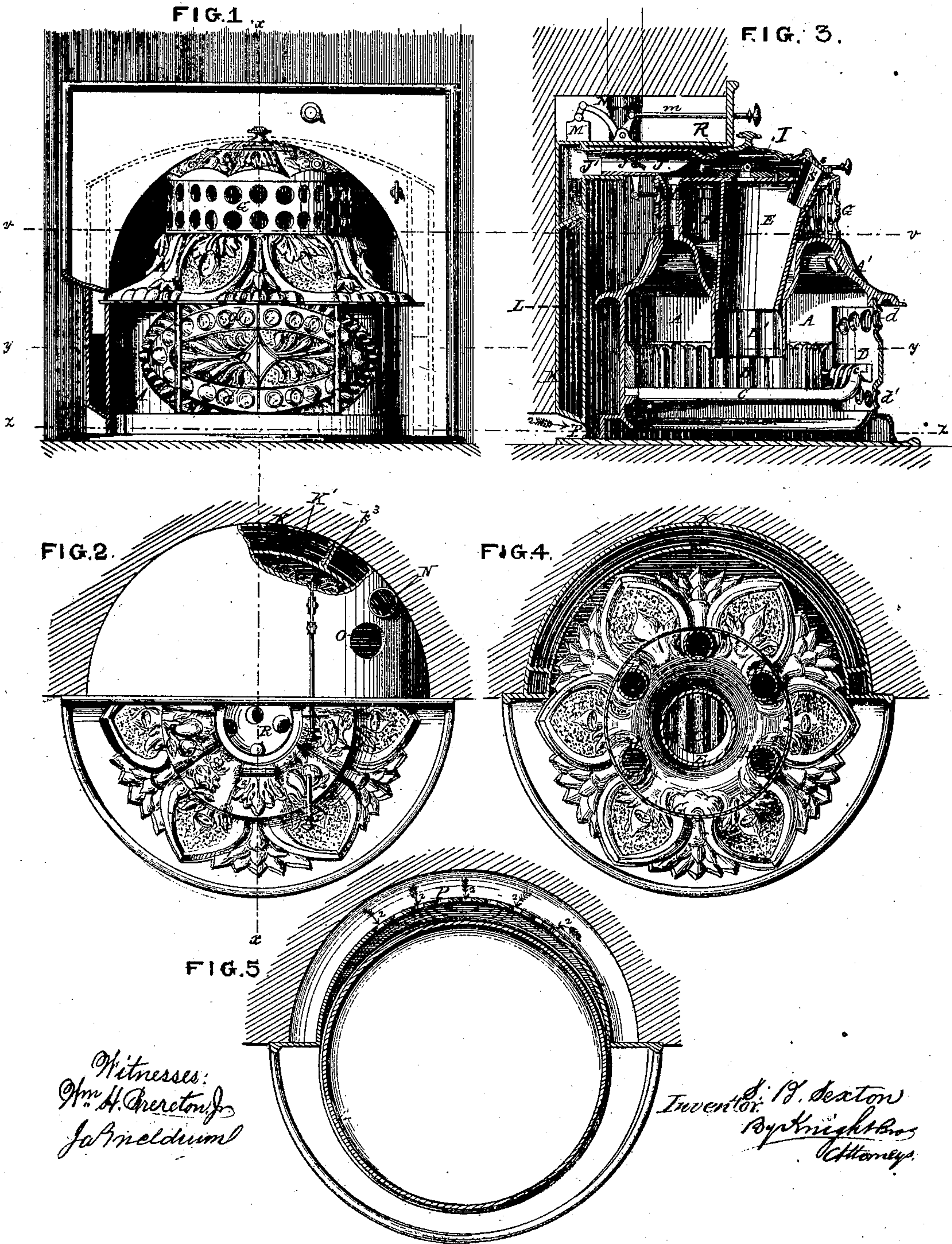


S. B. SEXTON.  
Fireplace Stove.

No. 103,510.

Patented May 24, 1870.





