

H. N. LONGFELLOW.

Hot Air Furnaces.

No. 135,227.

Patented Jan. 28, 1873.

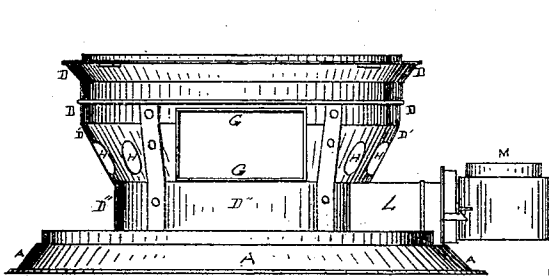


Fig. 1.

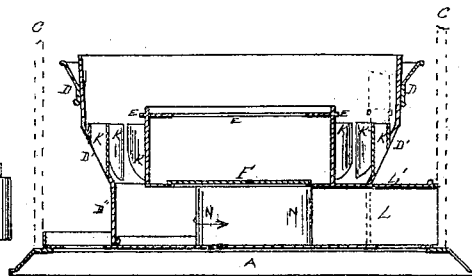


Fig. 2.

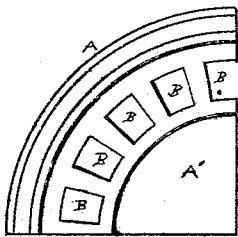


Fig. 5.

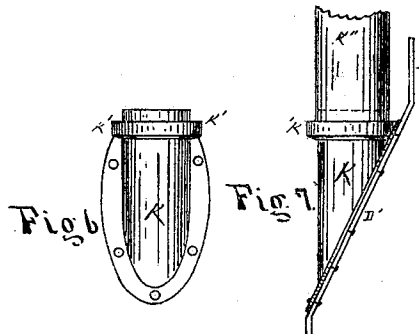


Fig. 6.

Fig. 7.

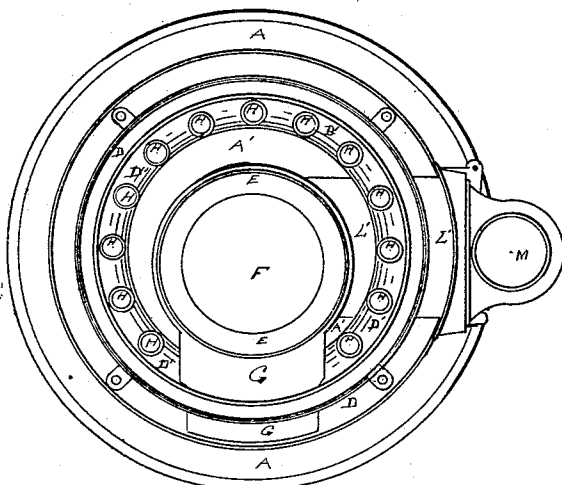


Fig. 3.

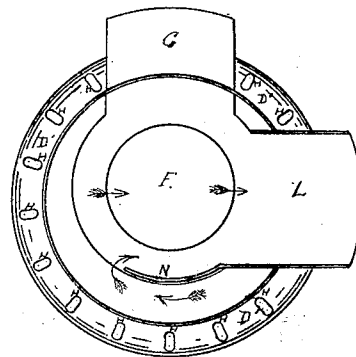


Fig. 4.

WITNESSES

E. H. Ober.
F. A. Doherty.

INVENTOR

Horatio N. Longfellow.

By his Attys

Henry W. Williams & Co.

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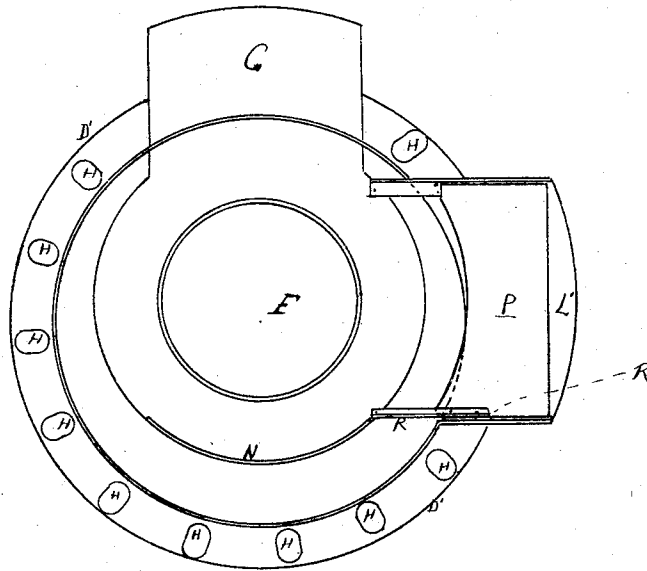


Fig. 8

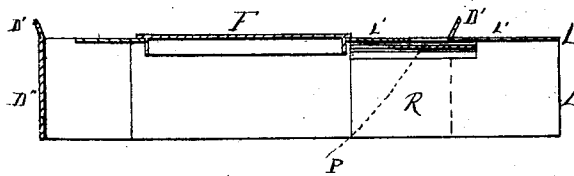


Fig. 9

WITNESSES

Henry A. Roberts
E. H. Ober

Horatio M. Longfellow INVENTOR

By his Attys

Henry C. Williams & Co.

