W. A. KINNEY & J. F. STRAITZ.

OIL BURNER.

APPLICATION FILED DEC. 17, 1917.

1,277,320.

Patented Aug. 27, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

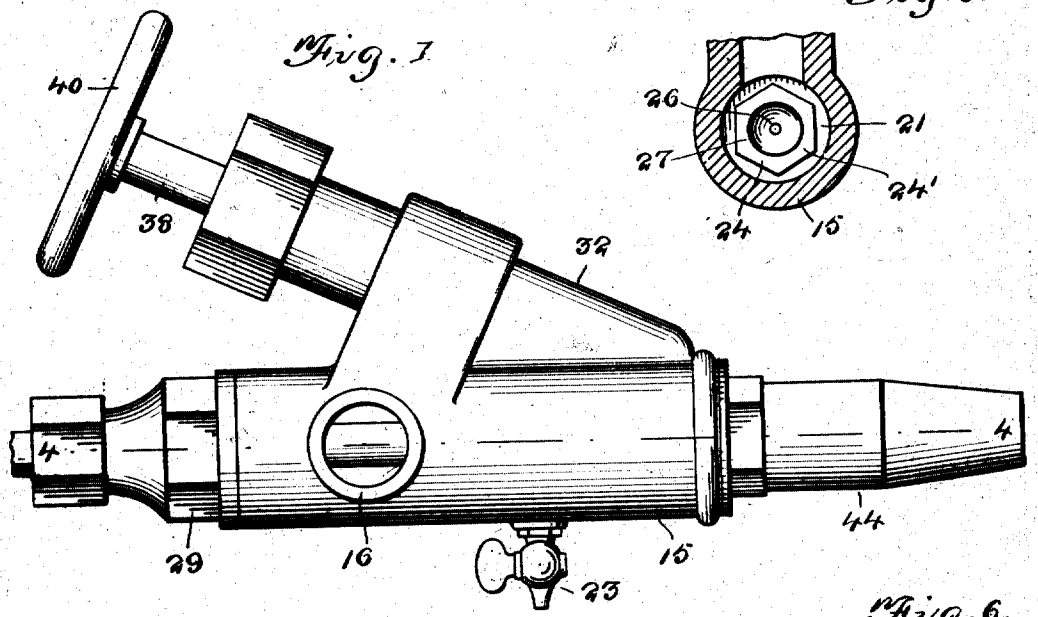


Fig. 5.

Fig. 6.

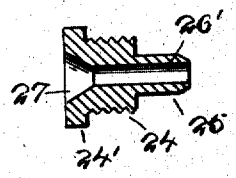


Fig. 2.

Witnesses

E. R. Culpepper

Wm Bagger

Inventor

W. A. Kinney

J. F. Straitz

By Victor J. Evans

Attorney

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2 SHEETS—SHEET 2.

Fig. 3.

