

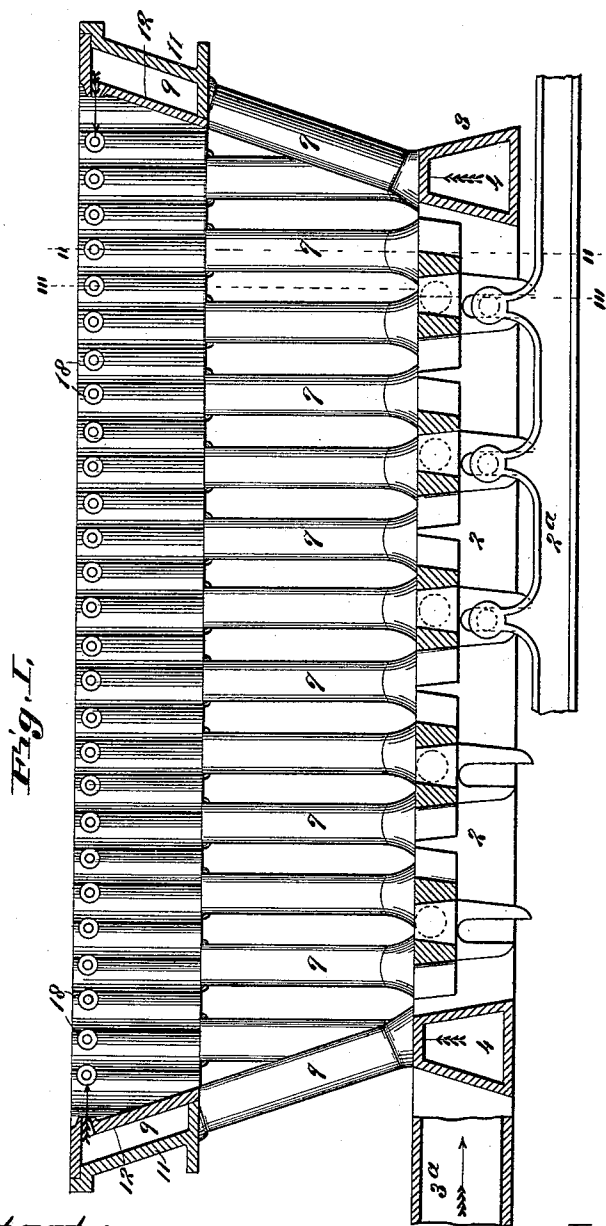
(No Model.)

2 Sheets—Sheet 1.

D. J. MURNANE & L. J. TRECY.
SMOKE CONSUMING FURNACE.

No. 464,580.

Patented Dec. 8, 1891.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. II.

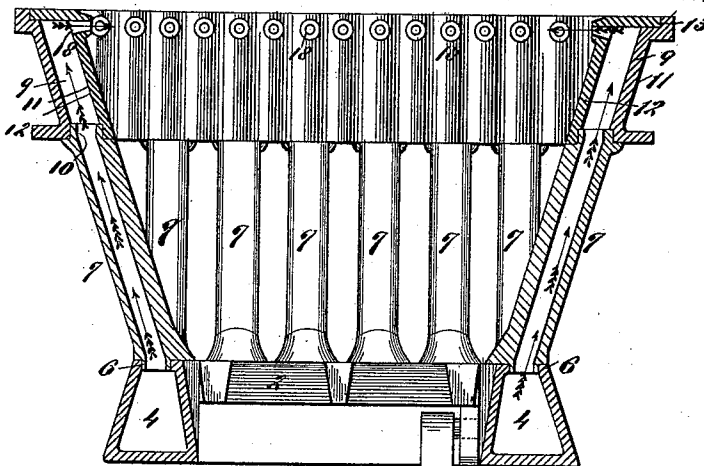


Fig. III.

