T. B. Davis,

Steam-Boiler Furnace.

No. 44,366. Patented Sep. 20, 1864.

Fig: 3.

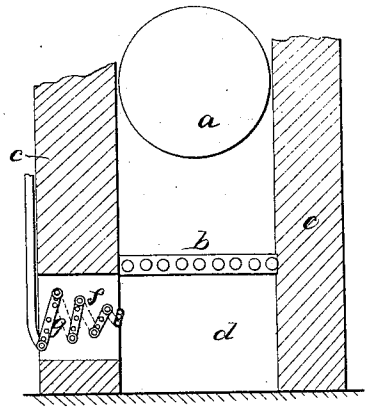


Fig: 1.

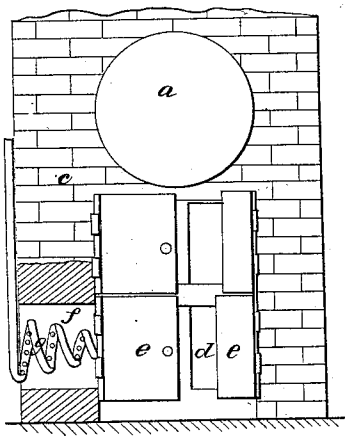
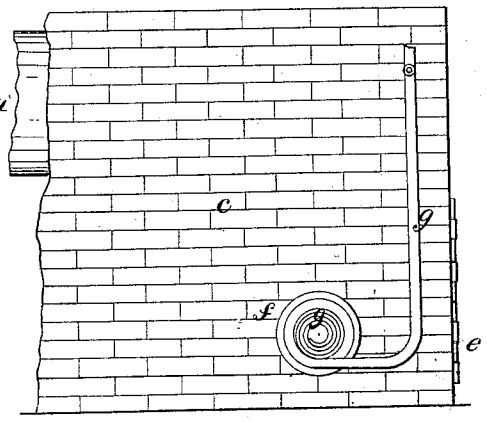


Fig: 2.



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UNITED STATES PATENT OFFICE.

THOMAS B. DAVIS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO STEPHEN G. TAYLOR, OF SAME PLACE.

IMPROVEMENT IN BOILER-FURNACES.

Specification forming part of Letters Patent No. **44,366**, dated September 20, 1864.

To all whom it may concern:

Be it known that I, THOMAS B. DAVIS, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Steam-Boiler Furnaces; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practice it.

This invention relates to the introduction of steam into the incandescent fuel of a steam-boiler furnace (or into the ash-pit just below said fuel) for aiding the combustion and heat of the fuel, the invention consisting in the peculiar arrangement of a steam-pipe and draft-passage for throwing steam and air into the ash-pit of the furnace.

Figure 1 denotes a front view, Fig. 2 a side elevation, and Fig. 3 a cross-section, of a portion of a furnace having my invention embodied therewith.

In the common method of forcing steam into the ash-pit of boiler-furnaces by extending a steam pipe directly into, and so as to open within, the ash-pit no uniformity of beneficial result takes place, because the air which supports combustion is very imperfectly and unevenly brought into contact with the jet of steam. An attempt has been made to regulate the introduction of the steam into the ash-pit and its action upon the air supplying combustion by commingling the air and steam outside of the ash-pit, and supporting the combustion entirely from the commingled air and steam, the ash-pit doors being closed, and the passage through or by the steam-pipes being the only communication for the draft. This arrangement is objectionable, because there is at times an excess of steam carried into the ash-pit, more than the fuel takes up, and such excess condenses upon the walls of the ash-pit and furnace, and soon causes a deposit of soot, injurious to the furnace and detrimental to the proper combustion of the fuel.

It is the purpose of my invention to overcome these difficulties by so arranging the steam-pipe that the door of the ash or draft pit may be kept open or partially open, while the steam is thrown upon a current of air in such manner that said current supports the combustion of the fuel and is diffused throughout the pit.

In the drawings, *a* denotes the boiler of the furnace; *b*, the grate; *c*, the masonry or furnace walls; *d*, the ash pit, and *e* the ash-pit doors.

Near the front end of the ash-pit, and through one of the side walls thereof, I make a passage, *f*, opening freely at one end into the ash-pit and at the other into the external atmosphere. Into this passage I lead a steam-pipe, *g*, said pipe encircling the outer end of the passage and coiling around in a tapering coil as it extends through the passage into the ash-pit, as seen in the drawings. The inner surface of this coil I puncture with holes in such manner that the jets of steam issuing therefrom shall be thrown radially toward the center or axis of the coil, and also toward the ash-pit. By this arrangement, whether the ash-pit doors are open or not, the air to support combustion is drawn through the passage *f* as it is there heated by the steam from the pipe *g*, and, thus heated and moistened or vaporized by steam, it is diffused throughout the ash-pit and imparts to the fire a high degree of vitality, while by having the ash-pit doors open an excess of steam is prevented, any surplus passing out of the ash pit doors. The steam-blast through the passage *f* creates a draft through said passage, rather than through the ash-pit doors, while the steam at any time escaping through the doors *e* will indicate its excess to the fireman, who can thus regulate the amount introduced through the passage *f*.

Although described as applied to a steam-boiler, it will be evident that the invention is applicable to any other furnace into the draft or ash-pit of which a steam-pipe may be conducted.

I claim—

In combination with an ash-pit of a steam-boiler furnace constructed with doors to open in the usual manner, the passage *f* and steam-coil *g*, operating together in the manner and for the purpose substantially as set forth.

THOMAS B. DAVIS.

Witnesses:

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