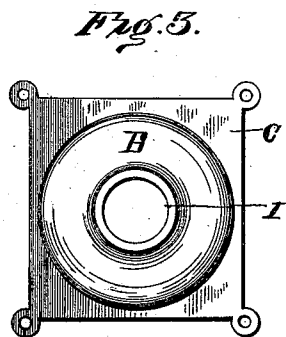
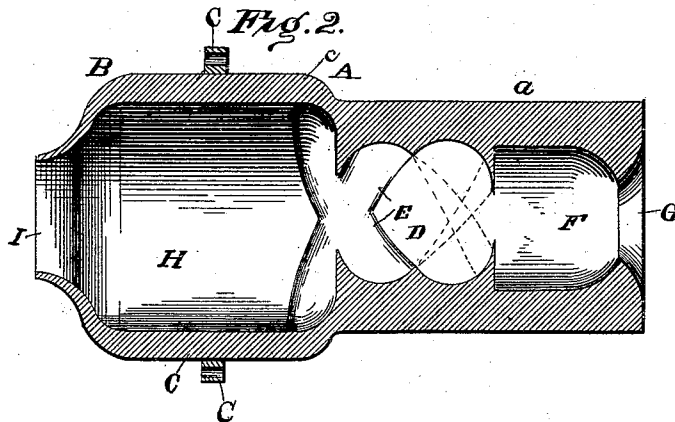
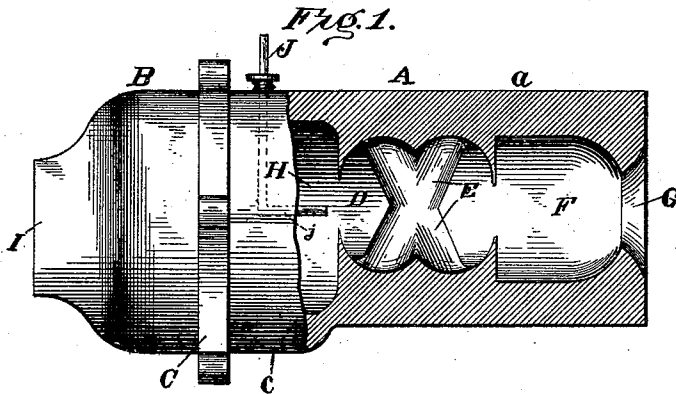


(No Model.)

J. F. COATES.
OIL BURNER.

No. 479,558.

Patented July 26, 1892.



Witnesses

J. M. Johnson
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Inventor

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UNITED STATES PATENT OFFICE.

JOHN F. COATES, OF TERRE HAUTE, INDIANA, ASSIGNOR OF FIVE-SIXTHS
TO LEO. J. WEINSTEIN, EDWARD WEINSTEIN, AND ISAAC FECHHEIMER,
OF SAME PLACE.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 479,558, dated July 26, 1892.

Application filed January 28, 1892. Serial No. 419,600. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. COATES, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented a new and useful Oil-Burner, of which the following is a specification.

This invention relates to oil-burners; and it has for its object to provide an improved oil-burner of that class wherein any volatile oil is converted into a gaseous state by means of a steam or hot-air blast or similar agents.

The present invention is designed in the nature of an improvement on my former patent, No. 443,477, dated December 23, 1890.

It is the primary object of this invention to provide a burner particularly adapted for boiler use in connection with ordinary furnaces, which will thoroughly atomize and vaporize the oil under the blast and intense heat to which the same is subjected.

With these and many other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of an oil-burner constructed in accordance with my invention. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is an end elevation.

Referring to the accompanying drawings, A represents the main body of the burner, which is a casting of any suitable metal and consists of the front cylindrical portion *a* and the rear head B. The said head B extends beyond the side of the cylindrical portion *a* and forms the square flange C and the heavy lug *c*, extending half-way around the cylinder. The said body is secured in position at the front end of the furnace by means of the encircling flange C in any suitable manner, so that the burner will receive the benefit of the heat from said furnace to assist the vaporization of the oil. The cylindrical portion of the casting *a* is provided with an interior tubular passage D, left through the center of the same. Winding around and opening into the said tubular passage D are the diametri-

cally-opposite spiral atomizing passages or grooves E. The said spiral passages or grooves E enter the said tubular passage from the interior of the head B at an angle on opposite sides thereof, and, winding opposite to each other around the said tubular passage, revolve in the same direction and in the same manner from one end of said passage to the other, said grooves intersecting each other at points intermediate of the ends of the tubular passage. The said spiral passages E and said central tubular passage terminate or open into the enlarged combustion-dome F, formed in the front end of the cylindrical portion *a* of said casting. The said dome F tapers to within a short distance of the extreme end of the cylindrical portion *a*, where it begins to diverge and forms a bell-shaped ignition mouth or orifice G. The opposite ends of the central tubular passage and the spiral atomizing-passages therein open into the enlarged blast dome or chamber H. The said enlarged blast-chamber H is provided with a reduced circular blast throat or neck I, through which the blast of steam or hot air is injected within the body of the burner for the purposes set forth. The said throat or neck I is of a diameter considerably less than that of the main blast-chamber in order that the blast may collect in said chamber and find escape through the central tubular passage and the surrounding atomizing-passages therein, which communicate with the front combustion-chamber F, previously referred to. An oil-supply pipe J is secured in the top of the head B, and, projecting down into the blast-chamber H, terminates in a right-angular discharging end *j*. The said pipe J projects through and beyond the body of the burner, where it may be connected with any suitable source of supply of oil.

In operation a small flow of oil is admitted through the oil-supply pipe, which has its end terminating directly at the inner terminal of the central passage through the burner. At the same time the blast is admitted through the neck into the enlarged blast-chamber H. The blast catches the oil at the end of the pipe at the center of the passage D and is carried by the same through said passage and

in a whirling movement through the spiral passages therethrough. A thorough atomization of the oil takes place, and when the same reaches the combustion-chamber with the
5 blast the heat and fire in the furnace beneath the burner causes a complete vaporization of the oil and an ignition of the same, from which a great degree of heat is attained.

Having thus described my invention, what
10 I claim, and desire to secure by Letters Patent, is—

In an oil-burner, the combination of a cylindrical body having an enlarged blast-receiving chamber or dome at one end, a dome-
15 shaped tapering combustion-chamber located in the opposite end of said body and terminating in a flared mouth or orifice at the ig-

niton end of the burner, an intermediate tubular passage between and connecting said chambers and provided with opposite inter- 20 secting spiral atomizing-grooves winding through said tubular passages and opening into said opposite chambers, an oil-supply pipe projecting within said blast-chamber and terminating at the center of the inner end of 25 said tubular passage, and a suitable blast, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN F. COATES.

Witnesses:

JACOB D. EARLY,
TREAT COATES.