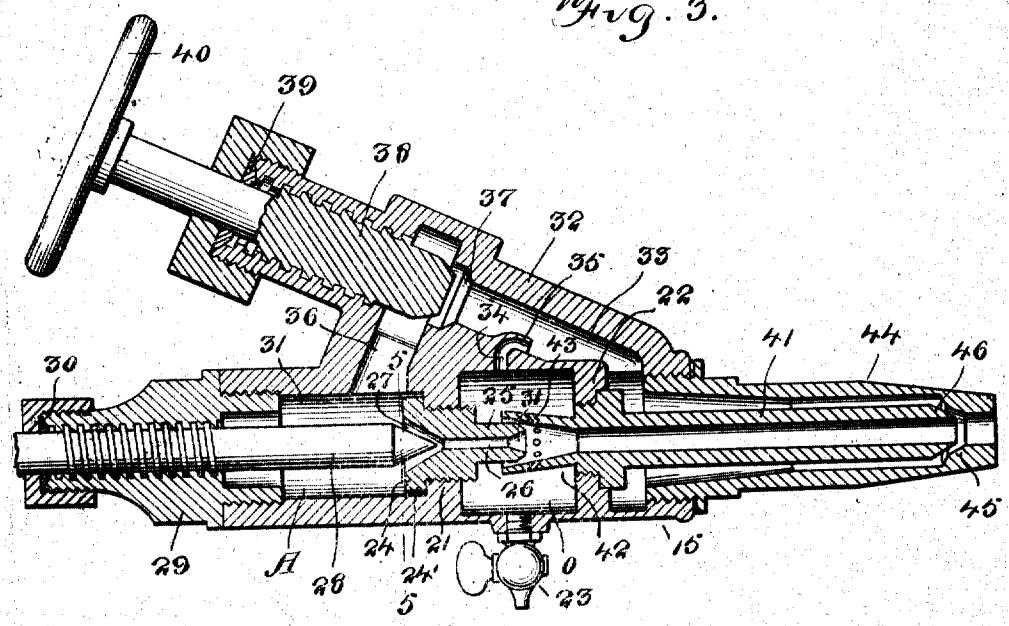
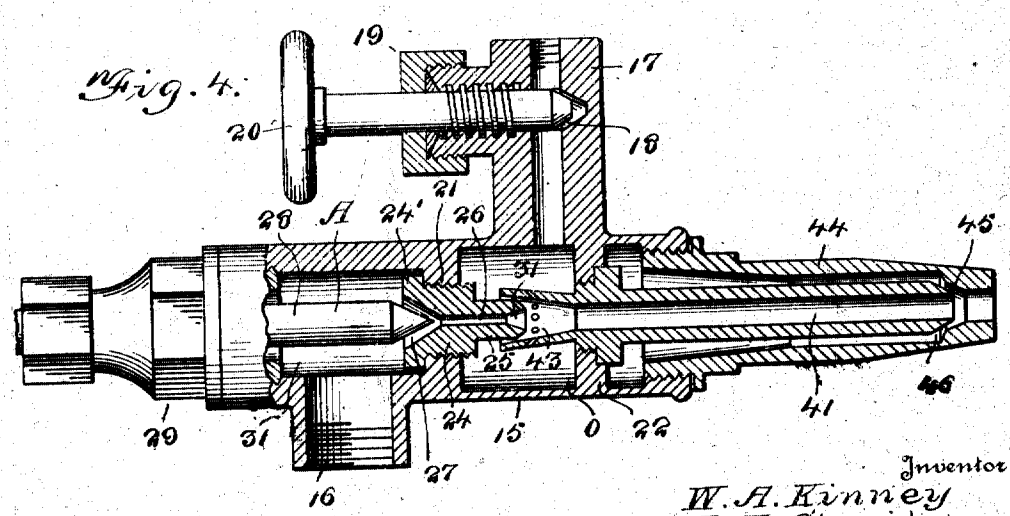


Fig. 4.



Inventor

W. A. Kinney

J. F. Straitz

Witnesses

E. R. Ruplpert.

Wm. Bagger.

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM A. KINNEY AND JOHN F. STRAITZ, OF PHILADELPHIA, PENNSYLVANIA.

OIL-BURNER.

1,277,320. Specification of Letters Patent. Patented Aug. 27, 1918.

Application filed December 17, 1917. Serial No. 206,633.

To all whom it may concern:

Be it known that we, WILLIAM A. KINNEY and JOHN F. STRAITZ, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

This invention relates to hydrocarbon burners and more especially to that class of burners in which a jet of air under pressure is utilized for siphoning the liquid hydrocarbon from a source of supply, the air jet being also utilized for atomizing the hydrocarbon which with a proper admixture of air is ejected through the burner nozzle, means being provided for regulating the supply of air as well as of liquid hydrocarbon which latter will hereafter be simply designated as oil.

The present invention has for its object to produce a burner of simple and improved construction embodying a main nozzle, an auxiliary nozzle surrounding the main nozzle and preferably arranged concentrically therewith and means for ejecting the fuel mixture through the main burner and also through the space intermediate the main and auxiliary nozzles.

A further object of the invention is to produce means in a burner of the class described whereby the ejection of fuel through the space between the main nozzle and the auxiliary nozzle may be independently regulated and controlled.

A further object of the invention is to produce a burner of the type described having a main nozzle and an auxiliary nozzle surrounding the same, said burner having a single source of oil supply, a single source of air supply and means for controlling the supply of fuel mixture to the space intermediate the main nozzle and the auxiliary nozzle independently of the supply to the main nozzle.

