F. A. COLEMAN.

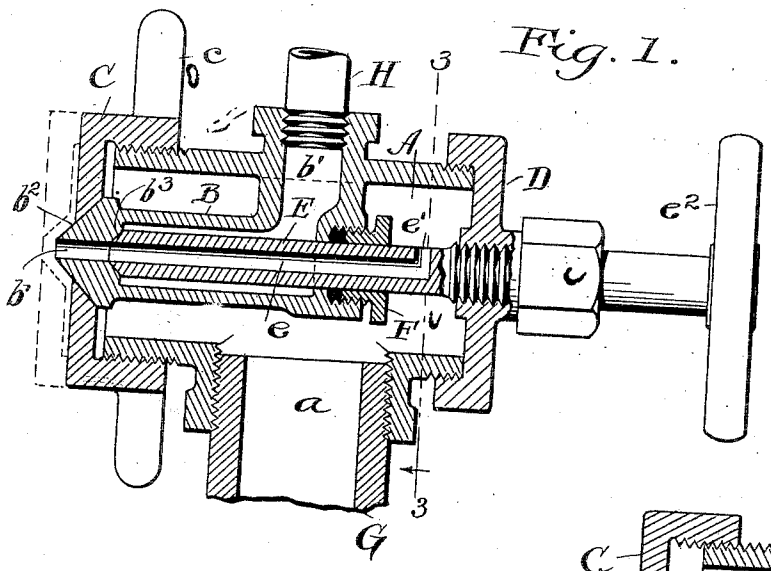
OIL BURNER.

APPLICATION FILED FEB. 12, 1912. RENEWED JAN. 7, 1914.

1,098,429.

Patented June 2, 1914.

Fig. 1.



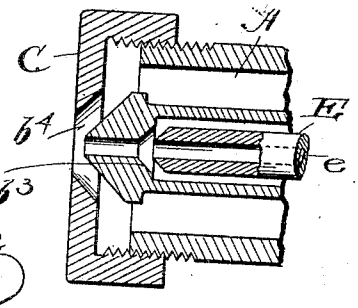


Fig. 2.

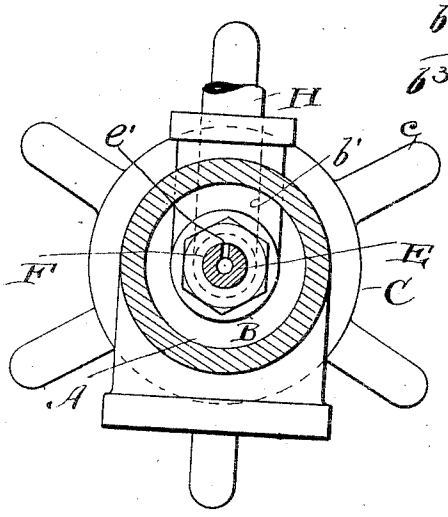


Fig. 3.

Witnesses,
E. B. Gilchrist,
H. R. Sullivan.

Inventor
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UNITED STATES PATENT OFFICE.

FREDERICK A. COLEMAN, OF CLEVELAND, OHIO.

OIL-BURNER.

1,098,429. Specification of Letters Patent. Patented June 2, 1914.

Application filed February 12, 1912, Serial No. 677,234. Renewed January 7, 1914. Serial No. 810,381.

To all whom it may concern:

Be it known that I, FREDERICK A. COLEMAN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Oil-Burners, of which the following is a full, clear, and exact description.

The principal object of this invention is to provide a cheap and simple oil burner, with which the oil will be completely consumed in the production of a hot flame whose size may be regulated as required. The burner, however, may be used as a burner of gas if desired.

The invention consists in the construction and combination of parts which are shown in the drawing, and hereinafter described and accurately defined in the appended claim.

In the drawing, Figure 1 is a central longitudinal sectional view of an oil burner embodying the invention. Fig. 2 is a longitudinal sectional view of the front part of said burner device when both of the valves (to be described) are open, as they may be in use. Fig. 3 is a transverse sectional view in the plane of line 3—3 on Fig. 1.

Referring to the parts by letters, A represents a chamber which is cylindrical in form, and has an inlet *a* to which a supply pipe G may be connected, and through this supply pipe air or some oxygen supplying fluid will be delivered into this chamber A. Centrally disposed within this chamber is a fuel nozzle B having a central discharge opening *b*, and having a fuel supply opening *b'* to which a supply pipe H may be connected. This nozzle B is preferably an integral part of the same casting, which forms the chamber A. The front end of the fuel nozzle projects slightly beyond the front end of the chamber; and this projecting front end has a conical exterior b^2.

A cap valve C screws onto the front end of the chamber A, and has laterally projecting arms *c* by which it may be turned in one direction or the other. This cap valve has a centrally disposed hole b^4 which is tapered so as to nicely fit upon the tapered end b^2 of the fuel nozzle.

A cap D is screwed onto the rear end of the chamber C. A valve E screws through this cap and passes through a stuffing box F in the rear end of the fuel nozzle. The front end of this valve E is conical and shaped to nicely fit a conical seat b^3 in said nozzle. This valve E has a hole *e* which extends from its front end rearward past the stuffing box F, which hole has a lateral extension *e'* through the side of the valve so that said hole is always in communication with the interior of the chamber A.

Preparatory to starting the burner, both of the valves C and E are closed. Then the valve E is opened slightly,—said valve having at its rear end a hand wheel e^2 by which it may be turned to produce this result. When said valve has been moved slightly from its seat, and the fuel (preferably oil) and the oxygen supplying fluid (preferably air) are turned on, a stream of air will be discharged from the front end of the valve into the opening *b* of the nozzle. Also a very thin annular stream of fuel will be discharged into the same opening *b* around the air stream. This annular stream of fuel being directed at an angle into the air stream will become fairly well mixed with the air within the opening *b*. At any rate, as the air and fuel are discharged from the end of the nozzle the liquid fuel will have been atomized and pretty thoroughly mixed with the air so that it may be readily ignited and will burn freely. The flame having been once established, the operator by taking hold of the arms *c* will turn valve C in the opening direction, whereupon an annular stream of air will flow between this valve and the nozzle, which air stream will envelop the annular stream of fuel. But because of the inclination of the passage between them, this air will be directed inward into the outflowing mixture of air and fuel which flows from the nozzle outlet *b* so as to facilitate the mixture of air and fuel. By still further opening the valve C and by still further opening valve E, this flame may be enlarged to any size within the limits of the device. The proportions of fuel and air may be accurately regulated by the manipulation of the two valves, so that the oil will be completely consumed and a hot flame produced.

It will be understood that the described burner may be used with a gaseous fuel, although it was especially contrived with reference to its efficiency as an oil burner.

Having described my invention, I claim:

In an oil burner, the combination of a chamber open at both ends and having an inlet at its side, a fuel nozzle disposed cen-

trally within said chamber and having a fuel inlet through the side,—the front end of said nozzle being externally tapered and said nozzle having an internally tapered valve seat,—a cap valve which screws onto the front end of the chamber and has a centrally tapered opening which is fitted to the tapered exterior surface of the front end of the fuel nozzle, said cap valve being provided with operating arms, a cap which screws onto the rear end of the chamber, a valve which screws through the last named cap and passes into the fuel nozzle, a stuffing box which embraces the rear end of said valve, said valve having a tapered front end and having a hole which extends from said front end rearward and communicates with said chamber.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

FREDERICK A. COLEMAN.

Witnesses:

E. L. THURSTON,

H. R. SULLIVAN.