2 Sheets—Sheet 1.

W. A. GREENE.

Mica Window and Door for Stoves.

No. 220,528. Patented Oct. 14, 1879.

Fig. 1.

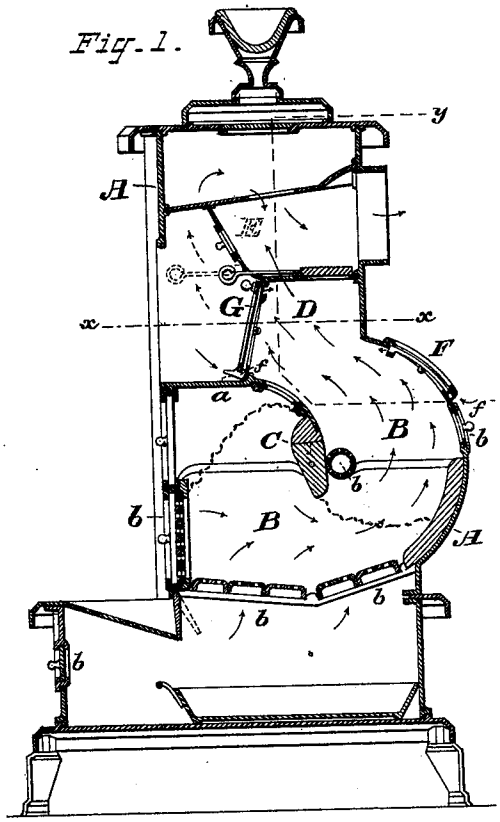


Fig. 2.

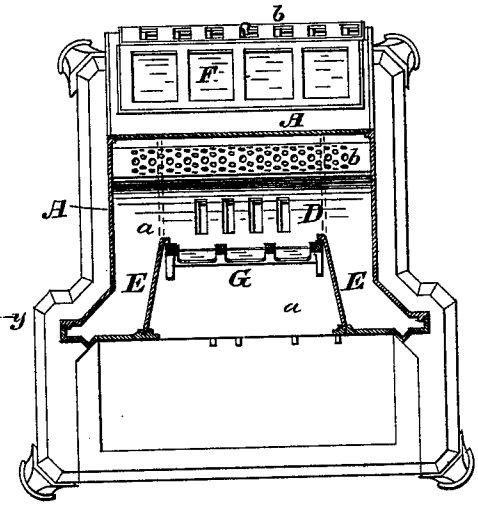


Fig. 3.

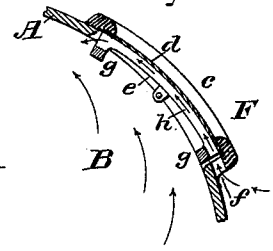


Fig. 4.

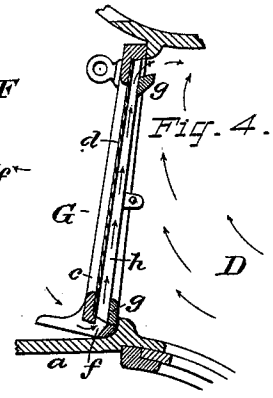
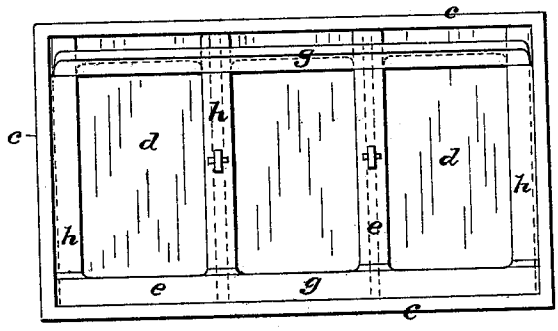


Fig. 5.



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2 Sheets—Sheet 2.

W. A. GREENE.

Mica Window and Door for Stoves.

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Fig. 6.