S. B. SEXTON.  
Fireplace Stove.

2 Sheets—Sheet 2.

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FIG. 6

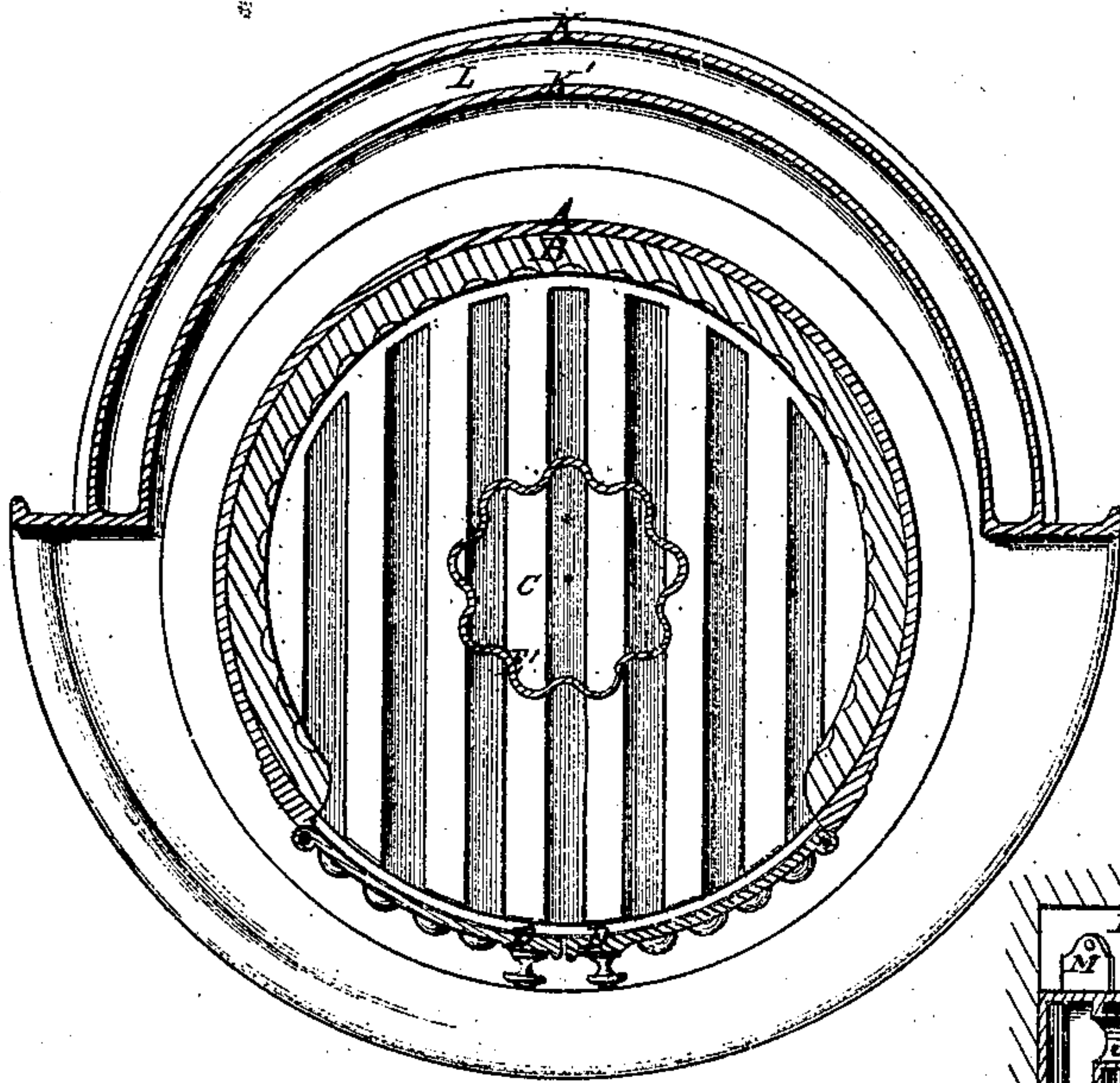


FIG. 8.

