R. D. GRANGER.

AIR TIGHT FRANKLIN STOVE.

No. 7,973. Patented Mar. 11, 1851.

Fig. 3.

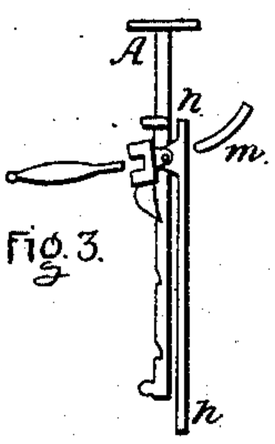


Fig. 1.

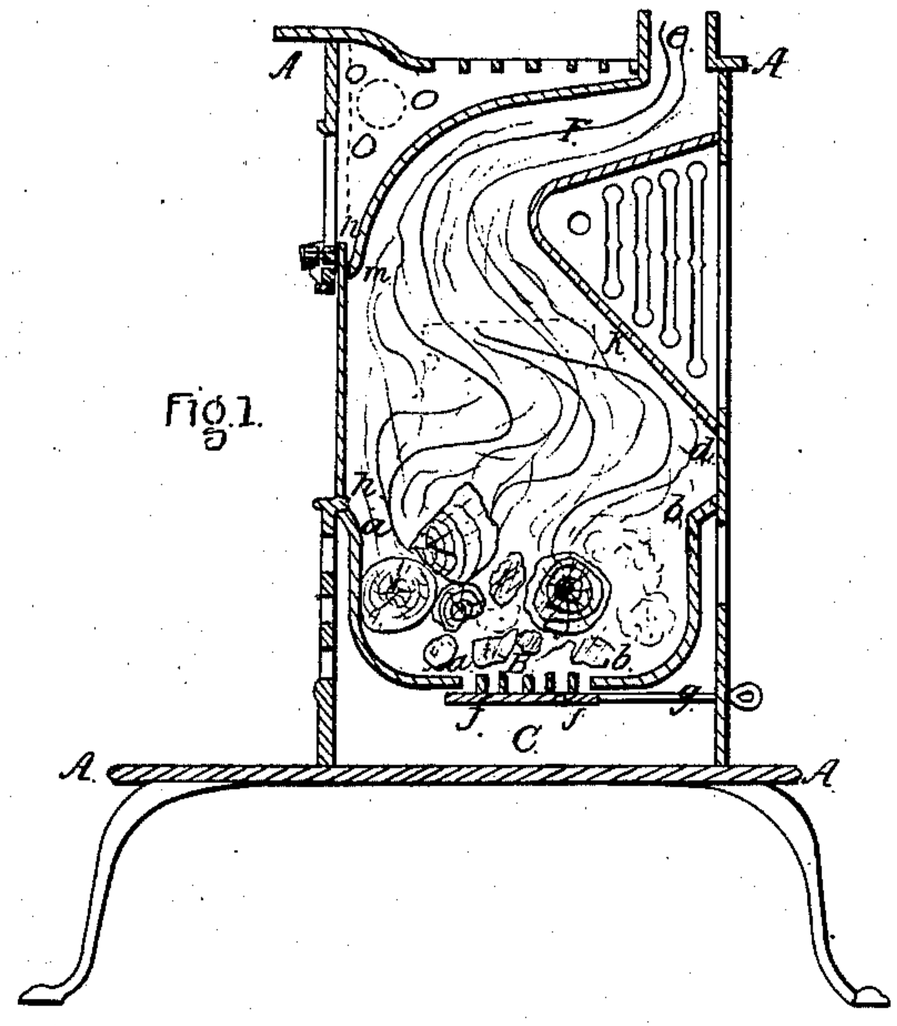
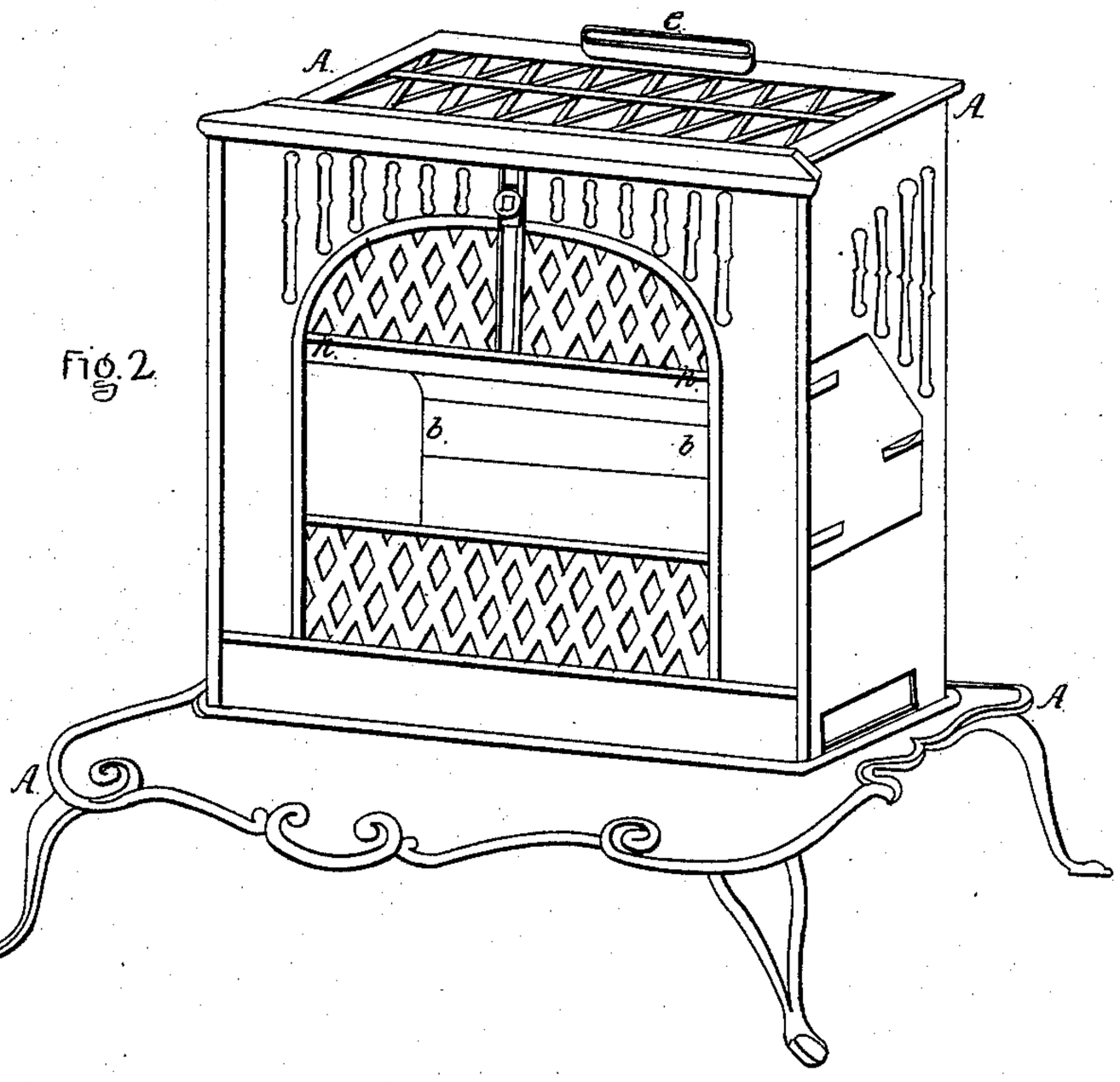


