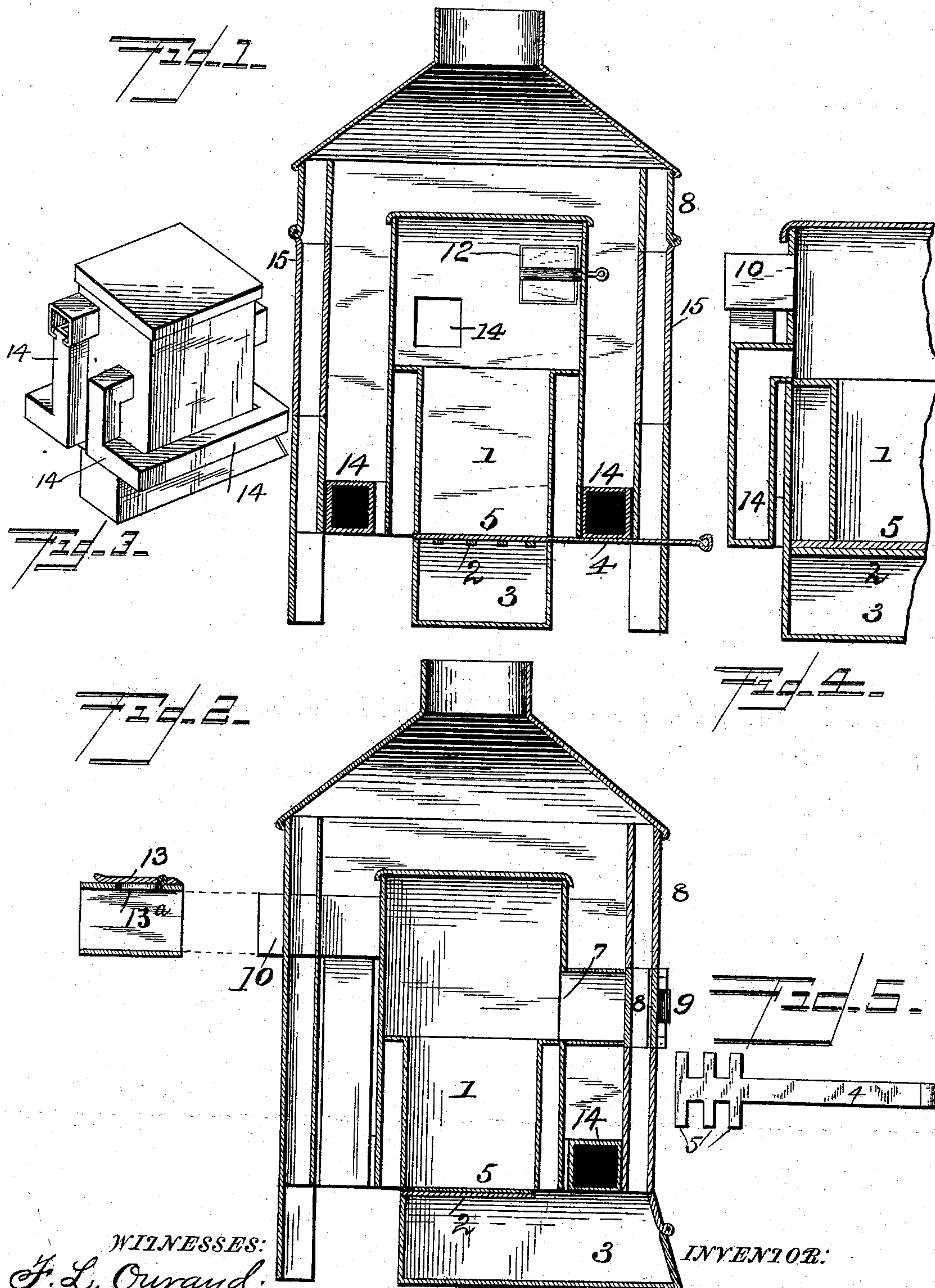


(No Model.)

J. H. PUTNAM.  
HOT AIR FURNACE.

No. 505,177.

Patented Sept. 19, 1893.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSEPH H. PUTNAM, OF BRIDGETON, NEW JERSEY.

## HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 505,177, dated September 19, 1893.

Application filed July 2, 1892. Serial No. 438,805. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. PUTNAM, a citizen of the United States, and a resident of Bridgeton, in the county of Cumberland and State of New Jersey, have invented certain new and useful Improvements in Hot-Air Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to stoves and furnaces, the object being to provide an improved construction of the same whereby the smoke and other products of combustion may be caused to take a tortuous course or circulate around the base of the fire-pot, or be carried directly to the smoke-flue as may be desired.

It is also an object to provide an improved construction of grate and raker, whereby the ashes may be readily removed without violently or unduly agitating the live coals, as in the ordinary shaker grates, thus insuring more perfect combustion.

There are other objects and advantages which will be apparent, and which therefore need not be mentioned here.

The invention consists in the novel features of construction and new combinations hereinafter fully described and claimed.

In the accompanying drawings I have illustrated my invention as being applied to a furnace, although it is obvious that it can be used as a stove with equal advantage and without departing from the principle thereof.

In the said drawing: Figure 1 is a central vertical section. Fig. 2 is a similar view, taken at right angles to Fig. 1. Fig. 3 is a perspective detail view, illustrating the location and arrangement of the radiating flue. Fig. 4 is a sectional view on a vertical plane through one of the upright limbs of the radiating flue, back of the fire-pot and ash-pit; and Fig. 5 is a plan or top view of the shaking or raking device, removed from the grate bars.

Like numerals of reference denote corresponding parts in all the figures.

To enable others to make and use my in-

vention I will now describe the same in detail referring to the drawings, wherein—

The numeral 1, denotes the fire-pot which may be of any ordinary or suitable construction provided with a grate 2, and ash-pit 3. Above the grate bars is a raker consisting of a handle 4, and a series of laterally extending bars 5. This raker rests upon the grate bars, and by means of the handle can be reciprocated back and forth, clearing the fire-pot of ashes which will drop down into the ash-pit.

The numeral 7 denotes the feed opening, which, in the present instance, communicates with a feed opening in the casing 8, provided with a door 9.

At the rear end of the fire-pot is the smoke-flue 10, leading to a chimney, and is provided with a damper 12, and with a hinged check-valve 13, adapted to open and close an opening 13<sup>a</sup>. Also connected and communicating with the fire-pot is a radiating flue 14, which extends downwardly and around the base of the stove one or more times, as may be desired, and then leads upwardly to the smoke flue. It will be noted that the damper 12, is located intermediate of the fire-pot and the point where the flue 14, connects with the smoke-flue, so that when said damper is closed, the smoke and other products of combustion will be caused to circulate through flue 14, before being discharged into the chimney. When the damper is open, however, the products of combustion will pass directly to the smoke-flue.

The casing 8 is provided at its upper part with out-swinging doors 15, hinged at their upper ends so that, when opened, they will flare outwardly with their lower free ends, thus forming funnel-shaped inlets to the heating space within the casing, for admitting cold air, and the casing 8 is also provided with an opening at the top communicating with a flue by which the hot air is conducted to the room to be heated.

The operation is as follows: The fire is made in the fire-pot and the feed door closed and the ash-pit door opened. The damper in the smoke-flue is opened and the check-valve closed. The products of combustion will now pass directly to the smoke flue, insuring rapid

combustion. The damper 12 is now closed, when the products of combustion will be carried around the base of the fire-pot by means of flue 14, and be discharged into the smoke flue, the flue, 14, serving as a radiator. If a lower temperature is desired, the ash-pit door is closed, and the check-valve 13 opened, thus reducing the draft. When it is desired to bank the fire, the ash-pit door is closed, and the feed door, the damper in the smoke-flue, and the check-valve opened, causing combustion to take place very slowly. By the above construction, a simple and economical stove or heater is provided, which will be found very efficient in use.

Having thus described my invention, what I claim is—

The combination, in a hot-air furnace, of the outer casing 8 having doors 15 hinged at their upper ends and adapted to swing outward with their free lower ends, fire-pot 1, ash-pit 3, smoke-flue 10 having damper 12 and hinged check-valve 13 respectively arranged as described, and radiating-flue 14, when said several co-operating parts are constructed, arranged and combined as shown and specified.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOSEPH H. PUTNAM.

Witnesses:

HOWARD MILLER,  
JAMES D. COX.