

Aug. 9, 1949.

E. CÀMERINO ET AL

2,478,457

OIL BURNER

Filed July 26, 1946

Fig-1.

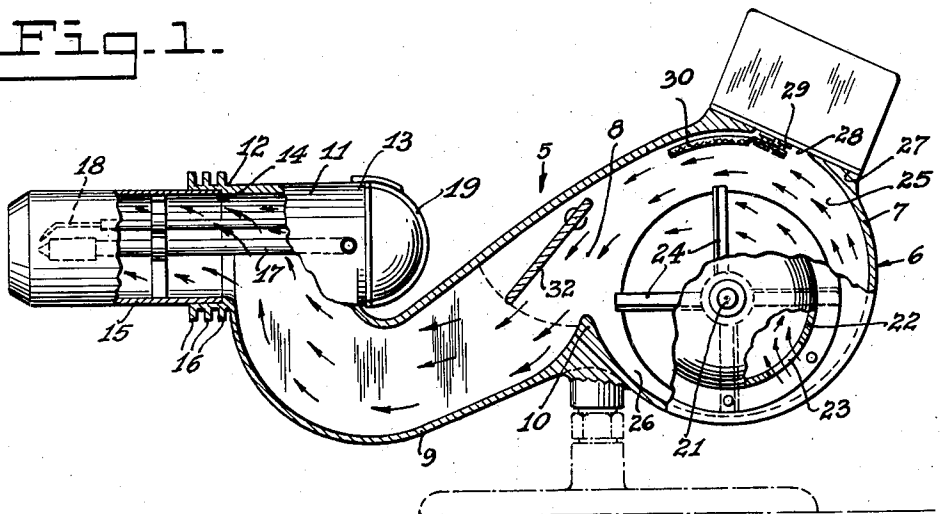


Fig. 2.

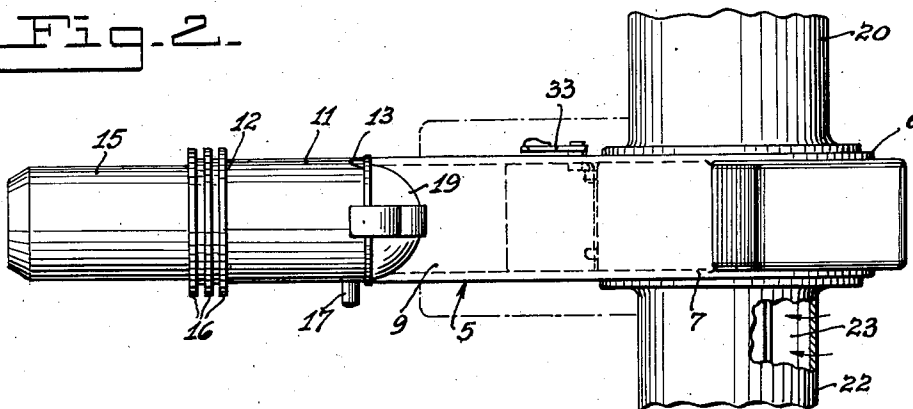
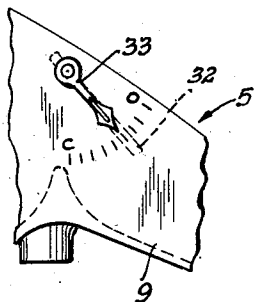


Fig. 3.



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UNITED STATES PATENT OFFICE

2,478,457

OIL BURNER

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Application July 26, 1946, Serial No. 686,517

2 Claims. (Cl. 230—114)

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The present invention relates to fuel oil burners and more particularly to those known in the art as gun-type burners.

