

J. L. Stevens,
Steam-Boiler Furnace.
N^o 11,975. Patented Nov. 21, 1854.

Fig. 2.

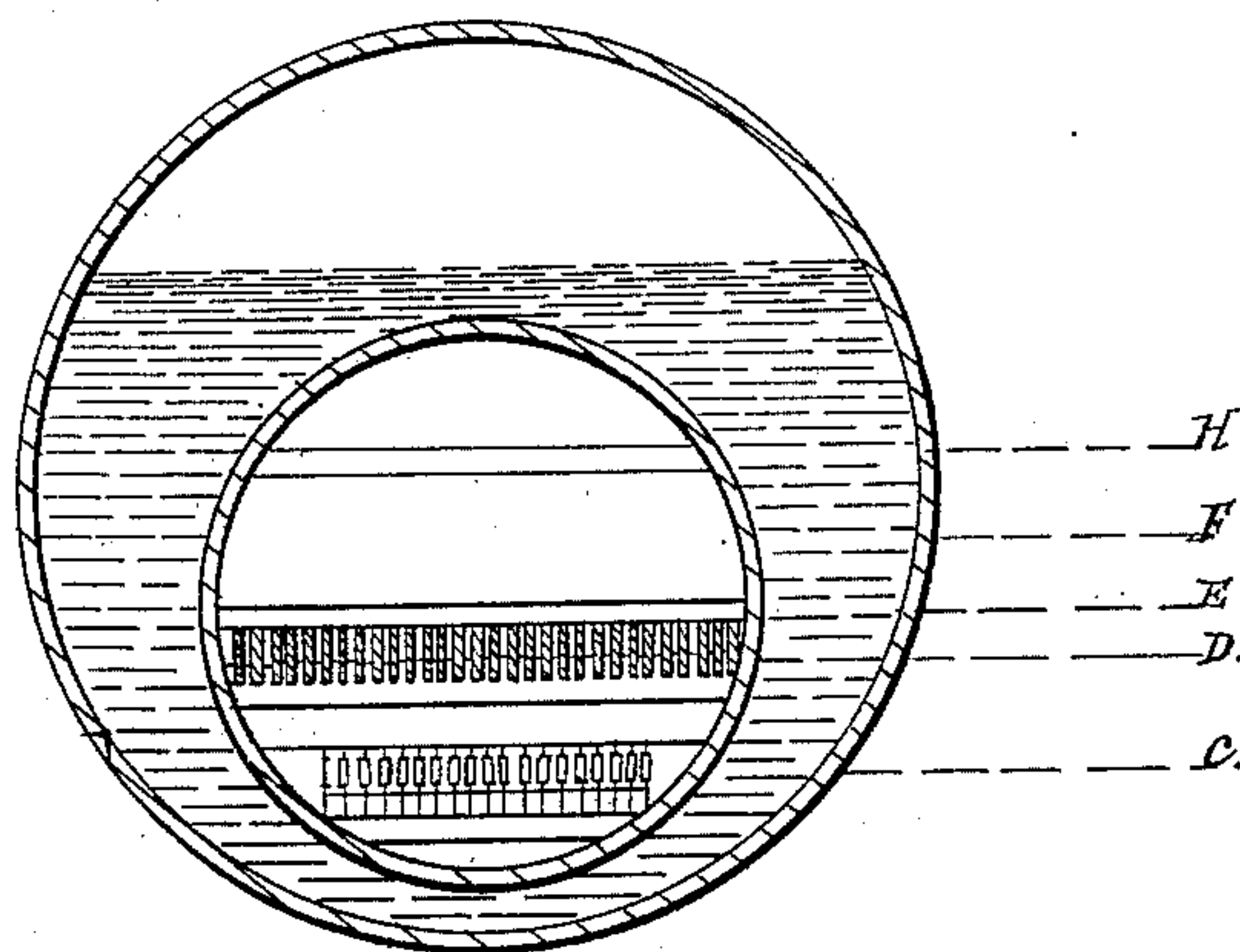
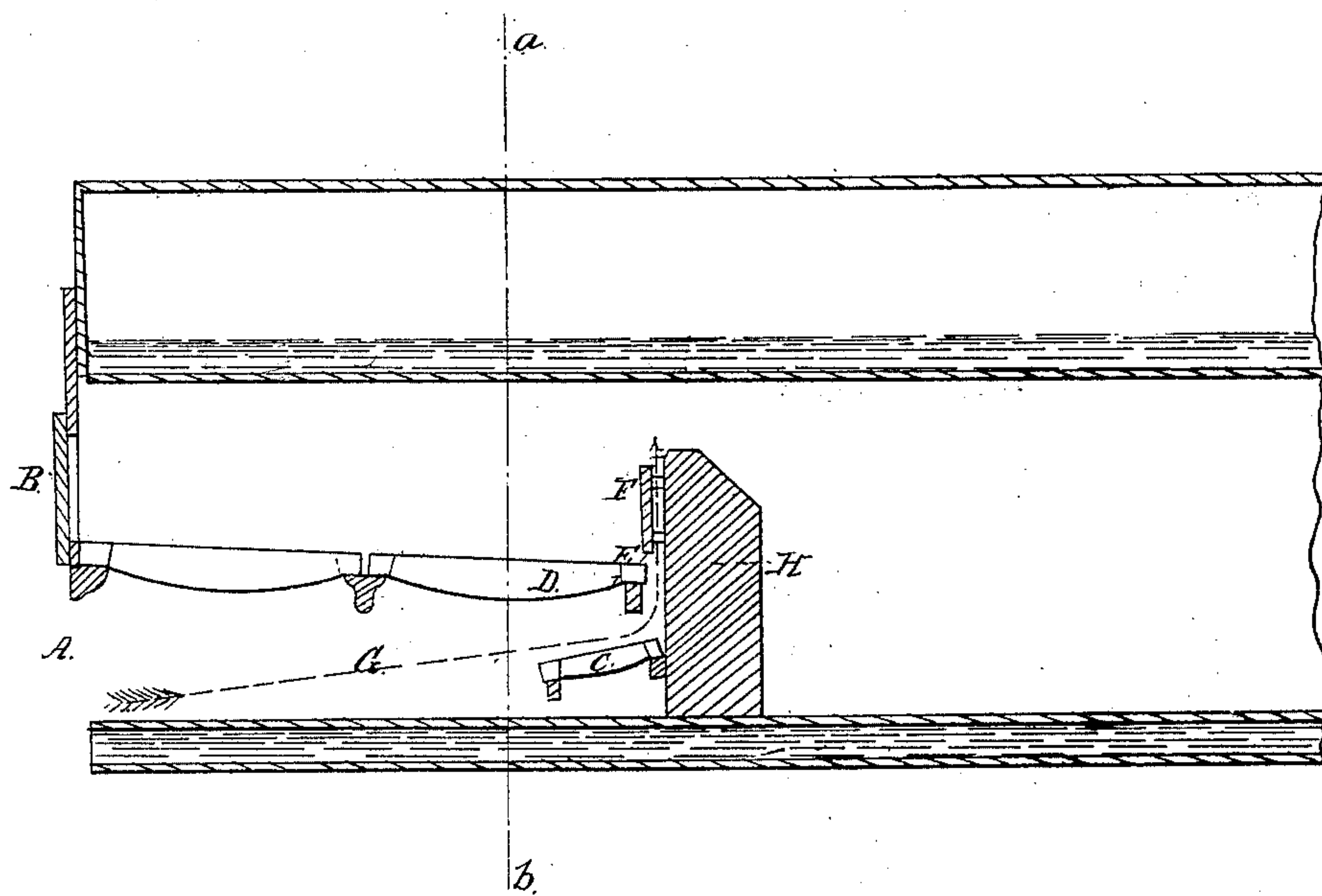


