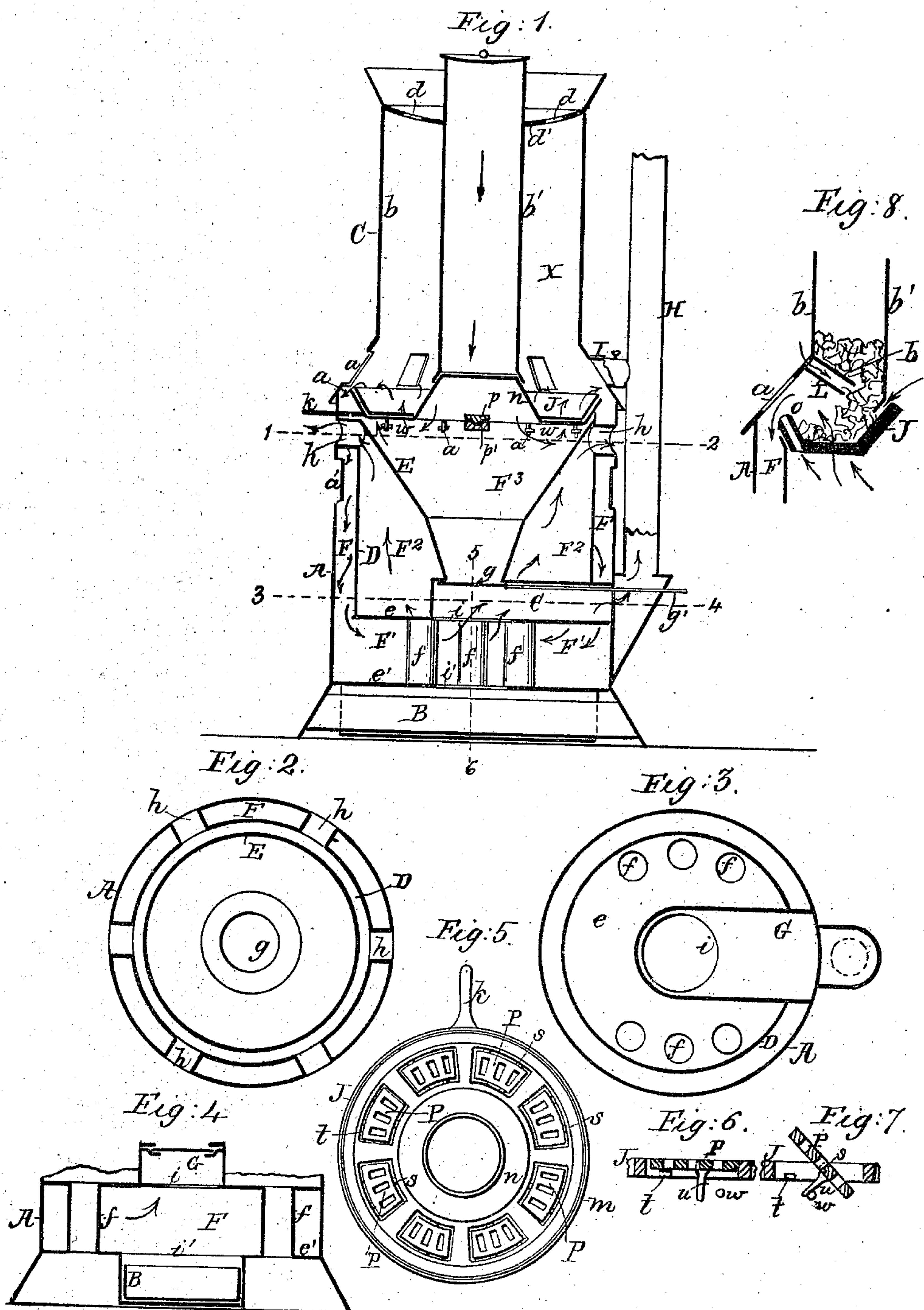


C. L. SVENSSON.

Magazine Stove.

