Feb. 7, 1928. 1,658,784

W. W. WILLIAMS

OIL BURNER

Filed May 21, 1923

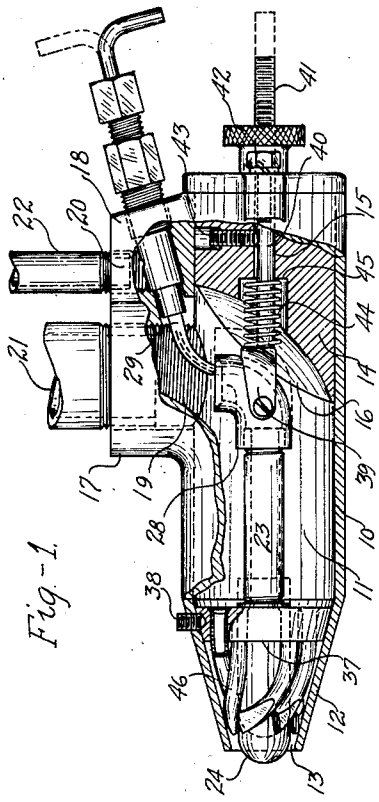

Fig.-1.

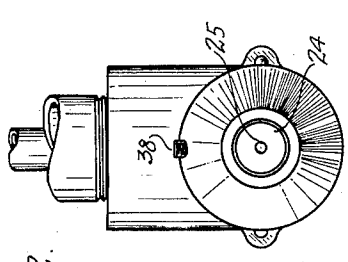

Fig.-2.

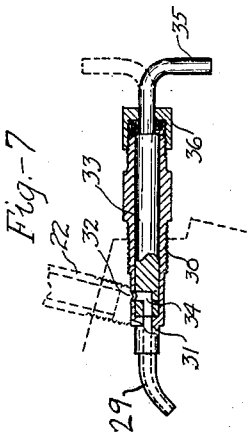

Fig.-7

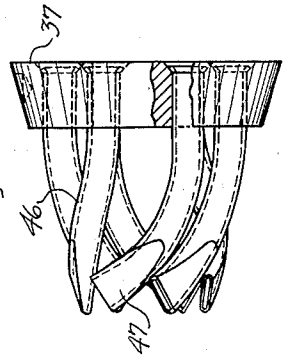

Fig.-3.

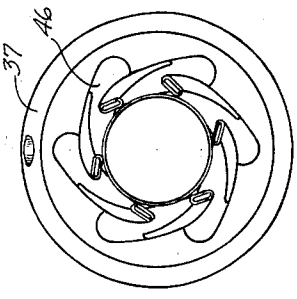

Fig.-4

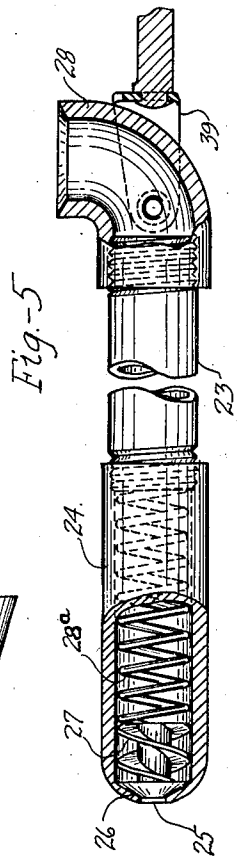

Fig.-5

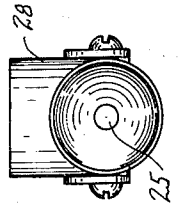

Fig.-6

Witnesses
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UNITED STATES PATENT OFFICE.

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OIL BURNER.

Application filed May 21, 1923. Serial No. 640,555.

My invention relates to oil burners.

The invention has special reference, the structural details and combinations of parts functioning to develop a proper mixture of oil and air and for relative centering of blast elements due to the end of developing a maximum of combustible efficiency of the fuel mixture.

Referring to the drawings:

Figure 1 is a side elevation of my invention with parts broken away to show relative arrangement of parts of the burner.

Figure 2 is a front end view of same subject matter disclosed in Figure 1.