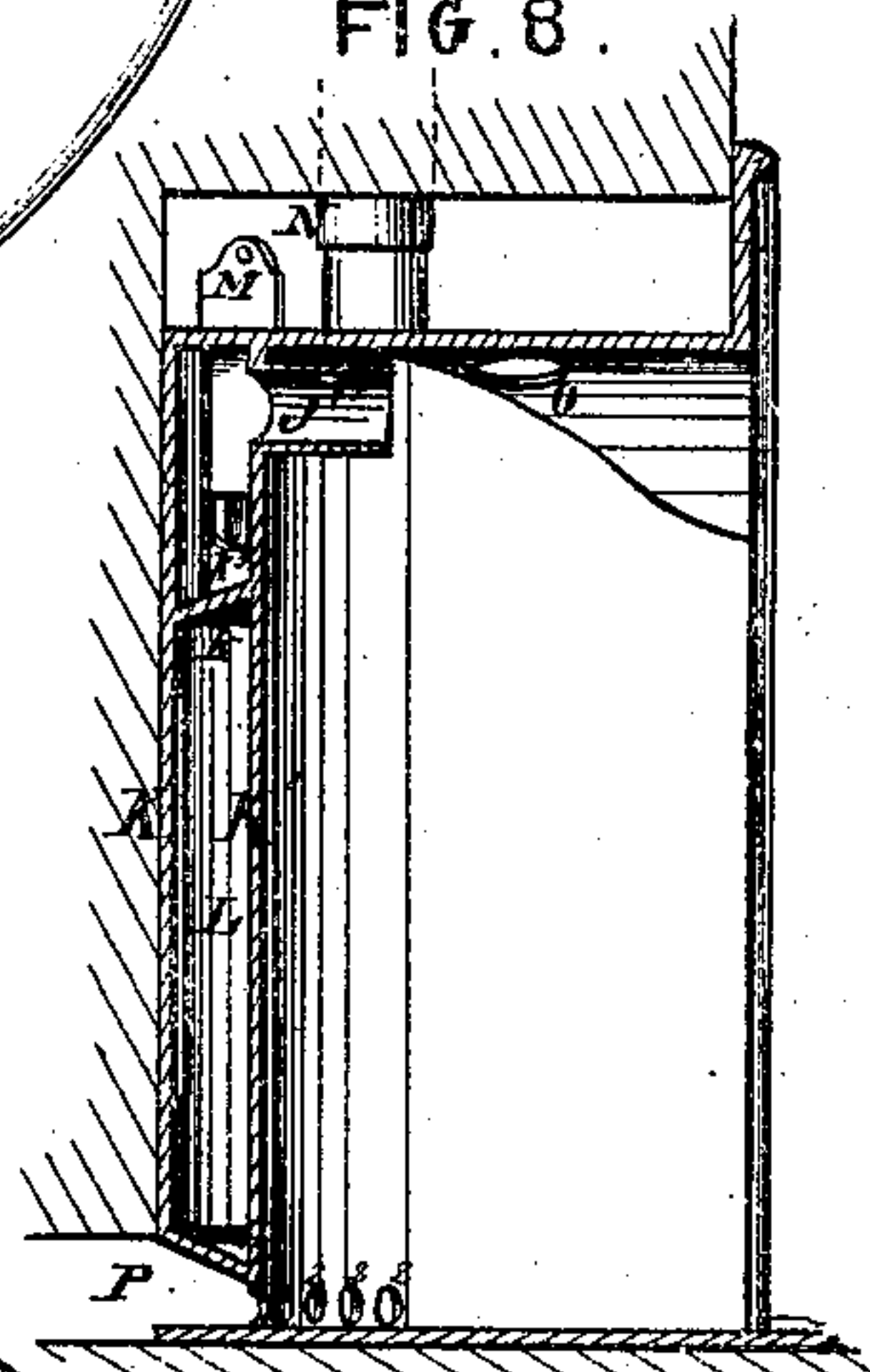
