

July 17, 1923.

1,461,908

H. IZARD

OIL BURNER

Filed March 8, 1921

2 Sheets-Sheet 1

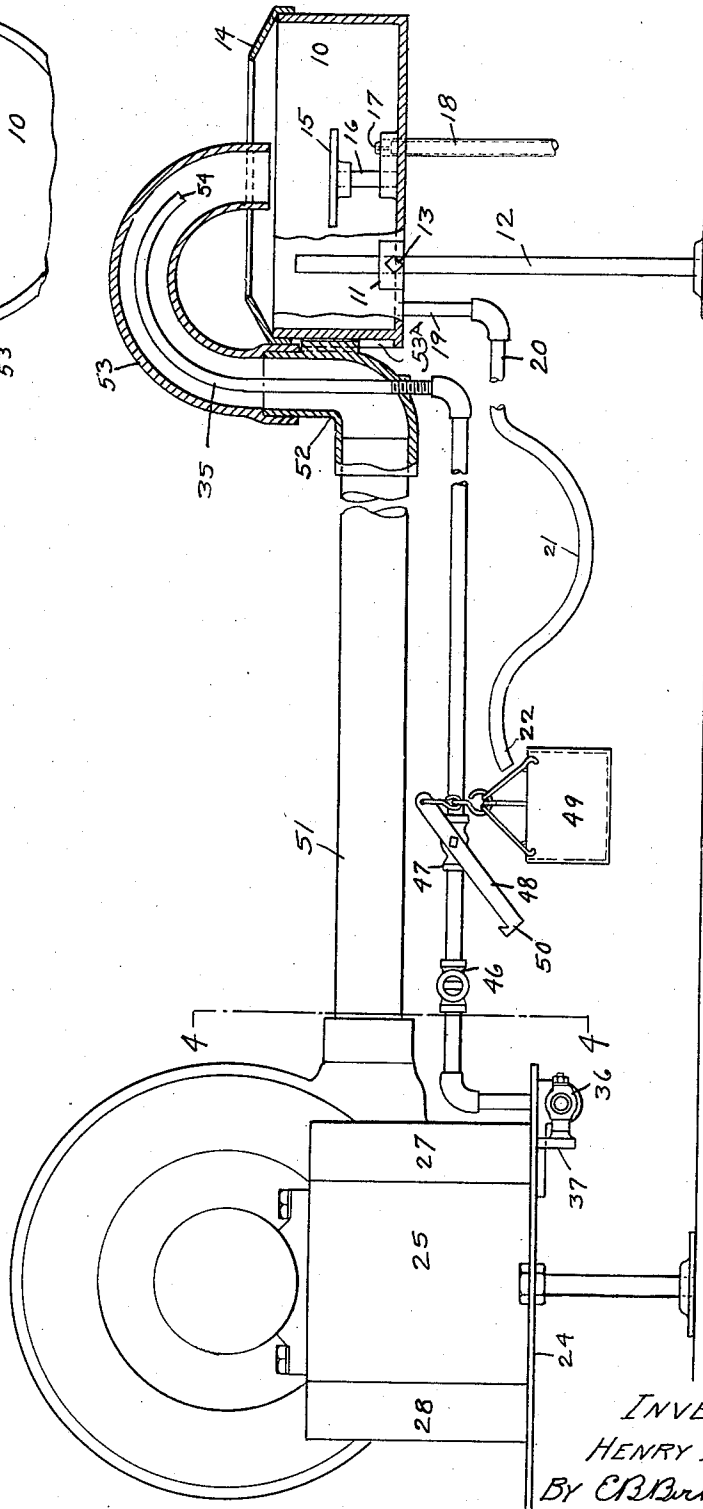
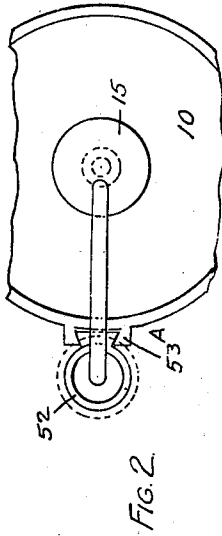


FIG. 1.

