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J. VAN BRUNT

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BOILER FURNACE

Filed June 25, 1927

2 Sheets—Sheet 1

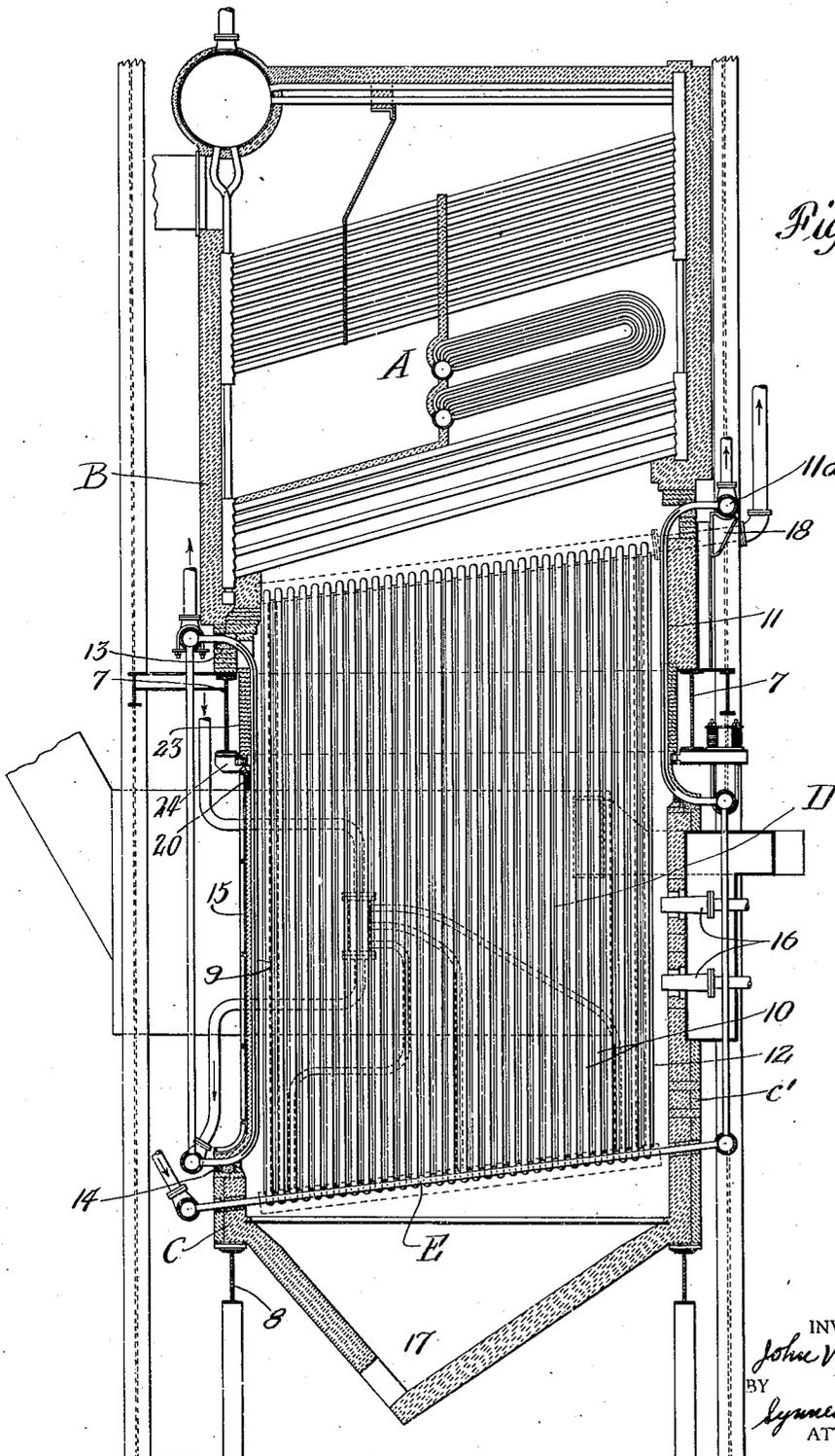


Fig. 1.

