

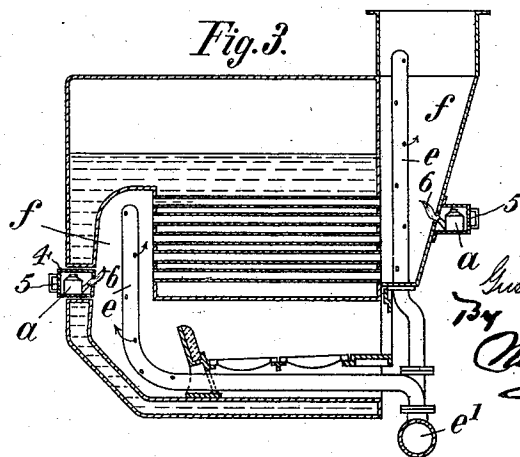
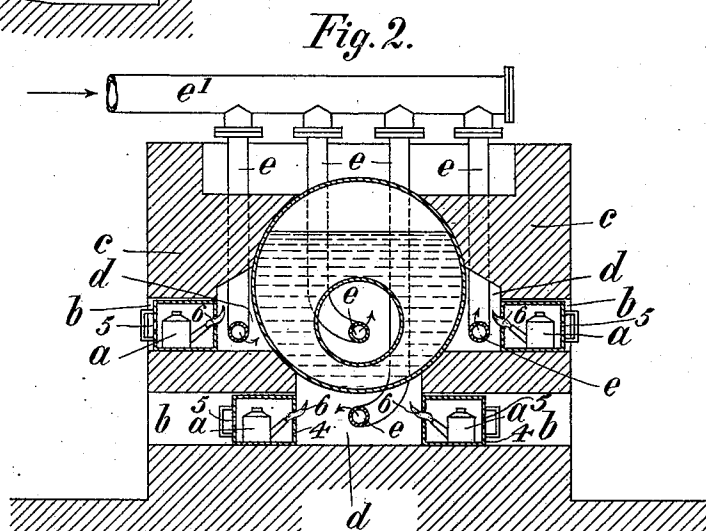
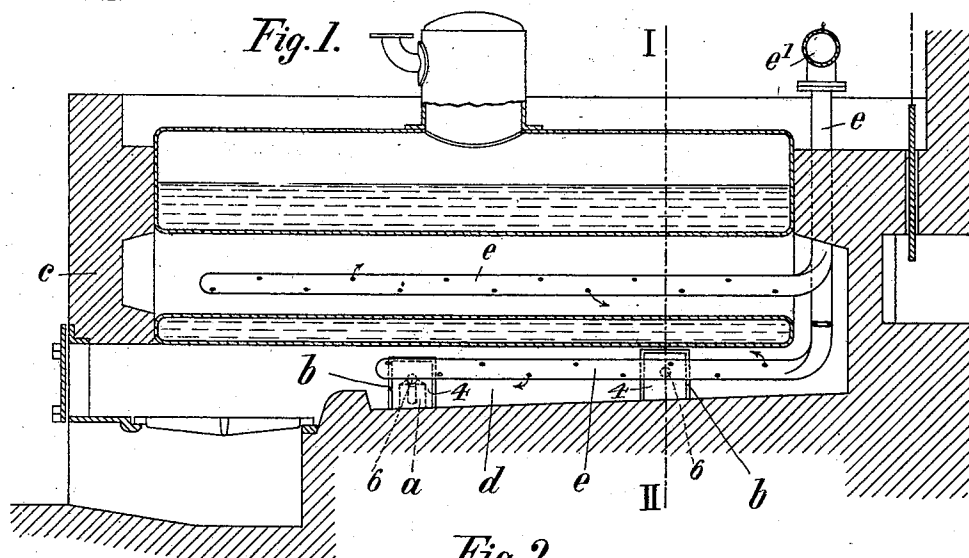
No. 755,220.

PATENTED MAR. 22, 1904.

G. A. DOEBBEL.
SMOKE CONSUMING APPARATUS.

APPLICATION FILED FEB. 12, 1902.

NO MODEL.



Witness:
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UNITED STATES PATENT OFFICE.

GUSTAV ADOLPH DOEBBEL, OF ALTONA, GERMANY.

SMOKE-CONSUMING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 755,220, dated March 22, 1904.

Application filed February 12, 1902. Serial No. 93,739. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV ADOLPH DOEBBEL, a subject of the German Emperor, and a resident of Altona, in the Province of Schleswig-Holstein, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Smoke-Consuming Apparatus, of which the following is a specification.

The present invention relates to improvements in smoke-consuming, and more particularly refers to means for effecting the same.

