

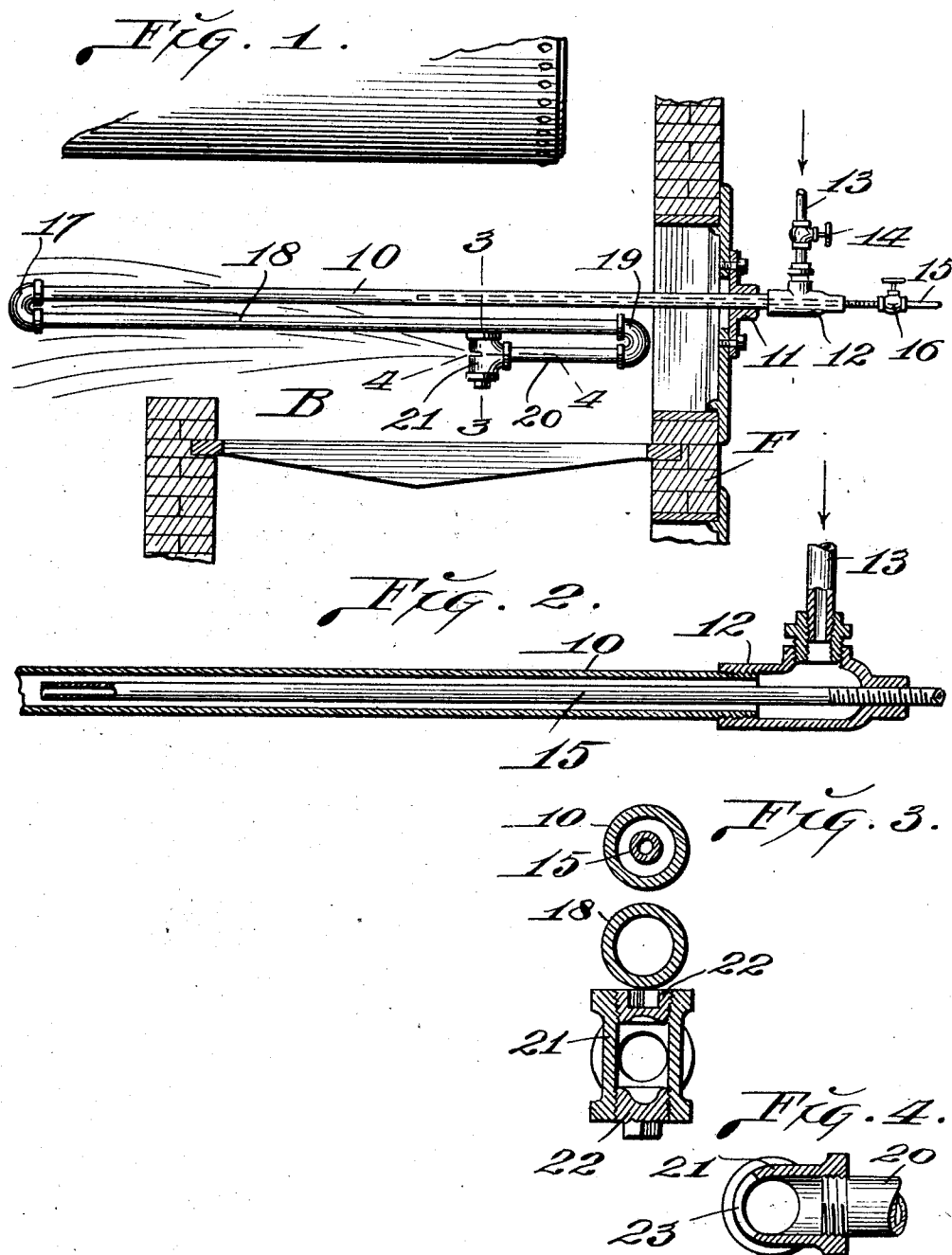
June 16, 1925.

1,542,583

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GASEOUS FUEL BURNER

Filed June 12, 1924



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Patented June 16, 1925.

1,542,583

UNITED STATES PATENT OFFICE.

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GASEOUS-FUEL BURNER.

Application filed June 12, 1924. Serial No. 719,524.

To all whom it may concern:

Be it known that I, JOHN V. ROBERTS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Gaseous-Fuel Burners, of which the following is a specification.

My invention relates generally to heating and steam generating appliances and more particularly to a gaseous fuel burner, the principal objects of my invention being, to generally improve upon and simplify the construction of the existing forms of similar burners; to provide a burner that will be highly efficient in the burning of fuel such as crude oil, refined liquid hydro-carbons, or the like; to construct the burner so that the gaseous fuel that passes through the same will be superheated and consequently vaporized to a relatively high degree before it reaches the point of ignition at the jet opening of the burner or nozzle and further, to provide a burner of the character referred to that may be easily and cheaply produced and installed for use in a furnace or the like.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will be hereinafter more fully described and claimed and illustrated in the accompanying drawings, in which:

Fig. 1 is a vertical section taken through the central portion of the fire box of a boiler furnace and showing my improved burner positioned for use therein.

