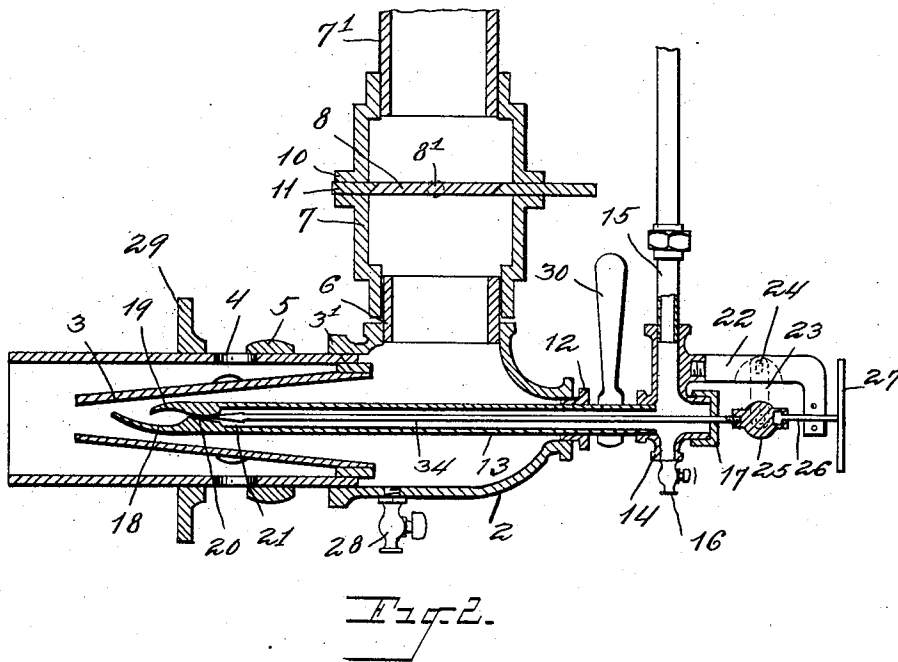
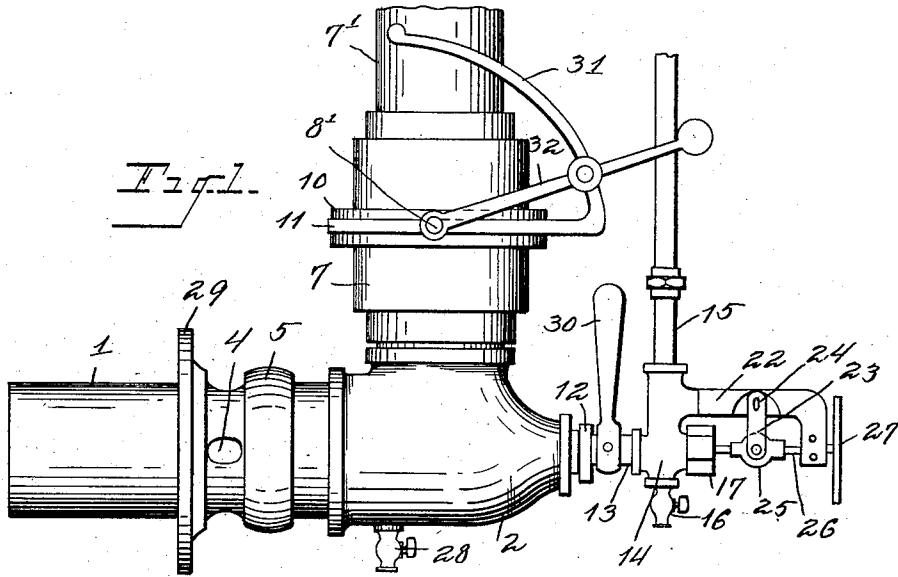


F. J. NICE.
HYDROCARBON BURNER.
APPLICATION FILED SEPT. 22, 1911.

1,031,365.

Patented July 2, 1912.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDRICK J. NICE, OF PONTIAC, MICHIGAN.

HYDROCARBON-BURNER.

1,031,365.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed September 22, 1911. Serial No. 650,837.

To all whom it may concern:

Be it known that I, FREDRICK J. NICE, a citizen of the United States, residing at Pontiac, county of Oakland, and State of Michigan, have invented a certain new and useful Improvement in Hydrocarbon-Burners, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to hydro-carbon burners, and has for its object a burner which is controlled by a needle valve that is pushed in and out of the jet orifice.

A further object is a pair of tips of spoon-like shape which give the flame a more desirable spread and which can be rotated, thereby, changing the location of the spread of the flame with respect to the air nozzle.

