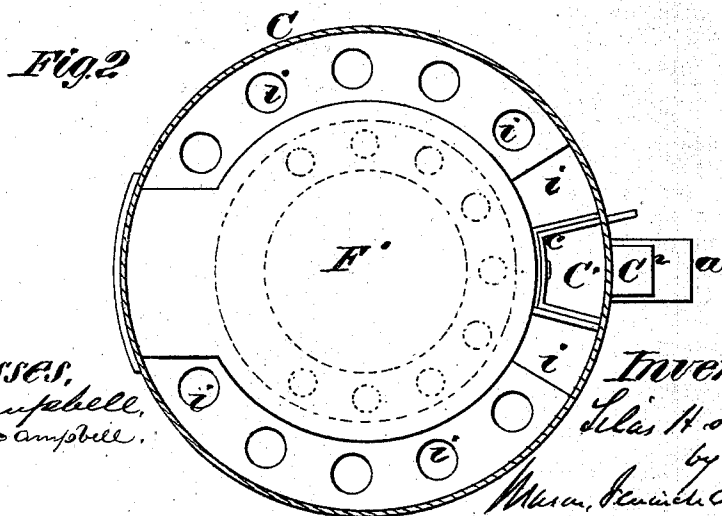
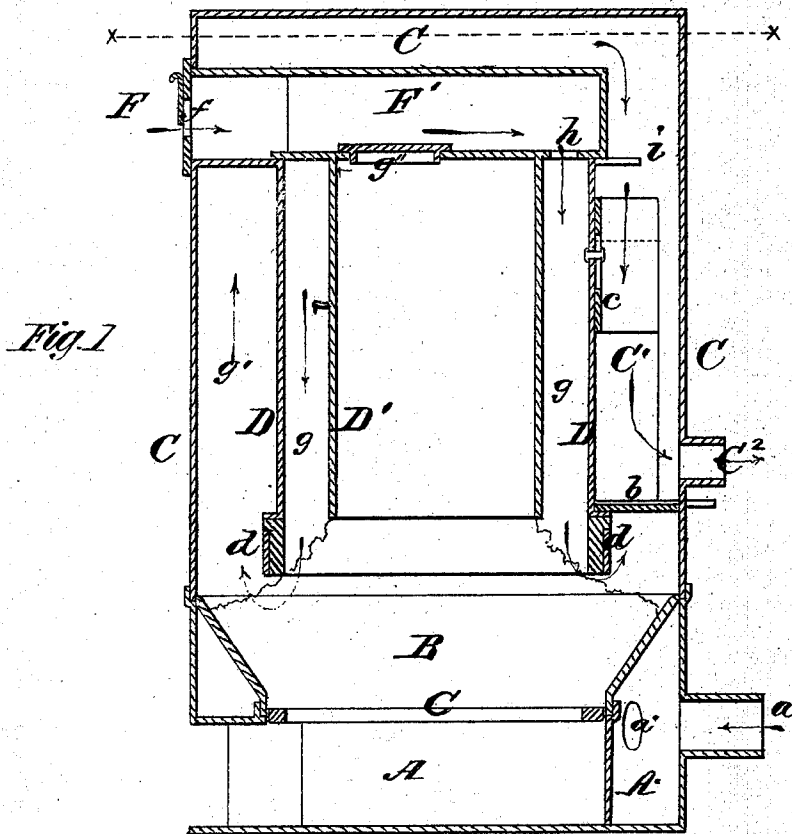


S. H. La RUE.
Base-Burning Stoves.

No. 144,461.

Patented Nov. 11, 1873.



Witnesses,
R. Campbell,
J. C. Campbell.

Inventor
S. H. La Rue
by
Messrs. Smith & Turner

UNITED STATES PATENT OFFICE.

SILAS H. LA RUE, OF ALLENTOWN, PENNSYLVANIA.

IMPROVEMENT IN BASE-BURNING STOVES.

Specification forming part of Letters Patent No. **144,461**, dated November 11, 1873; application filed February 28, 1873.

To all whom it may concern:

Be it known that I, SILAS H. LA RUE, of Allentown, in the county of Lehigh and State of Pennsylvania, have invented a new and Improved Heater; 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 a diametrical section through the heater, taken through it from front to rear. Fig. 2 is a section taken through the heater in the horizontal plane indicated by dotted line *x x*, Fig. 1.

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

This invention relates to improvements which are applicable to stoves, furnaces, and heaters generally, wherein a portion of coal in the lower part of the fuel-magazine is distilled and coked before it descends into the fire-pot, and the products of distillation are caused to descend through the incandescent coal in the fire-pot, as will be hereinafter explained.

