

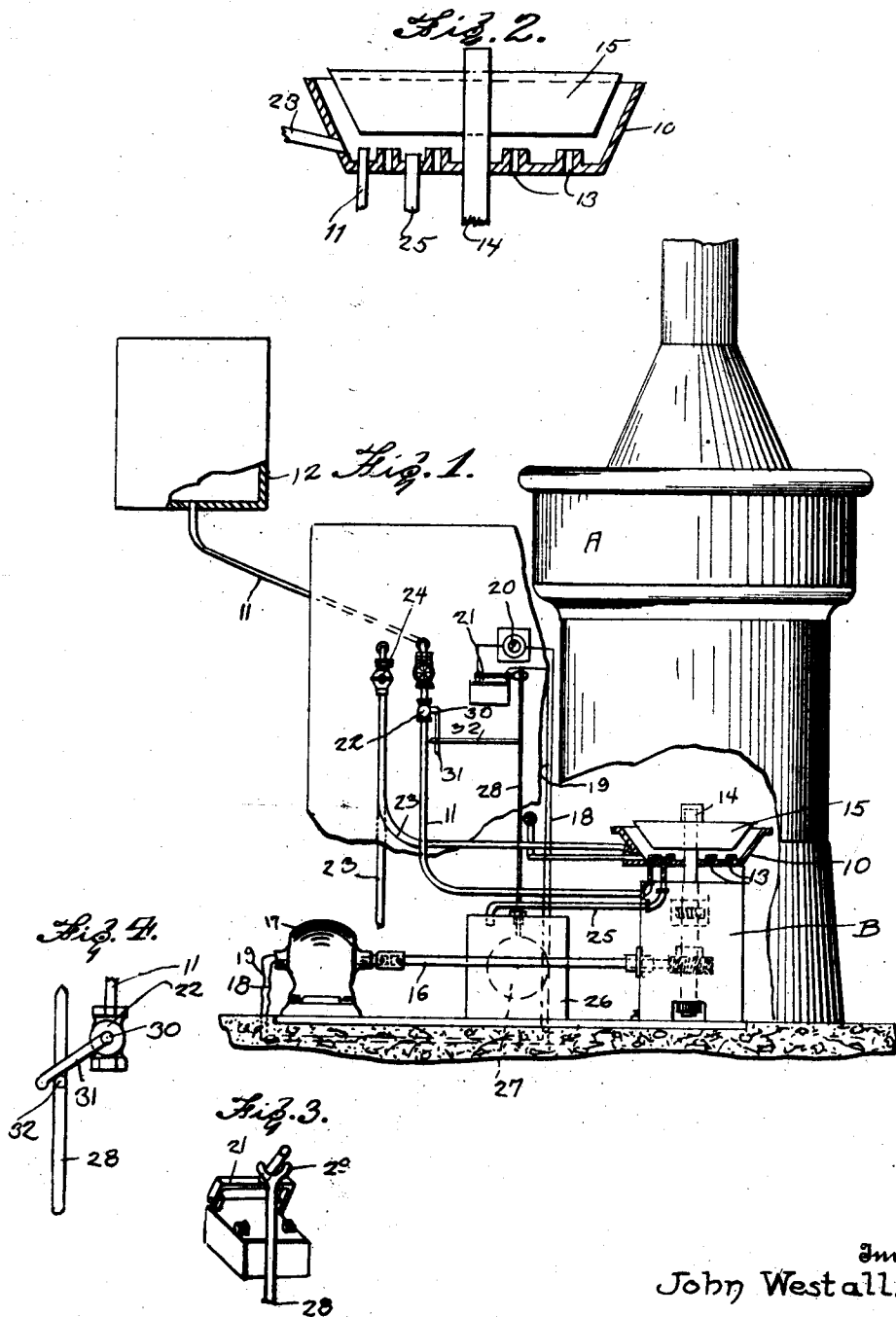
Oct. 2, 1923.

1,469,346

J. WESTALL

OVERFLOW CONTROLLED SAFETY DEVICE FOR OIL BURNERS

Filed June 6, 1921



Inventor
John Westall.

384
Watson E. Coleman Attorney

Patented Oct. 2, 1923.

1,469,346

UNITED STATES PATENT OFFICE.

JOHN WESTALL, OF FALL RIVER, MASSACHUSETTS.

OVERFLOW-CONTROLLED SAFETY DEVICE FOR OIL BURNERS.

Application filed June 6, 1921. Serial No. 475,369.

To all whom it may concern:

Be it known that I, JOHN WESTALL, a citizen of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Overflow-Controlled Safety Devices for Oil Burners, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to oil burners of the type shown in my Patents Nos. 1,293,590 granted on February 4, 1919, and 1,348,528 granted on August 3, 1920, and particularly to automatic controlling means for the electric motor of this burner.

In the form of burner which forms the subject matter of said patents, there is provided a burner plate upon which the oil is allowed to flow and on which the oil is burned and a rotatable breaker mounted above the plate and driven by a motor, this breaker acting to intimately mix the air and vaporized oil passing upward from the plate. This breaker is continuously rotated while the burner is in operation and is preferably driven by an electric motor. There may be occasions upon which the electric motor will stop, because the current is accidentally shut off or the circuit through the motor is broken in some way, and it is then desirable to absolutely shut off the current or break the circuit through the motor so that the motor shall not again start up until a controlling switch is manually thrown.

