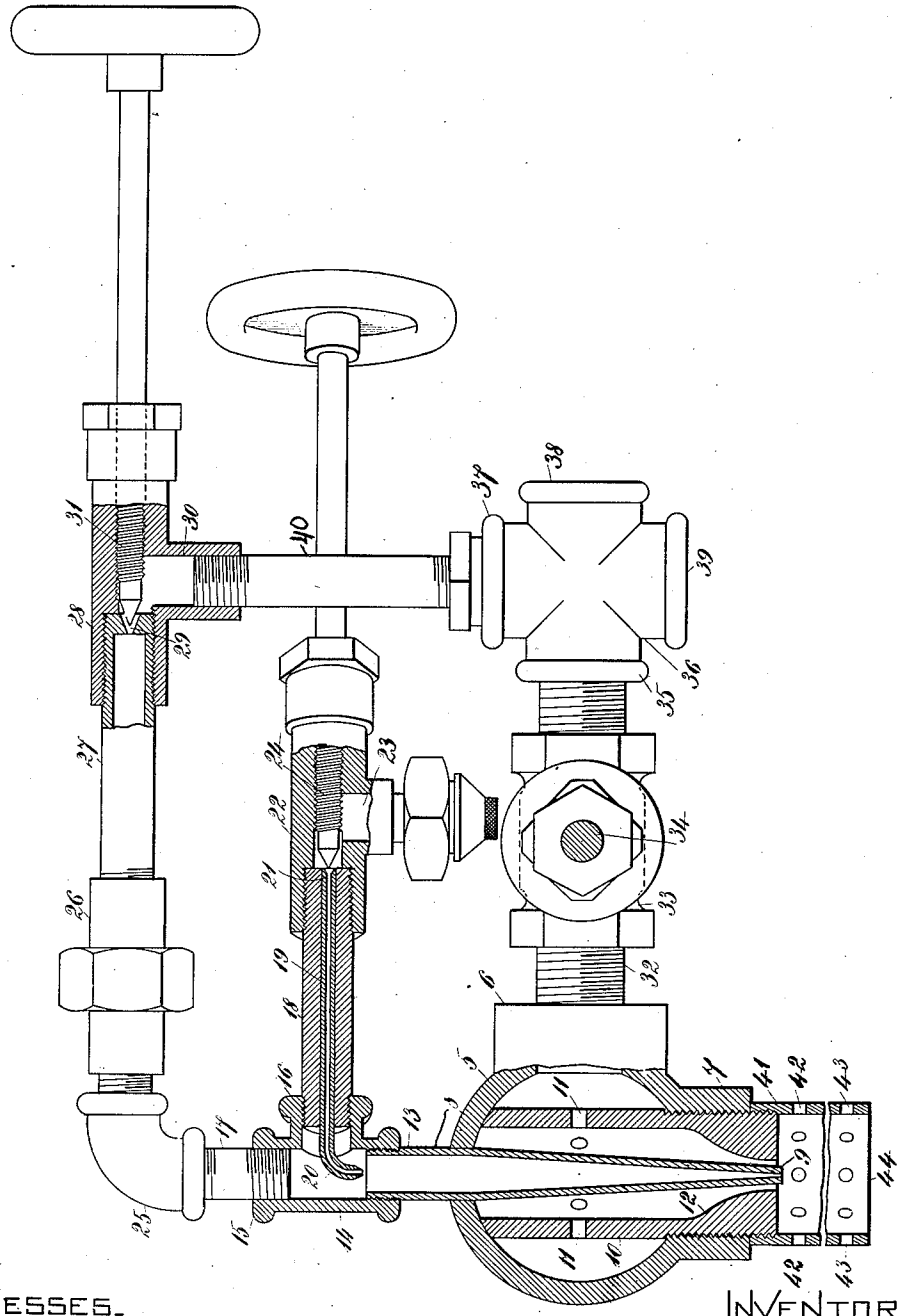
No. 836,883. PATENTED NOV. 27, 1906.

B. F. JACKSON.

BURNER.

APPLICATION FILED JULY 8, 1904.



WITNESSES.

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BURNER.

No. 836,883. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed July 8, 1904. Serial No. 215,709.

To all whom it may concern:

Be it known that I, BENJAMIN F. JACKSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Burners; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to improvements in burners for burning fluids, and particularly to burners for burning heavy oils under pressure.

One object of the invention is to so construct a burner that an intense heat may be obtained from hydrocarbon or similar fluid.

Other objects of the invention will appear from the following description and from the drawing.

The invention consists in the combination with an atomizer and an Argand burner arranged in tandem of a Bunsen tube embracing the Argand burner.

The invention also consists in the construction of the burner.

The invention also consists in the construction of the burner and in the air and fuel supply pipes connected therewith.

The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more fully described, and pointed out in the claims.

The drawing represents the improved burner and portions of the supply-pipes in side view, parts of the same being shown in section to more fully illustrate their construction.

