J. ATWATER.

Fire Place.

No. 1,001.

Patented Nov. 9, 1838.

Fig. 2

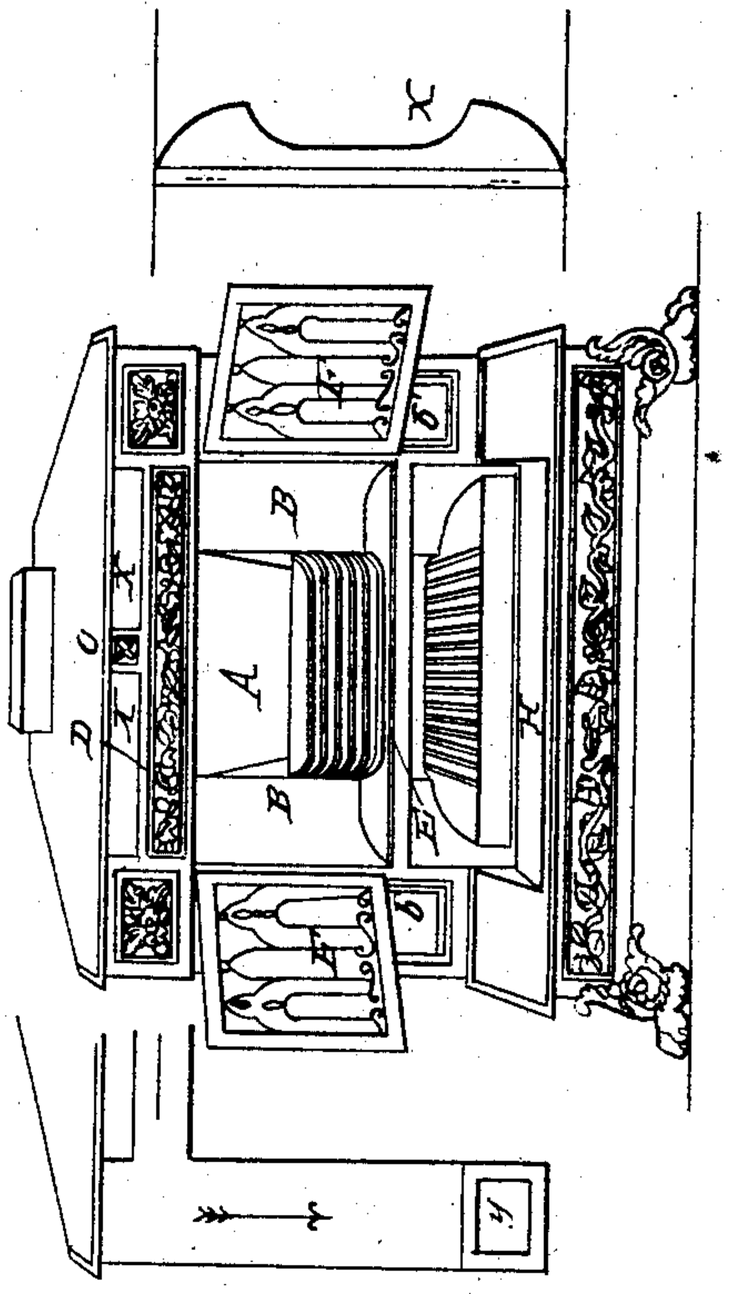


Fig. 3

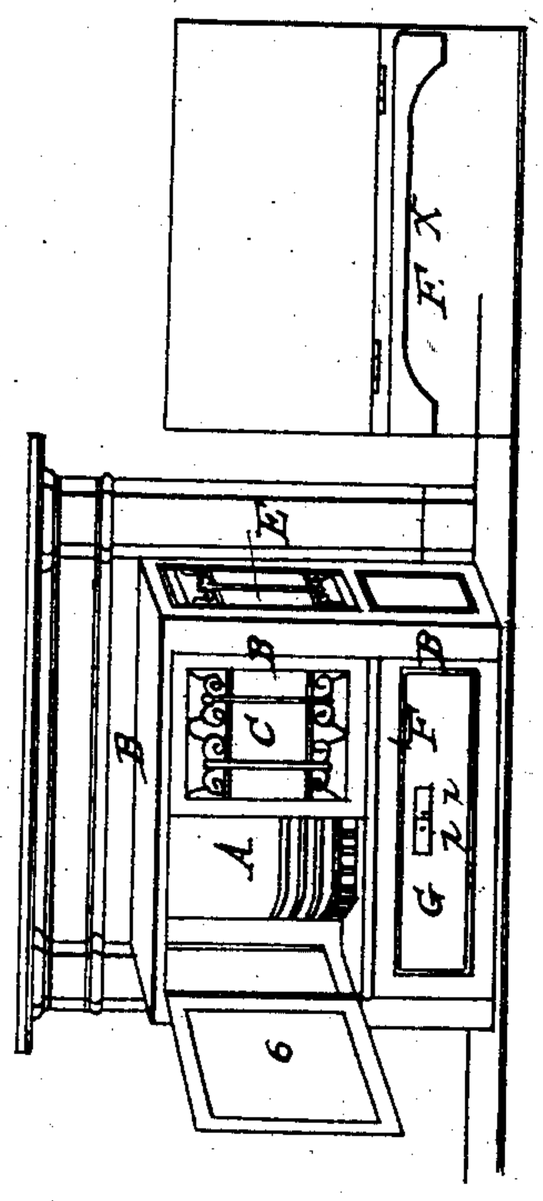
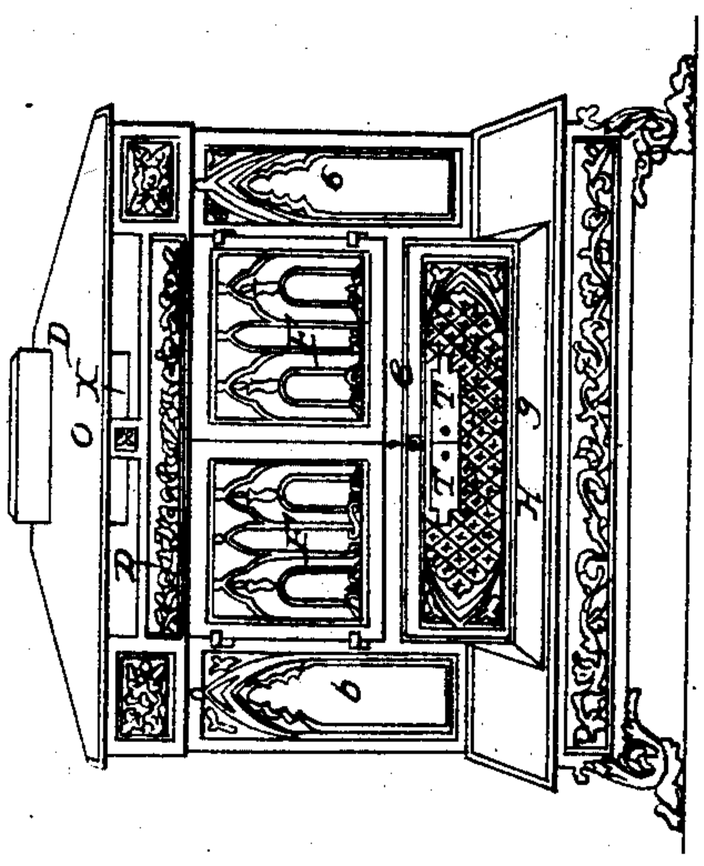


Fig. 1



UNITED STATES PATENT OFFICE.

JAMES ATWATER, OF NEW HAVEN, CONNECTICUT.

OPEN GRATE FOR BURNING COAL.

Specification of Letters Patent No. 1,001, dated November 9, 1838.

To all whom it may concern:

Be it known that I, JAMES ATWATER, of New Haven, in the county of New Haven and State of Connecticut, a citizen of said State and of the United States, have invented a new and useful Improvement or Addition to the Common Open Grate for Coal-Fires to Warm Rooms.