No. 105,737.

Patented July 26, 1870.



Witnesses
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. **105,737**, dated July 26, 1870; antedated July 21, 1870.

I, CARL LISTER SVENSSON, of Topeka, Shawnee county, Kansas, have invented certain Improvements in Stoves, of which the following is a specification:

Nature and Object of the Invention.

My invention consists of a stove having an annular grate of a peculiar construction, which may be employed, in connection with certain passages for air and for the heated products of combustion, as fully described hereafter, so as to effect a thorough heating of the plates of the stove with the consumption of a comparatively small amount of coal.

My invention further consists of an annular reservoir, having a central cold-air passage, and of certain chambers and passages, described hereafter, and of a drawer so arranged as to be withdrawn from either side of the stove.

Description of the Accompanying Drawing.

Figure 1 is a sectional elevation of my improved stove; Fig. 2, a transverse section on the line 1 2, Fig. 1; Fig. 3, a transverse section on the line 3 4, Fig. 1; Fig. 4, a vertical section on the line 5 6, Fig. 1; Fig. 5, a plan view of the fire-pot and grate; Figs. 6 and 7, detached sectional views, drawn to an enlarged scale, and illustrating the operation of the grate; and Fig. 8, a sectional view illustrating a modification.

General Description.

A is the base of the stove, in the lower part of which, below the base-plate e' , is a chamber containing an ash-drawer, B, the front and rear ends of the latter fitting openings in the flange of the base, and corresponding to the same, so that the drawer can be withdrawn from either side of the stove. In the upper portion of the base, which is conical or inclined, as shown in the drawing, and also in the cylindrical portion of the base, are openings a and a' , to which are fitted doors, provided with the usual mica panes. To the contracted upper end of the base is connected the lower end of the cylinder or magazine c , which consists of an outer cylindrical casing, b , and an inner casing or tube, b' , the latter extend-

ing through the top d' of the cylinder-openings d d , which permit access to the annular chamber X between the two casings. As the heated gases traverse the flue F, they pass the lower mica windows, a' , through which the heat is radiated directly into the room. In the base of the stove are a vertical casing, D, funnel-shaped casing E, and partition e , so arranged as to divide the base into chambers F F^1 F^2 F^3 , and between the partition e and the base-plate e' extend pipes f , through which the chamber F^2 communicates with the space below the base-plate. A flue or passage, G, communicates with the main flue H, with the chamber F^1 , (through an opening, i ,) and with the chamber F^3 within the casing E, the lower contracted end of the latter being closed by a slide or valve, g , operated by means of a rod, g' , which extends through the outer casing of the stove. In the base-plate e , directly below the opening i , is an opening, i' , through which the chamber F^1 communicates with the chamber containing the ash-drawer. A branch, I, provided with a suitable damper, extends from the main flue H to the upper part of the base, and from the outer casing, above the lower series of openings, a , extend pipes or tubes h , which communicate with the chamber F^2 . Within the upper flaring mouth of the casing E fits an annular fire-pot, J, consisting of a cast-iron frame, having at its inner edge a flange, n , inclined inwardly, so as to extend a short distance into the lower end of the tube or casing b' , and at its outer edge a flange, m . In the outer flange, m , are openings o , through which air can pass upward from the chamber F^3 , and across the frame of the fire-pot extends a bar, p , having at the center a projection, q , on which the fire-pot revolves, the said projection resting in a socket in a cross-piece, p' , secured at its ends to the casing E. Within openings in the frame of the fire-pot are hung adjustable grates P, each of which swings on trunnions s s , placed nearest one end of the grate, so that the opposite end shall be the heaviest, and will be maintained by its weight in contact with a lug, t , on the frame, and from the under side of each grate extends an arm, u . From the inner side of the casing E project pins w , and from one side of the fire-pot

extends an arm, *k*, which projects through an opening in the outer casing of the stove.

