

W. HAILES.
Base-Burning Stoves.

No. 146,527.

Patented Jan. 20, 1874.

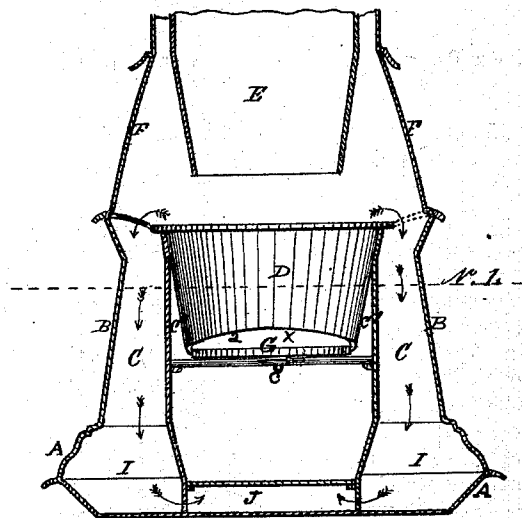


Fig. 1.

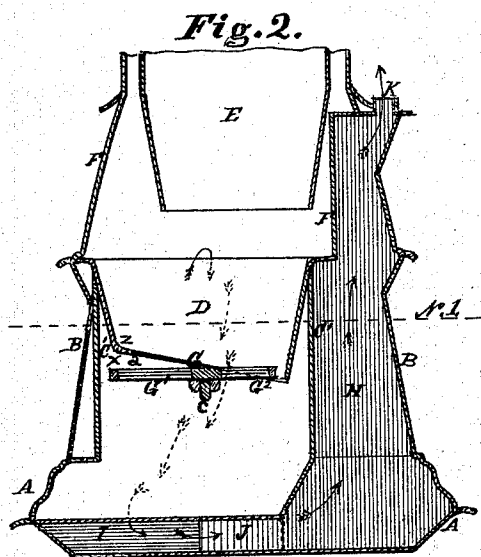


Fig. 2.

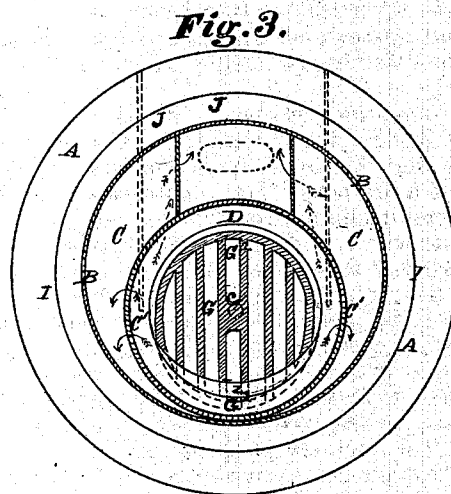


Fig. 3.

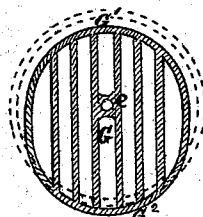


Fig. 5.

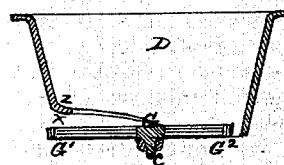


Fig. 4.

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UNITED STATES PATENT OFFICE

WILLIAM HAILES, OF ALBANY, NEW YORK.

IMPROVEMENT IN BASE-BURNING STOVES.

Specification forming part of Letters Patent No. **146,527**, dated January 20, 1874; application filed March 3, 1873.

To all whom it may concern:

Be it known that I, WILLIAM HAILES, of the city and county of Albany, State of New York, have invented certain new and useful Improvements in Stoves and Heaters; and I do hereby declare that the following is a description thereof, reference being had to the accompanying drawings forming a part of this specification, in which—

Figure 1 represents a lateral sectional elevation of a stove embodying the improvements in this invention. Fig. 2 is a sectional elevation taken in the transverse. Fig. 3 is a vertical view taken at line No. 1 in Figs. 2 and 3. Fig. 4 is a vertical sectional view of the fire-pot and grate; and Fig. 5 is a plan view of the grate, the fire-pot being shown in dotted lines.

