2 Sheets--Sheet 1.

S. B. SEXTON.

Magazine Fire-Place Stove.

No. 162,107

Patented April 13, 1875.

Fig. 1.

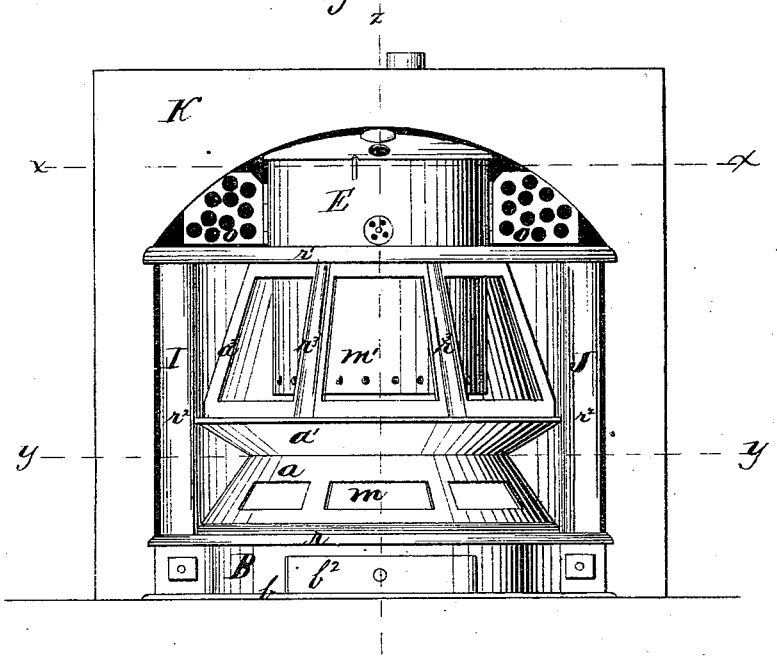

Fig. 2.

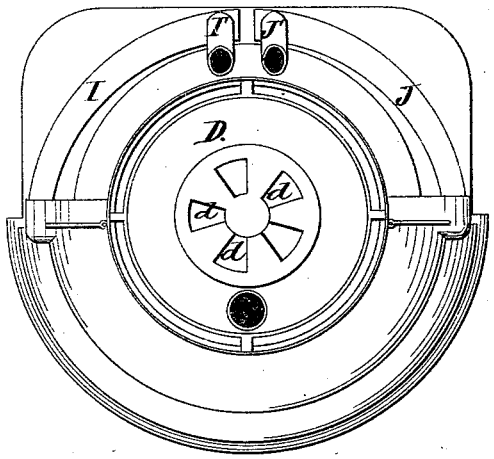

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Fig. 3.

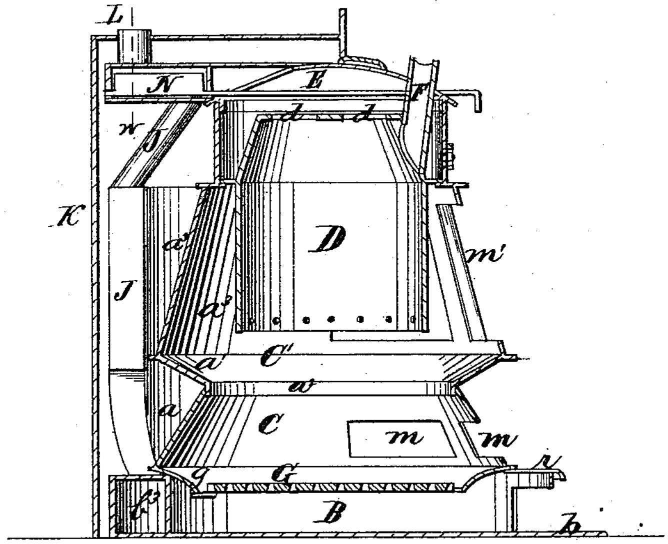


Fig. 4.

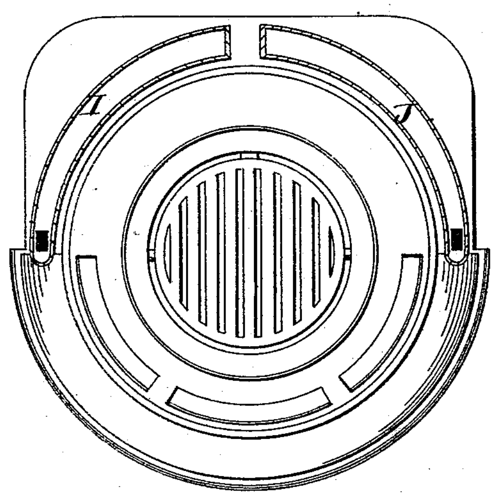
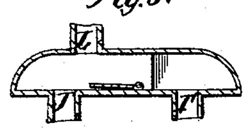


Fig. 5.