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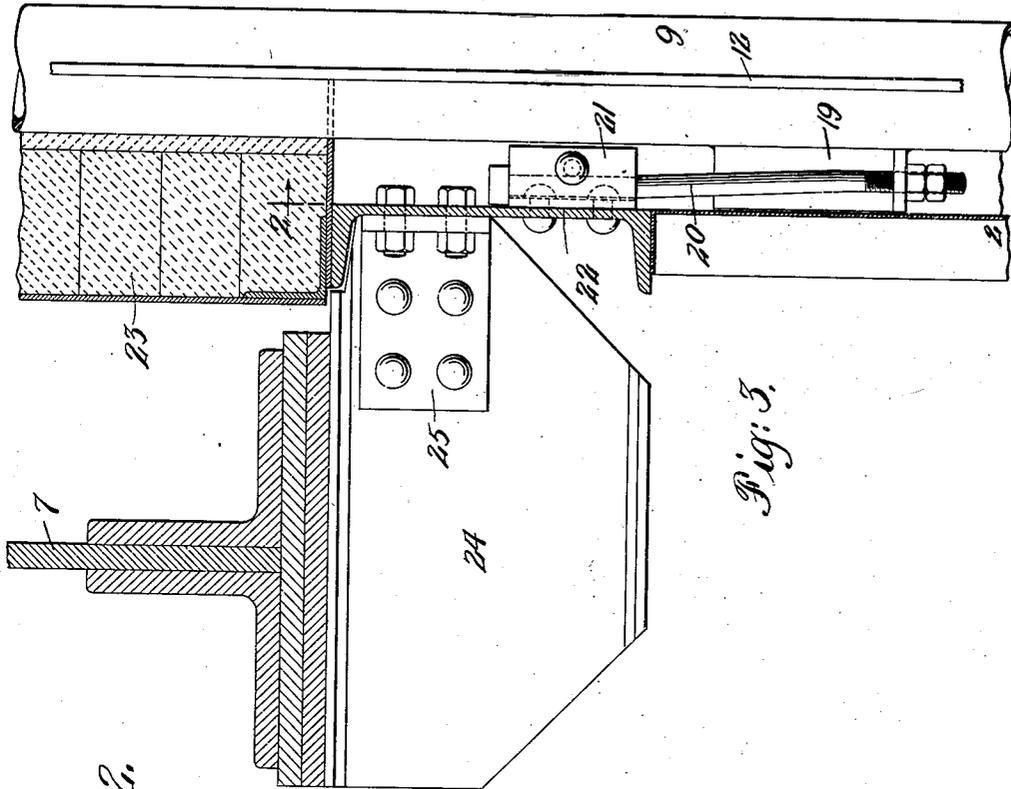
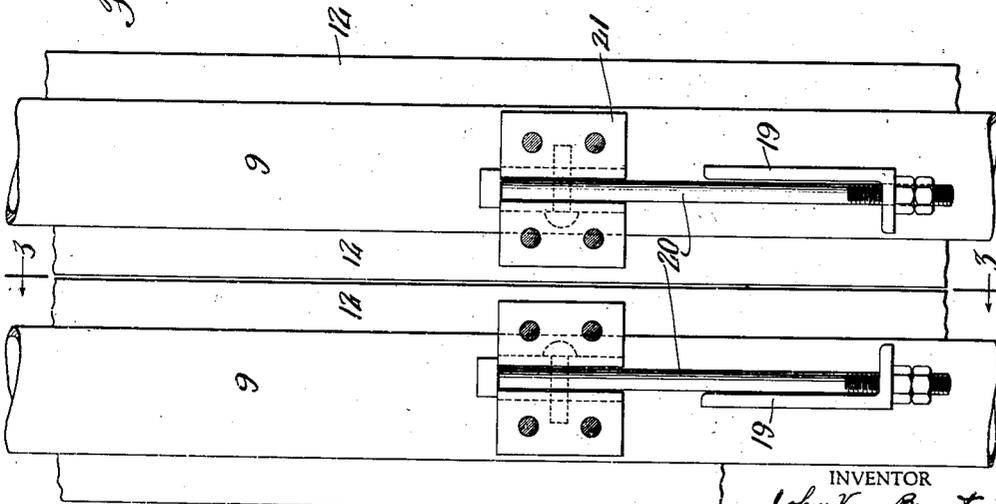


Fig. 5.

