Aug. 12, 1930. H. J. LIGHTY 1,772,750

OIL BURNER

Filed June 25, 1928

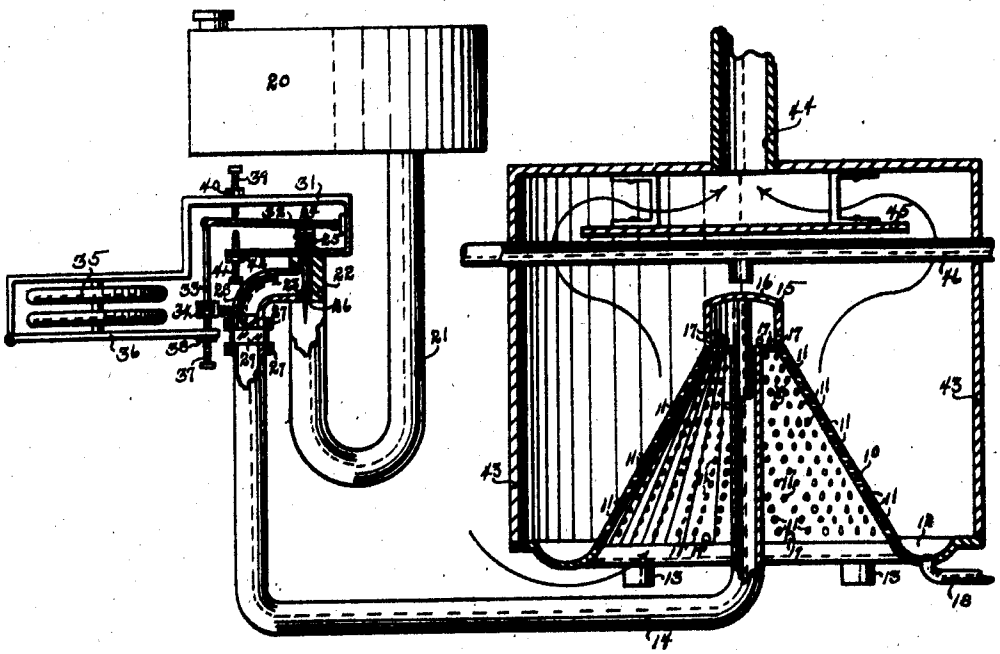


Fig. 1.

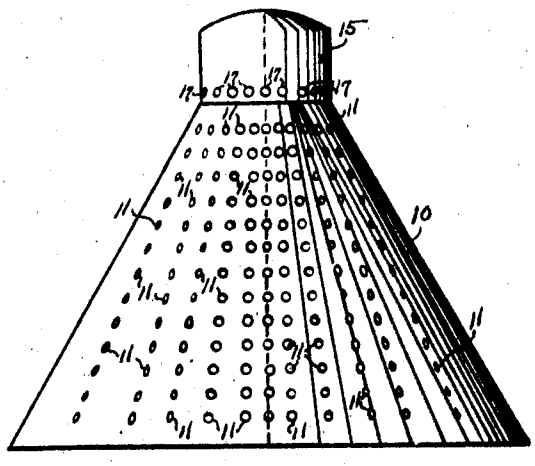


Fig. 2.

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OIL BURNER

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The principal object of this invention is to provide an oil burner for furnaces, stoves and the like but more specially adapted for use in connection with poultry brooder houses.

A further object of this invention is to provide an oil burner for heating purposes, that when once installed requires little if any attention from the user.

A still further object of this invention is to provide an oil burner that will operate as efficiently on a low flame as on a high flame.

A still further object of this invention is to provide an oil burner that may be used continuously and indefinitely on high flame without danger of the heat from the same generating the fuel oil prematurely in the supply pipe.

A still further object of this invention is to provide an oil burner that is capable of automatic adjustment, relative to the degree of heat desired.

A still further object of this invention is to provide an oil burner that requires no motive power for furnishing air under pressure.

A still further object of this invention is to provide an oil burner that is refined in appearance, economical in manufacture and durable in use.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claim and illustrated in the accompanying drawings, in which:

Fig. 1 is a side sectional view of my complete invention ready for use.

Fig. 2 is an enlarged side view of the cone burner portion of my device and more fully illustrates the same.

There are two methods of burning oil fuel, i. e. vaporizing and atomizing the charge before oxidization. Either may or may not use an electric motor. My burner is of the former type and operates successfully without the employment of any motive power. The chief objection to oil burners that do not use a motor for furnishing air under pressure is their tendency to form carbon when the burner is operating in its maximum capacity thereby interfering seriously with their successful functioning. I have overcome these disadvantages as will be appreciated by those familiar with the art.

I have used the numeral 10 to designate the hollow cone-shaped burner portion of the device having its top blunt or flat as shown in Fig. 1. Extending approximately horizontal through the side wall of the cone-shaped member are a plurality of air ports 11. This cone-shaped member is designed to rest on the inner marginal edge of the circular trough 12 as shown in Fig. 1, the purpose of which will hereinafter be appreciated.

