

Wilson & Shaw,
Steam-Boiler Furnace,
No. 48,125. *Patented June 6, 1865.*

Fig. 2.

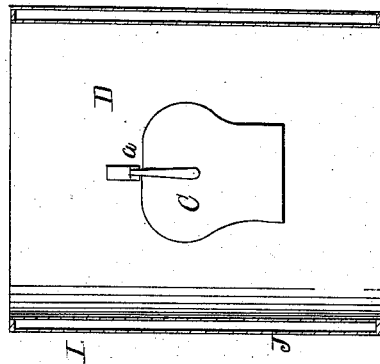


Fig. 2.

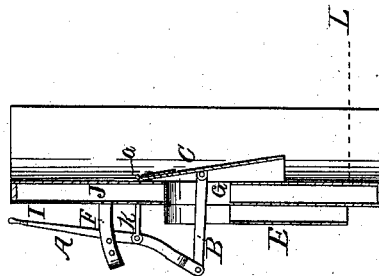
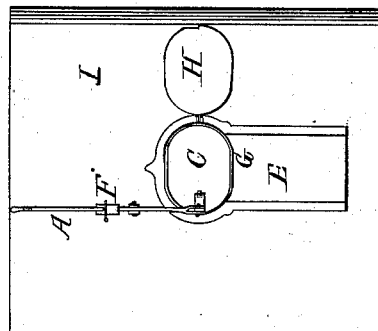


Fig. 1.



Witnesses.
Wm. Brown.
Thos. Lusk.

Inventor
J. B. Wilson.
W. K. Shaw.
per Mum & Co.
Attys

UNITED STATES PATENT OFFICE.

THOMAS B. WILSON AND WM. R. SHAW, OF MEADVILLE, PENNSYLVANIA.

IMPROVEMENT IN BOILER-FURNACES.

Specification forming part of Letters Patent No. 48,125, dated June 6, 1865.

To all whom it may concern:

Be it known that we, THOMAS B. WILSON and WILLIAM R. SHAW, of Meadville, in the county of Crawford and State of Pennsylvania, have invented a new and useful Improvement in Furnaces; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a portion of the front wall of the furnace. Fig. 2 is a vertical section thereof across the mouth of the furnace, and Fig. 3 is an elevation of the interior of the front wall.

Similar letters of reference indicate like parts.

This invention consists in the arrangement of an air-deflector within a furnace and over its mouth for the purpose not only of regulating the amount of draft to the fire, but also of directing the draft, so that the air will become thoroughly mixed with the gases arising from the fuel, and a more perfect combustion thereby attained.

I represents a furnace or fire-box, which is shown in the example of our invention to be double, inclosing a water-space, J.

G is a ring or section of a cylinder placed in the doorway of the furnace, for the purpose of a casing, and which projects beyond the outer wall of the furnace, as shown in Fig. 2.

H is the door of the furnace, hinged to the outer edge of the casing G.

E is an air-conducting box or channel extending below the casing G, and open at top and bottom, the lower part of the casing outside of the furnace-wall being cut away to receive the upper end of the box E.

C is a deflector of any suitable form, hinged at top to the inner shell, D, of the furnace, as shown at *a*. The deflector is pushed away from and drawn toward the furnace-wall by means of an upright lever A, pivoted to the outer end of a bracket, *k*, and connected by a hinge-joint at its lower end to the outer end of a connecting-rod, B, whose inner end is hinged to ears projecting from the surface of the deflector C. The upper part of the lever A is inclosed and moves within guides F, extending from the outer wall of the furnace. The guides are perforated with several pin-holes, and the lever A is held at

any desired position therein by means of a pin inserted in the holes.

The operation of the parts is as follows: The fuel upon the grate, supposed to be located on or about the red line L, having been fired, the lever A is so placed by the fireman as to open the deflector C to a degree sufficient to supply a sufficient quantity of atmospheric air to mix with the carbonaceous unconsumed gases arising from the incandescent fuel, and which will pass away unburnt through the flues of the furnace unless they are mixed, while still hot, with oxygen. The atmospheric air supplied passes upward into the door-space, the door H being closed, through the box E, in which it becomes highly heated by radiation from the wall of the furnace and also by conduction. The box E may be connected with a blower, if necessary.

Among the advantages of our mode of constructing the parts above described are, first, the protection it affords to the rivets and ring-casing of the door-space by a constant supply of air, and also preventing the leakage which frequently takes place at the seams and rivets of the water-space; second, the fresh supply of air for the draft is distributed over and directed upon the fire, and thereby freely and rapidly mixed with the liberated products of combustion as they arise from the fuel; third, by supplying air in this way to the fire, the air-blast usually forced beneath the grate can be dispensed with, and the forcing of the unburnt gases and lighter coals into the flues and the choking of the flues with coals and ashes will thus be prevented; fourth, this arrangement places the fire under easy control of the fireman, and can be applied to any class of furnace with small expense.

We claim as new and desire to secure by Letters Patent—

1. The deflector C, arranged, as shown, within the furnace, and operated by means of the hand-lever A without, substantially as above described.

2. The combination of the deflector C with the door-space of the furnace and the air-box E, opening into said space, substantially as above described.

THOMAS B. WILSON.
WILLIAM ROBT. SHAW.

Witnesses:

HENRY A. BURK,
FREDERICK SMITH,