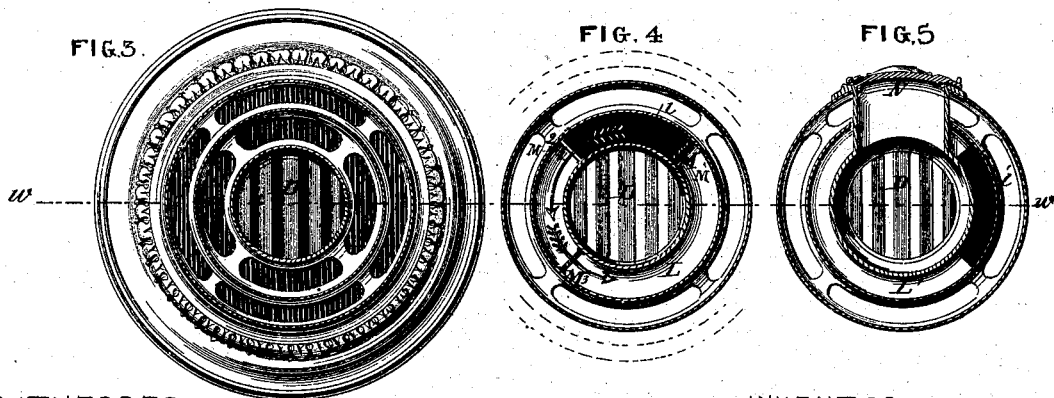
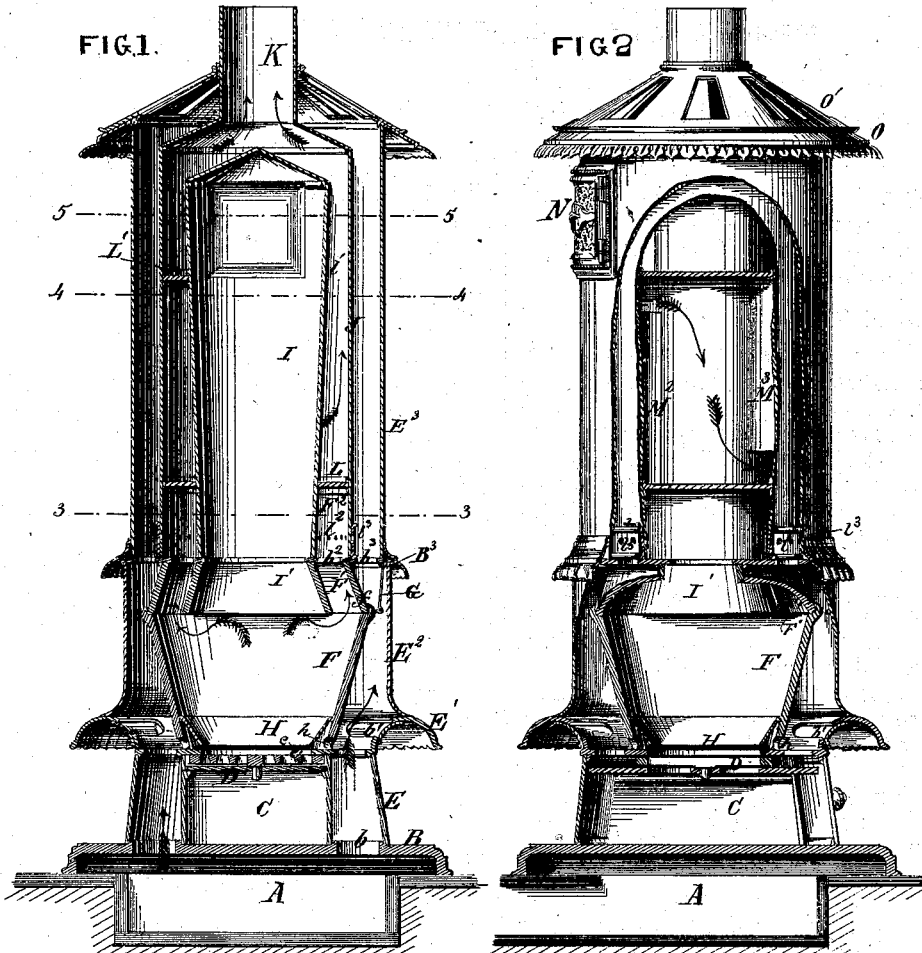


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Improvement in Base-Burning Stoves.

