

May 20, 1952

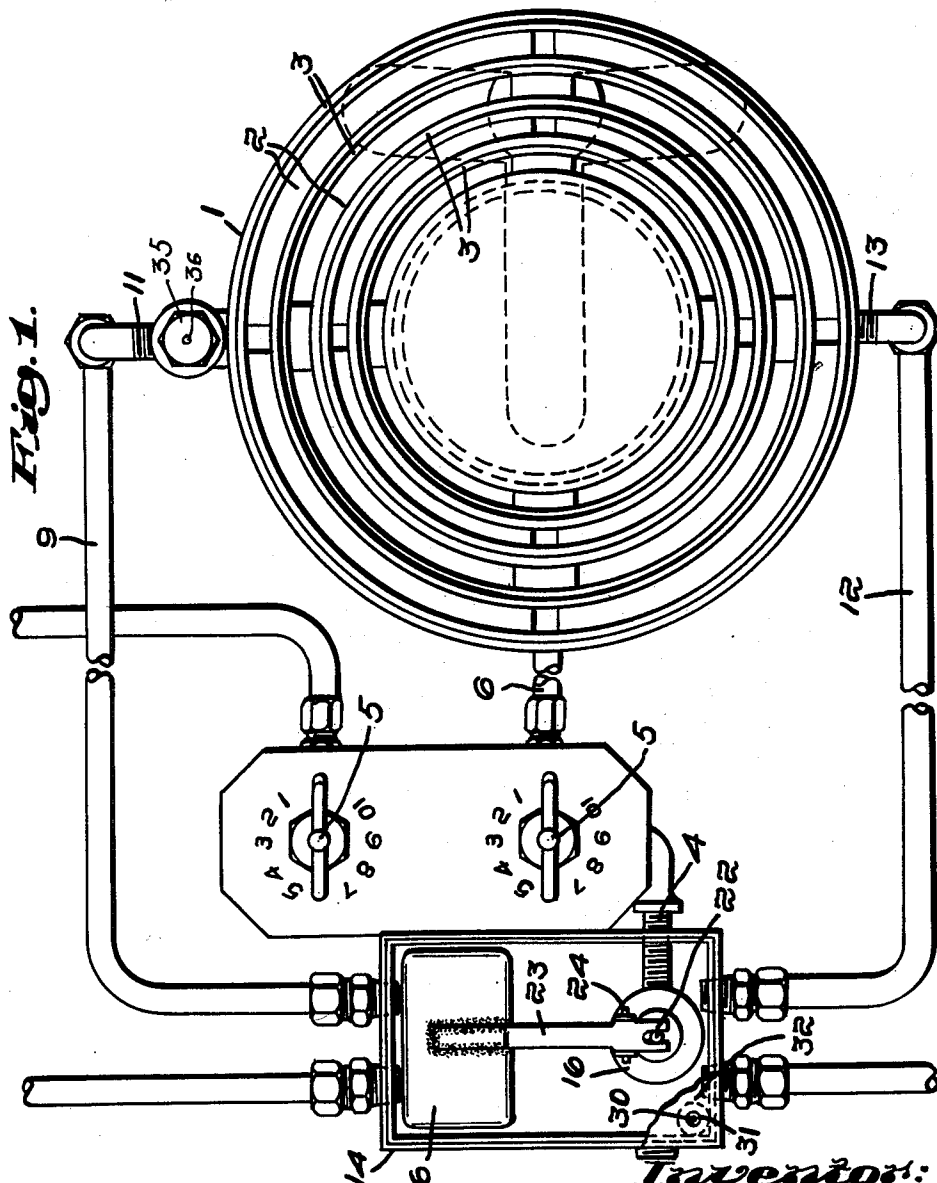
J. F. GIARDINO

2,597,470

OVERFLOW CUTOFF SAFETY DEVICE FOR OIL BURNERS

Filed Aug. 5, 1949

3 Sheets-Sheet 1



Inventor:
Joseph F. Giardino,
