

D. G. LITTLEFIELD.

Parlor Furnace.

No. 30,333.

Patented Oct. 9, 1860.

Fig. 1.

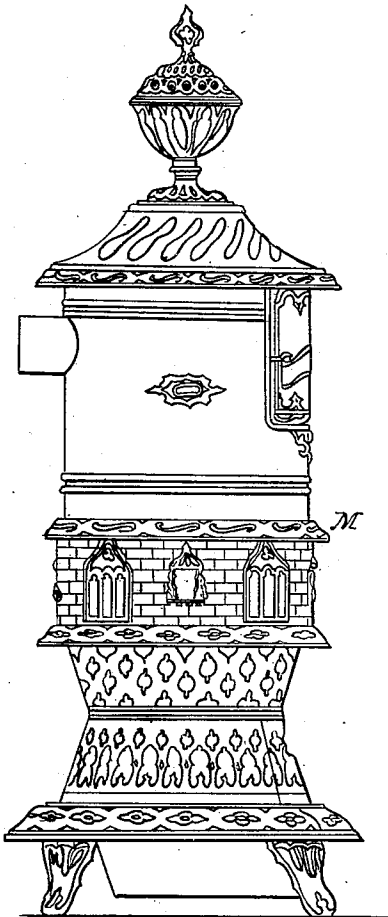


Fig. 2.

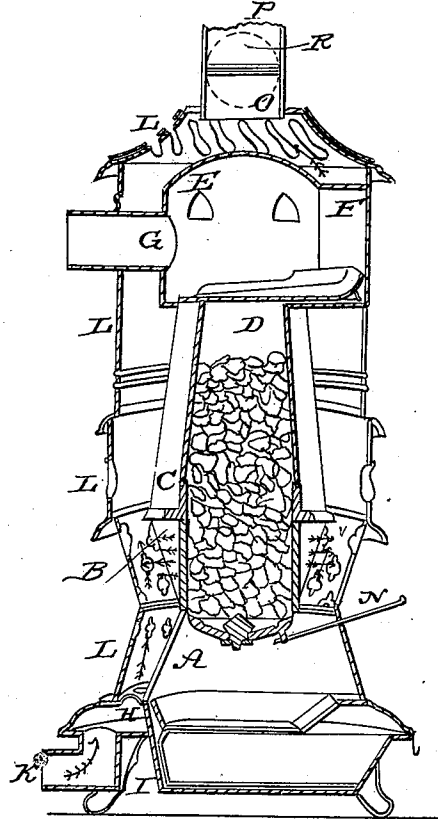
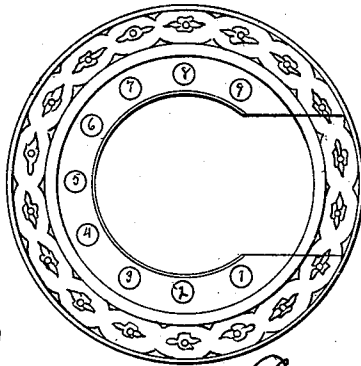


Fig. 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

DENNIS G. LITTLEFIELD, OF ALBANY, NEW YORK.

## FURNACE.

Specification forming part of Letters Patent No. 30,333, dated October 9, 1860; Reissued April 22, 1862, No. 1,303.

*To all whom it may concern:*

Be it known that I, DENNIS G. LITTLEFIELD, of Albany, in the county of Albany and State of New York, have invented a new and improved mode of constructing furnaces, by which they are more perfectly adapted for a parlor-furnace or for a double heating-furnace; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The proper definition of the words stove and furnace, must be defined as universally understood by those who use them. A stove as distinguished from a furnace, is a receptacle for burning fuel which radiates its heat direct from its surfaces to the room to be warmed; a furnace, a similar receptacle, placed within, and surrounded by a covering of metal, when portable, or brick, when permanent, placed a space apart from the stove, so as to admit the passage of a column of cold air at the base of the inclosed space, to absorb the heat from the stove, and transmit it to the upper part of the inclosed space, and thence to the rooms to be warmed.

My improvement, is a combination of stove and furnace as thus defined, and consists in the employment of a cold air channel, or inlets, at the base, a perforated space in the covering opposite the most intensely heated part of the stove, and a top fixture to the covering, to control the passage of the heated air;—a device that can be used as a parlor furnace, warming the room where placed by heated air combined with direct radiation; or as a double heating furnace, warming the room where placed by direct radiation, and rooms above by heated air. For this purpose I surround the stove with a covering of metal, through which the ash pit, the mica windows, the collar for the smoke pipe, and the feed door project. The bottom plate is perforated, through which air can pass from the room where the furnace stands, or a conductor may be employed to communicate with the external atmosphere; in either case, furnishing a supply of cold air which is warmed on its passage through the furnace as shown by the red arrows, while the radiant heat, as shown by the blue arrows, passes across this ascending current, and through the lattice

openings in the covering, to warm by radiation.

