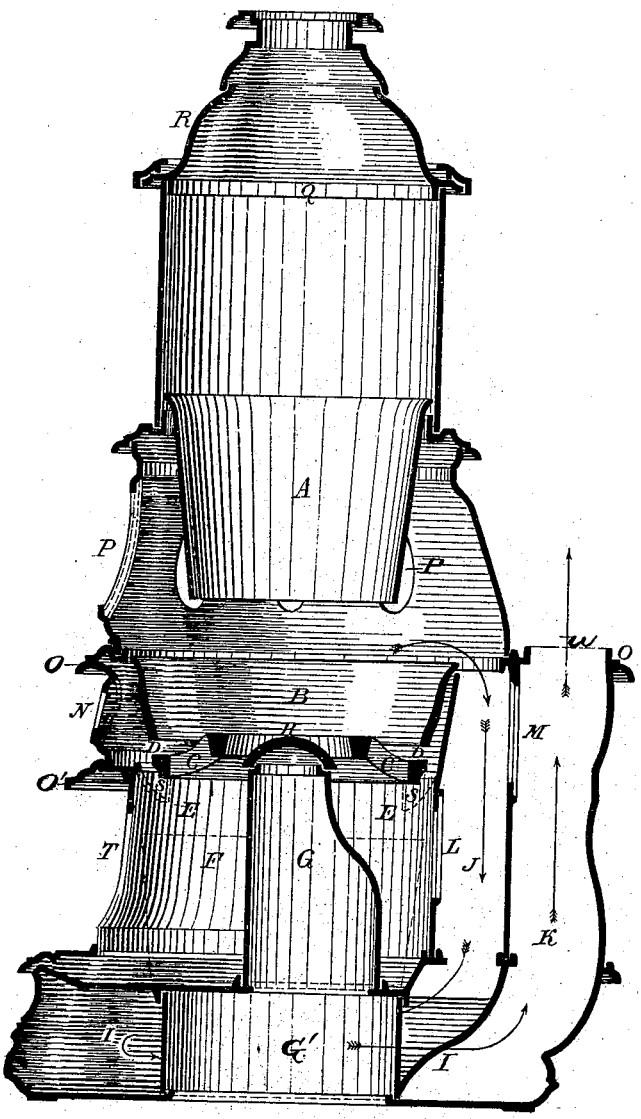
E. SMITH.

Stove and Furnace.

No. 169,052. Patented Oct. 19, 1875.



Attest:

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by Geo. W. Dyer, Atty

UNITED STATES PATENT OFFICE.

ELIHU SMITH, OF ALBANY, NEW YORK, ASSIGNOR TO SAMUEL H. RANSOM, TRUSTEE, OF SAME PLACE.

IMPROVEMENT IN STOVES AND FURNACES.

Specification forming part of Letters Patent No. **169,052**, dated October 19, 1875; application filed March 20, 1875.

To all whom it may concern:

Be it known that I, ELIHU SMITH, of the city and county of Albany, and State of New York, have invented certain Improvements in Stoves and Heaters, of which the following is a full description:

This invention relates to the class of stoves and heaters known as "base-burners," or those which are continually supplied with fuel by means of a supply reservoir or magazine, the lower end of which terminates within a combustion-chamber, into which the fuel is discharged for consumption; and the invention is designed to be an improvement upon the construction of the invention described in my patent dated April 13, 1869, and reissued October 20, 1874; and my invention therein consists in the combination of the central flue, the grate, the fire-pot, and the combustion-chamber, all constructed and arranged as more fully hereinafter described.

To enable others skilled in the art to make my invention, I make the following description of its construction and operation, reference being had to the accompanying drawings and the letters of reference marked thereon, in which—

Figure 1 is a vertical section of the stove, taken from front to rear.

