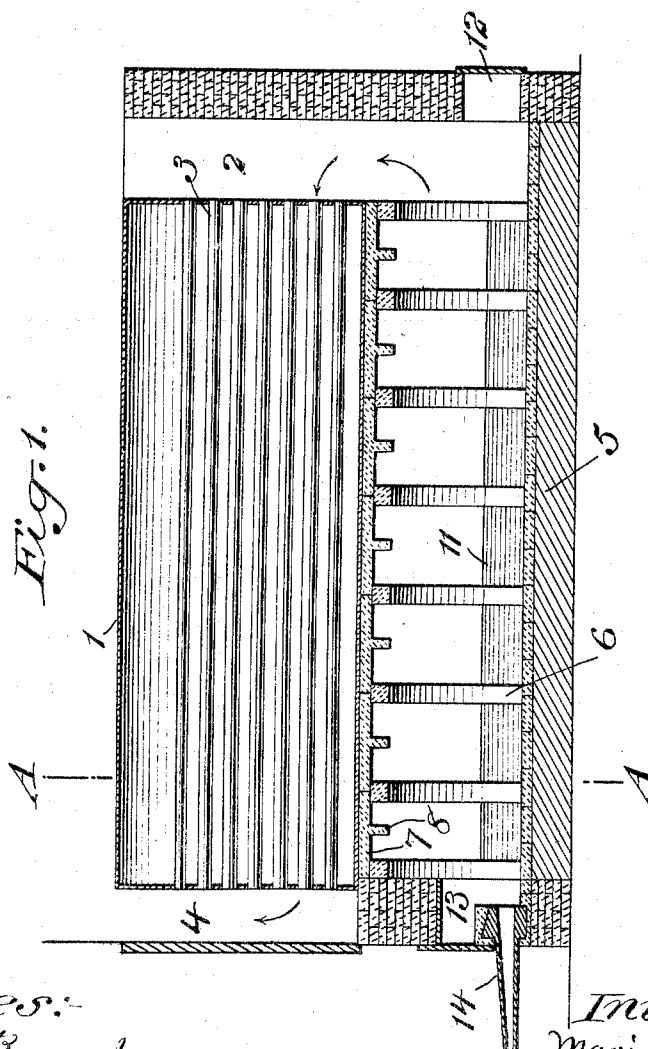
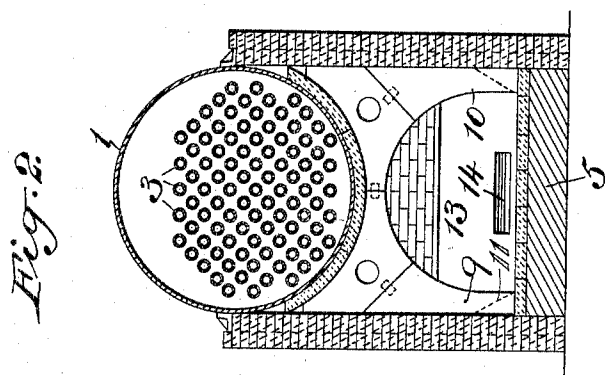


No. 788,722.

PATENTED FEB. 28, 1905.

M. F. COSSIO.
BOILER FURNACE.
APPLICATION FILED JULY 3, 1903.



Witnesses:
George Barry Jr.
Harry Thieme

Inventor:
Mariano F. Cossio
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his Attorneys

UNITED STATES PATENT OFFICE.

MARIANO F. COSSIO, OF NEW YORK, N. Y.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 783,722, dated February 28, 1905.

Application filed July 3, 1903. Serial No. 164,103.

To all whom it may concern:

Be it known that I, MARIANO F. COSSIO, a citizen of the Republic of Cuba, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Boiler-Furnace, of which the following is a specification.

My invention relates to a boiler-furnace, the object being to provide a structure particularly adapted to use in connection with the burning of pulverized fuel fed into the furnace from a suitable pulverizer.

In utilizing fuel in the form of flour and burning it while suspended in the air and gases within the furnace it has been found that the intense heat produced at such points as were in the direct path of the blast rapidly consumed the wall of the boiler or the brickwork or jacket intended to protect it, so as to require renewal at short intervals, thereby materially adding to the general expense in using the fuel. My present invention is directed to the overcoming of this objectionable feature in a simple and inexpensive manner.

