

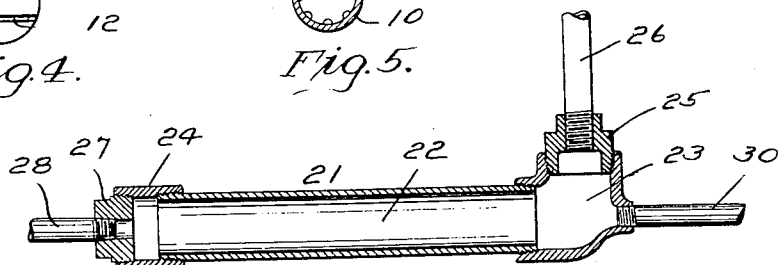
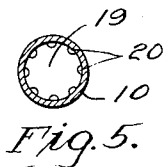
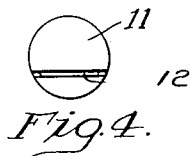
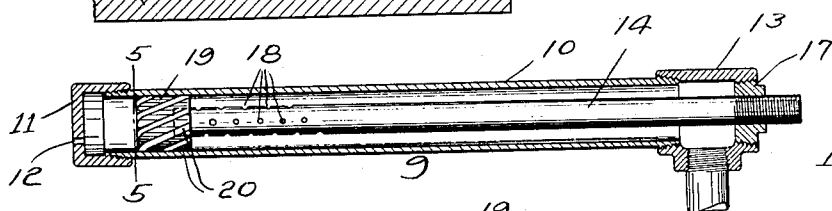
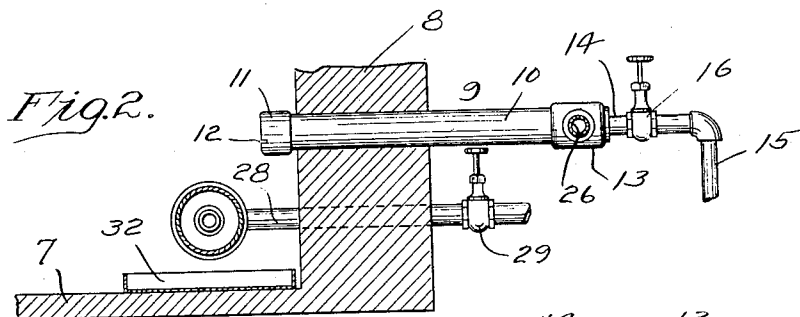
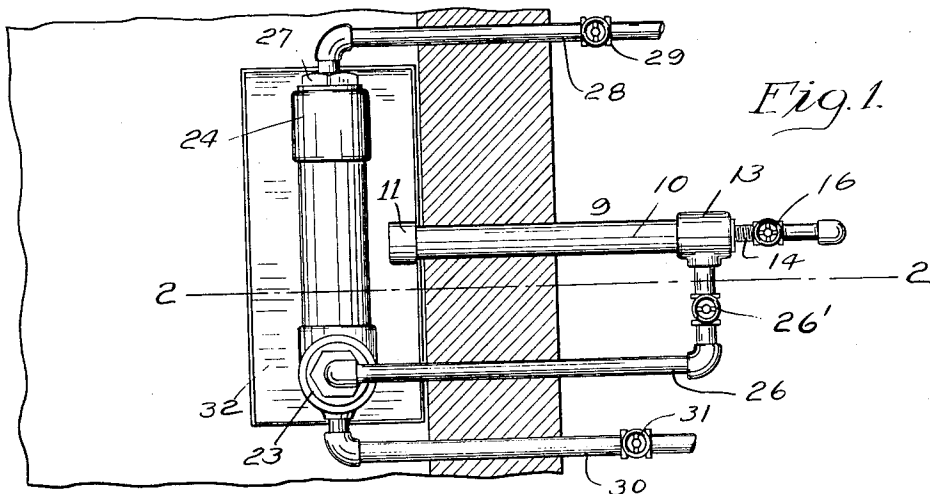
F. L. SALTZMAN & E. J. CROCKETT.

OIL BURNER.

APPLICATION FILED JUNE 19, 1912.

1,110,147.

Patented Sept. 8, 1914.



Witnesses

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Fig. 6.

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# UNITED STATES PATENT OFFICE.

FRANK L. SALTZMAN AND ERNEST J. CROCKETT, OF OAKLAND, CALIFORNIA.

## OIL-BURNER.

1,110,147.

Specification of Letters Patent.

Patented Sept. 8, 1914.

Application filed June 19, 1912. Serial No. 704,695.

*To all whom it may concern:*

Be it known that we, FRANK L. SALTZMAN and ERNEST J. CROCKETT, citizens of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification.

Our present invention relates to oil burners, which, when working normally, eject the fluid in an atomized state.

The burner is particularly adapted to burn the lower grades of distillate, and for use in small plants and heating furnaces.

The principal objects of our invention are to provide a simple and efficient oil burner wherein the atomizing of the fuel is attained without the aid of moving mechanism, but by the movement of fluid, the desired pressure of which is attained by action of heat of the burner itself, when working.