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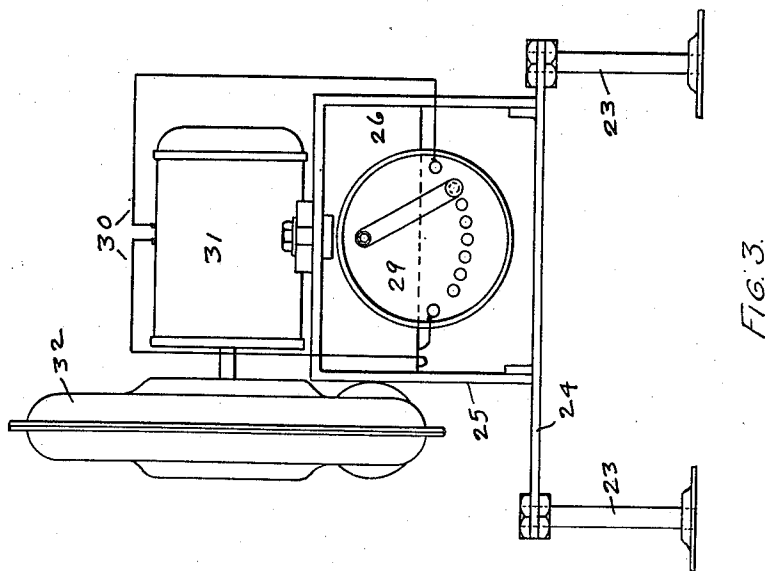
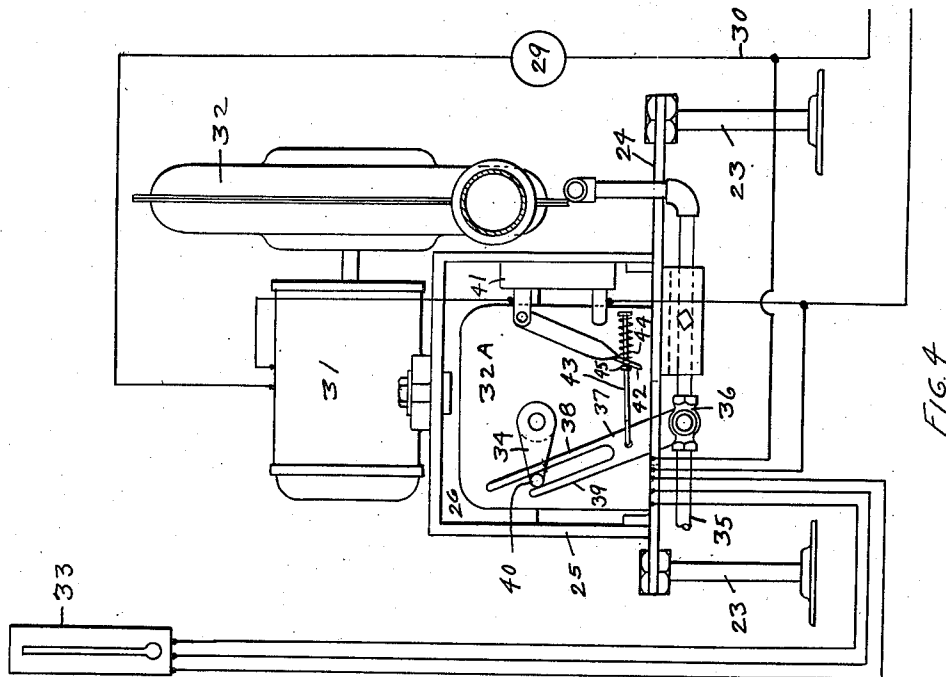
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2 Sheets-Sheet 2



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Patented July 17, 1923.

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UNITED STATES PATENT OFFICE.

HENRY IZARD, OF PORTLAND, OREGON.

OIL BURNER.

Application filed March 8, 1921. Serial No. 450,562.

To all whom it may concern:

Be it known that I, HENRY IZARD, a citizen of the United States, and resident of Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Oil Burner, of which the following is a specification.

This invention relates more particularly to devices for burning oils in furnaces.

The objects of my invention are to provide an automatic control for heat, and to produce this heat in the most economical manner with a minimum amount of labor or danger.

I attain these results in the manner set forth in the following specification and illustrated in the accompanying drawings in which:

Figure 1 is a side elevation of the device with portions cut away. Figure 2 is a plan of the combustion box with the air discharge pipe removed. Figure 3 is a front elevation of the device showing the means for varying the speed of the fan. Figure 4 is a vertical section along the line 4-4 in Fig. 1.

Similar numbers of reference refer to the same or similar parts throughout the several views.

Referring in detail to the drawings I have constructed my device as follows: The circular box 10 within which the combustion takes place is provided at each side with a lug 11 through which pass the vertical standards 12 which are secured by means of the set screws 13 when the box is at the desired height.

Around the upper edge of the box 10 I have provided a bevelled ring 14 which is easily removable and whose function it is to turn the flame back to the center of the box thereby assisting in securing complete combustion of the fuel. A baffle plate 15 is mounted on a nipple 16 which threads into the bottom of the combustion box. A pilot light jet 17 consisting of a perforated pipe plug underneath the baffle plate 15 is adapted to partly close the opening of the gas pipe 18. A drain pipe 19 leads from the bottom of the box 10 to a horizontal pipe 20 containing a trap 21 having an outlet 22 at approximately the same height as the pipe 20. It will be understood that the combustion box 10 and its attached parts are within the furnace and that the trap 21 is on the outside of the furnace.

At some distance in front of the furnace on the pedestal 23 is mounted a base plate 24 upon which is secured a box-like frame 25 having a half partition 26 near its center and a cover 27 on the furnace end and a second cover 28 on the opposite end. Behind the cover 28 and attached to the partition 26 is a rheostat 29 joined by means of the wires 30 to the motor 31 which drives a fan within the casing 32.