The object of my invention is to provide means which is controlled by the overflow of the burner which will automatically cut off the oil passing to the burner and automatically shift the controlling switch for the motor when the oil accumulates upon the burner plate or in the burner bowl to too great an extent and flows off, showing that the burner is not operating properly.

And a further object is to provide a construction of this kind which, if the current be shut off, causes the oil to flow into an overflow tank wherein there is a float, this float being connected to the controlling switch of the motor so that as the overflow tank fills the float will rise and will eventually open the controlling switch and also turn the cut-off valve controlling the flow of oil from the supply tank to the burner, thus preventing any flooding of the burner or the fire box or the furnace in which the burner is placed.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of a furnace partly broken away showing my mechanism applied to the oil burner thereof;

Figure 2 is a fragmentary section through the burner;

Figure 3 is a view of the switch showing the manner in which it is operated by the float rod;

Figure 4 is an elevation of the fuel valve showing how it is operated by the float rod.

Referring to these drawings, A designates a furnace of any usual or suitable character and B the burner which forms the subject matter of my prior patents. It is not believed necessary to describe this burner, except to say that there is a bowl or plate 10 forming the burner which is supplied with oil from an oil supply pipe 11 extending to a supply tank 12, from which the oil flows by gravity. This burner plate or bowl is provided with air inlet openings 13 and passing through the bowl of the burner is a shaft 14 which carries upon its upper end the radially extending blades 15 which constitute a rotatable breaker. This shaft is driven by suitable gearing from a longitudinally extending shaft 16 driven by an electric motor 17. This motor is shown as securing its current from wires 18 and 19 connected to a line connection 20 which is diagrammatically illustrated, this circuit having therein the knife switch 21.

In the oil pipe 11 there is disposed a cut-off valve 22. I have also illustrated the gas pipe 23 which extends from any suitable source of supply to the controlling valve 24 therefor and then extends downward and into the side of the burner to maintain a pilot light therein. Disposed above the bottom of the bowl or burner plate 10 is an overflow pipe 25 whose extremity is disposed about 1" above the bottom of the burner plate and which extends downward and discharges into an overflow tank 26, and in the overflow tank is disposed a float 27 of any suitable character.

Connected to the float is a vertical rod 28 which may be mounted in suitable guides and in any desired location and this rod at its upper end has a head 29 which extends beneath the handle of the knife switch 21. The valve 22 is provided with a stem or spindle 30, and projecting from this spindle is an arm 31. Extending from the rod 28 is an

arm 32 and the arm 31 is disposed in the path of movement of the arm 32. Thus it will be seen that when the float rises the rod 28 will push upward on the handle of the knife switch, thus opening the switch 21 and at the same time the arm 32 will engage with the arm 31 and eventually close the valve 22, thus cutting off the flow of oil to the burner and at the same time cutting off the supply of electric current to the motor.

The operation of this mechanism will be obvious from what has gone before. Normally the oil within the tank 12 flows downward through the pipe 11, the flow of oil being controlled by a controlling valve 22 in the pipe line, and is supplied to the burner. The burner should consume as much oil as is supplied to it but any overflow of oil passes back into the overflow tank 26. Ordinarily the oil gathers on the bottom of the burner to a depth of about $\frac{1}{4}$ " and so long as the beaters 15 are operating this oil will be consumed. When, however, the beaters cease to operate or if from any cause a greater amount of oil is supplied to the burners than the burners can use, the oil commences to rise in the bowl of the burner on the burner plate and will eventually flow off through the overflow pipe 25 into the overflow tank 26, and when the oil has reached a certain point in this tank, the float 27 will rise and in rising will open the switch 21, thus breaking the circuit of the motor and closing the cut-off valve 22, thus preventing the passage of any more oil to the burner until this cut-off valve 22 is manually opened again and the switch 21 is manually closed again. This prevents any flooding of the burner with oil or the flooding of the fire box of the furnace with oil.

I have illustrated the particular burner which forms the subject matter of my patents in connection with this regulating mechanism, but I wish it understood that I am not limited to the use of this safety cut-off mechanism or regulating mechanism with the particular form of burner

which I have illustrated. Neither do I wish to be limited to the exact form of the float, the manner in which the rod 28 is supported, or to the exact arrangement of the piping, overflow tank, supply tank, etc., which is illustrated in the drawings.

I claim:—

1. The combination with an oil burner, a feed pipe therefor, a rotatable motor driven member coacting with the burner, an electric motor operatively connected to said member to drive it and connected in circuit with the source of power, of a switch in said circuit, a cut-off valve in the feed pipe, an overflow tank, an overflow pipe leading from the burner to the tank, a float disposed in the tank, and a single member operatively connected to the float and acting to simultaneously open said switch and close the cut-off valve when the float is raised a predetermined distance by the accumulation of oil in the overflow tank said member permitting the independent manual operation of the cut-off valve and switch.

2. The combination with an oil burner, a feed pipe therefor, a motor operated member forming part of the burner and an electric motor for driving said member connected in circuit with a source of power, of a switch blade in said circuit, a cut-off valve in the feed pipe having a stem and an arm extending therefrom, an overflow tank, an overflow pipe leading from the burner and discharging into the tank, a float in the tank, a rod extending upward from the float and having a member in whose path of travel the said switch is disposed, and an arm on said rod in whose path of travel the arm on the valve stem is disposed whereby upon an upward movement of the float due to an accumulation of oil within the overflow tank the switch will be opened and the cut-off valve closed.

In testimony whereof I hereunto affix my signature.

JOHN WESTALL.