2 Sheets—Sheet 1.

S. B. SEXTON.

Hot-Air Furnace.

No. 112,081. Patented Feb. 21, 1871.

FIG. 1

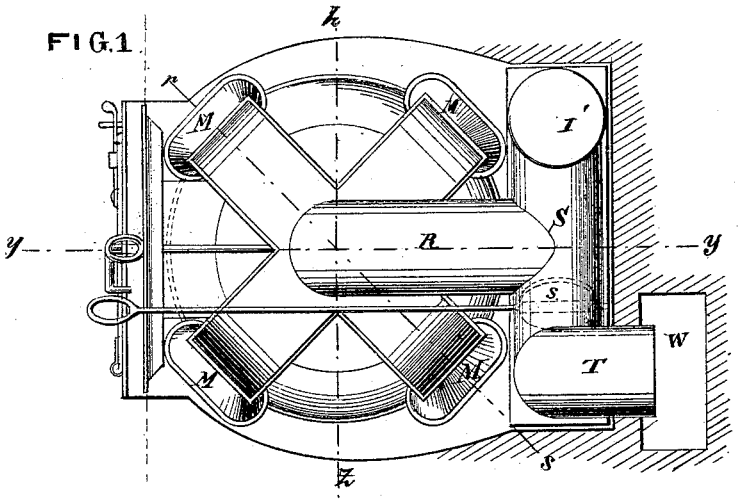
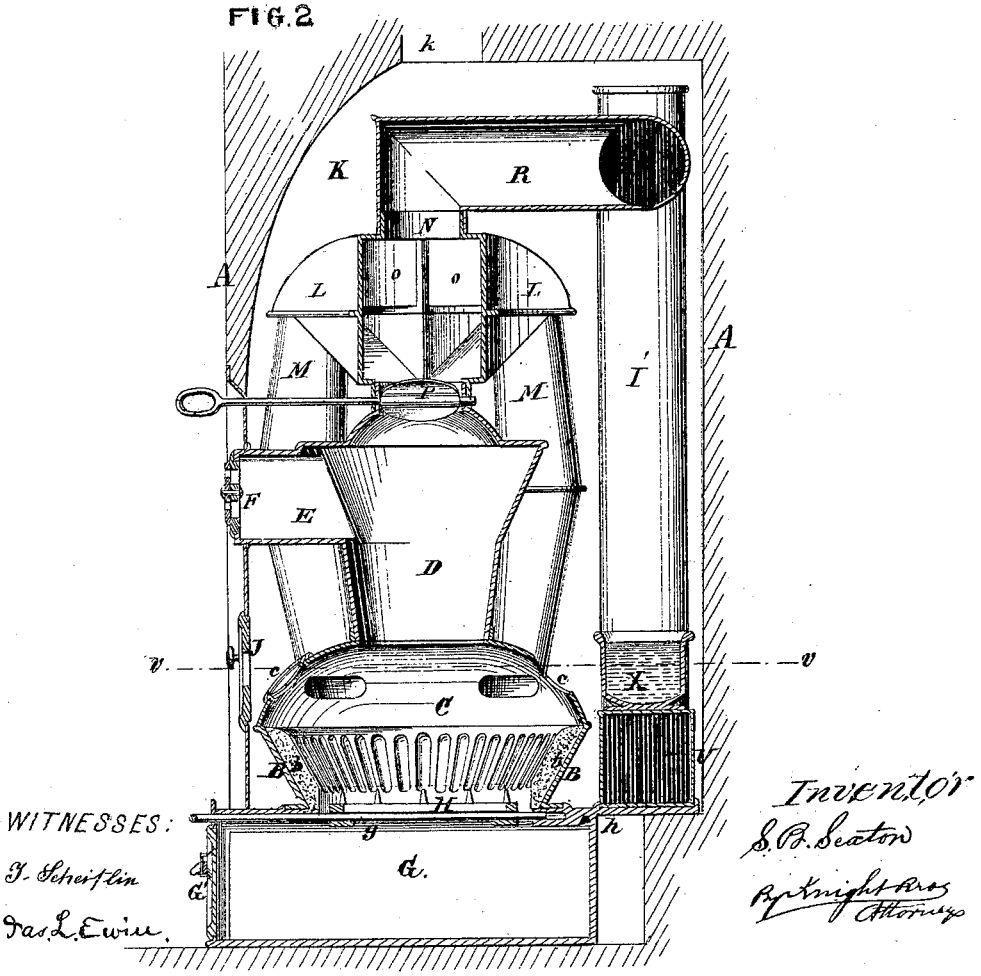


FIG. 2



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2 Sheets—Sheet 2.

