

Sept. 29, 1925.

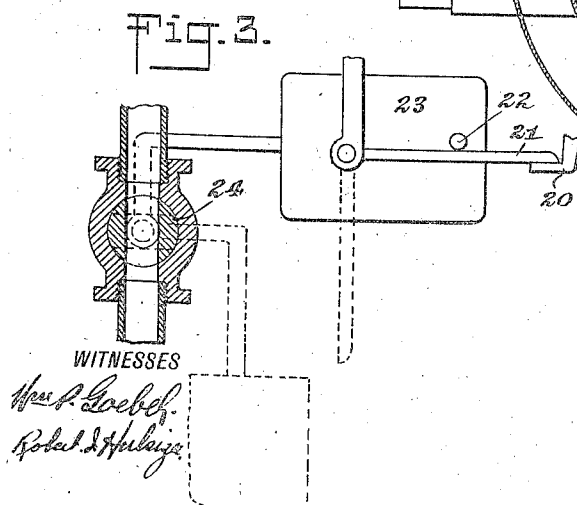
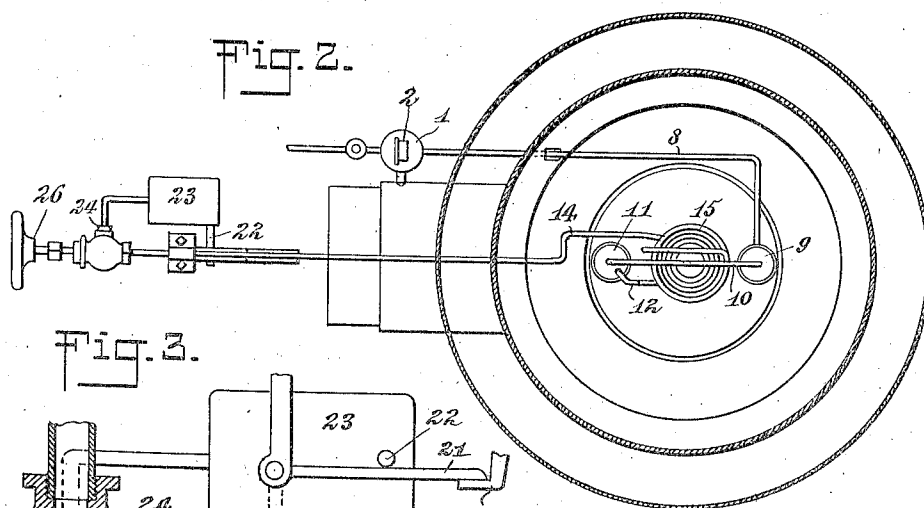
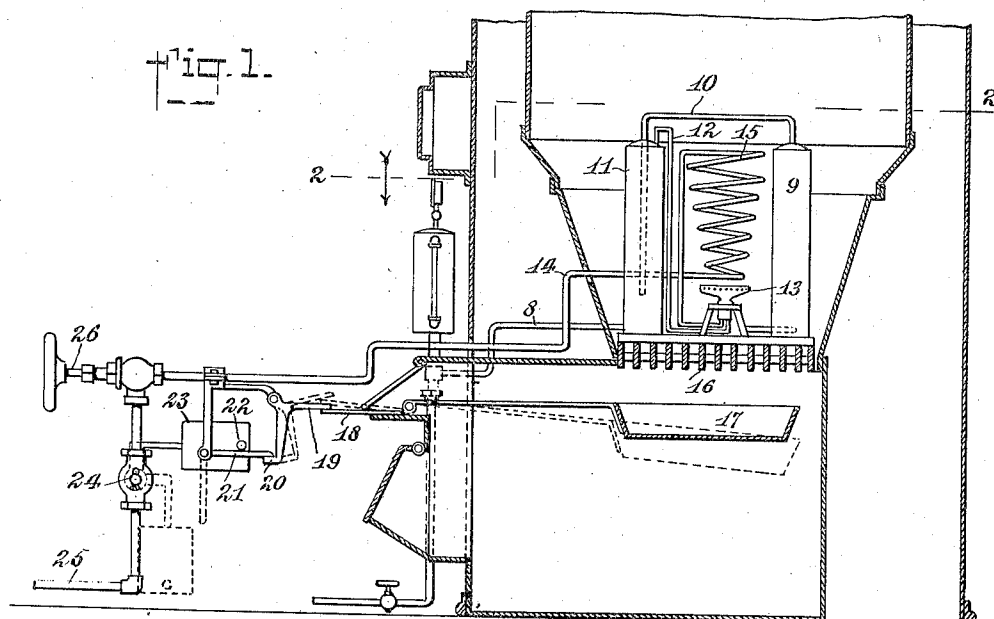
F. X. MANTSION

