(No Model.)

J. GROGAN.

BOILER FURNACE.

No. 526,485 Patented Sept. 25, 1894.

Fig. 1.

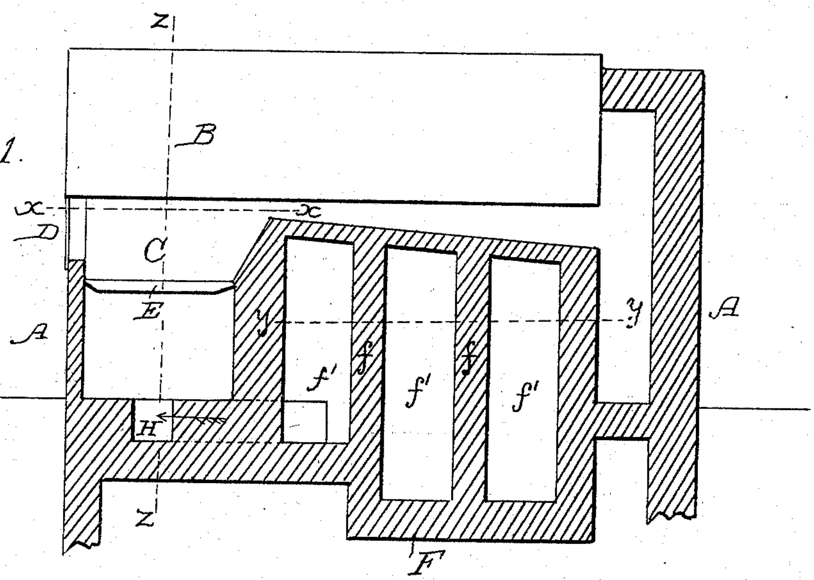


Fig. 2

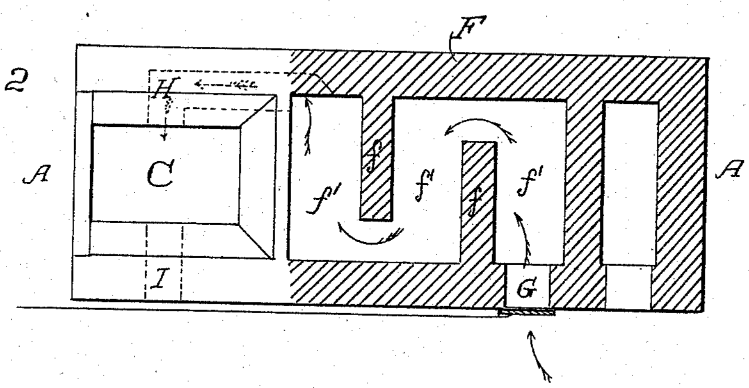
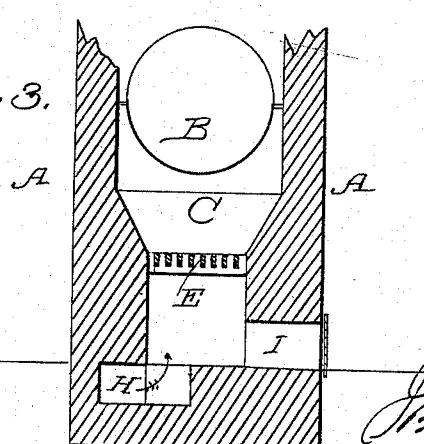


Fig. 3.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES GROGAN, OF PRESCOTT, ARIZONA TERRITORY.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 526,485, dated September 25, 1894.

Application filed August 22, 1893. Serial No. 483,760. (No model.)

To all whom it may concern:

Be it known that I, JAMES GROGAN, a citizen of the United States, residing at Prescott, Yavapai county, Territory of Arizona, have invented an Improvement in Boiler-Furnaces; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of boiler furnaces, and it consists in the novel construction and arrangement of the hot air passages, and of the fire-box, which I shall hereinafter fully describe and specifically claim.

The objects of my invention are to effect economy in fuel and to save labor in firing.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a vertical longitudinal section of my furnace. Fig. 2 is a horizontal section, the fire-box portion of which is taken on the line *x*—*x* of Fig. 1, and the hot air draft portion is taken on the line *y*—*y* of Fig. 1. Fig. 3 is a vertical cross section on the line *z*—*z* of Fig. 1.

A is the shell of the furnace, in which the boiler B is indicated as being supported.

C is the fire-box, to which access is had through the door D. The sides and back of this fire-box slope inwardly and downwardly at an angle, preferably of about sixty degrees, and the grate bars E are located about eight inches below the doors which position is about eight inches below the line of the ordinary position of grate bars.

In the lower portion of the furnace, back of the fire-box, is formed a closed chamber F which, by means of vertical partitions *f* extending in transverse planes and alternately from opposite sides and terminating short of the other side, is divided into a tortuous passage *f'*, one end of which communicates through a door-controlled inlet G with the outer air, and the other end communicates through a flue H with the space under the grate bars.

The draft enters at the inlet G, and circulates through the tortuous passage *f'*, as is shown by the arrows, and becomes heated therein, and this heated air is finally delivered through the flue H into the space under the grate bars and to the fire.

Cold air may be admitted through the ash-door I.

By this construction of hot air passage, the old draft door is entirely dispensed with, and by the shape of the fire-box the number of grate bars required is less than in the old style.

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

An improved furnace consisting of a shell having a boiler supported within it, and having a fire-box whose sides and back slope inwardly and downwardly for a short distance, said shell having also a closed chamber in the lower portion back of the fire-box formed by vertical partitions extending inwardly from each side, with each partition terminating short of the opposite side to form a tortuous passage into which external air is admitted and heated prior to being discharged into the space below the grate bars to increase the draft, said shell being also provided with a door controlled inlet for said air at one end of the passage, and a flue at the opposite end of said passage for delivering the air therefrom into the space below the grate bars.

In witness whereof I have hereunto set my hand.

JAMES GROGAN.

Witnesses:
M. MCINERNEY,
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