

No. 855,212.

PATENTED MAY 28, 1907.

D. VINES.
BOILER FURNACE.
APPLICATION FILED MAR. 8, 1907.

Fig. 1.

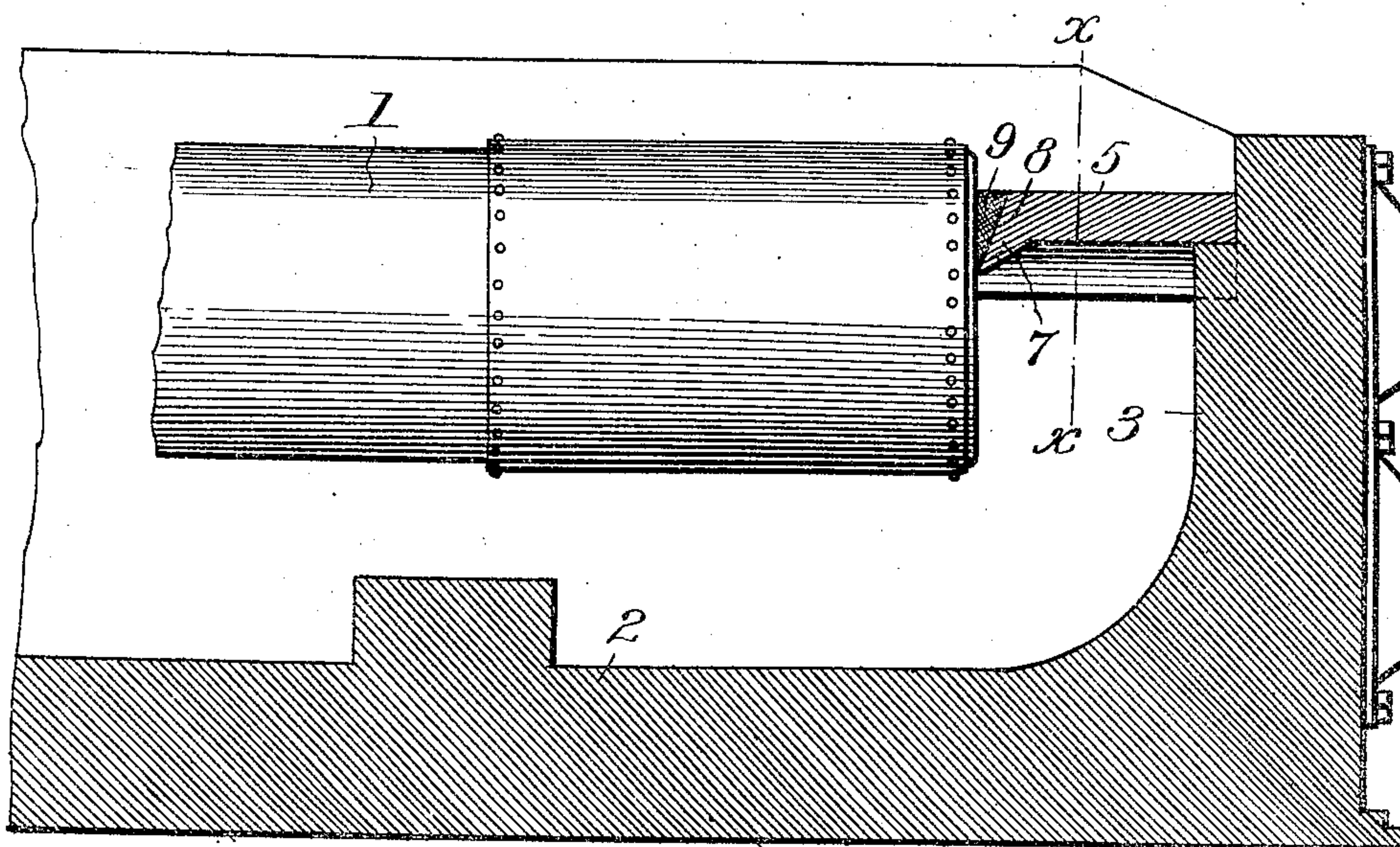


Fig. 2.

