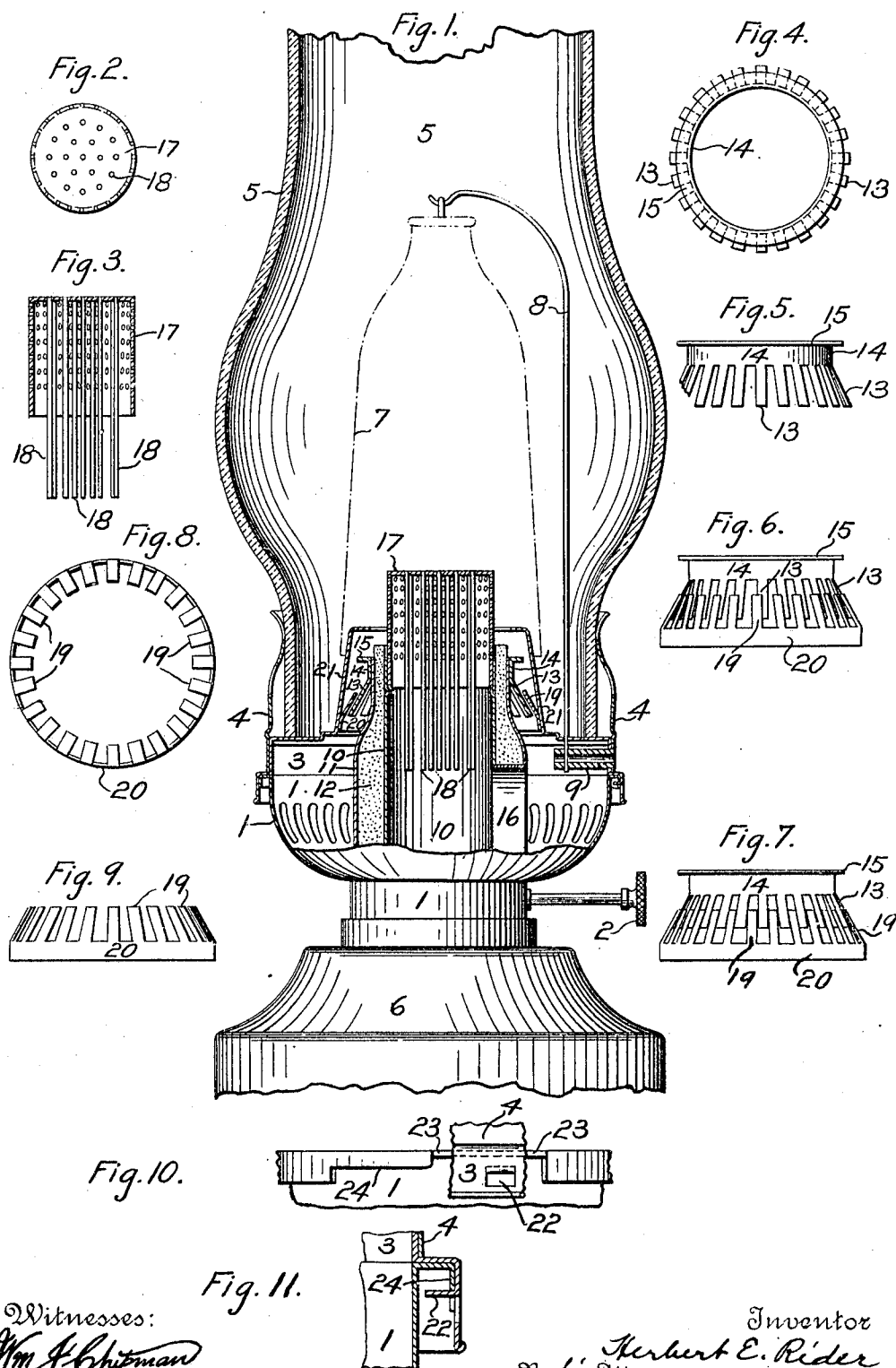


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MANTLE BURNER FOR KEROSENE LAMPS.
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MANTLE-BURNER FOR KEROSENE-LAMPS.