Fig. 2.



UNITED STATES PATENT OFFICE.

R. D. GRANGER, OF ALBANY, NEW YORK.

IMPROVEMENT IN AIR-TIGHT FRANKLIN STOVES.

Specification forming part of Letters Patent No. **7,973,** dated March 11, 1851

To all whom it may concern:

Be it known that I, RENSSELAER D. GRANGER, of Albany city and county, in the State of New York, have invented a new and Improved Parlor-Stove, which I call "Granger's Air-Tight Franklin Stove;" and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 shows a cross or profile section through the middle of the stove; Fig. 2, a perspective view of the stove with the front open.

The first part of my invention consists in making the front and back of the fire-box of closed metal plates to form a hot-air chamber in front and one behind, with the bottom provided with a grate occupying about one-third of the area from the front to back, and provided with a damper to close the whole grate-surface or any part thereof, whereby the supply of air to pass through the grate can be regulated to suit the draft of the chimney and the amount of combustion required, or be entirely cut off, so that a slow combustion can be maintained in the fire-chamber by a supply of oxygen from above, on the principle of what is known as the "air-tight" stove. The front and back plates of the said fire-box, while they are employed to form a fire-box with but a small proportional grate-surface, at the same time constitute the inner plates of two air-chambers, so that the air entering therein from the room will be heated by radiation.

The second part of my invention consists in combining with a fire-box—such as above described—having a grate at the bottom governed by a damper, vertically-sliding doors in front and above the fire-chamber, whereby the supply of air from the room to the inflammable products of the combustion of the fuel in the fire-pot can be regulated and directed at pleasure. The effect of the said sliding doors in front is at the same time such as to admit of a ready means of regulating the height and capacity of the front aperture, that the stove may be used as an open Franklin without smoking.

In the accompanying drawings, A A A A show the body and hearth of the stove, which is formed in the usual proportions of parlor Franklins.

The coal or wood receptacle is made with curvilinear or inclined front and back plates, *a a b b*, rounding or slanting from the horizontal lower lines of the front opening of the stove down to the grate B, which occupies a space at or near the center of the lower part of the stove, and is a little less than one-third of the width of the stove in breadth, extending from side to side thereof in its length, and is placed at the usual height from the bottom of the stove, so as to allow a sufficient ash-pit, C, beneath the grate.

The damper is a sliding plate, *f f*, arranged to be, when not used, in the space between the back edge of the grate and the back plate of the stove, (or front edge and front plate, if preferred,) and when pushed out from the recess by its handle *g* is capable of closing air-tight the said spaces of the grate and fire-box.

I arrange a sliding door or portcullis, *h h*, moving vertically in a groove or recess in the jambs of the open front, and continuing behind the front plate of the stove. The door, when drawn up, lies behind the front plate, as shown in Fig. 2, and when dropped down closes the front opening, as shown in Fig. 1. The door can be set to any desired height by means of a little dog or pawl hinged to a projection of the sliding door, which protrudes through a slot in the center of the front plate and catches into teeth cut in the side moldings of the slot, as shown in Fig. 3.

The flue F is constructed by throwing the upper back plate, *k*, of the fire-box with a slope forward from the fuel-receptacle at *d*, and upward for a short distance, when with a curve it turns upward and backward toward the rear of the upper part of the stove, where the flue passes through the top or upper part of the back plate. The front part of the flue is a plate, which starts from the top of the front opening of the stove at *m* and turns with a gradual curve toward the rear, slowly approaching the back plate till it reaches the exit-passage of the flue. This disposition of the flue leaves vacant spaces between it and the top, front, rear, and sides of the stove, which is constructed of plates perforated with openings, after some ornamental design, permitting free radiation of heat from the flue-plates.

It will be observed from the drawings that similar spaces lie between the receptacle for fuel and the front and back plates, also cov-

ered by the perforated front and rear plates of the stove. This disposition of inner and outer plates permits currents of cool air to enter at the lower parts of the inner plates, become heated, pass out and circulate through the room.

When the stove is to be used as an open Franklin, the front door is to be drawn up, and the bottom may be drawn out. Dropping the door and closing the damper under the grate converts the open Franklin into an air-tight Franklin.

By partially opening the front door and setting it at any desired degree the draft of the stove may be managed at pleasure.

The great objection to Franklin stoves heretofore made has been their liability to smoke when without doors, or with doors swinging on hinges, since the quantity of air admitted could not be controlled to meet the capacity of the stove and flues, and the smoke would escape from the stove. My object in the construction of this Franklin is to obviate this difficulty, and at the same time so to construct and combine my improvements that the open Franklin may be converted at pleasure into an air-tight stove for economy in fuel and safety and convenience in use.

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

1. Making the fire-box with closed plate in front and behind, with a grate-surface at bottom occupying about one-third of the space between the front and back stove-plates to constitute hot-air chambers front and back, when such fire-box is combined with a sliding damper at bottom, substantially as and for the purpose specified.

2. In combination with a fire-chamber constructed as above specified, and governed at bottom with a sliding damper, as specified, the open front with vertically-sliding doors, as described, and for the purpose specified.

RENSSELAER D. GRANGER.

Witnesses:
ALEX. PORTER BROWNE,
WM. BISHOP.