Figure 3 is a side elevation of a deflector head.

Figure 4 is a front end view of the same subject matter disclosed in Figure 3.

Figure 5 is a side elevation partly in section of a burner nozzle and lead members thereto.

Figure 6 is a front end view of same subject matter disclosed in Figure 5.

Figure 7 is a detailed view partly in section showing a feed valve.

In the drawings, 10 is a metal body interiorly fashioned with a forwardly positioned clearance open space 11, said body being preferably tapered at its forward end as at 12, the clearance space continuing through said tapered portion to the open end of the outlet portion 13.

The rear end of the body may be cast solid therewith as at 14, or cast separate and welded or otherwise secured thereto, said solid portion being provided with a centrally bored portion 15 and is preferably fashioned at its forward end with the inclined substantially concaved formed wall portion 16.

Raised portions 17 and 18 may be integrally formed in connection with the body and are provided with open ways respectively at 19 and 20 to facilitate entry-way 19 for the admission of air and 20 for the admission of oil.

21 is an air inlet pipe and 22 is an oil inlet pipe.

An oil conductor pipe 23 is disposed substantially centrally with respect to the open way in block 10 and to the forward end of said pipe a nozzle is attached which is referred to generally as 24. The forward end of the nozzle is interned and its marginal edges relatively spaced to form the jet opening 25 and is also fashioned as at 26 in a manner to present inclined circumferential walls leading to the jet opening.

27 is a spirally fashioned block or filler member dimensioned to snugly fit within the interior bore of nozzle 24. The forward end of the block member is preferably fashioned on straight transverse lines to facilitate thru its abutment with the wall members of the nozzle a substantially conically shaped clearance way intervening between block member and nozzle opening.

28ª is a spiral spring member interposed between the rear end of block 27 and an abutment portion within the nozzle adapted to hold block member 27 in proper functioning position. The construction of the nozzle as herein exemplified is one that is preferred because of convenience in manufacture. However, the spiral block may as a matter of course be made an integral part of the nozzle or may be otherwise supported in connection with the nozzle as may be desired.

In the practical working of my device it is intended that oil shall be delivered to the conductor tube and nozzle thru an open way which said open way will serve as well to permit the entry of air delivered into the chamber portion of block 10. I have provided herein an open ended elbow fashioned member 28 attached to tube 23, the same being positioned to receive a gravity discharge of oil.

29 is an oil conductor tube which communicates with a valve control means comprising a tubularly fashioned member 30 having a longitudinally perforated forward end portion 31. An entry opening 32 is provided in the wall of the sleeve member which is in communication with the oil inlet opening 20 in the block member.

33 is a valve member fitting within the central bore of sleeve member 30 and is fashioned with the right angled perforation 34 at its forward end that registers its opposed ends respective with oil inlet opening 20 and a perforation in the forward end of tubular member 30 whereby when the tubular and valve supports are in register oil will be conducted for discharge into oil conductor tube 23. The valve stem 35 is provided to facilitate turning the valve to effect at option register or non-register of the communicating ways from the oil supply to the conductor

way leading to conductor tube 23, leakage of oil being guarded against as by means of stuffing box 36, or by any other suitable means that may be desired.

Oil conductor tube 23 and its associated nozzle and elbow joint parts at its front end portion may be supported within a central bore within plate 37, which said plate may be fashioned in the manner of a taper as shown herein and fixed within the transverse area of the clearance supports within the block at a substantially angular juncture of the tapered walls of said block and may be secured in position by means of a set screw as 38. The rear end may be supported in the manner shown as by means of a bifurcated bracket member 39 connected with a rod member 40 that extends rearwardly therefrom and being carried in the longitudinal perforation in the cast portion 14 of body member 10, or rod 40 may if desired be rigidly connected with conductor member comprising tube 23 and elbow member 28.

