No. 616,425. Patented Dec. 20, 1898.

H. RUPPEL.

HYDROCARBON BURNER.

(Application filed June 11, 1896.)

(No Model.) 2 Sheets—Sheet 1.

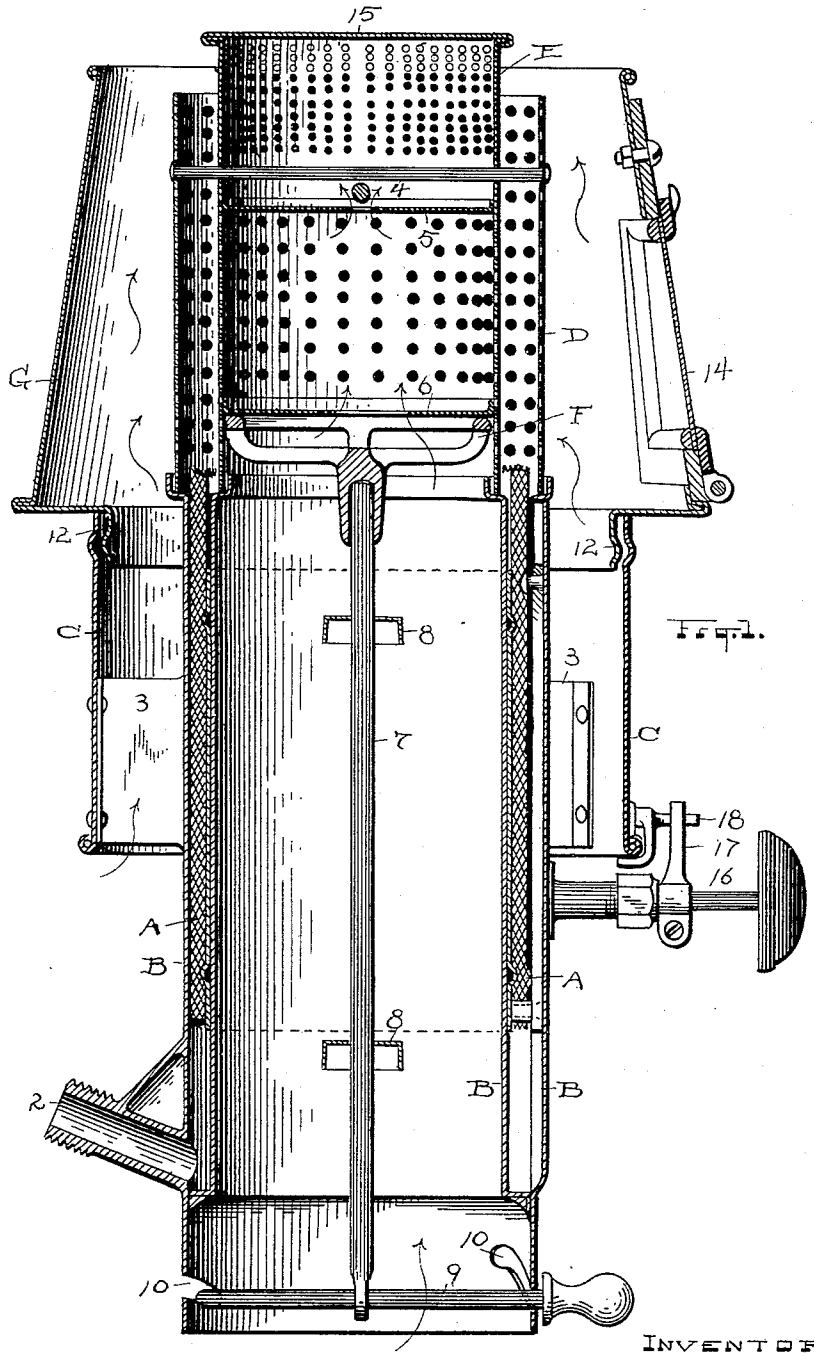


Fig. 1.