A represents the bottom portion of the magazine, which may be adapted to be agitated or shaken in any convenient way; and B, the fire-pot suspended from the ring O, and drawn in toward the bottom, so as to leave a clear open space between its periphery and the inner walls of the stove. This fire-pot is quite shallow, as shown in the drawing, and its top occupies a space across the stove from the inner front wall of the same to the inner edge of the top of the rear descending flue, hereinafter described. B′ represents the combustion-chamber, which flares downwardly, is clear and unobstructed, except in its upper part, where the magazine intervenes, and extends from the front wall of the stove entirely across the upper end of the rear descending flue. C is a convexed grate, whose highest surface is about on a line with the bottom of the fire-pot, so as to leave a clear open space, D, entirely around between the bottom of the fire-pot and the parts of the grate adjacent thereto, and a space between its periphery and the inner walls of the stove. This grate, which can be vibrated in the usual way and partly dumped, is supported upon lugs cast upon the dust-ring, or rests upon lugs cast upon the under side of the grate, which lugs rest upon the dust-ring S. E is the ash-pit section, and F the ash-pan. G is the bottom central vertical flue, surmounted by the cap H, provided with openings, so as to admit air from said flue into the center of the fire, communicating with the open space G′. This cap H, above referred to, fitting loosely upon the top of the flue G, being subject at that point to great heat, expands, leaving sufficient openings for the passage of currents of air from below to the center of the grate. I is the revertible base-flue below the ash-pit section; J, the descending rear flue, and K the ascending rear flue, both of which are incased in the shell of the stove. L is the dust and draft damper in the rear of the ash-pit section, and M is the direct-draft damper. N is one of a series of mica windows placed in the lower illuminating-section, hinged or capable of being opened conveniently, interposed between the combustion-chamber and the ash-pit section, and adapted to display the illumination of gases, which takes place at or about the open space D. O is the upper ring of the illuminating-section which supports the fire-pot, and O′ the lower ring of the illuminating-section which supports the dust-ring and the grate resting upon it. P is one of a series of mica windows opposite the combustion-chamber. Q is the ring which forms the upper portion of the magazine-section, and R is the usual top of the magazine and stove. S is the dust-ring, which is supported upon the ring O′; T, the usual door of the ash-pit section, and U the exit, adapted to receive an ordinary stove-pipe. The arrows denote the direction of the products of combustion, when the dust-damper and direct damper are closed.

In the operation of my device, it will be observed that the products of combustion escape directly over the rear edge of the fire-pot into the descending rear flue J, thence into the revertible base-flue I, whence they escape by

the rear ascending flue K to the exit. It will also be observed that the position of the dampers L and M and the exit U are in a direct line, so that when both of these dampers are opened a sufficient draft is always insured to carry off the dust from the ash-pit section. It will also be observed that there is a clear horizontal space extending entirely around between the bottom of the fire-pot and the periphery of the grate, whereby the burning gases, which take fire at the opening D, are displayed, and give light to the room through the windows N. It will also be observed that the space D can be utilized in connection with the windows N, for the removal of ashes, cinders, and débris from the grate, and that the position of the grate elevated upon the dust-ring affords a space for such ashes, cinders, and débris to fall over the outer edge of the grate upon the dust-ring, which diverts them into the ash-pan. It will also be observed that the products of combustion passing down the flue J and around the base-flue I heat the walls of the same, and thereby heat the open space G′, and the air entering therein at the bottom of the stove, which air thus heated rises in the flue G, and is delivered in currents in a heated condition to the center of the grate, thereby furnishing a supply of air at the point where clinkers are most apt to form, and insuring a more perfect combustion at that point.

In addition to this application for a patent upon the construction of my stove, as hereinbefore described, I intend to make application for a patent upon the structural design, outline, conformation, and ornamentation of the same.

Having thus described my invention and some of its advantages, what I claim as new therein, and desire to secure by Letters Patent, is—

In a central-flue heating-stove, the combination of the following elements, viz: a central flue extending through the base and ash-pit sections, and adapted to deliver currents of heated air to the center of the grate; a shallow fire-pot and convex grate, contained in a flaring illuminated fire-pot section; an unobstructed flaring illuminated combustion-chamber entirely above the fire-pot section, and an open-top rear descending flue entering directly into the bottom of the combustion-chamber, on a line with the top of the fire-pot, all substantially as described and shown.

ELIHU SMITH.

Witnesses:
H. W. WICKES,
E. A. ROSS.