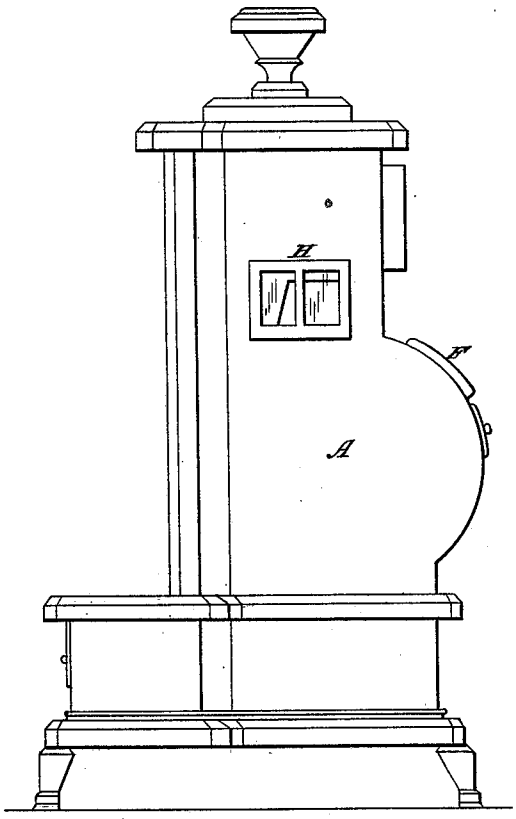
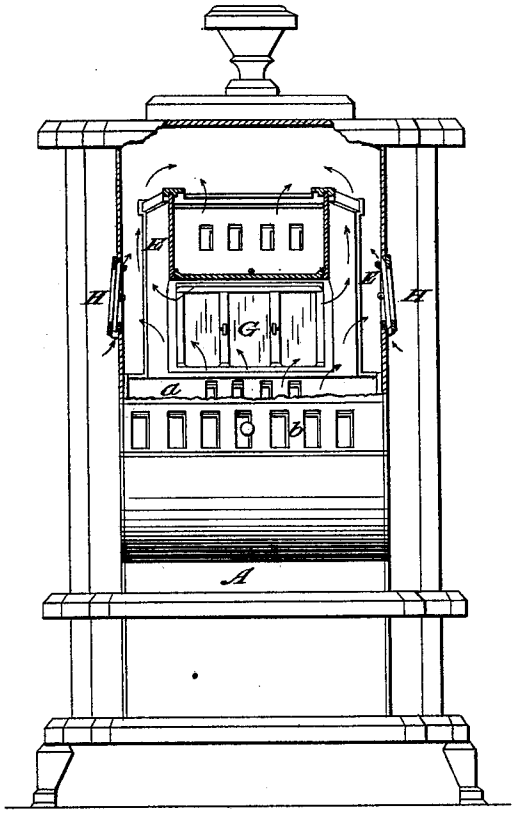


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM A. GREENE, OF ELIZABETHPORT, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO EDWIN R. CAHOONE AND ANDREW ALBRIGHT, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN MICA WINDOWS AND DOORS FOR STOVES.

Specification forming part of Letters Patent No. **220,528**, dated October 14, 1879; application filed August 27, 1879.

To all whom it may concern:

Be it known that I, WILLIAM A. GREENE, of Elizabethport, in the county of Union and State of New Jersey, have invented certain Improvements in Mica Windows and Doors for Heating-Stoves, and in the construction of stoves for use with such improved windows and doors, of which the following is a specification.

The object of my invention is to prevent the discoloration by smoke or soot of mica windows and doors used in stoves which burn bituminous coal or other fuel generating smoke. This I accomplish partly by the construction of the windows and doors themselves, and partly by the formation of the stove and the arrangement of the windows or doors therein.

In the drawings, Figure 1 is a vertical mid-section of a stove embodying my invention. Fig. 2 is a horizontal action of the same, taken in the plane of the line *x x*. Figs. 3 and 4 are vertical cross-sections of a window and door on a larger scale, and Fig. 5 is a rear elevation of the door shown in Fig. 4. Fig. 6 is a side elevation of the stove, showing a modified position of the window; and Fig. 7 is a rear elevation, showing the same partly in section, taken in the plane of the line *y y*.

Let A A represent the walls of the stove, and B the fire-box or combustion-chamber thereof. In the construction shown the chamber B is partially divided into two parts by a transverse partition, C, and the forward part is provided with a roof, *a*, extending from the top of the partition C to the front of the stove. The combustion in this fire-box is supported by air admitted at the several points *b b*, or at other effective places, and the fuel will ordinarily occupy the space indicated by the dotted lines. The back wall of this fire-box or combustion-chamber is curved in a uniform sweep upward and forward to a point sufficiently above the partition C to leave room for the passage of the gases from the chamber, whereby the gases are directed toward the front of the stove, over the roof-plate *a*. The direction of the stream of gases is thus entirely changed, it being horizontal and backward in their passage under the partition C and nearly horizontal and forward as they leave the chamber B.

A gas-chamber, D, is arranged above the combustion-chamber B, to receive the gases as they leave that chamber and conduct them to the flues E E, which, in the construction shown, are arranged at the sides of the stove, and from which the gases are conducted to the stove-pipe.

The exact construction and operation of the before-mentioned parts and of the parts not referred to in this specification are fully set forth in my application for a patent on improvements in parlor stoves or heaters, filed July 24, 1879.

F is an illuminating-window set in the curved back wall of the combustion-chamber B, where the incandescent fuel in the chamber is plainly visible, and where the brightly-burning gases afford a brilliant illumination.

