Feb. 10, 1925. 1,526,065

A. C. HERSTROM

OIL BURNER

Filed June 25, 1923

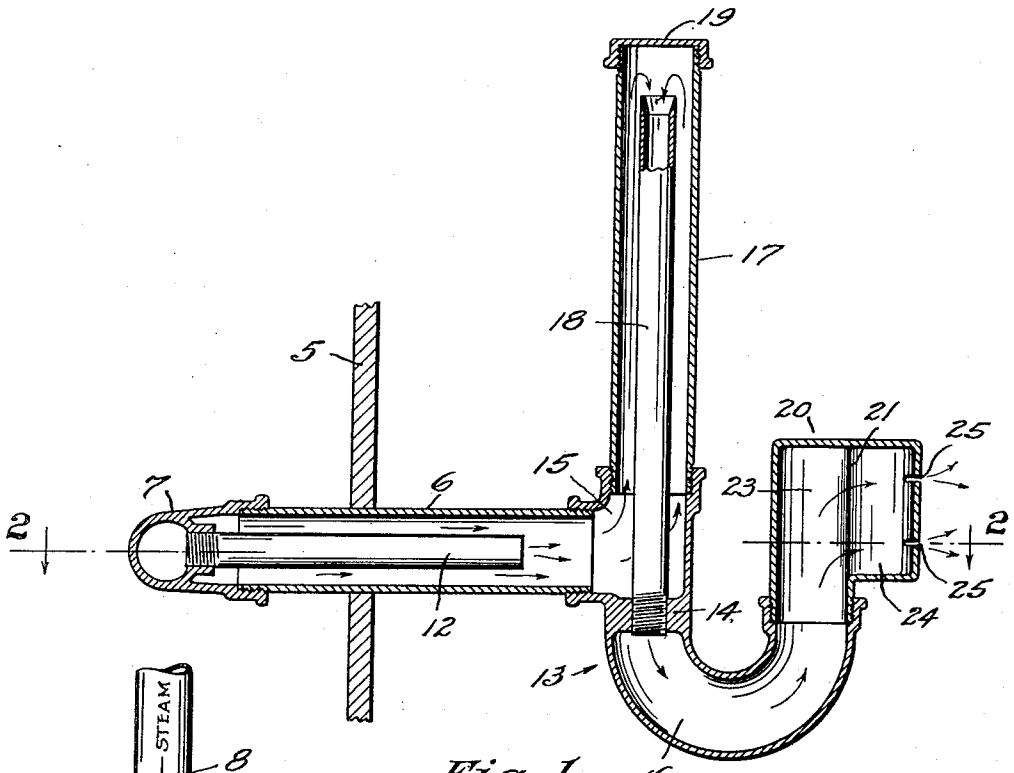


Fig. 1.

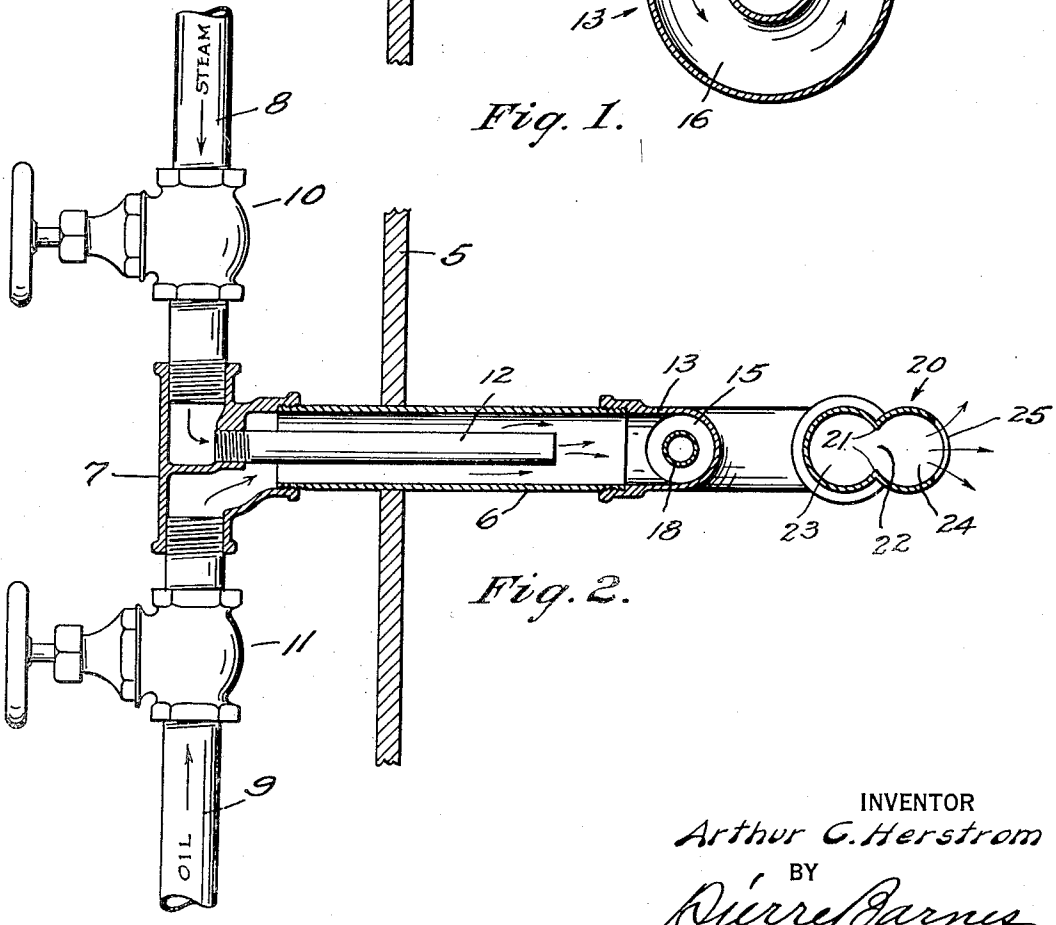


Fig. 2.

