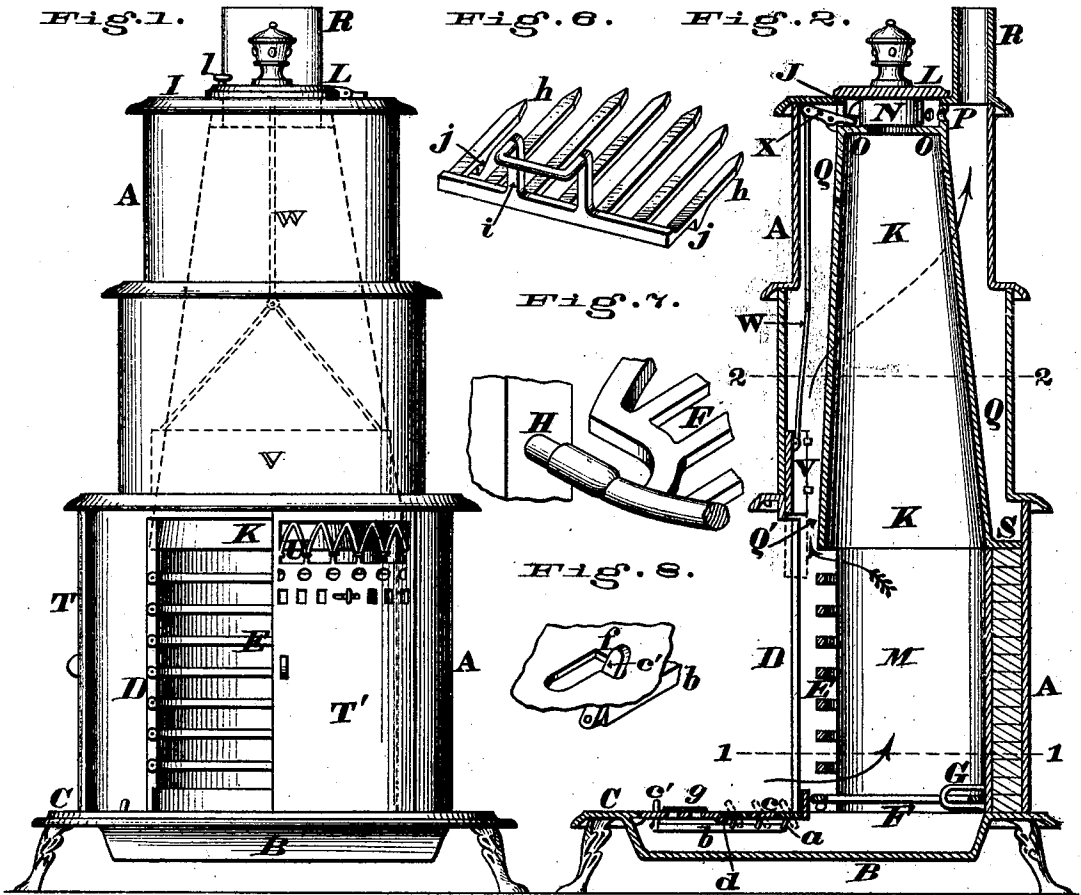


E. Y. ROBBINS.
No. 128,425.

Base-Burning Stove.
Patented June 25, 1872.



Attest.
Jas. H. Seymour
H. Knight

E. Y. Robbins
By Knight Bros.
Attorneys.

UNITED STATES PATENT OFFICE.

EDWARD Y. ROBBINS, OF CINCINNATI, OHIO.

IMPROVEMENT IN BASE-BURNING STOVES.

Specification forming part of Letters Patent No. 128,425, dated June 25, 1872.

Specification of an Improved Stove invented by EDWARD Y. ROBBINS, of Cincinnati, Hamilton county, Ohio.

My invention is essentially designed to combine, with an open-grated fire-front adapted to project a flood of luminous heat horizontally into the lower part of the room, a central magazine for coal or other fuel fed from the top, and, moreover, so arranged as to confine the active combustion and flame to the front of the grate, and to direct it away from the magazine, whose contents remain unignited until discharged into the grate, the flame and incandescence being concentrated on the front part of the grate and directed away from the magazine. My invention also comprises a double-seated lid or cover, inclosing a space between its seats and opening by a hinge, said space communicating with the flue by suitable apertures for a purpose hereinafter explained. My invention further comprises a peculiar construction of fire-doors or dampers for carrying out the above objects. My invention also includes an automatic provision for entirely or mainly closing the apertures in the fire-doors whenever the cover of the magazine is raised. My invention further includes the provision, in the hearth-plate, of one or more pivoted traps or slats, capable of being brought to a vertical position for discharging ashes, and of being then brought to a horizontal position flush with the said hearth-plate. My invention further consists in a peculiarly-formed dumping-grate bottom, whereby the débris at the lower part of the grate may be discharged without disturbing the fuel above. My invention further consists in a provision of a false-bottom grate for insertion in the front grate when it is desired to discharge the spent matter from the lower part of the grate by means of said dumping-bottom.

