

(No Model.)

T. A. BUCKLAND.
LOCOMOTIVE FURNACE.

No. 252,862.

Patented Jan. 31, 1882.

Fig. 1.

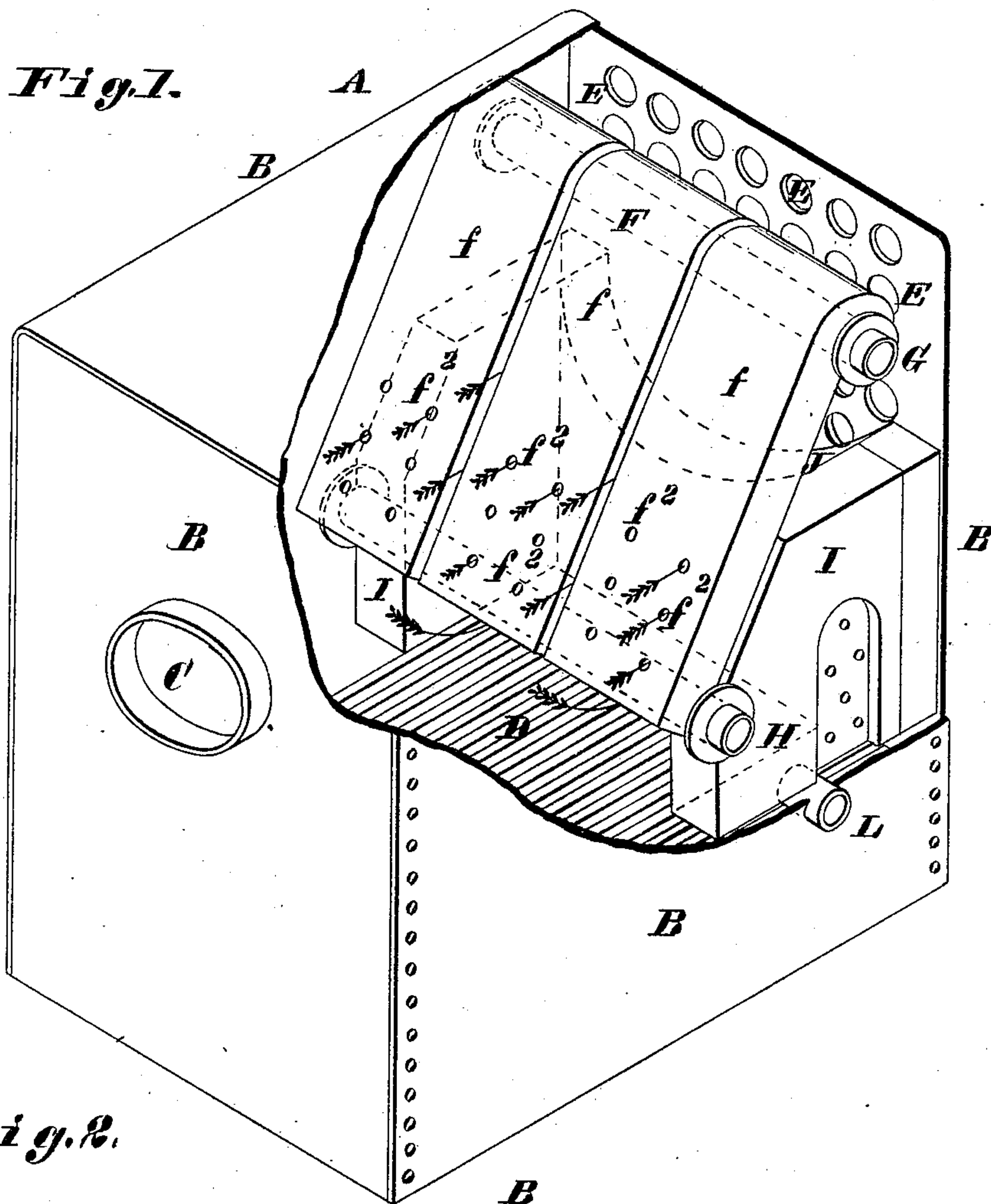
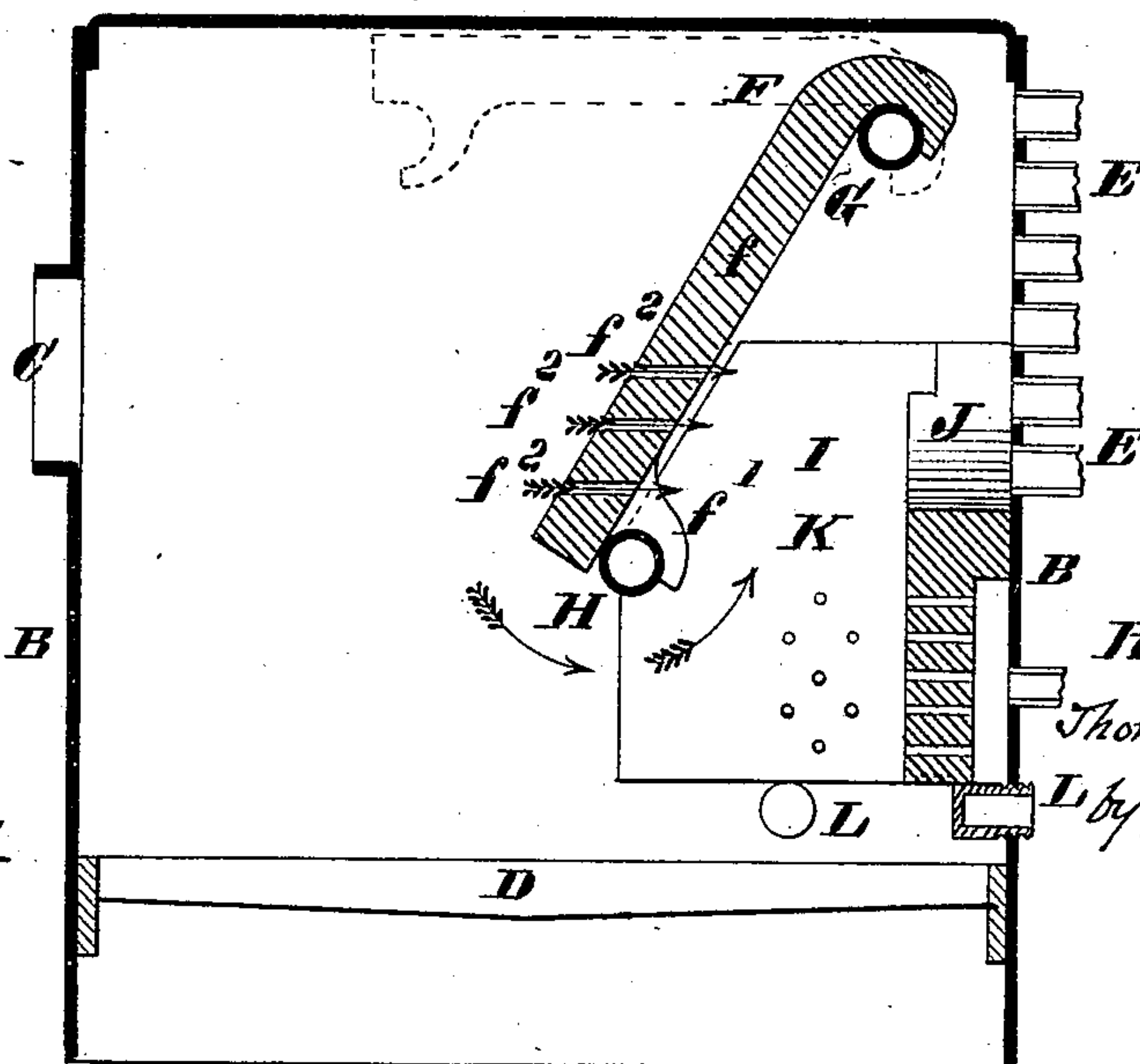