1,555,684

OIL BURNER

Filed July 26, 1924

2 Sheets-Sheet 1



WITNESSES

Wm. P. Goebel.
Robert L. Harkins.

Robert L. Hulsizer

INVENTOR
Frank X. Mantzian
BY *Mantz*
ATTORNEYS

INVENTOR
Frank X. Mantzian

84

Министр

ATTORNEYS

Sept. 29, 1925.

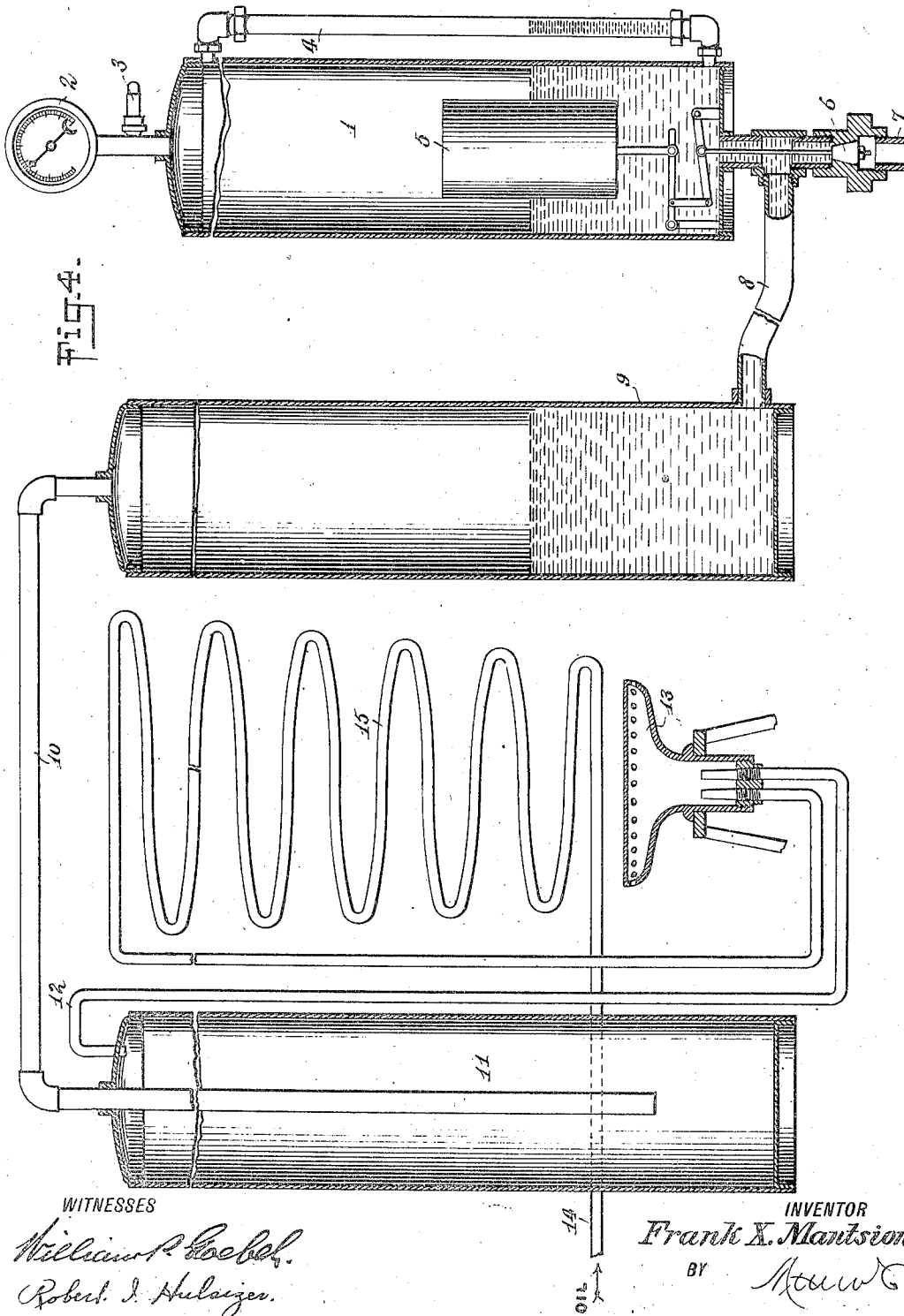
F. X. MANTSION

1,555,684

OIL BURNER

Filed July 26, 1924

2 Sheets-Sheet 2



WITNESSES

William R. Koebel.
Robert J. Hulsizer.

INVENTOR

Frank X. Mantsion

BY

Attorneys
ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK XAVIER MANTSION, OF PHILADELPHIA, PENNSYLVANIA.

OIL BURNER.

Application filed July 26, 1924. Serial No. 728,452.

To all whom it may concern:

Be it known that I, FRANK X. MANTSION, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Oil Burner, of which the following is a full, clear, and exact description.

This invention relates to an oil-burning apparatus. It has for an object the provision of simple and efficient means adapted to be applied to most any type of burner whereby oil and superheated steam can be most efficiently used to produce a maximum amount of heat and a minimum consumption of fluid in the burner.

Another object concerns the provision of simple and efficient means whereby the oil and the water are properly and preliminarily heated to the desired state before passing out through the burner.

A further object concerns the provision of a most efficient disposition of the parts so that both the fluids are heated to their desired state in the shortest possible time.

A still further object concerns the provision of simple and efficient means whereby the supply of water for the purpose of providing superheated steam is controlled substantially automatically.

The invention is illustrated in the drawings, of which—

Figure 1 is a vertical section through the apparatus;

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

Fig. 3 is a detail of the valve-controlling means; and

Fig. 4 is an enlarged section through the combination of fluid-heating and controlling elements.