G is an illuminating-door situated at the front of the gas-chamber D, where the luminous gases coming from the chamber B are also visible. This door may be arranged in the front wall of the stove, or it may be set back a short distance, forming a recess, as shown.

The construction of the window F and door G is shown in Figs. 3, 4, and 5, where *c* is the outer frame of the window or door; *d*, the mica, and *e* the inner frame or mat. The outer frame is of the usual construction, with the exception of its lower side, where a slit or continuous opening, *f*, is provided, admitting air under the bottom edge of the mica pane. The inner frame or mat is formed of two horizontal bars, *g g*, one at or near the top and the other at the bottom, and of a series of vertical bars, *h h*, corresponding to the vertical bars of the outer frame, *c*. Of the inner frame the bars *h h* are alone in contact with the mica, the bars *g g* standing off from it a short distance, sufficiently to permit the free passage of a current of air between them and the mica. The mica panes are thus clamped between the bars

g g of the inner frame and the corresponding bars of the outer frame, and are held only at their edges.

A current of cool air from outside the stove enters at the opening *f*, and passes up in a thin sheet or film along the inside surface of the mica until it reaches the top of the latter, when it mingles with the products of combustion in the stove and passes into the flues. This sheet of cool air protects the mica from contact of the smoke or heated gases from the fuel, and thereby keeps it clean and transparent for a much longer time than has been heretofore possible. This construction will produce the best results only when the window or door is arranged in the stove substantially as shown in the drawings.

As will be seen by reference to Fig. 1, the products of combustion from the fire-box are caused to sweep around a curve before they leave the same, and in doing so are thrown by centrifugal force against the curved back wall, and are pressed against the window F, which is set in that wall.

As the gases leave the chamber B and enter the gas-chamber D they are directed toward the front of the stove, and impinge directly upon the door G before passing to the flues.

It will be seen that by this construction both the window F and door G receive the pressure of a stream of gases, which are forced against them by the draft, instead of being drawn away from them, as is the case in most stoves. The sheet of cool air passing up the inside face of the mica is thus pressed firmly against the latter, and prevented from leaving the same until it has passed across its entire length, whereas if the gases from the fuel were drawn away by the draft the sheet of cool air would not adhere to the mica, but would pass off from it before reaching its top, and leave it exposed to contact of eddying currents of smoke, so that its upper portion at least would become tarnished.

I am aware that it is not new to keep a mica window clean by passing a current of air across its inner surface, and I make no claim to this feature, except in connection with a stove of such form that the gases are caused to press the air-current against the mica, or when used with my improved construction of frames.

The illuminating windows or doors may be somewhat differently arranged in the stove without departing materially from my invention, and additional windows or doors may be provided, if desired; but they should be arranged in some part of the stove where the current of gases will press against them, as before described. With the construction shown this effect might be secured by locating a window in the side wall, where the gases from the chamber D will impinge upon it as they enter the flue E. A window thus arranged is clearly shown at H in Figs. 6 and 7.

The illuminating doors or windows constructed according to my invention may have one or more panes of mica, as may be preferred, and if the upper horizontal bar, *g*, of the inner frame, *e*, is set high enough up and is sufficiently thin, it may be arranged in contact with the mica, so that the air-current will pass inside of it instead of between it and the mica; but I prefer the construction shown.

I claim as my invention—

1. In a stove, a mica window or door provided with a slit or opening, *f*, in its lower side for the admission of a stream of outer air under the bottom edge of the mica, and arranged at a point in the walls where the gaseous products of combustion will hug or impinge against it in their passage from the fire-box to the flue, substantially as and for the purposes set forth.

2. The mica window F, arranged in the curved back wall of the combustion-chamber B, where the burning gases are thrown against it centrifugally in their passage to the flue or flues, provided with a slit or opening, *f*, in its lower side, whereby a stream of outer air is admitted under the bottom edge of the mica and permitted to pass up without obstruction along its inner face, substantially as and for the purposes set forth.

3. The illuminating-door G, arranged at the front of the chamber D, where the burning gases from the combustion-chamber B are directed against it as they leave that chamber, provided with a mica pane or panes, and constructed with an opening or slit, *f*, in its lower side for the admission of a stream of outer air beneath the bottom edge of the mica, substantially as set forth.

4. An illuminating door or window consisting of an outer frame, *c*, a pane or panes of mica, *d*, and an inner frame or mat, *e*, the latter composed of vertical bars *h h*, between which and the frame *c* the mica is clamped, and horizontal bars *g g*, the lower of which is arranged to stand off from the mica out of contact therewith, and the two arranged to leave an air-inlet opening, *f*, under the bottom edge of the mica, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM A. GREENE.

Witnesses:

E. R. CAHOONE,

ARTHUR C. FRASER.