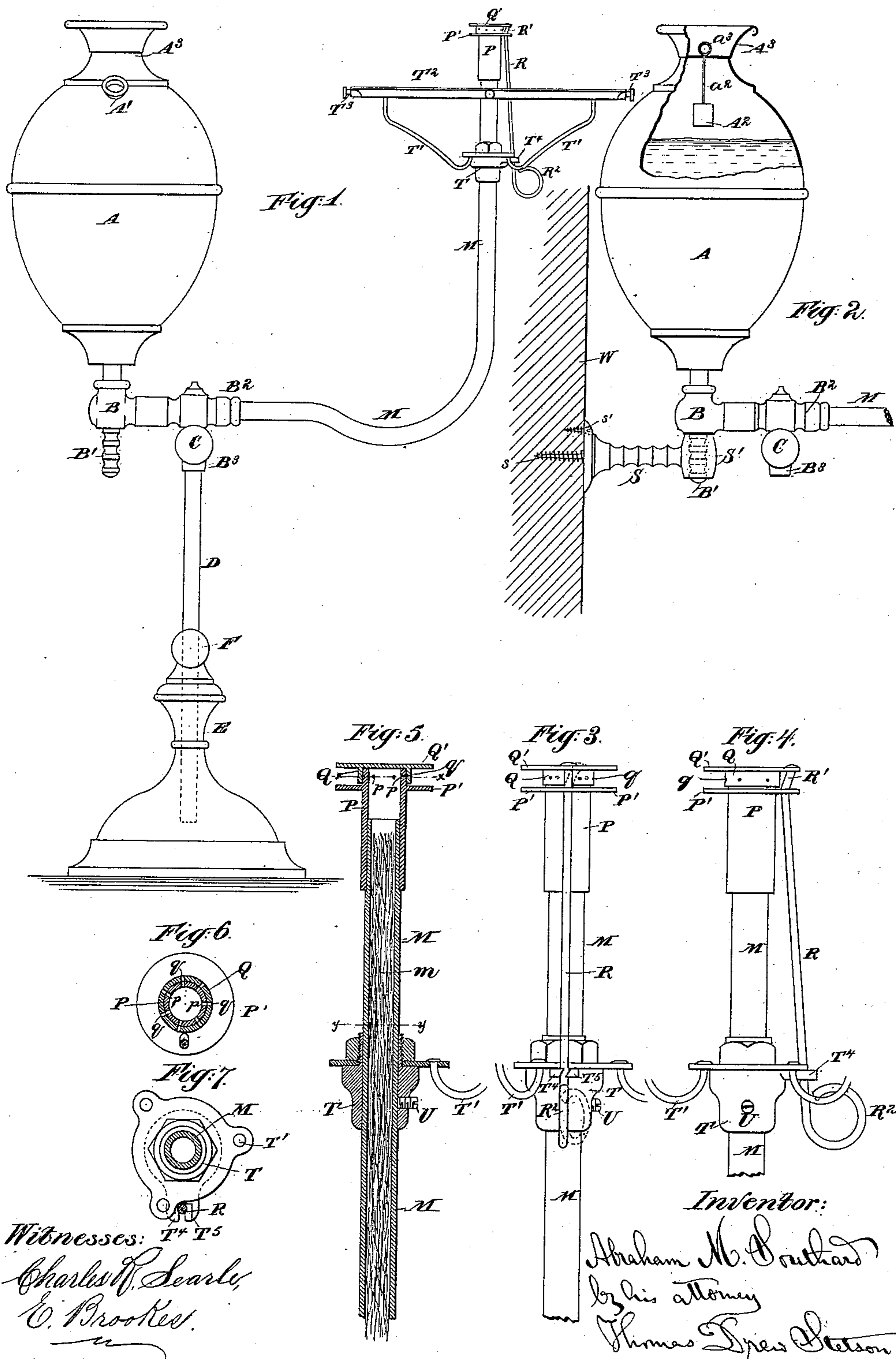


(No Model.)