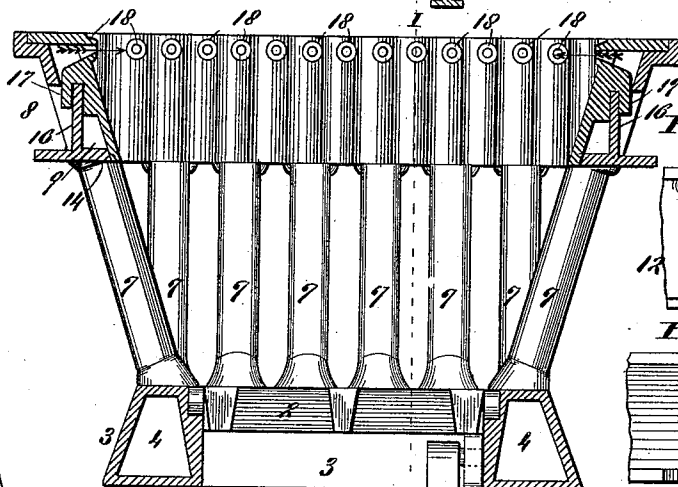


Fig. V.

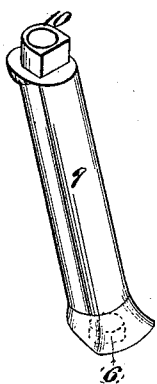


Fig. IV.

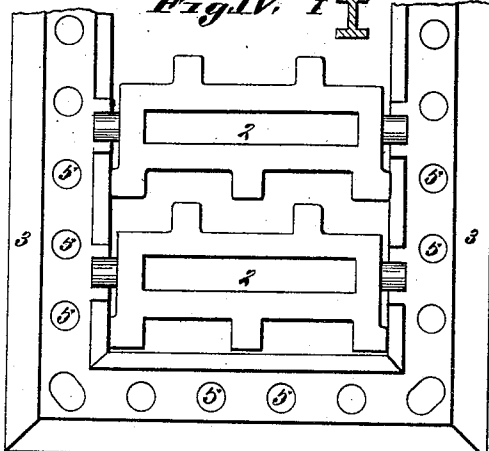


Fig. VI.

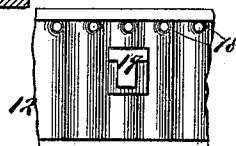


Fig. VII.

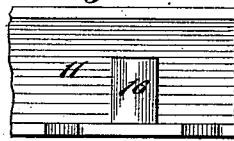
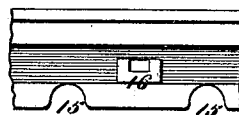


Fig. VIII.



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UNITED STATES PATENT OFFICE.

DANIEL J. MURNANE AND LAURENCE J. TRECY, OF ST. LOUIS, MISSOURI,
ASSIGNORS TO THE CHAMPION HEATING AND VENTILATING COMPANY,
OF SAME PLACE.

SMOKE-CONSUMING FURNACE.

SPECIFICATION forming part of Letters Patent No. 464,580, dated December 8, 1891.

Application filed August 2, 1890. Serial No. 360,781. (No model.)

To all whom it may concern:

Be it known that we, DANIEL J. MURNANE and LAURENCE J. TRECY, both of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Smoke-Consuming Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to an improved construction whereby the smoke generated in a furnace is very effectually consumed; and our invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a vertical section through the fire-box of a furnace and illustrative of our invention. The section is taken on line I I, Fig. III. Fig. II is a transverse section taken on line II II, Fig. I. Fig. III is a similar view taken on line III III, Fig. I. Fig. IV is a detail top view. Fig. V is a perspective view of one of the tubes composing the side of the fire-box. Figs. VI, VII, and VIII are detail elevations of the upper part of the fire-box.

Referring to the drawings, 1 represents the fire box or basket of a furnace, and to which our invention relates.

2 represents the grate-bars located in the bottom of the box or basket, and which may be operated by any suitable bar or rod 2^a. We make no claim to the grate or the manner of operating it.