Figure 1 is a front elevation of my improved stove, one of the sliding doors being shown opened and the other closed. Fig. 2 is a vertical section of the same from front to rear. Fig. 3 is a horizontal section at the line 1 1. Fig. 4 is another horizontal section at the line 2 2. Fig. 5 is a vertical section through the lower portion of the stove, showing the manner of using the false grate. Fig. 6 is a perspective view of the false grate. Fig. 7 is an enlarged perspective view, showing the manner of attaching the bottom grate to the front

of the stove; and Fig. 8 shows the devices that prevent the accidental movement of the slats in the hearth-plate.

The external shell A of my stove has, preferably, the oval horizontal section and stepped vertical section represented, but may be of cylindrical or other form, and rests upon an ash-pit, B, capable of being wholly or partially closed at will by means of a hearth-plate, C. Just above the hearth-plate there is an opening, D, to the fire-chamber M in the shell, which opening is wholly or almost wholly occupied by a series of bars, preferably horizontal, constituting the front E of my grate. The grate bottom F is supported at rear on two hooks, G G', which at all times support the said rear, but permit the said bottom to be slid forward for dumping, as in Fig. 5, or backward for bringing said bottom grate to its horizontal or normal position, as in Figs. 2, 3, and 7. In this latter position the front edge of said grate bottom rests upon the lugs H H'. The top plate I of the stove has an aperture, J, of corresponding shape but smaller size, from which depends a tube, K, of oval horizontal section, open both at top and bottom, and whose lower end terminates near or a little above the level of the top bar of the grate. Hinged to the said plate I is a lid or cover, L, which is fitted to the margin of the aperture as a seat to confine the smoke, and projecting downwardly from the under side of the lid L is an oval flange, N, of smaller size than the lid, which flange rests upon a ledge, O, extending inward from the concave walls of the magazine so as to form a nearly air-tight joint. The walls of the magazine between the seats O and N have several small orifices, P, which communicate with the annular flue Q that intervenes between the outside of the magazine and the inside of the said shell, and which serve to conduct into said flue whatever smoke may leak through the lower joint or seat O when the lid is shut. In order to enable the lid to be tightly shut I provide a wedge-button, I, which engages and binds in a suitable socket for the purpose. At or near the rear side of the stove top is my collar or exit smoke-flue R. To this exit the flame would take a direct course through the annular flue Q upward and round the sides and back of the magazine, whose contents would become ignited by the heat communicated and by the

suction of fresh air capable of supporting combustion through the open front under and into the bottom of the magazine, causing the fire to work up into the same. To prevent this action, I provide a flange or diaphragm, S, which separates the annular space Q from the grate or fire-chamber everywhere, except in front, where its omission forms a throat or passage, Q', through which all the smoke and flame being compelled to pass obliges these emanations to seek the front of the stove and leaves the magazine comparatively cool and free from contact both of flame and of air capable of supporting combustion. The diaphragm S may rest upon the tile or other lining of the fire-place, or may be fastened to the shell of the stove, or the magazine may rest directly upon the top edge of the lining, in which case the diaphragm S may be dispensed with, because my lining would in that case serve the same purpose.

The open fire-front is closable by one or more doors, which may be of the sliding form, as shown at T T'. These doors have numerous small draught-inlets U near their tops, which inlets are capable of being nearly closed by an ordinary register or by a slide-damper, V, confined in suitable guides behind the breast, and suspended by a rod, W, attached at its upper end to a lever, X, which, when depressed by the closed lid, as shown in Fig. 2, operates to elevate the said slide; and when released by the opening of the lid, permits said slide to drop, and thus to automatically close the said apertures, so as to cause a strong inward current at the top of the stove, and to prevent the escape of smoke into the room upward through the magazine when the lid is open as aforesaid. That portion of the hearth-plate nearest the fire has an opening, closed by one or more slats, c, or shutters, hung by pivots Z, at or near their proper axes, to the hearth-plate, and connected by arms a and rod b to a sliding bolt, c', whose motion in one direction operates to open the slats and to place the edge up, as shown by dotted lines in Fig. 2, so as to discharge into the ash-pit or pan any ashes that may have collected on the hearth-plate, and whose motion in the other direction operates to restore said slats to their proper horizontal position, and in which position their rabbeted edges d enable them to lie perfectly flush with the top of the hearth and with each other, as shown in Fig. 2. In order to hold them to such position, the bolt c' may be secured in place by a button, or may drop into a recess or be turned into a side slot, f, in the hearth-plate, or otherwise held in place. The hearth-plate may also have a register, g, for admitting draught-air. As in this stove the fuel that has been longest exposed to combustion will always be what is for the time being the lowest stratum in the grate, and from the nature of its construction and operation it will be desirable to rid the fire of the spent debris or ashes, cinders, &c., without disturbing the superincumbent portions of the fuel, I have