A. M. SOUTHARD.
VAPOR BURNING LAMP.

No. 333,354.

Patented Dec. 29, 1885.



UNITED STATES PATENT OFFICE.

ABRAHAM M. SOUTHARD, OF DENVER, COLORADO, ASSIGNOR TO THE
SOUTHARD PORTABLE GAS COMPANY, OF SAME PLACE.

VAPOR-BURNING LAMP.

SPECIFICATION forming part of Letters Patent No. 333,354, dated December 29, 1885.

Application filed April 3, 1885. Serial No. 161,137. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM M. SOUTHARD, of Denver, Arapahoe county, Colorado, have invented certain new and useful Improvements in Vapor-Burning Lamps, of which the following is a specification.

My improved lamp is adapted for converting light oil into vapor and burning it.

My improvements aid to make the lamp safe, regular, reliable, and easily governed with regard to the amount of vapor used and of light developed.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation of the lamp, showing it arranged on a standard. Fig. 2 is a similar view of a portion partly broken away, showing the lamp mounted on a bracket. Fig. 3 is an elevation. Fig. 4 is a similar view at right angles to Fig. 3. Fig. 5 is a vertical section. Fig. 6 is a cross-section on the line $x x$ in Fig. 5, and Fig. 7 is a cross-section on the line $y y$ in Fig. 5.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the body of the lamp. The base of A connects by a short vertical tube with a hollow socket-casting, B, certain portions of which will be designated, when necessary, by additional marks, as B' B^2 .

B' is an arm extending downward directly under the lamp-body. It is formed with swells, as shown, to give an ornamental effect, and is capable of serving as an efficient bearing to support the lamp and its attachments in a socketed bracket, as will appear further on.

C is a pinching-screw, which is tapped through the vertical socket B^3 and serves to set it firmly on an upright cylindrical rod, D, which latter is fixed at adjustable heights on a stand, E, by means of a pinching-screw, F. The casting B is tapped at the end B^2 , and receives a screw-thread of a curved tube, M, which incloses a fibrous filling, m . This has in my experiments been a loosely-braided soft cord of cotton or other fiber, such as is some-

times used for wicking in lamps having small round tubes. The curvature of this tube allows this material, which I will designate as "wick," to be conveniently inserted and withdrawn, when necessary, from either end. The upper end of this tube M and its contained wick m are higher than the top of the main body of A. The lamp is filled at intervals with a volatile hydrocarbon liquid. In my experiments I have used a light product of the distillation of petroleum, commonly known in the trade as "gasoline." I will so describe it. The gasoline fills the main body of B and the lower portion of the curved tube M, and saturates the whole of the wick, being drawn up in the fibrous filling quite to the top of M. The wick m does not protrude from the tube, but, raising the gasoline by capillary attraction, presents it to the heat which obtains in the metal at the upper end of M and produces a combustible vapor. I provide small orifices for the escape of the vapor with convenient means for simultaneously controlling their area. When the lamp-body A is filled, the wick is capable of presenting more of the fluid to the burner than is required. Under such conditions the heat generating a surplus of vapor will force down the level of the fluid in the tube M. There is practically little difference in the working of the burner whether the lamp-body A is filled or nearly empty; but it is important to provide means for regulating the slight differences which are due to this cause, and to allow the user of the lamp to command at will the full power of the burner or as much less as he may feel disposed to use. To this end I provide the upper end of the tube M with a fixed cap, P, having a flange, P' , and five or other desired convenient number of small lateral apertures, p . Exterior to this perforated portion of M is a close-fitting ring, Q, having a flange, Q' , and provided with apertures q , corresponding to the apertures p . The ring Q is capable of turning on the cap P, so as, when the apertures p and q coincide, to provide liberal apertures for the outflow of vapor.

