G. DUNSTER.

STEAM BOILER.

APPLICATION FILED FEB. 10, 1915.

1,151,348. Patented Aug. 24, 1915.

Fig. 1.

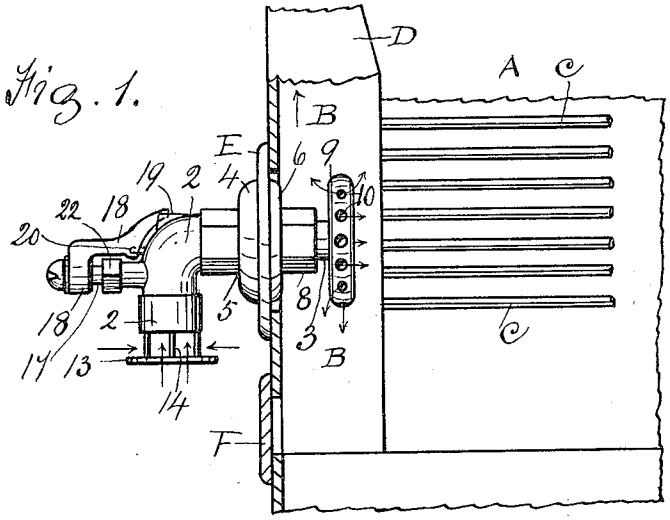


Fig. 2.

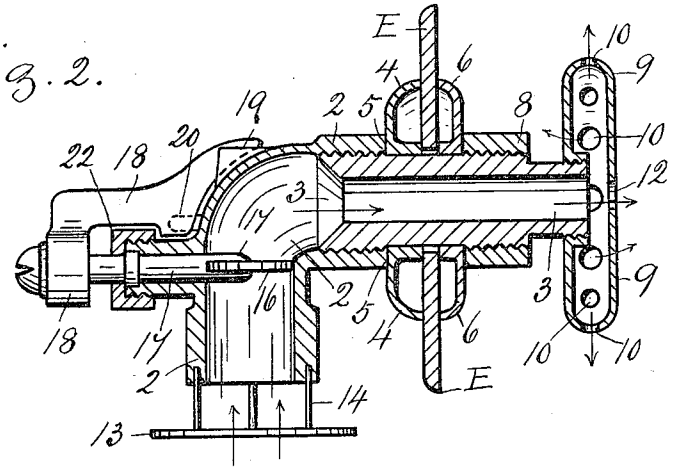
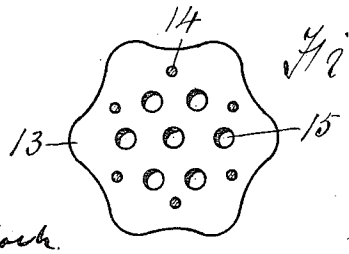


Fig. 3.



Witnesses.

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STEAM-BOILER.

1,151,348. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed February 10, 1915. Serial No. 7,263.

To all whom it may concern:

Be it known that I, GEORGE DUNSTER, a subject of the King of Great Britain, and resident of Hamilton, in the county of Wentworth and Province of Ontario, Canada, have invented new and useful Improvements in Steam-Boilers, of which the following is a specification.

My invention relates to improvements in steam boilers and consists of mechanism attached to the door of the flue-box of the boiler and immediately opposite to the smoke tubes therein, and arranged to admit and circulate more or less air in said flue-box.

The objects of my invention are, first, to provide means whereby more or less air may be drawn into the flue-box of a boiler, and circulated therein, in order to cause greater combustion and thereby assist the boiler in consuming the air gases and the smoke therein, thereby economizing the consumption of fuel, second, to provide means for retaining and maintaining a slow fire, when the same is packed with fuel, or otherwise, and when desired, and also afford facilities for brightening the fire up in order to create more heat in the boiler.

I attain these objects by the device illustrated in the accompanying drawing, in which:—

Figure 1 is an elevation of my invention secured to the door of a flue-box, or combustion chamber, of a boiler, which is provided with common longitudinal smoke tubes communicating with said flue-box. Fig. 2 is an enlarged sectional elevation of the device on a boiler door. Fig. 3 is an enlarged plan of the lower perforated air plate.

Similar characters of reference refer to similar parts throughout the several views.

