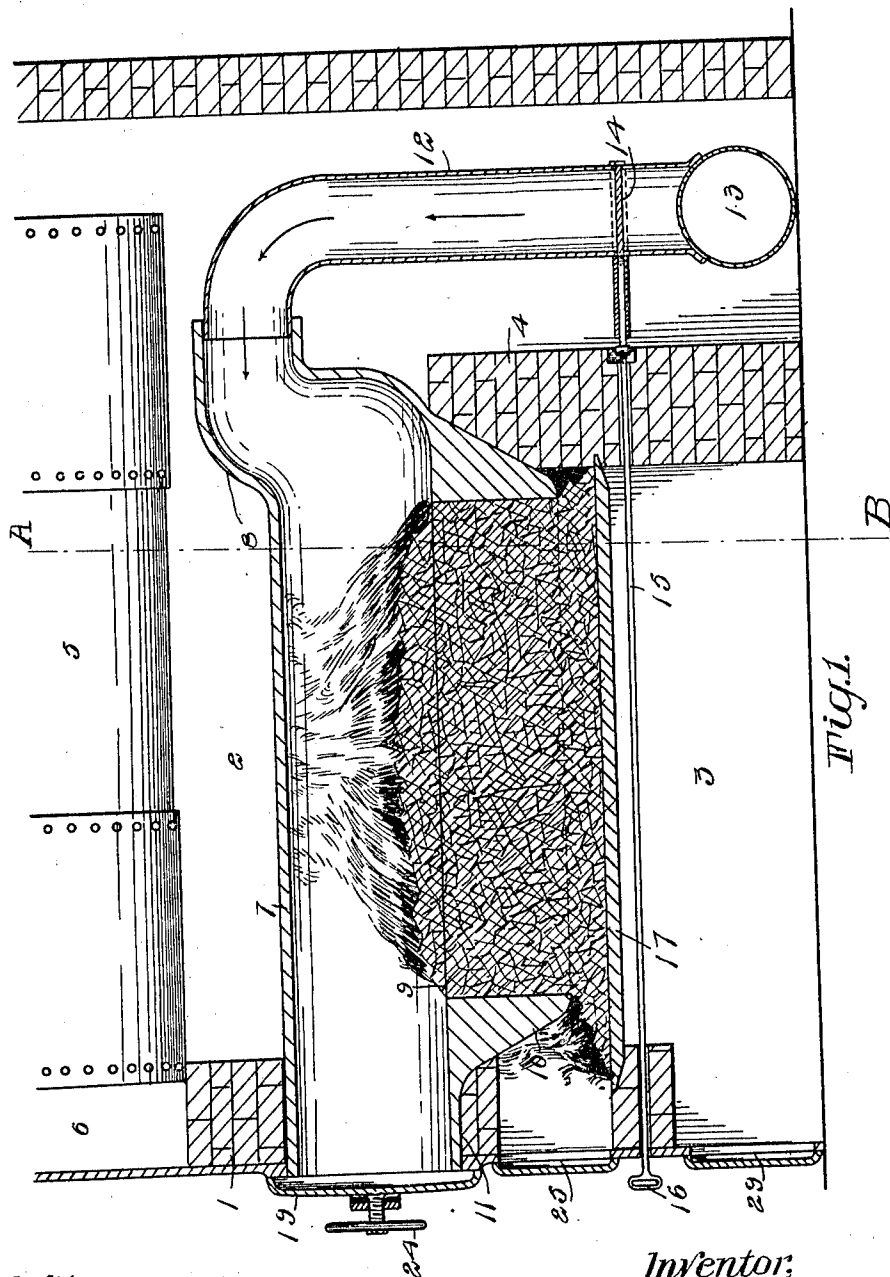


I. THERRIEN.
SMOKE CONSUMER.
APPLICATION FILED JUNE 15, 1912.

Patented May 6, 1913.
4 SHEETS—SHEET 1.

1,061,143.



