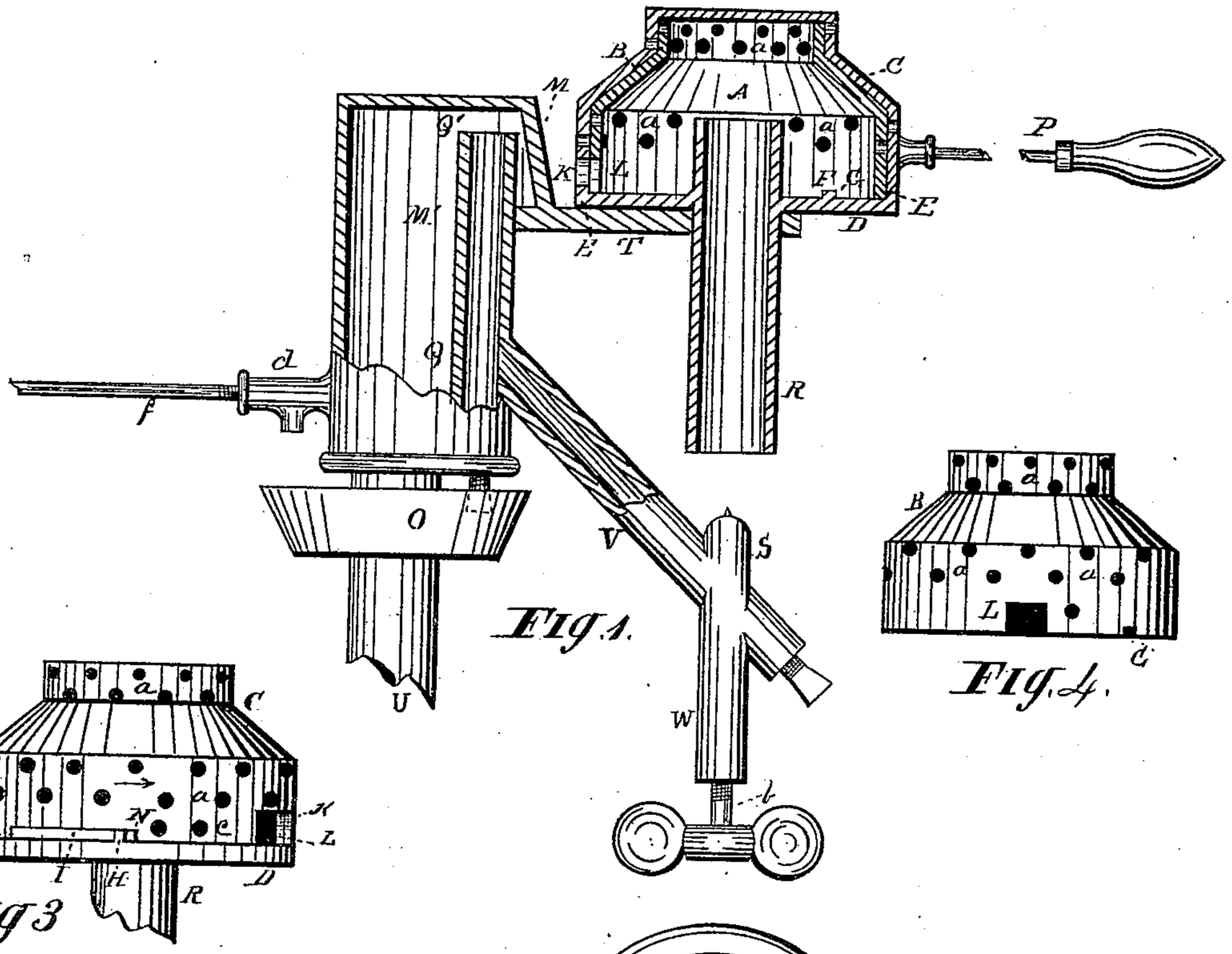

Fig. 1.

Fig. 4.