Fig. 6.



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# UNITED STATES PATENT OFFICE

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## BOILER FURNACE

Application filed June 25, 1927. Serial No. 201,471.

This invention relates to boiler-furnaces, particularly such as utilize fuel to be burned in space, as, for example, oil and powdered coal.

5 One of the primary objects of the invention is to provide a simple arrangement of and support for various of the parts; and to provide for freedom of expansion and contraction of certain of the parts in such an arrangement.

10 How the foregoing, together with such other objects as may hereinafter appear, or are incident to my invention, are realized, is illustrated in the accompanying drawings, 15 wherein—

Fig. 1 is a vertical section through an installation embodying my improvements, and

20 Figs. 2 and 3 are enlarged fragmentary views illustrating means for supporting certain of the parts.

Referring now to Fig. 1, the reference character A denotes a boiler such, for example, as a horizontal tubular boiler of the cross drum type; the reference character B denotes 25 the setting for such boiler, such setting being carried on structural work 7; the reference character C denotes the bottom of the furnace, said bottom being spaced well below the boiler setting; and the reference character D denotes the structure which bridges the 30 gap between the boiler setting B and the bottom C to complete the combustion space. The bottom C is supported on the structural work 8.

35 The structure D comprises the row of relatively closely spaced upright tubes 9 defining the rear of the combustion chamber of the furnace; the two rows of relatively closely spaced upright tubes 10 defining the sides of 40 the combustion chamber and the row of relatively closely spaced upright tubes 11 defining a portion of the front of the combustion chamber. The tubes of the rows of upright tubes are each provided with longitudinally 45 extending fins 12 at opposite sides, the tubes and fins cooperating to form a substantially continuous metallic wall. The upper and lower ends of the tubes of the rows are bent to extend outwardly at the top through the 50 setting B and outwardly at the bottom

through the bottom portion C. The upper and lower ends of these tubes connect into headers as shown, and these headers are connected with the boiler for circulation purposes. Where the upper ends of the tubes 55 extend outwardly through the setting B, sand joints 13 are provided, and, similarly, sand joints 14 are provided where the lower ends of the tubes extend outwardly. The rows of tubes are suspended from the structural work 60 which carries the setting, as will further appear, this form of support, in conjunction with the sand joints, permitting the tubes to freely expand and contract.

65 It will be seen from the foregoing that, generally considered, the boiler and its setting and the bottom portion of the furnace are independently supported and can be independently erected, and that thereafter the 70 intervening structure may be readily installed. This intervening structure being largely composed of tubes, requires no heavy wall structure, such as would otherwise be required, it being necessary only to sheath 75 the rows of tubes as with a sheathing which can be readily carried, if desired, on the tubes themselves. It will be obvious that where all of the load is carried on a single setting, a very substantial and heavy refractory structure must be provided. This 80 I avoid entirely.

85 If it is desired to provide some radiating surface to secure the ignition and proper combustion of the fuel, the bottom C may be carried up at one side, as indicated at C', and the burner or burners 16 may be disposed to deliver the fuel into the combustion space through such extension C'.

90 If desired, a screen E of relatively widely spaced tubes may be located above the ash pit 17.

95 Referring now to the means for suspending the rows of upright tubes, it will be seen that the header 11' with which the upper ends of the tubes 11 are connected is supported on saddles 18 supported by the structural work 7 as indicated. The tubes 9 have channel-like members 19 secured to their outer face, as by welding, and these 100 members are adapted to receive the lower

ends of the suspension rods 20 carried from the clips 21 which are secured to the channel 22 which carries the curtain wall portion 23. The channel 22 is supported from the structural work 7 by means of brackets 24 and 25, as indicated. The tubes 10 may be supported in a fashion similar to the tubes 9.

I claim:—

In combination, a boiler and its setting, structural work upon which said setting is carried, a refractory furnace bottom below and spaced from said setting, means for supporting said bottom, and a plurality of rows of relatively closely spaced upright tubes adapted to be suspended from said structural work and between said setting and said bottom to form the side wall portions of the space and to cover said structural work, means for so suspending the tubes engaging the outer face of the tubes, and a sheathing for the rows of tubes.

In testimony whereof I have hereunto signed my name.

JOHN VAN BRUNT.

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