(No Model.)

W. H. LEWIS & O. K. ASCHER.

STEAM HEATER.

No. 306,270. Patented Oct. 7, 1884.

Fig. 1.

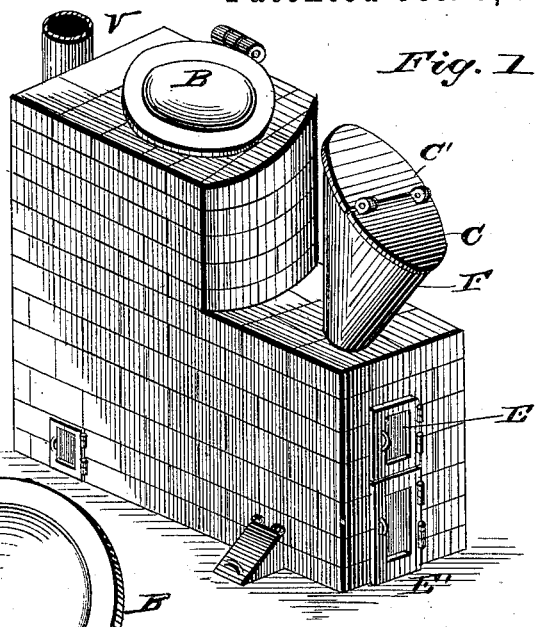


Fig. 2.

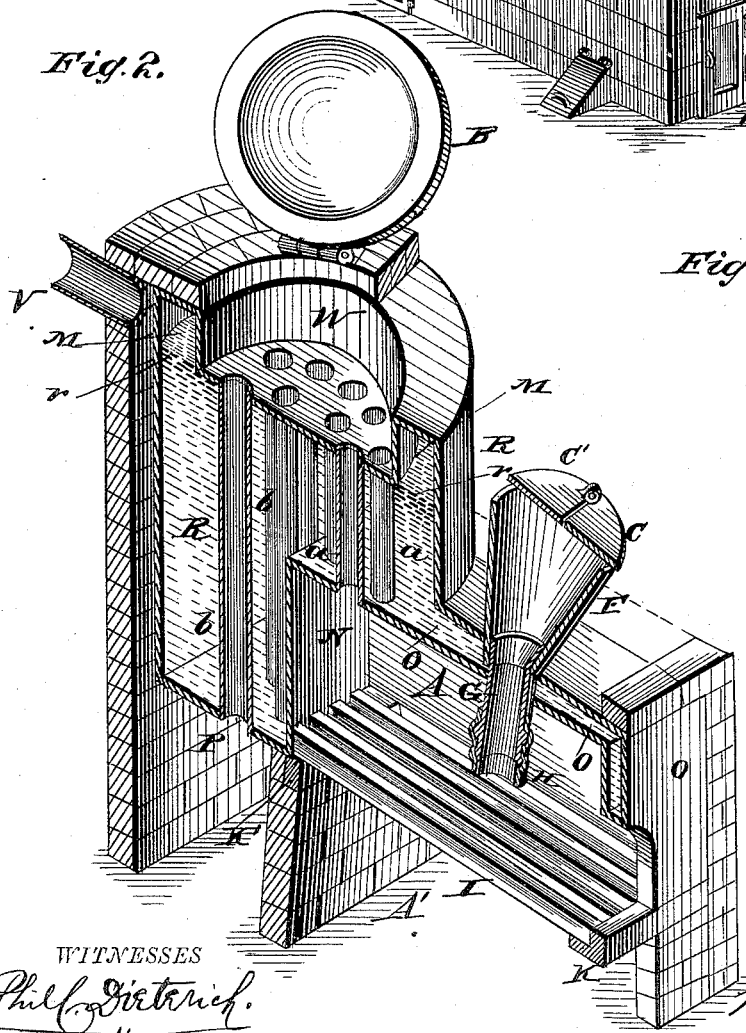
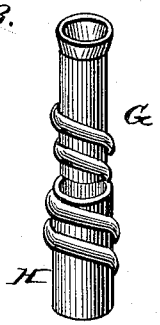


Fig. 3.



WITNESSES

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WILLIAM H. LEWIS AND OTTO K. ASCHER, OF SOUTH BEND, INDIANA.

STEAM-HEATER.

