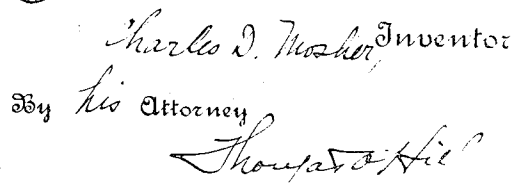


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3 SHEETS—SHEET 1.



1,289,037.

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3 SHEETS—SHEET 2.

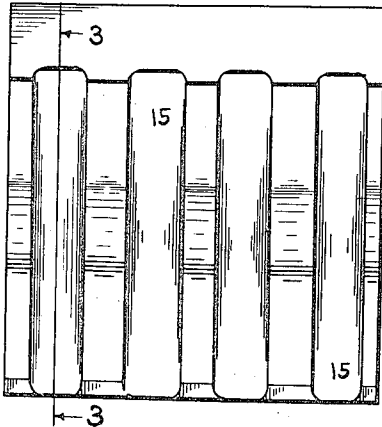


Fig. 2

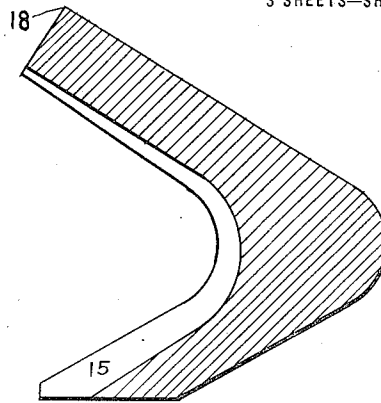


Fig. 3

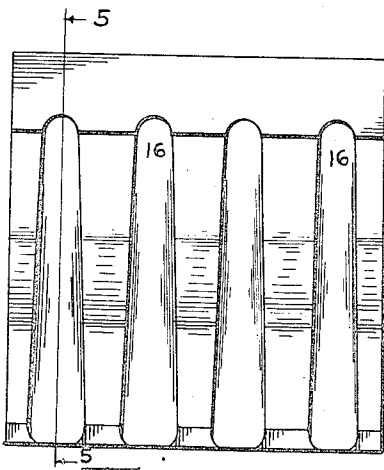


Fig. 4

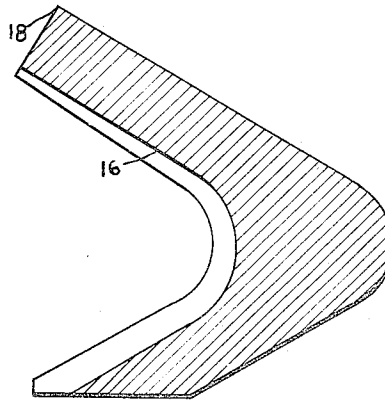


Fig. 5

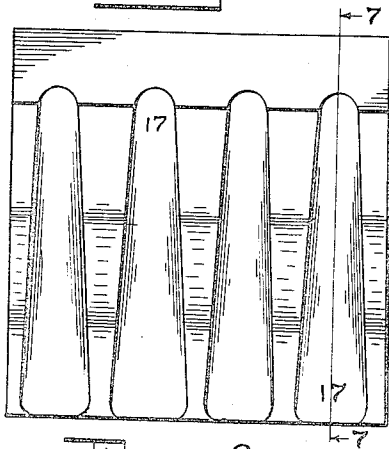


