(No Model.) 2 Sheets—Sheet 1.

S. L. WEST.

STOVE OR FURNACE DOOR.

No. 410,391. Patented Sept. 3, 1889.

Fig. 1

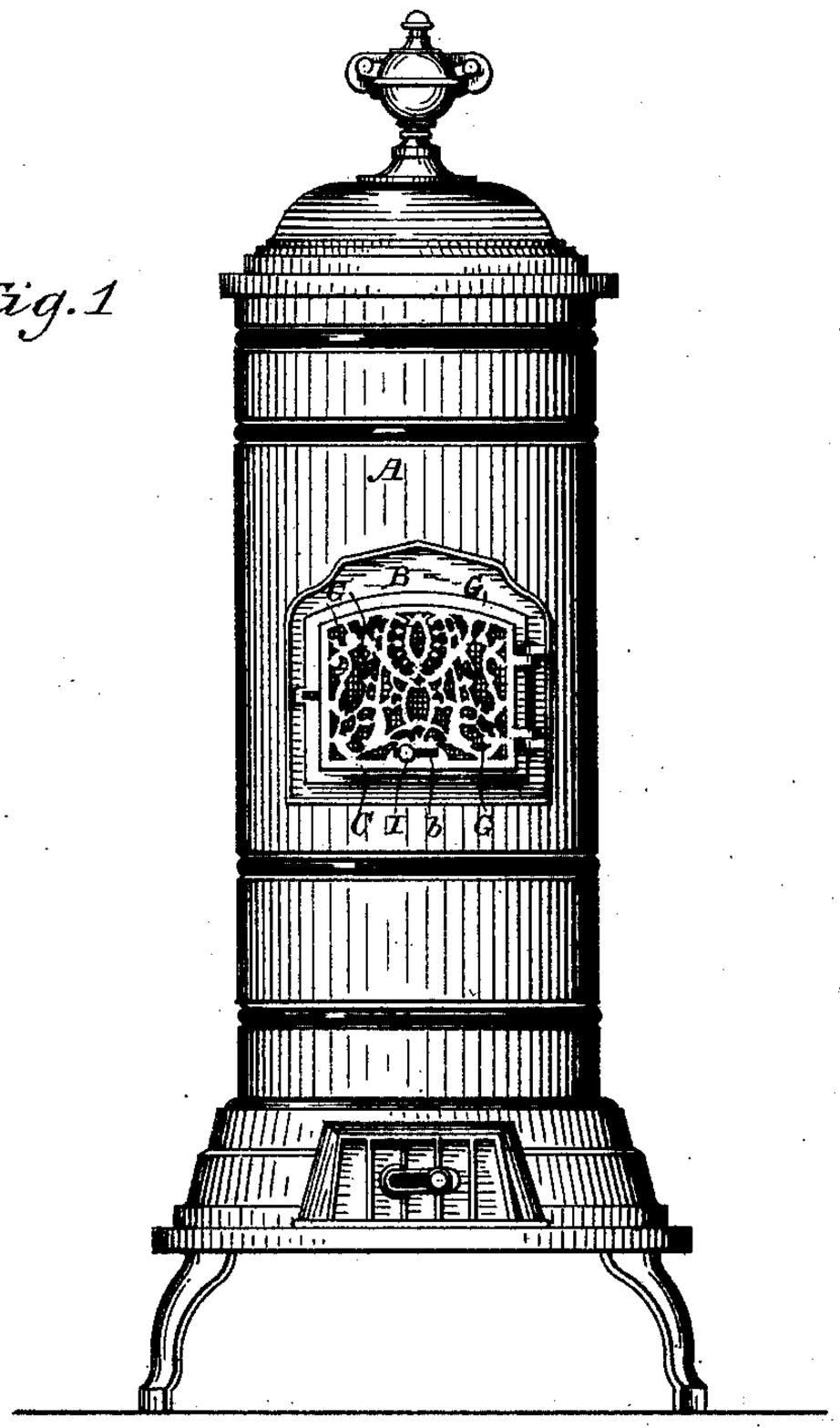
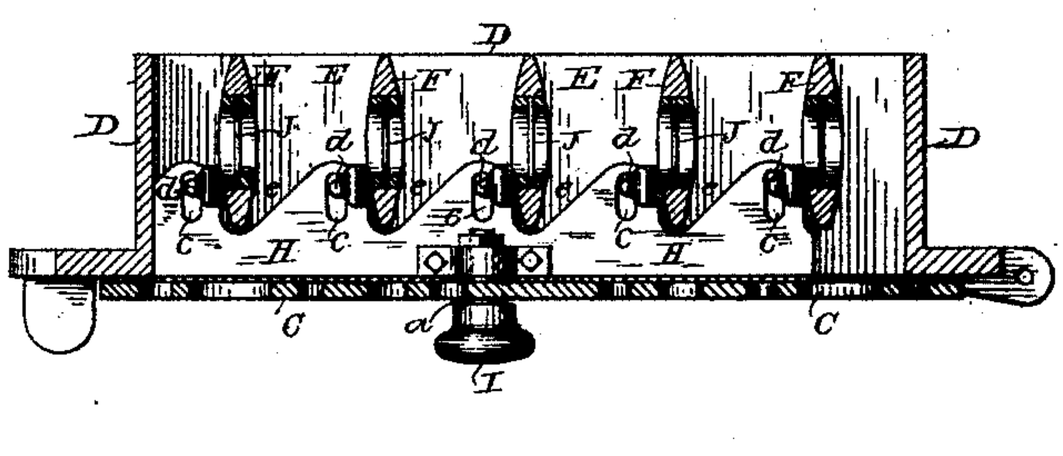