3 represents a hollow, preferably rectangular, continuous casting forming a chamber 4, and which extends around and comprises the lower part of the fire-box and forms a support for the grate-bars 2, the inner edge of the casting being provided with notched seats in which the journals of the grate-bars rest. As shown in Fig. IV, this casting consists of sides and ends, (only one of the ends being shown in Fig. IV, the other end being the same.)

3^a represents a flue through which air is admitted to the chamber 4 of the casting 3. The upper face of this casting is provided with perforations 5 to receive the reduced ends 6 of tubes 7, which form the side walls

of the basket or fire-box. The reduced ends 6 are shown clearly in Fig. II and by dotted lines in Fig. V. The lower ends of the tubes 7 have flanges or feet which rest upon the top of the casting 3 and overhang the journals of the grate-bars, thus holding the latter against upward displacement, as shown in Fig. III. At the upper ends of the tubes 7 is a hood 8, having a chamber 9, with which the tubes communicate. The upper ends of the tubes have reduced portions 10 fitting in perforations in the lower face of the hood. The hood is preferably composed of an outer piece 11 and an inner piece 12, which has a top extension 13 forming the top of the hood. The outer piece 11 has a bottom extension 14 forming the bottom of the hood, and which is perforated, as stated, to receive the reduced ends 10 of the tubes 7. The perforations in the bottom 14 are shown at 15, Fig. VIII.

On the bottom 14 are projections 16. (Shown in Figs. III and VII.) These projections receive notched projections 17 on the inner plate 12, the projections 17 being shown in Figs. III and VI. There are a suitable number of these projections 16 and 17 around the hood, and they serve to hold the plates or members 11 and 12 together. The hood 8 is also continuous—that is, it extends entirely around the upper part of the fire-box—and thus it will be seen that the hood is supported by the tubes, while at the same time the hood in turn holds the tubes together at their upper ends, making a rigid structure.

18 represents a series of jet-openings in the upper part of the hood, and through which the heated air escapes from the chamber 4, the flues 7, and the chamber 9 into the upper part of the fire box or basket. It will thus be understood that the air entering through the flue 3 is thoroughly heated as it circulates through the chambers and tubes and escapes into the fire-box in a highly-heated condition and serves to assist combustion, and thus acts as a preventive of smoke. This furnace may be used for locomotive or stationary boilers, and also may be used for heating-furnaces and the like.

By making the hood 8 in two parts secured together, as described, it can be conveniently

put in place, and the tubes 7 can be conveniently applied.

We claim as our invention—

1. The combination of the lower chamber 5 4, the hood having the chamber 9, and tubes or flues connecting said chambers, said hood consisting of the outer and inner plates 11 12, having the bottom flange 14 and top extension 13, respectively, forming the top and bottom of the hood, and locked projections on 10 said plates, substantially as set forth.

2. The combination of the chamber 4, the hood having the chamber 9, and the tubes or flues connecting said chambers, said hood consisting of the outer and inner plates 11 12, 15 having the bottom flange 14 and top extension 13, respectively, forming the top and bottom of the hood, and the projection 16 on one and the notched projection 17 on the other of 20 said plates, engaging one within the other for locking the plates together, substantially as set forth.

3. The combination of the continuous cast-

ing 3, surrounding the fire-box and having the chamber 4 provided with openings in its 25 upper side, the continuous hood 8, surrounding the upper part of the fire-box and having the chamber 9, the jets 18, and openings 15 in its lower side, and the tubes 7, having reduced portions at both ends fitted in the 30 openings 5 15 and supporting the hood upon the casting 3, said tubes forming communication between the chambers 4 9, substantially as set forth.

4. The combination of the hollow casting 3, 35 having notched seats on its inner edge, the grate-bars having journals resting in said seats, the hood, and the tubes 7, connecting the chamber 4 and hood together and having 40 flanges resting upon the casting 3 over the said notched seats, substantially as set forth.

DANIEL J. MURNANE.

LAURENCE J. TRECY.

In presence of—

E. S. KNIGHT,

A. M. EBERSOLE.