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To all whom it may concern:

Be it known that I, HERBERT E. RIDER, a citizen of the United States, residing at the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Mantle-Burners for Kerosene-Lamps, of which the following is a specification, reference being had therein to the accompanying drawings, forming part thereof.

My invention relates to mantle burners for kerosene lamps and has for its broad objects the obtaining of a brighter light and the avoidance of blackening the mantle by carbon deposits.

More immediate or more particular objects of my invention are to prevent overheating of the outer wick tube and to effectively preheat the air supplied to both the outside and the inside of the flame without choking the draft in the inner wick tube.

In burners of the general type to which my invention belongs there has been serious difficulty due to the fact that heat has been conducted from the end of the outer wick tube at the flame back down the tube, causing the formation of vapor in excess of what can be effectively burned with the amount of air that it is possible to supply to the point of combustion, resulting in streaks of yellow flame which form carbon deposits on the mantle.

My invention includes heat-diffusing or heat-dispersing fingers for conducting the heat away from the top of the outer wick tube and communicating it to the incoming air for preheating such air, it being well known that heated air facilitates combustion. It is also advantageous to preheat the air supplied through the inner wick tube, but there must be no obstruction to its free flow through such inner wick tube, and I provide and include in my invention a group of heat conducting and radiating rods, which project downwardly within the inner wick tube.

My invention also includes means for equalizing the air draft within the inner wick tube and outside of the outer wick tube.

My invention further includes other advantageous features and several details of construction, as will hereinafter appear.

I shall now describe my invention with reference to the accompanying drawings and

shall thereafter point out my invention in claims.

Figure 1 is a partial central vertical section of a lamp embodying my improved burner, portions being omitted. Fig. 2 is a plan view of the burner cap. Fig. 3 is a central vertical section of the same. Fig. 4 is a plan view of the heat-dispersing device removed from the burner. Fig. 5 is an elevation of the same. Fig. 6 is an elevation showing the device of Fig. 5 combined with a regulating device. Fig. 7 is an elevation showing the same parts in a different position of adjustment from that shown in Fig. 6. Fig. 8 is a plan view of the regulating device. Fig. 9 is an elevation of the same. Fig. 10 is an enlarged detail elevation showing the means for connecting and adjusting the parts of the burner. Fig. 11 is an enlarged cross-section of the same and as appears at the right side of Fig. 1.

The embodiment of my invention illustrated in the drawings comprises a burner having a lower part or base 1 provided with wick-adjusting means as indicated by the handle 2 and having air-inlet openings as shown, and an upper movable part 3 provided with spring chimney supports 4 for holding in place a usual chimney 5, the burner being shown as applied to an ordinary lamp font 6. A mantle 7 is supported in the usual manner by a supporting wire 8 extending upwardly from a socket 9 carried by the upper part 3 of the burner. The burner has usual inner and outer wick tubes 10 and 11 carried by the base 1 and between which is the wick 12.

For removing the excess of heat from the upper portion of the outer wick tube 11 and transmitting it to the incoming air, I provide a series of closely spaced fingers 13, which project outwardly and downwardly from a band 14 fitting over the top of the outer wick tube 11, such fingers being shown as formed integral with the band 14. The excess of heat, which would otherwise extend down the wick tube and cause excessive vaporization and consequent imperfect combustion, is carried away by the fingers 13 and given up to the incoming air, which is thus preheated and perfect combustion thereby further facilitated. The large number of fingers 13 and their aggregate large surface results in a very large heat-conductive and heat-diffusing capacity which effect-

ively prevents any over-heating of the outer wick tube with the attendant above-noted bad results. The band 14 is provided with an imperforate radial flange 15, which protects the base of the flame from too strong a draft such as might extinguish the flame.