The design and purpose of this invention and improvement, is, to inclose the grate or rack for coal, and its contents, so as to compel all the air which passes from the room into the chimney, to pass through the coal when required; also to prevent the warm air of the room, from being carried off too rapidly and uselessly, and thus wasting the heat generated by and radiating from the fire; also to keep in the room, a more uniform temperature than is usually done by the open grate; also to be able to control the fire, making it burn rapidly or slowly at pleasure; also to prevent dust and gas from entering the apartment; also to keep out of sight the ashes and coal, which usually fall from the burning pile, and also to exhibit and keep in sight during its operation, the beauty and cheerfulness of an open fire, combined with the advantages of a close stove. To combine all these improvements I inclose the whole exterior of the grate or rack for coal, with iron and with mica, leaving only a passage for the air necessary for combustion.

To enable others skilled in the art to make and use my invention and improvement, I describe its construction and operation and the several modes in which I have contemplated its application, as follows, observing that grates with my improvements may be set, permanently in fire places, or in frames made separate and portable.

The form which I prefer for parlor grates is portable and is so calculated that it may be placed in a fire place, or in any part of the room. The rack for coal may be in common form, lined with fire-brick or soapstone on the back and sides and is surrounded except in front with iron plates, exhibiting the form and appearance of a fire place, as seen in Nos. 1 and 2 of the drawings accompanying this specification.

At the bottom under the rack for coal, is a plate of iron, extending beyond the rack 4 or 6 inches more or less in front and on each side and fills the space between the pilasters. Under this plate is a chamber of suitable size, communicating with a chamber in the rear of the rack, which opens into the flue of the chimney, or into the smoke pipe. The jambs may be set flaring with a curve from the rack (and may be polished or plated with German silver) and terminate in hollow pilasters or columns, projecting from 4 to 6 inches more or less, beyond the front line of the rack. The pilasters or columns may be 8 or 10 inches wide and 2 or 3 deep more or less, and on these rests an entablature, covering the rack and projecting to the front line of the pilasters and may be 8 or 10 inches high or in due proportion. The hollow of the pilasters open freely into the entablature and into the hollow of the hearth. A grated ash pan rests upon the plate under the rack and an orifice opens between the ash pan and the bottom of the rack into the chamber behind the rack, and another opening is made for a direct draft, from the entablature above the rack, into the smoke pipe or chimney. Both the orifices may be opened and at pleasure closed by slides, valves, or stoppers. I then place a cross bar or plate of iron from one pilaster to the other horizontally of suitable size for the doors hereafter mentioned to shut against, &c., the lower edge of the bar, rising above the level of the bottom of the rack. On the inside of this cross bar I place a plate of iron made and fitted as a valve, to fill up all the space, between the rack, bar, and jambs. This plate or valve when in place slants downward, from the top edge of the cross bar, to the lower bar of the rack, and may be hung with hinges to the cross bar or suspended on pivots connected with the pilasters, and by a pin or crank in the cross-bar may be made to fall or rise to its place, as seen in No. 3 of the drawing section and in No. 2 section. I then inclose the front from the lower edge of the entablature down to the cross bar and between the pilasters, with iron framed doors or slides paneled with mica.

The space between the cross-bar and the bottom plate I inclose with a movable plate of iron, or the closing plate may be fixed in place, having suitable openings to rake the coal and to admit air, &c., with slides or doors to open and to close the same. I also place in front of the bottom plate as above described, a hollow hearth 6 or 8 inches

deep and 10 to 12 inches wide more or less and of sufficient length to pass the pilasters in front, and to be connected with them by a flue or neck, making a free communication between the hollow chambers of each. The top plate of the hearth, between the jambs, slants from the front to the top of the chamber under the bottom plate, about 3 inches and the hollow of the hearth opens into this chamber by a flue or neck, and suitable partitions are made in the hearth to direct the course of the fumes. This hearth is so made and connected, that it may remain permanent or can be easily taken off, to be cleaned, or for other purposes. The grate being thus set, is supported on feet, and may be fixed in a fire place, or placed in any part of the room. When placed in a fire place a further improvement may be made by surrounding the back and sides by a case of tin, thus forming an air chamber into which cold air from without may be admitted by proper flues, and discharged warm into the room, through an opening made for that purpose in the front of the entablature.

For further illustration I refer to the drawing. No. 1 and No. 2 represent the improved grate as above described—A the rack for coal; B, B, the curved jambs; C, C, pilasters; D, entablature; X, opening in it for warm air; E, the cross bar; F, F, doors with mica panels; G, closing plate under the cross-bar with doors or slides at I, I, to admit air, &c.; H, the hearth; Nos. 2 and 3 inside section exhibit the plate or valve attached to cross bar, with the pin or crank O to move it, Nos. 1 and 2; *o*, valve to control the direct draft.