My invention relates to certain improvements in the fire-pot and grate of heating stoves and furnaces; and consists, in one part, of a fire pot or box constructed with its lower end declining from front to rear, in combination with a horizontal grate, pivoted and supported so as to operate both as a circular and a tilting grate, the object of this part of the invention being to produce an opening at the front of the fire-pot, between the upper surface of the grate and the declining end of the fire-pot, through which the clinkers, ashes, &c., may be removed, either by operating the grate in an inclined position or by the use of some instrument, or both. Another part of my invention consists of a fire pot or box constructed with its lower end declining from front to rear, and with a shelf or ledge projecting inwardly from the front portion of said declining lower end, in combination with a horizontal grate pivoted and supported so as to operate both as a circular and a tilting grate, the object of this part of the invention being to prevent the fuel from being packed down toward the front of the grate when the latter is being depressed in front or shaken for the purpose of removing the clinkers, &c. Another portion of my invention consists of a fire-pot constructed with its lower end declining from front to rear, in combination with a horizontal grate pivoted and supported so as to operate both as a circular and a tilting grate, having its rear portion within the fire-pot and its front portion projecting beyond the lower end of the fire-pot in front, the ob-

ject of this part of the invention being to prevent the escape of the fuel through the opening between the grate and declining end of the fire-pot by preventing it from running over the edge of the grate.

To enable others skilled in the art to make and use my invention, I will proceed to describe it in reference to the drawings and the letters of reference marked thereon, the same letters indicating like parts.

In the drawings, A represents the base of the stove. B B are the outer walls of the fire-pot section, forming the outer wall of the side flues C C. C' C' is a plate forming the inner wall of the same. D is the fire-pot. E is the magazine for holding the fuel. F F are the walls forming the combustion-chamber above the fire-pot, and are made of metal, with door or window frames for holding mica lights. G is the horizontal grate. In my invention I form the fire-pot with a sloping or beveled lower end, *a*, Figs. 1 and 2, in such a manner that when the grate G is arranged horizontally there will be directly in front, between the front edge of the grate G and the lower edge of the fire-pot, a space, *x*, which, as it runs from the front toward and round the sides, will contract in width until wholly lost, as shown in Fig. 2. By thus beveling or sloping the said lower edge of the fire-pot, and having the grate preserved in its horizontal position, the said space *x* will afford a ready means for the discharge of the clinkers that may be formed in the fire-pot from the front of the same, which may be easily done by shaking the grate and at the same time tilting its front a little, so that its upper surface will, at the time being, be a little inclined downward, when the larger portion of the opening in front will permit the ready passage of the ashes and clinkers from the top surface of the grate, while the gradual contraction of the said opening at the sides will permit but a small escape of the same proportionately with the size of the side portions of the said opening, and only the small clinkers and particles of fuel will be permitted to escape at the sides, and the larger clinkers will be gradually worked toward the extreme front, to and out from the greatest depth of space in the said opening. To prevent the fuel in the fire-pot from escaping or falling directly down on the grate when being operated, I make on the

inner portion of the fire-pot, and with the terminating lower beveled edge *a*, the ledge or shelf *z*, as shown. This ledge is of the greatest width at the front, where the opening *x* is the largest, and gradually narrows as it runs from the front to the sides, as shown in Fig. 3, and being thus formed it will operate to prevent the fuel from spilling over the edge of the grate when being operated. The grate *G* is made with its forward half, *G*¹, longer than its rear half, *G*², from its central pivot *c*, so that its front edge will project beyond the outer edge of the fire-pot at the opening *x*, as shown in Fig. 3.

