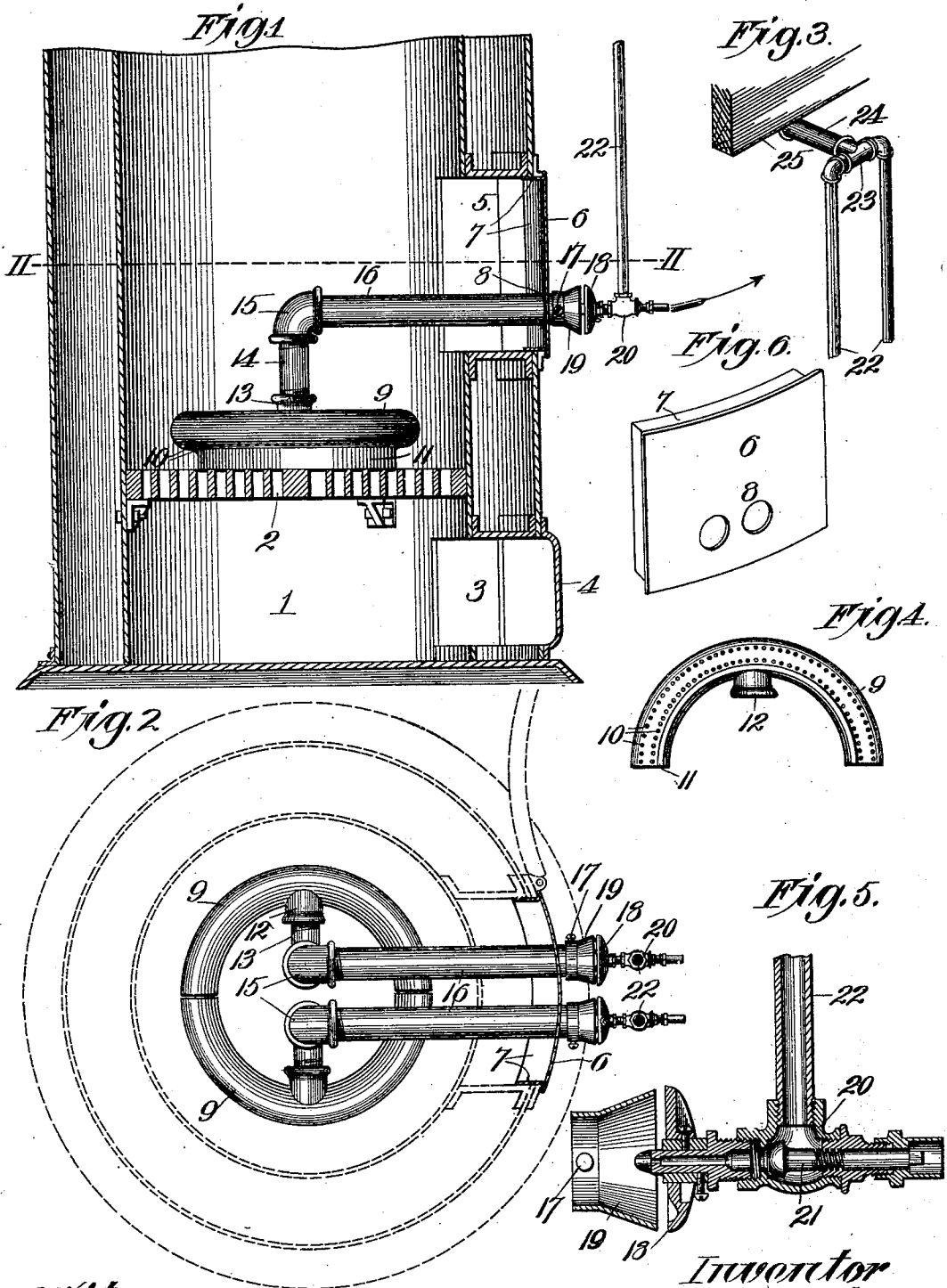


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GAS BURNER.

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UNITED STATES PATENT OFFICE.

ALFRED HOLTMAN, OF KANSAS CITY, MISSOURI.

GAS-BURNER.

938,423.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALFRED HOLTMAN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

This invention relates to gas burners and more especially to a burner for use with natural gas, and my object is to produce a burner of this character which will operate efficiently and reliably, which can be easily and quickly placed in or removed from a furnace and which is of simple, strong, durable and inexpensive construction.

With these objects in view and others, as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which—

Figure 1, is a central vertical section of a part of a hot air furnace equipped with a burner embodying my invention. Fig. 2, is a horizontal section of the burner taken on the line II—II of Fig. 1, and also shows the furnace in horizontal section in dotted lines. Fig. 3, is a perspective view showing the connection between the gas supply pipe and the gas distributing and valve carrying pipes. Fig. 4, is an inverted plan view of one member of the burner. Fig. 5, is an enlarged central vertical section of one of the valve-carrying pipes and the air mixer therefor. Fig. 6, is a perspective view of the fuel-opening closure plate of the furnace.