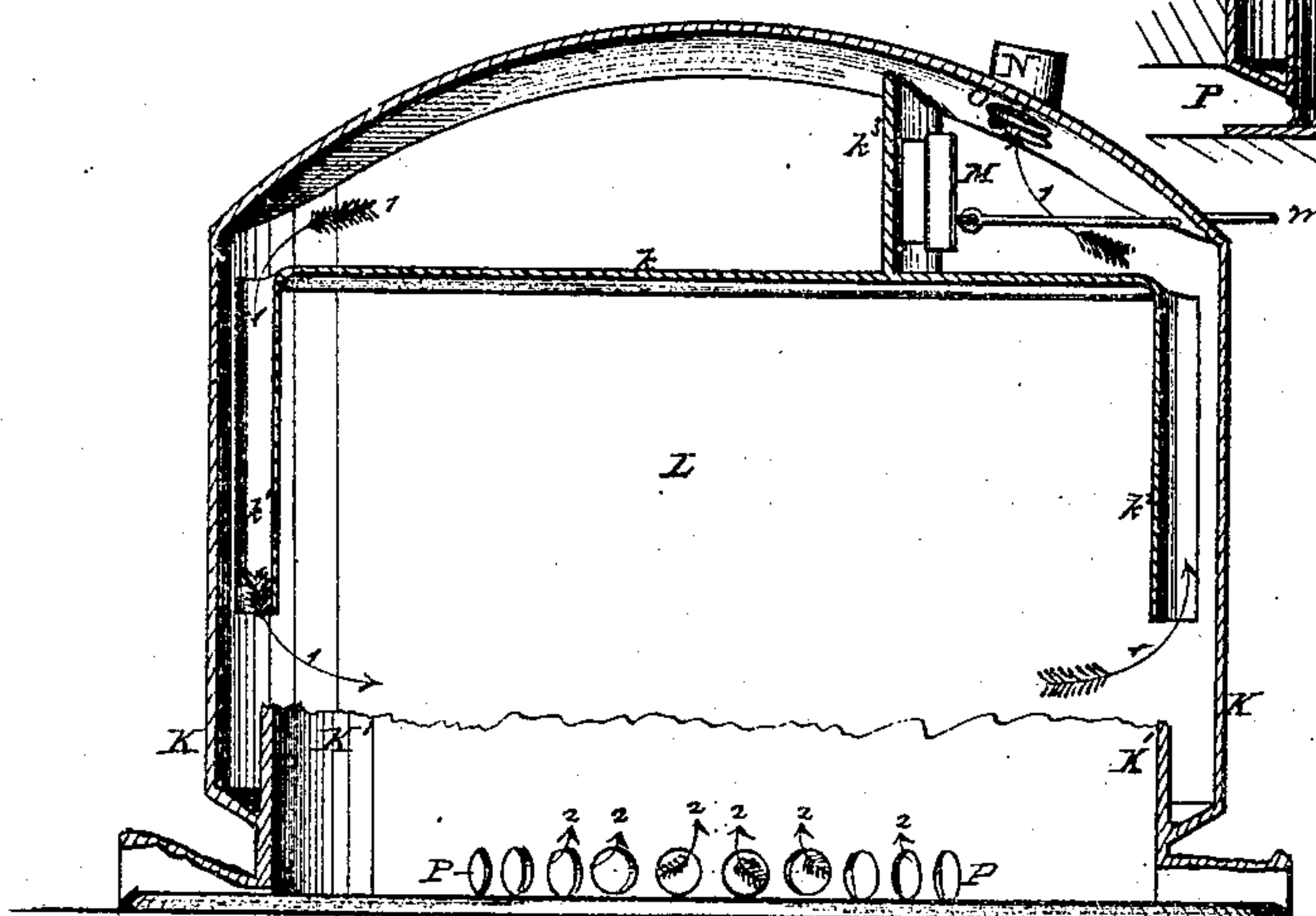