As stoves give off their heat by radiation and conduction; and their radiating powers being in proportion to their degree of heat, and the amount of heat absorbed by air passing over a heated surface being in proportion to the coldness of the air, and the quantity passed in a given time, it follows that this combination is not only capable of diffusing a more uniform heat to the space to be warmed when used as a parlor furnace, but must also operate with better economy than stoves or furnaces as heretofore constructed, whether used as a parlor furnace, or as a double heating furnace.

In adopting my improvement, any stove of the well known forms may be used, but it is more particularly adapted to those known as base burning, such as shown in the drawing. The combustion chambers of such stoves, are more highly heated than those of the common form; hence the advantage of passing more cold air over their surfaces, as well as to allow a part of their heat, to radiate through the covering, when designed to use them as "parlor heaters," or "portable furnaces" designed to warm the room where placed, and rooms above by heated air.

Of the annexed drawing, Figure 1 is a side elevation as used for a parlor furnace. Fig. 2, a longitudinal section, as when used for a double heating furnace. Fig. 3 is a plan of the base, with the stove and its covering removed.

Letters A, B, C, D, E, F, G, Fig. 2, represent respectively, the ash pit, fire pot, flues, supplying cylinder, upper chamber, and the collar for the smoke pipe, of a base burning stove, a more full description of which can be found in a patent granted to me bearing date March 4th 1856.

The base (Fig. 3) may be of the common form, having a series of perforations 1, 2, 3, 4, 5, 6, 7, 8, 9, or more if necessary. On the lower side of this base, a channel, or cold air passage is formed by a flat plate of iron resting against, and extending from its outer edge, to the ash pan case I, Fig. 2. This plate when bolted to the lower side of the base, forms the cold air channel H, which is provided with a fixture K, to receive a conductor, when desirable to communicate with the external atmosphere. L, L, L, L, Fig. 2, is the covering, which is made of

cast iron from the base to M, Fig. 1. The residue of the cylindrical portion, may be of sheet iron. From the base to n, Fig. 2, the covering is contracted for the purpose of causing the cold air as it ascends from the orifices in the base, to impinge against the fire pot, and also for the purpose of carrying the lattice covering nearer the fire pot, that the direct radiation may be less obstructed.

The top of the covering is constructed of lattice work; two plates of cast iron upon each other, fitted as a register; that is, the solid portion of the upper, being fitted to the open portion of the lower plate, that when turned around upon it, it can close the outlets wholly, or partially, to regulate the escape of the currents of air, which entering at the base, is warmed by contact with the heated stove.

For the purpose of carrying the heated air to upper rooms, a central opening O, Fig. 2, is provided in the top register, the top plate turning around it, from which a pipe P, can be carried upward to the room, or rooms above. This pipe is provided with a damper R, to prevent the passage of heat to the upper rooms when desirable to apply all the heat of the furnace, to warming the room where it is placed. The dotted lines represent the damper open, but when closed as shown in the drawing, the current of heated air reverberates, as shown by the upper red arrow, and passes out by the register, if the same be open; or if closed, the whole covering becomes a powerful radiator; yet the stove within is prevented from being destroyed by overheating, owing to the relief afforded by the outlet at the openings near the fire pot. This arrangement without the lattice openings in the covering, would complete what would be called a furnace for warming and conducting the currents of heated air to the points of use, and so far as the heating of air, and passing it to the apartment to be warmed, a furnace thus constructed would be a complete fixture; but it is well known, that it is de-

sirable to warm the lower stratum of air in the room where the furnace is placed, by direct radiation of caloric near the floor, instead of depending upon the heated air as it returns by the back current, which as it descends, cools considerably before it has reached the floor. To obviate this difficulty, I construct the waist of the covering which surrounds the fire pot, and where the most intense action of the fire is; an open grate, or net work, S, S, S, S, S, S, S, S, S, S, Fig. 1, showing the openings, to allow the heat from the hottest portion of the stove, to radiate freely through them.

The arrangement of these features is simple. For warming only one room, it may be called a parlor furnace. If the top register be open, all the air that enters at the orifices at the base, will pass up through the register and circulate through the room, imparting a uniform heat throughout the whole space. By closing the register to a proper degree, a greater or less proportion of the heat generated, will be radiated directly into the room and create, as is sometimes desirable, an intense heat around the furnace, without injury to the stove by overheating.

When used for warming the room where placed, and one or more rooms above, it may be called a double heating furnace. By a proper use of the damper R, and the top register; a greater or less proportion of the heated air may be conveyed to the rooms above.

My improvement, and what I claim, is—The combination of the cold air channel H, the perforations S, S, S, S, S, S, S, S, S, the register top to covering L, L, L, L, and the damper R, the whole being constructed and arranged in the particular manner hereinbefore specified.

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Witnesses:

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