Fig. 4.



Witnesses
Jos. S. Lahmer
M. M. Howlett

Inventor
Simeon Leslie West
by Arthur O'Brien
his Attorney

(No Model.) 2 Sheets—Sheet 2.

S. L. WEST.

STOVE OR FURNACE DOOR.

No. 410,391. Patented Sept. 3, 1889.

Fig. 2.

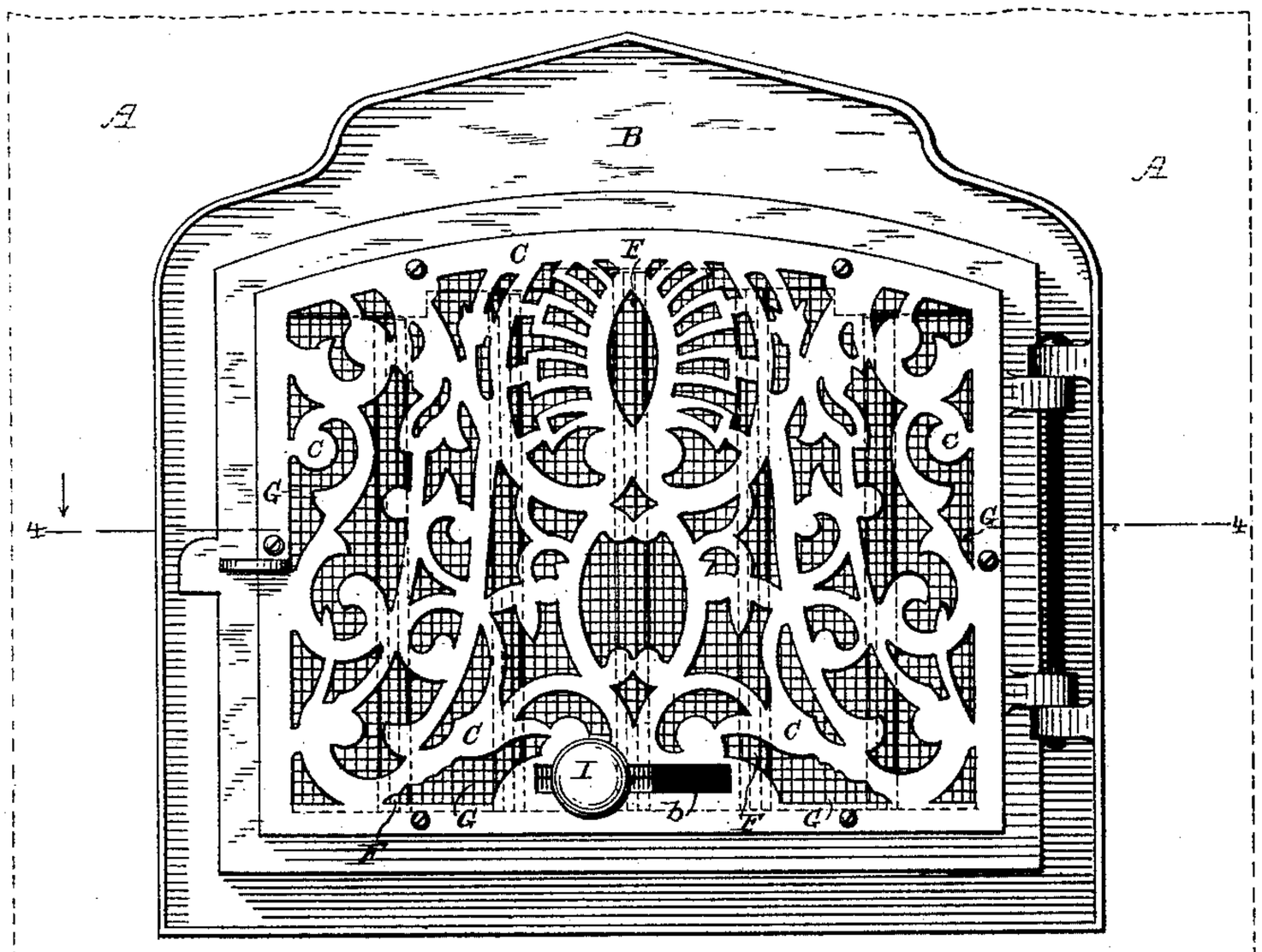


Fig. 3.

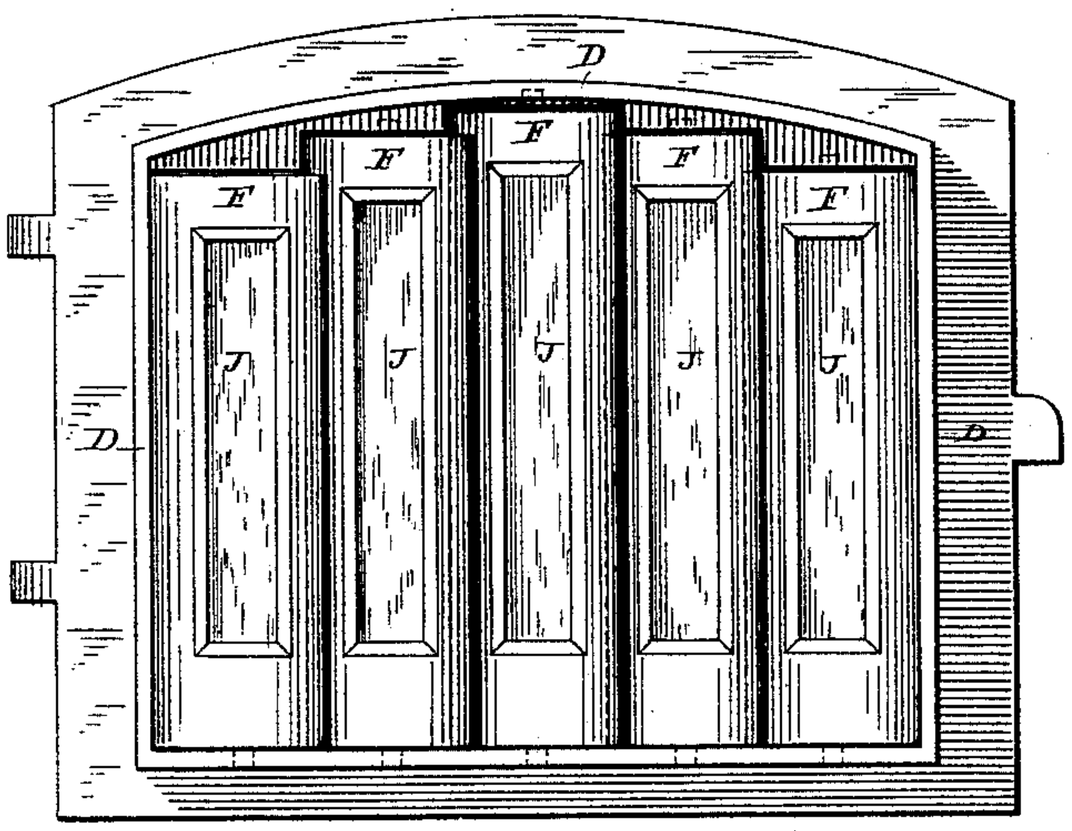


Fig. 5.