provided that the grate-bottom, by being simply drawn forward, shall drop at its front edge into the ash-pan, without elevating the rear part of said bottom. In all conditions of the stove, whether the doors be open or shut, the smoke coming forward meets the fresh air and becomes ignited in front. This combustion of smoke is still more complete when the doors and hearth-plate are entirely closed, save at the limited apertures at top of the doors, the effect of this closure being also to check combustion of solid parts of the fuel, thus placing the fire under control, and enabling the operator to maintain at will a more or less active combustion, as circumstances may make desirable. The sides and back of the magazine at bottom must rest upon and be fitted tightly to the lining of the fire-chamber, or to the outer shell of the stove, so that there can be no draught or vent for the smoke or blaze or heat to get up from the fire-chamber into the annular smoke-chamber above, except in front. This may be done either by building the tile-lining of the fire-chamber up against the lower edge of the magazine, back and sides, or by a flange or diaphragm around sides and back of magazine, extending outward, and fastened to the outer shell of the stove, or by making an iron lining for the fire-chamber continuous with the back and sides of magazine. Either arrangement will force the smoke and heat forward, in order to find an exit from the fire-chamber, and by this forward current no fresh air will be allowed to reach the fuel in the magazine, but only such air as has entered at or near the bottom of the grate and risen up through the whole body of ignited fuel in the fire-chamber, and become so completely exhausted of its oxygen that it cannot ignite the fuel of the magazine.

My stove is particularly designed for bituminous coal, but will also answer for the use of any other fuel. It is better adapted to the use of bituminous coal than other magazine-stoves for the following reasons: First, the arrangement of the bottom of the magazine, by which all backward draught of fresh air under the magazine is prevented, and thus the fire prevented from working up in the said magazine; and second, by the fact that it is an open-front stove, allowing the fresh air to enter and circulate with the smoke around the outside of the magazine, thus keeping the said magazine sufficiently cool to prevent all caking or sticking of the coal in said magazine, as would be the case with bituminous coal if the stove were shut up like ordinary close stoves. Even when the doors are closed, air enough will enter through the openings at the top of said doors to prevent the overheating of the magazine. This is the purpose of these perforations.

Claims.

I claim as my invention—

1. A stove whose fuel-magazine is arranged above the fire-chamber in such a manner as to

compel the products of combustion to escape from the latter upward, wholly in front, substantially as herein explained.

2. The provision, in a magazine-stove, of a fire-chamber having the grated open front D E, said fire-chamber being closed at its upper portion, at both sides and rear, and being arranged in such a manner as to exclude air from the bottom of the same, substantially as set forth.

3. A magazine-stove, consisting essentially of the shell A, grated-front fire-chamber D E M, magazine K, and flue or throat Q', said stove being constructed with the flange S or equivalent device for closing the draught from the back and sides of the fire-chamber, as and for the purpose herein designated.

4. I claim the double-seated cover L N, Fig. 2, fastened in its closed position by the button I, Fig. 1, which button, and also the lever X, Fig. 2, or either of them, work in and through one or more of the vent-holes P, Fig. 2, for the supplementary purpose of keeping said hole or holes open and free from soot or other substance resulting from the combustion of bituminous coal.

5. The slide V, to partially close the openings at top of the door or doors T T', when charging the magazine, said slide being worked automatically by opening and closing the cover of the magazine substantially as set forth.

6. I claim a supplementary grate for cleaning out the stove, constructed with shoulder or shoulders j, Fig. 5, together with upright front i, to hold it in position at any altitude at which it may be desirable to insert it.

7. I claim the provision in a hearth-plate of one or more pivoted slats or traps, c, adapted to be turned up edgewise to let the ashes drop through, and, when turned down or closed, forming a level surface.

8. I claim the devices *a b c' f*, or their equivalents, for holding or locking the slats or traps in the closed condition.

In testimony of which invention I hereunto set my hand.

EDWARD Y. ROBBINS.

Attest:

GEO. H. KNIGHT,
JAMES H. LAYMAN.