Fig. 6

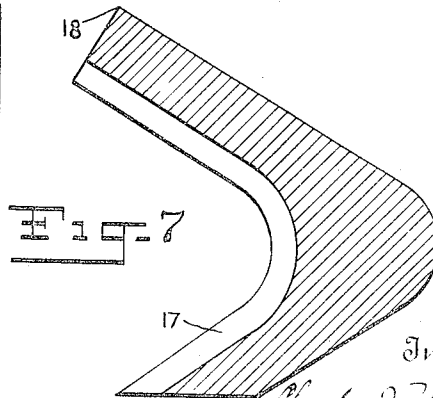


Fig. 7

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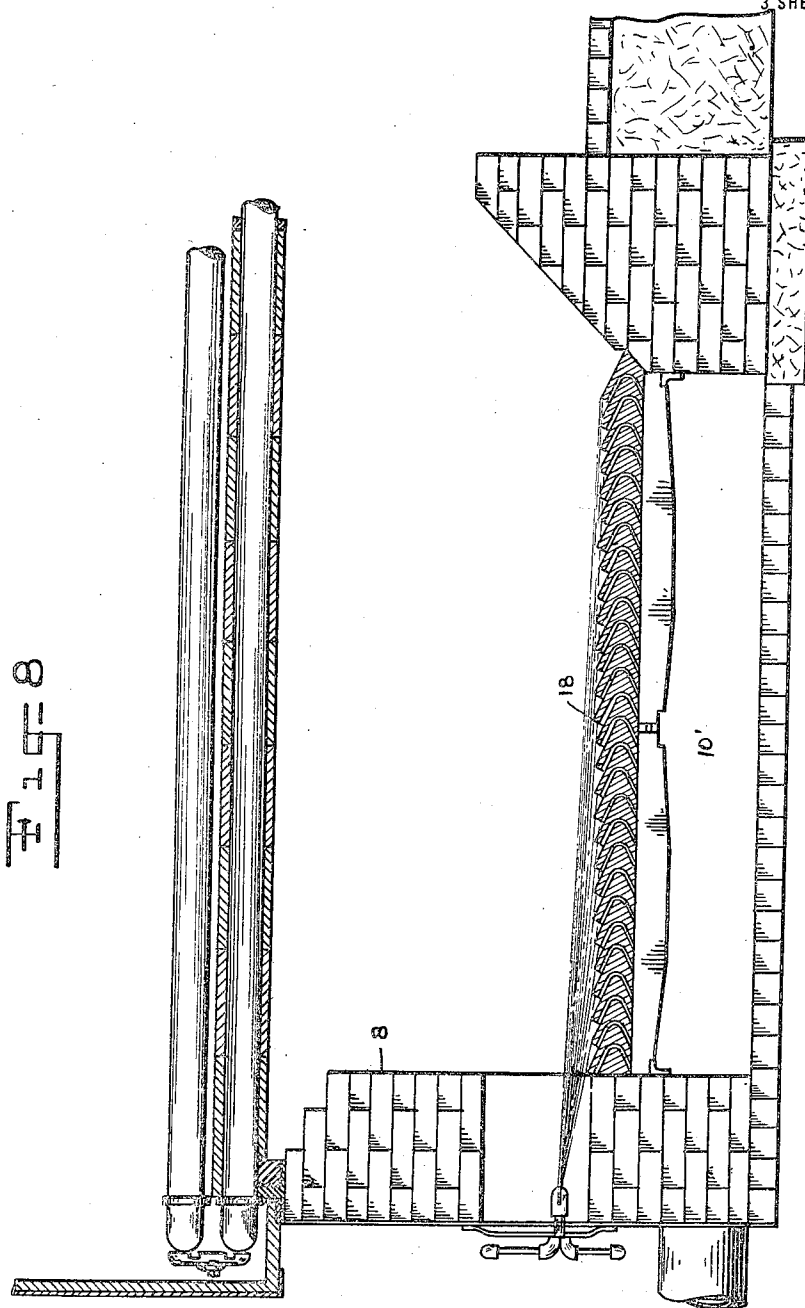
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UNITED STATES PATENT OFFICE.

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1,289,037.

Specification of Letters Patent. Patented Dec. 24, 1918.

Application filed August 9, 1917. Serial No. 185,227.

