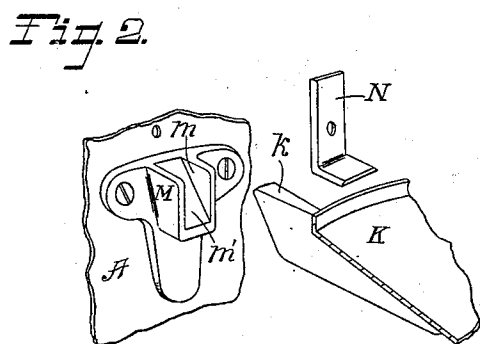
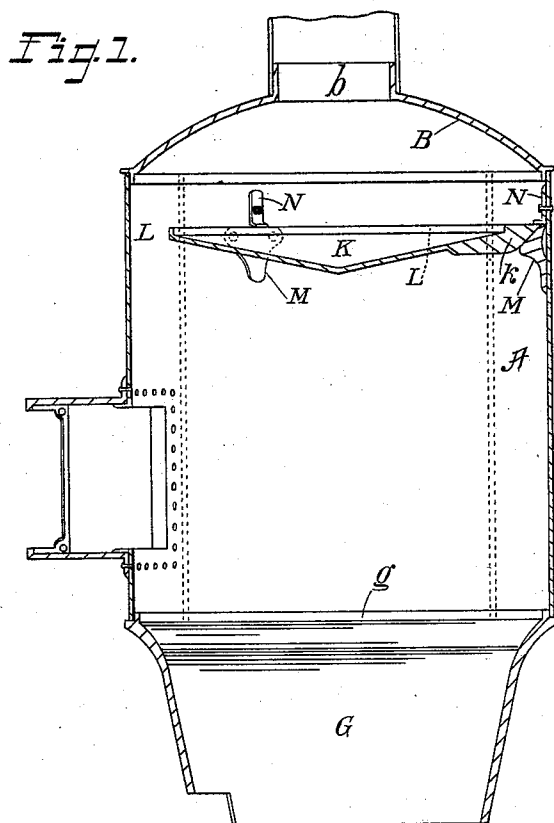


(No Model.)

F. E. BROWNE.
HEATING FURNACE.

No. 566,133.

Patented Aug. 18, 1896.



Witnesses
Sergey Lingman.
Alfred I. Townsend.

Inventor
Frank E. Browne
by Hazard Townsend
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UNITED STATES PATENT OFFICE.

FRANK E. BROWNE, OF LOS ANGELES, CALIFORNIA.

HEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 566,133, dated August 18, 1896.

Application filed September 21, 1894. Serial No. 523,667. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. BROWNE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Heating-Furnaces, of which the following is a specification.

My invention is specially designed for furnaces burning soft coal, although it is equally adapted for all kinds of fuel.

It is specially designed to provide simple, cheap, and easily-assembled means whereby to cause complete combustion and radiation and prevent the deposits of soot so liable to occur when soft coal is burned in stoves or heaters. In regard to burning soft coal, it is designed to give better effective and economical results by reason of its keeping the walls of the radiating-drum free from the non-heat-conducting soot, which is liable in ordinary soft-coal-burning stoves and heating-furnaces to transform the drum from a heat-radiator to a heat-insulator.

My invention relates to the features of construction hereinafter detailed by means of which I produce an easily-constructed and greatly-improved heater.

One object of my invention is to provide simple and perfect means for mounting the deflector in a furnace which will be self-cleaning and perfectly gas-tight. My furnace will, by its own action, keep the inside of the radiating-drum free from soot, so that the radiation will be perfect at all times.

The accompanying drawings illustrate my invention.

Figure 1 is an enlarged fragmental vertical mid-section of a furnace provided with my invention cutting through the neck or fuel-chute. Fig. 2 is a perspective fragmentary detail illustrating the arrangement for connecting the flame-spreading, heat-deflecting, and soot-burning device with the wall of the drum.

A indicates the wall of the radiating-drum, which is made of sheet-steel of suitable thickness.

