

Sept. 2 . 1924.

1,507,469

J. M. CORSON

FURNACE

Filed Jan. 15, 1924

Fig.1,

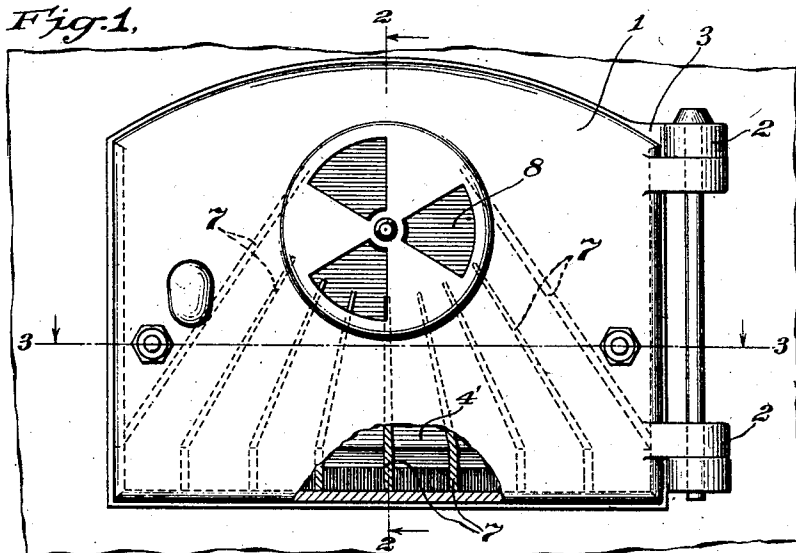


Fig. 2.

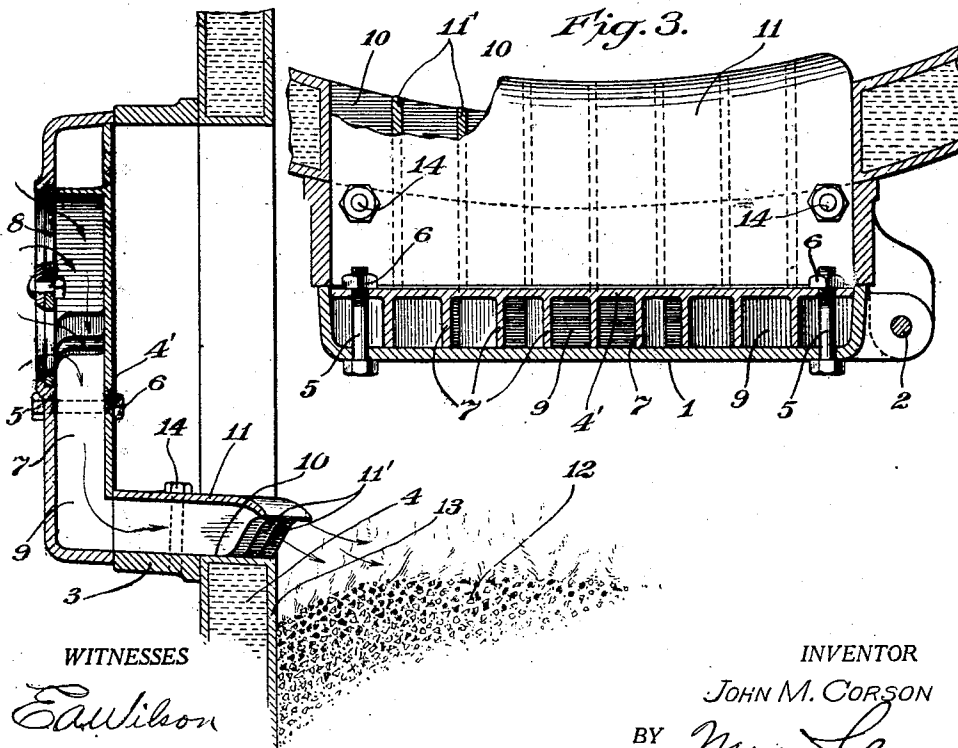
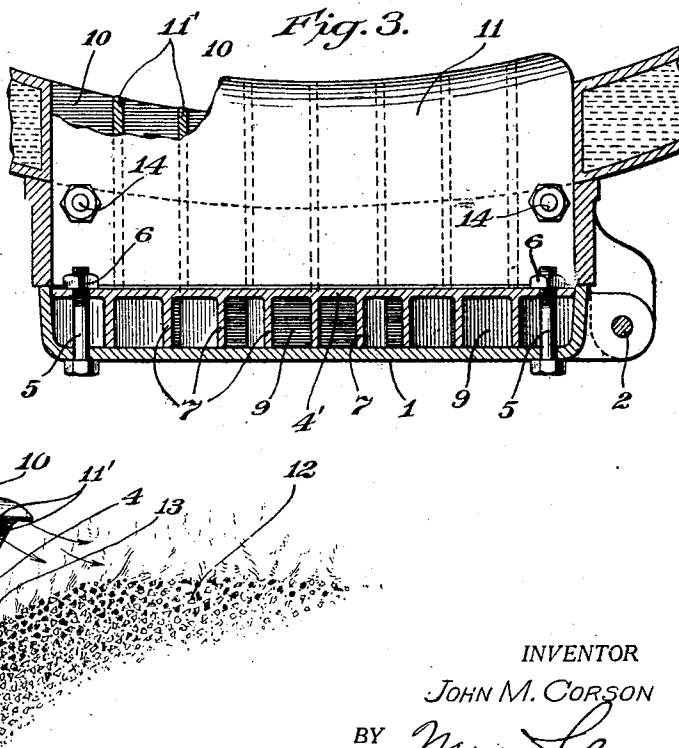


