

(No Model.)

W. J. SMART.
LAMP.

No. 587,875.

Patented Aug. 10, 1897.

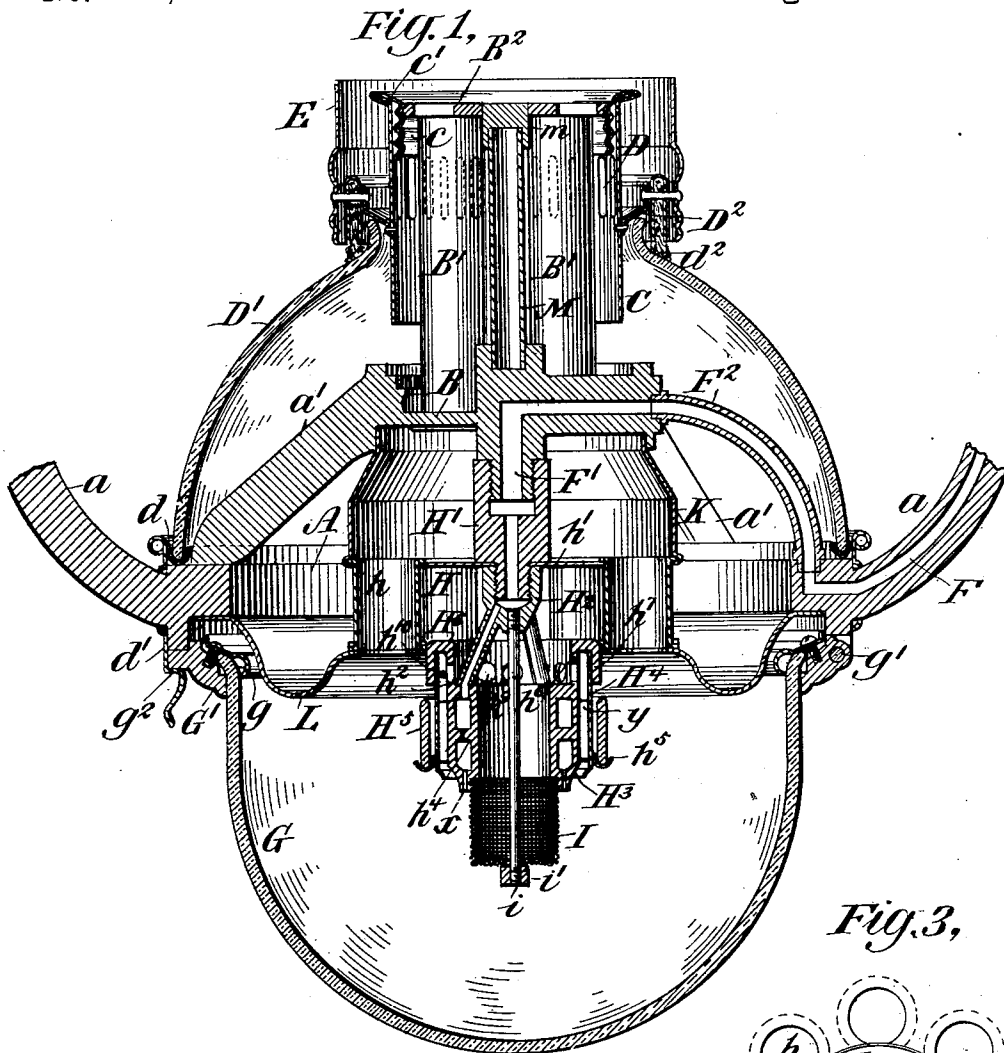


Fig. 2,

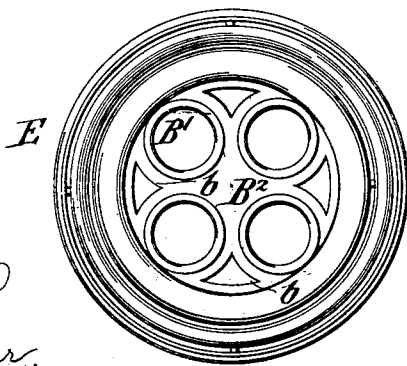
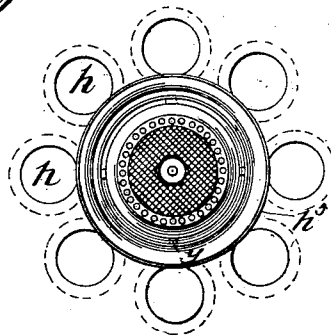


Fig. 3,



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LAMP.

SPECIFICATION forming part of Letters Patent No. 587,875, dated August 10, 1897.

