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W. G. McPHERSON.

DRAFT DEVICE FOR FURNACES.

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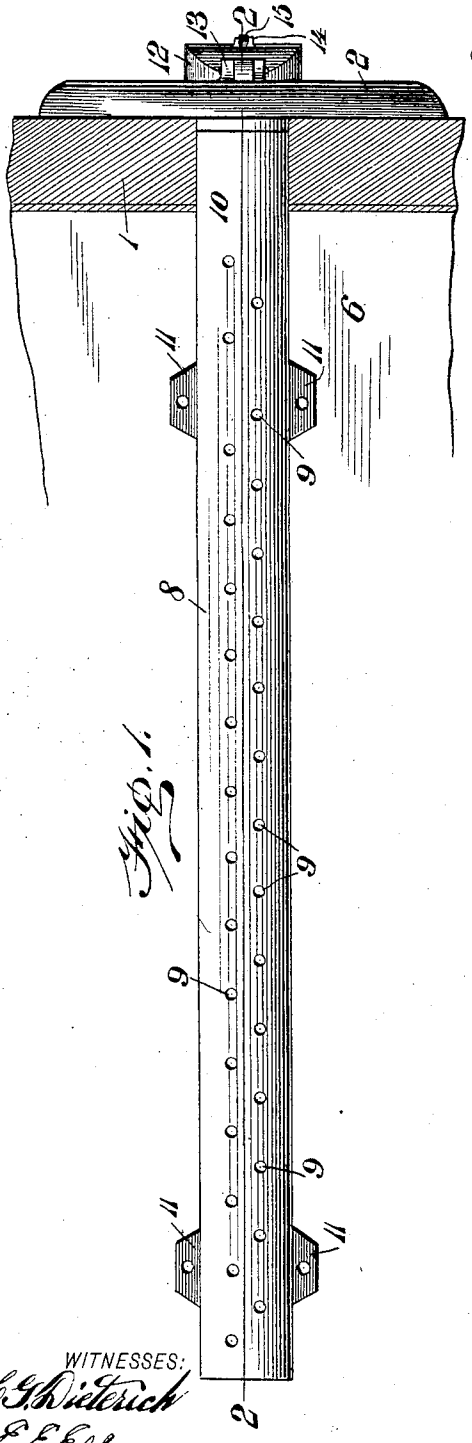

Fig. 1.

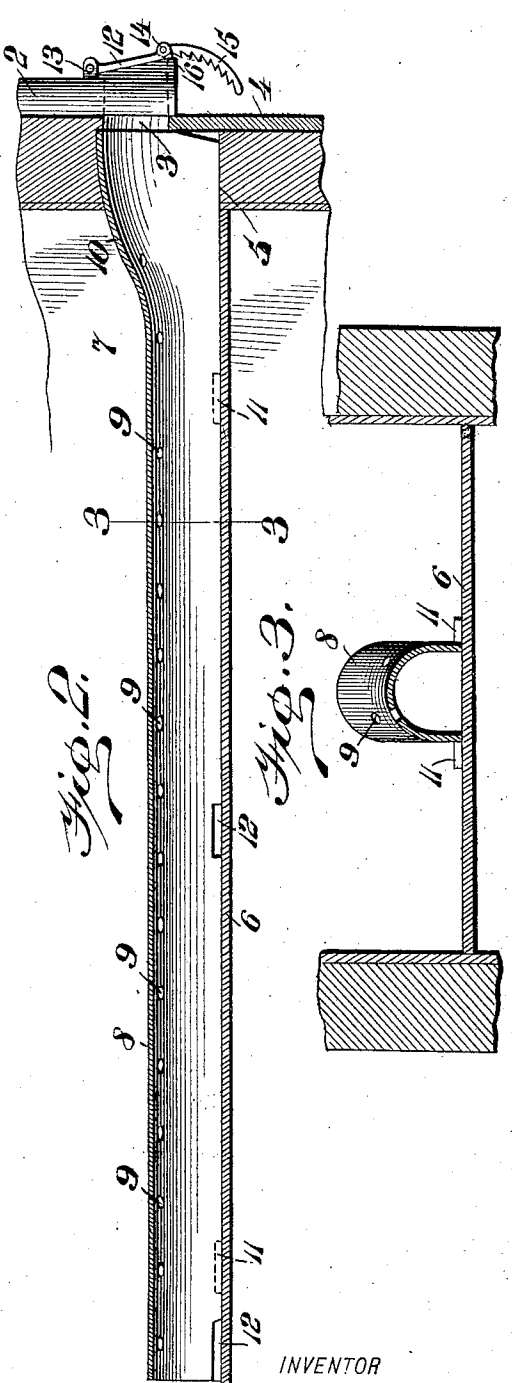

Fig. 2.

