(No Model.)

F. RHIND.

ARGAND LAMP.

No. 478,639. Patented July 12, 1892.

Fig. 1.

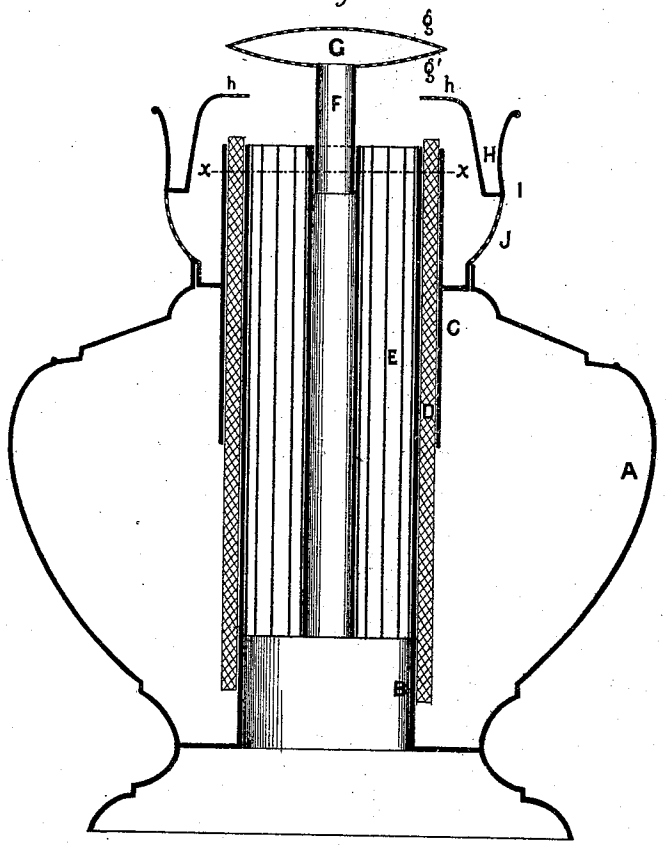
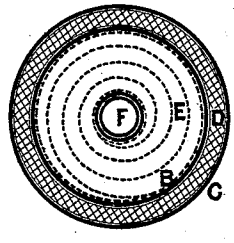


Fig. 2.



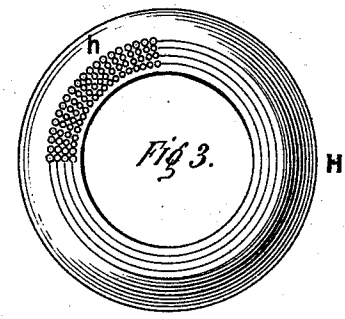


Fig 3.

WITNESSES.

Amm F. Sanborn

D. B. Miller.

Frank Rhind

INVENTOR

BY

Geo. L. Cooper

ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANK RHIND, OF MERIDEN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO THE EDWARD MILLER & COMPANY, OF SAME PLACE.

ARGAND LAMP.

SPECIFICATION forming part of Letters Patent No. 478,639, dated July 12, 1892.

Application filed November 29, 1890. Serial No. 373,061. (No model.)

To all whom it may concern:

Be it known that I, FRANK RHIND, a citizen of the United States, residing at Meriden, New Haven county, Connecticut, have invented a new and useful Improvement in Argand Lamps, of which the following is a specification.

My invention relates to Argand or central-draft lamps, and is intended to so regulate and direct the air supplied to the flame as to improve combustion and to prevent the burner or lamp from becoming unduly heated.

In the drawings, Figure 1 represents in vertical section so much of an Argand lamp as is necessary to illustrate my invention. Fig. 2 is a horizontal section through the line *x x*, Fig. 1. Fig. 3 is a top plan view of the dome or outer deflector removed from the lamp.

The same letters refer to like parts in the several views.

A designates the body of an Argand lamp; B, the inner and C the outer wick-tube; D, the wick; E, a volute partition; F, a spreader-post; G, a spreader consisting of the disks *g* and *g'*; H, an outer deflector or dome; *h*, perforations in the dome H; I, a chimney-gallery; J, a foraminous burner-skirt.

