(No Model.)

F. RHIND.

CENTRAL DRAFT LAMP AND BURNER.

No. 382,270. Patented May 1, 1888.

Fig. 1.

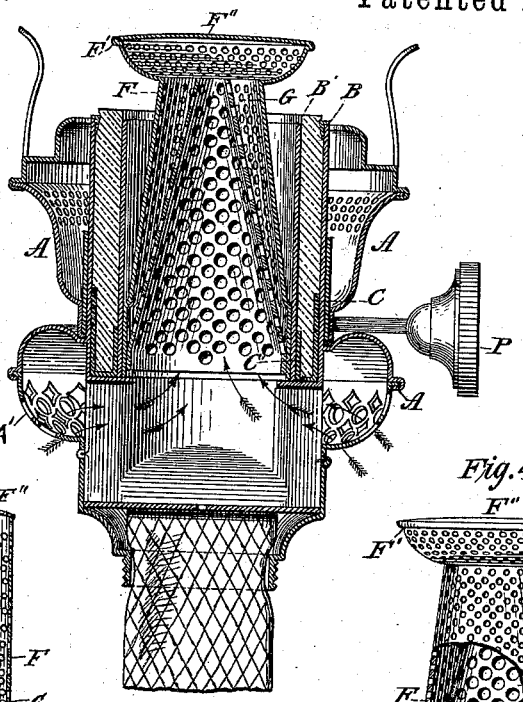


Fig. 2.

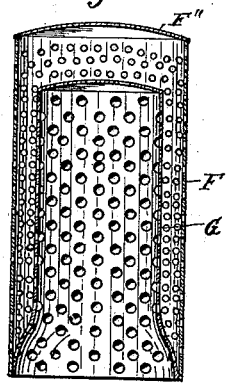


Fig. 4.

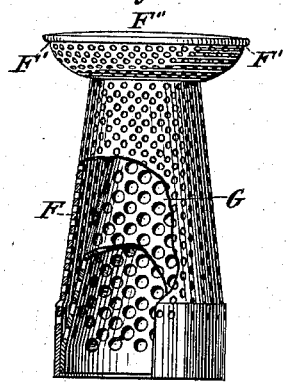
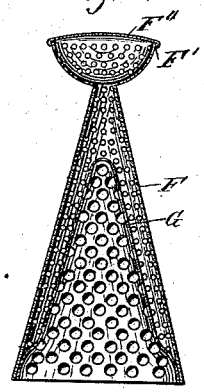


Fig. 3.



WITNESSES:

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CENTRAL-DRAFT LAMP AND BURNER.

SPECIFICATION forming part of Letters Patent No. 382,270, dated May 1, 1888.

Application filed December 20, 1886. Serial No. 222,125. (No model.) Patented in England January 12, 1887, No. 500; in Belgium January 17, 1887, No. 75,981, and in France January 18, 1887, No. 180,986.

To all whom it may concern:

Be it known that I, FRANK RHIND, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Central-Draft Lamp-Burners, of which the following is a specification.

In that class of central-draft lamp-burners of which the Rochester and the Niagara lamps are types the central tube which supplies air to the inside of the flame is surmounted by a cone or thimble having an imperforate top, but having its sides covered with small perforations, which distribute the air to the flame. In those lamps which, like the Rochester, have the central-draft tube extending down entirely through the fount, the increased length of the draft thus provided renders the supply of air to the flame so steady that a single cone or thimble at the top of the tube, when properly perforated, will distribute the air steadily to all parts of the flame, so that the latter will not flicker; but where, as in the Niagara lamp, the central-draft tube is in the burner only, an ordinary fount or reservoir being used, there is not sufficient length of tube to give steadiness to the draft, and I have found that where in such a lamp but a single perforated cone or thimble is employed at the top of the tube the flame is liable to such flickering as to materially injure the value of the lamp. To remedy this defect I have attempted to steady the draft by lessening the area of the inlet-openings at the base of the tube; but an improvement was not effected, probably for the reason that the air, when once within the tube, was allowed to rush, without interruption, to the perforated cone or thimble, and thus to the flame. I have found, however, that by placing at the top of the tube, within the cone or thimble, a second cone or thimble suitably perforated the direct rush of air to the outer cone is so interrupted as to destroy the eddies and render the flame almost perfectly steady. The space inclosed between the two cones or thimbles serves as a heating-chamber for the air, and the heating action is increased by reason of the fact that, owing to the expansion of the air which takes place in this chamber, the flow of air through the inner cone or thimble is slower than the flow through the outer cone or thimble. This heating action may be increased by increasing the number of cones, several concentric chambers being thus provided, through which the air passes outwardly, gaining in bulk by expansion as it nears the flame. To facilitate the flow of air, as well as to prevent the arrest of material by the inner cone or cones or thimble or thimbles after passing through the outer cone or thimble, the perforations in the latter are preferably somewhat larger in area than in the former.