R is a controlling-shaft, which stands nearly parallel to the upper portion of the curved

tube M. I will term it simply an "upright shaft." It extends through a hole in the flange P', and also through a hole a little farther out from the center under the flange Q'. It is provided at the upper end with a bent end, R', which bent end engages with the flange Q', serving as a short arm or lever to communicate the turning motion of R to the ring Q, and when the shaft R is turned causes the ring Q to turn to a less but effective extent. The lower end of R is provided with a convenient handle, R².

T is a hub or boss capable of being moved up and down on the tube M, and secured in the desired position by a pinching-screw, U. The hub T is equipped with arms T', which connect to a shade-holder, T², provided with the ordinary screws, T³, by which a shade may be confined or released. The lower end of the upright shaft R is steadied between two short arms, T⁴ T⁵, on the hub or boss T. The inner faces of these arms are beveled at their outer ends, as indicated in Figs. 3 and 7, and farther inward are finished, so as to loosely embrace the shaft R and form a bearing in which it may be turned to the right and left. This steadies the lower end of the shaft while allowing it to be removed and inserted when required on simply throwing it into an inclined position corresponding to the inclined inner faces of the arms T⁴ T⁵. It will be understood that the socket B³ is entirely out of connection with the passage containing the gasoline, and that the branch simply serves as a socket by which the lamp may be supported.

S is a bracket supported upon the wall W by screws s s'. By slackening the screws C the parts above may be disconnected from the rod D. The bracket S is formed with a socket, S', adapted to receive the arm B', and thereby to firmly support the body A and its attachments, allowing the tube M and its attachments to be turned in various directions by the partial revolving of the bearing-arm B' in the socket S'. Thus the lamp may serve either as a bracket-lamp or a student-lamp. In the latter use it is adjusted up and down by raising and lowering the rod D, on which it is supported.

The bracket described forms no part of the invention in this application.

I employ, in combination with this lamp, a peculiar lighting device adapted to conveniently apply the heat for putting the lamp in condition for work.

A' is a filling-aperture provided with a

screw-plug, which performs its obvious functions.

A² is a float. This may be a thin hollow metallic vessel, or a simple cork may suffice. To it is connected a slender rod, a², having its upper end formed in a ring, a³. This rod or wire a² can move up and down in a sufficient orifice provided in the lamp-top A³. When the lamp is being filled, the ring a³ remains down until the gasoline has nearly filled the lamp-body B. Then the float A² rises and communicates its motion through the wire a² to the ring a³, and serves as a gage to warn the attendant that he shall stop pouring. The top of the lamp A³ carries an ornamental cap, which makes a finish, and protects the ring a³ and the wire a² from mechanical injury, while allowing them to be easily inspected from above in the act of filling.

It will be seen that although I have applied the term "wick" to the fiber m it does not protrude so as to perform the ordinary function of a wick. It raises the gasoline into the vicinity of the upper end of the tube M by capillary attraction in a manner analogous to that of a wick, and it restrains any tendency of the gasoline to pulsate or dash, or rise and sink rapidly in the tube when the lamp is carried or jolted. If the impurities in the gasoline foul the wick or the heat of the burner chars the upper end after a time, the parts may be easily separated and the wick m drawn out, and the charred end may be cut off and the wick reinserted, or a new one substituted.

I claim as my invention—

1. The perforated ring Q q, in combination with the perforated cap P p, flanges P' Q', and bent or cranked operating-shaft R R', combined and arranged to serve relatively to each other and to the tube M and lamp-body A, substantially as herein specified.

2. The plate T, with lugs T⁴ T⁵, and arms T' T', in combination with the tube M, cap P P' with the lamp-body A, arranged for joint operation, ring Q Q' q, and adjusting-shaft R R', and substantially as herein specified.

In testimony whereof I have hereunto set my hand, at Chicago, Cook county, Illinois, this 17th day of March, 1885, in the presence of two subscribing witnesses.

ABRAHAM M. SOUTHARD.

Witnesses:

E. M. STANTON,
W. C. JONES.