

(No Model.)

F. G. GASCHE.
BOILER SETTING.

No. 488,241.

Patented Dec. 20, 1892.

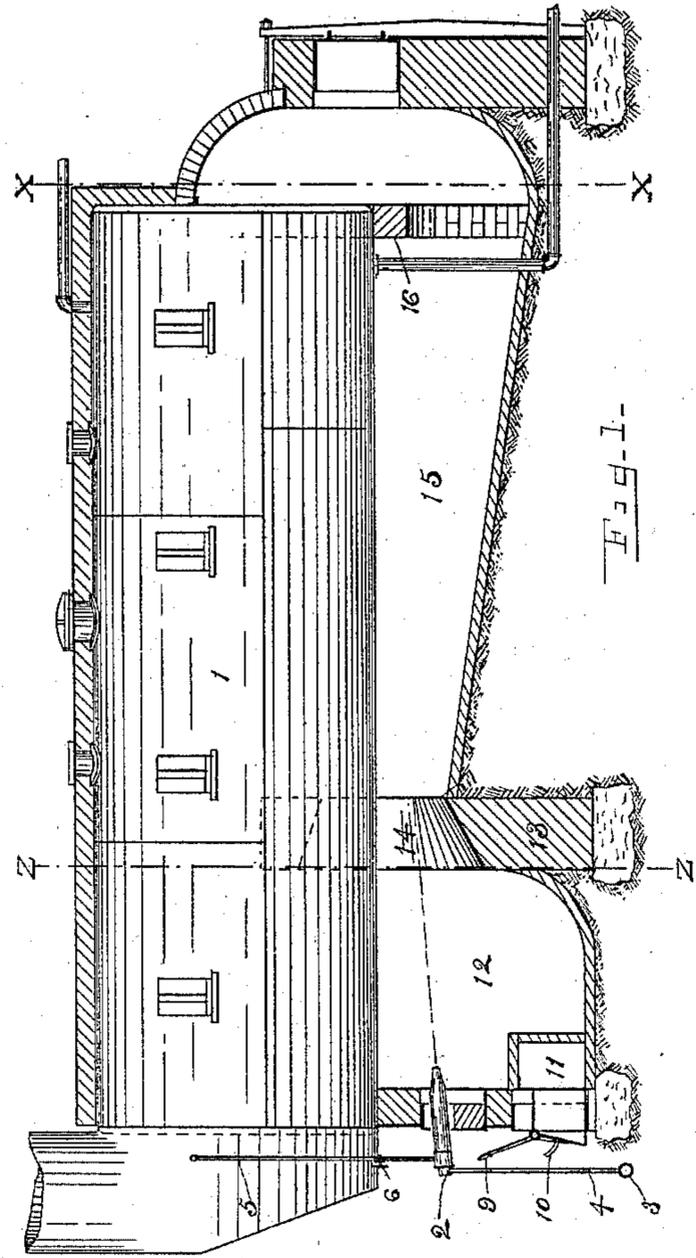


Fig. 1-

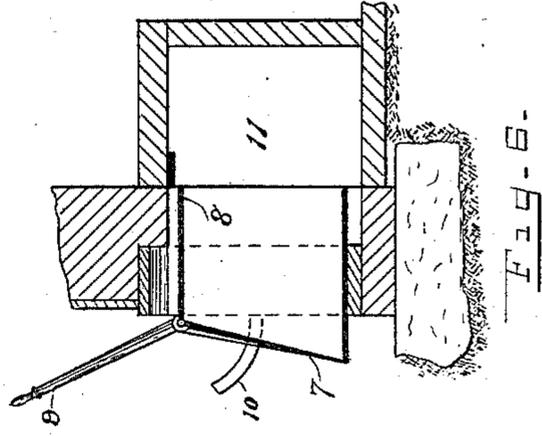


Fig. 6-

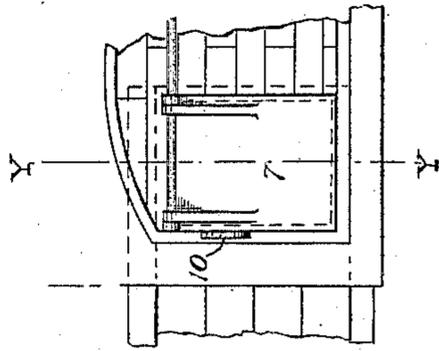


Fig. 5-

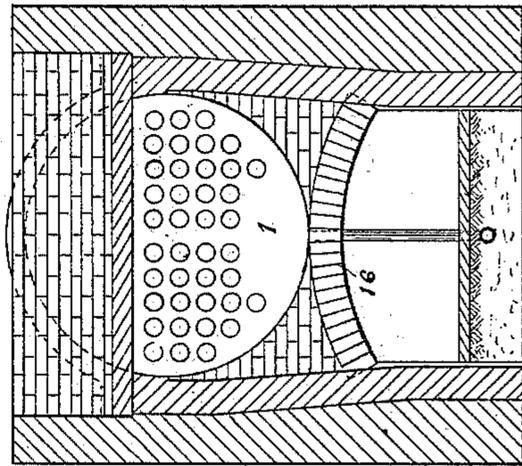


Fig. 4-

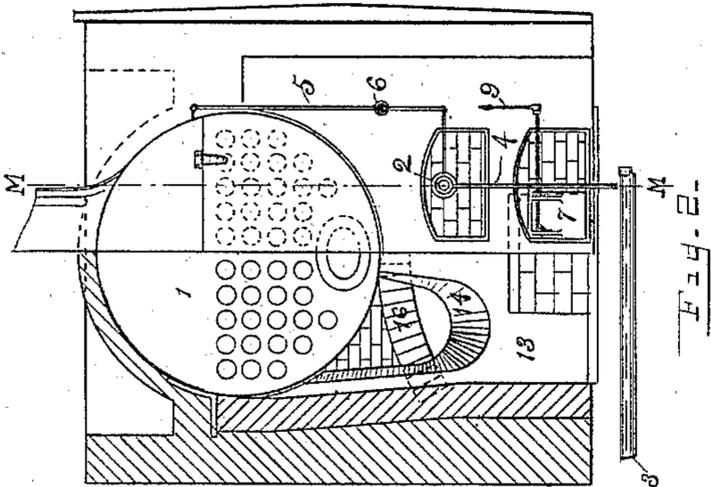


Fig. 2-

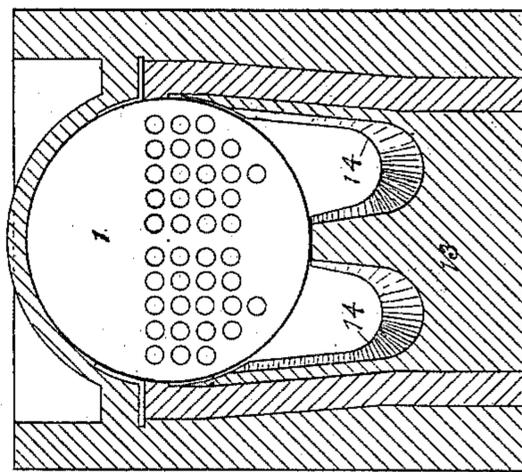


Fig. 3-

Witnesses,

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FERD GUY GASCHE, OF CHICAGO, ILLINOIS.

BOILER-SETTING.

SPECIFICATION forming part of Letters Patent No. 488,241, dated December 20, 1892.

Application filed September 19, 1891. Serial No. 406,274. (No model.)

To all whom it may concern:

Be it known that I, FERD GUY GASCHE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boiler-Settings; 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 settings, which are adapted to burn liquid or oil fuel.

The object of my invention is to provide a boiler setting, which is adapted to produce the highest development of heat, from a given quantity of oil, and in which the said heat, is imparted to the boiler, and utilized in the most efficient manner. I attain these objects by the means set forth in the following specification and claims, reference being had to the accompanying drawings in which:—

Figure 1 is a vertical longitudinal section of my improved boiler setting, taken on the plane indicated by the dotted line M. M. of Fig. 2. Fig. 2, is an end elevation partly in section. Fig. 3, is a transverse section taken on the dotted line Z. Z. of Fig. 1. Fig. 4, is a transverse section taken on the dotted line X. X. of Fig. 1. Fig. 5, is a detached front view of the air admission box, and, Fig. 6, is a section of the same on the dotted line Y. Y. of Fig. 5.

Referring to the drawings, 1, designates the boiler, which as here shown is of the horizontal tubular type, and is supported by brackets upon the side walls of the setting in the usual manner.