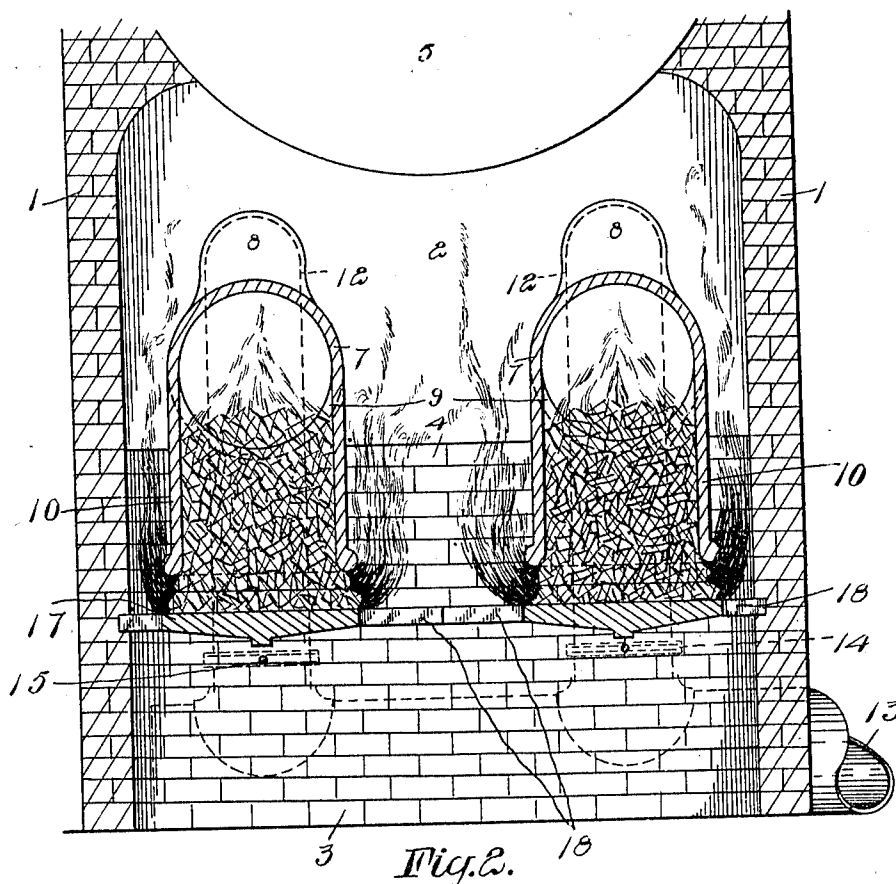
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

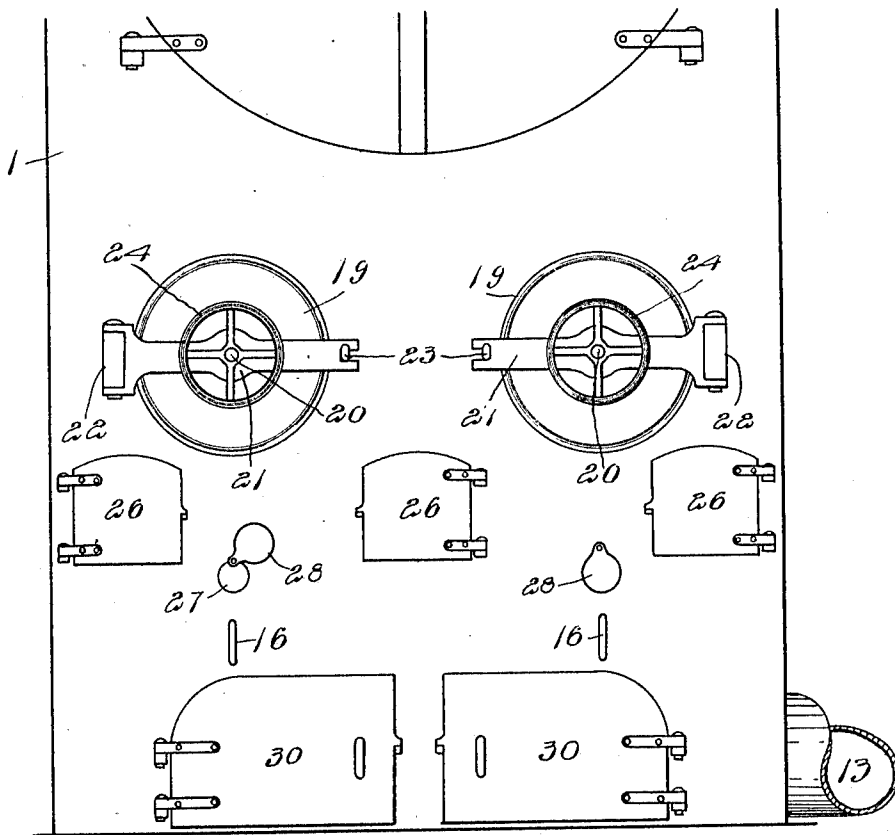


Fig. 3.