For purposes of co-ordinating discharges of the oil and air mixture delivered thru tubular member 23 and nozzle 24 and the auxiliary air blast delivered thru orifice 13 at the forward end of block member 10, I have provided means for adjusting the nozzle and tubular member for optional longitudinal projection or retraction which means as shown consists of the rod member 40 and the screw threaded as at 41 and the screw member 42 thereon thru which thru relative co-operative action and in conjunction with the rear wall of body member 10 said rod may be advanced or retracted at will. To the end that the rod shall be maintained in a definite position, screw member 43 actively connected with the block member is provided, which may be utilized to fix the rod in a definite and determined position. Also coil spring member 44 is provided the same being seated in pocket 45 in the cast portion of body 10, said spring surrounding the rod and abutting its opposed ends respectively against the rear wall of said pocket and bracket member 39 thereby imparting a forward pressure against the air and oil conductor parts being capable of adjustment under the tension of said spring.

In the carrying out of the purposes of my invention it is designed that air shall be delivered thru air duct 21 into the open areaway within block member 10 and that such air may at option enter conjunctionally with oil thru elbow member 39 for mixture with the oil designed for ultimate discharge thru nozzle 24; also that such air supply may also be provided with an optional course exteriorally of air and oil conductor to provide a pure air blast for and about the nozzle discharge way. Further it is designed that the auxiliary air supply shall be active under a limited resistance and that the discharge of the same shall be distributed and deflected for the purpose of producing a cone fashioned discharge and to this end I have provided a plurality of curved tubed member 46 which are supported at their rear ends in perforations in plate member 37 and arranged in said plate in a circular manner about the axially disposed central opening in said plate thru which nozzle projects and that the forward ends of said tubular member shall be disposed in and about the nozzle substantially as shown and the forward ends of said tubular members may be flattened as at 47 if desired to facilitate the presentation of a comparatively long and narrow discharge way. With this relative arrangement of auxiliary air discharge tubes 46 with respect to nozzle 24, the air and oil and air blast may be so related as to bring about the best combustion results, such regulation being accomplished as herebefore noted thru and by means of relative adjustment of said nozzle with respect to the clearance opening 13 in the forward end of block member 10.

In carrying out the function capabilities of my invention it is necesary that air and oil shall be supplied to the device under proper delivery means. However, as such requirement is well understood as being required in device in the practical and patent art, I have not presented any illustration of such compression means. I have shown herein my preferred form of embodiment of my invention. However, the same may be changed as to form, proportion and relative arrangement of parts without departing from the purposes herein contemplated, therefore, I do not desire to limit myself to the forms, proportions and relative arrangement of parts in exact detail as herein exemplified but claim all forms that fall legitimately within the principle herein disclosed.

What I claim is:

1. In a device of the class described, in combination, a housing and supporting member, including a clearance way therein leading to a discharge opening therefrom, an oil and air conductor member, disposed within the clearance way, provided with an open curved receiving portion at its rear end and with restricted exit way at its forward end, reflector members within terminal portions respectively of the housing and conductor members adapted to produce spiral motion of the discharge therefrom, means for effecting longitudinal adjustment of the conductor member within the housing member and inlets respectively for air and oil the former communicating with the housing clearance way and the conductor member and the latter discharging oil into the conductor member.

2. In a device of the class described, in combination, a housing and supporting mem-

ber having a clearance way therein leading to a discharge opening therefrom, the forward end of said clearance way being fashioned with an incline leading to the exit opening, a rear closure for said clearance opening, an air and oil conductor member disposed within the clearance way provided with an open curved oil receiving portion at its rear end and with a restricted exit way at its forward end, means at the forward ends respectively of the housing and conductor members for producing spiral motion to blast discharges therefrom, an air inlet for admitting air under pressure to the clearance way and the conductor member, an oil inlet leading to the conductor member for discharge of oil therein, and a valve for controlling the flow of oil to the conductor member.

3. In a device of the class described, in combination, a housing and supporting member having an interior clearance way communicating with a discharge opening at its forward end, an oil and air conductor member adjustably disposed in the clearance way provided at its rear end with an open curved oil receiving portion and restricted at its forward end, means within the terminal portions respectively of the housing clearance way and the conductor member to direct the course of the discharges therefrom, an air inlet way communicating with the housing clearance way and with the conductor member, and an oil inlet way communicating to discharge oil into the conductor member.

In testimony whereof I affix my signature.

WALTER W. WILLIAMS.