

(No Model.)

E. J. VRAALSTAD.
STRAW BURNER.

No. 533,511.

Patented Feb. 5, 1895.

Fig. 1.

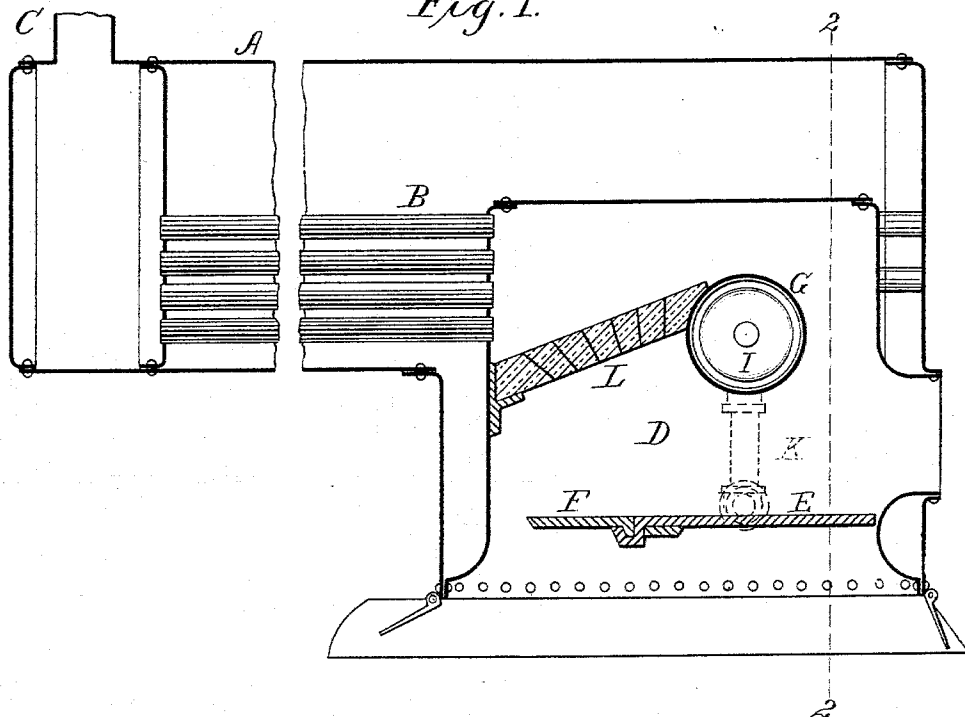
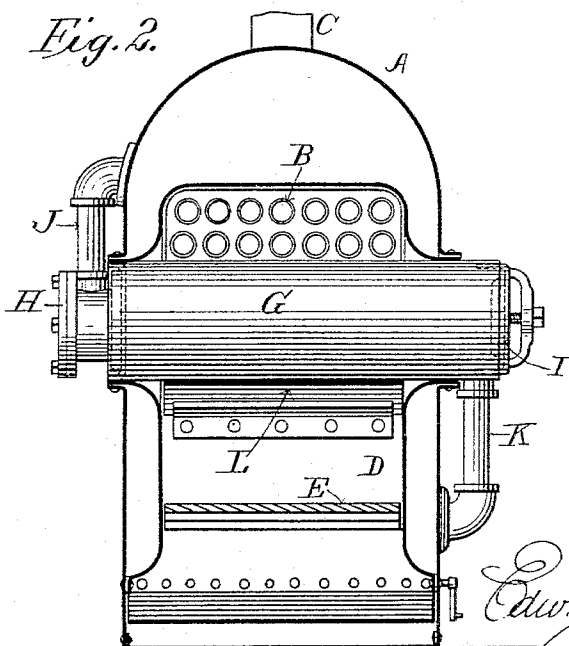


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD J. VRAALSTAD, OF HILLSBOROUGH, NORTH DAKOTA.

STRAW-BURNER.

SPECIFICATION forming part of Letters Patent No. 533,511, dated February 5, 1895.

Application filed November 28, 1894. Serial No. 530,272. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. VRAALSTAD, a citizen of the United States, residing at Hillsborough, in the county of Traill and State of North Dakota, have invented certain new and useful Improvements in Straw-Burners, of which the following is a specification.

My invention relates to straw burning furnaces, and consists in a novel construction of the same, as hereinafter set forth and claimed.

In the use of straw as a fuel, small charred or partially consumed pieces are carried up by the draft, and by lodging within the tubes, clog up the latter. To avoid this, and to increase the heating capacity of the boiler and also to insure a perfect circulation of the water, I adopt the construction shown in the drawings, in which—

Figure 1 is a longitudinal vertical sectional view, on the line 1—1; and Fig. 2, a vertical transverse sectional view on the line 2—2.

A indicates the boiler shell; B, the fire tubes; C, the smoke stack, and D the fire-box, all of which parts may be of the construction shown or of any other desired construction.

In the lower part of the fire box is the dead plate E and grate F, the former extending rearwardly from the front fire door, and the latter extending from the rear end of the dead plate, nearly to the rear wall of the fire box, as shown in Fig. 1,—these parts being omitted from Fig. 2.

Extending transversely of the fire box, and having its ends projecting beyond the sides thereof, is a drum or cylinder G, which in the size of boiler most commonly employed, will be about twelve inches in diameter. Drum G will advisedly be located about eight inches from the crown sheet, and about the same distance from the front wall of the fire box. This drum will be provided at its ends with the removable covers H and I, and will be connected at one end by means of a pipe J with the boiler just below the water line, and at the other end by means of a pipe K with the lower part of the boiler.

Extending from the drum or cylinder G backward and downward to the flue-sheet, is a baffle surface L which will preferably be made of fire brick; the lower or inner end of

the baffle surface being located below the lower row of tubes, while its forward or front end is about on line with the top of the second row. The size of the drum G; its distance from the crown sheet and front wall of the fire-box; and the inclination of the baffle surface L are matters that will be varied according to the size and character of the boiler, though as before stated, the proportions which I have indicated will be found suitable for ordinary work.

From this description it will be seen that the products of combustion rise and strike the baffle surface, thence move forward along the under side thereof, around the lower, front, and top sides of the drum, and finally pass rearwardly over the upper side of the baffle surface to the flues. In an ordinary size of boiler I thus secure a travel of the products of from six to eight feet with the result that the small particles of straw set free are all consumed before entering the flues.

The drum is located at about the hottest part of the fire-box, and the water contained in said drum will therefore become highly heated and insure a perfect circulation of the water within the boiler.

By taking off the covers H, I, the sediment deposited within the drum may be readily removed.

The drum and the baffle surface may be readily removed, when necessary, to give free access to the tubes for the purpose of repairing the boiler.

Where other fuel than straw is used, the form of the grate bars will be varied accordingly.

Having thus described my invention, what I claim is—

In combination with a boiler, a drum G located in the fire box and provided with covers H and I; pipes J and K connecting the drum with the upper and lower parts of the boiler; and a baffle surface L extending from the drum back to the flue sheet.

In witness whereof I hereunto set my hand in the presence of two witnesses.

EDWARD J. VRAALSTAD.

Witnesses:

JOHN B. OLMSTED,
H. P. SEIPP.