The object of my invention is to so apply the fuel that the evolved and escaping combustible matters shall be exposed to or come in contact with separate jets of flame produced or generated by a suitable combustible gas and air mixture, whereby the combustible gases of the fuel and the particles of carbon suspended in the said gases will be inflamed and consequently consumed. With this end in view my improved smoke-consuming furnace is mainly characterized by a series of suitable contrivances adapted to produce or generate each a jet or jets of flame and arranged in such proximity and along the furnace or boiler flues as to admit of the rising or intruding of the said flame-jets into the said flues in order to inflame the unconsumed combustible matter or gases which pass away from the fire and come in contact with the said secondary inflaming devices or their flame-jets, respectively. Separate air or oxygen supplies may be provided to supply a due amount of oxygen to the combustible gases within the flues or smoke-boxes of the boiler.

In order that my invention may be more fully understood, I shall now proceed to describe the same in detail, and for that purpose reference is taken to the accompanying sheet of drawings, wherein—

Figure 1 is a central longitudinal vertical section of a stationary Cornish boiler provided with and embodying my invention. Fig. 2 is a vertical cross-section of the said boiler on the line I II, Fig. 1, and Fig. 3 is a central longitudinal vertical section of a marine boiler constructed and arranged in accordance with my invention.

Similar characters refer to similar parts 50 throughout the several views.

Along the walls of the flues of the boiler are arranged suitable contrivances, such as lamps *a*, Figs. 1 and 2, fed by any suitable means—for example, by a combustible gas and air mixture and adapted to produce a flame jet or jets. These lamps *a* are placed in suitable channels, recesses, or breaks *b* in the walls or masonry of the furnace at a suitable distance apart in the masonry *c*, supporting and surrounding the boiler proper. The arrangement of the lamps *a* and the channels *b* is such that the flame-jets are capable of rising into the flues *d* and at the same time a due supply of vital or external air to the flame-jets is insured. The said channels or breaks *b*, moreover, admit of an easy access to and control or removal of the jet-generators *a*. The lamps *a* are shown inclosed in casings or boxes 4, having an air-inlet orifice 5 and a flame-orifice 6, and said boxes approximately fit the channels *b* in the masonry and are removable therefrom.

When using such a boiler, the flame-jets are to be ignited before fire is set to the fuel on the grate of the fire-box in order that the very first combustible gases escaping from the fuel through the flues may meet with flame-jets, by the contact of which they are inflamed and consequently consumed without choking the said secondary flame-jets. Within the flues are arranged perforated tubes *e* in communication with a main tube *e'*, through which tube-conduit *e'* *e*, by any appropriate means, a due amount of external air or oxygen is supplied into the flues in order to improve the inflammability and heating power of the combustible products of combustion.

In the modification shown by Fig. 3 the flame-jet producers *a* are attached in any suitable manner to the smoke-boxes *f*. The perforated air-supply tubes *e* of the air-supply *e'* pass into the said smoke-boxes.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a furnace, the combination with the flues thereof; of channels communicating therewith and the exterior of the furnace, and

means adjustable in said channels transversely to the flues to ignite products of combustion passing through the flues, substantially as and for the purpose specified.

5 2. In a furnace, the combination with the flues thereof; of means within the flues to supply a supporter of combustion, channels communicating with said flues and the exterior of the furnace, and lamps in said channels adjustable transversely to the flues to ignite the
10 products of combustion, substantially as and for the purpose specified.

3. The combination with a furnace having longitudinal flues, of horizontal channels arranged perpendicular to the flues and leading
15 from the exterior of the furnace, removable lamps in said channels adjustable transversely to the flues, and air-supply pipes arranged longitudinally of the flues, substantially as and
20 for the purpose specified.

4. In a furnace, the combination with the flues thereof; of perforated pipes longitudinally disposed in the flues to supply a supporter of combustion, channels leading to the
25 flues from the exterior of the furnace and

lamps in said channels adjustable transversely to the flues to ignite the products of combustion, substantially as and for the purpose specified.

5. In a furnace, the combination with the flues thereof; of channels leading to the flues from the exterior of the furnace, a casing approximately fitting each channel and having an air-inlet and flame orifice, and a lamp in each casing, substantially as and for the purpose set forth. 30 35

6. In a furnace, the combination with the flues thereof; of perforated air-supply pipes longitudinally disposed in said flues, channels leading to the flues from the exterior of the furnace, casings having an air-inlet and flame orifice fitting the channels, a lamp in each casing, the flame of which passes through the flame-orifice to ignite the products of combustion in the flues, substantially as and for the purpose set forth. 40 45

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