Application filed April 17, 1896. Serial No. 587,952. (No model.)

To all whom it may concern:

Be it known that I, WALTER J. SMART, of South Orange, Essex county, New Jersey, have invented a certain new and useful Improvement in Lamps, of which the following is a specification.

This improvement relates to lamps having a burner or burners of the inverted type. It is particularly adapted to the construction of car-lamps, and in the exercise of the invention it is readily applicable to existing types of lamps having an upright burner or burners—such, for instance, as shown in Patent No. 242,974, granted to J. Pintsch June 4, 1881—permitting these with little trouble and expense to be altered to inverted-burner lamps. This change is productive of desirable results, since the satisfactory use of a lamp with an upright burner requires the employment of a high-grade illuminant, whereas with a properly-constructed inverted-burner lamp an inferior grade of illuminant may be used of relatively less candle-power, but cheaper in cost and more readily obtainable than the former illuminant. Even if the same grade of illuminant is burned the inverted-burner lamp gives a better result than the ordinary lamp with one or more upright burners.

I will now describe a lamp embodying the features of my improvement and then point out its novelty in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through a lamp embracing the features of my improvement, portions, however, non-essential to an understanding of the invention being broken away. Fig. 2 is a plan view of the lamp, certain portions being removed. Fig. 3 is a view of the lamp, looking in the opposite direction to that which shows Fig. 2.

Similar letters of reference designate corresponding parts in all figures.

A designates a ring or annulus to which the supporting-arms *a* of the lamp are secured. Extending upwardly from the annulus A and affixed thereto are a number of leg-like supports *a'*, which serve to carry the internal parts of the lamp. A tube-seat B, or a part performing the same function, is rigid with these supports *a'* and is perforated to receive

the extremities of a number of waste-flues B', which are expanded, flanged, or otherwise attached to the tube-seat. The upper extremities of the flues B' are held in position by a plate B². Gases generated by the burning of the lamp pass upward through the flues B' to the space above the same, where they may be disposed of as desired.

Arranged exteriorly of the tubes B' is a shell C, which to facilitate the removal of parts associated with it is adjustably connected to the plate B². The construction for this purpose may consist of a metallic ring *c*, affixed to and extending downwardly from the peripheral portion of the plate B² and formed with a screw thread, with which engages a screw-threaded part *c'*, extending from the shell. This shell at its upper portion is perforated, as shown at D, for the inflow of air, which, passing downwardly through the shell, issues past the lower edge into the space inclosed within a hood D'. The lower edge of this latter rests upon the annulus A. Preferably between the edge of the hood and its seat there will be interposed some soft or yielding material *d*, while exteriorly the annulus is provided with a suitably-ornamented piece *d'*. To further increase the space for the downflow of air, the plate B² may be provided with openings *b*, as shown in Fig. 2.

The upper edge of the hood may be conveniently held in place by means of a fixture D², supported by the shell C, and preferably provided with a soft or yielding substance *d*² in immediate contact with the hood. If the shell C is removably held in place, as described, the fixture D² may be readily removed from its position holding the hood D' in place.

E is an ornamental ring surrounding the upper portion of the lamp.

The gas-conduit enters the lamp through one of the supporting-arms *a*, as shown at F, and communicates with an angular conduit F' by means of a connecting-pipe F². From this angular conduit gas passes to the lamp-burner.

G is a combustion chamber or globe hemispherical in shape and formed with an outwardly-extending lip *g* at its upper edge, which

is clamped in an appropriate globe-support G', having a hinged connection with the ring A at g', and a catch g².

The construction thus far described does not differ essentially from the construction of the lamps customarily employed with the so-called "Pintsch gas" and using upright burners; but such lamps are not adapted to burn a gas of low candle-power with satisfactory results. The construction now to be described may be readily applied to these lamps upon the removal of certain of their parts and with little additional change to render the lamps fit to burn the inferior quality of gas or to give better results than are obtainable with the ordinary lamps when burning the same gas.

H is a part comprising a number of tubes or passages h, arranged vertically and open for the passage of products of combustion through them. This part also comprises a circular upper plate h¹, rigid with the tubes or passages h. The central space surrounded by the said tubes or passages is freely open to the inflow of air passing downwardly from the openings D and through the spaces between said tubes or passages. A coupling H' connects the part H with the gas-supply, and the opening through it empties into a distribution-chamber H², from whence lead branch supply-tubes h² to the burner-body H³.

The body H³ is annular in form and is affixed to the part H by a connecting-piece H⁶, which allows air to flow to the outside or upper surface of the flame. This piece H⁶ comprises an inner ring h⁶ and an outer ring h⁷, joined at their upper edges and rigidly attached to the part H. The outer ring h⁷ is imperforate, while the inner ring h⁶ is provided with a number of openings h⁸, open to the central space of the part H and permitting air to flow to the outer surface of the burner-body H³, and thence to the outside or upper side of the flame.

