No. 829,129. PATENTED AUG. 21, 1906.

C. E. TREWHELLA.

VAPOR LAMP.

APPLICATION FILED OCT. 20, 1905.

Fig. 1.

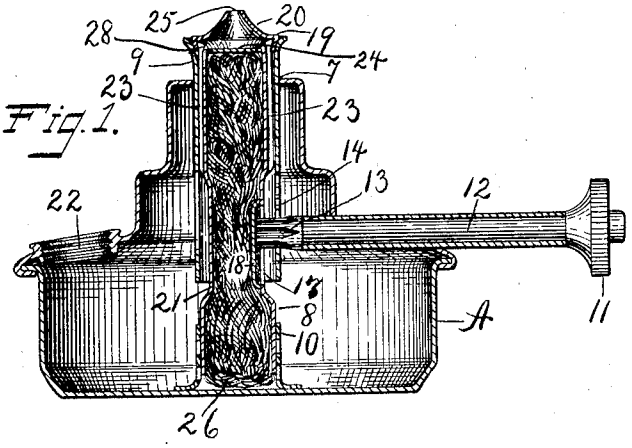


Fig. 2.

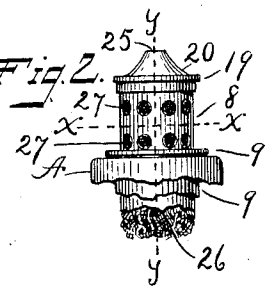


Fig. 5.

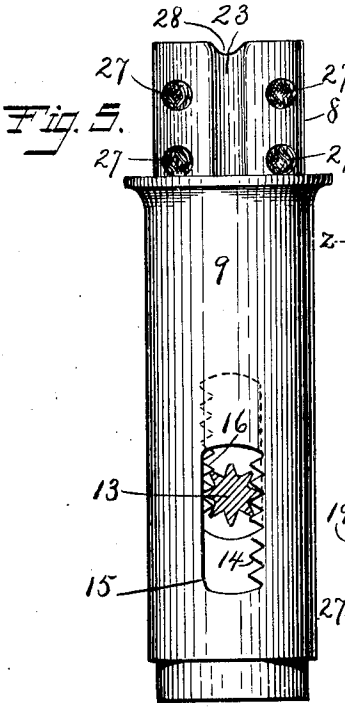


Fig. 7.

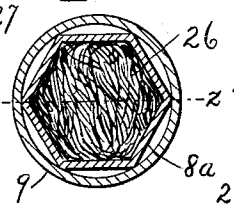


Fig. 3.

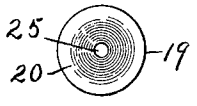


Fig. 4.

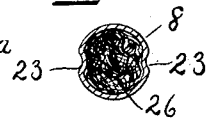


Fig. 8.

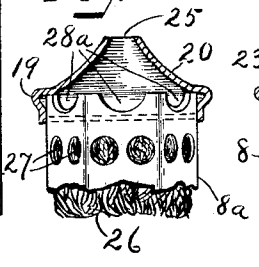
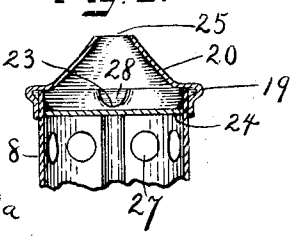


Fig. 6.



Witnesses.

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VAPOR-LAMP.

No. 829,129. Specification of Letters Patent. Patented Aug. 21, 1906.

Application filed October 20, 1905. Serial No. 283,693.

To all whom it may concern:

Be it known that I, CHARLES E. TREWHELLA, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Vapor-Lamps, of which the following is a specification.

My invention relates to improvements in vapor-lamps; and the objects of my improvement are simple and inexpensive provision for venting the lamp with efficiency and convenience in operation of the lamp.

In the accompanying drawings, Figure 1 is a central vertical section on a line through the axis of the shutter and burner operating shaft, the shutter being closed, the said shaft and its knob being shown in elevation. Fig. 2 is a detached and broken side elevation of the upper end of the lamp with the shutter open. Fig. 3 is a plan view of the burner-cap. Fig. 4 is a horizontal section of the burner or wick-tube on the line $x\ x$ of Fig. 2. Fig. 5 is an enlarged side elevation of the burner and shutter with the burner-cap removed and the shutter opened. Fig. 6 is a vertical section of the upper end of the burner on the line $y\ y$ of Fig. 2. Fig. 7 is a transverse section of a wick-tube and shutter, showing a modified form of wick-tube. Fig. 8 is a central vertical section of the wick-tube cap on the line $z\ z$ of Fig. 7, with a side elevation of the wick-tube.