Further objects of our invention are to render the device so simple that its making, to a considerable extent, may be accomplished by the use of standard pipe and fittings, whereby the cost of repair is reduced, and the repair conveniently effected.

In the drawings, forming a part of this specification: Figure 1 is a fragmentary, horizontal, section through a furnace, showing the application of our invention thereto. Fig. 2 is a cross sectional view on the lines 2—2 of Fig. 1. Fig. 3 is a central, longitudinal, sectional view through what we hereinafter term the atomizer, parts being shown in elevation to disclose details of construction. Fig. 4 is an end elevation of the nozzle used in connection with the atomizer. Fig. 5 is a cross sectional view on the line 5—5 of Fig. 3. Fig. 6 is a central longitudinal sectional view through what I hereinafter term a steam generator.

Similar characters refer to similar parts throughout the several views.

The burner is shown, in Figs. 1 and 2, by way of example, as applied to a furnace, a fragment of the hearth 7 and wall 8 being disclosed. An atomizer 9 projects through the wall 8 and includes, as clearly shown in Fig. 3 of the drawing, a tubular member 10 having screw threaded ends. At that end of the tubular member 10 projecting into the fire box of the furnace, a nozzle 11, which is in the form of a cap having a transverse slit or egress opening 12 on the face, is screwed thereupon, while the other end of said tube

has screwed thereupon a T member 13, which may be of the standard type.

Extending into the tubular member 10, is a relatively smaller tubular member 14 with its end directed toward the nozzle 11. This tubular member 14 is adapted for connection with a pipe 15 leading from the source of liquid fuel supply, under pressure, a valve 16 being interposed in the conduit for controlling passage of the fuel to tubular member 14. A bushing 17, surrounding tubular member 14, and screwed into the opening of member 13 concentric to the axis of tubular member 10, closes such tubular member, about tubular member 14, at the end opposite from nozzle 11.

Near its inner end the tubular member 14 is provided with a plurality of apertures 18 adapted to deliver a plurality of streams of liquid fuel from adjacent such end, and a drum like member 19 fits into said tubular member 10 and closes the end of said tubular member 14, as clearly shown in Fig. 3 of the drawing, this member 19 being intermediate the openings 18 of tubular member 14 and egress opening 12 of nozzle 11. Spiral grooves 20 are formed in the periphery of drum like member 19, so that fluid passing through tubular member 10, before leaving egress opening 12, travels in a whirling path past such member 19 and the particles are thoroughly broken up and intermixed before leaving the atomizer.

A steam generator, designated generally at 21, is disposed preferably below, in proximity to nozzle 11, to be acted upon by the flame which is to issue from such nozzle. This steam generator is conveniently formed of a horizontally disposed tube 22 having a T 23 at one end and a socket 24 at the other end. The T 23 is preferably disposed so that the opening having its axis at right angles to that of the straight openings, is directed uppermost, and has a plug 25 screwed thereinto, from which a pipe 26, leads through wall 8 to the complementary opening of the before mentioned T 13. The pipe 26 is preferably provided with a valve 26' to control movement of fluid therein. The socket 24, is provided with a plug 27, to which leads a pipe 28, having a valve 29 disposed therein, and connected with a source of water supply under pressure. The other straight opening of the T 23 is connected with a refuse pipe 30, controlled by valve 31 which is normally closed during the operation of the burner

but which may be opened when starting up or in blowing off the boiler. A receptacle 32 is disposed below the steam generator 21, and the nozzle 11, so that oil may drop by gravity to receptacle 32 and be collected therein. This receptacle may conveniently rest upon the hearth 7 of the furnace.

The operation of the device is as follows: Upon opening valve 16, a quantity of oil is permitted to flow from nozzle 11 into receptacle 32, the valves 29 and 31 being closed. When the desired quantity of oil is disposed in the receptacle 32, the valve 16 is closed, the oil is ignited and water permitted to flow to tube 22 by opening valves 29 and 31. Valve 26' is also opened and as soon as steam is generated in tube 22 and issues from nozzle 11, valve 16 is opened and the fuel is forced from the nozzle 11, having been intermixed and atomized by the movement of the steam, and the drum like member 19. The fuel at nozzle 11 is then ignited and the steam generator then receives its heat from such flame, the flame in receptacle 32 dying out when the oil in such receptacle is consumed.

We claim:—

A tubular burner nozzle for oil and the like comprising in combination, an outer casing, an inlet at one end of said casing for the introduction of steam, an outlet on the opposite end of said casing for the production of a flame, and an oil pipe entering said casing at the same end as the steam and extending nearly to the other end thereof, said oil pipe being provided with apertures opening substantially at right angles to the axis of the nozzle, and a cylindrical member closing the end of said oil tube and being intermediate said apertures and said outlet, said cylindrical member substantially filling the cross section of said nozzle, except for spiral grooves in its face through which oil and steam may escape.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK L. SALTZMAN.  
ERNEST J. CROCKETT.

Witnesses:

W. A. STOCK,  
M. M. ESCHERICH.