Being thus constructed and arranged beneath or in the lower portion of the fire-pot, the said grate will afford the same facility for being shaken and dumped, while its front portion will be made to act as a projecting shelf for holding any fuel that may be inclined to pass out of the opening *x*, and will preserve the same from being run out, which could not be effected if the front of the grate was arranged within the fire-pot. The fire-pot *D* is placed out of the center of the stove and toward the front of the same, as in Figs. 2 and 3, while the magazine is preserved central, as shown. The said fire-pot is suspended in the space inclosed by the wall-plate *C' C'*, and is supported by the same, as shown in Figs. 1 and 2. Between the said plate *C'* at its rear and the outer wall of the stove is placed the vertical flue *H*, (shown by full lines in Fig. 2 and dotted lines in Fig. 3,) which flue *H* separates the semi-crescent flues *C C*, located between the plate *C'* and the outer wall *B* of the stove. The said side flues thus formed communicate with the side base-flues *I I*, Fig. 1. Made in the base of the stove and in the central portion of the same is the mid-flue *J*, which leads from the side flues *C C*, and communicates with the vertical flue *H*, leading to the exit-flue *K*, Figs. 2 and 3. By this arrangement of the fire-pot and the supporting-wall *C'* out of the center of the stove, the fuel entering the fire-pot from the magazine will have a less depth in front than if placed central with the magazine and the stove, and will burn in thinner layers toward the front of the fire-pot, and the products of combustion will escape from the fire-pot into the said flues *C C*, and pass in an unobstructed manner into the side base-flues *I I* in a sheet form, thereby highly heating the sides of the stove and the sides of the base, and will from thence pass into the mid base-flue *J*, and thence enter the vertical rear flue *H* to escape through the exit-flue *K*, as indicated by arrows in Figs. 1, 2, and 3.

The manner in which the several parts of this invention operates to effect their useful results is as follows: The opening *x* will permit the discharge of clinkers from the fire-pot at its front, while the gradual contraction of the said opening as it passes back will prevent the larger pieces from passing out at the sides of the said opening, and the said opening will itself operate to permit a greater sup-

ply of air to the fuel, which will materially aid or stimulate its combustion in the front portion of the fire-pot forward of the magazine, as it is conically piled in the same. The ledge or shelf *z* on the inside of the fire-pot and over the opening operates to cast the fuel farther toward the center of the grate as it falls down, and thereby prevents the same from readily escaping from the said opening. The grate having its forward portion extended farther from the pivot on which it is shaken than its back, and ranging with the outer surface of the front wall of the fire-pot, or a little beyond the same, will effectually prevent any fuel from working off the grate, and at the same time permit the grate to be declined in front when the clinkers are to be removed without the fuel readily falling past or off the front edge. The two semi-crescent sheet-flues between the sides of the fire-pot and the outer wall of the stove will operate to greatly increase the heating power of the stove by the products of combustion passing down the same in an obstructed manner into the side base-flues, and in their passage impinging directly on the side walls of the stove and the base, and the mid-flue in the base will operate to draw the products of combustion from the side base-flues to enter the rear vertical flue after their heating powers have been partially spent, and in their passage the products of combustion will cause the front and side portions of the stove to become hotter and more effective for heating by radiation than the rear portion of the same.

It is to be understood that the feature of the inclined lower end of the fire-pot sloping downwardly from front to rear is new in this invention; and, though it is used by me in another invention made subsequent to this application, yet in combination with other elements or means not found in this invention, and is only used in my subsequent application in the combinations therein shown.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A fire pot or box constructed with its lower end declining from front to rear, in combination with the horizontal grate, substantially as and for the purpose set forth.

2. A fire pot or box constructed with its lower end declining from front to rear, and with a shelf or ledge projecting inwardly from the front portion of said declining lower end, in combination with the horizontal grate, substantially as and for the purpose set forth.

3. A fire pot or box constructed with its lower end declining from front to rear, in combination with a horizontal grate having its rear portion within the fire-pot, and its front portion projecting beyond the lower end of the same in front, substantially as and for the purpose set forth.

Witnesses:

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