Fig 3

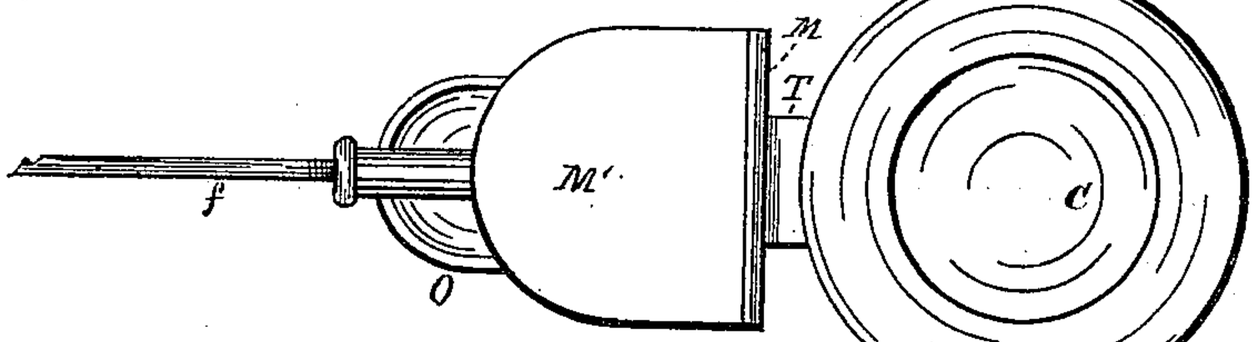

Fig 2.

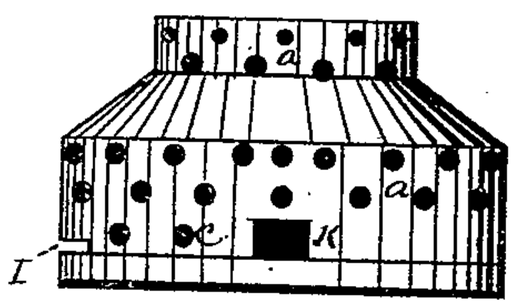

Fig. 5.

Witnesses,
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UNITED STATES PATENT OFFICE.

WILLIAM HESTON, OF MOUNT UNION, ASSIGNOR OF ONE-HALF TO JAMES E. INGERSOLL, OF BEDFORD, OHIO.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 270,587, dated January 16, 1883.

Application filed October 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HESTON, of Mount Union, in the county of Stark 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.

This improvement relates to a vapor-burner, the nature of which consists of double perforated caps, one of which is stationary and the other movable for the purpose of regulating the flame-jets, and to cause a small jet to continue burning to avoid the trouble and delay in relighting.

The improvement also relates to the means employed for generating the vapor from the oil for combustion in the dome.

For a more full and complete description of the said improvements reference will be had to the following specification, and to the annexed drawings, making a part of the same, in which—

Figure 1 is a view of a vertical section in part of the vapor-burner; Fig. 2, a top view. Figs. 3, 4, and 5 are views of the perforated caps detached.

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

The combustion-chamber A, Fig. 1, is inclosed by two perforated caps, B C, of which B is the inside stationary cap and C the outside movable one. The interior cap is adjusted to the base or floor D of the combustion-chamber, so as to fit on the inside of the flange E, and is prevented from turning by means of the lug or pin F, which projects from the base into a slot, G, in the lower edge of the cap, as seen in Figs. 1 and 4. This pin and slot prevent the cap from turning; but it may be readily removed and replaced, as occasion may require. The exterior cap, C, fits down over the interior one, and closes up the opening in the upper part or top of the interior one. The lower edge of the exterior cap, C, rests upon the flange E of the base D, while the interior cap is on the inside of the flange E, which flange prevents the inside cap from moving laterally, and thereby the exterior cap is also prevented from moving laterally, but is free to turn horizontally, so as to open or close the perforations in the caps, respectively. The exterior cap is permitted to turn only a certain distance sufficient to regulate the gas-jet from the perforations *a*. This is attained by means of lug H, projecting from the upper edge of the flange E into the elongated slot or opening I in the lower edge of the exterior cap. The shoulders at each end of the opening determine the distance of the horizontal rotation of the cap, as lug H forms a stop for the shoulders. When full jet-flames are required the exterior cap is turned in the direction of the arrow, Fig. 3, until the shoulder J is brought in contact with lug H, or nearly so, which will close the openings K and L and open the perforations *a* in the respective caps. The volume of flame-jets may be more or less reduced by turning the exterior cap in a reverse direction of the arrow, which will close up the perforations *a*, as required, for less heat. This closing of the perforations is due to the blank spaces of the exterior cap covering over the perforations of the interior cap. This opening and covering of the perforations in the interior cap causes more or less volume of flame to issue from the combustion-chamber A. On turning the exterior cap so that the shoulder N will be in close proximity to the lug H, the perforations of the interior cap will be closed over by the blank spaces between the perforations of the exterior cap. In this position the openings K and L will coincide with each other and will have a flame-jet issue from the chamber A through them, and impinging on the face M of the generating-chamber M′; but as the volume of flame from these joint openings is much less than from the perforations of the caps there will be less heat imparted to the chamber M′. Hence less gas is generated from the oil therein, but sufficient will be evolved to produce a low constant flame, enough at any time to cause full jets to issue from the perforations on turning the exterior in the direction of the arrow, so as to increase the heat upon the generating-chamber from the openings. In this way, after the first lighting of the burner by means of the oil-cup O, it need not be resorted to, as the burner may be fully inflamed from the result-

