A. P. LINK.

BURNER.

APPLICATION FILED MAY 15, 1918.

1,365,255. **Patented Jan. 11, 1921.**

Fig. 1.

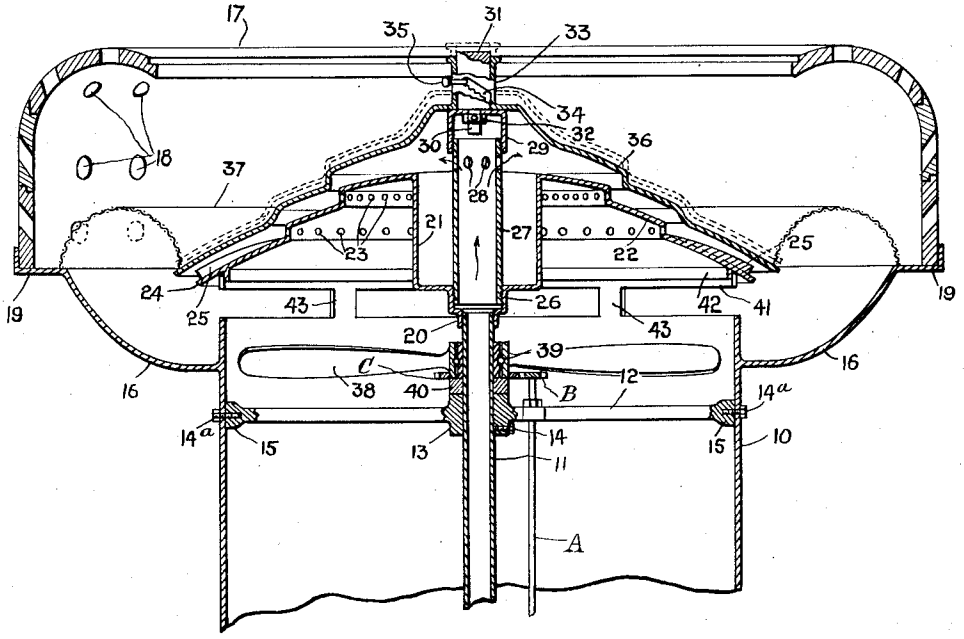
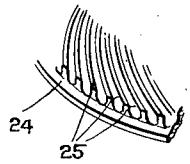


Fig. 2.



WITNESS

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BY

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ADOLF P. LINK, OF BROOKLYN, NEW YORK.

BURNER.

1,365,255. Specification of Letters Patent. Patented Jan. 11, 1921.

Application filed May 15, 1918. Serial No. 234,624.

To all whom it may concern:

Be it known that I, ADOLF P. LINK, a citizen of the United States of America, residing at Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Burners, of which the following is a specification.

My invention relates to a burner of the type in which oil or like liquid fuel is converted into a combustible gas, and consumed as such.

The object of my invention is to provide a burner of this type by means of which an intensely hot, smokeless and noiseless flame may be produced. Another object is to provide a very simply constructed device which may be employed for household purposes and almost unlimited industrial uses, which can be most economically and simply operated and simply adjusted to give the degree of heat desired.

The invention is illustrated in the accompanying drawing, in which—

Figure 1 is a substantially central vertical sectional view of the essential features of my improved burner; and

Fig. 2 is a fragmentary perspective view of a vapor distributing member employed as a part of the construction.

Referring to the drawing, the numeral 10 denotes a burner casing, which is preferably although not necessarily of cylindrical form and wherein the fuel pipe 11 is centrally supported by the skeleton cross brace 12, the latter having a hub 13 which is secured by a screw 14 to the pipe 11 and enlarged terminals 15 which are held by screws 14ª to the wall of the casing 10.

Extending radially from the exterior of the casing 10 near its upper end is a dish or pan 16 which serves the double function of receiving a quantity of fuel to start the burner, and also to support a baffle or flame directing means 17 which may be made of sections of refractory material and provided with perforations 18 through which the flame is directed against any desired object, such as a boiler, a water heater or the like. The flame directing member is open at the top, and is of annular shape with its upper edge curved downwardly and its lower edge supported on the flange 19 constituting the outer extremity of the pan 16.