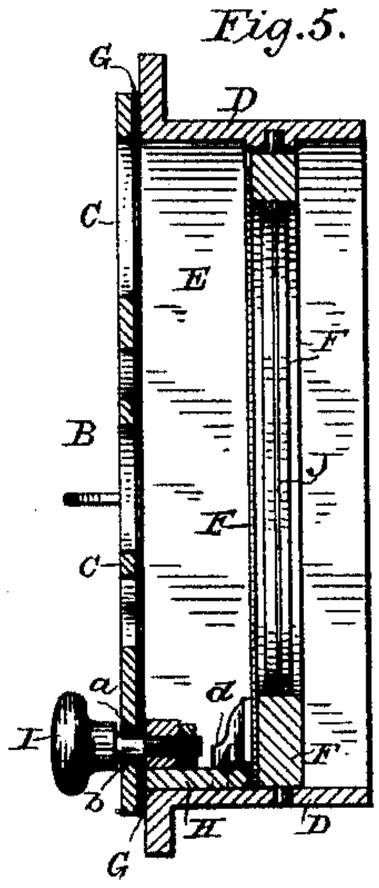
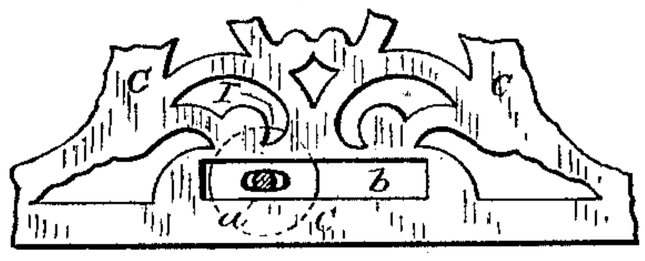


Fig. 6.



Witnesses
Jos. S. Lahmer
M. M. Howlett

Inventor
Simeon Leslie West
by Arthur O'Brien
his Attorney

UNITED STATES PATENT OFFICE.

SIMEON LESLIE WEST, OF WILMINGTON, DELAWARE.

STOVE OR FURNACE DOOR.

SPECIFICATION forming part of Letters Patent No. 410,391, dated September 3, 1889.

Application filed February 11, 1889. Serial No. 299,358. (No model.)

To all whom it may concern:

Be it known that I, SIMEON LESLIE WEST, of Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Stove or Furnace Doors, of which the following is a specification.

In by far the greater number of stoves in common use the fuel is fed through a door above the fire-box, and it is the almost universal practice when it is desired to check the fire, as when retiring at night, to open the door in order that the exterior air may freely enter above the fire and by lowering the temperature retard combustion. This practice is, however, a dangerous one, since sparks and coals frequently fly out through the open door and, alighting on the floor of the room or upon combustible articles in the room, set fire to the house. This danger is particularly great in the case of coal-burning stoves, since the gas contained in the coal frequently causes slight explosions sufficient to throw hot coals out of the door. Many disastrous fires have occurred in this manner, because, owing to the danger arising mainly at night, the fire gains headway before its existence is perceived.

The object of the present invention is to provide a stove-door which will prevent this danger and which will fulfill all the purposes and functions of the ordinary door in furnishing a fuel-supply passage and in permitting a free ingress of air, when desired, into the stove for the purpose of checking combustion.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a stove provided with the improved door. Fig. 2 is a front view of the door detached on a large scale. Fig. 3 is a rear view of the door. Fig. 4 is a horizontal section of the door in a plane indicated by the line 4 4 in Fig. 2. Fig. 5 is a vertical section of the door, and Fig 6 is a detached view of the operating-knob.

A is the stove, and B is the stove-door, hinged and latched in the usual manner and having an ornamental open-work front plate C. On its rear the door has projecting flanges D D on its four sides, constituting an open box and forming a chamber E within the door. Pivotally mounted at top and bottom within this chamber is a series of overlapping butterfly-valves F F, extending across the entire width of the chamber or door. When these butterfly-valves are turned so as to be parallel with the front plate of the door, they constitute a partition extending entirely across the chamber E, thus making the door air-tight. When, however, the butterfly-valves are turned so as to be at right angles to the front plate, they present only their edges to obstruct the passage of the air through the door, and thus practically offer as free a passage of air as if the door stood wide open.