In carrying this invention into practice I construct a chamber 5 of any desired cross-sectional shape and having an inlet-collar 6 and an outlet, (indicated herein by the collar 7,) the inlet being preferably disposed at an angle to the outlet. Secured through a perforation in the wall of this chamber 5 is the tapering tube 8, the lower contracted end 9 of which preferably extends beyond the collar 7. Embracing the tube 8 is the sleeve 10, secured in said chamber and extending from that wall of the chamber 5 through which the tube 8 is secured to and through the outlet to said chamber, this sleeve 10 having the series of perforations 11 11 located approximately opposite the inlet 6 and the contracted inner wall 12, the opening of which forms an annular passage embracing the end portion of the tube 8 near its end 9.

To the end 13 of the tube 8 is secured the branch fitting 14, having collars 15 and 16, to which are respectively connected the pipe 17 and the tube 18, in the bore of which tube is closely fitted the atomizer-tube 19, having the bent end 20, whereby the orifice in this atomizer-tube is located in the axial line of the tube 8, and also provided with the conical valve-seat 21, this end of the tube 18 being secured to the tubular valve-casing 22, having the inlet 23, which is adapted to be connected with any source of fluid-fuel supply, and this valve-chamber 22 is provided with the valve-stem 24, having a conical end and designed to work toward and from the valve-seat 21 to control the flow of fuel therethrough.

The pipe 17 is connected by the elbow 25 and the pipe 26 with the pipe 27, which is secured in the valve-chamber 28 and has the conical valve-seat 29 located within said chamber, said chamber having the inlet 30 and being furnished with the valve-stem 31, adapted to work toward and from said valve-seat and having a conical end adapted to be thus adjusted with relation to said seat.

The collar 6 of the chamber 5 is connected by a tube 32 with any ordinary valve-chamber 33, the valve-stem 34 of which is shown in section, and this valve-chamber is connected with the branch 35 of the fitting 36, which has also the branches 37, 38, and 39. The branch 37 of this fitting 36 is connected by the tube 40 with the inlet 30 of the valve-chamber 28, while the branches 38 and 39 are designed to be connected, respectively, with a source of pressure-supply and with the source of fluid-fuel supply, whereby pressure may be supplied to force the fuel from said supply to the valve-chamber 22.

For some purposes the device thus described may be utilized with great advantage, but I prefer to add to the same the Bunsen tube 41, which is secured in position to embrace the lower end of the sleeve 10 and is preferably supplied with the two series of perforations 42 42 and 43 43, the length of this tube 41 and the shape of its end 44 being determined largely by the uses to which the burner is to be applied.

When in use the inlet 23 is connected with any source of fluid-fuel supply, such as a tank, and the branch 39 of the fitting 36 is also connected with said supply, the branch 38 being connected with any ordinary pressure system. Pressure being admitted through the branch 38 passes through the branch 39 to the source of fluid-fuel supply and forces said fuel through the pipe connecting with the inlet 23 of the valve-case 22. At the same time a portion of said pressure medium passes through the tube 40, connecting the branch 37 of the fitting 26 with the inlet 30 of the valve-chamber 28.

The valves 24, 31, and 34 being suitably adjusted with regard to their respective valve-seats, the pressure medium, preferably compressed air, will pass through the valve-seat 29 and through the pipe 26 and its connections to the chamber of the fitting 14, where, at the open end of the bent tube 20, a suction will be exerted to draw through said tube the fluid fuel supplied to the valve-chamber 22 and to atomize the said fuel. This atomized fuel, mixed with the pressure medium, is carried forward through the tube 8 to its contracted end 9, where it is subjected to the action of the annular stream of air issuing from the mouth of the sleeve 10, which embraces the lower end of said tube 8. This latter pressure is supplied from the pipe 32 into the chamber 5, whence it passes through the perforations 11 11 into the sleeve 10, the large area of which as compared to the size of its outlet providing for a steady blast through said outlet. The gas thus generated and supplied to the Bunsen tube 41 is ignited and burned, as is usual in said tubes, atmospheric air being drawn into said tube through the perforations 42 42.

By the use of this device practically perfect combustion of the fuel may be effected and an intense heat may be developed at the end of the Bunsen tube, and this may be accomplished with or without the appearance of flame from the tube.

It is not my intention to restrict my invention to the particular structure shown or by reason of the specific location or relative arrangement of the parts as described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A burner comprising a chamber, a compartment within said chamber having perforated walls and a reduced outlet, a tapering tube extending through said compartment and having an end located in the outlet of said compartment, means for supplying pressure to said chamber, an atomizer-chamber, an oil-supply tube extending into said atomizer-chamber, and a pressure-supply pipe connected with the atomizer-chamber and with the pressure-supply of said first-mentioned chamber.

2. The combination with the burner-chamber, its perforated sleeve having the contracted outlet, the tube located in said sleeve and extending through said outlet, and the main pressure-supply pipe connected with the burner-chamber, of the fitting secured to said tube, the atomizer-tube positioned therein, the valved fluid-supply pipe connected with the atomizer-tube, and the valved pressure-supply pipe connected with said atomizer-fitting and with the main pressure-supply pipe, as described.

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

BENJAMIN F. JACKSON.

Witnesses:
H. J. MILLER,
W. R. REEVE.