In the example of my invention illustrated in the drawings the lamp-body A, concentric wick-tubes B and C, chimney-gallery I, and skirt J are of usual or any desirable form. Any desired means for adjusting the wick D may be used. Within the inner air-supply tube of large Argand lamps it has been customary to insert a plurality of concentric tubes held in position by interposed radial partitions. The function of these tubes is to break up and divide the ascending air-current and to prevent eddies in the air-supply tube. They are objectionable as somewhat expensive and as the radial partitions tend to divide or serrate the flame. In other constructions corrugated coiled strips are used. These are open to the same objections as being relatively expensive and difficult to manufacture and as forming substantially radial partitions. In the present device I substitute for this plurality of concentric tubes a volute or spirally-formed partition E, (shown in horizontal section in Fig. 2,) the inner coil of which is preferably adapted to form a socket or seat for the spreader-post F. This volute partition E may be made either of imperforate sheet metal, as shown in Fig. 1, or it may be foraminous, as indicated in Fig. 2. In either case it is found in practice to effectually prevent eddies and cross-currents in the inner air-supply tube and to insure an even and regular delivery of air to the inner mantle of the flame.

The function of the spreader-post F is to support the spreader G, which, as shown, consists of two concavo-convex foraminous disks *g* and *g'*, preferably of light sheet metal, with their concave sides toward each other and with their edges in contact and preferably secured together. It is obvious that the foraminous disks *g* and *g'* may either or both be made of another form than the cancavo-convex form shown. It is only necessary that they be separate disks connected together at their outer edges.

Heretofore spreaders or buttons have frequently been made of heavy cast metal. These are objectionable as absorbing a large amount of heat. This heat by radiation and by convection through the wick-tube is conveyed to the oil, rendering it more fluid and increasing the flow through the wick, thereby causing the flame to "climb." To prevent eddies above these buttons, holes have been drilled through their periphery, thereby permitting a small quantity of air to pass up through the button. I have, however, found in practice that it is better to provide a large number of small holes through the button than a much smaller number of relatively large holes. It is commercially impracticable, owing to the expense, to drill large numbers of small holes through a heavy button. Hence I have been driven to the use of light perforated sheet metal, which can be cheaply produced by means of dies. This is found to give a good result, but is open to the objection that it is easily bent out of shape by careless handling. My present device obviates this objection and provides a spreader which absorbs and radiates but little heat, permits a portion of the air to pass upward through it, is sufficiently strong, and can be economically manufactured. This form of spreader is preferable to a perforate cylinder as offering much

less obstruction to the light-rays. In practice it is found to be hardly visible through the flame. The disks *g* and *g'*, being foraminous, serve to deflect the flame and a portion of the ascending air, while another portion of the air passes through the spreader G. Of this latter portion a part is fed to the inner mantle of the flame above the spreader, while the rest acts to keep the chimney and lamp from overheating by increasing the amount of cool air which passes through the inner air-supply tube.

By the use of the spreader G and dome H, both constructed as shown, a tenuous brilliant tulip-shaped flame is produced, while at the same time the burner and lamp are kept considerably below the usual temperature.

I have shown the tube B as serving the double function of inner air-supply tube and inner wick-tube, such being the usual construction. It is evident, however, that the use of separate tubes for these purposes would not conflict with any part of my device. It is equally evident that my device is applicable to a form of construction in which air to supply the inner mantle of the flame is introduced above the top of the oil-fount instead of through the bottom of the oil-fount, as shown in Fig. 1, and that other mechanical changes may be made without departing from my invention. It is obvious, also, that the various features of my device would be useful if separately applied—*e. g.*, that either the spreader G or the dome H might be advantageously used in a lamp provided with an imperforate dome or with another form of inner deflector, respectively.

When in the claims I speak of a "vertically-convolute partition," it will be understood that I refer to a partition preferably made from an integral sheet of thin metal convoluted or rolled upon itself, as clearly shown in Fig. 2 of the drawings.

I am aware of certain British patents in which two, three, or more separate perforate deflectors or buttons are mounted upon a vertical rod at some distance apart. Each of these deflectors is open to the objections already named—*i. e.*, it must either be so heavy as to absorb and radiate a large quantity of heat or be structurally weak. In my device two light perforate disks are connected together at their outer edges to form a single deflector or button, thereby combining a maximum of strength with a minimum of thermal capacity. I do not claim as my present invention two or more separate perforate deflectors, but a single deflector consisting of two perforate disks connected at their peripheries.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is as follows:

1. In an Argand lamp, the combination of an inner air-supply tube and a vertically-convolute partition within said tube, the spiral space between the convolutions of said partition being clear and unobstructed, substantially as described.

2. In an Argand lamp, the combination of an inner air-supply tube and a vertically-convolute foraminous partition within said tube, the spiral space between the convolutions of said partition being clear and unobstructed, substantially as described.

3. An inner air-deflector of an Argand lamp, consisting of two foraminous disks connected at their outer edges, so that a portion of the air which strikes against the lower side of said deflector may be deflected outwardly and another portion permitted to pass upward through said deflector, substantially as described.

FRANK RHIND.

Witnesses:
GEO. L. COOPER,
H. E. SMITH.