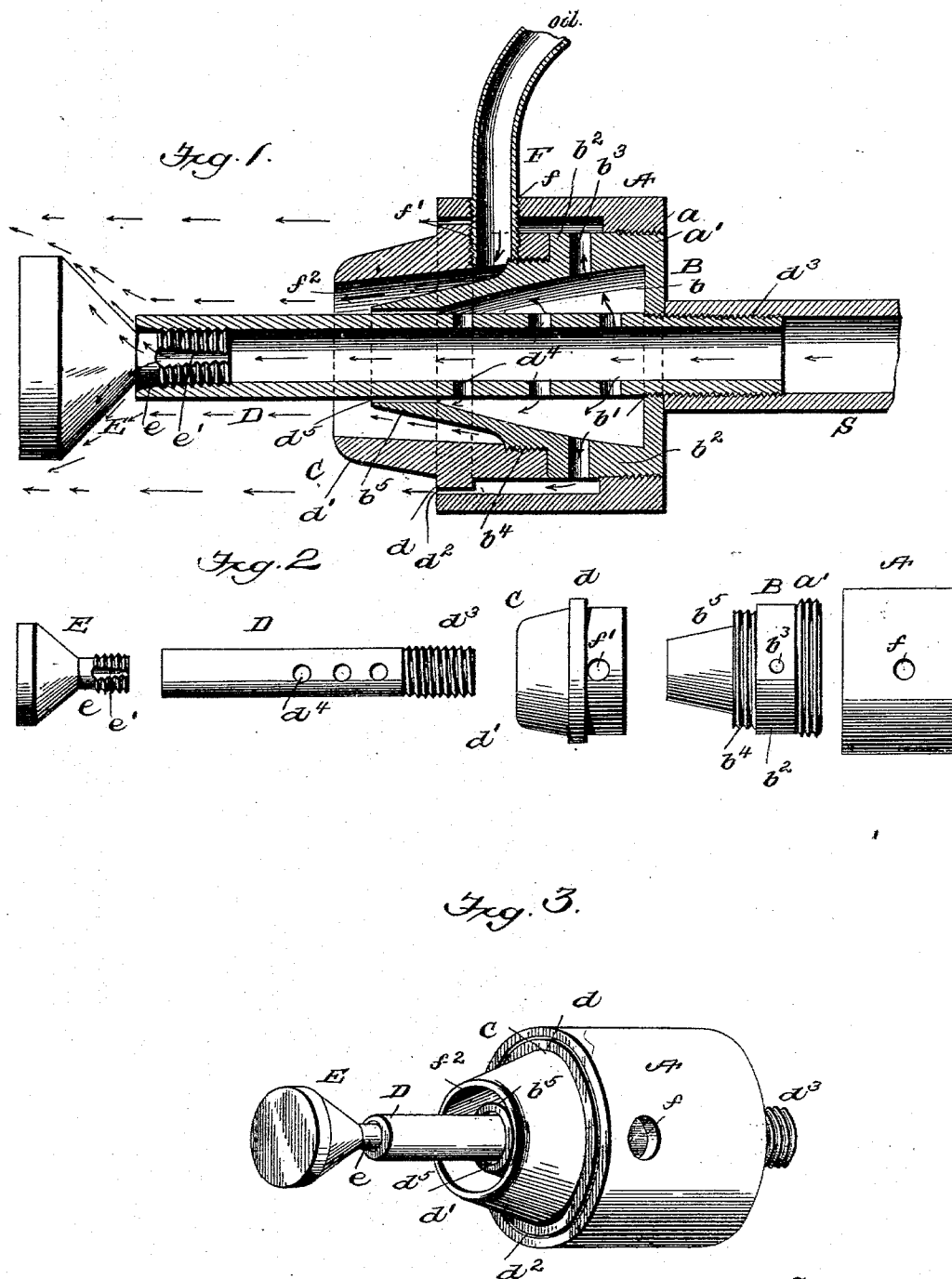


(No Model.)

