

STEVENS & SMITH.

Grate.

No. 39,969.

Patented Sept. 15, 1863.

Fig. 1.

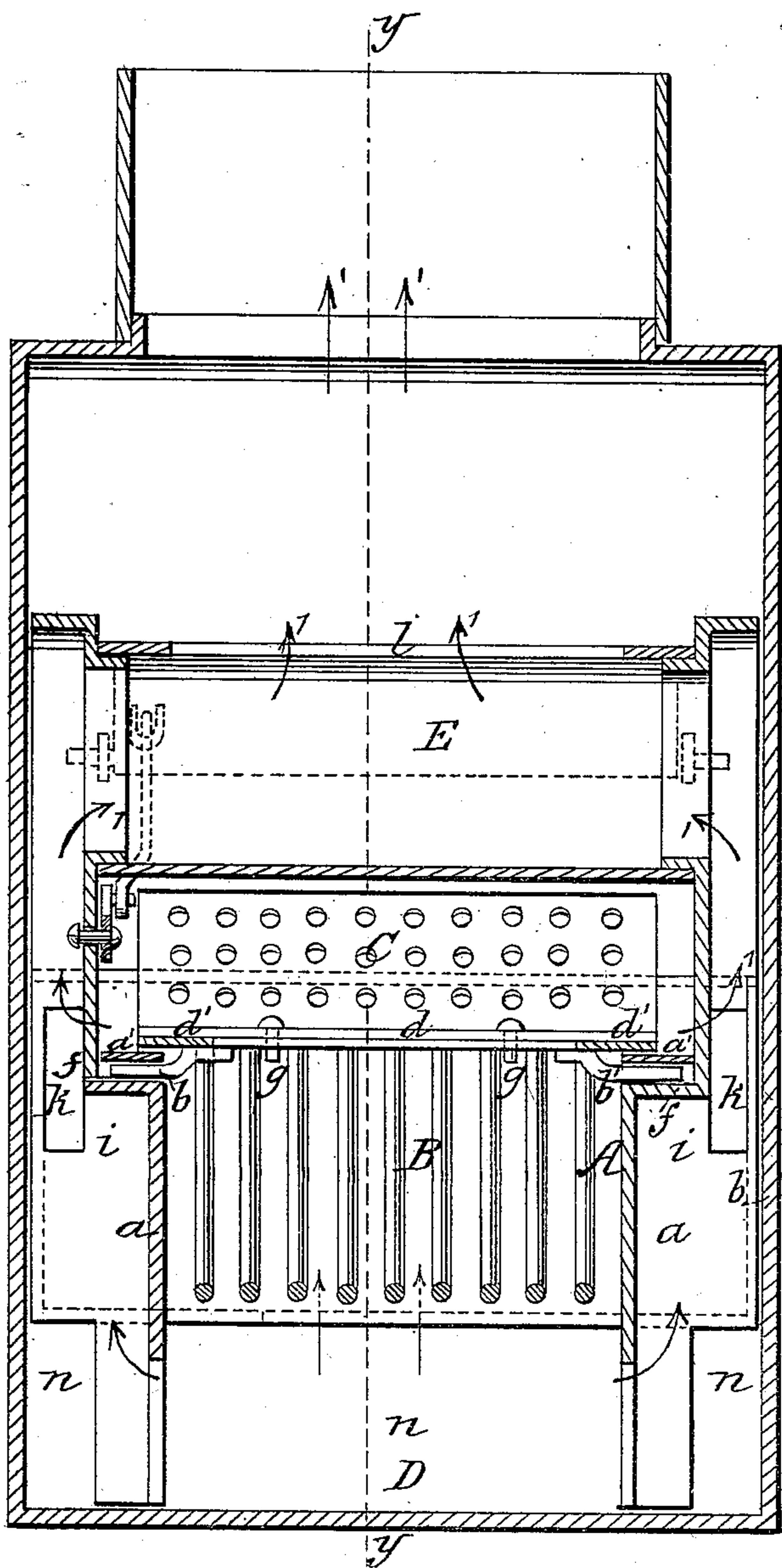
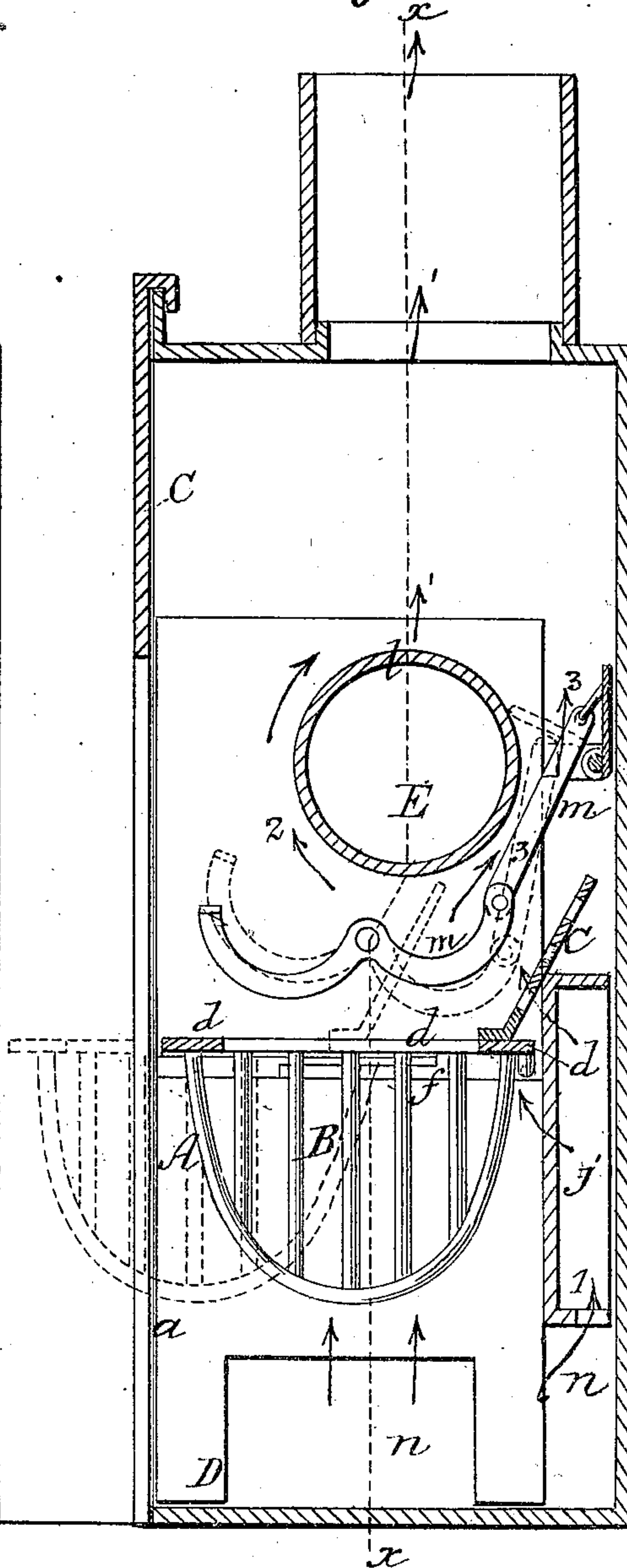