In the drawings:—Figure 1, shows an elevation of the burner. Fig. 2, is a section of the burner.

The burner consists of a tubular casing 1 which is set in a pipe coupling 2. On the inside of the casing 1 is an air nozzle 3, which is suspended in the interior of the casing 1 by the ring 3'. The casing 1 is provided with a number of air holes 4 which are disposed in a circle about its periphery. The ring 5 may be slipped over these holes, or partially over them, thereby controlling the supply of air at this point, and regulating the flame. The pipe coupling 2 has at one side an air conduit leading into it, and through which air is passed, usually under compression. This air conduit is attached to the pipe coupling by the coupler 6 which engages in the opening of the pipe coupling 2 and over which engages the neck of the valve casing 7, into which in turn leads the air pipe 7'. Within the valve casing 7 is located a valve 8, which swings on a short rod 8' that is journaled in a plate 11 held between the two portions of the valve casing 7, the valve casing being constructed of two cylindrical pieces that are joined at their center by the angular flanges 10, between which lies the circular plate 11. The circular plate 11 has an aperture which is opened and closed by the valve 8 and the wall of this opening is oppositely beveled on the opposite sides of the rod 8' so as to form with

the complementary beveled edges of the valve 8 a tight closure.

On the lower side of the pipe coupling 2 is an orifice in which is fitted the bushing 12, and through which passes the conduit 13. This conduit is fitted into a second pipe coupling 14 so that it may readily turn in both the pipe coupling and the bushing. At the top of the coupling 14 the fuel conduit 15 leads therein; at the bottom the drain cock 16 communicates with the chamber inside, and at the rear end is an orifice which is closed by the cap 17, which is provided with a central aperture through which slidably passes the needle valve 34. This needle valve 34 is coaxial with the conduit 13 and extends from the cap 17 forward to near the end of the conduit. The nozzle is formed integral with this conduit by narrowing the inner passage of the conduit and thickening the walls. A pair of spoon-shaped tips 18 and 19 are in front of the mouth of the constricted passage 20 of the nozzle. The tip 19 is only about half the length of its companion tip 18 and curved in toward the center of the tip 18. The constricted passage 20 leads from the main passage of the conduit and is slightly inclined so as to deliver fluid flush with the surface of the smaller tip 19 by which it is then directed into the hollow of the spoon-like tip 18. A head 21 of the needle valve 34 engages in the constricted passage 20. A bracket 22 is hung from the pipe coupling 14, and on this bracket an arm 23 is pivoted in an oval slot 24, and upon this arm a block 25 is pivotally hung. The block is secured to the main end of the needle valve 34 and at its rear end has a stepped bore with the larger bore at the inside and the smaller bore at the outside. A rod 26 has complementary portions engaging in the stepped bore and passes through the bracket 22. The rod is provided with a handle 27 by which it may be operated and the needle valve 34 pushed out or pulled back. A drain cock 28 is set in the wall of the pipe coupling 2 so as to drain off any waste products that drop into the chamber. The ring 29 on the outside of the casing 1 intervenes between the flame and the air openings 4 and protects them therefrom. A hand lever 30 is fast to the conduit 13 and may turn this conduit as it is rotatably journaled in the bushing 12 and the pipe coupling 14.

Turning changes the location of the nozzle, and hence the spray with respect to the air nozzle 3 to such position as is desired for the nature of the work to be performed.

5 Integral with the plate 11 which divides the valve casing 7 is a rod 31 which extends outward from one face in quadrant form, having as a center of the curve the rod 8'. The lever 32 is fastened to the rod carrying the
10 valve and guided by this quadrant rod.

The hydro-carbon issues from the constricted passage 20 and spreads upon the surface of the small spoon-like tip 19 by which it is spread and guided into the hollow of the larger spoon-like tip, being
15 dashed against the surface, thereby, breaking the liquid up into fine particles. The spray is then directed by the large spoon-like tip 18 angularly across the outgoing air
20 blast in the air nozzle 3, which further atomizes the hydro-carbon and carries it

through the mouth of the air-nozzle properly conditioned for burning. The direction of the flame may be varied to suit the work to be performed by turning the lever 30, which changes the location of the tips with
25 respect to the air-nozzle.

What I claim is:—

A hydro-carbon burner, having in combination an air nozzle, and a fuel nozzle with-
30 in said air nozzle, the fuel nozzle comprising a pair of spoon-like tips one delivering fuel into the hollow of the other and the latter delivering the fuel angularly across the out-
35 going air blast of the nozzle, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

FREDRICK J. NICE.

Witnesses:

CHARLES F. BURTON,
VIRGINIA C. SPRATT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."