(No Model.) 2 Sheets—Sheet 1.

H. FRASCH.

OIL LAMP.

No. 340,711. Patented Apr. 27, 1886.

Fig. 7.

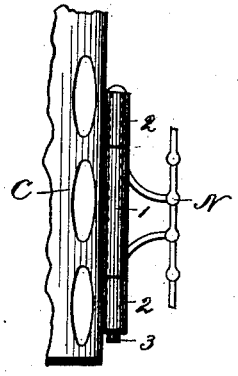


Fig. 1.

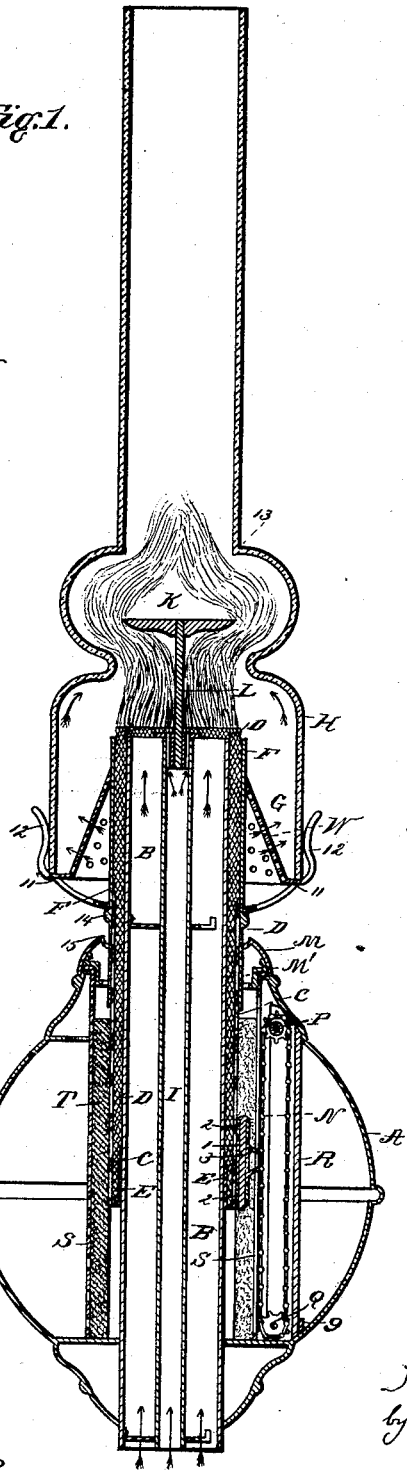


Fig. 3.

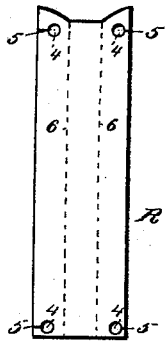
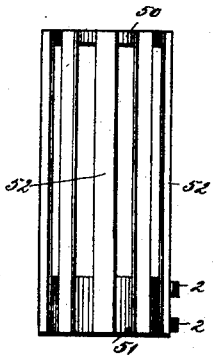


Fig. 4.



Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

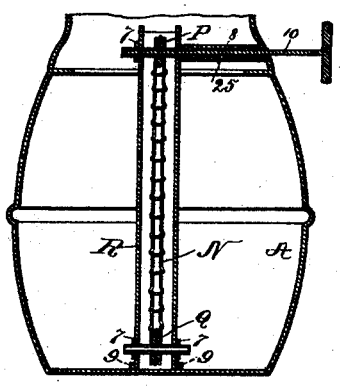


Fig. 5.

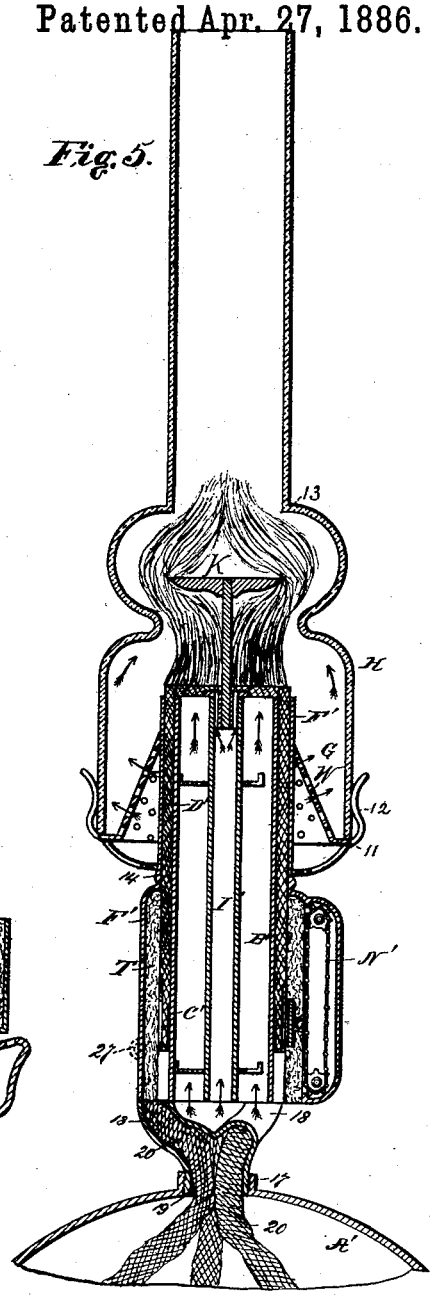
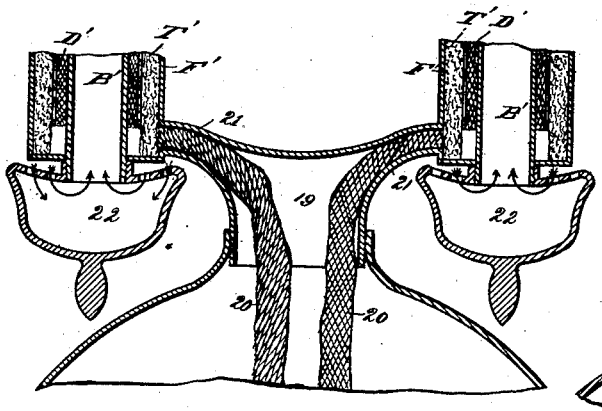


