

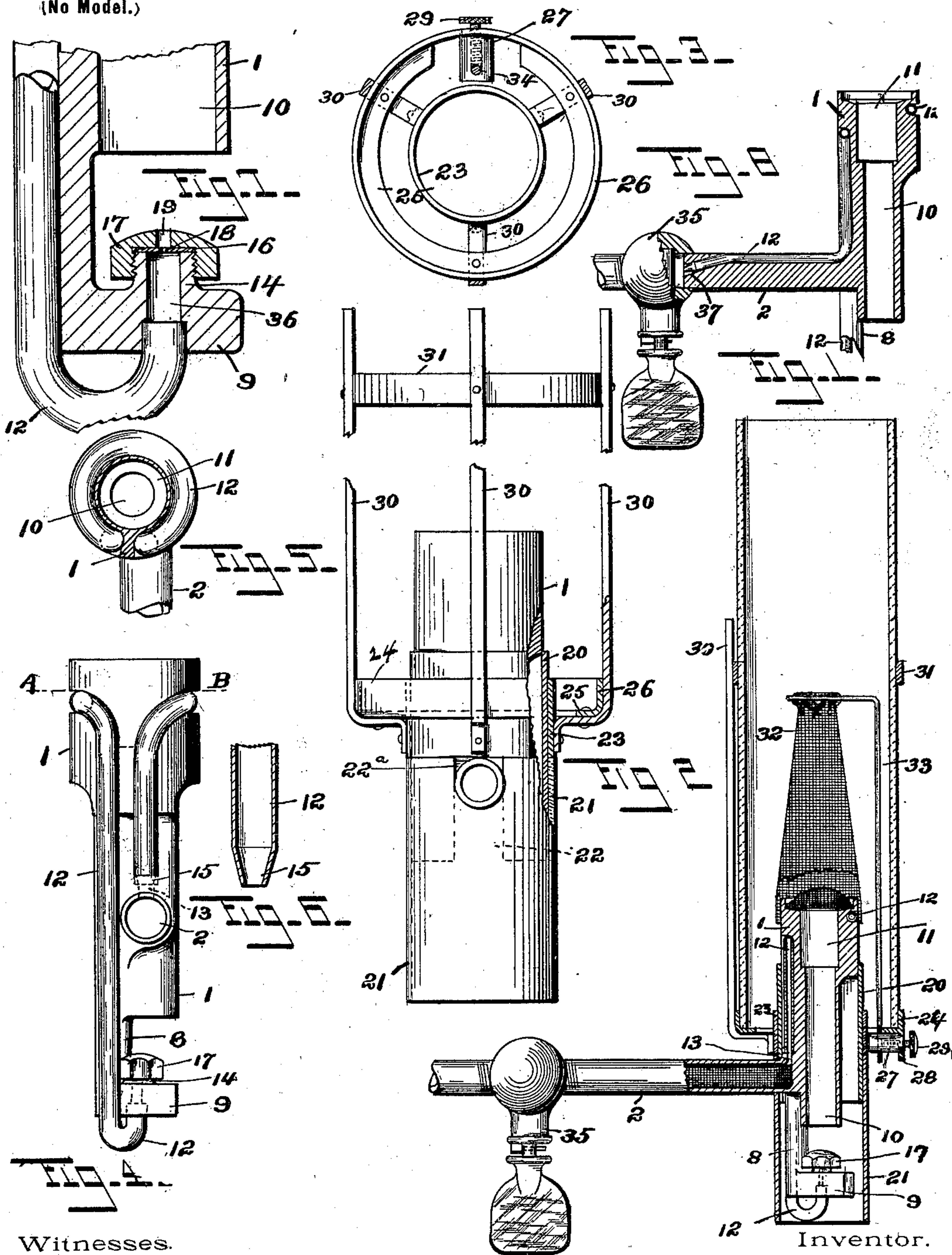
No. 662,385.

Patented Nov. 27, 1900.

A. A. ARNOTT.
HYDROCARBON BURNER.

(Application filed May 26, 1899.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

ALFRED A. ARNOTT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR OF ONE-THIRD TO WILLIAM A. GRANVILLE, OF SAME PLACE.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 662,385, dated November 27, 1900.

Application filed May 26, 1899. Serial No. 718,395. (No model.)

To all whom it may concern:

Be it known that I, ALFRED A. ARNOTT, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, 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.