2 is a steam jet oil burner, preferably of the "Reid" type, and adapted to give a long round flame. Any number of said burners may be used for which the setting is designed. The said burners are connected to the oil main 3, by means of a small pipe 4, and to the boiler by the steam jet pipe 5, in which is a cock or valve 6, adapted to admit steam to the burner.

7 is the air induction box-cover which is hinged to the top of the air box 8. Said cover is adapted to be adjusted by means of the hand lever 9, and is held in position by frictional contact against the curved spring arm 10, the arrangement being susceptible of ac-

curate adjustment. The air-boxes are inserted through the boiler front and setting at the bottom thereof, and discharge at their inner ends into chambers 11. The top, sides and bottom of said chambers are formed of fire brick, and are adapted to act as screens to protect the air openings from the heat, the ends of said chambers being open for the passage of the air to the burners, and to the mixing or combustion chamber 12. The said mixing chamber is made as large as is possible within practical limits, for the purpose of retarding the flow of the air, and thus to provide time for the thorough admixture of the air and oil vapors, and which is essential for complete and perfect combustion. The bridge wall 13, is provided with conical openings 14, which are approximately U-shaped and which correspond in numbers with the number of burners used, the axis of said conical openings being coincident with the center line of the burners. The flame from the burners in passing through the mixing chamber into the said conical openings exerts or produces an injector action upon the surrounding air, causing it to coalesce more intimately with the oil vapors, and thus prevent an undue amount or excess of air from passing through said openings.

15 is a chamber which extends from the rear of the bridge wall, to the top of the tubes or flues, at the rear end of the boiler, the said chamber having a gradual increase in size for the greater part of its length, the ratio of increase being sufficient to provide for the free expansion of the gases, due to the higher temperature which they assume, as they approach to complete combustion. The expanding form of said chamber is a valuable feature of my invention, and gives important results, as by expansion the heated gases have a reduced velocity, and consequently more time in which to impart their heat to the boiler. There is also a minimum of frictional resistance against the walls of the setting thereby.

16 is an arch, which extends across the expanding chamber, seen clearly in Fig. 4, adapted to support the brick work which incloses the rear end of the boiler, and by reason of which all of the gases or products of combustion are compelled to pass under the said arch, for which there is ample room provided. The

arch is further adapted to protect the edge of the tube sheet from the intense heat, and is a desirable feature of the setting.

The boiler and setting are provided with the usual fittings and appliances, and which need no description, the setting being made as nearly air tight as is possible, so that all of the air must enter through the air boxes at the front.

It will be seen from the foregoing description, that I employ a large mixing or combustion chamber, in which the air and oil vapors have time to unite, and from which the flames from the burners are projected across said chamber and pass through conical openings in the bridge wall, into the free space of the expanding chamber, and that all of the passages, are of ample dimensions, so that the products of combustion are unimpeded in their progress to the chimney.

Having described my invention, I claim:—

1. In a boiler setting for liquid or oil fuel the combination of a combustion and mixing chamber, an injector burner adapted to discharge across said mixing chamber, a conical outlet in line with the axis of said burner, and a combustion chamber communicating with the said conical outlet and gradually increasing in size toward its rear end, the size of the conical outlet between the combustion and mixing chambers being sufficient for the passage of the column of flame from the burner and yet to prevent material accession of air

to the combustion chamber, as and for the purpose specified.

2. In a boiler setting for liquid or oil fuel the combination of a combustion and mixing chamber provided with air induction chambers, an injector burner adapted to discharge across said mixing chamber, a conical outlet in line with the axis of said burner, and a combustion chamber communicating with said conical outlet, said combustion chamber gradually increasing in size toward its rear end, and an arch between the sides of said combustion chamber at the rear end of the boiler, as and for the purpose specified.

3. In a boiler setting for liquid or oil fuel the combination of a combustion and mixing chamber—air inlets for said mixing chamber provided with adjustable covers, an injector burner adapted to discharge across said mixing chamber, a conical outlet in line with the axis of said burner, and a combustion chamber communicating with said conical outlet, and gradually increasing in size toward its rear end, and an arch across said combustion chamber at the rear end of the boiler, as and for the purpose specified.

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

FERD GUY GASCHÉ.

Witnesses:

DOC BALLINGEE,
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