by **Hard Smith Tennant**
Attorneys

May 20, 1952

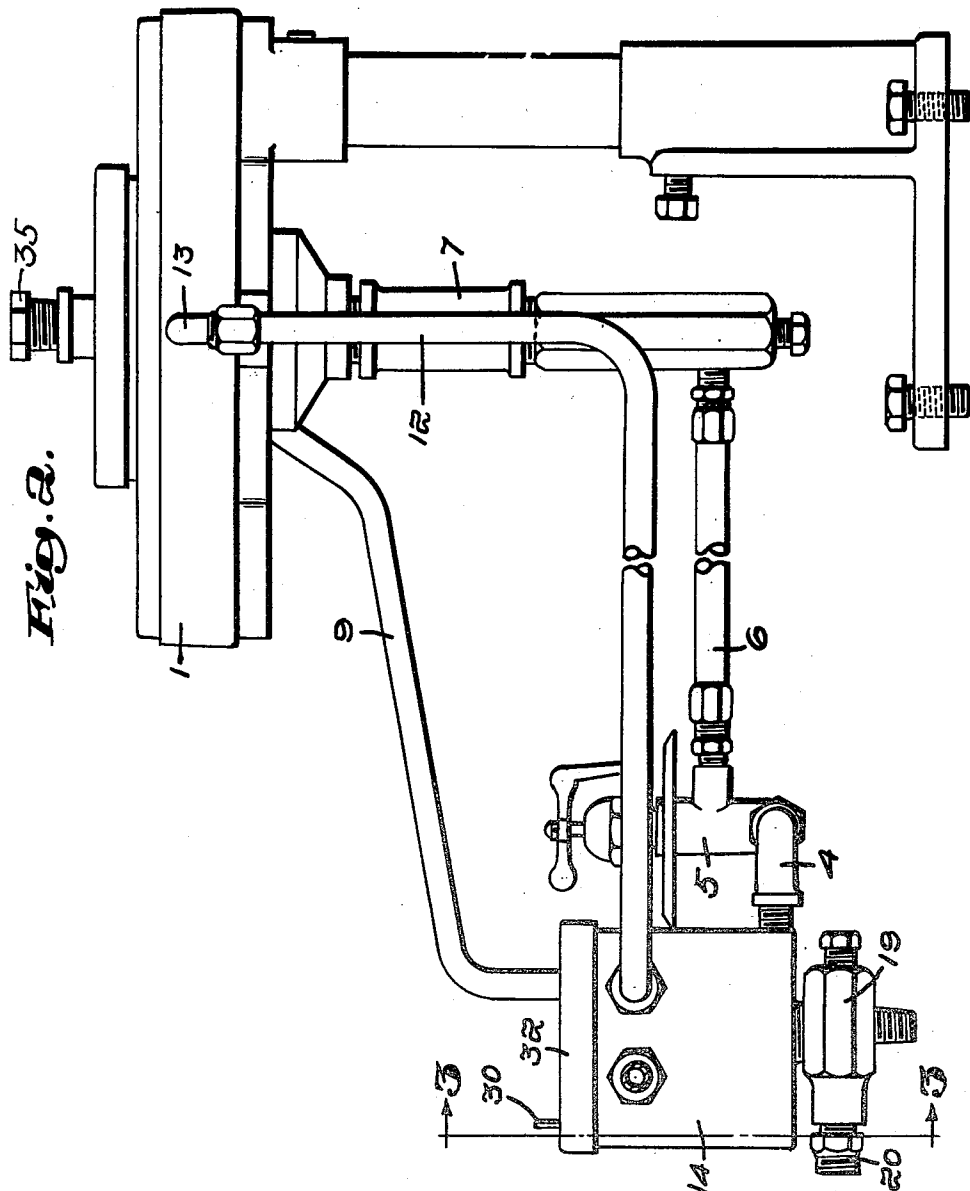
J. F. GIARDINO

2,597,470

OVERFLOW CUTOFF SAFETY DEVICE FOR OIL BURNERS

Filed Aug. 5, 1949

