

No. 686,086.

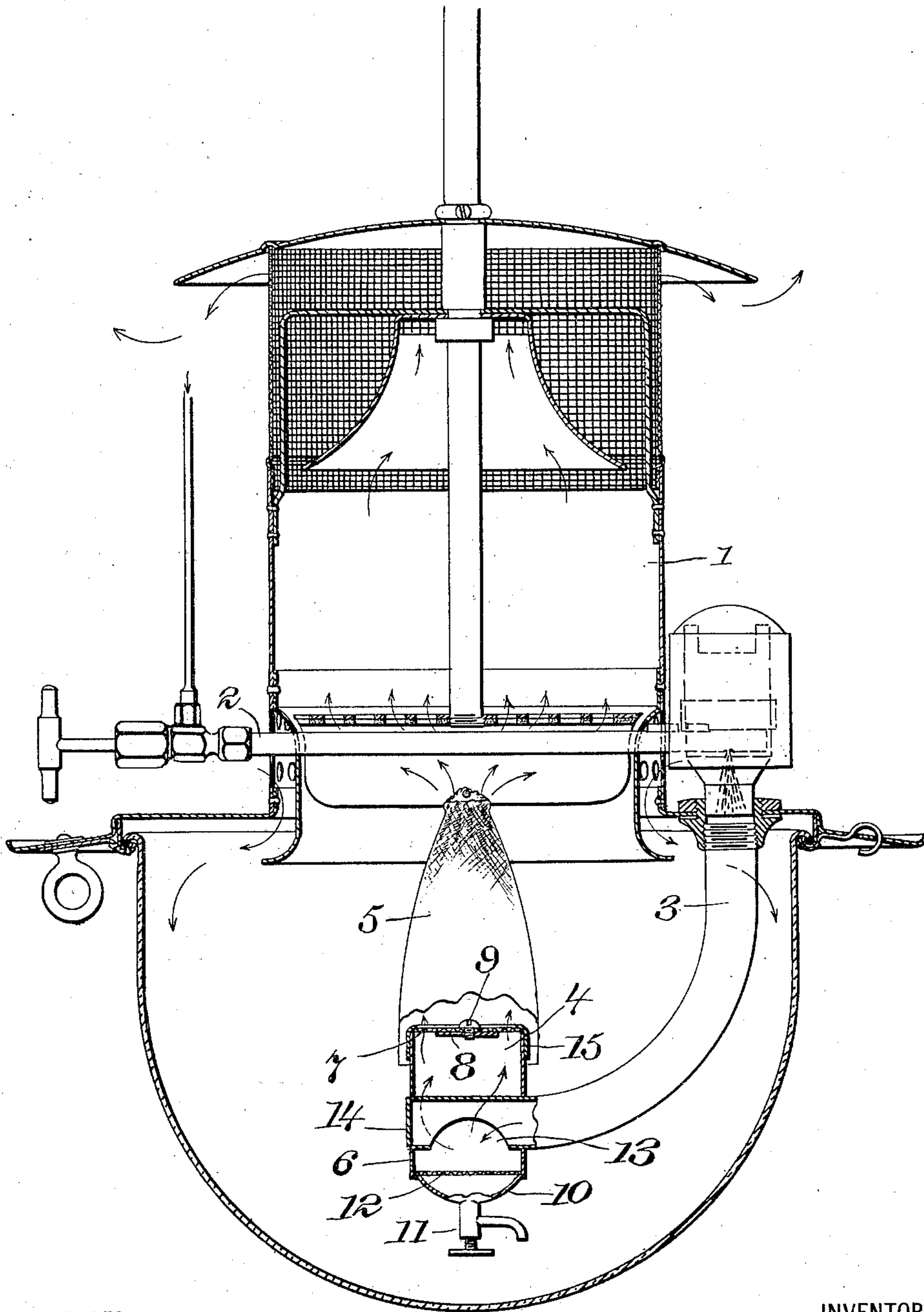
Patented Nov. 5, 1901.

A. KITSON.

SINGLE BURNER FOR VAPOR LAMPS.

(Application filed Apr. 7, 1900. Renewed July 18, 1901.)

(No Model.)



WITNESSES:

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SINGLE BURNER FOR VAPOR-LAMPS.

SPECIFICATION forming part of Letters Patent No. 686,086, dated November 5, 1901.

Application filed April 7, 1900. Renewed July 18, 1901. Serial No. 68,839. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR KITSON, a subject of the Queen of Great Britain, and a resident of Germantown, (Philadelphia,) county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Single Burners for Vapor-Lamps, of which the following is a specification.

My invention relates in general to vapor-burning apparatus, and more specifically consists of an improved single burner for vapor-burning apparatus for use in lamps employing the well-known Welsbach incandescent mantle. In lamps of high candle-power of this type two or more mantles have heretofore been employed. Of course in such construction each of the mantles to a certain extent interferes with the rays of light given off from the other, and, furthermore, the possibility of breakage in cleaning is twice as great where two mantles must be removed and replaced. I have therefore invented the improved form of single-burner apparatus herein described, which is designed to be employed with a special large mantle. In such construction points which have to be carefully kept in view are the thorough mixing of the vapor and air in the larger burner and the delivery of the same evenly to all parts of the larger mantle.

