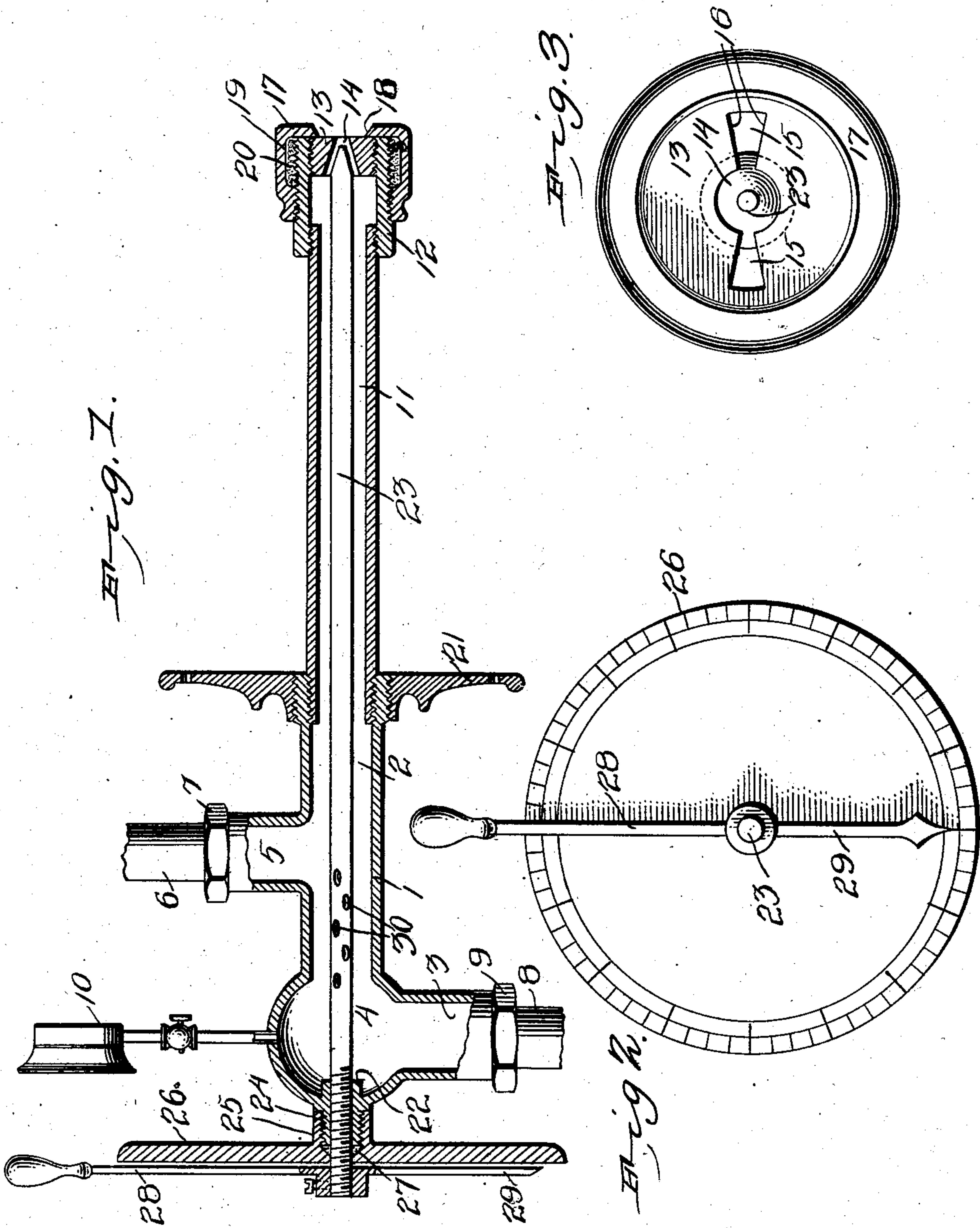


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PATENTED APR. 21, 1903.

T. O. BATEMAN.
HYDROCARBON BURNER.
APPLICATION FILED JULY 22, 1902.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

TALBOT O. BATEMAN, OF SAN ANTONIO, TEXAS, ASSIGNOR TO TEXAS
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HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 726,212, dated April 21, 1903.

Application filed July 22, 1902. Serial No. 116,572. (No model.)

To all whom it may concern:

Be it known that I, TALBOT O. BATEMAN, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Hydrocarbon-Burner, of which the following is a specification.