3 Sheets-Sheet 2



Inventor:
Joseph F. Giardino,
By *Harold Smith Tennant*
Attorneys

May 20, 1952

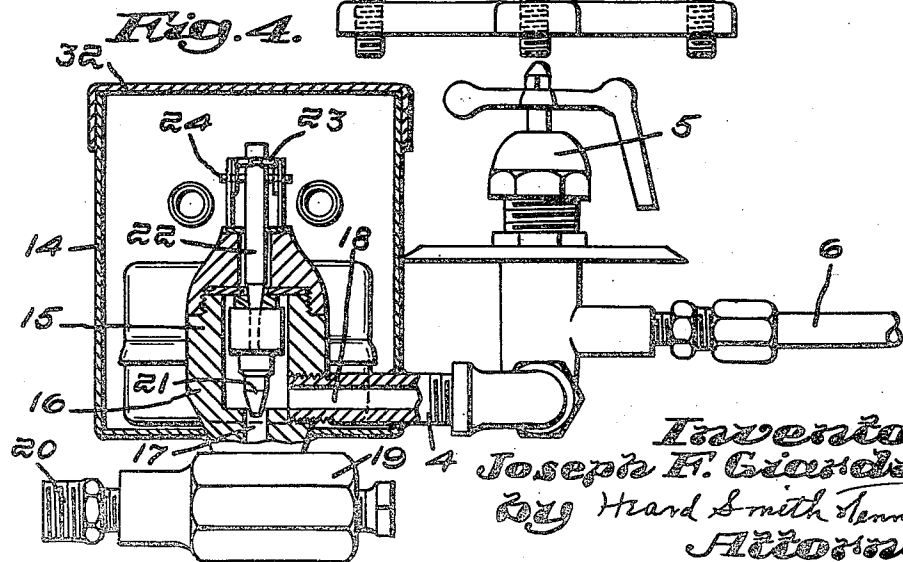
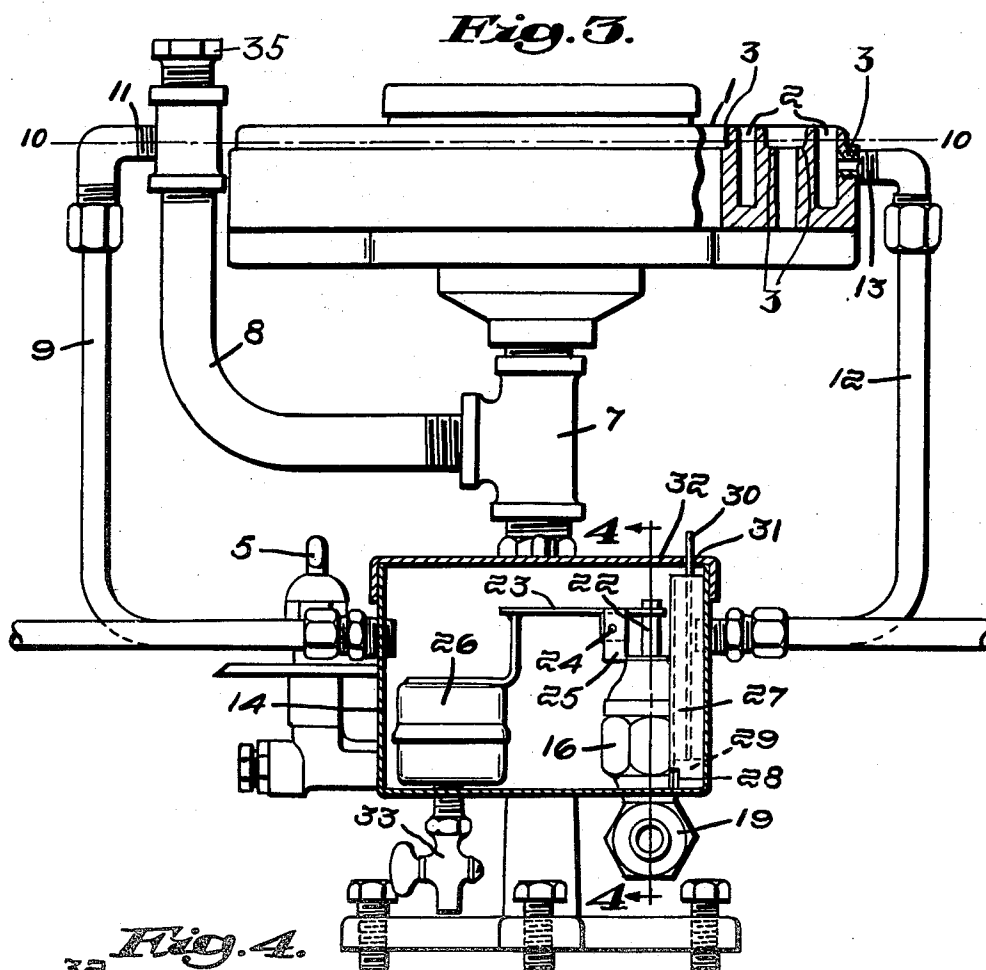
J. F. GIARDINO