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

SALMON STEVENS AND JOSEPH P. SMITH, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. 39,969, dated September 15, 1863; antedated November 24, 1862.

To all whom it may concern:

Be it known that we, SALMON STEVENS and JOS. P. SMITH, both of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Grates for Open Stoves and Fire-Places; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical section of our invention, taken in the line *x x*, Fig. 2. Fig. 2 is a vertical section of the same, taken in the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in having the grate made with four sides and a bottom, or what may be termed in "basket form," so that it may hold its contents independently of the stove or fire-place, and having the grate fitted in the stove or fire-place so that it may be adjusted farther in or out, to radiate more or less heat into the apartment, as may be required, in combination with a perforated guard-plate at the back end of the grate to prevent the escape of coal at said part of the grate.

The invention further consists in the employment or use of an air duct or passage, arranged substantially as herein fully shown and described, in connection with a damper for the purpose of controlling the draft of the chimney and the radiation of heat, as may be desired. By this invention the radiation of heat from the stove may be regulated as desired, and a free passage allowed for all dust up into the flue or chimney, and a good draft insured.

To enable those skilled in the art to fully understand and construct our invention, we will proceed to describe it.

A represents an open stove or fire-place, which may be constructed in the usual form, *a a* being the sides or jambs, *b* the back, and *c* the front upper piece.

If the invention be applied to an open stove or Franklin, the above-named parts will be of cast-iron. If applied to a fire-place, the latter will be of masonry, as usual.

B is the grate, which is of basket form, or has four sides with a bottom. The grate is of

oblong form, and its bottom may be rounded or semicircular in its transverse section, as shown in Fig. 2. At the upper part of the grate B there is a horizontal flange, *d*, which extends all around the grate. The flange *d* at the sides of the grate, as shown at *d' d'*, rests on projections *ff* at the inner sides of the jambs *a a*, and keeps the grate suspended in the stove or fire-place, as shown clearly in Fig. 1. The grate B is allowed to slide freely back and forth on the projections *f f*, as the latter extend the whole width or depth of the jamb *a*. On each projection *f* there is a guide, *a'*, and underneath these guides pins *b'*, which are secured to the ends of the grate B, pass. The guides *a'* and pins *b'* retain the grate in proper position, preventing it from tilting while being drawn in and out, and also preventing it from being casually drawn entirely out from the stove or fire-place. In Fig. 2 the grate is shown partially drawn out from the stove or fire-place, in red.

To the back of the grate B there is attached a perforated plate, C. This plate C extends the whole width of the grate, and may be attached to it by loose pins *g g*, which pass through the back part of the flange *d*, (see Fig. 1,) the loose pins admitting of the plate C working freely back and forth to a certain extent. The plate C bears or rests against the back *b* of the stove, and effectually prevents any coal passing down at the back of the grate into the ash-pit D below. This will be fully understood by referring to Fig. 2.

In each side or jamb *a* of the stove or fire-place there is an air-duct, *i*, and an air-duct, *j*, is in the back *b* of the stove or fire-place. The duct *j* communicates with the side ducts, *i i*, by means of openings *k k*, both of which are shown in Fig. 1. The ducts *i i* communicate with the ends of a drum or cylinder, E, which is placed below the throat of the chimney or flue F and over the grate B. The drum or cylinder E has a slot, *l*, made in it its whole length. At its upper side and directly back of the cylinder E, between it and the back *b*, there is a damper, G, as shown in Fig. 2, said damper being operated by levers *m m*. The lower ends of the ducts *i i j* communicate with the external air by means of openings *n n n*, as shown in Fig. 1.

From the above description it will be seen

that air will pass up the ducts *i i j* and into the drum or cylinder E, and will be rarefied therein and escape up the chimney or flue F, (see arrows 1,) creating a powerful draft therein. In case it is required to throw considerable heat into the room, the damper G is closed, and the products of combustion from the grate must necessarily pass around in front of the drum or cylinder E in order to enter the flue or chimney, as shown by arrows 2. The radiation of heat from the grate B may be still further increased by drawing out the grate B from the stove or fire-place. When a great radiation of heat is not required, the grate is shoved back within the stove or fire-place and the damper G is opened, the products of combustion passing up back of drum E, as indicated by arrow 3.

In consequence of having the grate arranged as shown, the stove or fire-place is prevented from burning out. The dust and ashes are

also allowed to pass upward into the flue, and not into the apartment.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In combination with the grate B, thus arranged, the perforated guard-plate C, applied to the grate, as and for the purpose set forth.

2. The drum or cylinder E, communicating with air-ducts *i i j*, provided with a slot or opening, *l*, at its upper part, and arranged relatively with the flue or chimney F, grate B, and damper G, to operate as and for the purpose specified.

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