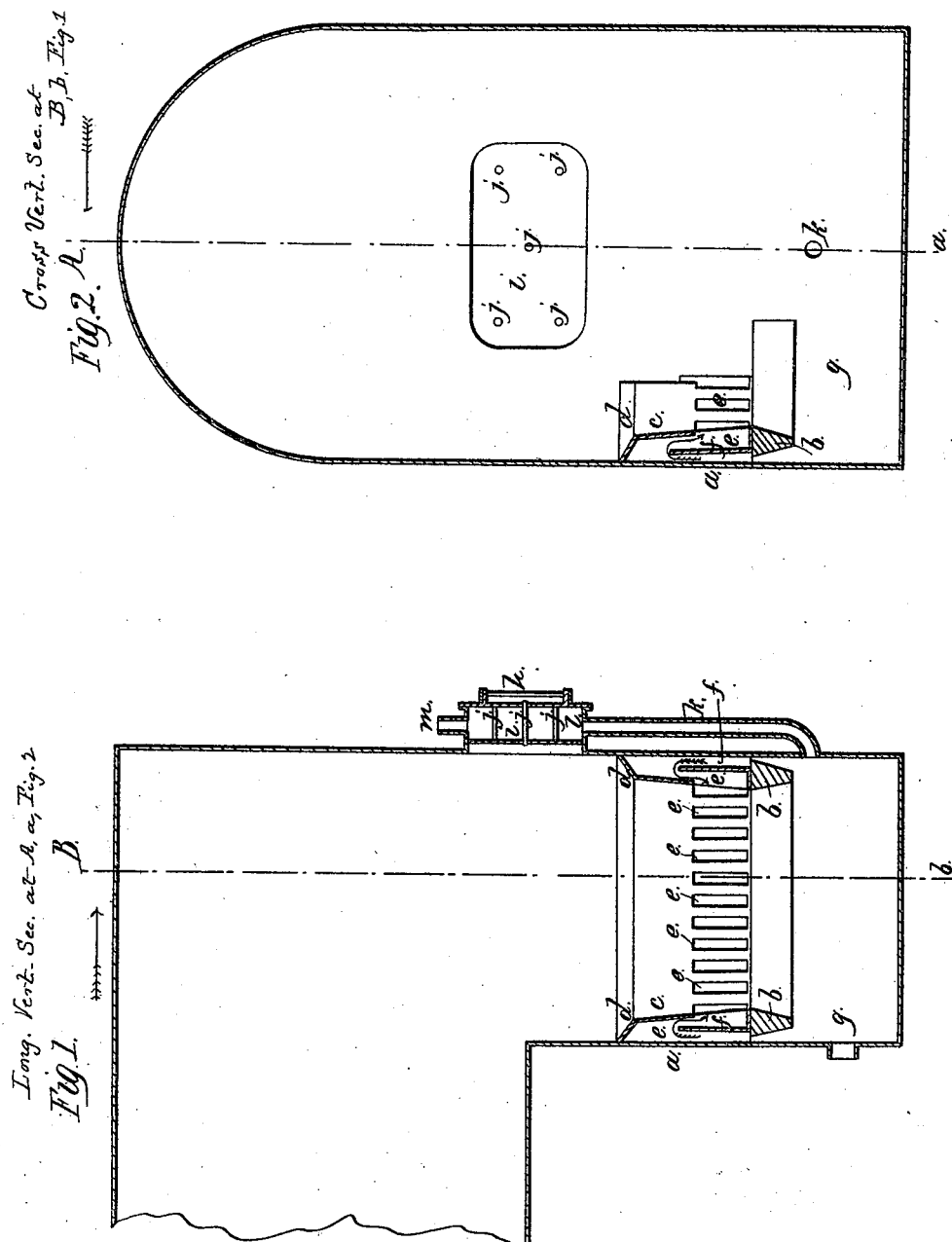


No. 7,752.

PATENTED NOV. 5, 1850.