2,597,470

OVERFLOW CUTOFF SAFETY DEVICE FOR OIL BURNERS

Filed Aug. 5, 1949

3 Sheets-Sheet 3



Inventor:
Joseph F. Giardino,
By Harold Smith Tennant
Attorneys

UNITED STATES PATENT OFFICE

2,597,470

OVERFLOW CUTOFF SAFETY DEVICE FOR
OIL BURNERS

Joseph F. Giardino, Brockton, Mass.

Application August 5, 1949; Serial No. 108,690

1 Claim. (Cl. 158—42.3)

1

This invention relates to oil burners, and especially to oil burners of the type having a burner base provided with concentric burner channels which form the bottom of concentric combustion chambers formed by concentric perforated cylinders that are supported on the walls of the burner channels, and also having means to feed fuel oil to said base which oil becomes vaporized and is delivered to the burner channels in vapor form.

Oil burners of this type are commonly used in kitchen ranges, and when so used, each complete burner usually includes two burner units which are fed from the same feed pipe.

If in the operation of an oil burner of this type oil in liquid form accumulates in the burner channels in sufficient quantity to overflow the channels, the overflowing oil will present a serious fire hazard.

One of the objects of the present invention is to prevent such overflow of liquid oil from the burner channels by providing means which is responsive to an accumulation of liquid oil in the burner channel to shut off the delivery of oil to the burner base before the oil accumulation has reached the overflow stage.

A further object of the invention is to provide an oil burner of this type with a shut off valve in the feed pipe and to provide means responsive to an accumulation of liquid oil in the burner channels to close said shut off valve before the oil accumulation has reached the overflow stage.

By such means the possibility of liquid oil overflowing the burner channels with its attendant fire hazard is entirely eliminated.

In the drawings, wherein I have illustrated a selected embodiment of my invention,

Fig. 1 is a top plan view of the burner base of an oil burner with its associated feed pipe and illustrating my improvements.

Fig. 2 is a side view of Fig. 1.

Fig. 3 is a section on the line 3—3, Fig. 2 with a portion of the burner base broken out to illustrate the burner channels.

Fig. 4 is a section on the line 4—4, Fig. 3.

In the drawings 1 indicates the burner base of an oil burner which is provided with two concentric burner channels 2 as usual in oil burners of this type. The complete burner involves the use of concentric perforated cylinders of sheet metal which are supported on shoulders 3 which are formed at the tops of the walls of the burner channels, said perforated cylinders forming between them annular combustion chambers in which the vaporized oil delivered to the

2

burner channels is consumed. The concentric perforated cylinders are not illustrated in the drawings as they form no part of the present invention.

Fuel oil is fed to the burner through a feed pipe which comprises a pipe section 4 leading to a control valve 5, a pipe section 6 leading from the control valve to a vertical pipe section 7 which delivers the oil to the vaporizing chamber of the burner base, these parts being such as are commonly found in oil burners of this type. The control valve 5 is of the usual type by which the flame of the burner is controlled.

As stated above, if, for any reason, liquid oil accumulates in the burner channels, there is a possibility that such accumulation may be in such an amount as to cause the liquid oil to overflow the channel thus creating a serious fire hazard. Such accumulation of oil in the burner channels might result from feeding the oil to the burner faster than it can be vaporized and burned, or it might result from a leaky control valve, or from failure to adjust properly the control valve 5 after it had been set at the "start" position when starting the burner.

In order to prevent any such overflow of oil from the burner channels, I have provided herein means which is responsive to an accumulation of oil in the burner channels for shutting off the supply of oil to the burner before the oil accumulation reaches the overflow stage. This end is accomplished by providing an overflow pipe having an inlet end which is situated at a level between the bottom and top of the burner channels and providing means whereby whenever there is an oil accumulation in the burner channel, the oil which is fed to the burner channels will be diverted into the overflow pipe thereby preventing any overflow.