ATTEST

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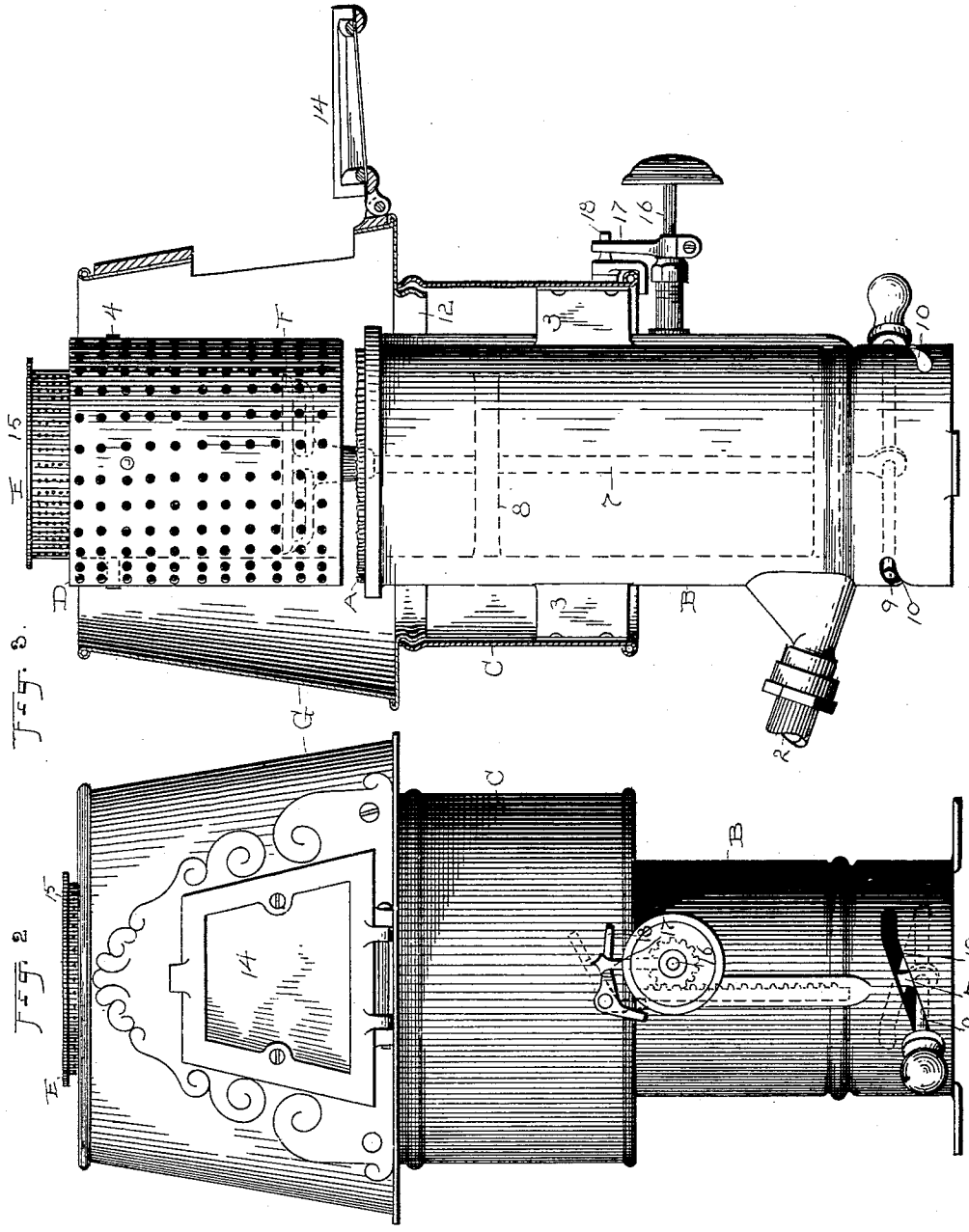
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UNITED STATES PATENT OFFICE.

HENRY RUPPEL, OF CLEVELAND, OHIO.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 616,425, dated December 20, 1898.

Application filed June 11, 1896. Serial No. 595,083. (No model.)