P. J. MULLANEY.
HYDROCARBON BURNER.

No. 515,837.

Patented Mar. 6, 1894.



Witnesses

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UNITED STATES PATENT OFFICE.

PATRICK J. MULLANEY, OF LAFAYETTE, INDIANA, ASSIGNOR OF TWO-THIRDS
TO JOHN F. MCHUGH AND MICHAEL F. GRADY, OF SAME PLACE.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 515,837, dated March 6, 1894.

Application filed August 23, 1893. Serial No. 483,805. (No model.)

To all whom it may concern:

Be it known that I, PATRICK J. MULLANEY, a citizen of the United States of America, residing at Lafayette, in the county of Tippecanoe and State of Indiana, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention contemplates certain new and useful improvements in hydro-carbon burners and it has for its object the production of a simple and inexpensive burner of this class which will insure the thorough intermingling of the oil and steam and prevent
15 carbonization at the point of the burner, or the formation of carbon deposits on the walls of the furnace, the force of the combined jet being arrested before igniting.

20 To these ends the invention consists of a hydro-carbon burner having a receiving chamber for the oil with which intermingles a central concentric jet of steam, a deflector against which the combined oil and steam strike, and
25 an outer concentric outlet for the steam which intermingles with the first combined jet of oil and steam as the latter leaves the edges of the deflector, whereby the force of the combined jet is arrested or softened, and carbonizing at the point of deflection is prevented.

30 The invention also comprises the details of construction, combination and arrangement of parts, substantially as hereinafter fully set forth and particularly pointed out in the claims.

35 In the accompanying drawings:—Figure 1 is a longitudinal sectional view of my improved burner. Fig. 2 is a view of the parts disconnected. Fig. 3 is a perspective view.

40 Referring to the drawings, A designates a ring or head open at its ends and having at one end an interiorly threaded flange a with which engages the threaded portion a' of a truncated cone B. The cone is closed at its
45 widened end b and has a central threaded opening b' . In the cylindrical portion b^2 of this cone adjacent to the thread a' , are formed four, more or less, holes or ports b^3 which permit steam to pass from the interior of the
50 cone or steam chamber, into the ring A. The cone B has an outer reduced threaded portion

b^4 from which the cone is tapered exteriorly to the outer end, as at b^5 . Upon this threaded portion b^4 of cone B is fitted a cylindrical section C having an exterior flange d and a forward tapered or cone-like extension d' which
55 incloses the outer tapered portion of cone B. The flange d is located within the ring or head A, but is not in contact therewith, thus leaving a narrow circular opening d^2 for the out-
60 let of steam from said ring or head.

D is a pipe which is extended through cone B and provided with a threaded end d^3 which engages the threaded opening b' of said cone, and to its extended end is connected a steam
65 supply pipe S. That portion of pipe D located within the steam-chamber of cone B is provided with six, more or less, ports d^4 through which steam passes from said pipe
70 into said chamber. A narrow space or opening d^5 between the outer tapered end of cone B and pipe D permits steam to pass out at this point.

In the outer end of pipe D is screwed a spreader or deflector E which is of approxi-
75 mately cone-shape, and from it projects a threaded rod e which engages a corresponding interior thread of pipe D. In this rod e is a series of tapered grooves or passages e' to permit of the passage of steam from the
80 end of pipe D against the tapered face of the deflector.

Into two coincident openings f, f' of ring A and section C is screwed the end of an oil
85 supply pipe F which supplies oil by gravity to the oil chamber f^2 which is formed by the tapered ends of cone B and section C.

The operation of my improved burner is as follows:—Oil is supplied through pipe F to chamber f^2 and falls against and around the
90 cone B, while steam is admitted from pipe D through the ports thereof into the steam chamber of cone B and out through the ports of the latter into the ring or head A and also out between the pipe D and the end of the
95 cone. The steam at this latter point takes up the oil which is then carried in a state of atomization against the tapered surface of the spreader or deflector where it intermingles with a new volume of steam passing out from
100 the end of pipe D, which forces the combined steam and oil off at an angle of about forty-

five degrees until it comes in contact with the volume of steam which passes out from the ring or head A. At this point of union the jet is ignited.