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FIG. 4.

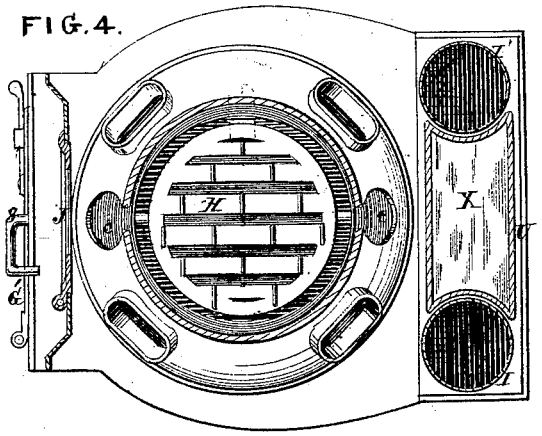


FIG. 5.

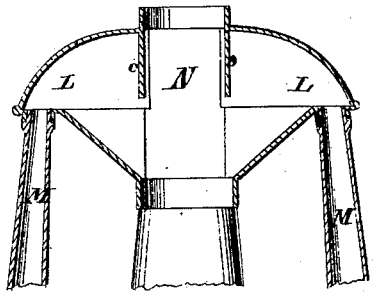
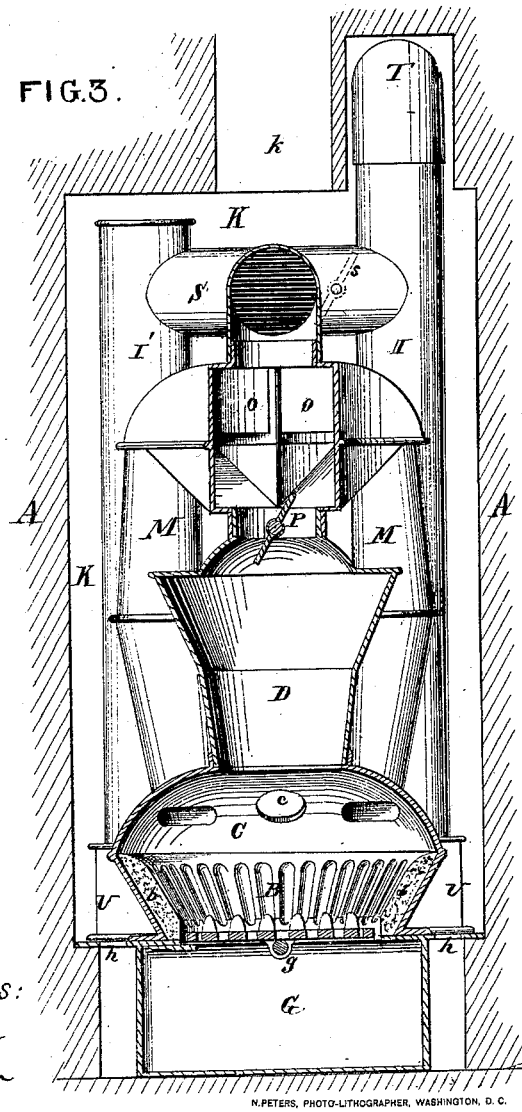


FIG. 3.



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SAMUEL B. SEXTON, OF BALTIMORE, MARYLAND.

Letters Patent No. 112,081, dated February 21, 1871.

IMPROVEMENT IN HOT-AIR FURNACES.

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

I, SAMUEL B. SEXTON, of Baltimore, in the State of Maryland, have invented a new and improved Warm-Air Furnace, of which the following is a specification.

Nature and Objects of the Invention.

The improvements relate to the construction of deflecting plates in the upper chamber of the furnace; a shiftable arrangement, by which the discharge-pipes can be placed on either side of the furnace; and a damper arrangement in the said pipes, by which the caloric current is allowed to pass immediately to the chimney, or is directed downward to pursue a more circuitous course.

Description of the Accompanying Drawing.