The inner wick tube is provided with a lateral air inlet 16 extending through both wick tubes at the side, as shown in Fig. 1, and air entering through the inlet 16 passes upward inside of the inner wick tube 10 to the inside of the circular flame. A perforated burner cap 17 fits into and projects upwardly from the upper end of the inner wick tube and serves as an air distributor and preheater. For more effectively preheating the air supplied through the inner wick tube to the flame without obstructing the draft, I provide a large number of straight rods 18, which are fixed in the top of the cap 17 and project downward into the inner wick tube. The rods 18 conduct heat from the burner cap 17 and convey or communicate it to the incoming air within the inner wick tube, but permit a perfectly free and unobstructed flow of the air. This feature is of importance because of the fact that the full air-carrying capacity of the inner wick tube is needed so as to be able to supply sufficient air to the inside of the flame to effect perfect combustion and also so that there shall be enough of this air supplied to the inside of the flame to equalize that supplied to the outside of the flame. It is of advantage especially in the larger burners to have some means of equalizing at will the air draft at the outside of the flame with that at the inside of the flame. For this purpose I provide upwardly and inwardly extending draft-regulating fingers 19, which surround and overlap or lap past the outwardly and downwardly extending heat-dispersing fingers 13, but are spaced therefrom, as most clearly shown in Fig. 1. The draft-regulating fingers 19 are shown as formed integral with a band 20 fixed in the lower portion of a gallery 21 which surrounds the outer wick tube 11 and extends above the upper end of the outer wick tube and is provided at its top, as shown in Fig. 1, with an inwardly turned flange overlying the flange 15 of the band 14, such flange of the gallery serving to direct the draft inward toward the flame. The gallery 21 is shown as formed integral at its base with the upper part 3 of the burner. To vary the strength of the air current passing upwardly between the gallery 21 and the outer wick tube 11, the draft-regulating fingers 19 may be moved relatively to the fingers 13. This is accomplished by rotating the upper part 3 of the burner relatively to the lower part 1, thereby rotating the band 20 and fingers 19 and causing the fingers 19 to occupy different rotative

positions relatively to the fingers 13. To secure the strongest draft, the fingers 19 will be immediately opposite to the fingers 13 so that the spaces between the two sets of fingers will be in alinement. When the draft is to be most restricted, the fingers 19 will be opposite the spaces between the fingers 13 as shown in Fig. 7, but the draft will not then be entirely checked or stopped, not only because of the fact that the fingers 13 and 19 do not overlap throughout their entire length, but also because of the fact that the fingers 19 are spaced upwardly and outwardly from the fingers 13, as most clearly shown in Fig. 1. Any intermediate adjustment may, of course, be obtained, one such being illustrated in Fig. 6. It is easy to tell when the proper adjustment has been secured merely by watching the flame.

The means provided for permitting the upper part 3 of the burner to rotate on the lower part 1 include also means for separating the upper part 3 of the burner from the lower part 1 and comprise a specially formed bayonet slot connection. There are a plurality of these bayonet slot connections located at different points around the periphery of the burner, but as all are alike, a description of one will suffice. A tongue 22 is provided near the lower edge of the upper part 3 of the burner and extending inwardly from the downwardly turned portion of an outwardly and downwardly turned flange on the part 3, and this tongue is adapted to be received into a notch 23 formed in an outwardly and downwardly turned flange at the top of the lower part 1 and coacting with the similar flange on the part 3, this notch 23 permitting the upper part of the burner to be attached and removed at will from the lower part 1. When the part 3 is rotated relatively to the part 1, the tongue 22 is received under a shoulder 24 which retains the part 3 on the part 1, this shoulder being of considerable length, as shown (Fig. 10), so as to permit rotative adjustment of the part 3 relatively to the part 1 while maintaining such parts in connected relation. By rotating the upper part 3 relatively to the lower part 1 of the burner, the air draft passing up between the gallery 21 and the outer wick tube 11 to the outside of the flame and that passing up inside of the inner wick tube 10 to the inside of the flame may be equalized as above explained. For greater convenience in operation, it is preferable that one extreme of adjustment, either that of greatest throttling of the outer draft as indicated in Fig. 7 or that of greatest freedom of draft in which the slots between both sets of fingers will be in alinement, should correspond to the adjustment of the tongue 22 to a position farthest from the notch 23 and in contact with the abutment formed by the flange on the part 1.