The nature of my invention consists in the combination of an annular passage between a short imperforated magazine and an intermediate cylinder of greater length than the magazine, and which is between the outer cylinder of the stove and the magazine, certain air-apertures, a horizontal feed-chamber, a register, and a circulation-chamber around the intermediate cylinder and over the feed-chamber, all as will be hereinafter described.

The following explanation of my improvement will enable others skilled in the art to understand it.

In the accompanying drawings, A represents the ash-pit section of the heater, and B represents an upwardly-flaring fire-pot, having at its base a grate, C. The ash-pit is partly surrounded by a hot-air chamber, Δ^1 , above and communicating with which is a chamber which entirely surrounds the fire-pot, and which is inclosed by a casing, C. Into these chambers cold air is admitted from outside of a building by means of a pipe, *a*, which air is warmed and expelled through holes *a'* through casing C. Above the fire-pot B is a fuel-magazine, D' , which is tightly closed at top by a cover, g'' , and which may be provided

with fire-brick at its lower end. Surrounding this magazine is a cylinder, D, which extends from the bottom of a feed-passage, F' , to a point which is below the lower end of the magazine, where it is protected by means of fire-bricks *d*, or their equivalent. The cylinder D forms an annular air-descending passage, *g*, between it and the magazine, and an annular flue, g' , between it and the casing C, through which latter the products of combustion ascend from the fire-pot on their way to an escape-pipe, C^2 . Above the passages *g* and g' and magazine D' is the feed-passage F' , leading into which is a front opening, closed by a door, F, which is provided with a register, *f*, as shown in Fig. 1. Partly surrounding the feed-passage F' , and outside thereof, are openings *i*, for the ascent of the products of combustion above the plane of the base of the feed-passage F, and the admission of such products into a descending flue, C^1 , from which the products escape through pipe C^2 to the chimney. The flue C^1 is provided at its upper end with a vertically-adjustable section, which allows this flue to be lengthened or shortened, to adapt the heaters to different chimneys. At the lower end of the flue C^2 is a valve, *b*, by opening which a direct draft is obtained from the fire-pot to the escape-pipe C^2 . Such a draft is required in first starting a fire.

For a hot-air furnace the heater above described will be properly inclosed by a casing of metal or masonry. For a parlor-heater there may be illuminating windows applied above the level of the fire-pot, as in other illuminating base-burners.

After a fire is started in the fire-pot the valve *b* is shut, which will cause all the products of combustion to rise through flue g' to the top of the case C, and thence descend through flue C^1 and escape. The section *c* of flue c' will be properly adjusted according to the draft of the chimney. The register *f* is opened, and air is admitted into the feed-passage or chamber F' , which air will descend through the annular passage *g*, outside of the magazine, and supply the mass of coal, which is between the lower ends of the magazine and cylinder D, with oxygen. This supply of oxygen to the coal in the lower end of the cylinder D produces a slow distillation, and cokes

the coal as it descends into the fire-pot, the products arising from which distillation are drawn down into the incandescent bed of coals in the fire-pot, and thence consumed. In this way, and by these means, all the inflammable products are consumed, whereas, if the whole body of coal below the lower end of the magazine was exposed to an upward draft from the ash-pit, a large amount of the inflammable products would be carried off at a great expense of fuel.

The flue C¹ is a tubular conduit having a vertically-adjustable section, *c*, applied to its upper end for the purpose of shortening or lengthening the conduit, according to the draft of the chimney with which pipe C² communicates.

I am aware that base-burning stoves have been made before my invention in which the magazine was grated or slotted for some distance above its lower end, and surrounded by a jacket or casing, which formed a descending air-space around the magazine. This grated portion of the magazine will prevent the coal from impinging on the surrounding casing, consequently there will be a free space around the said grated portion, which will conduct

the descending air-current upon the bed of incandescent coals below the magazine. I terminate the lower end of the magazine D' above the lower end of the casing, thus leaving a free space inside of the latter for the expansion of the descending body of coal before it escapes from this casing. By so doing all the air which descends through the space *g* will be compelled to circulate through said body of coal in the casing. I therefore do not subject the surface of the coal below the casing to a descending current of air.

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

The combination of the annular passage *g* between the short imperforated magazine D' and the cylinder D *d*, apertures *h*, horizontal feed-chamber F', register *f*, fire-pot B, and circulation-chamber *g'* around the cylinder D and over the feed-chamber F', as and for the purpose herein described.

SILAS HOFFMAN LA RUE.

Witnesses:

JOSHUA STAHLER,
F. A. R. BALDWIN.