The burner-body may be provided with a baffle-plate h⁴. H⁴ is a cylindrical shell secured to the outer ring h⁷ of the connecting-piece H⁶ by any suitable means—as, for instance, by pins h¹⁰, projecting from the ring or otherwise. This shell projects downwardly, terminating adjacent to the burner-openings x, which pass vertically downward through the bottom of the burner-body, so that the gas issuing from them shall have an initial downward direction. This arrangement of the burner-openings I deem important, as when so constructed the maximum light radiation will be downward and not more or less to one side, as would be the case if the burner-openings passed outward in any other direction. Preferably there will be provided a number of separating-strips y between this shell H⁴ and the burner-body. Encircling the shell H⁴ and seated in a support h⁵ is a cylindrical reflector H⁵. Air passing inward between the tubes or passages h issues in part through the openings h⁹ into

the space between the shell H⁴ and the outer surface of the burner-body H³, from whence it is supplied to the upper or outer surface of the flame. The remainder of the air passes vertically downward and is supplied to the combustion-chamber, as well as to inner or lower surface of the flame, through a perforated air-distributor I, fitted to the lower portion of the burner-body and held securely in place by a threaded rod i and nut i'.

The distributor I is perforated not only in its side walls, but its bottom plate is provided with openings also, as shown in the drawings, the better to direct the air to the combustion-chamber and supply it with the same.

K is a shell connecting the upper peripheral portion of the part H with the outer edge of the tube-sheet B and confining the upwardly-ascending products of combustion to the flues B'.

L is a reflector, ring-like in form, imperforate in the present instance and connecting the part H with the annulus or ring A. In the present instance it acts as a partition between the combustion-chamber of the lamp and the space through which air flows on its way to the flame.

The better to secure the part formed with the angular conduit F' there is shown a post M, which is firmly secured thereto, while its upper extremity enters a tapped hole in a boss m, extending from the plate B².

Having described my invention, what I consider as new, and desire to secure by Letters Patent, is—

1. A lamp having, in combination, a number of flues for the outflow of the products of combustion, a shell surrounding the same and forming a passage, or passages, for the flow of air, a part having upwardly-extending passages for the outflow of products of combustion, and radial inwardly-extending passages for the inflow of air to the flame, a combustion-chamber, a hood, a reflector separating the space included in said combustion-chamber from the space inclosed by said hood, an annular burner-body arranged below said part and provided with downwardly-extending burner-openings whereby the gas may be given an initial downward direction, and an air-distributor extending below said annular burner-body, and provided with perforations in its sides and in its bottom surface for delivering air to the flame and also to the combustion-chamber of the lamp, substantially as specified.

2. A lamp having, in combination, a number of flues for the outflow of products of combustion, a shell surrounding the same and forming a passage, or passages, for the flow of air, a ring or annulus, lamp-supporting arms extending therefrom, leg-like supports extending inwardly from the ring or annulus, a part having upwardly-extending passages for the outflow of products of combustion, and radial inwardly-extending passages for the inflow of air to the flame, a combustion-

chamber, a hood, a reflector attached at its outer edge to said ring or annulus and at its inner edge to said part, an annular burner-body arranged below said part and provided
5 with downwardly-extending burner-openings whereby the gas may be given an initial downward direction, and an air-distributor extending below said annular burner-body, and provided with perforations in its sides
10 and in its bottom surface for delivering air to the flame and also to the combustion-chamber of the lamp, substantially as specified.

3. A lamp having, in combination, a ring or annulus, a part having upwardly-extending passages for the outflow of products of combustion, and radial inwardly-extending
15 passages for the inflow of air to the flame, a reflector attached at its outer edge to said ring or annulus and at its inner edge to said
20 part, an annular burner-body arranged below said part and provided with downwardly-

extending burner-openings whereby the gas may be given an initial downward direction, a connecting-piece joining said burner-body
25 to said part and comprising an inner perforated ring and an outer ring, a shell projecting downwardly from this outer ring and terminating adjacent to the burner-openings whereby air is delivered to the outer or upper
30 side of the flame, and an air-distributor extending below said annular burner-body, and provided with perforations in its sides and in its bottom surface for delivering air to the flame and also to the combustion-chamber of the lamp, substantially as specified. 35

In witness whereof I have signed my name in the presence of two subscribing witnesses.

WALTER J. SMART.

Witnesses:

N. KEMPF,

ED. BEESLEY.