A further object of the invention is to produce a burner of the type described having two discharge nozzles, disposed concentrically with respect to each other but operating independently of one another, said nozzles receiving their respective supplies of air and oil constituting the fuel mixture from common sources.

A further object of the invention is to produce a burner of the character described having two independent nozzles so arranged that if the supply of fuel mixture to one nozzle should be choked or interrupted in any way, the other nozzle will still continue to function without interruption thereby avoiding a sudden material reduction of temperature in the furnace which is supplied by the burner.

A further object of the invention is to so construct the improved burner that the parts thereof will be very easily accessible for repairs or for exchange of parts when necessary.

Further objects of the invention are to simplify and improve the details of construction and arrangement of the parts entering into the construction of the improved device.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claims may be resorted to when desired.

In the drawings:—

Figure 1 is a view in side elevation of a burner constructed in accordance with the invention.

Fig. 2 is a top plan view of the same.

Fig. 3 is a longitudinal sectional view taken on the line 3—3 in Fig. 2.

Fig. 4 is a horizontal sectional view taken on the line 4—4 in Fig. 1.

Fig. 5 is a transverse sectional view taken on the line 5—5 in Fig. 3.

Fig. 6 is a sectional detail view showing a bushing having a bore of different diameter from that shown in Figs. 3 and 4.

Corresponding parts in the several figures are denoted by like characters of reference.

The main body or barrel 15 of the improved burner is provided at opposite sides thereof with an air inlet 16 and an oil inlet 17, the air inlet being located relatively near the head end of the barrel and the oil inlet being located near the tail end or discharge end thereof. The air inlet has been shown as being internally threaded for the reception

of a tube through which air under pressure may be received from a suitable source of supply. The oil inlet 17 is also threaded for connection with a supply tube and said inlet is provided with a transversely disposed screw valve 18 the stem of which is surrounded by a packing gland 19, said stem being also provided with a handle 20 whereby it may be conveniently rotated.

The barrel 15 is provided intermediate the air inlet 16 and the oil inlet 17 with a wall or diaphragm 21, a second partition wall 22 being formed intermediate the oil inlet and tail end of the barrel or casing. The oil chamber O which is located between said partition walls has a downwardly extending pet cock 23 whereby the oil chamber may be cleaned and drained. The partition walls 21 and 22 have centrally disposed threaded openings. Seated in the opening of the wall 21 is a bushing 24 having a nipple 25. The longitudinal bore 26 of the bushing and nipple is countersunk at its front end to provide a seat 27 for a screw valve 28 which is in threaded engagement with a cap 29 which forms a closure for the front end of the casing, said valve stem being surrounded by a packing gland 30 and provided with means, not shown, whereby it may be readily rotated to move said valve in and out of engagement with its seat for controlling the passage of air from the source of supply to the oil chamber. The rear end of the bore 26 is preferably enlarged or countersunk as seen at 31 in Figs. 3 and 4. The bushing 24 is provided with a head 24′ of hexagonal or other non-circular shape to enable said bushing to be conveniently reached and removed by means of a suitable wrench which may be conveniently applied when the cap 29 is removed. This will enable a bushing having a bore of a different diameter than that shown in Figs. 3 and 4 to be substituted when desired, a specimen of such bushing having been shown in Fig. 6 in which the bore, here designated by 26′, is of larger diameter than that shown in Figs. 3 and 4, thereby obviously affording a larger passage for the more generous supply of air to the burner nozzle which, as will be hereinafter described, receives the discharge from the bushing.

The top of the casing or barrel 15 has an obliquely disposed swelled portion or enlargement 32 having a longitudinal inclined bore 33 the forward end of which communicates with the interior of the casing 15 to the rearward of the partition wall 22. A passage 34 connect sthe bore 33 with the oil chamber or space O there being a deflector 35 within the bore 33 which overhangs the port or passage 34. A passage 36 connects the bore 33 with the air chamber or space A within the casing 15, said air chamber being the space forward of the partition 21 which communicates with the air inlet 16. The bore 33 is enlarged adjacent to the passage 36 to form a seat 37 for a screw valve 38 the stem of which is surrounded by a packing gland 39 and provided with a hand wheel 40 for conveniently manipulating the same.