Figure 1 is a top view of the furnace.

Figure 2 is a central vertical section on the line *y y*, fig. 1.

Figure 3 is a central vertical section on the line *z z*, fig. 1.

Figure 4 is a horizontal section on the line *v v*, fig. 2.

Figure 5 is a central vertical section on the line *r s*, fig. 1, the section only extending down a portion of the distance from the top.

General Description.

In figs. 1, 2, and 3, the furnace is represented as inclosed in a brick-work or other casing, A.

The fire-chamber has a flaring fire-pot, B, with an interior fire-clay lining, *b*, and a dome or arch, *c*, whose edge rests upon the fire-pot.

This dome has such a degree of lateral extension that it affords space for a number of openings around the central trunk or magazine-chamber D, which receives its fuel through the chute E.

F is a door, with a register, to admit air when required, in order to damp the energy of the fire.

G is the ash-pit, and

H, the grate, which has two motions, one, a reciprocating back-and-forth, in order to stir the lower bed of coals, and cause the ashes to drop between the grate-bars into the box below; the other motion being a rotation upon the axis *g*, in order to dump the contents of the fire-pot into the ash-pit.

On the upper edge of the grate-bars are prongs, which project upwardly, and stir the coals when the grate is reciprocated, in order to assist in sifting out the ashes.

The top of the ash-box is extended laterally, so as to rest upon steps furnished by the brick casing, and thus form a support for the reverting flues I I′, which will be described presently.

Holes are provided in the base-plate *k*, to allow the upward passage of air from the space around the ash-pit.

G′ is the door of the ash-pit, and is the air-supply, for the fire enters at that aperture.

J is a door in the outer casing; the aperture admits air into the chamber K to be warmed and carried off by the duct *k*, for the purpose of heating the apartments of the building.

The door J is placed opposite to one of the openings, *c*, in the arch of the fire-place, in order that kindling may be introduced at this point, or the poker to stir the fire.

A mica door closes the opening *c*, except when it is necessary to reach the chamber for the purposes stated, or for cleaning the flues or chambers.

Another opening, *c*, is afforded at the rear part of the furnace, to be used when the mode of setting the furnace may render it available.

From the top of the arch C rise four hollow columns, M, of peculiar form, and these serve as flues to conduct the caloric current into the upper chamber L.

Each of the columns is cast in two parts, which may be compared to hollow frustums, united at their larger ends, the smaller ends communicating with the fire-chamber and the upper chamber L respectively.

This shape allows them to be cast without a core, as the conical form permits the pattern to be lifted off the sand. The shape also affords a mid-length enlargement for the gas and smoke, and increases the radiating surface. They are also more easily and closely fitted together and at less cost.

The chamber L has four converging ducts, which lead the gaseous contents of the columns M toward the central flue N. Each current just before reaching the central chamber L dives down beneath a plate, O, which prevents it from escaping immediately up the chimney.

P is a damper at the bottom of chamber L. When the fire is first lighted this damper may be opened to allow escape of the gas and smoke immediately up the chimney before the heat has established an ascensive current of sufficient force to traverse the more circuitous passages.

R is an elbow and horizontal flue, which may be made to reach out from the central flue N in any direction, according to convenience, or to suit the shape or position of the cell K in which the furnace is placed.

The flue R leads to a short horizontal flue, S, which connects two pipes I I′.

A damper, *s*, is placed between the intersection of pipes R S and the discharge of the latter into the pipe I. When this damper is closed, the gas and

smoke are compelled to pass down pipe I′, along the flue V, and then up pipe I, to the elbow T and chimney W.

X is a water-reservoir on the flue U, to afford aqueous vapor to the air passing through the chamber K.

Claims.

What I claim as new is—

1. The reversible damper-pipe S, arranged in connection with the elbow-pipe R and radiating flues I I′, in the manner shown and described, to admit of changing the damper from side to side to suit the construction of the chimney and the location of the discharge-flue W.

2. The combination of the pipes I I′, the pipe R, with its elbow, the pipe S, the damper *s*, and discharge-pipe or chimney.

3. The arrangement of the magazine D and damper P with the fire-chamber, the upper chamber L, columns M, and plates O, all constructed substantially as and for the purpose described.

SAMUEL B. SEXTON.

Witnesses:

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W. H. HAYWARD.