The form of the invention shown in the drawings is a preferred form, although it is understood that modifications in the construction and arrangement of the parts and in the character of the materials used may be adopted without departing from the spirit of the invention as set forth in the appended claims.

In its general aspect the invention concerns the feeding of water automatically into a tank whereby the amount of water in the tank is maintained automatically by means of certain manually controlled valve mechanisms. This water flows by gravity

to a tank within the furnace which is disposed at one side of the heating coil and near the burner. This second or vaporizing tank is so heated that the water is turned into steam very rapidly and then passes into a third tank where the steam is superheated, this third or superheating tank also being disposed closely adjacent the burner so as to be sufficiently under the influence of the heat of the burner at all times. The superheated steam passes from the superheater tank directly into the burner. Oil or other hydrocarbon fuel is let into the furnace from a pipe which, above the burner, is coiled so that the oil has to pass through this coil before reaching the burner and is thus preliminarily heated so that when it comes out through the nozzle of the burner with the superheated steam it is in a vaporous condition. It is found that the flame produced by the burner, due to the preliminary and efficient heating of the water and the oil, is of very intense character, and, of course, the size and dimensions of the flame can be regulated in accordance with the particular burner which it is desired to use. The character of the burner used depends entirely, of course, upon the commercial requirements of the burner.

This invention is an improvement on the idea of burners shown in my United States Patent No. 1,499,306 issued June 26, 1924, entitled "Oil burners."

