J. W. CHAPMAN & E. A. GUTERMANN.

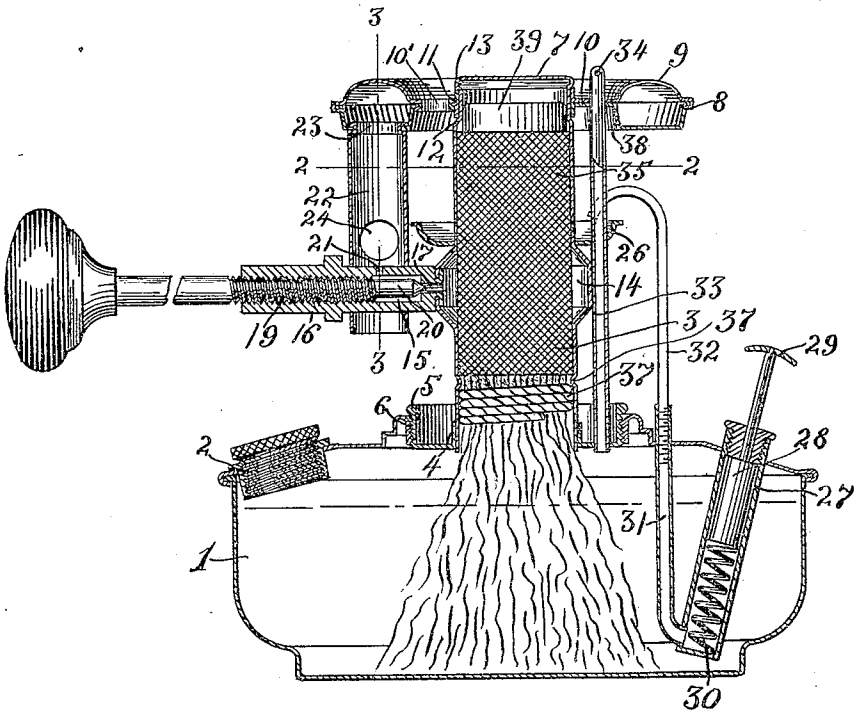
ALCOHOL LAMP.

APPLICATION FILED DEC. 17, 1908.

956,482. Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

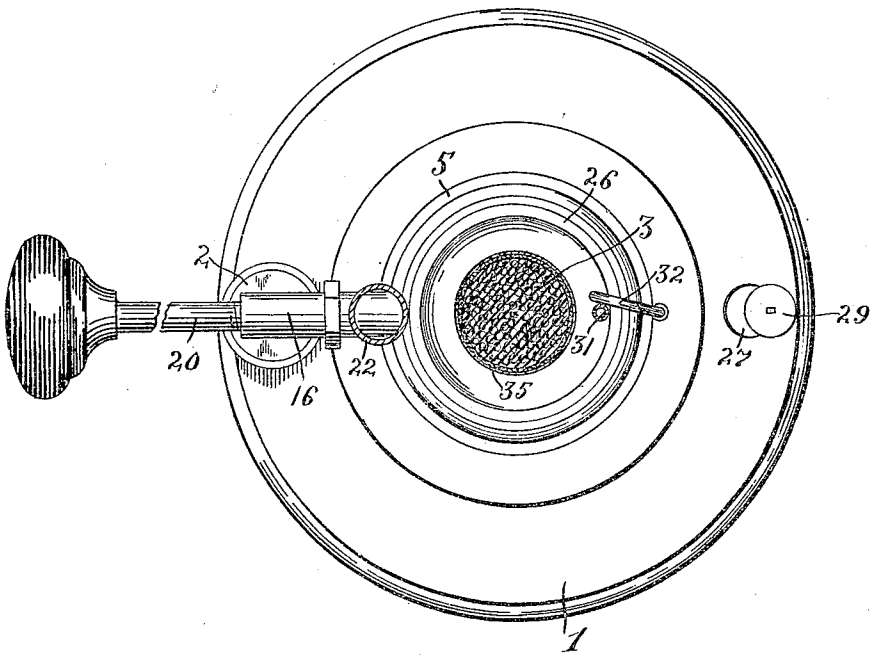


Fig. 3.