Fig. 3.

WITNESSES:

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DRAFT DEVICE FOR FURNACES.

No. 835,458. Specification of Letters Patent. Patented Nov. 6, 1906.

Application filed October 3, 1905. Serial No. 281,107.

To all whom it may concern:

Be it known that I, WILLIAM GEORGE McPHERSON, a citizen of the United States, and a resident of Portland, in the county of Multnomah and State of Oregon, have invented a new and Improved Draft Device for Furnaces, of which the following is a full, clear, and exact description.

This invention relates to draft devices for furnaces; and it consists, substantially, in the details of construction and combinations of parts hereinafter more particularly described, and pointed out in the claims.

In furnaces in which solid fuel is burned—as coal or wood, for instance—the air for supplying combustion of the fuel is usually introduced into the fire box or chamber directly through a draft-door or the like at the front of the furnace, and consequently the portions of the fuel nearest to the door are supplied in greater measure than the remaining portions thereof within the box, resulting in unequal combustion of the fuel, as well as loss of heat and uncertainty of operation of the furnace.

One of the principal objects of the present invention is to overcome the disadvantages and objections above referred to and to provide means whereby the burning of hard fuel in furnaces may be carried on most effectively and economically.

A further object is to provide means for the purpose named which are simple in construction and thoroughly effective and reliable in operation, besides possessing the capacity for long and repeated service.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of a portion of a furnace, showing the application of my improvements thereto, as well as the construction thereof. Fig. 2 is a longitudinal sectional view, and Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 2.

Before proceeding with a more detailed description it may be stated that in the form of my improvements herein shown I employ special means by which air may be introduced or supplied to the fuel on the bottom of the fire box or chamber of a furnace at numerous places throughout the mass of the fuel rather than at those portions only thereof lying at the front of the furnace, as will presently be explained. Such means may be constructed separately from or as an integral part of the furnace and may be renewed or replaced from time to time as occasion may require, no dismantling or separation of other portions of the furnace being necessary for enabling this to be done.

Reference being had to the drawings by the designating characters thereon, 1 represents a portion of the front of an ordinary furnace for burning hard fuel, as wood or coal or the like, and 2 represents the furnace-door, which, as shown in Fig. 2, closes before an opening 3 in the front of the furnace against the edge of a plate or other abutment 4 therefor. Leading rearwardly from the said front 1 of the furnace substantially in line with the lower edge 5 of the opening 3 is the bottom or floor 6 of the fire box or chamber of the furnace, a portion of one of the sides of the furnace being indicated at 7 in Fig. 2. My improved draft device comprises a semitubular structure 8 of suitable transverse dimensions and preferably of length substantially equal to that of the said bottom or floor 6 of the fire box or chamber, said structure being of metal or other preferred material and formed throughout the same with holes or perforations 9, disposed at suitable distances from each other, as shown. Preferably, though not essentially, the said device is enlarged at the forward end thereof, as indicated at 10, and at this end the device is fitted within the hereinbefore-mentioned opening 3 in the front 1 of the furnace, it being understood that the device is open at both ends of the same. If desired, and as preferred in some instances, I provide at the edges of the device sets of oppositely-disposed lateral projections or feet 11, by which the device may be secured in place to the bottom or floor 6, and also in some instances I may notch the edges of the device, as indicated at 12.