The upper end of the tube 11 is threaded so as to be engaged by the threaded flange 20 of a cup 21 to the upper edge or periphery of which a stepped dome 22 is attached or with which it is formed integrally. The dome 22 which may be of any desired configuration, may be provided with any desired number of steps, three being shown in the drawing, and between the steps the dome 22 is provided with a series of suitably spaced orifices 23 through which air may issue to mix with the vaporized or semi-liquid fuel which flows down the dome. Resting on the lowermost step of the dome 22 is an annular vapor distributing member 24 (Fig. 2) which is provided with slots 25 to guide the vapor or semi-liquid fuel as it flows down along the top of dome 22, and to prevent clogging of the burner in case the dome 36, hereinafter referred to is completely lowered on to the dome 22. The distributing member 24 is beveled, its greatest thickness being at its lower end and its thinnest portion at its upper end, as is clearly apparent from Fig. 1. At its lower end the cup 21 has a cylindrical extension 26 which is of greater diameter than the flange 20 but of smaller diameter than the cup 21. The cylindrical portion 26 is internally threaded to be engaged by the lower threaded end of a fuel emission tube 27 in line with the tube 11 and provided near its upper end with emission openings 28. The extreme upper end of the tube 27 beyond the emission openings 28 is externally threaded to be engaged by the internally threaded lower edge of a cap 29 which rests over the tube 27 and is rigidly secured thereto by means of the threaded engagement just described. The cap 29 has a central opening through which extends a threaded stem 30 having attached thereto a core 31 which core is capable of revolving over the cap 29 but not moving vertically in relation thereto, this result being secured by screwing on to the stem 30 a nut 32 which engages the underface of the upper part of the cap 29.

Embracing the core 31 is a sleeve 33 which is both revoluble about the core 31 and vertically movable in relation thereto. The sleeve 33 is provided with an angular slot 34 one edge of which is serrated or notched, and projecting from the core 31 through the slot 34 is a finger piece 35 which may be moved in the slot 34 to impart to the sleeve 33 its rotary and vertical movement as before suggested. Attached to the lower edge of the sleeve 33 is a sec-

ond dome 36 which conforms substantially in shape to that of the dome 22, and is superimposed thereon but spaced away therefrom. The space between the domes 22 and 36 may be varied by suitably raising or lowering the dome 36 by proper movement of the finger piece 35, thus permitting any desired quantity or grade of fuel to be burned, and by raising or lowering the upper dome the proper sized emission passages for the particular kind of liquid gas are formed. The dome 36 is held in its adjusted position by permitting the finger piece 35 to rest in the appropriate serration or notch in the slot 34.

In burners of this type it is desirable to provide means for preventing roaring when the burner is in operation, and for this purpose I attach to the lower end of the movable dome 36 a curved meshed baffle member 37 which may be of wire gauze or any other suitable substance to break up the flame at the point where final or complete combustion of the fuel occurs.

To promote air circulation through the device, I provide a suitable fan 38 which may be mounted on ball bearings 39 and capable of revolving about the tube 11. The fan may be driven from shaft A by means of the gearing B, C. Additional support for the dome 22 is provided by a ring 41 engaging a flange 42 formed on the inner face of the dome 22, said ring 41 being carried by rods or arms 43 which project from the upper edge of the cylindrical casing 10.

The operation of the invention is substantially as follows:—To start the burner in operation the liquid fuel, generally under pressure, is forced upwardly through the pipe 11, and a quantity of fuel is poured into the pan 16 and ignited. When ignition of the fuel in the pan 16 is under way an air draft through the casing 10 will commence which will be increased by revolution of the fan 38 driven from the shaft A thus whirling and forcing upwardly the air through the cylinder 10 and up through the rest of the burner. The heat given off by the consumption of the fuel in the pan 16 will to some extent heat the parts adjacent thereto, but there will be no carbonization of such parts, and the liquid fuel passing up through the pipe 11 will flow out through the emission openings 28 into the cup 21 from which it will overflow down along the upper surface of the stepped dome 22 where it will be partially vaporized. This semi-liquid vapor will be admixed with proper quantities of air flowing up through the cylinder 10 and out through the openings 23 in the dome 22. The vapor will then be directed through the passages 25 which are inclined to extend in the same direction as the current of air travels which is propelled by the fan 38, and as the vapor issues at the outlet end of the passages 25 it will be converted into flame which will pass out through the mesh 37 and the openings 18 in the wall 17. To regulate the quantity and intensity of the flame the dome 36 may be adjusted by either raising or lowering it in relation to the dome 22 so as to increase or decrease the space between these domes.