My invention relates to improvements in hydrocarbon-burners; and its object is to improve the construction of the hydrocarbon-burner invented by me and upon which Letters Patent of the United States No. 618,371 were issued the 24th day of January, 1899, by cheapening the cost of its manufacture and increasing its efficiency. This object is attained by providing a vaporizing-tube with a reduced inlet end and embedding the same in a groove surrounding the body of the burner, thereby obviating the use of drilled holes of small diameter and great depth, by providing a casement to cover and protect the body portion of parts which fit telescopically within each other and which can be readily attached and detached, and by constructing the chimney-support of but few parts, which are simple in design, which can be assembled economically and which can be readily placed over the body portion of the burner and rest upon rigid parts which will support it securely and firmly.

To these ends my invention consists of the hydrocarbon-burner having certain details of construction and combination of parts, as will be hereinafter described, and more particularly pointed out in the claims.

Referring to the drawings, in which like numerals designate like parts in the several views, Figure 1 is a fragmentary vertical section of a burner constructed in accordance with my invention as used in connection with a mantle of the "Welsbach" type. Fig. 2 is an elevation of the body member with the casement and chimney-support attached thereto. Fig. 3 is a plan view of the chimney-support. Fig. 4 is an elevation of the body member with the casement removed. Fig. 5 is a sectional plan view thereof upon line A B of Fig. 4. Fig. 6 is a sectional elevation of a

portion of the inlet end of the vaporizing-tube. Fig. 7 is an enlarged transverse sectional elevation of the lower portion of the body member, and Fig. 8 is a fragmentary vertical section of a modified form of a burner constructed under my invention.

As previously made the oil-passages to the vaporizing-tube and the vapor-passage from the vaporizing-tube have been drilled in the casting forming the body member. These holes are small in diameter and of great depth, and hence mechanically are difficult and expensive to make, owing chiefly to the liability of the drill to run out of its true center. Again, as the drills are of such small diameter in comparison to their length it requires skilled labor to operate them, and even with the most careful treatment and handling they frequently break. By the drilling process all of the corners in the passages must necessarily be square, which impairs very materially the efficiency of the burner, the square corners assisting in breaking up and thereby reducing the pressure of the oil and vapor. These disadvantages and many others I have attempted to overcome in my invention.

In the drawings the numeral 1 designates the body member, having the supply-pipe 2, connected therewith, the downwardly-projecting stem 8, and the horizontal arm 9, the bore 10 extending vertically through the center of the body member, with the hole 11 of larger diameter at the upper end thereof.

The numeral 12 designates the vaporizing-tube, connected at the inlet end with the supply-pipe 2 by means of passage 13 and which projects upwardly parallel with the axis of the body member nearly to the top of said body member, thence winding around the outside thereof, and thence projecting downwardly parallel with the upwardly-projecting portion to a point below the horizontal arm 9, whence it curves upwardly and enters the base of said arm concentric with the nipple 14. The whole length of the said tube is embedded in a groove cast in the outside of the body member, thereby leaving no projecting parts. The inlet end 15 of the vaporizing-tube is reduced in diameter, as shown in Fig. 6, to prevent the oil or vapor from being

forced back through the said tube and into the supply-tube, if perchance a considerable back pressure were created.

In my construction it will be noted that the
5 groove in the body member obviates the use of drilled holes, and by making all of the bends in the vaporizing-tube long and well-curved I am enabled to maintain a constant unbroken pressure therein and a continuous
10 unchecked flow of oil and vapor therethrough.

Resting loosely upon the top of the nipple 14 is a diaphragm or a check-plate 16, which consists of a thin metal plate having a perforation 18 therethrough, the said plate being
15 held rigid by the nut 17, which has a central hole 19 of larger diameter than the perforation in the said check-plate. The perforation 18 can be made of any desired diameter, the size being determined by the amount of gas
20 necessary to pass therethrough under a given pressure to furnish a light of the desired candle-power. It has been common heretofore to make the perforation in the nut 17, and thereby avoid the use of a check-plate;
25 but I find it much more convenient and economical to insert a check-plate which is of thin material, and therefore readily puncturable, while the nut 17 is of necessity made of much thicker material, and consequently a
30 hole of such an extremely small diameter is not so readily drilled therethrough. As the check-plate is very inexpensive, a number of them with holes of varying diameters can be furnished with each burner, and the consumer can use the one best adapted for his
35 particular locality or purpose.

