

(Model.)

J. N. FARNHAM.
Steam-Boiler.

No. 227,621.

Patented May 18, 1880.

Fig. 1.

Fig. 2.

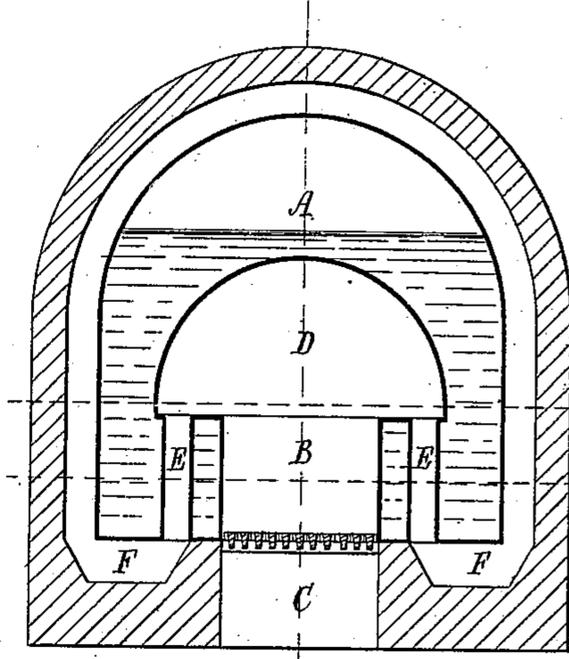
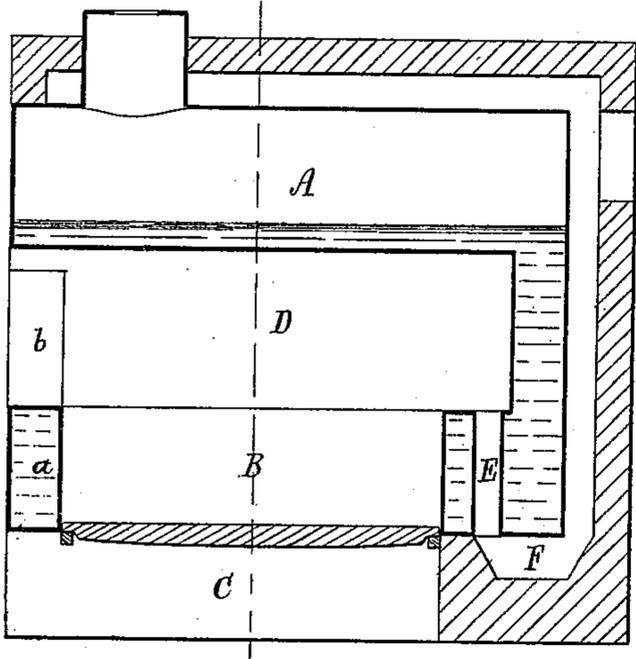
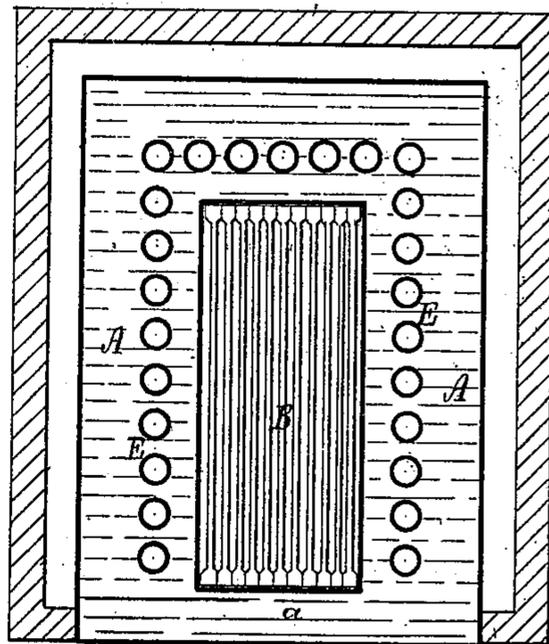
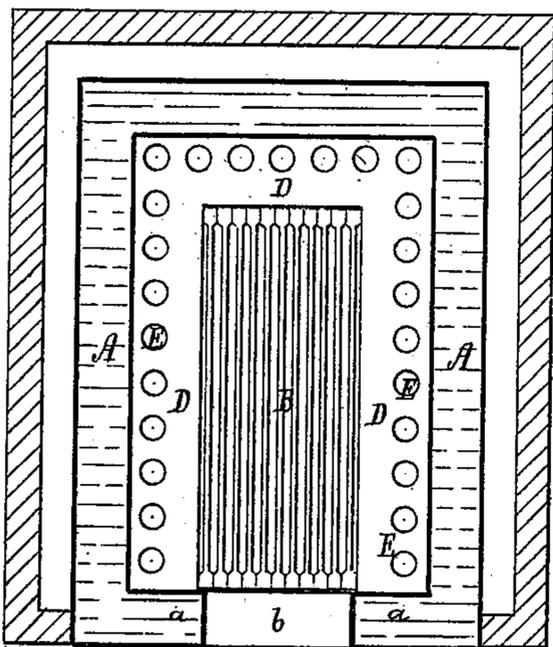


