

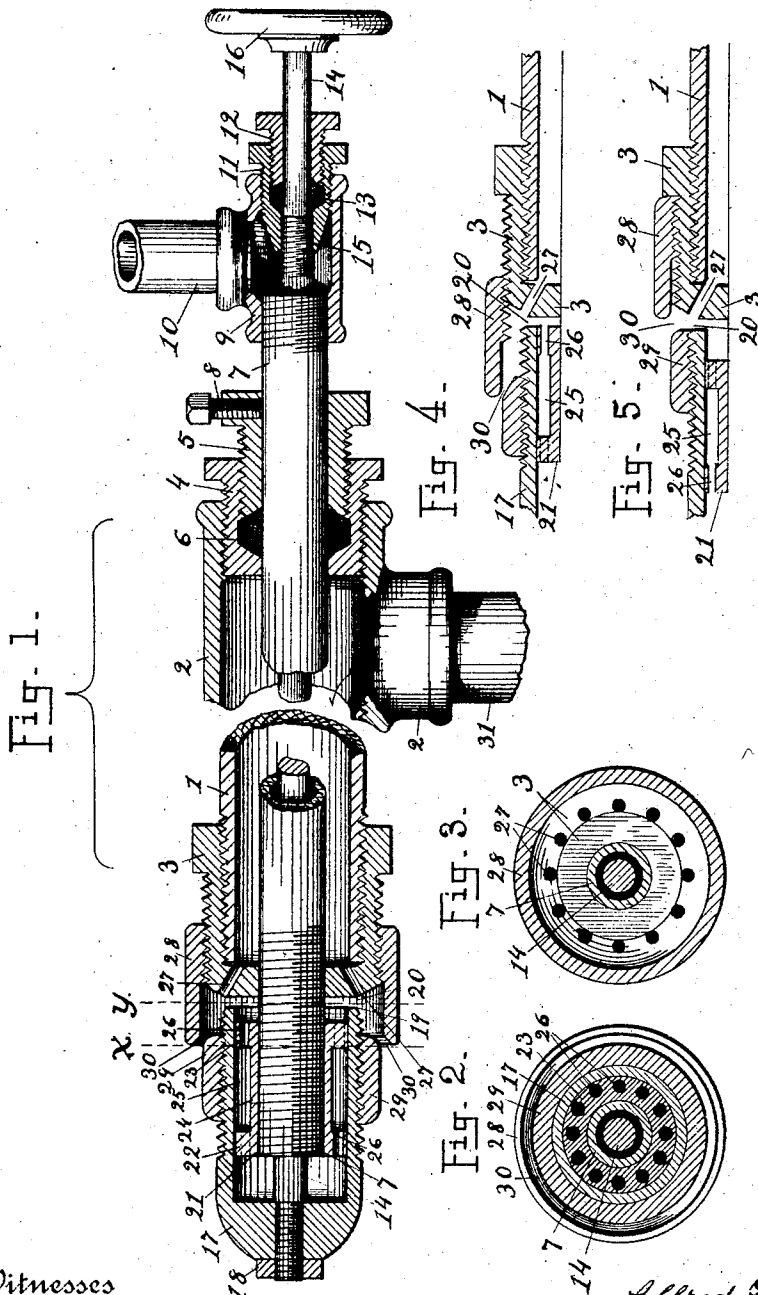
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OIL BURNER.

APPLICATION FILED NOV. 25, 1908.

919,176.

Patented Apr. 20, 1909.



Witnesses
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UNITED STATES PATENT OFFICE.

ALFRED F. JOHNS, OF LOS ANGELES, CALIFORNIA, AND WILLIAM X. STEVENS, OF WASHINGTON, DISTRICT OF COLUMBIA, SAID STEVENS ASSIGNOR TO JOHN FRANCIS WALSH, OF LOS ANGELES, CALIFORNIA.

OIL-BURNER.

No. 919,176.

Specification of Letters Patent.

Patented April 20, 1909.

Application filed November 25, 1908. Serial No. 464,467.

To all whom it may concern:

Be it known that we, ALFRED F. JOHNS and WILLIAM X. STEVENS, citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, and at the city of Washington, in the District of Columbia, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

This invention relates to oil burners of the class used for heating purposes; and its object is to provide means for economically burning heavy or crude oil for heating boilers of various kinds.

To this end, our invention consists in the construction and combination of parts forming an oil burner, hereinafter more fully described, and particularly set forth in the claims, reference being had to the accompanying drawings in which;

Figure 1 represents our oil burner in central, longitudinal section. Fig. 2 shows a cross section at line *x* of Fig. 1. Fig. 3 shows a cross section at line *y*, and Figs. 4 and 5 are detail views, in longitudinal section, of the delivery mouth, showing different adjustments of the lips.

