

(No Model.)

2 Sheets—Sheet 1.

E. BOILEAU.
BOILER FURNACE.

No. 526,006.

Patented Sept. 11, 1894.

Fig. I.

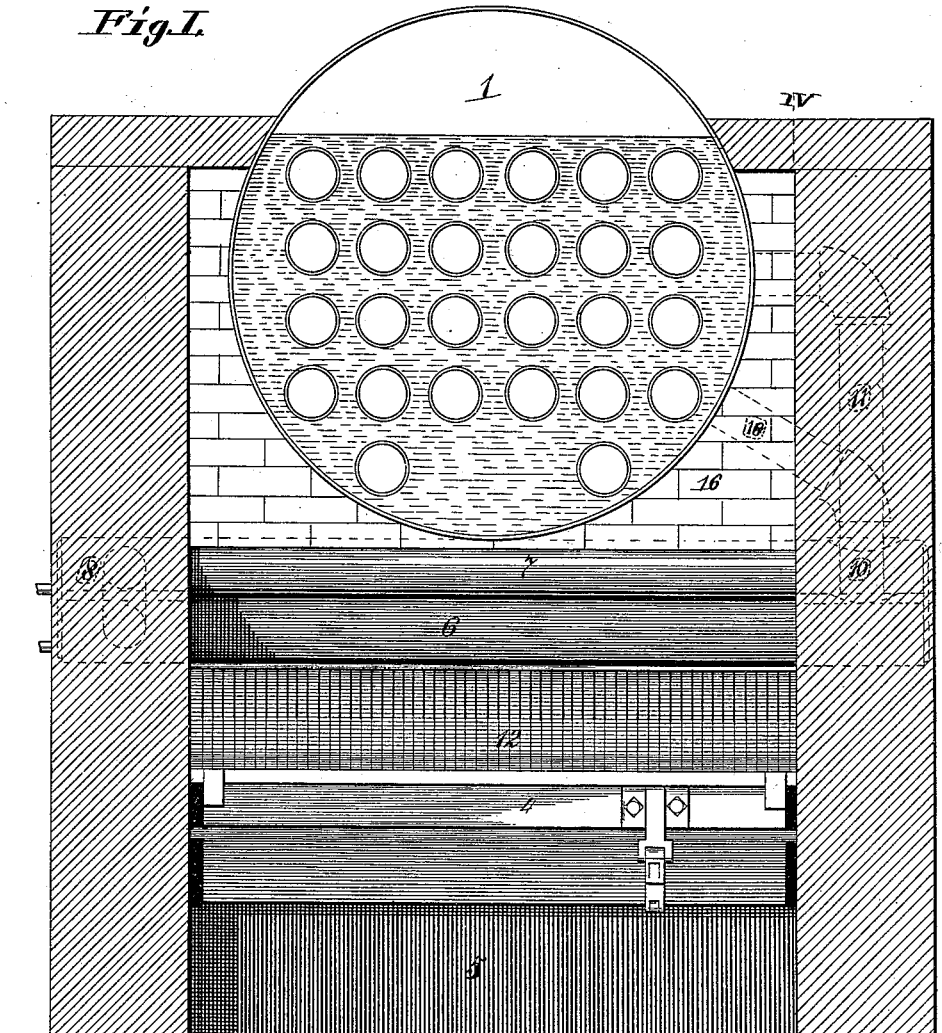


Fig. II.

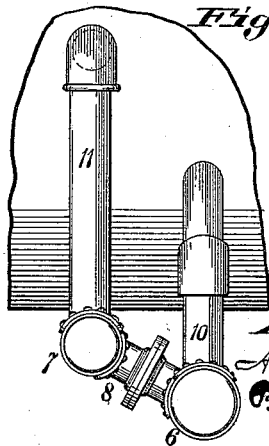
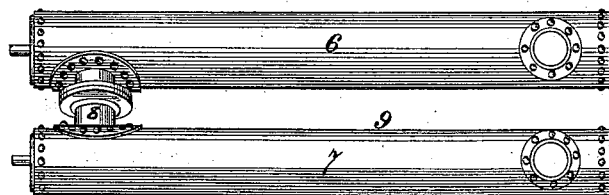


Fig. III.



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A. W. Eldersole
By *A. Knight.*

Inventor:
Etienne Boileau
By *Wright Bro* Attys.

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Fig. IV.

