

F. D. F. WALTERS & G. W. LATIMER.
OIL BURNER.

APPLICATION FILED FEB. 21, 1911.

1,036,758.

Patented Aug. 27, 1912.

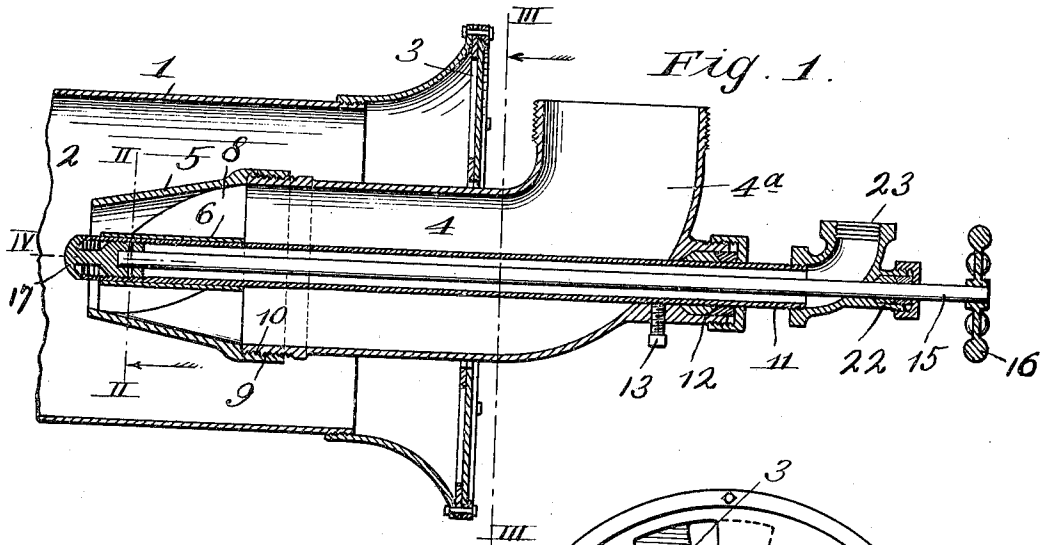


Fig. 2. Fig. 3.

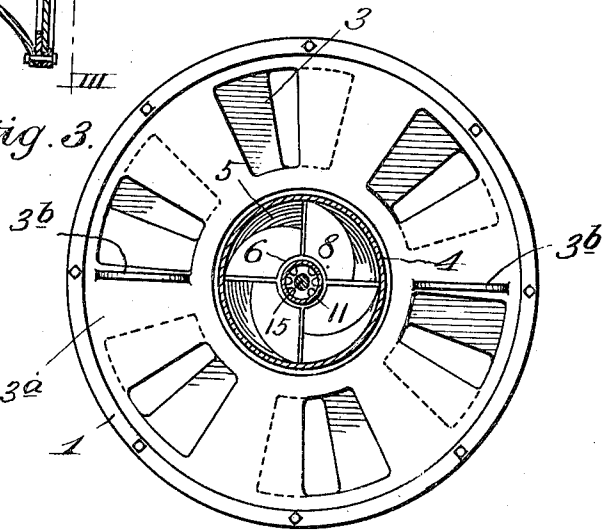
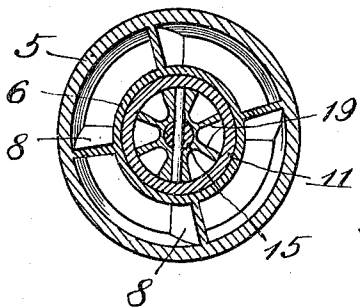
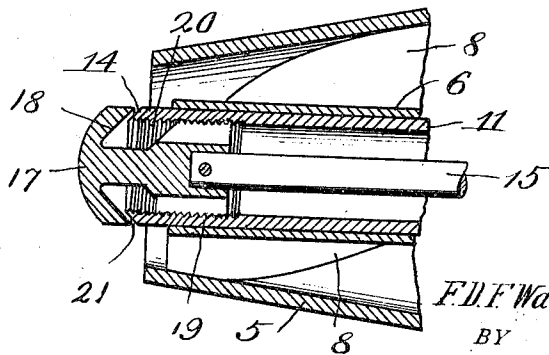


Fig. 4.



WITNESSES:

R. W. Hamilton.
E. C. Lillian.

INVENTORS:

F. D. F. Walters and G. W. Latimer,

BY

F. G. Fischer,
ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANK D. F. WALTERS, OF HUMBOLDT, KANSAS, AND GEORGE W. LATIMER, OF INDEPENDENCE, MISSOURI.

OIL-BURNER.

1,036,758.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed February 21, 1911. Serial No. 609,989.

To all whom it may concern:

Be it known that we, FRANK D. F. WALTERS and GEORGE W. LATIMER, citizens of the United States, residing at Humboldt and Independence, in the counties of Allen and Jackson and States of Kansas and Missouri, respectively, have invented certain new and useful Improvements in Oil-Burners, of which the following is a specification.

Our invention relates to improvements in oil burners, and one of our objects is to provide a burner of this character which is particularly adapted for use in cement kilns and driers.