My invention is an improved hydrocarbon-burner especially adapted for burning crude oil; and it consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional view of a hydrocarbon-burner embodying my improvements. Fig. 2 is a detail elevation showing the indicating-dial and the adjusting-lever. Fig. 3 is a similar view showing the atomizing-nozzle.

In the embodiment of my invention here shown there is provided a mixing-chamber 1, of tubular form, having arms 2 3, at right angles to each other, a globular portion 4 at the intersection of said arms 2 3, and an arm 5, to which a steam-pipe 6 is connected by a coupling 7. A pipe 8 to supply oil to the burner from a suitable source is coupled to the lower end of the arm 3, as at 9. A pressure-indicating gage 10 is connected to the globular portion 4 of the mixing-chamber.

To the outer end of the arm 2 is coupled a tube 11, which forms a vaporizing-chamber that leads from the mixing-chamber. A union 12 is coupled to the outer end of the tube 11 or vaporizing-chamber and forms practically an enlarged diametric prolongation thereof, and in the outer end of the union is screwed a head 13, which has a central opening 14, that tapers outwardly, and radially-disposed openings 15, which extend from diametrically opposite sides of the said opening 14, and the sides of which openings 15 diverge outwardly, as at 16, so that said openings 15 are widened progressively as they recede from the central opening 14. A cap 17 is screwed on the union 12, covers the major portion thereof, and bears against the outer side of the head 13, the said cap having an opening 18, which is concentric with the opening 14 and of sufficient diameter to uncover the openings 15, and a chamber 19 is formed in the cap surrounding the union, which

chamber is filled with a packing of asbestos, as at 20. This construction enables the discharge portion of the vaporizing-chamber to withstand a very high temperature. The union 12 and head 13 form a nozzle at the outer discharge end of the vaporizing-chamber.

Within the scope of my invention and the appended claims modifications may be made in the construction of the nozzle, and I do not desire to limit myself to the construction herein shown and described. To the outer end of the arm 2 of the mixing-chamber is secured a supporting-plate 21. The same is here shown screwed to the arm 2 and is adapted to be secured by bolts or other suitable devices to the front of a steam-boiler furnace, so that the same will support the burner with the vaporizing-chamber thereof disposed within the fire-box of the furnace.

At the outer side of the globular portion 4 of the mixing-chamber is formed a bearing 22. A jet-tube 23 extends longitudinally through the globular portion 4 and the arm 2 of the mixing-chamber and also through the vaporizing-chamber 11, being concentrically disposed with reference to the latter, the arm 2, and the globular portion 4, and the outer portion of the said jet-tube is screw-threaded, as at 24, and engages the threaded bore of the bearing 22, so that the jet-tube is not only supported by the bearing, but is adapted to be turned so that it may be moved longitudinally. On the outer portion of the bearing 22 is screwed the hub portion 25 of an indicating-dial 26. The outer portion of the jet-tube extends through a central opening in the indicating-dial, the latter being chambered, as at 27, for the reception of packing material to prevent leakage, and to the outer end of the jet-tube is secured an operating-lever 28, by which it may be turned, the said operating-lever being here shown as provided with a pointer 29, which sweeps on the dial as the jet-tube is turned. The inner end of the jet-tube is disposed to discharge through the opening 14 of the nozzle, is tapered, and disposed within the said opening, but does not entirely close the same. By turning the jet-tube to move the same longitudinally the capacity of the nozzle as represented by the opening 14 may be varied, as will be under-

stood. That portion of the jet-tube which is within the mixing-chamber is open to the admission of commingled steam and gases from the oil, and the said jet-tube is here shown as provided with openings 30 for this purpose.

The operation of my improved burner is as follows: Steam under pressure and oil are admitted to the mixing-chamber through the pipes 6 8. The oil is converted into gases in the mixing-chamber, which gases are thoroughly commingled with the steam and pass therefrom through the chamber 11, which is exposed to the direct heat in the interior of the furnace and in which the commingled steam and gases are vaporized and from which the resulting vapor is discharged through the openings 14 and 15 of the nozzle into the interior of the furnace. A jet of the commingled steam and gases is also discharged from the mixing-chamber directly through the opening 14 of the nozzle by the jet-tube. The vapor thus discharged by the jet-tube enters the interior of the furnace at a lower temperature and in a more aqueous condition than that which is discharged from the vaporizing-chamber, proceeds farther in the furnace under the boiler before being consumed than does the vapor which is discharged from the vaporizing-chamber, and hence uniform combustion is maintained in all portions of the furnace. The openings 15 discharge the vapor in lateral jets, the outer edges of which are broadened, owing to the shape of the said openings 15, thus contributing to the equal distribution of the vapor throughout the interior of the furnace and the uniform heating of all parts of the furnace. Where crude oil is used, an orange-colored flame, which is semitransparent and is intensely hot, is maintained in the furnace, and there is no smoke.