In Fig. 3 the vertical section 7 of the feed pipe is provided with a branch 8 which extends upwardly along side of the burner base and which communicates with the inlet end 11 of the overflow pipe 9. The connection between the branch pipe 8 and the overflow pipe 9 is at a level below the top of the wall of the burner channel but above the bottom thereof, that is, at a level indicated by the line 10 in Fig. 3. The branch pipe 8 and the overflow pipe 9 thus form an inverted U and the oil level in the pipe 8 will correspond to that in the pipe 7 and in the burner channel.

So long as the burner is operating normally and the liquid oil is being vaporized in the vaporizing chamber of the burner base as fast as

3

it is being delivered thereto, the oil level in the pipe 8 will stand at a point corresponding substantially to the bottom of the base and will thus be below the inlet end 11 of the overflow pipe 9.

If, however, there is an accumulation of liquid oil in the burner channels, then the oil level in the pipe 8 will rise to correspond to the level of the oil in the burner channels, and when the level of the oil in the burner channels reaches a point indicated by the line 10, then the oil will overflow through the pipe 9 and will prevent any further accumulation of oil in the burner channels.

There is also shown in Fig. 3 a second overflow pipe 12, the inlet end 13 of which is tapped in to the side wall of the exterior burner channel 2 so that if there is an oil accumulation in the burner channels, then when the level of the oil in the channel reaches the inlet end 13 of the overflow pipe 12, the oil will flow through said overflow pipe and thus prevent an overflow of the oil from the burner channels. Either one of the overflow pipes 9 and 12 may be omitted if desired, in which case the remaining pipe will function to drain off surplus oil. The advantage of having two overflow pipes is that if there is an excessive accumulation of oil in the burner, there will be plenty of facilities for draining off such surplus oil.

The invention also involves means for shutting off the supply of oil to the burner whenever the oil level in the burner channel reaches a point where the oil will flow through either of the overflow pipes thereby stopping the further flow of liquid oil to the burner.

For this purpose I have provided an overflow chamber 14 into which the overflow pipes 9 and 12 deliver overflowing oil. Situated in the overflow chamber 14 is a shut off valve 15 which is located in the overflow chamber 14, said valve having a projection at its lower end which extends through the bottom of the overflow chamber and is provided with an inlet port 17 that communicates with a passage in the fitting 19 which is located below the chamber 14 and is secured to the extending portion of the valve 15. Section 4 of the feed pipe extends through the side wall of the chamber 14 and is screw threaded to the valve as shown in Fig. 4, said pipe section providing the discharge port 18 for the valve.

The said valve is formed with a valve chamber with which the ports 17, 18 communicate and in which is located the valve 21. The fitting 19 is provided with a connection 20 by which it may be connected to another portion of the supply pipe.

With this arrangement the duct through which the oil flows to the burner extends through the chamber 14 but has no communication therewith.

With this arrangement the oil will flow from the supply pipe through the fitting 19 and through the port 17 of the shut off valve and thence through the discharge port 18 to the feed pipe sections 4, 6 and 7.

The shut off valve is provided with a vertically movable valve member 21 controlling the inlet port 17. This valve member 21 is provided with a valve stem 22 which extends beyond the valve body and which is connected at its upper end to a lever member 23 that is pivoted at 24 to a bracket 25 carried by the valve body.

The end of the lever 23 is attached to a float 26 which operates in the overflow chamber 14.

Under normal conditions when the burner is

4

operating properly, the overflow chamber 14 will be empty and the weight of the float will hold the valve 21 in raised position so that the inlet port of the shut off valve will be open and liquid oil will be fed to the burner in the usual manner.

If, for any reason, there is an oil accumulation in the burner channels sufficient to cause oil to flow through either of the overflow pipes 9 and 12, such overflowing oil will be delivered to the overflow chamber 14 and as the oil accumulates in said chamber 14, it will raise the float 25 thereby closing the shut off valve 21 and stopping further delivery of oil to the feed pipe 4, 6, 7.

With this construction, therefore, all danger of liquid oil overflowing the burner channels is avoided and the supply of liquid oil to the burner will be shut off whenever oil accumulates in sufficient quantities in the burner channels to cause surplus oil to be delivered to the overflow pipes.