A designates a font which may be of any ordinary construction and provided with a central opening 7 in its top, through which the burner-tube or wick-tube 8 and the shutter or extinguisher 9 may extend. In the interior of the font A at the bottom I place a guide-tube or socket 10, which may be in a skeleton form or have its sides perforated, so as to let the alcohol or other fluid into its interior. Some of my improvements are applicable to a fixed wick-tube or burner; but one of the improvements in this application relates to a movable burner or wick-tube—that is, a burner that is raised and lowered. The shutter 9 and wick-tube 8 are arranged to slide one upon the other, the wick-tube being within the shutter and fitted closely enough thereto to properly guide the shutter. The lamp-font is provided with any ordinary operating-knob 11, shaft 12, and pinion 13 for operating the shutter or the shutter and wick-tube. The lower end of the wick-tube 8 rests within the socket or guide-tube 10 at the bottom of the lamp, the said socket being slightly longer than the range of movement of the wick-tube, so that the lower end of the wick-tube in use is always within the said socket or guide-tube. On one side of the shutter is a pinion slot or opening, one edge of the metal at the said slot being toothed to form the rack 14, while the opposite edge 15 serves as a guide. A like slot is made in one side of the burner-tube to form a corresponding rack 16, Fig. 5, and guiding edge 17, Fig. 1. A bridge 18, Fig. 1, may be placed on the inner side of the wick-tube, directly opposite the pinion-slot, to prevent the wick 26 from coming in contact with the end of the pinion 13. The pinion is long enough to pass through both pinion-slots and simultaneously engage both racks—the rack 14 of the shutter and the rack 16 of the burner—while the guiding edges in the said pinion-slots engage the side of the pinion opposite each rack, and thus prevent the shutter and the burner from rotating on their axis, so as to disengage the rack from the pinion. The parts are so assembled with reference to the movements of the shutter and wick-tube that the shutter will be at its lowermost position when the wick-tube or burner is in its highest position, as shown in Figs. 2 and 5, in which the shutter is open. Then turning the pinion in the direction to close the shutter the shutter moves upwardly, while the burner moves downwardly until the upper end of the shutter and flange 19 of the burner-cap 20 come together and close the shutter, as shown in Fig. 1. It should be noted that this simultaneous reverse movement of the shutter and burner is effected by placing the respective racks on opposite sides of the pinion, as shown in Fig. 5.

The next part of my improvement relates to the burner-cap and vent. I form the wick-tube 8 with a reduced neck 21 at a point within the font and above the filling-opening 22. In one or more sides of the wick-tube above this reduced portion I form the vent-groove 23 by indenting the metal, as shown. A little below the upper end of the tube 8 and inside of the same I place a diaphragm 24 to close the upper end of the said tube on its interior. The cap 20, having a central vent or jet 25, is placed on the upper end of the tube 8, and

the upper ends of the grooves 23 are connected, by means of openings 28, with the chamber under this cap. The wick-tube below this upper chamber is filled with any suitable or ordinary wicking 26, and the upper portion of the wick-tube is provided with perforations 27 in the ordinary manner of similar burners. By raising the burner and lowering the shutter from the position shown in Fig. 1 to that shown in Fig. 2 the lamp (being properly filled) is in position for lighting. When it becomes properly heated, it will burn through both rows of openings in the burner and also sometimes burn at the central jet in the cap. If desired, the pinion may be operated until the lower row of openings is closed by the shutter to extinguish the flame at the said lower row. By moving far enough to bring the shutter and burner into the position shown in Fig. 1 all the flame will be extinguished except that at the central jet in the cap. After a little while as the lamp cools off the flame at this jet will die out.

In Figs. 7 and 8 I have shown an equivalent for the grooved wick-tube in connection with the cap 20. The wick-tube 8^a is of a hexagonal form in cross-section, so that when placed in the round shutter 9 there is a longitudinal space between the shutter and each of the six sides of the tube, substantially the same as that formed by the groove 23 and shutter 9. The wick-tube is surmounted by the same cap as before and also provided with the same diaphragm, and at the upper end of the six sides an opening 28^a is formed to connect the outer side of the wick-tube with the chamber under the cap. The operation is the same as that of the construction first described.

By means of the grooved or flattened sides of the wick-tube there is always a venting-space between the wick-tube and the shutter, and by means of the vented cap having openings leading to the said grooved or flattened sides any excess of gas will burn at the central jet of the cap, and the font is effectually vented, even when the shutter is closed. By the simultaneous movement of the shutter and burner the flame is extinguished by only a slight turn of the operating-knob.

I claim as my invention—

1. In a vapor-lamp, the combination of a font, an operating-shaft and pinion mounted on the said font, a tubular shutter having a rack in engagement with the said pinion at one side thereof, and a wick-tube arranged within the said shutter and having a rack in engagement with the said pinion at its opposite side, all combined and operating to simultaneously lower the said wick-tube and raise the said shutter.

2. In a vapor-lamp having a font and a tubular shutter, the combination of a wick-tube fitted inside of the said shutter and having a reduced neck inside of the said font, with an imperforate diaphragm closing interiorly the upper end of the wick-tube, and a cap having a jet perforation and mounted on the upper end of the said wick-tube above the said diaphragm, the said wick-tube having a groove on its outer side extending from the said reduced portion within the said font up to, and opening into, the space between the said diaphragm and cap at the upper end of the wick-tube.

3. In a vapor-lamp having a font and a tubular shutter, the combination of a wick-tube an imperforate diaphragm closing interiorly the upper end of the said wick-tube, a cap mounted on the upper end of the said wick-tube above the said diaphragm and having a jet perforation, and an opening leading from the font on the outer side of the wick-tube to the space between the said cap and diaphragm.

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