

G. G. Hunt,

Steam-Boiler Furnace,

N^o 39,402.

Patented Aug. 4, 1863.

Fig. 1.

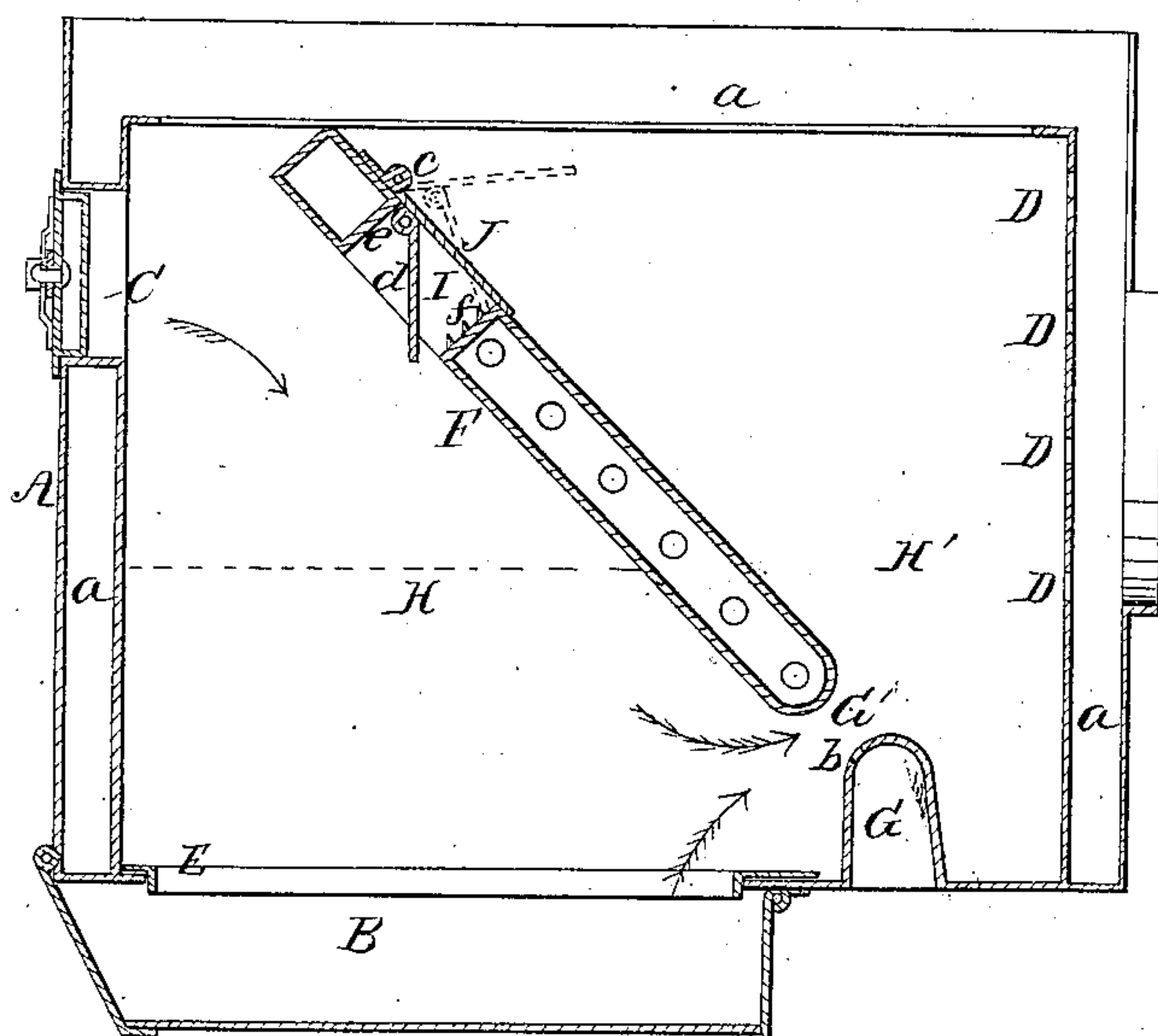
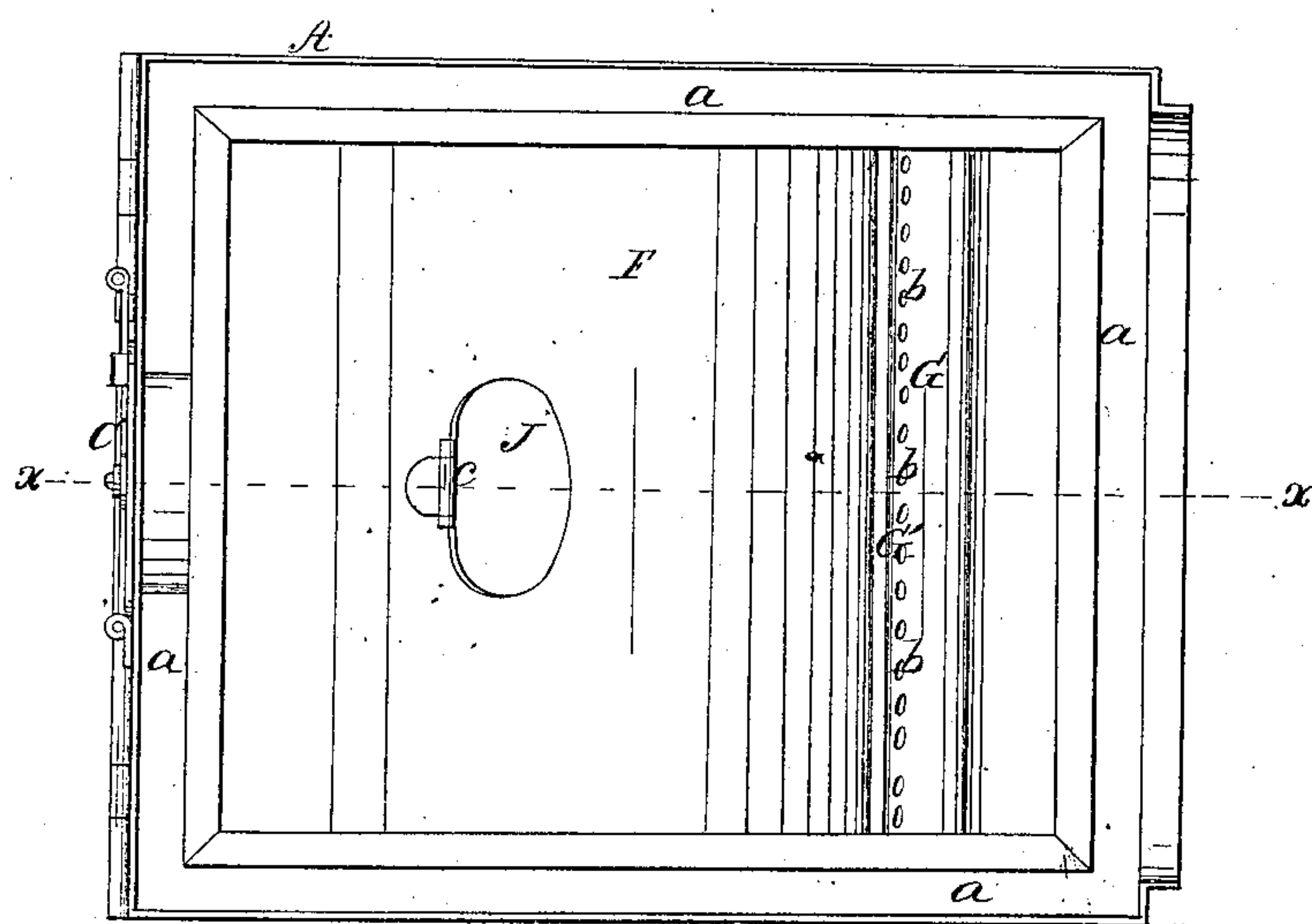