My invention will first be described with reference to the accompanying drawings, and then pointed out in the claims.

In said drawings, Figure 1 is a vertical sectional view of a Niagara lamp-burner embodying my invention. Fig. 2 is a sectional view of a cone or thimble of cylindrical form. Figs. 3 and 4 are similar views illustrating other forms of cones or thimbles.

A is the case or shell of the burner, having near the base, at A′, perforations sufficient in area to supply air freely to the inner tube, B′, which, in connection with the outer tube, B, forms an annular wick-space. The wick is carried by the rings C C′, and operated in customary manner by the wick-rod P. At top of and fitting the tube B′ is a cone or thimble, F, which is slightly conical, as shown in Figs. 1, 2, and 4, or cylindrical, as shown in Fig. 2. In the former case the cone is surmounted by a head, F′, having its under sides perforated, like the remainder of the cone or thimble below it. This head may vary somewhat in size and form, as shown in the figures. In each case the top of the cone or thimble is imperforate, so that air within the same is directed laterally through its sides.

Where but a single cone, F, is employed, it is found that the air rushing directly to the flame will be so unsteady and filled with eddies as to cause the flame to flicker. This difficulty is, as already pointed out, obviated by me by placing within the cone F a second cone or thimble, G, which may be of such diameter at its lower end as to bear on the inside of the outer cone, F, and which is preferably made

with a large number of perforations, which are somewhat larger in area than the perforations in the outer cone, for the purpose already set forth. Not only is the air steadied by reason of this inner cone preventing the air from rushing directly through the perforations of the outer cone, but a still-air chamber is provided between the cones F and G, and within this chamber the air is heated and expanded, and then supplied steadily to the flame throughout the whole lateral surface of the outer cone or thimble.

It will be seen that the air-chamber inclosed between the two cones is surrounded by the flame, to which it supplies air, so that the air in this chamber is directly heated by the flame.

It is not intended to claim anything in this application which is claimed in my contemporaneous application, Serial No. 242,569.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with a burner having a central-draft tube and a perforated cone or thimble at the top of said tube, a second perforated cone or thimble within the first, whereby an air-chamber is provided between the two cones, substantially as and for the purpose set forth.

2. In a burner having a central air-tube, the combination, with a cone or thimble at the top of said tube having an imperforate top and perforated sides; of a second cone or thimble within the first, having its sides perforated to supply air to the chamber between the two cones, substantially as and for the purpose set forth.

3. In a burner having a central air-tube, in combination with a cone or thimble at the top of said tube, perforated substantially as set forth, a second cone or thimble within the first and removable therefrom, and also perforated, substantially as set forth.

4. In combination with a burner having a central air-tube, a perforated cone or thimble fitting the upper end of the central air-tube, and an inner cone or thimble fitting inside the first cone or thimble, substantially as shown and described.

5. In a burner having a central air-tube, the combination, with a cone or thimble at the top of said air-tube having its sides perforated, for the purpose set forth, of a second cone or thimble within the first, and having in its sides perforations larger than those in the first cone or thimble, substantially as and for the purposes set forth.

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