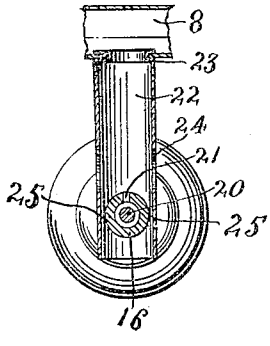
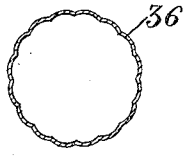


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES W. CHAPMAN AND EDWARD A. GUTERMANN, OF MERIDEN, CONNECTICUT, ASSIGNORS TO MANNING, BOWMAN & COMPANY, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ALCOHOL-LAMP.

956,482. Specification of Letters Patent. **Patented Apr. 26, 1910.**

Application filed December 17, 1908. Serial No. 467,939.

To all whom it may concern:

Be it known that we, JAMES W. CHAPMAN and EDWARD A. GUTERMANN, citizens of the United States, residing at Meriden, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Alcohol-Lamps, of which the following is a full, clear, and exact description.

Our invention relates to vapor burners or lamps adapted to be used with vapor stoves, such for example as employ alcohol as fuel.

The invention is particularly concerned with improvements in the construction and arrangement of the parts of the wick tube whereby the generation of the necessary vapor will be improved while at the same time provision is made for prevention of charring of the wick.

A further object of the invention is to provide a burner of this character, having but a single wick tube instead of two or more as is ordinarily the case with vapor burners or lamps at present in use.

A further object is to improve the construction and arrangement of the primer for the burner and to provide convenient means for supplying the primer with the necessary priming fluid.

A further object is to so arrange the wick tube with relation to the fuel reservoir as to prevent undue heating of the latter and also to provide against leakage of the fuel fluid.

With the above objects in view, the invention consists in the construction and arrangement of parts, preferred embodiments of which are illustrated in the accompanying drawings, in which,

Figure 1 is a vertical section of a vapor lamp or burner embodying the invention, Fig. 2 is a horizontal section on the line 2—2, Fig. 1. Fig. 3 is a sectional detail view of the mixing chamber on the line 3—3, Fig. 1. Fig. 4 is a horizontal section on a plane corresponding to that of Fig. 2, showing a modification of the wick tube construction.

In the embodiment of our invention illustrated in Figs. 1, 2 and 3, the same comprises a fuel reservoir 1, having the usual filling vent 2. Removably secured to the reservoir is the wick tube 3, having an attaching flange 4 provided with an annular screw-threaded rim or lip 5 adapted to fit a screw-threaded aperture 6 in the top of the reservoir. On the upper end of the wick tube, which is closed as indicated at 7, is mounted a burner ring 8 having the gas openings 9, which ring is connected with the wick tube by means of a webbing 10. For secure attachment to the wick tube, the webbing 10 has secured thereto a sleeve 11, which in assembling the parts is slipped over the top of the wick tube and rests against a shoulder 12 formed upon the latter, whereupon the top of the wick tube is upset or forced down as at 13 to hold the burner ring sleeve 11 firmly in place. By this construction, we are enabled to dispense with the necessity of solder and other like means of securing the burner ring to the wick tube. The webbing 10 is provided with draft apertures 10′ to spread the flame from the jets or openings 9.

The wick tube 3 is provided at any convenient point, intermediate of its length, with a gas collecting chamber 14, here shown as annular in form, with which a valve chamber 15 in the valve tube 16 communicates through a passage 17. The valve tube 16 may be conveniently attached to the gas chamber by upsetting its inner end over the edges of an aperture in the wall of said chamber. The valve tube 16 is screw-threaded as at 19 to receive the adjustable needle valve 20. The valve chamber 15 communicates by means of a small aperture 21 with the mixing chamber 22 formed as a tube attached to and communicating with the burner ring, and having an air inlet 24 preferably just above the gas aperture 21 whereby as the gas is ejected under pressure into the mixing chamber, the necessary supply of air to form the combustion mixture will be drawn into the mixing chamber through said inlet 24. In assembling the parts, after the burner ring is mounted upon the wick tube with the mixing chamber tube 22 depending alongside of said wick tube, the valve tube 16 is passed through apertures in the sides of tube 22 and is then attached to the wick tube 3. The diameter of the mixing chamber tube 22 is slightly greater than that of the valve tube 16, whereby, as shown in Fig. 3, additional air inlet passages 25 for the mixing chamber are provided.

