J. DICK.

BOILER FURNACE.

APPLICATION FILED JAN. 27, 1913.

1,137,465. Patented Apr. 27, 1915.

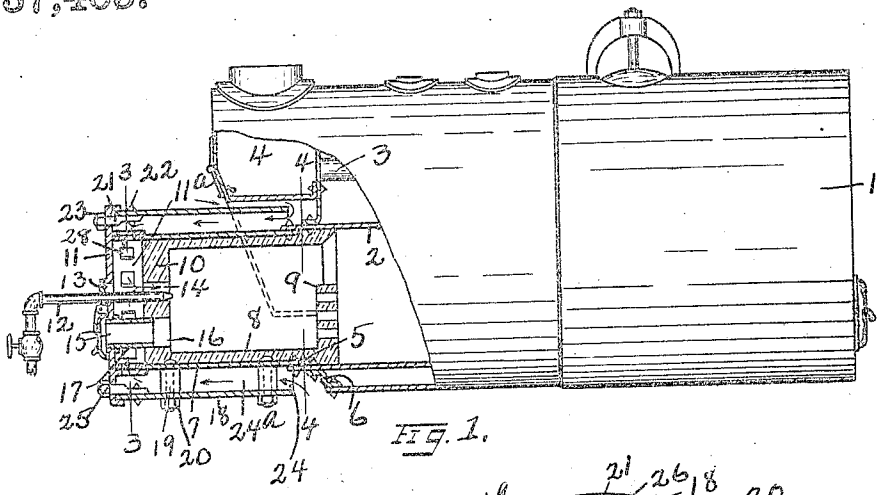


Fig. 1.

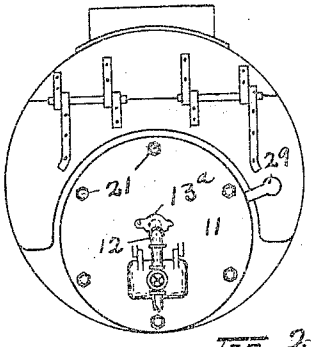


Fig. 2.

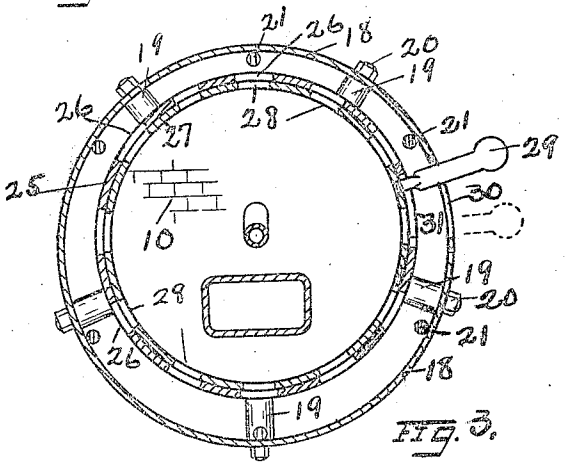


Fig. 3.

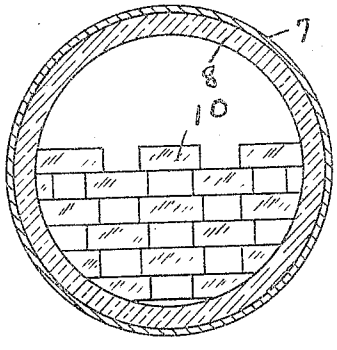


Fig. 4.

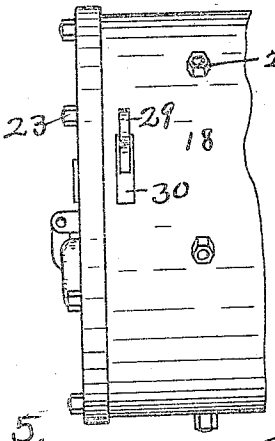


Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

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BOILER-FURNACE.

1,137,465. Specification of Letters Patent. Patented Apr. 27, 1915.

Application filed January 27, 1913. Serial No. 744,337.

To all whom it may concern:

Be it known that I, JOHN DICK, a citizen of the United States, residing at Meadville, in the county of Crawford and State of Pennsylvania, have invented new and useful Improvements in Boiler-Furnaces, of which the following is a specification.