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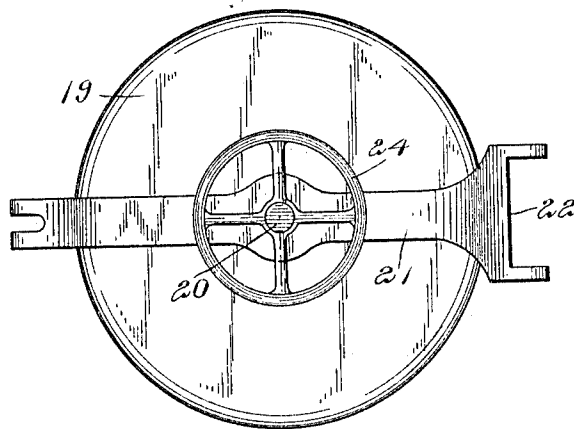
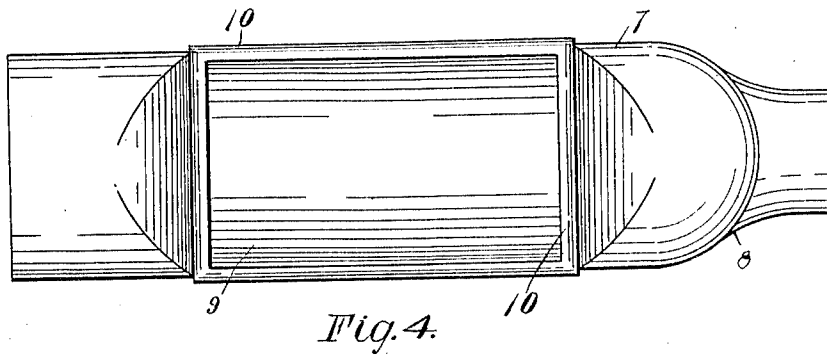
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4 SHEETS-SHEET 4.

1,061,143.



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Fig. 5.

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UNITED STATES PATENT OFFICE.

ISIDORE THERRIEN, OF QUEBEC, QUEBEC, CANADA.

SMOKE-CONSUMER.

1,061,143.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed June 15, 1912. Serial No. 703,818.

To all whom it may concern:

Be it known that I, ISIDORE THERRIEN, a citizen of Canada, residing in the city of Quebec, in the county of Quebec, in the Province of Quebec, in the Dominion of Canada, have invented certain new and useful Improvements in Smoke-Consumers, and do hereby declare that the following is a full, clear, and exact description of the same.

The invention relates to improvements in smoke consumers, as described in the present specification and illustrated in the accompanying drawings that form part of the same.

The invention consists of an ordinary steam boiler furnace having installed therein a gas generating retort of particular construction in combination with suitable air circulating means.

The objects of the invention are to provide means to increase the heating properties of any type of furnace, by consuming all the escaping gases thereby providing a smokeless fire, the chimney being only useful for the non-combustible gases to escape.

In the drawings, Figure 1 is a longitudinal sectional view through a furnace of the steam boiler type. Fig. 2 is a cross section view on the line A—B. Fig. 3 is a front elevation of the furnace, showing the disposition of the doors. Fig. 4 is a bottom view of the retort. Fig. 5 is an enlarged plan view of the door and means for closing the end of the retort.

Like numerals of reference indicate corresponding parts in each figure.

In the drawings, 1 are the outside walls of the furnace having the fire box 2, the ash-pit 3 and bridge-wall 4.

5 is a boiler and 6 is the ordinary chimney.

7 is a retort of refractory material able to resist very high temperatures, of cylindrical shape, and having the shape of an elbow at the end 8. The retort has a central cavity 9 from which dropping flanges 10 project therefrom, said retort fitting at one end in a corresponding opening 11 in the side-walls 1, and at the other end is supported by the bridge-wall 4.

12 is an air pipe connected at one end to the elbow 8 and at the other end to a main air pipe 13. A fan or any other suitable means of forcing the air into the said retort may be adapted at one end for the purpose.

14 is a damper or air regulator adapted

in the lower end of the pipe 12 to which a metallic rod is connected to control the feed of air in the retort, the end of said rod projecting out in the front of the furnace and terminating in a handle 16.