Fig. 2.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN FURNACES FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 39,402, dated August 4, 1863.

To all whom it may concern:

Be it known that I, G. G. HUNT, of Quincy, in the county of Adams and State of Illinois, have invented a new and useful Improvement in Coal-Burning Furnaces for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in placing a partition within a furnace in such a position as to divide the furnace into two compartments—one for the fuel and the other to receive the products of combustion—and so arranging the throat or passage which forms a communication between the two compartments in such a relative position with the fuel that the smoke and gases must in their passage to the flues pass through a portion of the fire and be brought in contact with oxygen supplied from a pipe at the throat aforesaid, whereby a perfect combustion of all the inflammable products of combustion is obtained.

The invention also consists in the employment or use of a man-hole and damper, arranged substantially as hereinafter shown and described, whereby the flues of the furnace are rendered accessible and a convenient damper also obtained to admit of a direct draft in kindling, &c.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a furnace of a steam-boiler, which may be provided with a water-space, *a*, all around it as usual. B is the ash-pan; C, the door or feed-hole; D, the orifices of the flues, and E the fire-grate.

F represents an inclined partition, placed within the furnace, as shown clearly in Fig. 2. This partition extends from the upper part of the furnace near its front end downward toward its back end, forming an angle of about forty-five degrees. This partition may be hol-

low or constructed with the double walls to form a water-chamber, and the latter may communicate with the water-space *a* around the furnace.

At the bottom of the furnace, opposite the lower part of the partition F, there is a tube, G, which is perforated at its upper part, as shown at *b*. The space G' between the lower end of the partition F and the upper end of the tube G is the throat or passage which forms a communication between the compartments H H'. The compartment H is the fire-chamber, and the compartment H' is the combustion-chamber. (See Fig. 1.) The tube G is open at its lower end, as shown in Fig. 1.

In the upper part of the partition F there is a man-hole, I, which is provided with a lid or cover, J, which serves as a damper. This lid or cover is connected at its upper end to the partition by a hinge, *c*, and it has a prop, *d*, attached to it by a hinge, *e*. By means of this prop the lid or cover may be retained more or less open, the free or disengaged end of the prop catching in a rack, *f*, at the lower edge of the man-hole I. This will be fully understood by referring to Fig. 1.

The level of the fuel in the fire-chamber H is shown by the dotted lines in Fig. 1. When the fire is kindled, a direct draft is obtained by opening the lid or cover J, which is, in fact, a damper. When the fire is under way, the cover or damper J is closed and the smoke, gases, &c., necessarily pass down through the fuel and a portion of the fire through the throat G', where it is mixed with air which passes into the throat G' through the perforations *b*, and causes the said products of combustion to be consumed in the chamber H'.

From the above description it will be seen that the partition F, arranged in relation with the throat G', as shown, causes all the smoke and gases to pass through a portion of the fire before passing into the flues, and it will also be seen that in case of opening the door C the cold air is prevented from passing into the flues, and hence the fire will not be cooled down, as is the case in ordinary furnaces.

The man-hole I renders the compartment H' and the flues accessible for repairing, cleaning, &c.

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

1. The inclined partition F, placed within the furnace A, and arranged relatively with a perforated air-tube, G, substantially as shown, whereby the furnace is divided into two compartments, a fire-chamber and a combustion-chamber, and the smoke and gases compelled to pass down through the fuel or fire in order to pass through the throat G' into the com-

bustion-chamber, as and for the purpose herein set forth.

2. The man-hole I in the partition F, provided with the cover and damper J, arranged, as shown, relatively with the door or feed-hole C and throat G', to operate as and for the purpose set forth.

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