Of course it will be understood that my device may be used as it stands in Fig. 1, or if it is used in a factory or shop where very intense heat is desired, for example in a forge, the cylinder 10 may be placed in line with any suitable form of air blast so that great volumes of air at high velocity flow upwardly through the cylinder 10 and admix with the vaporized fuel to increase the quantity and intensity of the flame.

I have found in practice that by means of my improved oil burner I can obtain an intensely hot flame which is very readily capable of adjustment both as to quantity and intensity, and that the device is one which lends itself with equal facility to domestic or commercial use, and that there is virtually complete consumption of the fuel without any loss of efficiency.

I desire it to be understood that the invention is not limited to the details of the construction herein shown and described, but what I claim as new and desire to secure by Letters Patent is:—

1. In a burner of the character described, the combination with a liquid fuel passage provided with emission openings therein, of superimposed domes having a space therebetween in line with the emission openings in said fuel passage, one of said domes having openings therein through which air may flow to the space between the domes.

2. In a burner of the character described, the combination with a liquid fuel passage provided with emission openings therein, of superimposed domes having a space therebetween in line with the emission openings in said fuel passage, one of said domes having openings therein through which air may flow to the space between the domes and means for varying the space between said domes.

3. In a burner of the character described, the combination with a liquid fuel passage provided with emission openings therein, of superimposed stepped domes having a space therebetween in line with the emission openings in said fuel passage, one of said domes having openings therein through which air may flow to the space between the domes.

4. In a burner of the character described, the combination with a liquid fuel passage provided with emission openings therein, of superimposed stepped domes having a space therebetween in line with the emission openings in said fuel passage, one of said domes having openings therein through which air may flow to the space between the domes and

means for adjusting one of the domes in relation to the other to vary the space therebetween.

5. In a burner of the character described, the combination with a liquid fuel passage provided with emission openings therein, of superimposed domes having a space therebetween in line with the emission openings in said fuel passage, one of said domes having openings therein through which air may flow to the space between the domes and means for distributing vapor issuing from the space between the said domes.

6. In a burner of the character described, the combination with a casing, of a liquid fuel passage therethrough, a cup attached to the upper end of said fuel passage, a dome carried by said cup and having air openings through which air is adapted to pass from said casing, a second dome superimposed on said first named dome and spaced therefrom, and a perforated pipe within said cup and in communication with said liquid fuel passage.

7. In a burner of the character described, the combination with a liquid fuel passage, of a dome at one end thereof, a second dome superimposed upon and spaced from said first mentioned dome, one of said domes having openings therein through which air may flow to the space between the domes and means for simultaneously rotating and vertically moving said second dome.

8. In a burner of the character described, the combination with a casing, of a liquid fuel passage extending therethrough, a pair of superposed spaced domes above said casing, means for regulating the space between said domes and means for producing a forced air draft through the device.

9. In a burner of the character described, the combination with a casing, of a liquid fuel passage extending therethrough, a pair of superposed spaced domes above said casing, means for regulating the space between said domes, means for producing a forced air draft through the device, and a mesh baffle member designed to partially intercept the flame issuing from between said domes.

10. In a burner of the character described, the combination with a casing, of a liquid fuel passage extending therethrough, a pair of superposed spaced domes above said casing, means for regulating the space between said domes, means for producing a forced air draft through the device, a mesh baffle member designed to partially intercept the flame issuing from between said domes, and a flame directing member surrounding said domes.

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

ADOLF P. LINK.

Witnesses:
CLARICE FRANCK,
OTTO MUNK.