Fig. 1.



UNITED STATES PATENT OFFICE.

JOHN LEE STEVENS, OF KENNINGTON, ENGLAND.

FURNACE.

Specification of Letters Patent No. 11,975, dated November 21, 1854.

To all whom it may concern:

Be it known that I, JOHN LEE STEVENS, of Kennington, in the county of Surrey, England, have invented, made, and applied
5 to use certain new and useful Improvements in Furnaces, for which Letters Patent were granted to me by Her Majesty the Queen of Great Britain on the first day of October, 1852, and for which I now desire to obtain Letters Patent for the United States of
10 America; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, constitutes a full and exact description of the
15 same.

This invention relates to double furnaces where the product from the fuel on one set of fire bars passes over or through the bright fire on the other set of fire bars which has
20 heretofore been proposed to be accomplished in various ways and the improvements consist of applying the second fire bars above the first in such manner that the bridge at the back end is common to the two sets of
25 bars and the fuel may be fed onto the two sets of bars through the one fire door.

The object of this invention is the more complete combustion of the products of the fuel as well as to prevent or lessen the formation of smoke which has heretofore been
30 proposed to be accomplished in various ways, and in order that my invention may be most fully understood I will proceed to describe the same with reference to the accompanying drawings.

Figure 1 is a longitudinal and Fig. 2 a transverse section of a furnace arranged or combined according to my invention applied to a steam boiler.

40 A, air passage; B, door way to second or upper furnace and from which second furnace ignited fuel descends on to the first set of fire bars; C, first set of fire bars nearest the floor; D, second or upper set of fire
45 bars of one, two or more ranges according to the length of the furnace; E, aperture by which fuel passes over the second set of fire bars; F, plate between which and the bridge the products of the fuel on the first set of
50 fire bars pass up and mix with the products from and over the other set of fire bars.

In large furnaces or those used for marine or other purposes wherein the fire is kept up continuously for many hours I protect the front of the plate with fire bricks carried by
55 a bar about four inches above the ends of the fire bars D. G, course of the current of air; H, bridge serving for both sets of fire bars; a, b, line of transverse section.

It will be seen by this description that
60 while the first set of fire bars C is supplied with fuel over and through the second set of fire bars D the current of air G accumulating heat and velocity in a rapidly increasing ratio in consequence of its passing between two strata of fire as well as between
65 the plate F and the bridge H which are naturally heated by the action of both fires, carries up with it the products of the fire at C and mixes the products of the fire from D
70 therewith, whereby the most attainable combustion is effected and the formation of smoke materially lessened if not entirely prevented.

I am aware that previous arrangements
75 have been made of sets of fire bars placed over each other and that various other means have been proposed for increasing the combustion of fuel and for consuming or lessening the formation of smoke. I do not therefore
80 claim such arrangements or means otherwise than herein mentioned.

What I claim is

1. Supplying the lower fire bars C, with ignited fuel from the upper bars D, in the
85 manner and for the purpose described.

2. I also claim the combination of the double fire bars with the plate F for dividing first, and then uniting the gases of each, when said fire bars are fed with fuel
90 through one door, and have a fire bridge which is common to both, substantially as described.

In witness whereof I, the said JOHN LEE STEVENS, have hereunto set my hand and
95 seal this fifth day of December in the year of our Lord one thousand eight hundred and fifty-three.

J. LEE STEVENS.

Witnesses:

LEE W. STEVENS,
THOS. T. BELL.