The numeral 13 designates feet members for suporting the trough 12 a slight distance from the supporting surface upon which the burner may be resting. Passing under the trough 12, up through the cone-shaped member 10 and communicating with the outside atmosphere adjacent the flat top of the cone-shaped member is the fuel inlet pipe 14. The numeral 15 designates an inverted cup member resting on the flat top of the cone-shaped member and enclosing the outlet end of the fuel pipe 14. This cup member is held from accidental displacement on the cone-shaped member by having a rod 16 secured in its bottom and extending into the pipe 14 as shown in Fig. 1. The numeral 17 designates a plurality of holes in the cup member adjacent its marginal edge. By this arrangement when fuel oil is passed through the pipe 14 it will run into the cup member 15 from which it will pass through the holes 17 and flow downwardly and evenly over the side of the cone-shaped burner 10. If this fuel oil on the side of the cone-shaped burner is ignited an intense heat will be produced, which will pass outwardly and upwardly thereby causing fresh air to pass under the trough 12, up into the cone-shaped burner and through the air ports 11. By this construction the burner automatically furnishes sufficient air for proper combustion without the use of centrifugal fans and the like. The cup member 15 not only prevents an excessive amount

of fuel oil from passing down over the cone-shaped burner thereby providing an uneven feed but prevents the accidental burning of any fuel oil inside the fuel inlet pipe 14. By the holes 17 being equally spaced apart one from the other and at the same height relative to each other the fuel oil will be caused to flow uniformly downwardly on the cone-shaped burner.

The air ports 11 as before stated are formed in the cone-shaped burner at approximately a horizontal angle thereby preventing any tendency of the oil fuel to run through the same to the inside of the cone-shaped burner before being burned.

The numeral 18 designates an overflow pipe communicating with the bottom of the trough 12 thereby taking care of any fuel oil that might collect in the trough when the burner accidently becomes extinguished. If it is desired this pipe 18 may lead to a trip valve (not shown) and after the trip valve is actuated no further fuel oil will be furnished the burner. To prevent the accidental displacement of the cone-shaped burner 10 on the trough 12 I have provided lugs 19 integrally formed on the trough as shown in Fig. 1.

The fuel oil supply tank is designated by the numeral 20. Leading from this tank is the fuel pipe 21 communicating with the ordinary needle valve body portion 22. Extending into the needle valve body portion is the usual needle valve 23 having the head 24. The numeral 25 designates a coil spring for yieldingly holding the needle valve out of engagement with the valve seat 26. Secured by unions 27 to the end of the valve outlet pipe 28 and the inlet end of the pipe 14 is a sight glass 29. By this arrangement when the needle valve 23 is not seating with the valve seat 26 the oil will pass through the pipe 28 and into the fuel pipe 14 thereby making it possible to observe through the sight glass 29 the amount of fuel oil being used. To prevent the fuel oil from running down the side wall of the sight glass 29 thereby obscuring the view through the sight glass I have provided a small funnel member 30 in the end of the pipe 28 as shown in Fig. 1.

Secured by any suitable means on the body portion 22 of the needle valve is the bracket member 31. Pivoted to this bracket member at one end and engaging the head 24 of the needle valve is the link 32. Secured to the free end of the link 32 and extending downwardly therefrom is the arm 33 having the head 34. Secured near the free end of the bracket 31 at one end is the ordinary wafer thermostat 35. Pivotally secured to the free end of the bracket 31 and secured to the other end of the thermostat 35 is the arm 36 as shown in Fig. 1. Threaded through the free end portion of the arm 36 is the adjusting screw 37 having its end swivelly engaging the head 34. The numeral 38 designates a lock nut on the adjusting screw 37. By this arrangement the thermostat 35 will automatically operate the needle valve 23. This operation may be adjustably secured by the use of the adjusting screw 37 as is well known in the art. Threaded through the bracket member 31 and capable of engaging the link 32 for limiting the movement of same in an upward direction is the adjusting screw 39 having the lock nut 40. Threaded through the short end portion of the bracket 31 and capable of engaging the link 32 for limiting its downward movement is the adjusting screw 41 having the lock nut 42. By adjusting the screws 39 and 41 the amount of movement of the needle valve 23 by the thermostat 35 may be controlled and if the thermostat is not used the needle valve may be securely set at any desired position against any movement by the adjusting screws.

If the device is to be used for poultry brooder houses a shield or housing 43 should be placed around the cone-shaped burner 10 and allowed to rest on the outer marginal edge of the trough 12 as shown in Fig. 1. The numeral 44 designates a flue communicating with the top of the housing 43. To prevent the heat from immediately passing out of the housing 43 through the flue 44 I have provided the baffle plate 45 directly under the flue 44. When the housing 43 is used I recommend an air pipe 46 extending into the housing and communicating with the outside atmosphere at a point above the cup member 15 thereby furnishing additional air inside the housing 43 for the proper combustion of the fuel.

The burner is to be so adjusted that all of the fuel oil passing down the side of the cone-shape burner will be consumed in flame before it reaches the trough 12.

By the fuel feed pipe 14 extending up through the center of the cone-shaped burner, it will always be kept comparatively cool by the incoming fresh air thereby eliminating any danger of the fuel oil generating into gas before it reaches the inside of the cup member 15.

Some changes may be made in the construction, arrangement of my improved oil burner, without departing from the real spirit and purpose of my invention and it is my intention to cover by my claim any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

In a device of the class described, a circular trough, a cone-shaped member resting on the inner marginal edge of said trough and having a plurality of air holes passing through its side wall, a housing resting on the outer marginal edge of said trough and embracing said cone-shaped member, a flue

communicating with the inside of said housing, a baffle member adjacent said flue, an air pipe extending into said housing and communicating with the inside of said housing at a point above said cone-shaped member, and a fuel supply pipe extending through said cone-shaped member and terminating with the small end of the same.

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