In the said drawing which illustrates an ordinary coal burning hot air furnace equipped with a burner embodying my invention, 1 indicates the furnace, 2 the grate therefor, 3 the ash-pit opening, 4 the door for the same, and 5 the fuel door opening. The door controlling the last-named opening may be removed or swung open and in either event the opening will be closed by a cover 6 having inwardly projecting spring flanges 7 to engage the walls of opening 5, and a pair of holes 8, for a purpose which hereinafter appears.

The burner comprises two independent semicircular members 9 arranged end to end so as to produce conjointly a ring of flame, as hereinafter explained and each member is provided with a plurality of perforations

10, in its underside and inward of said perforations with a depending semicircular flange 11 which flange will rest upon the grate 2 or its equivalent so as to support the burner horizontal, by preference, at the desired height. Each member is provided with an inwardly projecting tubular stem 12 and screwed into the same is an elbow 13, connected by a vertical pipe section 14 to an L-coupling 15, which coupling is secured to the inner end of a horizontal pipe 16 extending through one of the holes 8 of cover 6.

Secured by a set screw 17 on the outer end of each pipe 16 is the body portion 19 of an air mixer of common and wellknown type, the air shutter 18 of the mixer being adjustable toward the body portion 19 to permit the volume of air mixed with the gas as hereinafter explained to be varied. The mixer is secured upon the nozzle of an ordinary valve casing 20, the valve 21 having a threaded relation with the casing so that when turned it will provide for a variation in the volume of gas discharged by the nozzle through the mixer into pipe 16 or will cut off such supply of gas entirely. The valve casings 20 are secured to the main gas supply pipes 22, having their upper ends turned inwardly and communicating with and pivoted to a T-coupling 23, mounted on the front end of a supply pipe 24 leading to the gas meter, not shown, and secured in any suitable manner to an overhead support 25. The supply pipe 24 preferably parallels the pipes 16, so that pipes 22 can swing toward and from the door opening 5.

After the device is once installed in the furnace the householder or any other inexperienced person can easily and quickly remove it from the furnace or replace it therein. To effect the removal set screws 17 are loosened; pipes 22 are then grasped and swung upwardly away from the furnace as indicated by the arrow Fig. 1, the mixers being of course carried with them. The cover is then slipped off the projecting ends of pipe 16 and then the latter are grasped one at a time, for the purpose of removing the burner members through the door opening, it being understood that this can be easily effected irrespective of the length of pipes 14 because the threaded connection between the elbows 13 and the stems 12, permits the burner member to be swung around until it is in substantially the same vertical plane with the pipe 14. In this position it can be

more easily removed through the ordinary door opening than if it is left in its horizontal position, though of course if the door opening be large enough it may be removed without any pivotal action whatever. Each member is assembled in the same manner and the actions described are reversed to restore the burner to operative position in the furnace.

When the gas is turned on a lighted taper is preferably used to ignite it, the taper being introduced through the lower opening 3 or at any other suitable point. It will be understood that when the parts are properly assembled the air to support combustion will be sucked into the mixer between the body and the cap thereof and that by the time it leaves the burner it will be thoroughly and intimately mixed with the gas and escape with the same through the perforations 10. The flame will rise in the form of a ring or cylinder around the burner as the depending flange 11 disposed inward of the perforations will tend to deflect all of the gas outward, this being desirable because it more rapidly heats the inner shell of the furnace and hence the air surrounding the same. As the flame and heat rises it impinges upon the pipes 16, so as to raise the temperature of the gas and air therein to a high degree, in fact the pipes 16 get so hot that the lower ends of the gas supply pipes 22 are also heated so as to supply warm gas to the pipes 16, this gas warming the air which it sucks into said pipes where the mixture is superheated by contact with the latter. This heating and superheating of the combustible mixture causes the same to expand and therefore be discharged forcibly through the burner orifices with the result

that a ring of flame of considerable depth is produced, this flame being sufficient to raise the air destined for distribution through the building, to a high temperature.

From the above description it will be apparent that I have produced a gas burner possessing the features of advantage enumerated as desirable and I wish it to be understood that I do not desire to be restricted to the exact details of construction shown and described as obvious modifications will suggest themselves to one skilled in the art.

It will be noted that this burner can be employed in any type of furnace without removing or changing the position of any part of the latter except to either provide it with holes to receive pipe or pipes 16 or equip it with a perforated plate to cover the fuel door opening.

Having thus described the invention what I claim as new and desire to secure by Letters-Patent, is:—

The combination of a burner provided with a depending supporting flange, a horizontally disposed pipe leading laterally therefrom, an air mixer body portion adjustably secured on the outer end of said horizontally disposed pipe, a vertically disposed supply pipe mounted to swing to and from said horizontally disposed pipe, a valve casing carried by the lower end of said supply pipe, a regulating valve therein, and an air shutter adjustably secured on the end of said valve casing.

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

ALFRED HOLTMAN.

Witnesses:

EZRA BONE,
G. Y. THORPE.