ant effect of the jet from the joint openings K L of the caps. When the perforations are in full-open relation with each other, so that the maximum volume of jets is attained, the perforation *c*, Figs. 3 and 5, will then coincide with the opening L in the interior cap, Figs. 1 and 4, to cause a jet to pass from the combustion-chamber through this space, which otherwise would be blank, and to be impinged upon the generating-chamber. It will be noted that the opening L will at all times be in the same position, directly opposite the upper part of the generating-chamber, as seen in Fig. 1.

The turning of the exterior cap is so regulated or determined by the lug H, in connection with the slot I and the shoulders J N, that the cap can only be turned a given distance, and when moved to the position seen in Fig. 3 the perforations *a* are closed and the openings K L made to coincide, so that a light low flame ensues therefrom, and on turning the cap C in the direction of the arrow the openings K L are closed and the perforations opened accordingly.

To the cap C is connected a handle, P, for turning it.

Connected with the base or floor of the chamber A is a conducting-tube, R, which is in open relation with the needle-valve mechanism S at its lower end, the upper end opening into the combustion-chamber, as seen in Fig. 1. The tube R is supported in a bracket, T, attached to the generating-chamber M′, Figs. 1 and 2, by which the combustion-chamber is held in position. To the lower end of the generating-chamber is attached a supply-pipe, U, leading to the oil-supply tank. (Not shown, as it may be same as ordinarily used for this purpose.) In the interior of the generating-chamber is a vapor-pipe, Q, closed at the lower end and open at top into the generating-chamber, as seen at Q′. This vapor-pipe forms a part of the said chamber M′.

Extending from the vapor-pipe Q, and in open relation therewith, is a branch pipe, V, which connects with the needle-valve pipe W, in which is fitted the needle-valve, the stem *b* thereof being provided with a handle for operating in in the usual way.

Directly under the generating-chamber and attached to the pipe U is an oil-cup, O, Figs. 1 and 2, into which oil is conveyed from the lower part of the generating-chamber M′ by means of the valve-cock *d*, which admits of more or less oil passing from the chamber M′ into the cup, as may be required. The supply may be stopped entirely by closing the valve-cock, the stem of which is seen at *f*, Figs. 1 and 2. On the oil being conveyed to the generating-chamber M′ and the cup supplied, as before stated, the ignition of the oil in the cup will convey heat to the generating-chamber, causing generation of vapor from the oil, which will pass through the pipes Q V to the needle-valve pipe or chamber, thence through the conductor R into the combustion-chamber, from which chamber it issues through the perforations and openings before set forth. A portion of the flame from the chamber A passes through perforations or openings adjoining the upper part of the generating-chamber, thereby supplying the required heat for the constant generation of the gas or vapor so long as the supply of oil is continued. The upper end of the pipe Q is in close proximity, at Q′, to the upper end of the generating-chamber M′, by which regurgitation of the oil through the pipes on igniting the burner is arrested, as the rapid generation of gaseous vapor above the oil in the chamber will have sufficient pressure above the oil to resist the ebullition of the oil engendered by the heat from the cup O when ignited, and thereby preventing its passage through the pipes to the combustion-chamber.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In vapor-burners, the two perforated caps B C, arranged one within the other, the interior one being stationary and the exterior one movable therein, and provided with openings K L, slot I, and lug H, in combination with the pipe R and needle-valve mechanism, substantially as described, and for the purpose set forth.

2. In vapor-burners, an improvement consisting of double perforated caps B C, provided with openings K L, the interior cap being stationary and adjusted to the floor of the combustion-chamber within the flange E, and the exterior cap, C, inclosing the said cap B and turning upon the same, in combination with the pipe R, generating-chamber, and needle-valve mechanism, substantially in the manner as described, and for the purpose specified.

3. In vapor-burners, the combustion-chamber having a stationary and movable cap, slot I, and pin H, with a pipe extending from the needle-valve mechanism into the interior of said chamber, in combination with the bracket T, generating-chamber, openings K L, and pipes Q V, arranged substantially as and for the purpose set forth.

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

WILLIAM HESTON.

Witnesses:
W. H. BURRIDGE,
J. H. BURRIDGE.