5 The advantages of my invention are apparent to those skilled in the art to which it appertains. It will be specially observed that by reason of intermingling the outer volume of steam with the jet of combined oil and
10 steam just as the latter is ignited the force or blow of the jet is softened and thus I avoid any destructive action on the furnace. Another advantage is that carbonizing at the point of the burner is prevented as also the
15 formation of carbon deposits on the walls of the furnace. A hydro-carbon burner thus constructed is extremely simple and inexpensive and not liable to readily get out of order or be deranged.

20 I claim as my invention—

1. A hydro-carbon burner having an oil chamber, a steam chamber centrally communicating therewith, an outer concentric steam outlet, and a spreader or deflector
25 against which the jet of the combined oil and steam strikes, said jet being engaged as it leaves said sprayer or deflector by the volume of steam discharged through said outer concentric outlet, substantially as set forth.

30 2. A hydro-carbon burner having an oil-chamber, a steam-chamber centrally connecting therewith, an outer concentric steam-outlet, a pipe extending from the burner, and a spreader or deflector in the outer end of said
35 pipe against which the jet of combined oil and steam strikes, said jet being engaged by a volume of steam from the end of said pipe and as it leaves said spreader or deflector also engaged by the volume of steam discharged
40 through said outer concentric outlet, substantially as set forth.

3. A hydro-carbon burner having an inner oil chamber, an outer circular steam outlet, a steam supply pipe and a sprayer or deflector
45 on the outer extended end of said steam supply pipe, the edge of said sprayer or deflector being within the line of discharge from said outer circular steam outlet, and means for supplying oil to said oil chamber, substantially
50 as set forth.

4. In a hydro-carbon burner having an outer circular steam outlet and interior oil and steam chambers, a steam supply-pipe extending outwardly therefrom and having
55 ports communicating with said steam chamber, and a spreader or deflector in the outer end of said steam-pipe having steam-passages from said pipe leading against its tapered face for engaging the jet of combined oil and

steam as the latter strikes said spreader or deflector, substantially as set forth. 60

5. The herein-described hydro-carbon burner, comprising the ring or head having a circular opening forming an outer concentric steam outlet, an inner oil chamber and
65 an interior steam chamber communicating with said ring or head, the steam-supply pipe extending through and communicating with said steam chamber and also extended beyond said oil chamber, the deflector in the
70 outer end of said steam supply pipe having openings for the passage of the steam from said steam supply pipe, said deflector being on a line with the discharge from said steam and oil chambers and within the line of discharge from said outer concentric steam out-
75 let, substantially as set forth.

6. The herein-described improved hydro-carbon burner, comprising the ring or head, having a circular steam outlet, the cone secured therein and having an interior steam chamber communicating with said ring or head, the section having a tapered end corresponding to said cone and forming in connection with the latter an oil chamber, the
80 oil supply pipe opening into said oil chamber, the steam pipe extended through said cone and having ports opening into the steam chamber of said cone, and the spreader or deflector having a threaded rod fitted in the
85 outer end of said steam pipe and having grooves or passage-ways for the steam from said pipe, substantially as set forth. 90

7. The herein-described improved hydro-carbon burner, consisting of the ring or head
95 having an inner threaded flange and a hole or opening, the cone having a thread engaging said flange and provided with a central threaded opening and a forward tapered end and exterior screw thread, the section engaging said latter screw-thread and having a
100 forward tapered end, an exterior flange and a hole or opening coincident with said hole or opening in said ring or head, the oil supply pipe extended through both of said holes
105 or openings, the steam pipe extended through the said central opening of said cone and having ports therein opening into the latter, and the tapered spreader or deflector having a threaded rod fitted in the end of said pipe
110 and provided with grooves therein, substantially as set forth.

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

PATRICK J. MULLANEY.

Witnesses:

JOHN F. MCHUGH,
MICHAEL F. GRADY.