Threaded into the opening in the partition wall 22 is a nozzle 41 which projects through the tail end of the casing, said nozzle being also provided with a forwardly extending flaring or funnel shaped intake 42 that extends within the oil chamber O and within which the nipple 25 of the plug 24 extends. The intake funnel is provided with a circumferential series of apertures 43 which are preferably inclined in an inward and rearward direction as best seen in Fig. 3. An auxiliary nozzle 44 which surrounds the nozzle 41 is threaded into the tail end of the casing. The nozzle 44 is provided with a seat 45 for the tapered end 46 of the nozzle 41 and it follows that by adjustment of the nozzle 44 the area of the annular discharge opening between the seat 45 and the tapered end of the nozzle 46 may be varied.

From the foregoing description taken in connection with the drawings hereto annexed the operation and advantages of this invention will be readily understood. Air under pressure may be admitted through the inlet 16. Assuming the valve 28 to be open and the valve 38 to be seated, the air will pass through the bore of the plug 24 and nipple 25 to the nozzle 41 producing a partial vacuum in the oil chamber and inducing oil to pass from the source of supply to the inlet 17, the quantity of oil being regulated by the valve 18. The oil thus entering will be atomized and the fuel mixture will be ejected through the main nozzle and the mouth of the auxiliary nozzle 44 issuing from which it may be ignited. If now the valve 38 be unseated, a portion of the air under pressure will pass through the passage 36 and bore 33 to the tail end of the casing, siphoning a portion of the oil from the chamber O through the port or passage 34, atomizing the same and ejecting the fuel mixture through the annular space between the main and auxiliary nozzles, the mixture thus ejected being commingled with the mixture issuing through the main nozzle 41 and ignited as it is sprayed into the furnace. If the valve 28 be seated, the fuel mixture will issue through the space between the main and auxiliary nozzles only. In all cases the passage of air as well as of oil may be completely and accurately regulated by the valves provided for the purpose, thus enabling a rich mixture to be projected through the main nozzle and a lean mixture to be projected through the space intermediate the main and auxiliary nozzles, or vice versa as may be required in order to produce the most

desirable and beneficial result. Ordinarily when the burner is in operation both valves 28 and 38 will be unseated so that fuel mixture will be ejected through the main nozzle and also through the space intermediate the main and auxiliary nozzles. If now, for any reason, either nozzle should be obstructed, the other nozzle will still continue to function without interruption, thereby preventing any sudden and detrimental lowering of temperature within the furnace to which the burner is applied. The improved burner is extremely simple in its construction and arrangement of parts and of such a nature as to render all the parts thereof easily accessible for such adjustments and repairs as may be found necessary.

Having described the invention what we claim as new is:

1. In a hydrocarbon burner, a casing having an air inlet near its head end, an oil inlet near its tail end, a partition between the air inlet and the oil inlet, a second partition between the oil inlet and the tail end of the casing, a nozzle seated in the last-named partition and having a flaring intake extending within the oil chamber between the partitions, a bushing seated in the partition adjacent to the air inlet and having a nipple extending within the flaring intake, a valve to control the passage of air through the bushing, an enlargement on the casing having a longitudinal inclined bore communicating at its low end with the tail end of the casing, a port connecting the bore with the oil chamber, a passage way connecting the bore with the air inlet of the casing, a valve for controlling the passage of air through said passage to the bore, and an auxiliary nozzle threaded into the tail end of the casing and surrounding the main nozzle.

2. In a hydrocarbon burner, a casing having an air inlet near its head end, an oil inlet near its tail end, a partition between the air inlet and the oil inlet, a second partition between the oil inlet and the tail end of the casing, a nozzle seated in the last-named partition and having a flaring intake extending within the oil chamber between the partitions, a bushing seated in the partition adjacent to the air inlet and having a nipple extending within the flaring intake, a valve to control the passage of air through the bushing, an enlargement on the casing having a longitudinal inclined bore communicating at its low end with the tail end of the casing, a port connecting the bore with the oil chamber, a passage way connecting the bore with the air inlet of the casing, a valve for controlling the passage of air through said passage to the bore, and an auxiliary nozzle threaded into the tail end of the casing and surrounding the main nozzle, there being a deflector within the bore overhanging the port communicating with the oil chamber.

In testimony whereof we affix our signatures.

WILLIAM A. KINNEY.
JOHN F. STRAITZ.