The preferred form of apparatus embodying my invention is illustrated in the accompanying drawing, in which the standard form of lamp, having a casing 1, consisting of chimney, annular supporting-frame, and hemispherical glass globe, is shown in section. Across the chimney there extends the usual vaporizing-tube 2, which discharges a jet of vapor into the upper end of the mixing-tube 3. This mixing-tube is curved to one side, so as to have its lower end extending in a horizontal direction, and on it is mounted the burner 4 and above that the mantle 5.

The burner 4 consists of the upright cylinder 6, across the upper end of which extends the usual wire-gauze 7, the same being retained in position by the annular cap 15 or by any other convenient means. A solid button 8,

preferably of metal, is supported centrally of said gauze by means of the screw 9 or other convenient means. The lower end of the burner-cylinder 6 is closed by a solid head, preferably made in the form of an outwardly-dished plate 10, as shown, and at the lowest point of said dished head the outlet-valve 11 may be placed. The gauze 12 is stretched across the burner-tube 6, below the level of the mixing-tube 3, and preferably said gauze is located at the junction of the burner-tube and the dished head 10. The mixing-tube extends across the burner-tube, being of less diameter than said burner-tube, and has its end closed, as by a head 14. The said mixing-tube has a discharge-opening in its under side, (shown at 13,) through which a downward discharge of the vapor and air occurs over the center of the gauze 12.

The mode of operation of my invention is evident from the foregoing description. The jet of vapor issuing from the vaporizing-tube 2 entrains the necessary amount of air into the mixing-tube 3, and the mixture passes down said tube and out through the discharge-opening 13. Being thrown down upon the gauze 12, it is thoroughly mixed together and distributed evenly throughout the entire cross-section of the burner-tube 6. It then moves up through said burner-tube and issues through the annular discharge-opening between the button 8 and the cap 15 of the burner. A cylindrical or conical flame of the Argand type is thus formed, which burns under the large mantle 5, heating the same to intense incandescence throughout its entire area.

The advantages of my invention comprise the increased efficiency, reduction in cost, and reduction in loss by breakage resulting from the use of a single mantle in place of the two mantles heretofore employed. The delivering of the combustible mixture in an annular discharge adjacent to the sides of the mantle also economizes fuel and produces an efficient heating of the mantle. The gauze 12 not only serves to distribute the mixture evenly throughout the large burner-tube 6

and prevent the formation of eddies, but also serves to collect any particles of unvaporized oil, and retain the same in a position where the combined action of heat and air currents tend to produce their reëvaporation. Any surplus quantity of oil collecting on the gauze 12 drops through onto the dished head 10 and if not reëvaporated can be drawn off through the valve 11. I have found the construction of the discharge-orifice 13 and its downward discharge to be necessary for the even distribution of the combustible mixture throughout the large burner-tube 6, and this when taken in connection with the gauze 12 produces improved results.

It is evident, of course, that various changes could be made in the details of the apparatus shown in the drawing without departing from the principle of operation described in the specification. The proportions of the parts and their shapes and the manner of attaching them together might be varied without departing from the spirit and scope of my invention. Also certain features of the invention might be employed without using other features described; but all such modifications I should still consider within the limits of my invention.

Having, therefore, described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. In a vapor-burning lamp the combination of a burner in the form of a cylinder with its lower end closed, and a mixing-tube entering at the side of the cylinder and having a discharge opening downward toward said closed lower end.

2. In a vapor-burning lamp the combination of a burner in the form of a cylinder with its lower end closed, and a mixing-tube entering at the side of the cylinder and having a discharge opening downward toward said closed lower end, together with the gauze stretched across the burner-tube below the mouth of the mixing-tube.

3. In a vapor-burning lamp the combination of a burner comprising a short cylinder with its lower end closed by an outwardly-dished head, and a mixing-tube entering at the side of the burner-tube and having a downward-discharge opening located over the center of the dished head.

4. In a vapor-burning lamp the combina-

tion of a burner comprising a short cylinder with its lower end closed by an outwardly-dished head, and a mixing-tube entering at the side of the burner-tube and having a downward-discharge opening located over the center of the dished head, together with the gauze stretched across the burner-tube at the point where the head joins the tube.

5. In a vapor-burning lamp the combination of a burner in the form of a vertical cylinder closed at its lower end, and a mixing-tube of smaller diameter which enters one side of the burner-cylinder, extends across the same, and has its end closed, with a discharge-opening in its under side.

6. In a vapor-burning lamp the combination of a burner in the form of a vertical cylinder closed at its lower end, and a mixing-tube of smaller diameter which enters one side of the burner-cylinder, extends across the same, and has its end closed, with a discharge-opening in its under side, together with the gauze stretched across the burner-tube below the level of the mixing-tube.

7. In a vapor-burning lamp the combination of a burner in the form of a cylinder with its lower end closed, and a mixing-tube entering at the side of the cylinder and having a discharge opening downward toward said closed lower end, together with the gauze across the upper end of the burner-tube and the button located centrally thereof, whereby an annular discharge-orifice is formed for the combustible mixture.

8. In a vapor-burning lamp the combination of a burner comprising a short cylinder with its lower end closed by an outwardly-dished head, and a mixing-tube entering at the side of the burner-tube and having a downward-discharge opening located over the center of the dished head, together with the gauze stretched across the burner-tube at the point where the head joins the tube, the gauze across the upper end of the burner-tube, and the button located centrally of said last-mentioned gauze.

Signed by me at New York, N. Y., this 2d day of April, 1900.

ARTHUR KITSON.

Witnesses:

W. H. PUMPHREY,
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