The draft-regulating fingers 19 also serve the additional function of conducting excessive heat away from the gallery 21 and upper part 3 of the burner, thereby preventing such heat from extending downward and eventually reaching the base 1 and wick tubes 11 and 10. If found desirable a plurality of sets of heat-dispersing fingers 13 may be provided, one set above another.

It is obvious that various modifications may be made in the construction shown and above particularly described within the principle and scope of my invention.

I claim:

1. A lamp burner comprising, in combination with an outer wick tube, a series of closely spaced heat-dispersing fingers projecting from the upper portion of the outer wick tube into the column of incoming air and terminating within such column of incoming air so as to permit the incoming air to flow both between the heat-dispersing fingers and beyond the ends thereof.

2. A lamp burner comprising, in combination with an outer wick tube, a series of heat-dispersing fingers extending from the upper portion of the outer wick tube and free from contact with any other part of the burner.

3. A lamp burner comprising, in combination with an outer wick tube, a band fitting over the top of the outer wick tube, such band being provided with projecting heat-dispersing fingers supported solely by such band and out of contact with any other part of the burner.

4. A lamp burner comprising an outer wick tube, a gallery surrounding the outer wick tube, and a band fitting over the top of the outer wick tube, such band being provided at its upper edge with a radial flange extending outward and terminating in a free edge between the outer wick tube and the gallery, and such band being provided at its lower edge and adjacent to the top of the outer wick tube with outwardly and downwardly extending heat-dispersing fingers terminating inwardly from the gallery and unconnected therewith.

5. A lamp burner comprising an outer wick tube, spaced heat-dispersing fingers extending outwardly and downwardly from the upper part of the outer wick tube, and a draft-regulating device coactive with the fingers, such device and the fingers being relatively adjustable to vary the draft.

6. A lamp burner comprising an outer wick tube, spaced heat-dispersing fingers extending outwardly and downwardly from the upper part of the outer wick tube, a gallery surrounding the outer wick tube, and draft-regulating fingers extending inwardly and upwardly from the gallery and coacting with the heat-dispersing fingers.

7. A lamp burner comprising an outer

wick tube, spaced heat-dispersing fingers extending outwardly and downwardly from the upper portion of the outer wick tube, a gallery surrounding the outer wick tube and the heat-dispersing fingers, and a draft-regulating device coactive with the fingers to regulate the draft passing upward between the gallery and the outer wick tube.

8. A lamp burner comprising an outer wick tube, spaced heat-dispersing fingers extending outwardly and downwardly from the upper part of the outer wick tube, a draft-regulating device coactive with the fingers, such device and the bars being relatively adjustable to vary the draft, a gallery surrounding the outer wick tube, an inner wick tube, a cap for the inner wick tube, and a plurality of straight substantially parallel rods extending downward from the cap within the inner wick tube.

9. A lamp burner comprising an outer wick tube, spaced heat-dispersing fingers extending outwardly and downwardly from the upper end of the outer wick tube, spaced draft-regulating fingers extending inwardly and upwardly and lapping past the heat-dispersing fingers, and means for relatively rotatively adjusting the two sets of fingers.

10. A lamp burner comprising, in combination with an outer wick tube, a band fitting over the top of the outer wick tube, such band being provided at its lower edge with outwardly extending heat-dispersing fingers and being provided at its upper edge with an outwardly extending radial flange, a gallery surrounding the outer wick tube, a band fitting in the lower portion of the gallery, such band being provided at its upper edge with inwardly extending draft-regulating fingers which overlap the heat-dispersing fingers, and means for rotatively adjusting the draft-regulating fingers.

