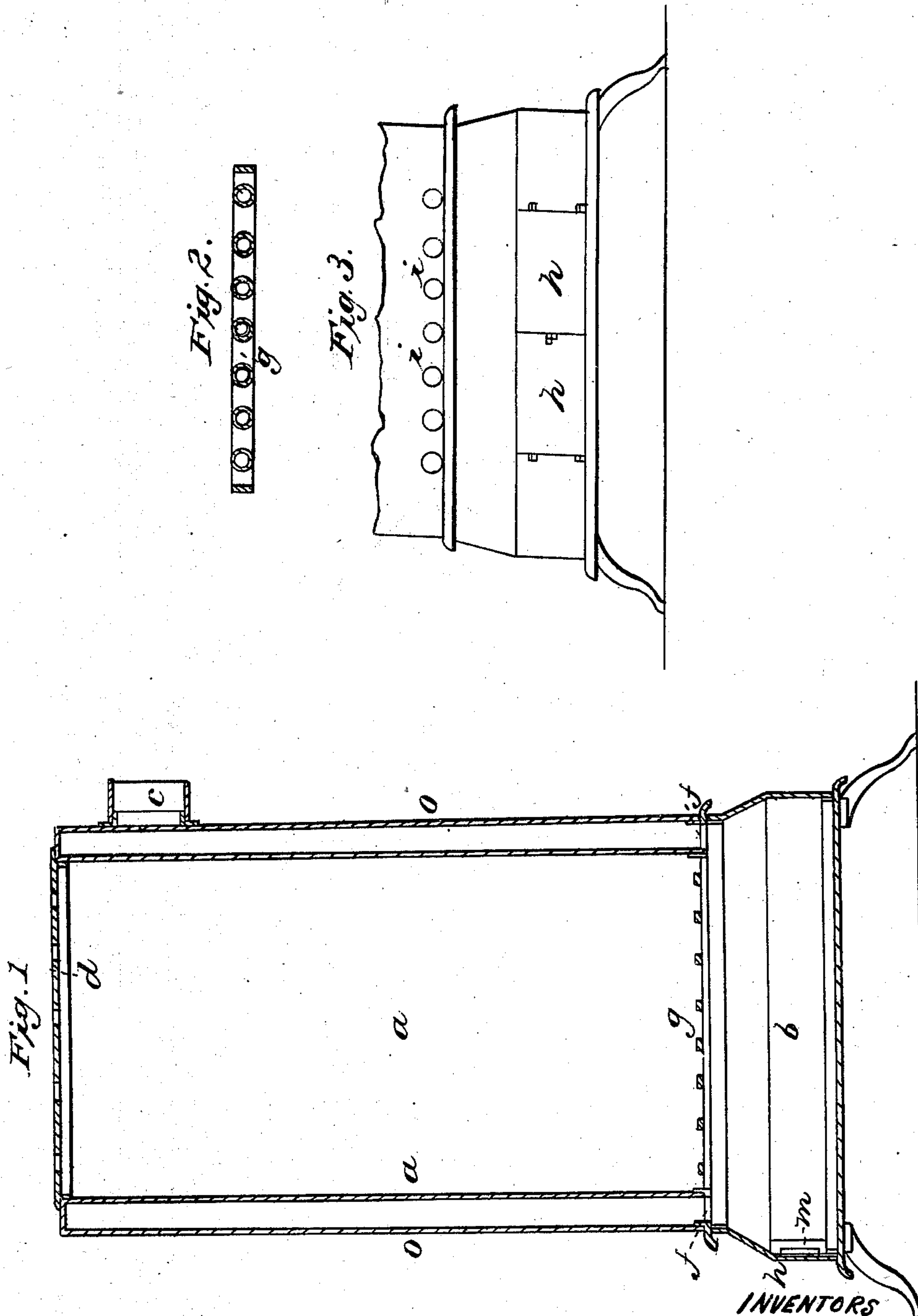


SLATER & PLATT.