UNITED STATES PATENT OFFICE.

HORATIO N. LONGFELLOW, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 135,227, dated January 28, 1873.

To all whom it may concern:

Be it known that I, HORATIO N. LONGFELLOW, of Lawrence, in the county of Essex and State of Massachusetts, have invented an Improvement in Hot-Air Furnaces, of which the following is a specification:

The object of this invention is to effect a perfect down-draft in a hot-air furnace, which will heat all the hot-air pipes equally, and which cannot be affected by clogging. The nature of my invention is fully described below.

In the accompanying drawing, the bottom section of a radiator inside a furnace is shown, with some of its adjacent parts, and the base or bed of the furnace upon which the radiator rests.

Figure 1 is an elevation of that part of the furnace embodying my invention. Fig. 2 is a vertical section of the same. Fig. 3 is a plan of the upper side. Fig. 4 is a plan of the under side when taken off from the base. Fig. 5 is a top view or plan of a portion of the base. Fig. 6 is a front view of the lower end of a detached hot-air pipe, showing the gas-tight joint. Fig. 7 is a view of the same attached to the stave of the radiator, and connected with another section or piece of the hot-air pipe. Fig. 8 is a plan of the under side when removed from the base, showing particularly the sliding plates for use in cleaning the furnace. Fig. 9 is a sectional view of the same and for the same purpose.

Similar letters of reference indicate corresponding parts.

A is the base of the furnace. A' is the center or bed-plate of the base A of the furnace. B B are the openings in the base A. These openings B are made at intervals around the base A, excepting under the down-draft opening, and supply air to the hot-air pipes. c c are broken lines representing the position of the outside plate of the furnace. D D' D'' are the staves forming the bottom section of the radiator. D and D'' are vertical. D' is set at an angle. These staves are, of course, cast in different sections or segments. E is the grate and bottom of the fire-pot. F is the bottom of the ash-chamber, which is made to be removable. By removing the bottom F, which is simply a cover, access may be had to the base or bed plate A'. This is desirable when clean-

ing the furnace. G is the opening or draft beneath the fire to supply air to the same, as usual. H H are openings through the stave D'. These openings are placed at intervals around the stave to the draft G, and communicate with the hot-air pipes. K K are the hot-air pipes, (or the lower ends of them,) which are heated by radiation and carry the hot air to the different rooms in the house after having passed out of the furnace. These pipes are (except in Figs. 6 and 7) represented as cast in with the staves.

Figs. 6 and 7 represent the hot-air pipes K as detached from the staves and arranged to be bolted thereto. K' represents a shoulder, which is placed in each pipe H, usually as a connection at the joints. (See broken lines. Fig. 2.) K'' represents the pipe to which it is joined. This joint K' is tight and secure from gas. L is the down-draft leading to the pipe, which passes to the chimney. L' is the upper plate of the down-draft L. M is the pipe leading from the down-draft L to the chimney. The upper draft (used when building the fire) leads also into the pipe M before it reaches the chimney. N is a partition or plate intended to prevent the hot air from passing out of the down-draft L until it has come in contact with all the hot-air pipes.

It will be seen that there is no provision for closing the down-draft L. P is a slide forming a part of the top L' of the down-draft L. In Fig. 8 it is open, and closed in Fig. 9. It is made to slide, so as to easily clean out the furnace when necessary. It affords easy access to the down-draft. R is a slide forming a part of one of the sides of the down-draft L. It passes from the down-draft L to the plate or partition N. It is made to slide in order to clean out the furnace easily when desirable.

In practical operation my invention works as follows: When building the fire the draft above the fire, or, in other words, the direct draft, is open. When the fire is well going the direct draft is closed and the flames and heat are drawn down around the pipes K K, enveloping them, and, having passed around the plate N, pass out at the down-draft L. Of course there is nothing new in simply having a down-draft, and the great difficulty with furnaces in which both the radiator D and

pipes K are vertical and parallel is that after a year or so the down-draft becomes clogged and filled up, or the entrance to it does, and the furnace must be taken to pieces and repaired and cleaned. This ashes and soot fills around the lower ends of the hot-air pipes, and prevents the heat from getting at them by radiation or otherwise. This is obviated in my invention in two ways—first, the pipes do not pass down to the bed of the furnace, but pass out at or rather enter at the stave D', so that there is no way by which the pipes H may possibly get surrounded by soot and the heat has continual access to them; second, there are good arrangements for cleaning the furnace. The cover F may be removed, and the slides P R pushed out of place, (after removing, if necessary, the pipe M,) and easy access is had to all portions of the furnace be-

low the bottom F of the ash-chamber. The hot-air pipes K may be cast in the staves or bolted on, as in Fig. 7. In either case they are perfectly tight.

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

1. The arrangement of the down-draft L, slides P and R, bed-plate A', and cover F, as and for the purposes hereinbefore described.

2. The arrangement of the pipes K, openings H, staves D D' D'', plate N, and down-draft L, as and for the purposes hereinbefore specified.

HORATIO N. LONGFELLOW.

Witnesses:

HENRY W. WILLIAMS,
E. H. OBER.