Fig. 2 is a longitudinal section taken through the front portion of the upper tubular leg of the burner and showing the fluid pressure jet pipe therein.

Fig. 3 is an enlarged section taken on the line 3—3 of Fig. 1.

Fig. 4 is an enlarged horizontal section taken on the line 4—4 of Fig. 1.

Where my improved burner is used for heating a boiler furnace as illustrated in Fig. 1, a tube 10, of sufficient length to extend through the fire box B of the furnace is secured in any suitable manner, preferably by means of a collar 11 to the fire door or front wall of the furnace and the outer end of this tube 10 is screw-seated in the inner end of a reducing nipple 12.

Connected to this nipple, preferably the top thereof and near its center is a tube 13

that leads from a suitably located liquid hydro-carbon supply tank and arranged in said tube 13 adjacent to the nipple is a manually operable oil flow control valve 14.

Screw-seated in the smaller outer end of the nipple 12 is a relatively small tube 15 that extends for a substantial distance axially through the larger tube 10.

This small tube 15 is connected to a suitable source of fluid pressure supply either steam or compressed air and located in said tube adjacent to the nipple is a fluid pressure flow control valve 16.

The rear or inner end of tube 10 is connected by a return bend 17 to the inner or rear end of a tube 18 that occupies a position just beneath and parallel with said tube 10 and said tube 18 extends forwardly through the fire box B of the furnace to a point adjacent to the front wall F of the furnace.

The forward end of tube 18 is connected by a return bend or nipple 19 to the forward end of a short tube 20 that projects a short distance rearwardly in the fire box and which occupies a position directly beneath and parallel with said tube 18.

The rear end of short tube 20 carries a burner head 21, preferably a T-union having the ends of its vertical leg closed by plugs such as 22 and, formed in the rear portion of the wall of the vertical leg of this union is a horizontally disposed slot 23 that performs the functions of a jet orifice.

In the operation of my improved burner, valve 16 is opened to permit fluid pressure, either steam or compressed air through tube 15 and this fluid pressure discharging from the rear end of said tube creates a certain degree of suction through the forward portion of tube 10 and the fitting 12 so that, when valve 14 is opened to admit liquid hydro-carbon through supply pipe 13, said liquid hydro-carbon will be forcibly drawn through tube 10.

The flame resulting from combustion of the gaseous fuel discharging from jet orifice 23 heats the rear portions of tubes 10 and 18 to a relatively high degree, with the result, that the liquid hydro-carbon passing through said tubes with the fluid pressure will, as a result of the high temperatures, become very thoroughly vaporized and, in such condition it will mix with said fluid pressure and form a highly combustible mixture that ignites readily and burns with a

relatively high degree of heat as it discharges from jet orifice 23.

In the event that steam is the fluid pressure that is admitted to the apparatus through pipe 13, then said steam, in passing through tubes 10, 18 and 20 will become superheated at the same time that it is mixing with the hydro-carbon vapor and this superheating effect adds materially to the combustible qualities of the gaseous fuel mixture.

I have found in practical use, that best results are attained by extending tube 15 a substantial distance into tube 10 and in Fig. 1 said tube 15 is shown as terminating a short distance inwardly from the burner head.

Thus it will be seen that I have provided a gaseous fuel burner that is relatively simple in structure, capable of being easily and cheaply produced and which may be economically and advantageously used for all heating purposes and particularly for the generation of steam in boilers.

It will be understood that minor changes in the size, form and construction of the various parts of my improved gaseous fuel burner may be made and substituted for those herein shown and described without departing from the spirit of the invention, the scope of which is set forth in the appended claim.

I claim as my invention:

A gaseous fuel burner comprising an elongated tubular member that is arranged to form a pair of relatively long legs, one of which is disposed directly above the other and a third relatively short leg that is disposed directly beneath the front end portion of the lower one of said long legs, a reducing nipple on the forward end of the upper one of the longer tubular legs, a fluid fuel supply pipe connected to said reducing nipple and into and through the upper longer leg for approximately half its length, a fluid pressure supply pipe connected to said reducing nipple, a short vertically disposed hollow cylindrical burner head connected to the rear end of the short tubular leg, said burner head being disposed forwardly with respect to the rear end of the fuel supply pipe in the upper one of the long legs, plugs removably seated in the upper and lower ends of the cylindrical burner head and said burner head being provided its rear wall with a centrally arranged horizontally disposed slot that occupies the same plane with the center of the short leg to which said burner head is connected, so that the fluid fuel mixture that discharges through the short lower tubular leg, passes directly across the chamber within said burner head and discharges through the jet orifice formed by said horizontally disposed slot.

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In testimony whereof I affix my signature.

JOHN V. ROBERTS.