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN M. CORSON, OF BROOKLYN, NEW YORK.

FURNACE.

Application filed January 15, 1924. Serial No. 686,424.

To all whom it may concern:

Be it known that I, JOHN M. CORSON, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Furnaces, of which the following is a full, clear, and exact description.

10 This invention relates to improvements in furnaces and more particularly to improved means for admitting heated air to the fire box of the furnace, and while I shall hereinafter refer to the device as a furnace it is, of course, to be understood that I use
15 this term in its broadest possible sense to include any stove or heater with which my invention may be employed. The improvement is, however, particularly adapted for use in connection with the fuel door of a furnace and is illustrated and described as such.

An object of the invention is to provide an attachment or adjunct to the door and the door frame whereby a plurality of air inlet flues are formed, communicating with the damper of the door and discharging over the top of the fuel in the fire box, and to so construct and arrange the parts that
30 the air will be subjected to the maximum of heat from a relatively large radiating metallic surface and will be distributed in a wide sheet or stream over the top of the fuel so as to supply the necessary heated oxygen to aid combustion and prevent choking of the fire, wasting of the gas, and loss of heat.

A further object is to provide improvements of the character stated which may be attached to a furnace door of a construction in general use or may be installed on doors and frames in the course of manufacture and which add but little to the cost of construction while at the same time resulting in
45 a great economy in fuel consumption as well as beneficial results of combustion.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts which will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

55 Figure 1 is a view in front elevation, partly broken away, illustrating my inven-

tion as applied to the fuel door and to the door frame of a furnace;

Figure 2 is a view in vertical section on the line 2—2 of Figure 1;

Figure 3 is a view in horizontal section on the line 3—3 of Figure 1.

1 represents an ordinary furnace door having hinged connection as shown at 2 with the door frame 3. This door frame 3 is a secured to the furnace wall 4 in any approved manner, and I would have it understood that I have not attempted to illustrate in detail the construction of any particular furnace as it is obvious that the invention is adapted for use in connection
70 with any type, either hot water, steam or hot air. The illustration is therefore as simple as possible to show merely sufficient portions of the furnace to indicate the position and operation of my improvement.

