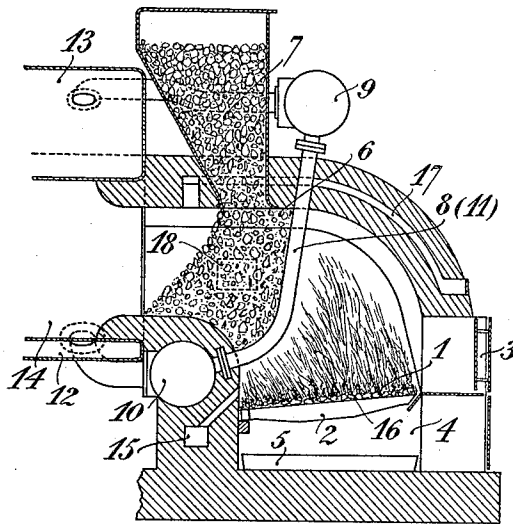


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APPARATUS FOR CONSUMING SMOKE IN BOILER FURNACES.
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1,029,952.

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UNITED STATES PATENT OFFICE.

VALDEMAR GUSTAV SMITH, OF COPENHAGEN, DENMARK.

APPARATUS FOR CONSUMING SMOKE IN BOILER-FURNACES.

1,029,952.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed April 15, 1911. Serial No. 621,230.

To all whom it may concern:

Be it known that I, VALDEMAR GUSTAV SMITH, of No. 22 Rosenvaengets Allé, Copenhagen, in the Kingdom of Denmark, dairy inspector, have invented certain new and useful Improvements in Apparatus for Consuming Smoke 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The subject of the present invention is a smoke-consuming boiler furnace by which is arranged—in front of a self-feeding coke-furnace or furnace for burning fuel with small smoke capacity—a furnace for burning bituminous fuel such as coal.

A special feature of the aforesaid furnace is its arrangement in front of the boiler in such a manner as to render it easily applicable to already existing boilers. The fire bars of the coke or secondary furnace are arranged at a certain distance from the coal spread on the principal furnace grate, for the purpose of the secondary air supply; the coke furnace grate which is exposed to the fire on both sides being constructed as a water tube grate.

A smoke consuming boiler furnace of this kind is illustrated in the drawing in one form by way of example.

1, is the coal furnace with grate 2, charging door 3 and ash pit 4, through which the moistened air of combustion is conveyed, the moistening of which for example may be effected by vaporization of water (for instance through the medium of the water tank 5).

6 is the coke furnace with feed hopper 7 and grate 8, which is formed for example by the pipes which are connected above and below with the collecting vessels 9 and 10. The lower collecting vessel or water distributor 10 is connected with the lower water space 12 of the boiler and the upper collecting vessel or steam collector 9 with its steam chamber 13, so that a continuous circulation can take place through the grate tubes 11.

The furnace 6 opens into the principal draft flue 14 of the boiler. 55

The introduction of the secondary air is effected through the passage 15 that opens at a suitable place into the free space 16 situated between the two fire places 1 and 6, a further quantity of secondary air being introduced if required through suitable passages 17. The quantities of primary and secondary air introduced are regulated by any suitable means. 60

18 is an inspection and cleaning opening through which the state of incandescence of the coke can be observed and the slag, etc., removed. 65

The grate 2 illustrated in the drawing is arranged substantially horizontal and the grate 8 substantially vertical. The relative positions of the two grates may however be different, if necessary the grates may be arranged parallel to one another. 70

As a matter of course any other smokeless fuel can be used in place of coke. 75

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed I declare that what I claim is: 80

In combination with a boiler having a draft flue, of a furnace having a main combustion passage leading to such flue and provided with a vertical and a horizontal portion, a substantially horizontal grate disposed in said vertical portion of said passage, a substantially vertical grate disposed near the horizontal portion and in advance of said first named grate with respect to the direction of draft, said furnace having a wall portion supporting a part of the fuel in said second grate, a hopper for supplying fuel to said second grate, an opening for supplying fuel to said first grate, a main draft opening discharging to said first grate, and a second draft opening discharging between said grates, substantially as described. 85

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses. 100

VALDEMAR GUSTAV SMITH.

Witnesses:

P. HOFMAN-BAUG,
ERNEST BOUTARD.