

# United States Patent Office.

THOMAS HENNEY, OF DUBUQUE, IOWA.

Letters Patent No. 71,171, dated November 19, 1867.

## HOT-AIR STOVE.

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

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS HENNEY, of Dubuque, in the county of Dubuque, and State of Iowa, have invented a new and improved "Hot-Air Stove;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an elevation of the front part of the improved stove.

Figure 2 is a transverse section, taken in a vertical plane through the centre of the stove.

Figure 3 is a longitudinal section, taken in a vertical plane through the centre of the stove.

Figure 4 is a section through the top of the stove, taken in a horizontal plane indicated by red line  $x x$  in fig. 2.

Figure 5 is a section, taken horizontally through the intermediate smoke-chamber of the stove.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on the construction of that class of stoves known as parlor-heaters, wherein air is caused to circulate through pipes leading through smoke-passages, for the purpose of absorbing and utilizing a large quantity of heat, which would otherwise be carried off and wasted.

The nature of my invention consists in constructing a stove, with air and smoke-flues, in such manner that, when the direct draught to the escape-flue is shut, the products of combustion will be caused to descend from a point at or near the top of the fire-chamber, and circulate through external flues or columns, thence circulate through a hollow chamber surrounding the body of the stove above its base, and pass off through ascending flues rising from said chamber and communicating with an exit-flue, as will be hereinafter described.

It also consists in employing air pipes in conjunction with the above-mentioned arrangement, which pipes are arranged so as to be partly exposed to the direct action of the fire in the fire-chamber, and partly exposed to the action of the heated products of combustion circulating through the ascending and descending columns of the upper part of the stove, said pipes being also so arranged as to receive air at the bottom of the stove, and discharge it from the top thereof, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings I have represented a stove, which is constructed partly of cast iron and partly of sheet iron; that is to say, the top, bottom, and lower part of the fire-chamber are made of cast iron, so as not to be readily destroyed by the action of the heat.

A is the base of the stove, which is elevated upon legs, so as to allow of the free passage of air to the vertical air-heating pipes  $a a^1 a^2$ . B is the lower part of the fire-chamber, which is capped by a hollow chamber or rim, C, that communicates with the top section D by means of several vertical smoke-columns or pipes E E F F', and F', as shown in the drawings. Upon this hollow section C, the upper part G, forming the body of the stove, or smoke-chamber, is constructed, which part may be elliptical, or of any other shape, taken in cross-section.

The pipes  $a a^1 a^2$  pass from the bottom plate of the base-section A through the fire-chamber B, through the several columns E F F', and through the top section D, thus forming air-passages through the stove, from bottom to top, so that air entering at the lower ends of said pipes will escape into the apartment from their upper ends.

The top section D is divided by means of a plate,  $b$ , which takes in the upper ends of the three pipes or columns F, F', and F', and to which is applied a sliding damper,  $c$ , by means of which a communication can be made from the fire and smoke-chambers directly with the exit-flue J. When this communication is shut off, the products of combustion, after rising to the top of the stove, are carried forward and conducted downward through the hollow columns E E into the hollow chamber C. From this chamber the heated products of combustion are carried backward, and conducted thence upward, through the pipes F F F', to the chamber  $d$ , formed by the division-plate  $b$  in the top section D. From this chamber the smoke and gases, which are then comparatively cool, escape through the exit pipe J.

It will be seen, from the above description, that the smoke-flues are all arranged above the fire in the fire-chamber, so that they will be heated and kept hot, and thereby prevent condensation in them. It will also be

seen that the air-heating pipes are partly exposed to the direct heat of the fire in the fire-chamber, and partly to the heat of the products of combustion circulating through the ascending, as well as descending, flues and flue-chambers.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The chamber C, arranged between the base A and top section D, and provided with communications E, F, and F', in combination with the division *b* and a damper, *c*, substantially as and for the purposes described.
2. The combination of the intermediate chamber C, top chamber D, single-wall fire-chamber B, short pipes E F, and long pipes *a a'*, substantially in the manner and for the purpose described.

THOMAS HENNEY.

Witnesses:

T. C. ROBERTS,

W. C. CHAMBERLAIN.