To the inner face of the door 1 I secure a plate 4' by means of bolts 5 and nuts 6 or any other suitable securing means. This plate 4' fits within the outline of the door and is shorter than the door and spaced
80 from the bottom thereof for a purpose which will hereinafter appear. Webs or ribs 7 are made integral with the plate 4' or otherwise formed thereon, and these webs extend upwardly to a point of communication with the inner face of the door, back of the damper 8. This damper is illustrated as of the ordinary rotary type, but, of course, may be of any other type with which doors are ordinarily equipped. The
90 central web is relatively straight and the other webs at both sides thereof are inclined, forming a series of air flues 9, having their entrances in communication with the damper 8 and their exits in communication with similar flues 10 formed by a plate 11 secured to the bottom of the door frame 3. The plate 11 has webs 11' corresponding in number to, and registering with, the webs 7, so that the flues 9 and 10
100 are continuous and the air is directed through the same above the fuel 12 in the fire box 13.

In attaching this improved plate 11 to the frame 3, where it is used on furnaces such as now in common use, I employ bolts, rivets or other securing devices 14, but it is, of course, to be understood that where the improvement is applied to furnaces in the course of construction the plate 11 and
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the webs 11' may be cast integrally with the door frame 3; in other words, formed as a fixed part thereof and not a separate attachment.

5 By reason of the construction and arrangement of parts such as above described, the air is divided or distributed from the damper 8 through the several flues and is subjected to a maximum of heat radiation
10 from the metal surfaces with which it comes in contact both in its passage against the door 1 and plate 4' and in its passage through the flues 11' against the metal surfaces thereof. Furthermore, it will be
15 noted that the air is distributed over a relatively wide surface and is discharged in a downward direction directly toward the fuel and supplies the necessary heated air to give the best results and prevent other-
20 wise waste products of combustion escaping from the furnace.

Various slight changes and alterations might be made in the general form of the parts described without departing from my
25 invention, and hence I do not limit myself to the precise details set forth but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of the appended
30 claims.

I claim:

1. The combination with a furnace door having an air inlet therein, of a plate se-
35 cured to the door, and webs on the plate spacing the same from the inner face of the door constituting a wall around the inlet and forming a plurality of flues communicating with the air inlet and directing the air downwardly to the bottom of the
40 door.

2. The combination with a furnace door having an air inlet therein, of a plate se-
cured to the door, and webs on the plate

spacing the same from the inner face of the door and forming a plurality of flues
45 constituting a wall around the inlet and communicating with the air inlet, said plate terminating short of the bottom of the door whereby the flues discharge under the same
50 into the furnace.

3. The combination with a furnace door having an air inlet and a frame for said door, of a plate secured to the inner face of the door, a plate secured to the bottom of the frame, and registering webs on said
55 plates constituting a wall around the inlet and forming flues connecting the air inlet with the fire box of the furnace.

4. The combination with a furnace, a fuel door thereon having a dampered air inlet,
60 and a door frame in the furnace to which the door is hingedly connected, of means fixed to the bottom of the frame and inner face of the door forming a plurality of air inlet flues communicating with the air inlet
65 of the door and discharging over the fire box, the air in its passage through said flues receiving heat radiated from the walls thereof and discharging the same in a well distributed stream over the fire box.
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5. The combination with a furnace having a fuel inlet and a door normally closing said fuel inlet, said door having an air inlet at its intermediate portion, a plate
75 secured to the back of the door, webs spacing the plate from the back of the door, said webs forming a plurality of flues whereby the air entering the air inlet is directed downwardly and spread laterally, and a webbed plate secured to the bottom
80 of the fuel inlet and forming flues communicating with the first-mentioned flues whereby the air is directed into the furnace at the bottom of the fuel opening.

JOHN M. CORSON.