This invention relates to boiler furnaces and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

In burning comminuted fuels such as oil, powdered coal and also in burning gas it is desirable to have the furnace removed from the surfaces in contact with the water in the boiler because such surfaces are of such low temperature as to interfere with the proper burning of such fuels.

One of the objects of the present invention is to so form a boiler furnace as to adapt it for the use of comminuted fuels.

Other objects of the invention will appear from the specification and claims.

The invention is illustrated in the accompanying drawings as follows:—

Figure 1 is a side elevation of a boiler, partly in section. Fig. 2 is a front view of the boiler. Fig. 3 is a section on the line 3—3 in Fig. 1. Fig. 4 is a section on the line 4—4 in Fig. 1. Fig. 5 is an enlarged side elevation of the front end of the furnace.

1 marks the boiler, 2 the enlarged flue ordinarily used in what is known as the Scotch type boiler, 3 the return flue and 4 the smoke box. These are of the usual construction of this type of boiler. As ordinarily formed these boilers have the furnace arranged directly in the enlarging flue 2. In the present invention the flue 2 extends at 5 slightly beyond the head 6 of the boiler, the head being flanged and secured to the flue by rivets or any suitable means. A furnace shell 7 is secured to the front end of the flue 2 and projects forwardly from the front end of the boiler. This shell is of cylindrical shape and forms in effect a forward extension of the flue 2. It has a cylindrical lining 8 of fire brick or suitable material and the bridge wall 9 is formed at the inner end of the flue 2. A wall 10 closes the front end of the shell 7 and forms the front wall of the furnace. A metal furnace head 11 is arranged in front of the wall 10 leaving a space 11^a between the wall 10 and the head 11. The oil supply pipe 12 extends through the openings 13 and 14 in the head 11 and wall 10 respectively. The opening 14 being of sufficient size to supply the furnace with air and the opening 13 being provided with a swinging plate 13^a to permit inspection of the furnace. An opening 15 is also provided for cleaning the furnace or burning waste material. This opening 15 is formed with a shell 17 extending across the air space 11^a and into the opening 16 in the wall 10.

A draft shell 18 is arranged around the shell 7 and spaced therefrom by spacing blocks 19 and secured to the shell 7 by means of bolts 20. The head 11 is secured to the shell 18 by means of bolts 21, these bolts being secured to the shell 18 by rivets 22 and extending through the head. They have the nuts 23 for drawing the head 11 into engagement with the end of the shell 18. The head 11 has an inwardly extending flange 25 which incloses the space 11^a. This flange has the radial openings 26. A ring 27 is arranged within the flange 25. This ring has the radial openings 28 which are adapted to be thrown into and out of register with the openings 26 and in this way to regulate the draft opening to the furnace. An operating handle 29 extends through the slot 30 in the shell 18, slot 31 in the flange 25, into the ring 27. By operating the handle it will be readily seen that the ring 27 may be thrown to any position desired.

The cylindrical construction of the furnace and its method of attachment to the boiler makes it self sustaining, or in other words, the ordinary supports for the boiler carry the furnace. The air enters at 24 and passes through the space 24^a, then by way of the openings 26 and 28 to the space 11^a, and thence by the opening 14 to the furnace. The furnace is entirely inclosed with brick surfaces which become heated to above the ignition point of the fuel, so that there is no tendency to form coke so as to seriously interfere with the operation of the furnace. On the other hand, a complete and perfect combustion may be secured. The heated bridge wall assures the ignition of practically all the gases before they reach the surfaces of the flue cooled by the water of the boiler.

What I claim as new is:—

1. In a boiler furnace, the combination of

a boiler; a cylindrical furnace shell extending from said boiler; a draft shell surrounding the furnace shell and exposed to the outer air and adapted to convey air from the boiler end of said furnace to the front end of said furnace shell; means for conveying the air from the draft shell to the furnace shell at the front end of the furnace; and a cylindrical regulator arranged within said draft shell and at the front of the furnace to control the passage of air from the draft shell to the furnace.

2. In a boiler furnace, the combination with a boiler of a cylindrical furnace shell secured to the front of the boiler; a draft shell surrounding the furnace shell and adapted to convey air from the boiler end of the furnace to the front end of the furnace; a furnace head having an inwardly extending cylindrical flange having draft openings therein; and a regulating ring arranged on the flange, the ring having openings adapted to be brought into and out of register with openings in the flange to regulate the draft.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN DICK.

Witnesses:
F. D. WOODWORTH,
E. P. CULLUM.