No. 115,959.

Patented June 13, 1871.



WITNESSES.  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN BASE-BURNING STOVES.

Specification forming part of Letters Patent No. 115,959, dated June 13, 1871.

I, SHUBAEL E. HEWES, of the city and county of Albany and State of New York, have invented a new and useful Magazine-Stove, of which the following is a specification:

### *Nature and Objects of the Invention.*

This invention relates to a stove adapted for burning anthracite coal, and primarily designed for the heating of school and audience rooms where it is desirable to economize heat and to completely envelop the walls of the stove. My great object is to warm apartments by the circulation of air, in contradistinction to direct radiation of heat. To this end I provide a jacket or casing extending continuously from the bottom plate of the stove to the top thereof, so as to protect the walls of the fire-chamber from exposure at any part and form a space or chamber through which, by means of suitable registers, the air of the room may be passed, so as to warm the apartment with great rapidity, after which the registers may be so adjusted as to deliver into the room warm fresh air from outside. The invention further consists in improved modes of constructing and connecting the parts of the fire-pot and casing, as hereinafter described. The invention further consists in providing within the fire-chamber, directly above the grate, an annular plate converging downward toward the grate, and having around and beneath it a space to which air is admitted from the outside, and within which the said air is heated to a high temperature, after which it is delivered around the lower edge of the said plate, to the burning fuel, directly above the grate. The invention further consists in constructing the lower part of the magazine of a plate, attached as hereinafter described, projecting down into the fire-chamber and made removable, so that it may be renewed as often as required. The invention further relates to an approved mode of forming a serpentine smoke-flue in the annular space between the magazine and the air-chamber.

### *Description of the Accompanying Drawing.*

Figure 1 is a vertical section of my improved stove in the plane indicated by the line *w*, Figs. 3, 4, and 5. Fig. 2 is a side elevation of the same, partly in section. Fig. 3 is a horizontal section thereof on the line 3 3, Fig. 1.

Fig. 4 is a horizontal section on the line 4 4, Fig. 1. Fig. 5 is a horizontal section on the line 5 5, Fig. 1. Fig. 6 is a vertical section (detached) of the cast plate shown at B<sup>3</sup> in Fig. 1.

### *General Description.*

A may represent an air-chamber or duct beneath the bottom B of the stove. In the said bottom are formed any suitable number of openings, *b*, for the passage of air from the duct A. C is the ash-pit. D may represent a grate of common construction. The bottom plate B is cast with annular flanges to receive the shell, within which the ash-pit is located, and also the lower part E of the casing, which completely surrounds the stove. This portion E of the casing is preferably made of cast-iron, in order that it may possess sufficient strength and rigidity. It is surmounted by an ornamental flanged plate, E<sup>1</sup>, to which the third section E<sup>2</sup> of the casing is attached, which section reaches to the top of the fire-pot F F<sup>1</sup>. This fire-pot is made of two frusto-conical sections jointed together at *f*, and secured, by means of short wires, G, to the connecting-plate B<sup>3</sup>, the construction of which plate is more fully shown in Fig. 6. The plate E<sup>1</sup> may be cast in one piece, its inner part *e'* supporting the base of the fire-pot. A plate or plates, *b'*, either hinged or else fitted to slide either vertically or around the plate E<sup>1</sup>, form, in connection with apertures in the latter, a register, by which air may be admitted or discharged at this point. H represents a plate for heating air to support combustion. The upper edge of said plate forms a tight joint with the fire-pot F, while its lower part projects to a sufficient extent to leave a space around and beneath it, to which air to be heated is admitted through the apertures *h*. Air, having been heated to a high temperature within this space, is allowed to pass beneath the lower edge of the plate H, above the grate, in direct contact with the incandescent fuel. By this means much more active combustion is maintained than if the interstices of the grate were relied on for the supply of air. I represents the fuel-magazine, extending from near the top of the stove downward to the plate B<sup>3</sup>. Beneath this is a supplementary piece, I', which is made remov-

