(No Model.)

# M. L. HULL.

## VAPOR BURNER.

No. 347,712. Patented Aug. 17, 1886.

Fig. 1.

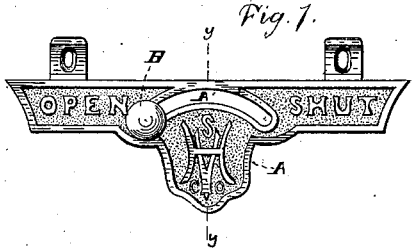



Fig. 2.

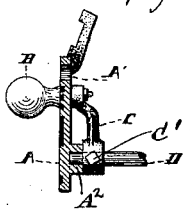


Fig. 3.

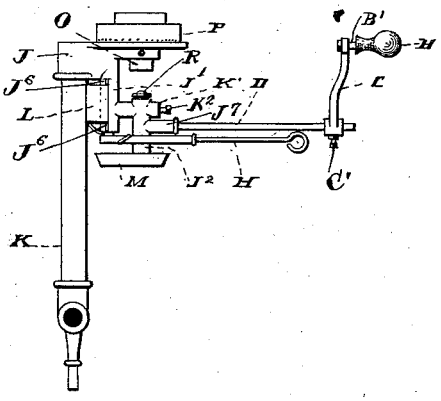


Fig. 4.

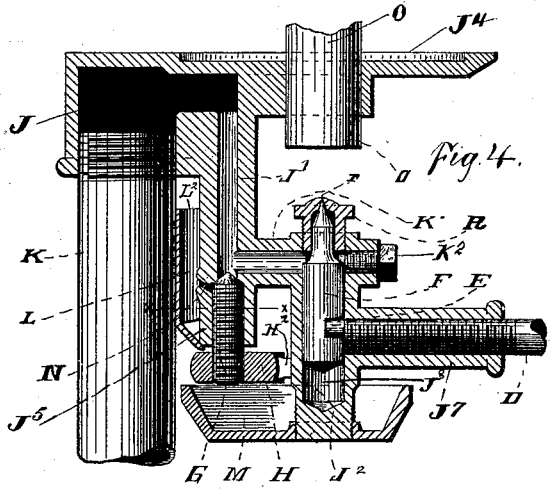


Fig. 5.

Fig. 6.

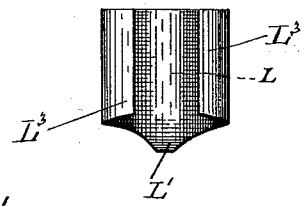


Fig. 7.

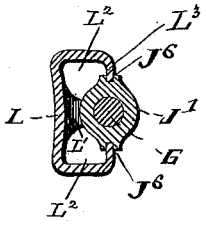
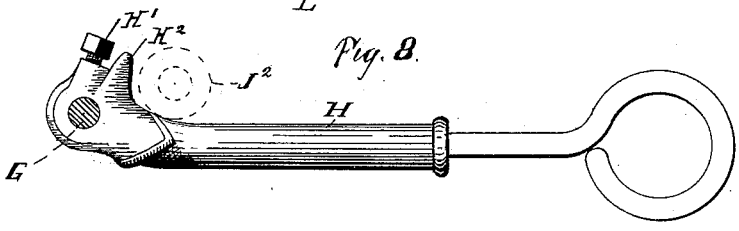


Fig. 8.



WITNESSES

N. S. Amsbury.

G. W. Shumway

M. L. Hull. INVENTOR

By Jno. Crowell.

Attorney

# UNITED STATES PATENT OFFICE.

MARTIN L. HULL, OF CLEVELAND, OHIO.

## VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 347,712, dated August 17, 1886.

Application filed May 4, 1885. Serial No. 164,271. (No model.)

*To all whom it may concern:*

Be it known that I, MARTIN L. HULL, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vapor-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention is an improvement in vapor-burners; and it consists, first, in the combination of a vapor-tube, a horizontal arm extending therefrom provided with a jet-orifice, a valve-casing having a chamber in which is located the primary needle-valve having a transverse recess, a horizontal sleeve connected to the valve-casing, a front plate having a socket, a valve-rod secured in the casing-sleeve and plate-socket, an eccentric located on the inner end of the valve-rod and occupying the recess in the primary needle-valve, and a crank at the outer end of the valve-rod provided with a handle, as hereinafter described; second, in the combination, with a primary needle-valve and its casing, of a vapor-tube having a small orifice, and an extension to the tube beneath the orifice, an initial heating-cup supported under the vapor-tube, a secondary valve controlling the orifice, and a lever having limited movement in a horizontal plane for operating the secondary valve, as hereinafter described; third, in the combination of a vapor-tube having a small orifice in the side thereof and an extension thereunder, an initial heating-cup having a suitable support, a deflector secured opposite to the orifice, forming a chamber for directing the flame upward, provided with an extension in the direction of the cup, a secondary valve controlling the orifice, and a horizontal lever for operating the secondary valve, as hereinafter described.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is an elevation of a front plate for application to the face of a vapor-stove, showing the handle in open position. Fig. 2 is a vertical section on the line *y y*, Fig. 1. Fig. 3 is a side elevation of my improved burner, the front plate being omitted. Fig. 4 is an enlarged vertical section through the center of the burner, showing the arrangement of the several parts. Fig. 5 is a front view of the primary needle-valve detached, showing the recess for the reception of the eccentric. Fig. 6 is a front view of the deflector for directing the small flame upward for heating the main chamber. Fig. 7 is a horizontal section of the deflector, vapor tube extension, and secondary valve on the line *x x*, Fig. 4. Fig. 8 is a plan view of the horizontal lever by which the secondary valve is operated.

