

No. 894,069.

PATENTED JULY 21, 1908.

J. SCHURS.
OIL BURNER.

APPLICATION FILED JUNE 22, 1907.

Fig. 1.

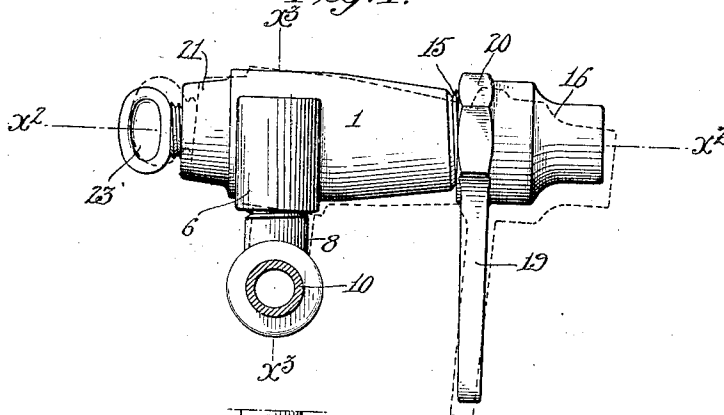


Fig. 2.

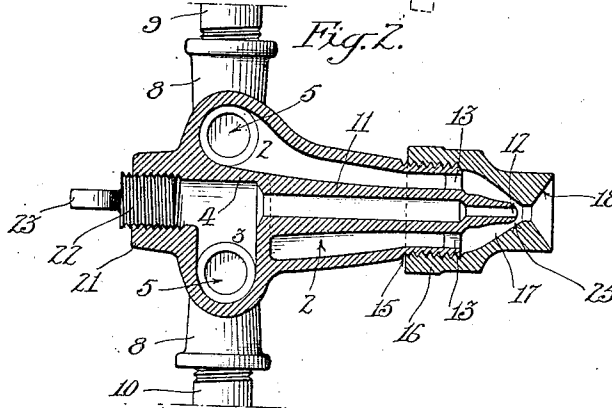
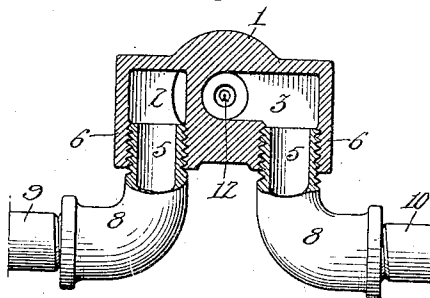


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN SCHURS, OF LOS ANGELES, CALIFORNIA.

OIL-BURNER.

No. 894,069.

Specification of Letters Patent.

Patented July 21, 1908.

Application filed June 22, 1907. Serial No. 380,364.

To all whom it may concern:

Be it known that I, JOHN SCHURS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Oil-Burner, of which the following is a specification.

This invention relates to an oil burner for use in brick kilns and the like, and the main object of the invention is to provide a burner of the injector type wherein the injector parts are integral, thereby avoiding the expense incident to the construction of a pipe burner, and also insuring permanent proper relation of the injector parts in a manner that is not possible with a pipe burner.

A further object of the invention is to provide for varying the angle or direction of the burner.

Another object of the invention is to provide for varying the injection action according to the nature of the flame desired.

In the accompanying drawings:—Figure 1 is a side elevation of the burner. Fig. 2 is a horizontal section on line x^2-x^2 in Fig. 1. Fig. 3 is a vertical section on line x^3-x^3 in Fig. 1.

The burner comprises a substantially frusto-conical body 1 formed of a single integral casting and provided at the rear, or larger, end with a steam chamber 2 and oil chamber 3, these chambers being separated by a diaphragm or partition 4. A channel or passage 5 extends downwardly from each of these chambers in a lateral enlargement 6 of the body 1 and terminates at its lower end in a tapped opening for the reception of an ell 8 screwing thereinto, the ell at one side being connected to a steam supply pipe 9 and the ell at the other side to an oil supply pipe 10. The oil chamber extends from this downward passage inwardly to the center of the body 1, and at the central portion it has a forward extension formed as a tubular projection 11 from the partition 4 aforesaid, said tubular projection extending forward to the outer end of the body 1 and preferably somewhat beyond the same, its forward end being preferably reduced to form a contracted oil outlet 12, this outlet portion being tapered on the outside. To rigidly support this tubular forward extension of the oil chamber, the same is connected at its forward end to the outer wall of the body 1 by any desired number of webs or radial arms 13, the body 1, partition 4, tubular projection 11 and

webs 13 being all cast integrally so that the relative position thereof is determined permanently, insuring a proper construction and axial alinement at a minimum cost.