The overflow chamber 14 is provided with a telltale device to indicate the oil level therein. Such telltale device comprises a vertically arranged tubular member 27 located within the chamber and open at its top and also provided with an opening 28 at its lower end. Located within the tube 27 is a piston element 29 having a stem 30 rising therefrom which is of sufficient length to project through an aperture 31 in the cover 32 of the chamber 14.

When there is no oil in the chamber 14, the piston 29 will be at the lower end of the cylinder as shown in Fig. 3. But whenever oil accumulates in the chamber 14, the piston 29 will be floated upwardly thereby elevating the stem 30. The position of the stem relative to the top 32 of the box gives an indication as to the amount of oil in the chamber 14.

Said chamber 14 is provided with a drain cock 33 by which any oil that has accumulated therein may be drained away.

There is shown in Fig. 1 two control valves 5, and the section 4 of the feed pipe is connected to deliver oil to both control valves. The second control valve is the one which would be used for controlling a companion burner of a two-unit burner such as is commonly used in kitchen ranges.

The overflow pipe 9 is provided at its inlet end 11 with a fitting 35 having an air vent opening 36 to allow escape of air from the pipe 8 as the oil level therein rises, and the entrance of air to said pipe 8 as the oil level falls.

While two overflow pipes 9 and 12 are herein illustrated, yet for many installations a single overflow pipe may be sufficient.

The construction involving the branch pipe 8 and the overflow pipe 9 is well adapted to be installed in burners that are already in use, thus providing such a burner with the anti-overflow device, it only being necessary to insert a T in the vertical pipe section 7 and connect the branch pipe 8 thereto, and then to connect the overflow pipe 9 to the branch pipe.

The construction involving the overflow pipe 12 is one which might be built into the burner at the time of its manufacture, thereby providing a burner which can be delivered to the purchaser equipped with the safety attachment.

While I have shown a burner having two-burner channels, yet I desire to state that the invention is equally applicable to burners having a single burner channel, such as are frequently

5

installed in stoves used for heating purposes rather than cooking purposes.

The invention is also applicable to burners having more than two burner channels.

It will be understood that various changes in the constructional details of the device may be made without departing from the invention as set forth in the appended claim.

I claim:

In a safety device for oil burners, the combination with an oil burner having a burner channel, of a supply pipe for supplying said burner with oil, an overflow chamber below the burner channel, an overflow pipe leading into the overflow chamber and having its inlet end at a level above the bottom but below the top of the burner channel, a pipe connection between the supply pipe and the inlet end of the overflow pipe whereby oil being supplied to the burner channel will be diverted to said overflow pipe whenever the oil level in the burner chamber reaches the level of the inlet end of said overflow pipe, a shut off valve device in said overflow chamber, said valve device comprising a valve body having a valve chamber, a portion of the valve body projecting through the bottom of the overflow chamber and having an inlet port leading to said valve chamber, means located below the overflow chamber and connected to the projecting portion of the valve body to deliver oil to the inlet port, said supply pipe having a portion extending into the over-

6

flow chamber and connected to the valve body and communicating with said valve chamber, a vertically movable valve element in the valve chamber which closes the inlet port on its downward movement, a float in said overflow chamber, a pivotally mounted lever connected at one end to the float and at the other end to the valve element, whereby raising movement of the float due to an accumulation of oil in the overflow chamber will depress the valve element and close said inlet port.

JOSEPH F. GIARDINO.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,359,917	Pryce	Nov. 23, 1920
1,489,415	Anderson	Aug. 8, 1924
1,550,047	Remsnider	Aug. 18, 1925
1,623,161	Buerger	Apr. 5, 1927
1,710,703	Krebs	Apr. 30, 1929
1,723,102	Walker	Aug. 6, 1929
1,788,827	Ferrin	Jan. 13, 1931
1,820,403	Stevens	Aug. 25, 1931
2,111,744	Bock	Mar. 22, 1938
2,111,774	Hainsworth	Mar. 22, 1938
2,194,133	Whitcomb	Mar. 19, 1940
2,236,559	Anderson	Apr. 1, 1941
2,416,932	Litzenberg	Mar. 4, 1947