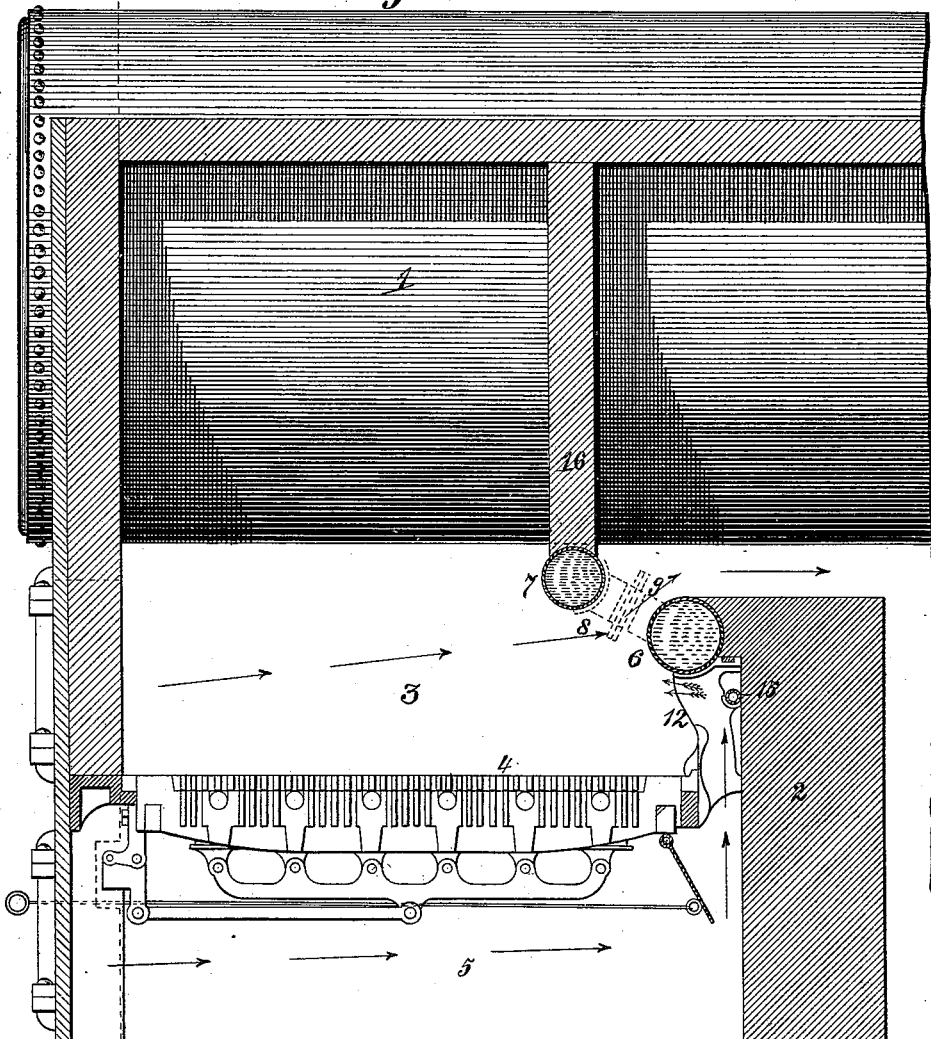
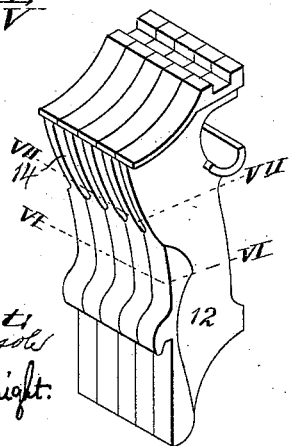


Fig. V.



Attest:
A. M. Oberholser
Benj. L. Knight.

Fig. VI.

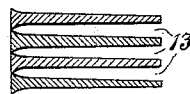
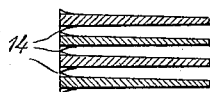


Fig. VII.



Inventor:
Etienne Boileau,
By Night & Bro. Atty.

UNITED STATES PATENT OFFICE.

ETIENNE BOILEAU, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE IMPROVED
ZIGZAG GRATE BAR COMPANY, OF SAME PLACE.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 526,006, dated September 11, 1894.

Application filed December 6, 1893. Serial No. 492,927. (No model.)