In the accompanying drawings, Figure 1 represents in vertical longitudinal section a practical embodiment of my invention, and Fig. 2 is a view of the same in transverse section in the plane of the line A A of Fig. 1.

The boiler is denoted by 1. It is here shown as of the fire-tube type, a space 2 being provided at its rear end for the products of combustion to enter the flues 3 of the boiler and a space 4 being provided at the front end for the products of combustion to escape upwardly into a suitable uptake.

The base of the furnace is denoted by 5, and on this base there are set a line of supporting-brackets, (denoted by 6,) in the present instance eight of these brackets, the upper part of said brackets being curved and forming a support for the boiler-protecting bricks 7, each of which is intended to rest upon two adjacent brackets 6, the faces being curved to conform to the curve of the boiler 1. These bricks 7 are provided with fins 8, projecting from their backs, preferably at points about midway between two consecutive brackets 6 and extending down to or slightly below the under faces of the crowns of the brackets 6. The bracket-

ets 6 terminate at the opposite sides of the inner wall of the furnace in legs 9 and 10, (see Fig. 2,) and intermediate of each two consecutive legs on opposite sides of the furnace and at the base thereof there are slanting plates 11, intended to direct the ash or unconsumed fuel, such as there may be, downwardly into the space on the base of the furnace intermediate of the inner edges of the legs 9 and 10, so that it may be readily removed by an ash-remover inserted through the rear door 12 of the furnace.

There is formed at the front end of the furnace a chamber 13, the rear end of which is in open communication with the interior of the furnace and the outer end of which is closed, save only where the fuel-discharging nozzle 14 enters, as clearly shown in Fig. 14. The fuel-discharging nozzle 14 terminates within the chamber 13, so that the ignited fuel at the inner end of the nozzle 14 will have an opportunity to spread into a flame of considerable diameter before it enters the fire-chamber of the furnace beneath the boiler 1. The upper stratum of the flame which enters the furnace will be baffled at frequent intervals along the bottom of the boiler by the crowns of the supporting-brackets 6 and also by the fins 8 on the backs of the supporting-bricks 7, or, to be more specific, the upper part of the flame entering the furnace will heat the bottom of the boiler between the first two consecutive brackets and by its contact with the wall become deadened, while a portion of the flame below it will proceed with full force and heating effect to the space between the next two consecutive brackets, and so on throughout the line, such portions of the flame as have not already been deadened by contact with the upper wall of the fire-chamber of the furnace finally escaping into the space 2 at the rear and the flame or heated products of combustion finally finding their way through the tubes 3 to the space 4 at the front and thence into the uptake. This provision for interrupting the flame in layers as it progresses throughout the length of the chamber, leaving a lower layer free to pass on and do its effective work, is an extremely advantageous feature and serves to so dis-

tribute the heat from the flame throughout the entire crown-space of the chamber that the intensity of heat is no more than may readily be endured by ordinary fire-brick
5 without liability of their being unduly consumed, and at the same time the units of heat are utilized with great economy and efficiency.

What I claim is—

1. The combination with a fire-chamber,
10 boiler and boiler-protecting bricks, of a series of brackets located within the fire-chamber and forming a support for the boiler-protecting bricks, fins extending from the crown of the fire-chamber downwardly into the space
15 intermediate of the crowns of the supporting-brackets and a nozzle for discharging pulverized fuel into the fire-chamber.

2. The combination with a fire-chamber, a boiler, boiler-protecting bricks and a series

of brick-supporting brackets located along
the interior of the fire-chamber, of a fuel-re-
ceiving chamber located at the front of the
fire-chamber, a fuel-discharging nozzle enter-
ing said chamber, a fire-space at the rear of
the fire-chamber in communication with the
25 rear end of the boiler and the fire-chamber, a space at the front end of the boiler and fins depending from the bricks into the crown of the fire-chamber intermediate of the boiler-supporting brackets. 30

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 12th day of June, 1903.

MARIANO F. COSSIO.

Witnesses:

FREDK. HAYNES,
C. S. SUNDGREN.