Heretofore, considerable difficulty has been experienced in the operation of the gun-type burners by reason of turbulences being created by the broken or uneven face of the cylindrical wall of the impeller casing, one example being the abutments formed by the faces defining the relatively large opening over which is disposed the relatively flat underface of the transformer which has extending through the opening a binding post to which is secured one end of a cable leading to the electrodes. Due to the turbulences, the air propelled through the conduit, leading from the impeller casing to the nozzle, is of an uneven flow and causes a pulsation with the result that maximum efficiency in carburation is not obtained. Furthermore, electric motors for operating the impellers or blowers of these burners are confined to those having a relatively low R. P. M. value in order that the air supplied to the nozzle may be of a relatively slow velocity. Obviously, this precludes the use of motors of a relatively high R. P. M. value which may be desirable especially in view of the present-day shortage of various products. Another undesirable feature heretofore present in burners of the gun-type is that the nozzle often becomes overheated, due to inefficient carburation in some instances, with the result that the nozzle becomes burnt and distorted thus requiring replacement and in many instances replacement of the entire burner housings when the nozzles are constructed integrally therewith. The present invention overcomes the foregoing disadvantages and difficulties and presents many novel and desirable features heretofore lacking.

One of the many objects of the present invention is to provide an oil burner wherein a constant flow of air to the nozzle of the burner is capable of being maintained at a relatively slow velocity, means being provided for controlling the flow of air within a predetermined range whereby a desired mixture with the fuel may be obtained.

Another object of the present invention is to provide a device of the foregoing described character equipped with means for counteracting overheating of the nozzle and thus prolong its life.

A further object of the present invention is to provide a device of the foregoing described character wherein the nozzle may be readily detached for replacement or repair.

A still further object of our invention is to provide a device of the foregoing described character wherein the peripheral wall of the impeller cham-

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ber is of a relatively smooth construction between the air inlet and outlet to effect a smooth flow of the air toward the nozzle.

An important object of our invention is to provide a device of the foregoing described character which is simple in construction, durable in use, efficient in operation, economical in manufacture and with its components being capable of easy assembly and disassembly.

With the above and other objects in view, as will hereinafter appear, the invention consists in the combination and arrangement of parts hereinafter set forth and illustrated in the accompanying drawings from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

Referring to the drawings wherein like reference characters designate like parts throughout the several views:

Figure 1 is a side elevation, partly in section, of a burner constructed in accordance with the present inventions.

Figure 2 is a top plan view with certain of the components being broken away.

Figure 3 is a fragmentary side elevation of the opposite side with respect to Figure 1.

In practicing the present invention, as illustrated in the drawings, there is provided a burner housing 5 comprising a cylindrical impeller casing 6 formed on one side of its cylindrical wall 7 with a throat 8 establishing communication with the upper inner end of a downwardly and outwardly extending conduit 9 structurally integrally connected to the casing at the jointure of the conduit with the casing, the lower portion of the throat is defined by a transverse rib 10. The lower outer end of the conduit is fashioned with an upwardly extending portion terminating in a cylindrical section 11 having distal and proximal open ends 12 and 13 respectively relative to the casing. The end 12 is formed with an inner circumferential seat 14 which accommodates therein the inner end of a tubular nozzle 15 and on its periphery with a plurality of spaced air fins 16 for counteracting overheating of the nozzle, the latter having incorporated therein an oil feed line 17 and electrodes 18. The foregoing nozzle construction enables the nozzle to be readily replaced when desired, while the air fins serve to prolong the life and use of the nozzle. The end 13 of the section 11 is closed by a cap 19 which coacts to direct the air entering the section 11 outwardly through the nozzle.

One side wall of the impeller casing 6 has se-

cured thereto a motor 20 equipped with a drive shaft 21 extending through the casing 6 and journaled in a bearing disposed within a bearing case 22 provided on the opposite side wall of the casing. One side of the under portion of the cylindrical wall of the case 22, distally disposed with respect to the throat 8, is provided with a port or air inlet 23 through which air enters the impeller casing and is propelled, through the medium of impeller blades 24 secured to the shaft 21 into the conduit 9. The direction of flow of the air within the casing is counterclockwise, as viewed in Figure 1, and therefore travels a relatively long arcuate path 25 bordering the upper portion of the wall 7 and between the inlet 23 and the throat 8 as compared with the relatively short arcuate path 26 bordering the lower portion of the wall 7 and between the throat 8 and inlet 23.