A is a plate of metal for attachment to the front of the frame of a vapor-stove. This plate is formed with a curved slot or opening, A′, for the shank B′ of a handle, B, and a socket, $A^2$, for the support of the outer end of the primary valve-rod. On the left and right of the slot or opening, respectively, are the words "open" and "shut."

The burner is constructed with a platform, $J^4$, having a main chamber, J, which receives the supply-pipe K.

J′ is a vapor-tube extending from the platform, having a horizontal arm, K′. This arm is provided with a jet-orifice, *r*, in an adjustable nipple, R, and with a screw-plug, $K^2$, closing the outer end thereof.

Extending from the horizontal arm K′ is a casing, $J^2$, in whose chamber $J^8$ is located the primary valve F, projecting across the arm K′ for controlling the jet-orifice, and formed with a transverse recess, F′.

Projecting from the valve-casing is a horizontal sleeve, $J^7$, which receives the primary valve-rod D. This valve-rod is provided at its inner end with an eccentric, E, which occupies the recess F′ in the primary valve. The outer end of the valve-rod is provided with a crank, C, and is supported in the socket $A^2$ of the plate.

To the crank C is secured the handle B.

M is the initial heating-cup secured to the lower end of the valve-casing.

The vapor-tube J′ is formed with a small orifice, N, in one side thereof, and also with an extension, $J^5$, in which is fitted a secondary valve, G, for controlling said orifice.

To the secondary valve is secured adjustably (by means of a set-screw, H′,) a hand-lever, H, by which it is operated. The lever is formed with a horn, $H^2$, which abuts against

the primary valve-casing for limiting the movement of the lever and preventing the opening of the valve too far.

L is a deflector opposite to the orifice N, secured by its flanges $L^3$ in the grooves $J^6$ of the vapor-tube, forming a chamber, $L^2$, open at bottom and top beneath the main chamber of the platform and over the initial heating-cup. The deflector is formed with an extension, L′, for directing any fluid which may escape through the small orifice into the cup.

P is the burner proper, secured by a pipe, O, to the platform. The crank C is adjustably connected to the valve-rod D by means of a set-screw, C′.

The operation of the burner is very simple. When it is desired to light a flame, the lever H is turned, so as to allow a small quantity of fluid to pass from the orifice N into the cup M, where a match is applied to the fluid to ignite the latter and heat the burner. As soon as the gas begins to flow, the handle B is turned to the left, causing the valve-rod to open the primary valve by means of its eccentric, and the gas immediately streams up past the needle-point through the jet-orifice, and up through the pipe O, (where it is mixed with air,) into the chamber of the burner proper, P, where it may be lighted and utilized in any way desired. By means of the orifice N a small flame is maintained for keeping the vapor-tube and main chamber hot while the primary valve is closed. The flame also heats the portion of the supply-pipe contiguous to it and to the main chamber. Initial heating is therefore only required when the flame is first started. With the limited movement permitted to the lever H there is no liability of the secondary valve being opened too far. The valve-rod is firmly supported in the plate-socket, and the crank-handle gives positive movement to the rod.

Having thus described my invention, the following is what I claim as new therein, and desire to secure by Letters Patent:

1. The combination of a vapor-tube, horizontal arm K′, having a jet-orifice, valve-casing $J^2$, having chamber $J^8$, horizontal sleeve $J^7$, primary needle-valve F, occupying the chamber, having a recess, F′, front plate, A, having a socket, $A^2$, and a valve-rod, D, secured in the casing-sleeve and plate-socket, provided with eccentric E at its inner end, occupying the recess in the needle-valve, and having a crank, C, and handle B at its outer end, substantially as described.

2. The combination, with a primary needle-valve and its casing, of a vapor-tube, J′, having a small orifice, N, and an extension, $J^5$, initial heating-cup supported thereunder, a secondary valve, G, controlling the orifice, and a lever having limited movement in a horizontal plane, for operating the secondary valve, substantially as described.

3. The combination of a vapor-tube, J′, having a small orifice, N, in the side thereof, and an extension, $J^5$, initial heating-cup supported thereunder, deflector L, secured opposite to the orifice, forming a chamber, $L^2$, for directing the flame upward, and having an extension, L′, in the direction of the cup, a secondary valve, G, controlling the orifice, and a horizontal lever for operating the secondary valve, substantially as described.

In testimony whereof I sign this specification, in the presence of two witnesses, this 1st day of May, 1885.

MARTIN L. HULL.

Witnesses:
G. W. SHUMWAY,
N. S. AMSTUTZ.