Fig. 2.



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UNITED STATES PATENT OFFICE.

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LOCOMOTIVE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 252,862, dated January 31, 1882.

Application filed May 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. BUCKLAND, of St. Louis, Missouri, have made a new and useful Improvement in Locomotive-Furnaces, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a view in perspective of the furnace of a locomotive having the improvement, the furnace-wall being broken away to exhibit the interior of the furnace; and Fig. 2, a vertical longitudinal section taken through the furnace.

The same letters denote the same parts.

The present invention relates to the diaphragm—its construction, arrangement, and operation—at the farther end of the furnace-chamber.

A represents a locomotive-furnace having the improvement, and, saving which, being of the usual construction, B being the inner wall of the furnace, C the furnace-door, D the grate, and E the boiler-flues.

F represents a diaphragm made of suitable material for withstanding the heat, and extending from or from near the upper farther corner of the furnace downward and toward the furnace-door, its lower end coming in practice a short distance above the fuel as ordinarily laid in a locomotive-furnace. The diaphragm also extends transversely across, or well across, the furnace. It is preferably made in two or more sections, *fff*, to facilitate its being introduced into the furnace, and when thus made the various sections are spaced slightly apart to prevent them from fusing together, which is apt to occur when the diaphragm is made of fire-clay (as is generally the case) and when the sections are in contact.

The sections *fff* or diaphragm F is supported in the position shown by any suitable means, but so that it can be removed or turned up, as indicated by the dotted lines in Fig. 2, to enable the boiler-flues to be reached for cleaning or repair. The mode I have adopted is to hang the upper end of the diaphragm against and upon a water-tube, G, and to rest its lower end against another water-tube, H, and for this purpose the diaphragm is made hook-shaped at its upper end, and its lower end is preferably provided with a shoulder, *f'*, shaped and arranged to fit the tube H. To reach the

flues E the diaphragm is cleared of the lower tube, H, and turned upward upon the upper tube, G, as upon a bearing. Either section *f* may be raised separately.

The diaphragm is preferably perforated at *f*² to allow the air to pass through the diaphragm, as indicated by the arrows. The air becomes heated by reason of the heat accumulated in the diaphragm, and enables the fuel to be consumed more perfectly beyond the diaphragm.

Side tiles, I I, and end tiling, J, (both of which are perforated to admit the outer air, as shown in constructions previously patented by me,) are preferably used in combination with the diaphragm F, forming with the latter a throat, K, in which the fuel can be very thoroughly consumed. The tiling I J is preferably supported upon plugs L, which are screwed into the inner wall, B, of the furnace, and which are made hollow to provide for the circulation of water therein from the water-space surrounding the furnace.

The diaphragm F compels the products of combustion to pass beneath its lower end into the throat K, where they are heated and more thoroughly burned before reaching the boiler-flues. At the same time the diaphragm can be easily moved, when desired, to provide access to the boiler-flues. So far as swinging the diaphragm upon a bearing is concerned, it is immaterial, for the purpose of reaching the flues, whether the diaphragm, when at rest, is inclined from the upper forward end or the upper rear end of the furnace, or whether it hangs vertically.

I claim—

1. The combination of the furnace A, hooked and adjustable diaphragm F, support G, and support H, substantially as described.

2. The combination of the furnace A, the sections *fff*, spaced apart, as described, and forming a removable diaphragm, having a shoulder, *f'*, and the water-tubes G H, substantially as described.

3. The combination of the diaphragm F, constructed, arranged, and extended as described, and the tiling I I and J, substantially as described.

T. A. BUCKLAND.

Witnesses:

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