In the drawing, A, is a portion of a common steam boiler, B, is the flue-box and combustion chamber, C, are a few of the longitudinal smoke tubes of the boiler communicating with said flue box. D, is the smoke discharge exit. E, is the door of the boiler leading into the flue box, and above the door F, of the fire box of the boiler, all the aforesaid indicated parts are not new.

My invention consists, in parts, of an elbow valve casing 2, provided with a horizontal pipe extension 3, screwed into the horizontal end part of the casing and extending through the door of the flue-box and a distance therein.

4, is a nickeled large and ornamental washer, which fits on the extension 3, and against the shoulder 5, of the valve casing, and close to the outer side of the door E. The inner side of the door has a washer 6, on the pipe 3, and a nut 8 is screwed on said pipe to fasten and to retain the shoulder 5 of the casing to the washer 4, and consequently to the door E. The end part of the pipe 3, is provided with a hollow air distributer 9, screwed thereon, and rigid therewith. The air distributer 9, has a number of holes, or openings 10, through the perimeter thereof, and also an opening 12, in the end thereof, of smaller diameter than the opening through the pipe 3, in order that the air may come through the opening 12, with greater force, which is caused by suction. A force of air also passes out from the valve casing through the holes 10, in perfect radiation, circulation and combustion through and with the gases and smoke in the flue box B. The opposite and lower end of the valve casing 2 has a perforated horizontal plate 13, suspended therefrom, by means of small vertical rods 14. Air from the boiler room passes through the perforations 15, in said plate, thence through the opening of the valve casing, the valve and the pipe 3, by suction from the flue-box.

16, is a valve, secured to the valve end of the horizontal stem 17, the opposite and outer end part of said stem is rigidly secured to the lower hub part of the manipulating handle 18, which when rotated in one direction, rotates the stem 17, together with the valve 16, to an open position, the valve 16 is shown closed. The forward end of the handle 18, is in contact with the stop 19, on the upper part of the valve casing, and said casing is provided with a suitable stop 20 thereon, that the handle 18, may contact therewith, when the valve is open. The stem 17, is held in horizontal position by the nut 22, and fits tightly and snugly in the opening of the valve casing, to allow the valve to be adjusted to an open or closed position in the casing, or to a partially open position. The manner of travel of the air to, and through the valve casing, and out from the end of the pipe 3, and through the openings in the air distributer 9 are indicated by arrows.

In experimenting with the device herein set forth it has demonstrated that the suction through the holes 15 of the plate 13, and valve is very pronounced, and the distribution of air and the oxygen therein, mingling therewith and with the heat, gases and smoke in the flue-box, tends to retain and detain the heat in the boiler and consequently economizes the consumption of fuel.

By the fact of the perforated plate 13, being a distance from the inlet of the valve, together with the six or more rods 14, prevent any pieces of foreign matter, for instance pieces of paper, from entering the valve by the suction thereof, thereby interfering with the sensitive parts, also said plate contributes to the thorough distribution and the force of the air passing through the valve.

What I claim as my invention and desire to secure by Letters Patent, is:—

1. In an air feeding device for boiler furnaces, in combination with a flue-box door, of an air valve casing secured to the outer side of the door and extending into said box, a perforated plate secured to the outer and air entrance end of the casing and a distance therefrom, a hollow air distributer having a central air opening and perforated perimeter secured to the opposite end part of the casing in said flue-box, said air opening being in alinement with the horizontal portion of said casing.

2. In an air feeding device for boiler furnaces, in combination with a flue-box door having an opening therethrough, of an air valve casing secured to the outer side of the door, and extending through said opening to a distance into the flue-box, a hollow air distributer, having a central opening, secured to the end part of the casing in the flue-box, said opening being opposite to and in alinement with said casing, the perimeter of said distributer having a plurality of holes therethrough, an air valve in the casing, and means extending from the valve to the outer part of the casing to regulate the air passing therethrough and through said distributer.

3. In an air feeding device for boiler furnaces, in combination with a flue-box door, of an air valve casing, an ornamental washer thereon, both secured to the outer side of said door, and said casing extending into the flue-box, a hollow air distributer, having a central opening and a perforated perimeter secured to the end part of the casing in said flue-box, a perforated plate, means secured to said plate and to the opposite air inlet end of said casing, to support said plate, a distance from the casing, and to allow air to enter the casing between said means, a valve in the casing, and means on said valve extending on the outer side of the casing, adapted to allow said valve to be opened and closed.

GEORGE DUNSTER.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."