The outer face of the wall 7 is formed with a tangentially disposed elongated boss or seat 27 arranged in close proximity to the inlet 23 and superjacent the latter. The boss is provided with a relatively flat face formed with a relatively small opening 28 communicating with the interior of the casing and on which face is mounted a transformer having binding posts 29 extending through the opening and connected to the ends of cables 30 leading to one of the electrodes. From the foregoing, it will be apparent that air entering the impeller casing through the inlet 23 is propelled over the relatively long path 25 and which is between the inlet 23 and the throat 8, substantially smooth and free of obstructions to insure smooth flow of the air into the conduit without attendant pulsations.

In order to control flow of air to the nozzle, the housing is provided with a damper disposed transversely of the throat and comprising a plate 32 pivotedly mounted at its upper end within the throat adjacent the top wall of the conduit. The lower end of the plate is adapted to abut the rib 10 when in closed position and to coast with the latter to control the passage of air into the conduit.

As illustrated in Figure 3 of the drawing, the damper plate 32 is manually adjustable with respect to the rib 10 by means of a finger piece 33 which has a portion disposed in fixed relation with the plate and has its lower end provided with a pointer coacting with graduated markings or indicia provided on the side of the conduit to indicate, to an operator, the position of the damper with respect to the throat. Obviously, by adjusting the damper within the throat, the rate of flow of the air may be controlled through the conduit and into the nozzle for carburization of a desired character. Furthermore, the utilization of the damper permits of the use of a motor having a greater R. P. M. value than would be possible without the damper.

Without further elaboration the foregoing will so fully explain the invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. Moreover, it is not indispensable that all the features of the invention be used conjointly since they may be employed advantageously in various combinations and subcombinations.

It is obvious that the invention is not confined to the herein described use therefore as it may be

utilized for any purpose to which it is adaptable. It is therefore to be understood that the invention is not limited to the specific construction as illustrated and described, as the same is only illustrative of the principles involved which are capable of extended application in various forms, and the invention comprehends all construction within the scope of the appended claims.

What is claimed is:

1. In a burner housing construction, a cylindrical impeller casing having a cylindrical chamber adapted to house an impeller for propelling air therein at a relatively high velocity, said chamber being formed with relatively smooth interior faces for precluding air turbulences, the peripheral wall of said casing being provided on one side with a downwardly and outwardly extending conduit communicating with said chamber, said conduit being provided with an inclined section having a lower outer end portion fashioned with an upwardly extending section terminating in and between the ends of an angularly extending section having a nozzle receiving end, said sections coacting to provide a relatively long path of travel for the air between said chamber and said nozzle receiving end.

2. In a burner housing construction, a cylindrical impeller casing having a cylindrical chamber adapted to house an impeller for propelling air therein at a relatively high velocity, said chamber being formed with relatively smooth interior faces for precluding air turbulences, the peripheral wall of said casing being provided on one side with a downwardly and outwardly extending conduit communicating with said chamber, said housing being provided with a throat disposed at the jointure of said conduit with said casing and a rib defining said throat, means disposed within said throat and coacting with said rib for controlling the admittance of air from said chamber into said conduit, said conduit provided with an inclined section having a lower outer end portion fashioned with an upwardly extending section terminating in and between the ends of an angularly extending section having a nozzle receiving end, said sections coacting to provide a relatively long path of travel for the air between said throat and said nozzle receiving end, said casing being provided with a radial wall equipped with an axially extending case having a peripheral wall formed with air inlet means disposed on a side distally with respect to said throat whereby air drawn into said casing is caused to travel a relatively long path between said inlet means and said throat.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,295,086	Eddison	Feb. 18, 1919
1,752,830	Bliss	Apr. 1, 1930
2,014,507	Price	Sept. 17, 1935
2,156,405	Smoot	May 2, 1939
2,290,423	Funk	July 21, 1942
2,298,745	Klockau	Oct. 13, 1942