To all whom it may concern:

Be it known that I, HENRY RUPPEL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to hydrocarbon-burners; and the invention consists in a hydrocarbon-burner or similar oil-burner provided with a wick and a combustion-chamber formed by perforated tubes, substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical central sectional elevation of my improved burner. Fig. 2 is a side elevation thereof, and Fig. 3 is a part side elevation and a part sectional view, and the parts in said two views are arranged as shown and hereinafter more fully described.

Referring to the drawings, A represents the wick, and B the wick-tubes, which may be of any desired kind or construction and have the oil supplied thereto from any convenient source of supply; but in this instance the oil is shown as received through the pipe or connection 2.

C is a fixed or stationary drum which rises nearly to the elevation of the top of the wick-tubes, but still is low enough down to come beneath the surface of the stove and is fixed to the side of the wick-tube by the interposed webbing 3, of sheet metal or the like, so as to make a rigid connection between said parts. The perforated combustion-tubes D and E are supported in a common way about the top of the wick-tubes in such relation as to have the wick come between them and are rigidly connected by cross-rods 4 at right angles to each other, which also is a common and well-known method of support. Two perforated diaphragms 5 and 6 span the inner tube, the diaphragm 5 being near the center of the inner tube and the diaphragm 6 being near its bottom. This construction and arrangement of parts makes the said tubes rigid with one another and movable together, so that they may be bodily raised and lowered without getting out of proper working relation or removed and replaced at pleasure. Sometimes it is desirable to remove them from the burner, and again only to raise them, as for lighting. To this latter end I have provided a lifting mechanism having sufficient elevation to raise the tubes from the wick to introduce a match or a light, as seen, for example, in Fig. 3. This mechanism consists in a spider F, adapted to bear against the bottom of the diaphragm 6 within the inner tube, and the rod 7 is socketed in said spider and extends down beneath the wick-chamber through cross-braces 8 within said chamber, which form bearings for said rod, and which is connected at its bottom with a short transverse lifting-rod 9, engaged at its ends through oppositely-inclined slots 10 in the lower extension of the wick-chamber. This brings the shifting handle or rod 9 at the bottom of the stove into a convenient position for the operator to take hold of and rotate the same, and thereby raise the said wick-tubes. A top drum G is supported on the lower drum C and is adapted, in this instance by means of its flange 12, to be seated within the drum C; but it might have its flange seated upon the outside thereof.

It will be noticed that the drum G is enlarged at its bottom, as compared with the cylindrical drum C, and that it has an inward inclination from its bottom to its top, converging at a point shown here somewhat above the outer combustion-tube and beneath the top of the inner combustion-tube and having the effect by this converging construction and arrangement of crowding the air inward toward the combustion-tubes and promoting its entrance into the combustion-chamber, which would not occur if the sides of the drum were parallel with the combustion-tubes. This chamber serves several important purposes. In the first place it affords protection to the combustion-chamber, shielding it from side drafts and breezes, and thereby promoting a steady flame even when the burner is otherwise exposed to more or less wind or breeze. In the second place it is a heating-chamber for the air which is drawn up from beneath within the drum C, and the air is heated preparatory to its entering into combustion with the vapor in the combustion-chamber. When heated, the air naturally expands, and this

expansion, with the converging side of the drum, as already indicated, promotes the feeding or supply of the air to the combustion-chamber from without and materially facilitates and improves the character thereof and of the flame, so that a beautiful and uniform blue flame is maintained. When the combustion-tubes are raised, as in Fig. 3, for lighting and the d or 14 is opened, a match is easily applied to the wick, and then to facilitate speedy lighting in the large burners usually employed the drum G may be rotated and the light be applied at several places on the wick instead of depending upon its travel entirely around. The combustion-tubes are then lowered and the door 14 is closed and the burner is at once in readiness for use.

The inner tube E extends a little above the outer tube D, and in addition to the diaphragm 5 in the said inner tube there is a closed cover or cap 15 across the top of said tube, these parts forming a chamber in the upper end of the inner tube. A small air-opening through the diaphragm 5 permits the passage of a limited volume of air to the said chamber. The perforations in the side of this chamber for the escape of air to the flame are in this case smaller and more numerous than the perforations in the body of the inner tube, thus contributing to the uniform distribution of the limited volume of air from the chamber.