In order to start the operation of the lamp or burner, a primer pan 26 is provided,

which in this instance is of annular form surrounding the wick tube and resting upon the upper side of the gas collecting chamber 14. If desired, also the primer pan 26 may be omitted and the priming may be effected from the annular channel formed on the flange 4 by the rim 5. To supply the primer pan with the necessary priming fluid, a small pump 27 is mounted within the reservoir 1 in which is a suitable plunger 28 having a handle 29, which plunger is normally held in its upward position by means of a coil spring 30 located beneath the same. The pump communicates by means of a pipe 31 and a second pipe 32 swiveled thereto with the primer above, as shown in Fig. 1. By so swiveling the upper section or pipe 32, the same may be turned out of the way when it is desired to unscrew the wick tube from the reservoir 1. To provide for the escape of residual vapor in the reservoir after the lamp is extinguished, an escape pipe 33 is mounted within the flange 4 of the wick tube and projects up through one of the apertures 10′ of the burner ring web 10 and has apertures 34 for the escape of the gas.

In order to facilitate the passage of the gas generated within the wick tube to the collecting chamber 14, the wick is preferably surrounded by a short section of wire net 35, which is interposed between the wick and the side walls of the tube and provides for more or less free passage of the generated gas down to said gas collecting chamber. It is to be understood that the wire net may extend from the upper portion of the wick tube only partially over, preferably about half way across the collecting chamber 14. As a modification of the construction for this purpose (Fig. 4) the upper portion of the wick tube 3 above the gas receiving chamber 14 may be corrugated as at 36, to provide open passages along the sides of the wick to the gas receiving chamber 14.

To provide against the back-flow of the gas generated in the wick tube into the reservoir or chamber 1, a bead 37 may be spun into the lower portion of the wick tube or the wick may be bound with a strip or cord 37′ of asbestos whereby substantially a dam is formed between the main body of the wick tube and the reservoir.

To quicken the generation of gases in the wick tube the inner side of the burner ring below the webbing 10 is provided with gas apertures 38 from which small heating jets will be directed against the upper end of the wick tube, the heating of which caused thereby will serve to generate the gas much more rapidly than if such heating depended entirely upon the jets from the burner openings 9. In order to provide against the charring of the upper end of the wick by the more or less intense heat from the jets 38, a protecting cap 39 of asbestos or other suitable material is fitted over the upper end of the wick.

By forming the annular flange 4 at the base of the wick tube of suitable diameter, a considerable space is left between the wick and the threaded aperture 6 of the reservoir into which the wick tube is screwed, whereby leakage of the fuel fluid between the lip 5 of the wick tube and the wall of the aperture 6 is prevented. Furthermore, by so widening the aperture 6, insertion of the wick in the reservoir 1 is facilitated.

While we have herein described a particular embodiment of our invention, it is to be understood the same may be altered in details and relative arrangement of parts without departing from the spirit or scope thereof.

What we claim is:

1. In a vapor lamp or burner, a reservoir, a wick tube carried thereby and having an annular vapor collecting chamber formed in the wall thereof communicating with all sides of the wick, a burner ring connected with said wick tube having burner openings located a little below the top of said tube to aid in generation of gas therein and having a series of apertures arranged to project jets of flame directly against said wick tube to generate gas therein, a mixing chamber connecting said vapor chamber and said ring, and a gas-controlling valve interposed between said chambers.

2. In a vapor lamp or burner, a fuel reservoir, a wick tube carried thereby, a vapor collecting chamber within said wick tube and communicating with all sides of the wick, a burner ring, a mixing chamber comprising a tube connected to said ring and depending alongside of said wick tube and communicating with said collecting chamber, and a gas-controlling valve interposed between said chambers.

3. In a vapor lamp or burner, a fuel reservoir, a wick tube carried thereby having a vapor collecting chamber formed therein, a foraminous sheathing surrounding the wick and overlying said chamber to provide vapor passages along the walls of said tube and communicating with said chamber upon all sides of the wick, a burner ring, and mixing chamber interposed between said chamber and ring.

4. In a vapor lamp or burner, a fuel reservoir, a wick tube carried thereby, having an annular vapor collecting chamber therein located well below the top of said tube, a burner ring surrounding the upper end of said tube having a series of burner apertures and having a second set of apertures in its inner side to project jets of flame directly against said wick tube above said chamber, a mixing chamber communicating with said ring and a valve interposed be-

tween said vapor collecting and mixing chambers.

5. In a vapor lamp or burner, a fuel reservoir, a wick tube carried thereby having a vapor collecting chamber therein, a burner ring, communicating means between said chamber and ring, a wick in said tube, a dam formed in the wall of said tube surrounding said wick, and a protecting cap fitted upon the upper end of said wick.

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