SPECIFICATION forming part of Letters Patent No. 306,270, dated October 7, 1884.

Application filed May 5, 1884. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. LEWIS and OTTO K. ASCHER, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Steam-Heaters; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a perspective external view of our improved steam-generator and furnace complete. Fig. 2 is a perspective view of a vertical longitudinal section of the generator and furnace. Fig. 3 is a perspective view showing the telescopic chute of the fuel-magazine.

This invention relates to furnaces or apparatuses and steam-generators commonly known as "steam-heating furnaces," which are especially designed for warming buildings, said apparatuses being located in the cellars of buildings, where the vertical space is generally limited.

The nature of our invention consists in a novel construction of a combined furnace and steam-generator, whereby many serious objections to such apparatuses as hitherto constructed are remedied, as will be fully understood from the following description, when taken in connection with the annexed drawings. The entire furnace and the water and steam spaces are inclosed by a casing which is composed of fire-brick or other suitable substance which is a poor conductor of heat, and which will therefore prevent undue radiation of the same.

A designates the combustion-chamber of the furnace, which is provided with a front door, E. I, the grate, is sustained by bearers K K', and A' designates the ash-pit, which is provided with a door, E', and an inclined hinged draft-door applied to a passage leading into the ash-pit. The combustion-chamber A is inclosed by a double wall of boiler-iron, leaving a water-space, O, which is in communication with the vertical steam-generator R, and which extends therein, as shown in Fig. 2, and is separated therefrom by a vertical single wall or diaphragm, N. The crown-sheets of the combustion-chamber are vertically perforated at a suitable point, and at this point is applied a vertical telescopic chute composed of two sections, G H, connected by a male and female screw, the lower section of which chute is adjustable toward and from the grate I, for the purpose of graduating or regulating the feed of the fuel, as may be desired, so that in weather when little fire is required the draft need not be kept so tight as would be liable to put out the fire. This telescopic chute has removably applied to it a conical fuel-magazine, F, having an inclined top, which is provided with covers C C', hinged at the center, as shown in Figs. 1 and 2. The magazine F is composed of a single wall, not inclosed and not exposed to a high degree of heat; consequently it prevents the generation of steam and gas from the coal in said magazine.

That portion of the inner crown-sheet of the furnace which extends into the vertical portion of the boiler proper is in communication with a depressed flue-chamber, W, at the upper end of the boiler, by means of a series of vertical flues, *a*, through which the highly-heated products of combustion pass from the combustion-chamber A and enter said flue-chamber W. From this chamber W the products of combustion descend through flues *b*, which are connected to the ends of the vertical portion of the boiler, and which communicate with a soot-chamber, P, beneath the vertical boiler, and thence pass through a vertical flue to the common outlet V. It will thus be seen that the highly-heated products of combustion pass from the rear part of the combustion-chamber up through a series of flues, through the vertical boiler, into a flue space or depression, W, thence descend through the vertical boiler again into a chamber beneath it, and thence ascend outside of the vertical boiler-shell to the chimney. In this long course of the products of combustion through the combustion-chamber, the flue-space W, and the chamber P to the outlet it is obvious that a large amount of heat will be absorbed by the boiler-water, and that there will be a great economy of fuel. The hinged cover B at the top of the flue-space W serves as a deflector for the heated currents, and it also affords

ready access to the vertical straight flues *a b* for the purpose of cleaning them when necessary.

It will be seen by reference to Fig. 2 that above the water-line *r* (indicated by dots) we form a steam-space, M, which is between the walls surrounding the flue-space W.

It will be observed from the above description that we have reduced the height of the boiler, and that we can increase the capacity of either the fire-space or steam-generator indefinitely without increasing the height of said apparatus.

Having described our invention, we claim—

1. The combination, with a furnace, of a fuel-chamber, a telescopic fuel-feeding chute formed of two parts connected by screw-threads, and a removable fuel-magazine, substantially as described.

2. The combination of a removable fuel-magazine arranged outside of a steam-generator furnace, and provided with inclined covers, a telescopic chute composed of two sections connected by a male and a female screw, horizontal steam-boiler, and a horizontal furnace therefor, substantially as described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

WILLIAM H. LEWIS.
OTTO K. ASCHER.

Witnesses:
JAS. DU SHANE,
WILLIS A. BUGBEE.