F. P. DIMPFL.
FURNACE FOR STEAM BOILERS,



UNITED STATES PATENT OFFICE.

F. P. DIMPFL, OF PHILADELPHIA, PENNSYLVANIA.

FURNACE FOR STEAM-BOILERS.

Specification of Letters Patent No. 7,752, dated November 5, 1850.

To all whom it may concern:

Be it known that I, F. P. DIMPFL, of Philadelphia city and county, in the State of Pennsylvania, have invented certain new and useful Improvements in Furnaces for Steam-Boilers and other Purposes; of which the following is a full, clear, and exact description, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a longitudinal vertical section at A, *a*, Fig. 2 of my improved furnace as applied to a steam boiler, and Fig. 2 a cross vertical section taken at the line B, *b*, of Fig. 1.

The same letters indicate like parts in all the figures.

The nature of the first part of my invention consists in making a hollow or box lining with a partial partition or partitions interposed between the outer shell and inner lining, so that the air, whether introduced under pressure or by draft, shall rise between the outer shell and the partition or partitions, and then over the upper edge thereof and then down and through the inner lining to the fuel contained therein. In cases where the furnace is constructed within a steam boiler such as are usually employed for steamboats and locomotives, or where a forced blast is employed, either by blowing or exhausting, for the purpose of accelerating the combustion of the fuel, I have found upon experiments that the above named hollow or box lining proved completely successful in removing the injurious effects of the fire on the sides of the fire box and also preventing the burning out of the linings, as has heretofore been the case where a forced blast is employed. It is therefore under these particular circumstances that my invention will prove most useful. And the second part of my invention consists in making the furnace door with an inner plate or lining, separated therefrom so as to leave an open space for the passage of a cooling medium, such as cold air, steam or water, the said door so constructed being combined with a tube or tubes or apertures for the passage of the said cooling medium.

In the accompanying drawings (*a*) rep-

resents the furnace as applied to a locomotive boiler, (*b*) the grate bars at the bottom, and (*c*) the inner lining connected at top with the outer shell by a plate (*d*) sloping inward. This box lining is composed of a series of cells (*e*) opened to the fuel inside from the bottom upward about half the height of the fire pot, and between this and the outer shell in each cell there is a partition or division plate (*f*) which extends some distance above the top of the aperture, so that the air blown in or otherwise entering the ash pit (*g*) will ascend between the outer shell and the partition and pass over the top of the partition and then down through the aperture and among the fuel as indicated by the arrows.

The air having equal access to, will pass in the same manner through all the cells and by passing first up the outside and then down the inside will effectually prevent the furnace from burning out, and at the same time the greatest lateral supply of air will be through the upper part of the apertures instead of the bottom which would be the case if the partitions were not used, for the air will seek the nearest aperture.

Instead of the cells above described I contemplate in some instances making the partition continuous around the furnace and perforating the inner lining at the required points, so as to give the supply of air where it is required, after passing over the partition, but the first mode is that which I have essayed with success and deem the best.

The door (*h*) is provided with an inner plate (*i*) at some distance therefrom and connected therewith by bolts or rods (*j*) so as to leave a free space between for the circulation of a cooling medium such as air or other fluid, which is admitted from the ash pit by a pipe (*k*) attached to the ash pit and to the door frame (*l*). There may be an aperture or apertures or pipe (*m*) for the discharge of the air, if it be desired to carry a rapid current through.

What I claim as my invention and desire to secure by Letters Patent, is—

1. The method substantially as described of making the box lining of furnaces with a partition or division plate or plates between the inner lining and outer shell to direct the

current or currents of air before entering the fire substantially for the purpose and in the manner specified.

2. I also claim the manner of arranging
5 the furnace door with its interior plate or lining, in combination with the tube or apertures for blowing or forcing in air, steam or other cooling medium between the

door and said plate, all as herein described, irrespective of form, and also of the man- 10
ner of producing the forced current of the cooling medium.

F. P. DIMPFL.

Witnesses:

ALEX. PORTER BROWNE,
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