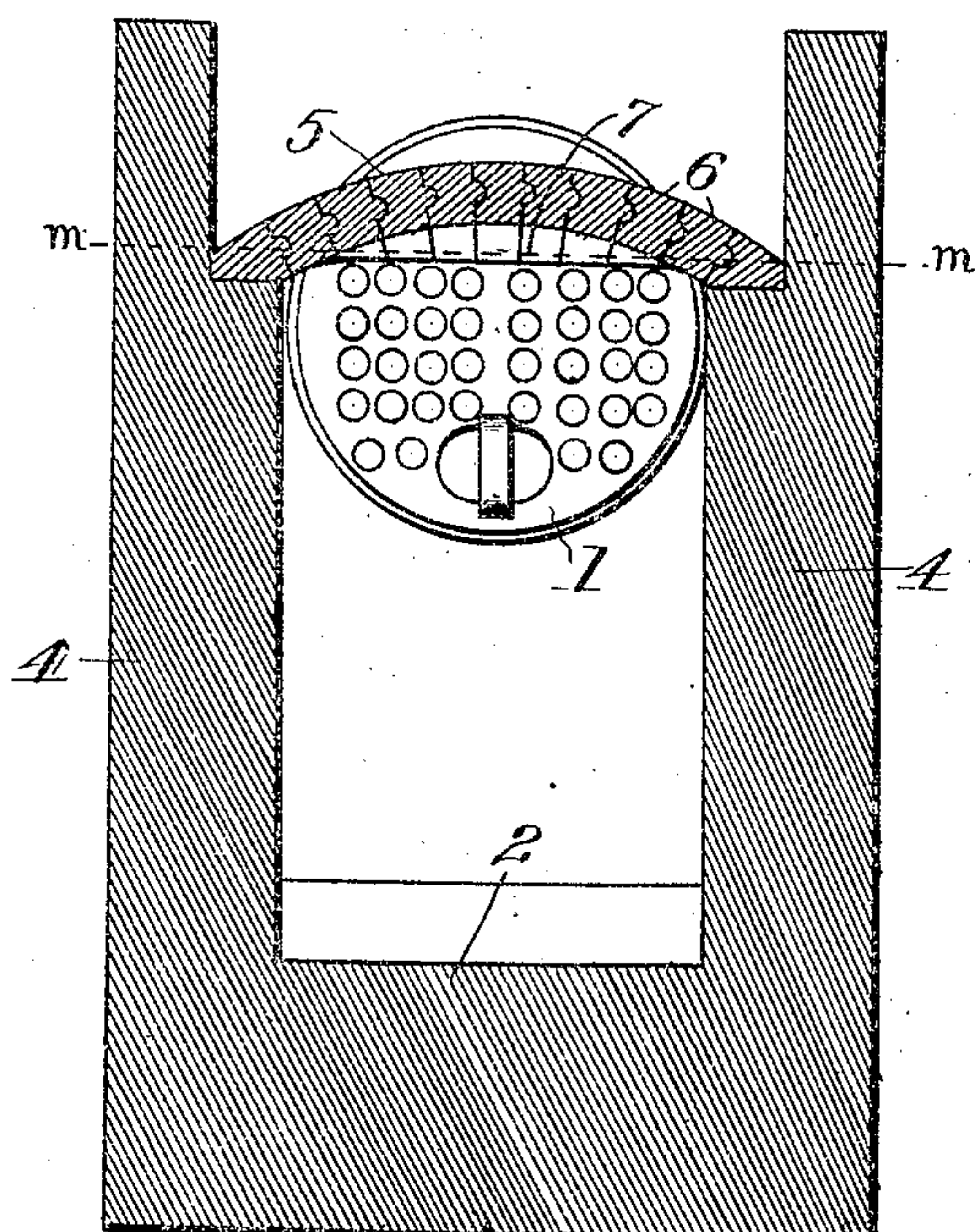


Fig. 3.