Numeral 1 represents a steam pipe joined at one end with a steam coupling, 2, and at the other end with a cap, 3. A packing-box, 4, is provided with a gland, 5, and packing, 6, to form a steam tight joint around the oil pipe, 7, which is fitted to slide longitudinally through the packing-box. A binding screw, 8, secures the pipe at any point of adjustment. A coupling, 9, joining the oil pipe, 7, with an oil supply pipe, 10, is provided with a packing-box, 11, having a gland, 12, and packing, 13, through which a valve-rod, 14, is fitted to reciprocate longitudinally. This rod is screw-threaded at 15, through the packing-box, and is provided with a hand-wheel, 16. The valve-rod, 14, passing longitudinally through the oil pipe, 7, carries a retort, 17, into which or through which it is screw-threaded; and a binding nut, 18, secures it rigidly to the retort. The inner end, 19, of the retort is neatly faced as a valve to seat against the end of the cap, 3; the annular opening, 20, between retort and cap being for the discharge of oil gas in service. A throttle-valve, 21, is secured upon the inner end of the oil pipe, 7, and has flanged heads, 22, 23, and is fitted to

reciprocate longitudinally within the retort, 17, and is faced to engage the cap, 3, as a seat and it has a reduced body, 24, leaving an expansion chamber, 25, for gas around it between the flanges, 22, 23. These flanges are perforated with holes, 26, which should not be in line through the two flanges, because the object of these flanges is to obstruct the free passage of oil through the retort, retaining it therein to become as highly heated as possible, thus expanding it into gas for combustion. Steam jet holes, 27, are bored through the cap, 3. These jets are preferably arranged in conical form with an outward, circular base, forming a ring of discharge openings for the steam. A ring, 28, screw-threaded upon the cap, 3, and a ring, 29, screw-threaded upon the retort, 17, are shaped at their adjacent edges, as lips outside of the mouth, 30, where the combined steam and oil gas is delivered for combustion. The steam supply pipe, 31, and the oil supply pipe, 10, may be provided with the usual valves (not shown) for stopping or limiting the flow through them.

In operation, oil passing through the pipe, 7, enters the retort, 17, and is vaporized by the surrounding heat. The vapor passes into chamber, 25, where it is expanded into gas. Thence it passes through holes, 26, to the annular outlet, 20, where it is met by steam from the jets, 27, and the gas and steam mixing, rush out at the mouth, 30, where instantaneous combustion takes place, the flame being directed by the lips, 28, 29, according to their adjustment. If they are set well forward, as in Fig. 4, the flame will be delivered around the retort; if they are set to bring the mouth, 30, opposite to the annular delivery, 20, as in Fig. 5, the flame will be delivered in a circle. The burning of crude oil as a fuel being yet in the experimental stage, this burner is designed with these various adjustments to adapt it to produce the best results with each grade of oil. To this end, the adjacent edges of the lips may be made more or less angular, and with either straight or curved faces see Figs. 1 and 4, and they may be adjusted for wide delivery or for narrow delivery; and central, or forward or backward; and when the best result is ascertained with any grade of oil the lips for that service may be, one or both, made as integral portions of

their respective supports, the cap, 3, and the retort, 17. The valve-rod, 14 extending through the oil pipe to the outside, its hand-wheel 16, is located in the open air so that the retort may be operated as a valve to adjust the discharge opening, 20, while heat is on in service. The throttle-valve, 21, may also be adjusted while heat is on, by means of its supporting pipe, 7, which extends into open air; the pipe, 10, swinging enough to permit the little movement required.

For experimental purposes; for adaptation to different densities and other variations in oils; for maintaining the best results when once secured; and for adjustment to compensate for wear and for fouling in service, this invention presents the qualifications described.

Having thus fully described our invention, what we believe to be new and desire to secure by Letters Patent is the following claims.

1. In oil burners, a steam pipe; a cap thereon perforated to form a ring of discharge jets; an oil pipe within the steam pipe and passing through the said cap; a valve-rod within the oil pipe and extending out at both ends thereof; a retort secured upon the valve-rod and faced at one end as a valve; the aforesaid cap faced as a seat for the said valve, and means for reciprocating the valve-rod longitudinally through the oil pipe.

2. In oil burners, a steam pipe; a cap thereon having a series of perforations arranged in a ring and faced within the ring as a valve-seat; a valve-rod passing longitudinally through the steam pipe and carrying a retort; means for reciprocating the valve-rod, and means for delivering oil to the retort.

3. In oil burners, a steam pipe; a cap thereon having a series of perforations arranged in a ring; an oil pipe within the steam pipe and fitted to reciprocate longitudinally through it and projecting at both ends therefrom; a retort around the end of the oil pipe beyond the cap; and a throttle-valve upon the end of the oil pipe within the retort to engage the end of the said cap.

4. In oil burners, a steam pipe; a cap thereon having a series of perforations arranged in a ring; an oil pipe within the

steam pipe and fitted to reciprocate through it; a retort around the oil pipe beyond the cap; a throttle-valve secured upon the end of the oil pipe to engage the end of the said cap and having flanged heads and fitted to reciprocate within the said retort.

5. In oil burners, a steam pipe having discharge outlets near its circumference at one end; an oil pipe within the steam pipe and projecting beyond its delivery end; a retort over the end of the oil pipe and having an annular discharge adjacent to the steam pipe discharge; and a throttle valve mounted upon the oil pipe and having flanges fitted within the retort, each flange having a series of apertures through it for the passage of oil.

6. In oil burners, a steam pipe discharging substantially in a circle at one end; an oil pipe within the steam pipe and projecting beyond the end thereof; a retort around the oil pipe and having a circumferential discharge at the end of the steam pipe; a lip around the delivery of the steam pipe and longitudinally adjustable thereon, and a lip longitudinally adjustable upon the retort.

7. In oil burners, a steam pipe fitted to discharge substantially in a circle at its end; a retort having circumferential delivery adjacent to the steam delivery; a pipe for delivering oil into the retort, and lips beyond, and surrounding the said deliveries and forming a mouth for the discharge of their united product.

8. In oil burners, a steam pipe; an oil pipe; a retort connected with the latter; the discharge outlets for the steam pipe and for the retort being located in adjacent rings to combine their discharge products; and lips beyond, and surrounding these discharge outlets to form a delivery mouth for the combined products, substantially as described.

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

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