The mica door in the side of the drum G has material convenience in that it discloses at once the state of the flame in the burner, especially when the burner is turned low. The advantage of having drum G rotate on its support to facilitate lighting by a match or the like is obvious. Then coöperating with this arrangement is the device for bodily lifting the combustion-tubes away from the wick, so as to reach the wick without handling the said tubes directly or removing them.

The inclines 10 are at such an angle that the rod 9 will rest in whatever position it may be placed therein, and when lighting is done it is easily turned back to closed position.

The wick-controlling spindle 16 has a finger 17 clamped thereon, and a pivoted stop 18 on the drum limits the rotation of the spindle when the parts have been set. By tilting the stop 18 upward, as in dotted lines, Fig. 2, the finger 17 can pass and the wick be raised and lowered as far as may be desired. By clamping the finger 17 on the wick-controlling spindle a close frictional engagement on the spindle is effected, and this suffices for all the ordinary purposes of stopping the rotation of the spindle; but if for any reason it is desired to further rotate the spindle than the finger in any given position allows, the clamp can be released and the finger be adjusted, or by not clamping too tight and by sufficient extra exertion the spindle can be rotated against the action of the finger as it engages the stop. This, however, is not deemed the better way of setting the spindle.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a wick oil-burner the connected combustion-tubes, a diaphragm within the inner of said tubes and a member to engage against said diaphragm, a central vertical rod to raise and lower the said parts, a part beneath the wick-tubes having opposite inclines and a transverse swinging part therein carrying the said supporting-rod, substantially as described.

2. In a hydrocarbon-burner, a set of perforated combustion-tubes in fixed relation, the inner of said tubes having an inwardly-extending diaphragm, in combination with an independent laterally-extending member adapted to engage said diaphragm, a lift-rod engaging said member and means connected with the lower portion of said rod to raise said rod and thereby lift said tubes, substantially as described.

3. An annular burner, in combination with a drum encircling the lower part of the burner mechanism and an upper horizontally-rotatable drum above said lower drum and having a door in its side, whereby a lighting-opening is afforded to light the burner at any desired point as said upper drum is rotated, substantially as described.

4. The wick-tubes and the drum C supported on said tubes and apart therefrom to make a passage for air, in combination with the drum G rotatably seated on drum C and having a door, substantially as described.

5. An annular hydrocarbon-burner, a set of connected combustion-tubes therefor, means extending within the inner tube to raise said tubes comprising a lifting-rod and a horizontal part at the top of said rod extending across the space within the inner tube and arranged to support the same, and means to raise said lifting-rod, in combination with a horizontally-rotatable drum about said burner having a door through which to light the burner when said tubes are raised, substantially as described.

6. In a burner perforated tubes forming a combustion-chamber between them, two walls with a space between them spanning the bore of the inner of said perforated tubes and forming an air-chamber at the upper end thereof, means for supplying a limited volume of air to said chamber, and openings from said chamber for the escape of air, substantially as described.

7. In a burner, an outer and an inner perforated tube forming a combustion-chamber, a cap and a partition at the upper end of the said inner tube separated and forming an air-chamber between them, and means for supplying air to said air-chamber, substantially as described.

8. In a burner, an outer and an inner perforated tube forming a combustion-chamber, an air-checking partition in the upper end of the inner tube having an opening for the passage of a limited quantity of air, and a cap

above and separated from said partition, substantially as described.

9. In a burner, an outer and an inner perforated tube forming a combustion-chamber, an air-checking partition in the upper end of the inner tube having an opening for the passage of a limited quantity of air, a cap above and separated from said partition, and the perforations in the said inner tube between said partition and cap being smaller and more numerous relatively than the perforations in the body of said tube, substantially as described.

Witness my hand to the foregoing specification this 4th day of June, 1896.

HENRY RUPPEL.

Witnesses:
H. T. FISHER,
H. E. MUDRA.