11. A lamp burner comprising, in combination with an inner wick tube, a group of air-preheating rods projecting downward within the inner wick tube and distributed transversely within the inner space of the inner wick tube, and heat-conductive supporting means exposed to the flame and supporting the preheating rods.

12. A lamp burner comprising, in combination with an inner wick tube, heat-conductive supporting means exposed to the flame, and a group of air-preheating rods projecting downward from the heat-conductive supporting means and free from contact with any other part of the burner, and projecting into the inner wick tube.

13. A lamp burner comprising, in combination with an inner wick tube, a perforated burner cap carried by the upper end of the inner wick tube, and a group of heat-conductive rods distributed substantially uniformly throughout the inner space of the burner cap and projecting downward from

the top of the burner cap into the inner wick tube.

14. A lamp burner comprising an inner wick tube, an outer wick tube, heat-conductive fingers projecting from the upper portion of the outer wick tube, a plurality of heat-conductive rods extending downward into the inner wick tube, and means for supporting the rods from the top of the inner wick tube.

15. A lamp burner comprising an inner wick tube, an outer wick tube, a cap for the inner wick tube and extending above the top thereof, a plurality of parallel rods extending downward from the top of the cap to a point below the top of the inner wick tube, and a plurality of fingers extending outward from the top portion of the outer wick tube.

16. A lamp burner comprising an inner wick tube, an outer wick tube, a cap for the inner wick tube and extending above the top thereof, a plurality of parallel rods extending downward from the top of the cap to a point below the top of the inner wick tube, a plurality of fingers extending outward from the top portion of the outer wick tube, a gallery surrounding the outer wick tube, and a plurality of fingers extending inward from the gallery.

17. A lamp burner comprising a base, an upper part rotatively adjustable on the base, an inner and outer wick tube both carried by the base, a cap for the inner wick tube, a plurality of substantially parallel rods extending downward from the cap into the inner wick tube, a radial flange at the top of the outer wick tube, inner spaced fingers extending downwardly and outwardly from the upper portion of the outer wick tube, a gallery carried by the upper part of the burner, and outer spaced fingers extending upwardly and inwardly from the gallery and overlapping the inner fingers, whereby the outer fingers are rotatively adjustable relatively to the inner fingers by rotating the upper part of the burner on the base.

18. A lamp burner comprising an outer wick tube, an inner wick tube, a series of

closely spaced heat-dispersing fingers projecting from the upper portion of the outer wick tube into the column of incoming air, a group of air-preheating rods projecting downward within the inner wick tube, and heat-conductive supporting means exposed to the flame and supporting the preheating rods.

19. A lamp burner comprising, in combination with an outer wick tube, a fringe of closely spaced heat-dispersing fingers projecting from the upper portion of the outer wick tube into the column of incoming air, the fingers being of greater length than width and the width of the spaces between the fingers being substantially the same as the width of the fingers.

20. A lamp burner comprising an outer wick tube, spaced heat-dispersing fingers projecting from the upper portion of the outer wick tube into the incoming air, a gallery surrounding the outer wick tube and the heat-dispersing fingers, draft-regulating fingers projecting from the gallery toward the inner wick tube and lapping past the heat-dispersing fingers, and means for relatively adjusting the two sets of fingers.

21. A lamp burner comprising an outer wick tube, spaced heat-dispersing fingers projecting from the upper portion of the outer wick tube into the incoming air, a gallery surrounding the outer wick tube and the heat dispersing fingers, draft-regulating fingers projecting from the gallery toward the inner wick tube and lapping past the heat-dispersing fingers, and means for relatively adjusting the two sets of fingers, the fingers of the two sets being substantially equal in width and also substantially equal in width to the spaces between the fingers, whereby maximum regulation will be secured.

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

HERBERT E. RIDER.

Witnesses:

WM. ASHLEY KELLY,
BERNARD COWEN.