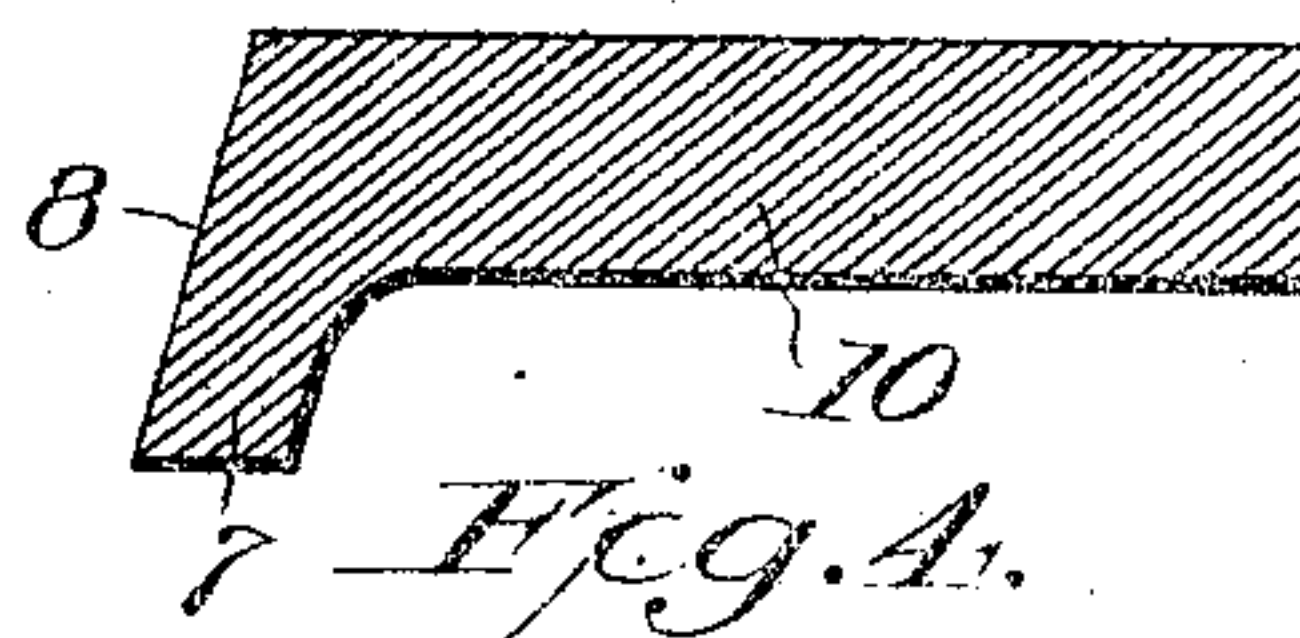
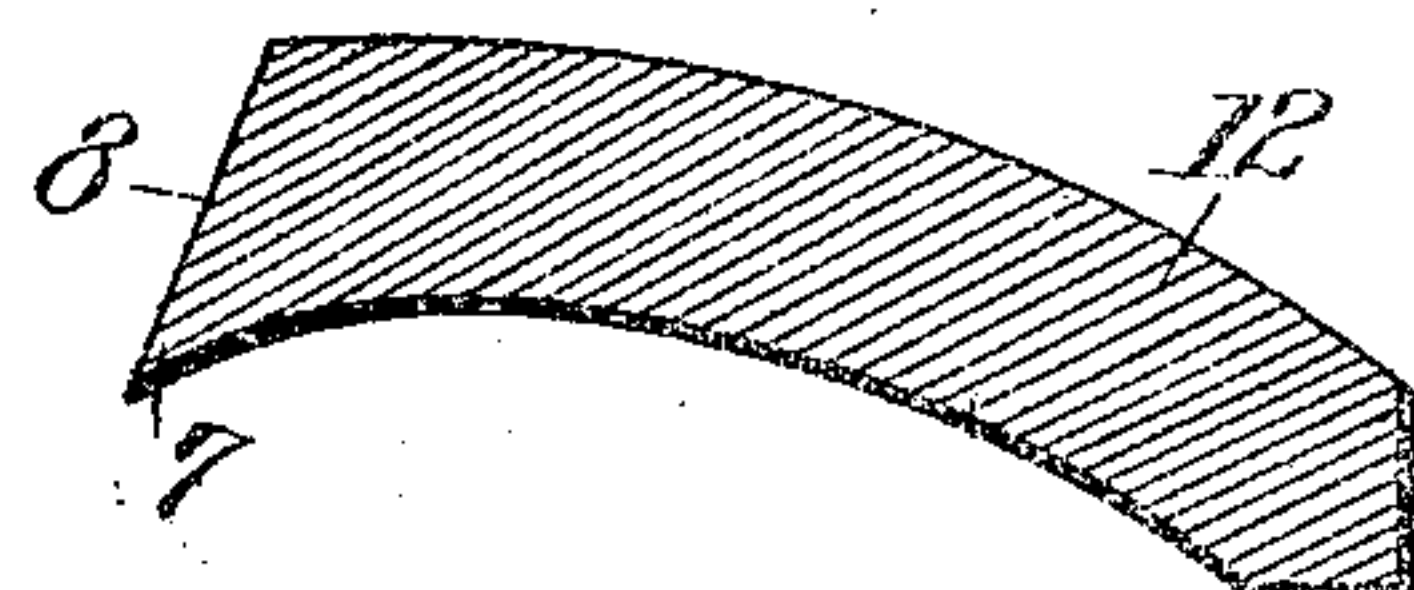


Fig. 4.