The body 1 preferably tapers toward its forward end and the steam chamber 2 within said body and surrounding the tubular extension 11 of the oil chamber also tapers or converges forwardly. At its forward end the body 1 is screw threaded at 15 to receive a tip 16 which screws thereon and has a forwardly convergent or tapering bore or passage 17 surrounding the oil outlet 12, this tip passage 17 extending somewhat beyond the said oil outlet and then flaring rapidly outward, as shown at 18. To facilitate adjustment, this tip is provided with an arm or handle 19, and may also have a wrench hold 20. The oil chamber 3 is provided rearwardly with an axial extension 21 in line with the forward tubular extension 11, this extension opening at the rear end of the burner and being normally closed by a removable screw plug 22 having a handle 23, so that by removing said plug the burner may be opened to allow cleaning of the oil passage and outlet.

By constructing the burner in this manner the projection 11 is fixed and permanent and can be bored absolutely perfect, or in axial alinement with the body 1 so that when the tip 16 is screwed on the body said bore will register with the center of the throat or contracted portion of the tip, whereas, if the projection were separable and had to be screwed into its seat at the rear end it would add to the cost of manufacture and, in assembling the parts, the least amount of play or looseness between the screw threads, which of necessity must exist, would permit of a corresponding movement laterally of the bore from the axial center of the body multiplied as many times as the length of the extension would exceed the length of the radius from the axis of the bore to said screw threads. Actual experience with screw threaded fittings has demonstrated that it is impossible to secure them together with such accuracy as to avoid a slight displacement of the free end of the extension and it has been found that a displacement of even the sixty-fourth of an inch is sufficient to impair the efficiency of the burner by forming an uneven flame and a trifle more would substantially destroy it.

The tip 16 is of such length and the throat

or contracted portion of it is so related to the flaring walls 17 and 18, that if lines from the walls were extended they would cross each other in the throat. This construction will
 5 cause the steam to be converged, or centered, in the throat directly in front of the forward end of the oil outlet 12, after which it will expand, thereby subjecting the oil to the greatest possible disintegrating effect of the
 10 steam. Owing to the shortness of the tip the slight play or movement that must necessarily occur between the screw threads 15 will not affect the relative position of the throat to the outlet to such an extent as to make any appreciable difference in the flame.

In putting the burner in place on the oil and steam supply pipes with the ells 8, the fittings are made sufficiently tight to prevent leakage, but not so tight but that the burner
 20 can be moved on these fittings in both horizontal and vertical planes, the motion in a vertical plane being by the two ells turning on the respective pipes 9, 10, and the motion in the horizontal plane being by lateral yielding of the pipes and by slight turning of the
 25 body 1 on the ells.

In using the burner in a brick kiln the burner will first be tipped downwardly, as shown in dotted lines in Fig. 1, the burner
 30 tip being at the same time screwed out so as to leave a rather large steam jet opening or throat at 25, the steam and oil supply being so adjusted, by proper valves, that there is low velocity in the steam jet and a flame of
 35 low power, so that the kiln is heated gradually without burning out the brick. Then as the temperature rises and a more intense heat is required, the burner is tipped to position shown in Fig. 1, so as to direct the flame
 40 above the brick, the tip being screwed back to contact the throat and the steam pressure being turned on to give high jet velocity and intense flame.

What I claim is:—

45 1. A burner comprising a substantially frusto-conical body having an elongated steam chamber, a non-rotatable, tubular extension arranged substantially axially therein and rigidly and permanently secured to
 50 and projecting beyond the forward end of

said body, and forming an oil chamber, the bore of the extension being contracted at its forward end and enlarged and interiorly screw threaded at its rear end, the forward end of said body being exteriorly screw
 55 threaded and its rear end having inlets formed integrally therewith and communicating with said elongated chamber and enlarged bore, respectively, said inlets being
 60 parallel and upon opposite sides of the axis of the body and internally screw threaded, a plug in the rear end of said bore, and a tip on the forward end, said tip comprising a longitudinally perforated body having a contracted
 65 portion and outwardly flaring ends, the rear end being internally screw threaded and the length of the tip and the inclination of the walls of said flaring portions being such that lines extended from said walls would cross each other at said contracted
 70 portion.

2. A burner comprising a body having a steam chamber and an oil chamber formed therein, the oil chamber having a tubular extension extending forwardly through the
 75 steam chamber and terminating in an oil outlet, the steam chamber surrounding the tubular extension of the oil chamber, the walls of said chamber and the tubular extension of the oil chamber being formed inte-
 80 grally with the body, said oil and steam chambers having downward extensions, ells screwing into said extensions, oil and steam supply pipes screwing into said ells to permit of angular movement of the burner body on
 85 the said supply pipes, a tip screwing on the end of the burner body and having a forwardly converging passage, the forward tubular extension of the oil chamber having a tapering end extending within said tip to
 90 form a throat, and said tip having an operating means for rotating the same to adjust the size of said throat.

In testimony whereof, I have hereunto set my hand at Los Angeles, California this 11th
 95 day of June 1907.

JOHN SCHURS.

In presence of—

ARTHUR P. KNIGHT,
 FRANK L. A. GRAHAM.