The door 2 of the furnace is provided with an opening therein closed by a flap or shutter 12, which is pivotally supported at 13 on the door and in the present instance has pivot-

ally suspended from its lower edge at 14 a curved ratchet 15, the teeth of which are adapted to engage with a lug 16 at the lower edge of the door 2 whenever the said flap or shutter is raised, thus to permit air to enter the opening 3 in the front of the furnace and pass beneath the draft device 10 and into the fire box or chamber through the holes or perforations 9, as well as through the notches 12, it being clearly apparent that in this way currents of air will be introduced or supplied to the mass of fuel which may be sustained on the bottom or floor 6 above and around the said draft device 8. Thus the fuel may be burned to an equal extent throughout instead of at the portions only thereof lying near the front of the furnace, which results in economy of fuel as well as saving of time and deriving altogether better results in practice.

It will be understood that my improved draft device may be constructed in various ways, and also that instead of admitting air thereto in the manner described through an opening in the usual furnace-door I may provide a separate or independent door for opening and closing the forward end of the draft device as occasion may require for the purposes thereof.

The device may be built with the furnace in the first instance, if desired, and thus constitute, practically, an integral part thereof, or the same may be constructed separately from the furnace and introduced and set up therein at any time as occasion may require.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A furnace provided with a fire-chamber having a floor and with an opening in the front thereof, the said opening being located in proximity to the forward end of the floor of the fire-chamber, a draft device comprising a substantially semitubular structure open at both ends and provided with numerous holes, said device extending lengthwise of the fire-chamber and resting on said floor, and having its forward end fitted within the opening in the front of the furnace, and means for controlling the admission of air to the forward end of said draft device.

2. A furnace having an opening in the front thereof, and provided with a fire-chamber having a floor, and means for introducing air to the fuel at numerous places beneath the mass thereof in the chamber, the said means comprising a substantially semitubular structure extending lengthwise of the fire-chamber and fitting at its forward end within the opening in the front of the furnace, the said semitubular structure having numerous holes and provided with notches in its edges, and having sets of oppositely-disposed lateral projections at said edges for securing the said structure to the floor of the fire-chamber.

3. A furnace provided with a fire-chamber having a floor and with an opening in the front thereof located in proximity to the forward end of the floor of the fire-chamber, a draft device extending lengthwise of the fire-chamber and provided with numerous holes, the said device being open at both ends and fitted at its forward end within the opening in the front of the furnace, and a door for controlling the admission of air to said opening.

4. A furnace provided with a fire-chamber having a floor, and with an opening in the front thereof, located in proximity to the forward end of the floor of the fire-chamber, and a substantially semitubular structure extending lengthwise of the fire-chamber and resting on the floor thereof and having notches in its edges, the said structure being open at both ends and enlarged at the forward end and fitted at said forward end within the opening in the front of the furnace.

5. A furnace provided with a fire-chamber having a floor, the furnace having an opening in the front thereof, located in proximity to the forward end of the floor of the fire-chamber, and a substantially semitubular structure extending lengthwise of the fire-chamber and resting on the floor thereof, the said structure being provided with numerous holes and having sets of oppositely-disposed lateral projections at its edges for securing the structure to the floor of the fire-chamber, the structure being enlarged at the forward end and fitted at said end within the opening in the front of the furnace.

6. A furnace provided with a fire-chamber having a floor, the furnace having an opening in the front thereof and provided with a door closing the opening, said door also having an opening and provided with a shutter for controlling the same, the first-named opening being located in proximity to the forward end of the floor of the fire-chamber, and a draft device extending lengthwise of the fire-chamber and resting on said floor, said device being provided with numerous holes and having the forward end thereof fitted within the said first-named opening in position to receive air through the opening in the door.

7. A furnace provided with a fire-chamber having a floor, the furnace having an opening in the front thereof and provided with a door closing the opening, the door being also provided with an opening, a shutter pivotally supported on the door for opening or closing the opening in the door, means for adjusting the shutter, the opening in the front of the furnace being located in proximity to the forward end of the floor of the fire-chamber, and a

draft device comprising a substantially semi-tubular body extending lengthwise of the fire-chamber and resting on said floor, said draft device being provided with numerous holes and having its forward end fitted within the opening in the front of the furnace, in position to receive air through the opening in the door.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM GEORGE McPHERSON.

Witnesses:
ROBERT G. McPHERSON,
O. I. BAKER.