To all whom it may concern:

Be it known that I, ETIENNE BOILEAU, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Boiler-Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to certain improvements in boiler furnaces, the object being to facilitate the steam generating quality of the furnace, in connection with the smoke consuming qualities of the furnace.

My invention consists in features of novelty hereinafter fully described and pointed out in the claims.

Figure I is a transverse, vertical section of a furnace, embodying my invention; the section being taken on line I—I, Fig. IV. Fig. II is an end view of the water pipes. Fig. III is a top view of same. Fig. IV is a detail, longitudinal, vertical section, taken on line IV—IV, Fig. I. Fig. V is a perspective view of part of the plates located in front of the bridge wall. Fig. VI is a transverse section, taken on line VI—VI, Fig. V; and Fig. VII is a similar view, taken on line VII—VII, Fig. V.

Referring to the drawings, 1 represents the boiler; 2, the bridge wall; 3, the fire box; 4, the grate, and 5, the ash-pit of the furnace. In front of the upper end of the bridge wall is a water pipe 6, connected to a water pipe 7, located beneath the boiler, slightly in advance of the bridge wall. These pipes 6 and 7 are connected by a short pipe 8, preferably located in the boiler setting, as shown in Fig. I. There is a space 9 between the pipes 6 and 7, through which the products of combustion pass from the fire box, as shown by the arrows, Fig. IV. The pipes 6 and 7 may be supported in any suitable manner, and I have shown them extended into the furnace setting. The pipe 6 is connected to the boiler by means of a pipe 10, and the pipe 7 is connected to the boiler by means of a pipe 11, as shown by full lines in Fig. II, and by dotted lines in Fig. I. In front of the bridge wall is located a series of vertical plates 12, the upper ends of which fit beneath the pipe 6, and the lower ends of which are supported by the

grate bar frame. These plates are formed with spaces 13 between them, and their upper forward edges are cut out, as shown at 14, so that the air can pass from the ash-pit up between the plates and into the inner end of the fire box, as shown by the arrows, Fig. IV.

15 is a perforated steam pipe, having connection with the boiler, and which is located back of the plates 12. The function of this pipe is to create a forced draft of air from the ash-pit into the fire box, when desired, the course of the steam from the pipe being indicated by two full arrows, in Fig. IV. The form of these plates and the steam pipe 15 are fully shown and described in my application filed November 11, 1893, Serial No. 490,651, and they, in themselves, form no part of my present invention.

In the operation of the furnace, air passes from the ash-pit up between the plates 12, and escaping through the openings 14, enters the inner part of the fire box, where it unites with the products of combustion and gases rising from the bed of coals on the grate, effecting a thorough combustion and a consequent consumption of smoke. The products of combustion are forced to pass under the pipe 7, and through the space 9 between the pipes 6 and 7, by means of a wall 16 located over the pipe 7, and filling the space between the boiler and the side walls of the furnace, as shown in Figs. I and IV.

By using the pipes 6 and 7 connected with the boiler, as a means for confining the gases and products of combustion to pass through the space 9, I not only effect the consumption of the smoke, but add to the steam generating power of the boiler and furnace, while not adding materially to the cost of construction.

I claim as my invention—

1. In a boiler furnace, the combination of a bridge-wall, a water pipe located at the top of the bridge-wall, a water pipe located beneath the boiler, a wall over the last mentioned pipe, a pipe connecting said water pipes, and a pipe connection between said water pipes and the boiler; substantially as and for the purpose set forth.

2. In a boiler furnace, the combination of a bridge-wall, water pipes 6 and 7, connected

together and to the boiler, a wall over the pipe 7, and means for admitting air to the fire box, in front of the bridge-wall and beneath said pipe, substantially as and for the purpose set forth.

3. In a boiler furnace, the combination of a bridge-wall, a pipe 6 located in front of and at the upper end of the bridge-wall, plates 12 admitting air from the ash-pit beneath said pipe, and a pipe 7 located beneath the boiler,

slightly in front of the bridge wall, a wall 16 over the pipe 7, a pipe 8 connecting the pipes 6 and 7, a pipe 11 connecting the pipe 7 to the boiler, and a pipe 10 connecting the pipe 6 to the boiler; substantially as and for the purpose set forth.

ETIENNE BOILEAU.

In presence of—

A. M. EBERSOLE,
C. G. EDWARDS.