Operation.

The fuel, which is deposited within the annular chamber *X* of the magazine, passes downward into the annular fire-pot, where it is ignited, air for supporting combustion flowing downward through the tube *b'* into the chamber *F*³, and upward through the grate.

The gaseous products of combustion pass over the edge of the fire-pot, where they mingle with the air flowing upward through the openings *o*, and thence downward through the annular chamber *F* to the chamber *F*¹, upward through the openings *i* to the passage *G*, and to the main flue or chimney, the heated gases being thus brought into direct contact with the outer casing of the stove, and also with the inner casing, *D*, and partition *e*, which together present a surface as great as that of the outer casing, and which, therefore, will thoroughly heat the air which flows into the chamber *F*² through the tubes *f*, and outward through the tubes *h*.

When the fire requires raking the fire-pot is agitated by means of the arm or handle *k*. This movement also agitates the fuel in the lower part of the reservoir, so as to aid in withdrawing it from the latter.

When it is desired to empty the fire-pot the latter is turned to such an extent as to bring the arms *u* against the pins *w*, when the grates will each be tilted to the inclined position shown in Fig. 7, and the contents of the fire-pot will be discharged into the casing *E*, from which, on drawing back the slide *g*, they will fall into the ash-pan.

By the use of an annular fire-pot the fire is brought close to the outer casing of the stove, so as to heat the latter both by conduction and radiation, while the coal can be gradually fed onto the grate, and consumed in small quantities at a time, so that the gases are only evolved in such quantities as can be entirely consumed within the stove, this mode of burning the fuel being especially desirable in using soft or bituminous coals, which, if heated in large bodies at one time, evolve gases so rapidly that the latter cannot be consumed within the stove, and are carried to the chimney and wasted.

By the use of an annular reservoir or magazine a current of cold air may be conducted through the center, so as to maintain the reservoir and its contents at a low temperature. If desired, however, a cylindrical reservoir may be employed, and annular plates *LL* may be placed within the outer casing, as shown in Fig. 8, so as to prevent the heated gases

from gaining access to the fuel, guide the latter toward the center of the pot, and afford a passage for the admission of cold air to the fuel as it passes from the feeder.

The fire-pot may be differently constructed, and may be stationary, and a movable annular grate may be used. Other devices may also be used for dumping the grates, as, for instance, a ring moved by means of an arm projecting through the outer casing, and having radiating pins arranged to strike the arms *u*.

If desired, air may be admitted to the chamber *F*³ through lateral pipes extending to the outer casing, or through openings communicating with the chamber *F*², instead of through the tube *b'*, and the products of combustion may be conducted directly upward through passages outside of the casing *b'*, or within the tube *b'*.

It will be seen that the annular fire-pot is independent of the casings of the stove, and may be detached, when injured or worn, and repaired or replaced by another.

Claims.

1. An annular fire-pot arranged within the casing of a stove and turning within the latter, for the purpose described.
2. An annular fuel-magazine, *C*, containing a central flue or chamber, and arranged on a heating-stove so that cold air only shall have access to the central flue.
3. The combination of an annular grate, an annular fuel-magazine, and a chamber below the grate communicating with the central passage or chamber of the magazine, substantially as specified.
4. Mica windows *a'*, arranged to expose the interior of the flue or flues through which heated gases pass from the combustion-chamber to the main flue.
5. A series of grates arranged in a circle, in combination with devices whereby the grates may be tilted, for the purpose described.
6. An annular fire-pot arranged within a stove so as to rotate, or partially rotate, within the same, for the purpose set forth.
7. The combination of the movable fire-pot *J*, the tilting grates *P*, their arms *u*, and the pins *w*, substantially as specified.
8. The slide *g*, arranged in a base-burning stove between the chamber below the grate and the main flue, substantially as described.
9. A drawer, *B*, arranged beneath a stove, so as to be withdrawn from either side of the same.

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Witnesses:

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