The grate may be made and used with or without the projecting hollow hearth; when used without the hearth, the chamber under the bottom plate is closed in front, and a direct communication is opened between the pilasters and that chamber and by extending the chamber to the pilasters.

To make a cheap and economical grate, set permanently in the brick wall of a chimney with my improved front, I set the rack nearly in a line with the front or jambs of the fireplace and surround the whole with an iron frame or plates of iron projecting outward from the wall of the chimney a suitable distance from the top, bottom and sides so as to present a front for the doors 4 or 6 inches more or less forward of the front of the rack. I then place a cross bar horizontally in front, from one side plate to the other, with a plate or valve attached, in the same manner and for the same purposes as above described for the portable grate, and the front is closed by a closing plate below the cross bar, and above it by doors or slides paneled with mica in the same manner as in the portable grate and additional panels of mica may be inserted in the sides. See No. 3 of the drawings: A, the rack; B, B, B, projecting sides and top; C, C, doors; E, mica panels in the side; F, cross bar and valve; G, closing plate; X, side section showing the cross bar and valve.

The advantages resulting from my improvements, so far as respects the projection beyond the front line of the rack, are the same in both modes specified. The volume of heated air in the chamber of combustion is thereby enlarged and the gas confined; the mica in the doors is thus protected from the fire, and the valve on the cross-bar when closed upon the lower bar of the rack forces the air necessary for combustion to pass through the coal from the bottom of the rack, and prevents the air of the room, from coming in contact and deadening the fire in the rack or passing off with the fumes. The combustion is regulated by opening or closing the small doors or valves more or less as in stoves.

The operation and the peculiar advantages resulting therefrom in the mode first described, are, that after the fire is well kindled by force of the direct draft—on closing that flue—the fumes from the chamber of combustion are forced circuitously, through the pilasters into the hollow hearth, and are carried off through the chamber under the bottom plate to the smoke pipe or chimney, radiating heat in their progress, in proportion to the great extent of surface passed. Another advantage is that when incased with tin cold air from without is made to pass between the plates till warmed or heated and is then discharged into the room in the manner specified. Another advantage is that the closing plate below the rack, shuts from view the ashes and droppings from the rack, and by opening the door or slide in the front of this plate and the door or slide of the chamber behind the rack, the grate may be cleared of ashes and all the dust prevented from entering the room.

My improved grate as above specified may be made wholly of cast iron, or partly of sheet and partly of cast iron, and of any size required and with more or less mica, and more doors than specified, may be used, if experience should require them, and the whole may be ornamented to suit the fancy.

What I claim as my invention and improvement, and as distinguishing my improvement from all others, consists—

1. In projecting the top, sides and bottom, of the frame of the grate a suitable distance from the rack for the coal or fire, and placing a cross bar, in the front line of the projection, with a valve behind it, made to open and close at pleasure, the space projected between the rack and cross bar, as above specified.

2. I also claim the inclosing of the whole

front of a fire grate, with iron doors paneled with mica above the fire and with a plate of iron below the rack, in combination with the projected front, cross bar, and valve, all made substantially in the manner and for the purposes above specified. But I do not claim as my invention, the inclosing with iron and mica, or otherwise, the front of fire grates as heretofore made and used.

3. I also claim as my invention the hollow hearth in either of the forms above specified, whether portable or fixed, when standing in front of a fire grate and connected with an entablature and pilasters or columns or with pilasters or columns alone in the manner and for the purposes above specified, and I also claim the same in combination with the projected, front, cross bar, and valve made in the manner and for the purposes above described and specified.

4. I also claim irrespectively a portable hearth as specified, when standing in front of a fire grate and connected therewith for the purpose of conducting the products of the chamber of combustion through the same in any form, so as to radiate heat therefrom into the apartment as new and as my invention.

And to secure my invention and improvement thus specified and claimed I solicit Letters Patent.

May 12th 1838.

JAMES ATWATER.

Witnesses:

SIMEON BALDWIN,

DENNIS KIMBERLY.