The casement covering my burner consists of two cylindrical members or bands 20 21, having a slot or opening 22 22^a in one side
40 thereof to accommodate the supply-tube 2. The band 20 is of larger diameter than the band 21 and is first placed over the upper portion of the body member and at the same time covering the vaporizing-tube, the opening 22 admitting the supply-pipe 2, after
45 which the band 21 is placed over the lower portion of the body member and is fitted telescopically upon the outside of the band 20, as shown in Fig. 1, the opening 22^a admitting the supply-pipe 2. As I have no projecting parts upon the body member, I am enabled to cover the same by a casement which is readily slipped on and off and which can be made of simple design and manufactured at a slight cost. The chimney-support
50 comprises a central hub 23, made of tubing of sufficient size to pass over the casement-band 20, the said hub resting upon the supply-pipe 2 when in its normal position, a gallery member
60 24, having a base portion 25, upon which the chimney stands, a flanged portion 26, a tapped sleeve 27, mounted in the depending lip 28, and a thumb-screw 29, threaded within the said sleeve, a plurality of standards 30, usually three in number, rigidly secured at
65 their lower ends to the central hub 23 and

the gallery member 24 and at their upper ends to the band 31, which encircles the chimney.

In Fig. 8 I have shown a modified form of my burner in which the supply-pipe 2 is cast
70 solid with a longitudinal groove therein, which groove terminates near the outer end of the supply-pipe 2 in the hub 37, forming the oil-inlet. The vaporizing-tube 12 is extended from the body portion in this groove
75 and through the hole 37, terminating in a contracted end, as shown in Fig. 6, flush with the end of the supply-tube. It is obvious that by this construction I am enabled to entirely avoid the use of the central bore in the
80 supply-pipe 2 and the passage 13 without affecting the operation of the device. For this reason and because of its reduced cost of manufacture I prefer in some instances to use this modified form of burner.
85

The mantle 32 is supported by a vertical rod 33, which is secured rigidly in an upright position within the hole 34 in the sleeve 27 by the thumb-screw 29. In practice when
90 used in connection with hydrocarbon oil the burner is first heated to a degree sufficient to vaporize the oil, and the latter is then permitted by the proper manipulation of the valve or cock 35 to pass to the burner through the supply-pipe 2, passage 13, and into the vaporizing-tube 12, and by the time it has passed
95 through the said tube around the upper portion of the burner it is completely vaporized and passes downward through said tube and is discharged therefrom in an upward current
100 into the chamber 36, from which it escapes through the perforation in the check-plate and enters the mixing-chamber within the central bore 10, drawing up with it sufficient
105 air to produce a highly-inflammable gas, which as it escapes through the burner is ignited and in a moment heats the mantle to incandescence in the customary manner.

I am aware that vaporizing-tubes have been used in connection with gas-burners, they being separated from the body by an open space,
110 and I do not therefore claim such a construction, but limit myself to a construction in which the body is provided with a groove in the outside thereof and within which the vaporizing-tube is embedded.
115

I desire in this application to be limited to the use of a vaporizing-tube and do not claim a passage or hole other than through such
120 tube for conveying the oil or vapor from the oil-inlet to the vapor-outlet.

It is apparent that there are many minor changes and alterations which can be made within my invention, and I would therefore have it understood that I do not limit myself
125 to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters
130 Patent, is—

1. In a hydrocarbon-burner, a body mem-

ber, provided with an oil-inlet and a vapor-outlet and having a continuous groove in the outside thereof beginning at the said oil-inlet and winding around the burner end of said body member terminating at the bottom end thereof; the combination therewith of a vaporizing-tube embedded in said groove and connecting the said oil-inlet and vapor-outlet, whereby the volatile oil is conveyed as a vapor to the vapor-outlet, substantially as described.

2. In a hydrocarbon-burner, a body member having a depending stem connected therewith and a groove upon the outside thereof terminating at the bottom of said stem; the combination therewith of a vaporizing-tube, embedded in said groove and joining the oil-inlet in said body member with the vapor-outlet, substantially as described.

3. In a hydrocarbon-burner, a body member having an oil-inlet and a vapor-chamber, with a groove around the said body member, extending from said oil-inlet and terminating at the bottom of said body member; the combination therewith of a vaporizing-tube embedded in said groove, having connection at one end with said oil-inlet and provided near the other end with a curved portion which

enters the said vapor-chamber, substantially as described.

4. In a hydrocarbon-burner, a body member having an oil-inlet and a vapor-chamber, with a groove around the said body member extending from said oil-inlet and terminating at the bottom of said body member; the combination therewith of a vaporizing-tube embedded in said groove, having connection at one end with said oil-inlet and provided near the other end with a curved portion which enters the said vapor-chamber, and a case-ment adapted to slide over the said body member and cover the same and said vaporizing-tube, substantially as described.

5. In a hydrocarbon-burner the combination with the body having a laterally-projecting member of a vaporizing-tube surrounding the said body and embedded in a groove in the said body and laterally-projecting member, substantially as described.

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

ALFRED A. ARNOTT.

Witnesses:

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WALLACE S. MOGLE.