Fig. 5.



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BOILER-FURNACE.

No. 855,212.

Specification of Letters Patent.

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Application filed March 8, 1907. Serial No. 361,352.

To all whom it may concern:

Be it known that I, DAVID VINES, a citizen of the United States, residing at Mechanicsville, in the county of Saratoga and State of New York, have invented certain new and useful Improvements in Boiler-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in boiler-furnaces and particularly to the arches over the rear combustion chambers.

Heretofore it has been thought impractical to support the arch simply on the side walls of the furnace for the reason that if the arch were built with sufficient rise it would bring the central portion thereof so high that it would expose the end of the boiler above the water line. Various metallic devices have been employed to support the end of the arch next to the boiler. The defect in these arches is that the metal support burns out and allows them to fall in.

It is the object of the present invention to provide a curved arch of fire brick supported solely upon the side walls of the furnace and so constructed that it may have the required rise and still not expose the end of the boiler above the water line.

A further object of my invention is to provide against the falling out of asbestos or like material filled in between the end of the boiler and the adjacent end of the arch.

The invention consists in the features of construction and combinations of parts hereinafter described and specified in the claims.

In the accompanying drawings, illustrating the preferred embodiment of my invention: Figure 1 is a broken central longitudinal vertical sectional view of a boiler furnace equipped with my arch. Fig. 2 is a cross sectional view on the line $x-x$ of Fig. 1. Figs. 3 and 4 are detailed views of two modified forms of plain bricks for the central portion of the arch, and Fig. 5 is a detailed view of another modified form of brick which is curved down at its rear end.

Referring more particularly to the drawings; 1 is the boiler, 2 the bed, 3 the rear wall and 4 the side walls of the combustion chamber. The arch 5 is composed of a plurality of fire bricks 6. Said bricks may be tongue and grooved as illustrated in Fig. 2 or they may be plain as shown in Figs. 3 to 5 inclu-

sive. Each of the bricks making up the central portion of the arch is thicker at the end adjacent to the boiler as shown at 7, in order to protect said boiler above the water line $m-m$ (see Fig. 2) and still allow sufficient rise to the arch to render it strong and durable. It will be noted that in my arch it is not necessary to support the end thereof next to the boiler by any form of metallic device which might burn out.

The end faces of the bricks adjacent to the boiler are inclined or beveled upwardly and away from the boiler as at 8, and between said faces and said boiler is placed a filling of soft material such as asbestos or the like which allows for expansion and contraction. Heretofore said end faces of said bricks have been made vertical but it has been found that, when so made, the filling material will soon drop out leaving an opening through which the flames may pass up against the boiler above the water line. By making the end faces of the bricks oblique, a V-shaped space or slot is left between said bricks and boiler into which the filling material may be packed or wedged so that it will not fall through.

In Figs. 3 and 4 I have illustrated two modified forms of bricks for building the central portion of the arch.

In Fig. 5 still another style of brick is shown which curves down at the end farthest from the boiler so as to rest upon a straight topped rear wall.

It will be understood that any of the styles of bricks illustrated or any other suitable form may be employed without departing from the spirit or sacrificing the advantages of my invention.

I claim:

1. In a boiler-furnace, the combination, with the boiler and the side walls of the combustion chamber, of a laterally curved arch supported on said side walls, the end of said arch adjacent to the boiler being thicker at the central portion thereof for the purpose specified.

In a boiler-furnace, the combination, with the boiler and the side walls of the combustion chamber, of a laterally curved arch composed of a plurality of bricks and supported on said side walls, the bricks forming the central portion of said arch being thicker at the ends adjacent to the boiler for the purpose specified.

3. In a boiler-furnace, the combination, with the boiler and the side walls of the com-

bustion chamber, of a laterally curved self-sustaining brick arch supported on said side walls, the end of said arch adjacent to the boiler being thicker at the central portion
5 thereof for the purpose specified.

4. In a boiler-furnace, the combination, with the boiler and the walls of the combustion chamber, of an arch having its end adjacent to the boiler beveled upwardly and
10 away from the boiler, forming a V-shaped slot to receive a filling material.

5. In a boiler-furnace, the combination,

with the boiler and the walls of the combustion chamber, of an arch composed of a plurality of bricks, said bricks having their end
15 faces adjacent to the boiler beveled upwardly, and away from the boiler forming a V-shaped slot to receive a filling material.

In testimony whereof, I affix my signature, in presence of two witnesses.

DAVID VINES.

Witnesses:

JAMES R. SMITH,
HOMER KLINSING.