Hot-Air Furnace.

No. 83,415.

Patented Oct. 27, 1868.



WITNESSES:
R. S. Loring
Andrew Whitley

INVENTORS
Eli Slater
Amson H. Platt
By their atty.
J. S. Brown

United States Patent Office.

ELI SLATER, AND ANSON H. PLATT, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 83,415, dated October 27, 1868.

IMPROVEMENT IN HOT-AIR FURNACES.

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

To all whom it may concern:

Be it known that we, ELI SLATER and ANSON H. PLATT, of Philadelphia, in the county of Philadelphia, and State of Pennsylvania, have invented a new and improved Stove or Furnace for Heating; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a central vertical section of a stove constructed with our improvement.

Figure 2, a transverse section of a modified construction of grate, adapted to our improved stove.

Figure 3, a front view of the lower part of the stove, as provided with the improved grate.

Like letters designate corresponding parts in all of the figures.

The object of our invention is to produce a stove or furnace with a downward draught through the fuel, so as to consume all the smoke and carbonaceous gases, and to produce the most intense heat at the base of the stove, whereby a more desirable and uniform distribution of temperature may be obtained in the room.

In the simplest form of stove for the application of our invention, there are two concentric cylinders, *a* and *o*, with an annular radiating-space or chamber between, wide enough to allow a free circulation of the draught and products of combustion all around, before passing off at the exit-pipe *c*. At the bottom of the inner cylinder *a* is the fire-grate *g*, beneath which is a close base, *b*, that receives the ashes, and into which the draught and products of combustion descend. The annular space between the cylinders also communicates with the base, *b*, through the openings *f f*, so that the draught freely passes up therein on all sides. A door (or doors) *h*, opens into the base, for gaining admission thereto, and there may be an opening or openings in the door, controlled by a register, *m*, (fig. 1,) through which to admit air, when desired. The annular space between the cylinders is closed at the top and on all sides.

The top of the inner cylinder, *a*, is closed by a cover, *d*, which has perforations, through which the air to support combustion is ordinarily admitted.

If the stove is intended for burning coal, the inner cylinder or fire-chamber has the usual lining, for protection.

The above are the essential features of construction,

but they may be varied in form or otherwise, so long as the principle of operation is retained.

The fuel is introduced at the top, and the cover *d* is replaced. The fire may be kindled on the grate, with air admitted below through the base, *b*, but as soon as the fuel is sufficiently kindled, the draught-passage below is entirely closed, and air to support combustion is only admitted at the top. Thus all the smoke and carbonaceous gases are forced, with the air, down through the burning fuel, and their combustion is perfectly effected. At the same time, the principal heat is first carried down into the base, *b*, thence to be radiated near the floor, where the greatest heat is required, but seldom obtained. Finally, the heated products are carried upward into the annular space between the cylinders, and radiated from all sides of the large surface of the outer cylinder, most intensely at the bottom, and gradually less towards the top, just as most desirable.

In large stoves, this method of combustion subjects the grate *g* to intense heat, rendering it liable to be destroyed. To avoid this effect, in such cases we contemplate making the grate-bars hollow, (as shown in fig. 2,) and admitting cold air therein at one (say the front) end, as shown at *i* in fig. 3. The air is conducted through their length, to the rear end, and is there introduced, through openings, into the fire. Thus the grate-bars are kept comparatively cool, and a heated draught of air admitted to the lower part of the fuel, just where desired, to perfectly complete the combustion.

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination of the inner combustion-cylinder or chamber *a*, outer radiating-cylinder or chamber *o*, surrounding the same, and the close base, *b*, all constructed and arranged so that the draught and products of combustion pass down from the first, through the fire-grate *g*, into the base, and thence up through the space between the two cylinders, substantially as and for the purposes herein specified.

ELI SLATER.
ANSON H. PLATT.

Witnesses:

CASSIUS L. PLATT,
SAMUEL C. OGLE.