Behind the cover 27 is mounted a mechanism 32^A such as are commonly found in the market today and are known as reversible motors which are wired in a three way circuit containing a thermostat 33 whose maximum temperature will close the circuit of the motor in the mechanism 32^A and cause the crank 34 to make a complete revolution in one direction, and the minimum temperature on the thermostat closing the other side of the circuit which causes the crank 34 to make a complete revolution in the opposite direction.

The fuel consumed by this device passes through the pipe 35 containing the valve 36 which is operated by the slotted lever 37 whose one side 38 is considerably longer than the side 39. A pin 40 on the crank 34 is adapted to engage the slot between the members 38 and 39. A clock-wise movement of the crank 34 will move the lever 37 to the right and a counter-clockwise movement will move same to the left, thereby opening or closing the valve 36 as the case may be.

Mounted within the case 25 is a knife switch 41 whose handle 42 is joined by means of a connecting rod 43 to the lever 37. A spring 44 on the end of the rod 43 insures a rapid breaking of the circuit and the collar 45 on the rod 43 insures a positive return of the knife plate in the opposite direction.

The pipe 35 also contains a manually controlled valve 46 by means of which the flow of oil to the burner is regulated in proportion to the speed of the fan. A third valve 47 in the pipe 35 is supplied with an operating lever 48 from the raised end of which is suspended a cup 49 which is underneath the outlet 22 of the pipe 20. If desired a weight may be attached to the end of the lever 48 to over-balance the cup 49.

An air pipe 51 conveys the air from the fan to an elbow 52 which is joined by a dove tail 53^A to the combustion box 10.

On top of this elbow is mounted a return bend 53 terminating in the center of the box 10 above the baffle plate 15. The fuel pipe 35 enters the elbow 52 and follows along the center of the return bend to its end 54 at which the oil is discharged and broken up or atomized by the surrounding current of air.

The operation of my device is as follows:

- 10 When installing as shown in the drawings and the temperature at the thermostat causes the regulating motor to operate in the counter-clockwise direction, it will be seen that the crank 34 will open the valve 36 and-
- 15 close the switch 41 which starts the air fan. The flame from the pilot light 17 ignites the atomized fuel now projected against the baffle plate 15, and when the temperature at the thermostat reaches its
- 20 other limit the crank 34 is operated one revolution in the opposite direction, thereby stopping the fan and cutting off the flow of oil.

The pilot lamp, of course, may be fed by gas or kerosene without departing from the spirit of my invention. If for any reason this flame should become extinguished and oil accumulate in the box 10 it would run out through the trap 21 into the cup 49 and automatically cut off further flow of oil. The trap 21 prevents the escape of gas or flame from the outlet 22 of the waste pipe 20 during ordinary operations.

It will be understood that when this device is used in greenhouses and under small boilers where there is no danger of developing too much heat that the automatic regulation may be dispensed with, but it is always desirable to be able to control the relation between the fuel and air consumption.

I have constructed the members 10, 14, 52 and 53 of aluminum bronze composed of approximately ten per cent of aluminum and ninety per cent of copper, as experience has indicated that this is the only metal which will withstand the action of the flame thus produced, and I regard it as an essential to the success of my invention.

While I have thus illustrated and described my invention it is not my desire to limit myself to this precise form or

method of application, but intend that it shall cover all forms and modifications that fall fairly within the appended claims.

What I claim is:

1. In an oil burner, the combination of an open top combustion box having a baffle plate in the center of its bottom, an inverted air supplying elbow suspended over the side of said box and discharging downwardly upon said baffle, an oil feed pipe within said air pipe and a gas pilot lamp within said combustion box:

2. In an oil burner, the combination of an open top combustion box having a baffle plate in the center of its bottom with an inverted air supplying elbow suspended over the side of said box and having its outlet over said baffle plate, means for forcing air through said elbow against said baffle and an oil supply pipe within said elbow and having its discharge over said baffle.

3. In an oil burner, the combination of an open top fire box having a baffle plate in the center of its bottom with an air supplying pipe adapted to discharge air downwardly against said baffle, an oil supply pipe within said air pipe whose outlet is also over said baffle, a cutoff valve in said oil pipe, a lever for operating said valve, a container for liquids attached to said lever and adapted to close said valve when liquid is placed in the container and a trapped drain pipe leading from the bottom of said combustion box and discharging into said container.

4. In an oil burner, the combination of an aluminum bronze combustion box having an open top, a baffle plate of the same metal mounted in the center of the box, a pilot lamp under said baffle plate, a drain pipe in the bottom of said box, adjustable standards secured to the sides of said box, an air pipe joined to the side of said box by means of a dove-tailed elbow, a discharge tip for said air pipe consisting of a return bend of aluminum bronze mounted on said elbow and terminating above said baffle plate, and a fuel pipe passing vertically into said elbow and terminating above the open end of said return bend.

HENRY IZARD.