able, and constitutes in effect the lower end of the magazine, projecting downward within the combustion-chamber  $F^1$ , so as to increase the capacity of said chamber. From the plate  $B^3$  also rises a sheet-iron shell,  $J$ , connected at top with the flue  $K$ , through which the gaseous products of combustion are finally discharged. The space between the magazine  $I$  and the shell  $J$  constitutes an annular flue, which is divided by horizontal annular plates  $L$   $L'$ . Beneath the annular plate  $L$  is an extension,  $F^2$ , of the combustion-chamber, into which extension the gases rise freely through extended openings  $b^2$  in the plate  $B^3$ , and to which air is supplied through the ducts  $h^2$ , which are controlled by an annular register,  $I^2$ , Figs. 1 and 2.  $l$ , Fig. 4, represents an opening by which the gases are allowed to pass from the combustion-chamber through the annular plate  $L$ .  $M^1$   $M^2$   $M^3$  represent vertical partitions, the first,  $M^1$ , extending from the annular plates  $L$  to  $L'$ ; the second,  $M^2$ , extending from the annular plate  $L$  nearly up to the annular plate  $L'$ ; the third,  $M^3$ , extending downward from the annular plate  $L'$  nearly to the annular plate  $L$ . By this arrangement the gases rising through the opening  $l$  are conducted up between the partitions  $M^1$   $M^2$ , thence down between  $M^2$   $M^3$ , and again up between  $M^3$  and  $M^1$  to the opening  $l'$  in the annular plate  $L'$ , above which they are diffused through the upper annular chamber so as to completely part with their heat before they are discharged through the flue  $K$ .  $N$  represents the feed-door, the jambs of which are connected with the upper annular plate  $L'$ , and form a chute or conductor across the annular flue, in order to permit the introduction of fuel into the upper part of the magazine.  $O$   $O'$  are cap-plates, one adapted to slide upon the other, and so perforated that they constitute a register for the discharge of air, which is heated within the annular chamber between the flue-shell  $J$  and the external casing  $A^3$ . The openings  $b^3$  in the plate  $B^3$  permit the passage of air through said plate.

By means of the register  $b^1$ , applied to the plate  $E^1$ , heated air may be discharged beneath the projecting rim of said plate when required for warming feet or for other purposes. When this is to be done the upper register  $O'$  is to be closed. If both the registers are opened the

effect will be to take air in at  $b^1$  and discharge it at  $O'$ , by which means the air within the room may be passed through and heated with great rapidity, instead of taking air from the outside.

To put the stove together it is only necessary to pin the wires  $G$  to the upper flange of the fire-pot  $F$ , hook them into eyes provided for this purpose in the under side of the plate  $B^3$ , and to rivet the sheet-iron cylinders to the proper flanges on the cast plates. This mode of construction is very advantageous, in leaving all the parts free to expand and contract independently, and dispensing entirely with long wires or bolts extending from bottom to top of the stove.

#### Claims.

I claim as my invention—

1. In a stove, constructed substantially as herein described, the continuous casing  $E$  surrounding the stove from the hollow base  $B$  to the top  $O$ , and employed in connection with the base ducts and the two sets of registers  $b^1$  and  $O'$ , substantially as and for the purposes explained.

2. The combination of the upper combustion-chamber  $F^2$ , fire-pot  $F$   $F^1$ , register  $I^2$ , and annular plate  $L$ , as and for the purposes specified.

3. The fire-pot  $F$   $F^1$ , constructed of two converging portions connected by a joint,  $f$ , and secured by means of short wires  $G$  to the plate  $B^3$ , substantially as herein described.

4. The annular air-heating plate  $H$ , constructed and applied in connection with the fire-pot  $F$  and grate  $D$ , and air-ducts  $h$ , substantially as and for the purposes specified.

5. The magazine  $I$   $I'$ , constructed in separable parts, connected through the medium of the plate  $B^3$  to admit of the removal and renewal of the lower part  $I'$  when required.

6. The combined arrangement of the horizontal annular plates  $L$   $L'$  and vertical partitions  $M^1$   $M^2$   $M^3$ , adapted substantially as herein described to impart a serpentine course to the heated gases on their way from the fire-chamber to the discharge-flue  $K$ .

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Witnesses:

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