To all whom it may concern:

Be it known that I, CHARLES D. MOSHER, a citizen of the United States, residing at the borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Furnaces, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to improvements in furnaces and has particular reference to means for burning liquid or gaseous fuel in such a manner as to insure a proper mixture of air therewith at the proper temperature to insure more perfect combustion.

Referring to the accompanying drawings, Figure 1 illustrates in side elevation, partly broken away, an application of my invention as applied to a suitable form of furnace. Fig. 1^a is a view looking from left to right at Fig. 1 on the line 1^a thereof. Fig. 2 is an enlarged detail in front elevation of part of the furnace interior structure. Fig. 3 is a cross-section on the line 3—3 of Fig. 2. Fig. 4 is a similar view to Fig. 2, illustrating a modified form of unit, and Fig. 5 is a cross-section on the line 5—5 of Fig. 4. Fig. 6 is another view similar to Figs. 2 and 4, but illustrating another modification, Fig. 7 is taken on the line 7—7 of Fig. 6, and Fig. 8 is a side elevation of a suitable furnace, illustrating a nested arrangement of units for the furnace interior structure.

Referring to Fig. 1, 8—9 are the usual front and rear walls of the furnace, and 10 indicates a suitable chamber therein which may be arranged substantially as shown so as to be in communication with the air inlet 11. 12 indicates a structure preferably of carborundum or other suitable material substantially in the form shown and provided with passages 13 allowing air entering the chamber 10 from the inlet 11 to pass upwardly through said passages 13 where the air is mixed with the incoming jet of fuel 14.

In the form illustrated more particularly in Figs. 2 and 3, it will be observed that the passage 15 is deeper at the bottom than at the top, although of substantially the same width. This restricts the delivery end of the passage without narrowing the stream of air emitted therefrom.

In the form shown in Figs. 4 and 5 the passages 16 it will be observed are prefer-

ably narrower and may be shallower at the top as shown, and in the modification shown in Figs. 6 and 7 the passages 17 are illustrated as preferably of more uniform depth producing a nozzle or restricted area at the outlet end of the several passages through which the air discharges for mixing with the incoming fuel.

In the one embodiment of my invention, the several sections or units are preferably separate and nested together as shown in Fig. 8 and are provided with an upper edge 18 which serves to prevent the incoming stream of fuel 14 from striking into the passage behind the upper edge of the preceding section, thus allowing the air from the chamber 10 or 10' in Fig. 8, to be jetted in a direction opposed to the incoming stream 14, while at the same time allowing free and unimpeded egress for the air immediately prior to the same becoming mixed with said fuel which of course is preferably delivered in a fan-shaped jet. In the form of my invention shown in Fig. 1, the furnace interior structure is preferably integral.

The individual sections or units may be nested upon the grate bars as shown in Fig. 8 and are provided with passages of less area at the outlet than at the inlet side, and this reduction of area may be made either by reducing the depth or width at the outlet end of the passage or by reducing both the depth and width at said outlet end of the passage as may be found most desirable under the particular conditions for which the furnace is to be applied. The fuel 14 being preferably injected under pressure over the entire upper portion of the sections or units mixes with the air passing upwardly from the chamber 10 or 10' through the channels or passages between the several units or sections where the same is thereupon thoroughly mixed and ignited, heating the water within the boiler tubes, the products of combustion escaping through the flue 19.

Of course it will be understood that various modifications may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

I claim:

1. In a furnace, a structure having a series of passages extending upwardly and rearwardly from the bottom, then forwardly

and upwardly through the top thereof, a burner adapted to feed fuel into said furnace, means in combination with said furnace for admitting air thereto, said passages of greater area at the bottom than at the top.

2. In a furnace, a structure having a series of passages extending upwardly and rearwardly from the bottom, then forwardly and upwardly through the top thereof.

a burner adapted to feed fuel into said furnace, means in combination with said furnace for admitting air thereto, said passages wider at the bottom than at the top.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHARLES D. MOSHER.

Witnesses:

DOLORES I. TOLEDO,
THOMAS A. HILL.