B is the head, top, or dome of the drum, and is made of cast-iron and provided in its center with the smoke-pipe collar *b*.

G indicates the fire-pot, the body of which is much smaller in diameter than the radiat-

ing-drum. The upper end or mouth of the fire-pot is flared outward abruptly to a diameter greater than that of the wall of the radiating-drum, and such wall is seated upon said mouth, a suitable flange *g* being provided at the mouth of the fire-pot to hold the wall of the drum in place.

Within the radiating-drum, near the top of the wall thereof, I provide the heat deflector and distributor K, arranged beneath the smoke-flue, coaxial therewith, and extending across the greater portion of the cross-sectional area of the drum, with a narrow space L extending around it between it and the wall of the drum. This deflector and distributor is much greater in area than the smoke-flue, and is substantially equal to or greater in area than the cross-sectional area of the fire-pot at the point where the pot begins to flare outward to form the bell-shaped mouth, and its action upon the ascending draft causes the heat from the fuel in the fire-pot to spread outward and come into direct contact with the wall of the radiating-drum and to be equally distributed against every portion thereof. The smoke-flue, the deflector, and the fire-pot are coaxial, and by their combined action the draft is so directed as to produce a greater radiation of heat from a smaller quantity of fuel than in heaters not so constructed. This arrangement causes the heat to be equally distributed, so as to heat the drum alike on all sides and the drum will be kept free from soot.

The deflector and distributor K is supported by brackets M, riveted to the wall. Each bracket is provided in its upper face with a lug-recess *m*, having the inner face *m'* of its outer wall sloping from the inner face of the bracket upward toward the wall of the drum. The heat deflector and distributor is provided with outwardly-projecting lugs *k*, having their ends beveled on the under side and arranged, respectively, to fit into the recesses in the brackets. Angle-irons (or other suitable fastenings) N are fixed to the wall above the bracket and arranged to hold the lugs *k* in place and prevent the deflector from being blown upward in case of any of the slight explosions of gas which frequently occur in furnaces burning soft coal or other gas-producing material.

The deflector K is circular and is made of cast-iron and operates upon the rising draft in the drum to produce a uniform distribution of the heat which rises from the fire-pot G.
5 The equal distribution of heat adds greatly to the life of the furnace for the reason that the contraction and expansion is equalized throughout the furnace, and the radiating-drum is not subjected to fierce heat at one
10 point while another part is comparatively cold.

The beveled wall of the brackets and the beveled ends of the lugs which project from the rim of the deflector cause the deflector to
15 center itself with relation to the wall of the drum when it is in the brackets.

To assemble the parts in proper position, the deflector is dropped into place with the lugs in the recesses *m*. Then the angle-irons
20 N are brought into place above the lugs. The beveled support allows the deflector to rise and fall with the expansion and contraction without any strain upon the furnace or upon the deflector and causes the deflector to re-
25 main centered in the proper position regardless of the contraction and expansion. This form of construction of the brackets and lugs also gives greater strength to the bearing-support of the lugs than would be otherwise se-
30 cured with the same weight of metal.

In practical operation a suitable charge of fuel is placed in the fire-pot and ignited and

the draft adjusted in the ordinary way to give the combustion desired. The ascending draft through the fire-chamber spreads out evenly
35 against the radiating-walls, passes around the deflector, and out at the central smoke-flue.

The dome or drum head is internally concave, curving upward and inward uniformly from the wall of the drum to the smoke-flue,
40 so as to facilitate evenness of draft through the annular draft opening or space L. The draft-opening is unobstructed throughout, except by the brackets and lugs which sup-
45 port the deflector, and these should be made of as small size as possible consistent with the necessary strength.

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

The combination of the radiating-drum; the brackets provided respectively with a lug-receiving recess having its walls sloping upward toward the wall of the drum; the heat
55 deflector and distributor provided with lugs having their ends beveled on the under side and arranged to respectively fit into the recesses in the brackets; and detachable means for holding the lugs in the brackets.

FRANK E. BROWNE.

Witnesses:

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