FIG. 7.



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# United States Patent Office.

SAMUEL B. SEXTON, OF BALTIMORE, MARYLAND.

Letters Patent No. 103,510, dated May 24, 1870.

## BASE-BURNING FIRE-PLACE STOVE.

The Schedule referred to in these Letters Patent and making part of the same

I, SAMUEL B. SEXTON, of the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Fire-place Stoves and Flue-Casings therefor, of which the following is a specification.

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

My invention consists—

First, in constructing the lower part of a fuel magazine of a corrugated or irregular shape, so as to lessen the liability to fracture, either in original manufacture or in subsequent use, and also to adapt it to deliver the fuel with greater freedom and less danger of clogging.

Secondly, in surrounding the upper part of the fuel-magazine with an air-space or chamber, communicating freely with the air-heating space between the stove and its rear casing, and masked in front by a screen of any suitable construction, which may or may not constitute a permanent part of the walls or shell of the stove, and is adapted to permit the passage of air.

Thirdly, in a flue-casing, which may remain permanently set in the fire-place, while permitting the introduction and removal of the stove.

Fourthly, in the combination of a removable stove and a permanent flue-casing.

Fifthly, in the arrangement of a number of vertical tubes or pipes employed to conduct the gases from the combustion chamber to an upper flue or chamber, and affording heating surfaces for air.

### *Description of Accompanying Drawings.*

Figure 1 is a front view of a stove and casing, illustrating my invention.

Figure 2 is a top view thereof, with a part of the casing shown in section.

Figure 3 represents a vertical section in the plane indicated by the line *x x*, figs. 1 and 2.

Figure 4 represents a horizontal section in the plane indicated by the line *v v*, figs. 1 and 3; and

Figure 5, a horizontal section in the plane indicated by the line *z z*, figs. 1 and 3.

Figure 6 is a horizontal sectional view at *y y*, figs. 1 and 3.

Figure 7 is a front elevation of the rear shell or sheet, and the lower part of the front sheet of the casing, exhibiting the structure of the radiating flues, and showing also the air-ducts in the casing beneath said flues.

Figure 8 represents a section of the flue-back or casing, without the stove, at *x x*, figs. 1 and 2.

### *General Description.*

A A are the walls of the main combustion-chamber.

B is the fire-brick lining, the inner surface of which is formed with vertical ribs or corrugations, as shown in figs. 3 and 6.

The grate C may be constructed with a rise, *c*, in front, to retain the burning fuel.

D D represent either hinged or sliding doors, with apertures *d d'* above and below the grate.

The upper range *d* of these apertures may be closed with mica or other material for illumination, while the lower ones, *d'*, are left open to admit air; but these may, of course, be provided with valves or registers to check combustion.

The upper part of the magazine or fuel-reservoir E is surrounded by an air-space, F, communicating freely with the heating-space behind the stove, and screened in front by a wall or casing, G, which may be perforated or formed with any suitable open work to permit a free circulation of air around and in contact with the walls of the magazine.

The lower part, E', of the magazine may be cast in one piece with the crown A' of the main combustion-chamber, or may be separate therefrom, and either connected or not with the upper part of the magazine.

The said lower part E' is formed with vertical ribs or corrugations, as shown in figs. 3 and 6, in order to give it greater strength and elasticity to resist the action of the fire and changes of temperature, and at the same time to adapt it to deliver the fuel more freely, and lessen the danger of clogging.

Communicating with the interior of the crown or upper part of the combustion-chamber are tubes H H, which also connect with an upper chamber, I, from whence a horizontal flue, J, leads to the interior of the hollow casing K K, which forms an extended chamber, L, for radiation.

Within this radiation-chamber are partitions *k k'* *k'' k'''*, to conduct the gaseous products of combustion in a circuitous course, and distribute them throughout the chamber.

In the partition *k''* is a damper, M, guarding an aperture, to afford direct draught when desired.

The damper M may be made to slide, as shown in fig. 3, or it may be hung on either vertical or horizontal hinges, the operating rod *m* being attached directly to it, as illustrated in fig. 7.

N is the discharge flue.