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Patented Feb. 10, 1925. 1,526,065

UNITED STATES PATENT OFFICE.

ARTHUR C. HERSTROM, OF SEATTLE, WASHINGTON.

OIL BURNER.

Application filed June 25, 1923. Serial No. 647,427.

To all whom it may concern:

Be it known that I, ARTHUR C. HERSTROM, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Oil Burners, of which the following is a specification.

This invention relates to oil burners, and its object generally is the improvement of burners of this character to render the same more efficient in use and more economical in the consumption of fuel.

More specific objects and advantages of the invention will appear in the following description.

The invention consists in the novel construction, arrangement and combination of parts hereinafter described and claimed, it being understood that, within the scope of what is claimed, changes in the precise embodiment of the invention shown may be made without departing from the spirit of the invention.

In the accompanying drawing,—

Figure 1 is a view in vertical longitudinal section of an oil burner embodying my invention. Fig. 2 is a sectional plan view taken substantially on line 2—2 of Fig. 1.

Referring to the drawing, the reference numeral 5 indicates the wall of a steam-boiler furnace, or the like, through which extends a horizontal lead-in pipe 6. The end of this pipe exteriorly of the furnace is connected to a T-fitting 7 having connected to its lateral branches a steam supply pipe 8 and a fuel-oil supply pipe 9 which are respectively provided with regulating valves 10 and 11.

The steam supply pipe 8 communicates with a nozzle element 12 extending axially into the lead-in pipe 6 into which oil is delivered. The end of the lead-in pipe 6 has connected thereto within the furnace a casing 13 which is divided by a horizontal partition 14 into two compartments 15 and 16. The compartment 15 has communication with the outlet end of the pipe 6 and is provided with an extension afforded by a tubular attachment 17 of the casing.

18 represents a tube engaged in an opening provided in the partition 14 and extends upwardly axially of the attachment 17 to within a short distance from the closed upper end 19 thereof. The casing compartment 16 above mentioned is of a substantially U-shape in vertical section so as to provide a curved passage with an upwardly directed outlet to which a chambered head 20 is connected.

The chamber within said head is of an elliptical form in horizontal section with the minor axis somewhat contracted to afford inwardly protruding ribs 21 (Fig. 2) and a restricted opening 22 between compartments 23 and 24 of the head. The compartment 23 is in axial alignment with the outlet of the curved passage or compartment 16. Orifices in the nature of horizontal slots 25 are provided in the peripheral wall of the head 20 opposite the opening 22.

The number of orifices 22 in the head, however, is determined by the size and duty of the burner, a single orifice being sufficient for small installations and three or more for larger burners.

In operation, oil supplied at a pressure of approximately 60 pounds is supplied through pipe 9 into the lead-in pipe 6 whence it is ejected by a stream of high pressure steam emitted from nozzle pipe 12. The oil in being discharged with steam from said lead-in pipe is impinged against the lower end of the tube 18 and the wall of the compartment 15 becomes broken up and partially converted into a vapor. The mixture of vaporized oil and steam pass upwardly in the annular space surrounding the tube 18 and is then conducted through the latter into the curved compartment or passage 16 and thence through the head chambers 23 and 24 to eventually escape through the burner orifices 25.

In such passage or flow of the fluid fuel, the same is primarily heated by the steam which is supplied through the pipe connection 8 and the nozzle 12.

The temperature of the fuel is progressively increased in its travel through the burner which is exposed to the heat of the furnace.

The course of the steam and fuel through the burner chambers and passages tends to thoroughly mix the fluids with a complete vaporization of the oil prior to its discharge from the burner orifices. The operation of the invention will, it is thought, be understood from the foregoing description.

What I claim, is,—

1. An oil burner comprising a casing of a substantially U-shape, a partition provided

in said casing, a nozzle-head provided for one arm of the casing, a tubular extension to the other arm of the casing and above said partition, a tube extending upwardly from said partition concentrically into said extension to afford communication between the upper portion of the space therein and the casing space below the partition said tube and extension thus forming an annular passage, a lead-in pipe communicating from one of its ends laterally with the annular space about said tube in the casing, and steam and oil supply pipes connected to the other end of the lead-in pipe the steam pipe having a terminal end extending into the lead-in pipe and discharging against the upwardly extending tube adjacent the partition.

2. An oil burner comprising a casing of a substantially U-shape, a partition provided in said casing, a nozzle-head provided for one arm of the casing, a tubular extension to the other arm of the casing and above said partition, a tube extending upwardly from said partition concentrically into said extension to afford communication between the upper portion of the space therein and the casing space below the partition said tube and extension thus forming an annular passage, a lead-in pipe communicating from one of its ends laterally with the annular space about said tube in the casing, steam and oil supply pipes connected to the other end of the lead-in pipe, and a nozzle-pipe for said steam supply pipe provided in said lead-in pipe the steam pipe having a terminal end extending into the lead in pipe and discharging against the upwardly extending tube adjacent the partition.

Signed at Seattle, Washington, this 4th day of June, 1923.

ARTHUR C. HERSTROM.

Witnesses:
PIERRE BARNES,
M. G. SUPPLE.