In order to prevent sparks and coals flying out of the stove into the apartment when the butterfly-valves are open, a wire-gauze screen G is stretched across the chamber E of the door immediately behind the ornamental front plate and in front of the butterfly-valves. This screen effectually prevents the passage of sparks and coals into the apartment where the stove stands. In order that the screen may permit the free passage of air into the stove, the meshes should be quite large. If the meshes are too small, the air will pass so slowly through them as to become heated, and if so heated the air would promote and accelerate combustion instead of retarding and checking it.

A door thus provided with a series of butterfly-valves extending entirely across the same and having a coarse-wire screen in front of the valves affords a safe protection against fires resulting from sparks and coals flying through the doorway. The door need only be opened when the fuel needs replenishing, for when the fire needs checking it is only necessary to open the valves.

The placing of the screen in front of the valves is a very important feature of the invention. When the fire is burning briskly, the valves being closed, if the screen was behind the valves it would become highly heated, and if it were then desired to check the fire the opening of the valves would be ineffectual for this purpose, because the inflowing air passing through the meshes of the heated screen would thereby become heated and so accelerate and promote combustion; but by placing the screen in front of the

valves the screen is protected from the heat, and is thus capable of fulfilling the desired functions. Moreover, the employment of butterfly-valves is important in this connection. This form of valve requires a considerable space to be left between the screen and the valves when the latter are closed, and since there is a free communication through the screen between this space and the exterior air the screen will always be cool. As the result, when the valves are opened the temperature of the inflowing air is not raised in passing through the screen.

In order to open and close the butterfly-valves without opening or closing the door, the several valves are each connected to a sliding bar H within the chamber E between the screen and the valves, and this bar is manipulated by a knob I exterior to the door and connected to the bar H by means of a stem *a*, passing through a horizontal slot *b* in the front plate C. The sliding bar has a series of slots *c c* extending at right angles to the movement of the bar, and in each of these slots engages a downwardly-projecting lug *d*, secured to one of the butterfly-valves. The lug *d* on each valve is secured on one side of the axial center of the valve, so that the reciprocation of the sliding bar causes the rotation of the valves. The movement of the sliding bar is limited in either direction by the side flanges D D of the door, and the extent of its movement is just sufficient to insure the full opening of the valves when the bar is moved in one direction to its limit and the tight closing of the valves when the bar is moved to its limit in the other direction. The bar is recessed, as shown at *e e*, to permit the free movement of the valves. In order to lock the slide at any point, so as to prevent the accidental opening or closing of the valves by sudden drafts, the stem *a* of the knob I is rotatively connected with the sliding bar H, and the stem is elliptical or cam-shaped in cross-section, so that its longest axis is longer than the width of the slot *b*. When the sliding bar is at the desired position, it may be locked by turning the knob, thus binding the stem against the margins of the slot *b*. The valves may be opened to any desired extent and held in that position.

In order to make the door ornamental, panels of mica J are set in each of the butterfly-valves.

I do not limit myself to the exact features of construction shown and described, since various modifications can be made without sacrificing or departing from the essential features of the invention. For example, a single butterfly-valve could be employed; but the compound valves, consisting of a series of butterfly-valves, are preferable, since with a single valve either the air-passage through the door would have to be made much smaller or else the chamber in the door would have to be made much deeper. Nor is the invention necessarily limited to a butterfly valve or valves. Sliding or rotary valves could be used, it only being essential that they should be placed behind the screen, and preferably so as to leave an air-space behind the screen. The butterfly-valves are, however, preferable, since they admit of the air-passage through the door being of substantially the full size of the doorway.

I claim as my invention—

1. A stove-door provided with a chamber open front and back and of substantially the full size of the doorway, in combination with a wire screen extending across the front of said chamber, and a series of connected butterfly-valves behind said screen and within said chamber and opening and closing the same, whereby when said valves are closed an air-space is left between said valves and said wire screen, and when said valves are open the chamber is open throughout its entire width, substantially as described.

2. A stove-door provided with an air-passage extending therethrough, with a valve opening and closing said passage, with a sliding bar operating said valve, with a front plate having a slot, and with an operating device exterior to the front plate having a rotating stem connected with said sliding bar through said slot, said stem being elliptical or cam-shaped in cross-section and having its greatest diameter longer than the width of said slot, substantially as set forth.

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

SIMEON LESLIE WEST.

Witnesses:
THOMAS GIFFIN,
HENRY C. CONRAD.