Grates 17 are supported by the side walls 1 and the bridge wall 4 and are extended below the retorts 7, said grates having the slots 18 in the sides, the central portion of the grate on which lies the combustible being non-perforate. The ashes will fall through the openings 18 into the ash-pit 3.

19 are doors slightly convex fitting snugly over the opening 11 and hermetically closing the retort 7, said doors having the projections 20 cast thereon and threaded, on which fits the bar 21 which is hingedly mounted at 22 and slotted at the other end to receive the pin 23. 24 is a fly wheel rigidly secured at the end of said lug 20, to close the door hermetically.

25 are openings in the face of the furnace into which may be introduced a poker to stir the fire if found necessary, said openings having the doors 26 closing same. 27 are smaller openings for the same purpose, said apertures being closed by the pivoted plates 28.

29 are the ash-pit openings and 30 are the doors closing them.

In the operation of the invention, the fuel is first put into the retort through the opening 11, the doors 19 are then closed by turning the fly-wheel 24. The draft regulator 14 is then opened, the fans will force the air into the retort 7 and cause the gases to ignite.

In Fig. 3 the apertures 27 are shown to be level with the plates 17. They are for the purpose of stirring the fire if needed by inserting therethrough a long iron bar or poker that will penetrate into the mass of incandescent coal that lies between the retort and plate or grate 17. The use of these small openings will thus prevent the unnecessary introduction of cold air and save the fireman from the intense heat that radiates from the fire box. When the fireman has to open the doors 26, the air regulator must be closed, as the generation of gas would still occur.

The drawings show two retorts disposed under the boiler which requires considerable space. It will readily be understood that if the fire box is not large enough, one retort can be used only with equal advan-

tage, although the more retorts there are the larger is the amount of gas generated. The retorts are placed some five or six inches above the grate 17, the central portion being filled with fuel that lies on the grate. 5 The gases generated in the retorts will tend to escape somewhere and the compressed air that is sent in to the said retorts will force the gases to ignite and escape through the 10 opening left between the grate and the bottom of the retorts.

A feature in this invention is the elbow shaped end 8 which is connected to the air pipe 12, the air thus being forced over the 15 fire will light the gases by forcing them through the burning fuel, thus providing a most effective smoke consumer and also considerably increasing the heating properties of the furnace.

20 It is evident that alterations may be made in the shape of the retorts and the disposition of the air pipes according to the space and type of the furnace, as for instance in an upright boiler furnace, the retorts could 25 probably be made of an oblong shape.

The essential features of this invention is a retort in which gas may be generated for the purpose of increasing the heat, to overcome the smoke by burning all the combustible gases and also saving considerable 30 fuel by using all the gases that usually escape through the chimney, said retorts being installed in the fire box above a grate having a non-perforated bottom and air 35 circulating means connected therewith. Another feature of this invention is that it can be readily adapted to any existing furnace without altering its construction.

What I claim as my invention is:—

40 1. In a smoke consumer, the combination

with furnace walls of a retort consisting of an open ended tube having downwardly extending solid flanges intermediate of its length forming a tubular branch adapted to hold the burning fuel, the rear open end 45 of said tube being upwardly offset, removable means for tightly closing the front end, means for supplying a current of air through said rear end into the tube, means for supporting said retort within said furnace 50 walls, and a flat plate suitably supported beneath and partially closing in the lower end of said branch and supporting the fuel.

2. In a smoke consumer, the combination 55 with furnace walls, of a pair of open ended retorts longitudinally supported side by side within said walls and each comprising a tube having depending solid walls intermediate of its length forming a fuel holder, 60 the rear open end of said tube being offset upwardly means for closing the front ends of said tubes, adjoining flat plates supported beneath and partly closing the lower ends of said branches respectively, said 65 plates being solid beneath said lower ends and supporting the fuel and gridded therebeyond at the sides, a main air pipe arranged at the rear of the furnace, and upwardly extending branch pipes within the 70 furnace respectively communicating with said offset ends, dampers in said branch pipes operable from the outside, and means for supplying forced draft to said main pipe.

Signed this 12th day of June 1912, at the 75 city of Quebec, in the Dominion of Canada.
ISIDORE THERRIEN.

Witnesses:

LOUIS MORIG,
P. WM. PATNAUDE.

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