A further object is to obtain complete atomization of the oil immediately after its discharge from the burner, so that ignition may take place close to said burner.

A further object is to obtain uniform density of air and oil, so that complete combustion may take place, and economy in consumption of oil be thereby effected.

Another object is to arrange the burner in such manner that the flow of oil there-through will be so strong as to prevent accumulation of sediment and consequent clogging of the burner tip.

We obtain the foregoing objects by discharging the oil backwardly in conical form against a spiral column of air, and by controlling the flow of oil through the burner at the tip thereof, so that initial pressure of the oil will be had at said tip and the oil discharged therefrom with considerable force.

Other objects of the invention will hereinafter appear, and in order that said invention may be fully understood reference will now be made to the accompanying drawing in which:

Figure 1 shows a vertical longitudinal section of our improved burner. Figs. 2 and 3 are transverse sections taken on lines II—II and III—III, respectively, of Fig. 1, and Fig. 4 is an enlarged central section of the forward end of the burner, on line IV.

In carrying out the invention we employ a tube 1 of any desired length, forming a combustion chamber 2, provided at its rear end with a register 3, for the admission of the outer atmosphere.

4 designates a steam, air, or other fluid pipe, the forward portion of which extends centrally through register 3, and into the

combustion chamber 2, a suitable distance, said pipe being provided at its forward end with a fixture comprising a conical nozzle 5, a centrally-disposed sleeve 6, and a plurality of equally spaced spiral blades 8, connecting sleeve 6 to nozzle 5. Nozzle 5 is removably secured to the forward end of air-pipe 4, through the intermediacy of internal threads 9 and external threads 10 at the rear end of the nozzle and the forward end of the pipe, respectively.

11 designates an oil-tube extending axially through the horizontal portion of pipe 4 and nozzle 5, said oil-pipe being slidably-mounted in sleeve 6, and a stuffing-box 12, which latter is located at the elbow 4^a of the air-pipe 4. Oil-tube 11 is held from accidental longitudinal movement by a set-screw 13 bearing against the same and extending outward through a portion of the stuffing-box 12, and the forward end of said oil tube terminates in the form of a beveled valve-seat 14. The flow of oil through tube 11 is controlled by a valve comprising a stem 15, a handle 16, secured to the rear end of said stem, and a valve-plug 17 secured to the forward end of stem 15. Valve-plug 17 has a concave rear side 18, adapted to snugly fit seat 14 and thus cut off the flow of oil through pipe 11 when desired. Valve-plug 17 is adjustable longitudinally independently of the oil-tube 11, said valve-plug being provided at its rear end with externally threaded radial wings 19 engaging internal threads 20 at the forward end of said oil tube. Valve seat 14 and the concave rear side 18 of valve 17 form, when the valve is open, a conical port 21 to discharge the oil rearwardly in conical form against the steam or air escaping through nozzle 5. Stem 15 extends rearward through a stuffing-box 22 on an elbow secured to the rear-end of the oil-tube 11.

By referring to Fig. 1 of the drawing, it will be noted that the oil-tube 11 is of the same diameter throughout its length, consequently oil forced therethrough from a source of supply (not shown) will be discharged at initial pressure through port 21 instead of at a lower pressure due to passing through a chamber or pipe of larger diameter than the oil tube, before finally escaping through port 21. By forcing the oil at high pressure through port 21, it discharges therefrom in the form of a conical

sheet or film of uniform density, and as this film impinges against the oppositely-flowing column of steam or air passing through nozzle 5, it is thoroughly atomized thereby and commingles therewith, thus insuring perfect combustion. The efficiency of the device is further increased by having the air or steam passing through nozzle 5 impinge against blades 8, which gives it a spiral motion and thereby insures uniform discharge throughout the area of the forward end of said nozzle. By thus atomizing the oil at the tip of the burner, the point of ignition is brought closer to said tip than if atomization of the oil took place farther from said tip. Should port 21 become clogged, it is only necessary to open the valve wide enough to permit the discharging oil to carry all impurities therewith, after which the size of the port may be again reduced to normal, hence, the advantage in controlling the flow of oil immediately at the point of discharge, instead of at the rear of the oil-tube in the customary manner. When a comparatively large quantity of oil is to flow through the oil-tube 11, set-screw 13 is removed and said tube is drawn backward until its tip is within nozzle 5, which prevents too great a spread of the oil, and when only a small quantity of oil is to flow through tube 11,

said tube is adjusted forward slightly beyond the forward end of nozzle 5, to give the oil an opportunity to spread after discharging through port 21. When a large quantity of oil is being consumed, additional air is admitted to the combustion chamber 2 through the register 3, the movable member 3^a of which is provided with diametrically-disposed lugs 3^b, whereby it may be conveniently turned.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is:

An oil-burner consisting of an oil-tube having a beveled valve-seat and internal threads at its discharge end, a valve-plug having a concave rear side adapted to snugly fit said valve-seat and provided with externally-threaded radial wings engaging the internal threads of the oil-tube, a stem secured to said valve plug and extending through the oil-tube, and a handle fixed to the outer end of said stem.

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

FRANK D. F. WALTERS.
GEORGE W. LATIMER.

Witnesses:

F. G. FISCHER,
E. C. LILLIAN.