O represents an aperture in the casing, through which the workman putting up the stove may have access to the flue-pipe N, to adjust it on its collar.

P P represent a range of apertures, through which external air to be heated may be admitted through the casing underneath the radiating sheet flue or chamber L, to the space between the stove and casing.

R is the register or valve, operated by a rod, *r*, to



permit the escape of gas from the magazine into the discharge-flues.

S is a chute, through which the magazine may be supplied with fuel. The said chute may be closed by a hinged or sliding door, s, in any common way.

The flue J may be provided with a check-flue, j, but this is not generally necessary, except with chimneys of very strong draught.

#### *Operation.*

When the fire is first made, the valves or dampers R and M may both be opened, to afford the most direct communication with the discharge-flue N. Both these valves are afterward closed, and the doors D may be opened or not, as preferred. The magazine being filled with fuel, active combustion will be maintained around its lower part in customary manner.

The gaseous products of combustion, passing upward through the tubes H, fill the chamber I, and are conducted by the horizontal flue J into the radiating sheet-flue L, within which they are deflected and distributed by the partitions  $k^3$   $k$   $k^1$   $k^2$ , as indicated by the arrows 1 in fig. 7, and finally delivered to the discharge-flue N.

The arrows 1 indicate the course of the gases when the damper M is closed. This damper, is however, represented open in fig. 7, in order to show the aperture which it is intended to guard.

The arrows marked 2 show the ingress of external air to be heated.

The permanent flue-casing K K' may be used with stoves of various kinds.

One great advantage of this part of my invention consists in the facility afforded for setting the flue-casing without incumbrance from the stove, and subsequently introducing and removing a stove as often as necessary, without disturbing the flue-casing or the smoke and hot-air flues within the chimney.

In fire-place heaters, as usually constructed, it is difficult to get at the flue-pipe to set in place, and great inconvenience is experienced from the frequent necessity of taking out the stove for cleaning and other purposes, the pipes having to be detached and disturbed on every occasion, and in many cases the registers removed to readjust them.

With my invention, the opening is made in the wall to admit fresh air from the outside, and the radiator or casing K K', without the stove, is then set in position in the fire-place, and the smoke and hot-air pipes are attached.

The workman is enabled to perform this duty with great ease by reason of his having the entire space

to work in, which is afterward to be occupied by the stove. The casing having been set in its place, any suitable stove is introduced, the flue-pipe F' being inserted in a collar or opening, J', prepared for its reception in the casing K'.

Either a common close stove or an open-grate stove may be used in this way with advantage.

When the stove is removed, the front of the casing or radiator may be closed by a screen or shield, such as is described in my patent dated December 14, 1869, so as to make a neat finish in connection with the sides or front of the flue-back or radiator.

An important advantage of the particular form of stove which I have shown consists in exposing the central part of the magazine to a free circulation of air, while at the same time it is concealed from view.

The feed-chute S also passes through this air-space instead of through a gas-space, as is usual.

By carrying the gases from the main combustion-chamber, through several tubes H, I provide a greater radiating surface, and at the same time make the flue-tubes more durable than when they are surrounded by fire and heat without air. The air-chamber through which these tubes pass, may be inclosed in whole or in part by an open-work case or cover, constituting a screen, while permitting the passage of air.

#### *Claims.*

I claim as my invention—

1. A fuel-supply reservoir or magazine, having at its lower part a corrugated, ribbed, angular, or irregular shape, substantially as and for the purposes set forth.
2. The air-chamber F, surrounding the upper part of the magazine or fuel-reservoir, and connecting at back with the heating-chamber, and in front with the atmosphere through a screen or shell, G.
3. The casing K K', containing a radiating-flue or flues, and adapted to remain permanently set, while permitting the introduction and removal of a stove.
4. The combination of a removable stove and a permanent flue-casing, substantially as set forth.
5. The series of tubes H H H, arranged around the magazine E, and employed for conducting gases from the crown of the combustion-chamber to the upper flue-chamber I.

S. B. SEXTON.

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