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UNITED STATES PATENT OFFICE.

SAMUEL B. SEXTON, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN MAGAZINE FIRE-PLACE STOVES.

Specification forming part of Letters Patent No. **162,107**, dated April 13, 1875; application filed January 16, 1875.

To all whom it may concern:

Be it known that I, SAMUEL B. SEXTON, of the city and county of Baltimore and State of Maryland, have invented an Improved Fire-Place Heater; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a front elevation; Fig. 2, a horizontal section through line *x x* of Fig. 1. Fig. 3, a vertical section through line *z z* of Fig. 1; Fig. 4, a horizontal section through line *y y* of Fig. 1; and Fig. 5, a vertical section in line *w w* of Fig. 3.

Similar letters of reference in the accompanying drawings denote the same parts.

This invention relates to that class of base-burning stoves, heaters, furnaces, &c., in which the combustion-chamber is divided into two parts by means of a contracting flange, as set forth in the patent granted to George R. Moore July 18, 1871, No. 117,194, and in an application for Letters Patent heretofore filed by me and now pending in the United States Patent Office. The object of this invention is to further extend the application of the principle of the contracting flange, and to adapt base-burning stoves, heaters, &c., to the use of Cumberland coal and other light bituminous coals.

So far as the new application of the principle of the contracting flange is concerned, the invention consists in contracting the body or wall of the stove to answer as an equivalent for the contracting flange, and for other purposes hereinafter referred to; and so far as the adaptation of the stove to the successful burning of Cumberland and other bituminous coals is concerned, the invention consists in the improved devices and combinations for that purpose hereinafter set forth and claimed.

Another feature of the invention consists in improved means for reflecting the heat and light of the stove, and at the same time preventing the ashes, coals, &c., from falling upon the floor.

In the drawings, B represents the base of the stove, provided with the usual hearth-plate *b*, top-plate, ash-drawer b^2, and semi-annular passage or flue b^3, to carry the smoke, &c., around back of the ash-box from one side of the stove to the other when the indirect draft is open. G represents the grate; C C′, the combustion-chamber; D, the fuel-magazine, having openings *d d* through its top; E, the chamber in the top of the stove over the fuel-magazine; F, the fuel-supply pipe; *m m′*, the two rows of mica windows, one opposite to the lower compartment C and the other opposite to the upper compartment C′ of the combustion-chamber; I J, the heating-drums at the sides of the stove; K, the casing which surrounds the stove; L, the smoke-escape flue; and N, the damper, which turns the draft into the direct or indirect passage. When the damper is turned down, as shown in Fig. 5, the smoke, &c., pass directly from the chamber E to the pipe L; but when the damper is turned up, as shown in Fig. 3, the smoke passes from the chamber E down through the pipe I′ into the drum I, thence into the horizontal passage b^3 therein, around the base of the stove to the other side, thence up into the drum J, and thence through the pipe J′ to the escape-flue L.

In lieu of employing the internal flange to contract the combustion-chamber and divide it into two compartments, as heretofore, I now contract the walls of the stove, as shown at *a* a^1. The fuel from the lower end of the magazine spreads out in a conical pile, the lower edges of which rest upon the annular ledge a^1, and there burn as though the grate were arranged at the line a^2. Below the opening a^2 the fuel again spreads out in another conical pile, the lower edges of which rest upon the annular ledge *g*, immediately surrounding the grate. From the opening a^2 the wall *a* expands outward more sharply than is shown in the drawing, or, in other words, the opening a^2, between the upper and lower compartments of the combustion-chamber, is comparatively smaller than is represented in the drawing, so that the coals in the lower compartment shall not extend out against the walls of the stove; but there shall always be a space between them and said wall, in which the gases can burn, and for the protection of the lower range of mica windows.

There are many advantages in thus contracting the walls of the stove instead of in-

serting the contracting flange, as heretofore, prominent among which are the increased protection to the metal, by the application of the cold-air currents directly to its outer surface, better provision for the contraction and expansion of the metal without danger of fracture, and economy of construction, both in material and labor.

It will be observed that the walls of the combustion-chamber are constructed in two sections, to wit: a small section, *a*, resting on the top plate *b'*, and a large section, a^1 a^3, terminating at its lower end in a flange or collar which fits into the upper end of the part *a*. This construction renders the manufacture, and the subsequent repair of the stove at any time, much cheaper and easier than would otherwise be the case.