By adjusting the jet-tube as hereinbefore described the pressure in the mixing and vaporizing chambers of the burner may be regulated at will. The adjustment of the jet-tube is indicated by the position of the pointer 29 on the scale of the dial 26.

When the burner needs clearing out, which occurs very infrequently, this may be readily accomplished by moving the jet-tube outwardly a sufficient distance to entirely uncover the tapered opening of the nozzle. The deposits in the burner will then be blown therefrom, as will be understood.

Having thus described my invention, I claim—

1. In a hydrocarbon-burner, the combination of a mixing-chamber, means to admit liquid hydrocarbon and steam under pressure thereto, a vaporizing-chamber leading from the mixing-chamber and having a nozzle, and a jet-tube extending from the mixing-chamber through the vaporizing-chamber, open at a point within the mixing-chamber to the admission of commingled steam and gases, and disposed to discharge through, without closing, the nozzle, substantially as described.

2. In a hydrocarbon-burner, the combination of a mixing-chamber, means to admit liquid hydrocarbon and steam under pressure thereto, a vaporizing-chamber leading from the mixing-chamber and having a nozzle, a jet-tube extending from the mixing-chamber through the vaporizing-chamber, open at a point within the mixing-chamber to the admission of commingled steam and gases, and disposed to discharge through, without closing, the nozzle and means to vary the capacity of said nozzle, substantially as described.

3. In a hydrocarbon-burner, the combination of a mixing-chamber, means to admit liquid hydrocarbon and steam under pressure thereto, a vaporizing-chamber leading from the mixing-chamber and having a tapered nozzle, a jet-tube extending from the mixing-chamber through the vaporizing-chamber, open at a point within the mixing-chamber to the admission of commingled steam and gases, and disposed to discharge through, without closing, the nozzle, the one being adjustable with reference to the other to vary the capacity of the nozzle, substantially as described.

4. In a hydrocarbon-burner, the combination of a mixing-chamber, means to admit liquid hydrocarbon and steam under pressure thereto, a vaporizing-chamber leading from the mixing-chamber and having a nozzle, and a longitudinally-adjustable jet-tube extending from the mixing-chamber through the vaporizing-chamber, open at a point within the mixing-chamber to the admission of commingled steam and gases, and disposed to discharge through, without closing, the nozzle, substantially as described.

5. In a hydrocarbon-burner, the combination of a mixing-chamber, means to admit liquid hydrocarbon and steam under pressure thereto, a vaporizing-chamber leading from the mixing-chamber and having a nozzle, a jet-tube extending through the said chambers, open at a point within the mixing-chamber to the admission of commingled steam and gases and disposed to discharge through, without closing, the nozzle, a screw-bearing for the jet-tube whereby the latter is longitudinally adjustable to vary the capacity of the nozzle, and means to adjust the jet-tube, substantially as described.

6. In a hydrocarbon-burner, the combination of a mixing-chamber, means to admit liquid hydrocarbon and steam under pressure thereto, a vaporizing-chamber leading from the mixing-chamber and having a nozzle, a jet-tube extending through the said chambers, open at a point within the mixing-chamber to the admission of commingled steam and gases and disposed to discharge through, without closing, the nozzle, a screw-bearing for the jet-tube whereby the latter is longitudinally adjustable to vary the capacity of the nozzle, means to adjust the jet-tube, and means to indicate the position of the jet-tube, substantially as described.

7. In a burner of the class described, the

combination of a mixing-chamber, means to admit liquid hydrocarbon and steam under pressure thereto, a vaporizing-chamber leading from the mixing-chamber and having a
5 nozzle including a tapered opening and relatively narrow openings disposed radially thereof, and a jet-tube extending through the vaporizing-chamber, disposed to discharge through the tapered opening of the nozzle and

having an intake in the vaporizing-chamber, to substantially as described.

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

TALBOT O. BATEMAN.

Witnesses:

F. MCCHESENEY,
JOHN O. TALBOTT.