

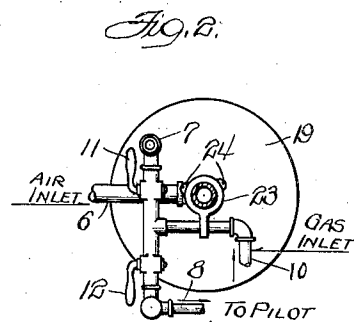
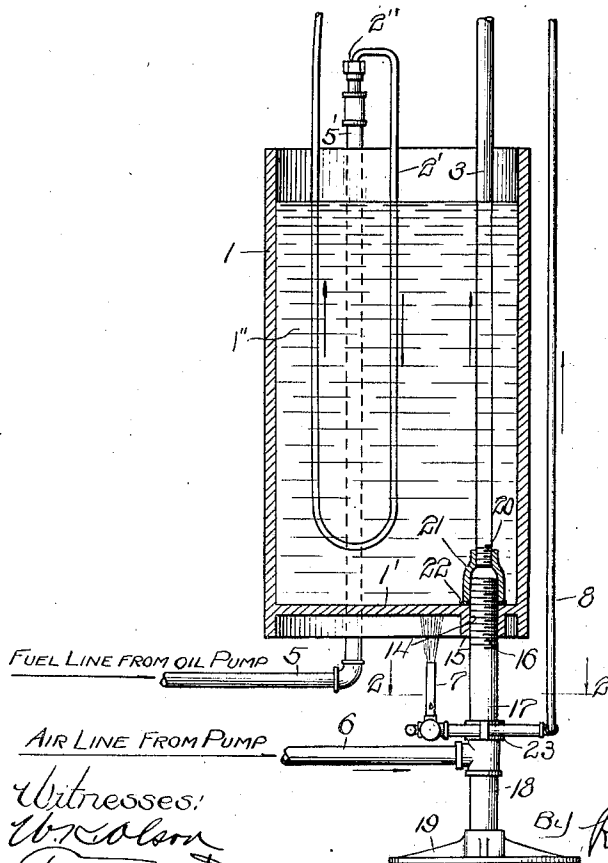
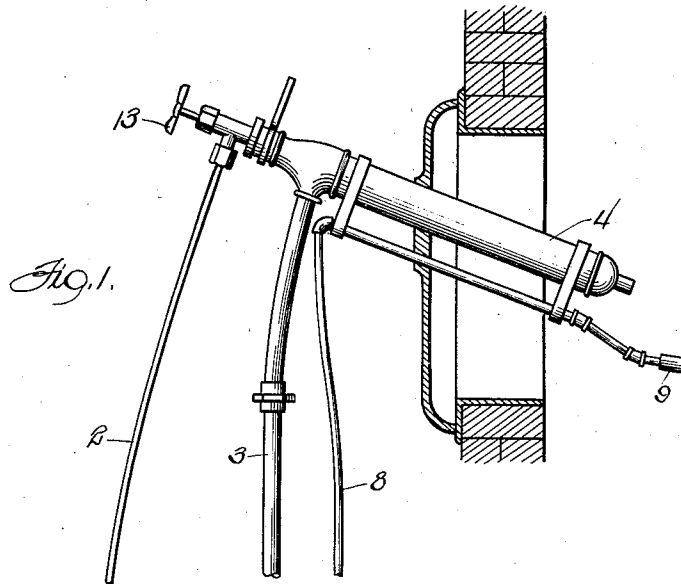
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PREHEATING ATTACHMENT FOR FUEL OIL BURNERS

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UNITED STATES PATENT OFFICE.

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PREHEATING ATTACHMENT FOR FUEL-OIL BURNERS.

Application filed July 16, 1923. Serial No. 651,825.

This invention relates to hydrocarbon fuel burners and accessories therefor adapted for use with low grade heavy fuel oils. Heretofore various forms of burners have been used for this purpose, but so far as I am aware no burner of this sort for general use in household furnaces and the like has been produced heretofore which is adapted both for quiet operation and freedom from carbonization and also certain other desirable features for which I provide.

The main objects of this invention are to provide an improved form of fuel burner outfit as a whole of the character referred to, adapted for use with furnaces such as are commonly used for heating dwellings and other buildings and which shall be at all times quiet in operation and free from carbonization and other troubles; to provide in combination with such a burner proper, adequate and dependable means of simple character adapted for ready control and adjustment with a minimum amount of attention; and to provide such a burner equipment adapted for using the lowest grades of fuel oil and having preheating means adapted to positively limit the maximum temperature in the heater to a point where carbonization of the fuel cannot take place.