The walls, thus constructed, to avoid the necessity of applying the internal flange, are equally applicable to stoves for burning anthracite or bituminous coal; but the magazine and the relative arrangement of the parts, as shown in the drawings, are such as to adapt the stove particularly to the latter. The magazine extends somewhat above the lower end of the feed-pipe, to give space for the expansion of the fuel by the heat, and it should be made larger at its discharge end than at its top, to enable the expanded fuel to feed downward without difficulty. At or near its lower end it is provided with small openings *v v*, through which a poker can be inserted to break up the fuel, or otherwise facilitate its downward movement, when necessary, or to hold up the fuel in the magazine, while the ashes or coals are being removed from the combustion-chamber below.

The stove thus provided with a combustion-chamber, divided or partially divided into two compartments, separated by the internal flange, or by contracting the walls, either entirely around the stove, or at least around the front side of the stove, is admirably adapted to the use of Cumberland coal. The fuel in the upper compartment C′ burns into coke, and falls through into the lower compartment, where it is entirely consumed, the ashes passing off through the grate into the ash-pan below.

The coke in the lower end of the magazine can be broken up by means of a poker introduced through the top of the stove, or through the doors *m* or *m'*. The coke in the upper compartment C′ can easily be broken up and made to fall into the lower compartment by the same means. For this kind of fuel, the relative size and arrangement of the opening a^2 and the lower end of the magazine should be such that the upward draft through the opening a^2 will concentrate the greatest heat immediately beneath and at the lower end of the magazine, instead of around it, thus forming at that point a species of retort, in which the smoke and gases evolved from the descending fresh fuel are brought at once into contact with the intensely-heated incandescent coal and coke, and are there consumed instead of passing out around the magazine to be consumed in the spaces next to the walls of the stove. I find that by burning this kind of coal in my stove in the manner described, with an intense heat and but little air, the smoke is nearly all consumed, and a good illumination is kept up.

The lower range of mica windows or doors are opposite to the brightly-burning coal in the lower compartment, out of the way of smoke and soot, and greatly increase the illuminating power of the stove, besides affording every facility for kindling the fire, for removing any slate or clinkers, and for cleaning out the stove, when necessary. The usefulness of the upper range of windows or doors for other purposes than illumination has already been referred to herein.

While the fire is kindling the direct draft should be employed; but when it is once kindled the direct draft should be closed and the indirect draft opened, which gives a larger circulation of the heated volatile products of combustion and a larger radiation of heat from the surface of the drums, pipes, walls, and top of the stove, than in any other stove that I am familiar with.

Hinged doors *o o*, capable of being opened and closed, are arranged at the sides of the stove, above the drums, as shown in Figs. 1 and 2, their object being, when closed, to act as screens, and when open to afford room to pass the hand in and attach or detach the pipe when putting in or taking out the stove. A space is left between the two drums, behind the stove, through which air can pass around to be warmed, and this space may be made much larger at the bottom than at the top, to give ample room for the purpose intended, and to admit the air most freely at the bottom of the stove, so that as it rises it will receive the radiated heat therefrom. The indirect draft-passage may be reversed, if desired, so that the currents will move around the base of the stove from right to left instead of from left to right.

The front of my improved stove I construct with especial reference to increasing its illuminating and heating power. With this object in view I apply below the lower range of mica doors a curved removable shelf, *r*, which prevents the ashes, &c., from falling upon the floor when said doors are open, and I burnish, and, if preferred, silver or nickel plate the upper and outer surface of this shelf, so that it will reflect upward and outward the light and heat from the windows and walls above it. I also attach another curved plate, r^1, above the upper mica windows, with burnished or plated surfaces on both sides, to reflect the light and heat and to improve the appearance of the stove; and I apply burnished or plated surface plates $r^2 r^2$ to the front edges of the drums I J, and also, as shown at r^3, to the columns or ribs that separate the mica doors, for a similar purpose. The effect of these burnished sur-

faces, when the stove is lighted up by the fire within, is very beautiful; the whole front of the stove, even to the side drums, is aglow, and its increased illumination and heat are obvious. When the stove is not lighted up the bright burnished lines and surfaces give it a very light and fanciful appearance, which is greatly admired. The upper plate r^1 may be provided with air-holes to prevent heated air from accumulating under it, and to give a draft through it to cool it and keep it from becoming tarnished or discolored.

Having thus described my improved stove, I claim as my invention—

1. In a base-burning magazine-stove, the combination of the horizontally-contracted walls *a a'*, the magazine D, the grate G, the surrounding flange *g*, and the two rows of illuminating-windows, one above and one below the contracted part of the wall, substantially as and for the purposes specified.

2. In a fire-place heater, the combination of the hinged doors *o o* with the top E and surrounding face-plate K, said doors being arranged to shut over and close the angular spaces between the plate r^1, the top, and the face-plate, substantially as and for the purposes specified.

SAMUEL B. SEXTON.

Witnesses:

GEORGE T. LEONARD,

S. B. SEXTON, Jr.