The preferred embodiment of the invention, as shown in the drawings, comprises a water tank 1 preferably disposed outside the furnace. The tank 1 is provided with a pressure gage 2 connected to a pipe 3 through which additional water may be introduced or gaseous pressure can be maintained within the tank. The tank is provided with a water-level gage 4 and a float 5 connected through suitable linkage to a water inlet valve 6 seated in a pipe 7 which is connected to the source of water. The tank 1 is connected by a pipe 8 at the bottom thereof to a vaporizing tank 9 containing water at the same level as the water in the tank 1. The vaporizing tank 9 is connected by a pipe 10 at the top, to the superheating tank 11, the pipe 10 extending downward within the tank 11. The liquid turns to steam in the tank 9 and is additionally heated, passing through the pipe 10 over the flame and is superheated in the tank 11.

This superheated steam passes out of tank 11, through pipe 12 into the burner 13 of any suitable dimensions to give the required shape and size of flame.

The oil or other fuel enters pipe 14, passes through the coil 15 disposed over the burner, whence it is led into the burner direct.

As shown in Figs. 1, 2 and 3, the burner is shown as an oil burner provided with a grate 16 beneath which is a pan 17 adapted to receive the fuel which is finally passed into the burner through the piping. In accordance with my previously mentioned patent this pan will be depressed by the weight of a sufficient quantity of oil to lift the lip 18 outside of the furnace, actuating one arm 19 of a bellcrank lever, the other arm 20 of which acts as a latch to hold up a bar 21 in engagement with a pin 22 on a weight 23. When this latch 20 is drawn away the bar 21 drops, permitting the weight 23 to drop. This weight is connected to a valve 24, and when the weight drops the valve is closed. A manually operated valve 26 is disposed in the pipe 14 so that the oil flow can be regulated.

As shown in Figs. 1, 2 and 3, the tanks 9 and 11 are disposed in the burner above the grate on opposite sides of the coil 15, so that they both are directly under the influence of the flame coming from the burner 13. In this way the liquids and gases within the two tanks are most efficiently brought to the desired state before they are fed to the burner. Because of its close proximity to the intense flame, the time required to bring the combustible mixture to the desired state is reduced to a minimum. The water is supplied automatically to the vaporizing tank 9 by the means described in connection with the tank 1, which is preferably located outside the burner.

The apparatus described is simple and efficient, can be operated with a minimum of effort and time on the part of the operator,

and when once started requires practically no attention.

What I claim is:—

1. In an oil burning apparatus, a burner, a water vaporizing tank adjacent to and at one side of the burner, a superheating tank adjacent to and at another side of the burner, a pipe connecting the tops of the tanks, means for keeping the water in the vaporizing tank at a constant level, a pipe leading from the superheating tank to the burner, and an oil supply pipe having a coil above the burner, and adjacent the said tanks, the other end of the coil leading to the burner.

2. In an oil burning apparatus, the combination with a furnace, and a burner therefor, of a vaporizing tank in the furnace adjacent the burner and at one side thereof, a superheating tank in the furnace adjacent the burner and opposite the vaporizing tank, a pipe connecting the tops of the tanks, means outside of the furnace for keeping the water in the vaporizing tank at a constant level, a pipe leading from the superheating tank to the burner, and an oil pipe leading into the furnace and having a coil above the burner and between the said tanks, the other end of the coil leading to the burner.

3. In an oil burning apparatus, the combination with a furnace and burner therefor, a vaporizing tank in the furnace at one side of the burner, a superheating tank in the furnace at the opposite side of the burner, a pipe connecting the tops of the tanks, a water tank outside of the furnace and connected with vaporizing tank and having means for keeping the water in the vaporizing tank at constant level, a pipe leading from the superheating tank to the burner, and an oil pipe leading into the furnace above the burner and having a coil above the furnace and between the said tanks, the other end of the coil leading to the burner.

FRANK XAVIER MANTSION.