An illustrative embodiment of this invention is shown by the accompanying drawings, in which:

Figure 1 is a diagrammatic side elevation of the device as a whole.

Fig. 2 is a horizontal section on the line 2-2 of Fig. 1.

In the construction shown in the drawings, the fuel and air are preheated by passing separately through the water warming tank 1. The fuel oil, which may be of a very thick and heavy low grade, passes through the heating loop 2' of tube 2 and the air passes through the heating pipe 3. Said pipes 2 and 3 are connected to the rear end of the downwardly inclined carbureting burner 4, which projects through the doorway of the furnace substantially as shown and described in my copending application, Serial No. 601,641, filed November 17, 1922.

The fuel heating pipe 2 is preferably made of flexible copper tubing and is tightly connected at 2" to a fuel supply pipe 5 leading to a pressure pump, not shown. The air heating pipe 3 is preferably straight

and connected at its lower end to an air supply pipe 6 leading to an air pressure pump, not shown.

The water 1" in the preheating tank 1 is heated by a burner 7, preferably of the Bunsen type, positioned under said tank. Ordinary illuminating gas is well adapted for operating this burner, and a branch tube 8 extends upward to the main burner pilot 9 adjacent to the tip of burner 4 for operation substantially as set forth in my said copending application. The burner 7 and pilot 9 are fed from a common supply pipe 10 leading to the gas main, as will be understood. Cocks 11 and 12 control the flow of gas to burner 7 and pilot 9, respectively.

A hand valve 13 is provided at the rear end of burner 4 for regulating the flow of fuel oil according to the amount of flame and heat desired. The bottom of the hot water tank is perforated at 14 and provided with a downward interiorly threaded flange 15 to receive the upwardly projecting threaded end 16 of the tubular support 17, which support is connected to the air supply pipe 6 and in turn is supported by a post or standard 18 set in the flat bottomed base 19.

The air heating tube 3 is threaded at its lower end, as at 20, and is connected to the upwardly projecting tip 16 of tube 17 by means of the coupling 21, which is interiorly threaded at both ends. A gasket 22 is provided between the tank bottom 1' and the lower end of said coupling whereby a tight joint is assured.

The gas supply unit is attached for support to the member 17 by means of the clamp 23, which is fixed in place by the set screws 24.

The air pressure means and the fuel oil pump are operated by an electric motor or any other convenient source of power as will be understood, though not here shown. Automatic means may also be provided to maintain a proper level of water in tank 1, as will be understood, though not here shown.

Heretofore, so far as I am aware the lowest grades of oil successfully or commonly used for such purposes have been "thirty-two to thirty-six gravity" mineral oils, costing about eight and a half cents per gallon, but with my improved preheater I am enabled to make use, with entire success, of

"twenty-three and twenty-four gravity" oils, costing only about six and a half cents per gallon.

In operation the fuel oil is turned on and adjusted at 13. The pilot flame at 9 is expanded, as by turning valve 12, sufficiently to ignite the fuel as it emerges from burner 4. The temperature of the water in tank 1 is regulated by turning the Bunsen burner on more or less, as by valve 11, but the tank heat can never exceed 212° Fahrenheit, by reason of the open water tank. This and even somewhat lower temperatures, however, are amply sufficient to effect the desirable results sought after. It will be noted that the water tank 1 is a unitary means for serving the dual purpose of heating both the oil supply and the air supply.

In order that the equipment as a whole may be ever ready for instant operation, the Bunsen flame is never entirely extinguished, but is left burning sufficiently to keep the tank water hot at all times. Then when the furnace heat is desired it only remains to turn on the three valves, 11, 12 and 13, and start the air and fuel pump motor by throwing a switch as will be understood. The simple reverse operation may be followed to close the device down. The equipment is all so constructed and arranged as to be practically noiseless.

Although but one specific embodiment of this invention is herein shown and described,

it is to be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. In a burner feeding device of the character described a water tank, a hollow standard whereon said tank is supported, a tube extending upward from the end of said standard which projects inward through the bottom of said tank, means to force air there-through, and means to heat said tank.

2. The combination with a carbureting burner, unitary means for preheating the fuel supply and the air supply enroute to the burner, said unitary means comprising a water tank vented to atmospheric pressure through which the fuel supply pipe and air supply pipe pass, and means for heating the water within the tank.

3. The combination with a carbureting burner, for burning heavy low-grade fuel-oils, unitary means for preheating the fuel supply and air supply intermediate the supply pumps and the burner, said unitary means comprising a water tank vented to atmospheric pressure through which the fuel supply pipe and air supply pipe pass, and means for heating the water within the tank.

Signed at Chicago this 14th day of July, 1923.

JEFFERSON C. GIBSON.