Fig. 3.

Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN N. FARNHAM, OF WALTHAM, MASSACHUSETTS.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 227,621, dated May 18, 1880.

Application filed March 1, 1880. (Model.)

To all whom it may concern:

Be it known that I, JOHN N. FARNHAM, of Waltham, of the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

10 Figure 1 is a longitudinal and vertical section, and Fig. 2 a transverse and vertical section, of a boiler provided with my invention. Fig. 3 is a horizontal section taken through the smoke-chamber, and Fig. 4 is a similar
15 section taken through the fire-place and the smoke-discharge tubes about the sides and ends thereof.

In carrying out my invention I construct the boiler with a fire-place arranged within it, and over such fire-place I place, within the boiler, a smoke-chamber having at its front end a fuel-supplying opening. This smoke-chamber projects laterally beyond the sides and rear end of the fire-place, and has a series of
25 smoke-discharge pipes or ducts leading out of it (the said chamber) and down through the water-space, around the fire-place, and to and opening through the bottom of the boiler into a flue-space around the ash-pit and under-
30 neath the boiler, and extending up the sides and rear end and over the top of the boiler.

In a boiler so constructed the water to be heated covers the smoke-chamber, extends around the fire-place on its sides and rear end, or both ends of it, and encompasses the pipes through which the smoke escapes from the smoke-chamber. The water thereby becomes heated to great advantage. It furthermore is heated by the smoke and volatile products of
40 combustion that, passing out of the said pipes, course underneath the boiler and up against its sides and rear end, and over its top, from which they escape by a duct leading out of the flue-space over the boiler.

In the drawings, A denotes the boiler or its outer shell. B is the fire-place, which is wholly within the boiler, and is to have a grate at its lower part to open into an ash-pit, C, arranged below the fire-place.

50 The smoke-chamber is shown at D. It is wholly within the shell A, and projects be-

yond the fire-place at its sides and rear end in manner as represented, and there is led out of such smoke-chamber, at its bottom, a series of discharge pipes or tubes, E, which go down
55 alongside of the fire-place to the bottom of the boiler-shell, and open through such into a flue, F, arranged underneath the shell and around the ash-pit and up the sides and end of the shell, and over its top, all as repre-
60 sented.

The water-space of the boiler is shown as arranged against the front end as well as against the rear end and the sides of the fire-place; but instead of having the water-space
65 across the front end of the fire-place in manner as shown at a, I sometimes have it only on the sides and rear end of the fire-place.

A fuel-supply opening or throat, b, is made to lead from the front end of the boiler into
70 the smoke-chamber.

My improvement relates to what are termed "horizontal boilers," the boiler hereinbefore described being of that character, and though analogous in some particulars to the up-
75 right boilers shown and described in Patents Nos. 47,968 and 83,445, differs therefrom in important particulars, as its flue-space extends entirely over and around the arched top of such boiler, besides going up its sides and
80 rear, and underneath it and around its ash-pit, whereas in the Patent No. 83,445 there is no flue-space carried over the arched top of the boiler, and in Patent No. 47,968 there is no flue-space going up the sides of the boiler, though
85 there is a series of tubes extending from the lower flue-space up through the water-space of the boiler. Therefore

I claim as my invention as follows, viz:

The horizontal boiler A, arched at top and provided with a smoke-chamber, D, and fire-
90 place B, and a series of pipes, E, arranged as set forth, in combination with the flue-space F, extending around the sides and rear of the ash-pit and underneath the said boiler and up
95 its sides and rear end and over its arched top, all in manner essentially as set forth.

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Witnesses:

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