Fig. 6.



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UNITED STATES PATENT OFFICE.

HERMAN FRASCH, OF LONDON, ONTARIO, CANADA.

OIL-LAMP.

SPECIFICATION forming part of Letters Patent No. 340,711, dated April 27, 1886.

Application filed October 14, 1885. Serial No. 179,837. (No model.)

To all whom it may concern:

Be it known that I, HERMAN FRASCH, a citizen of the United States, residing at London, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Oil-Lamps, of which the following specification is a full, clear, and exact description.

This invention relates more particularly to lamps having a central draft or opening through which air is admitted to the inside of the flame, although it is not wholly limited to such lamps.

The invention comprises, first, a new mechanism for feeding the wick, of which mechanism the essential elements are a wick-holder, an endless chain for raising and lowering the same, and means whereby the wick-holder is detachably connected with said chain, so that it can be disconnected when desired to insert a new wick or for other purpose; second, a special construction of the wick-raising mechanism, so that the rod for operating the same can be inserted after the lamp has been polished, and thus not interfere with the polishing operation, and also certain special constructions, combinations, and arrangements of parts, as hereinafter explained.

The following is a description of what is considered the best mode of applying the principle of the invention, reference being had to Figures 1, 2, and 3 of the accompanying drawings, in which—

Fig. 1 is a central vertical section of a lamp embodying the invention; Fig. 2, a partial view of the same in section in a plane at right angles to that of Fig. 1; Fig. 3, a detail view; Fig. 4, a view of a modified form of wick-holder; Fig. 5, a central vertical section of a modified form of lamp embodying the invention or parts thereof, and Fig. 6 a partial view of another modification. Fig. 7 is a detail view in elevation, showing the means for connecting the wick-holder with the endless chain.

Referring to Figs. 1, 2, and 3, A is the bowl of the lamp, or oil-reservoir, of any ordinary or suitable construction. It may be supported in any known or suitable way. The tube B, open at both ends, passes entirely through the bowl or reservoir, and extends above the top of the same. This tube forms a guide to the wick-holder C, which surrounds the tube, and is moved up and down over the same. The wick D is placed on the inside of the holder, and is retained therein by the ring E, which is slipped inside the wick and clamps it near its lower edge against the surrounding wick-holder. The upper projecting portion of the tube B is surrounded by the short tube F, so as to leave an annular space between for the wick to pass. The chimney holder or basket G surrounds the outer tube, F, and supports the chimney H.

Inside the tube B is a smaller tube, I, which serves as a holder for the button K, the latter being soldered to the upper end of a rod, L, whose lower end is fastened in a plug which fits into the tube I. There are grooves inside of the plug, so that air passing through the tubes I can there escape into the flame. The principal air-supply is furnished through the tube B.

So far there is nothing substantially new in the lamp except the grooved plug. Ordinarily, however, the opening in the top of the bowl or reservoir A is of the same diameter as the tube F, and the latter is soldered to the bowl, or permanently affixed thereto.

It is customary to provide a side opening for filling. In the lamp shown the opening is of greater diameter than the tube F, and the latter is provided with a supporting-collar, M, and screw-ring M', by which it is detachably secured to the lamp-bowl. The separate opening for filling is or may be dispensed with. The lamp can readily be filled through the opening around tube B, and there is no danger of running the oil over, since its level can be seen.

The wick-holder C is connected with the endless chain N, which travels over star or sprocket wheels P and Q at the top and bottom of the bowl A, respectively. The connection between the wick-holder and the endless chain is, as shown, made by a perforated projection, 1, on the endless chain, two perforated lugs, 2, on the wick-holder, and a pin, 3, which passes through the lugs and projection; but this precise form of connection is not essential. The pin 3 can be removed at will, in order to detach the wick-holder for inserting a new wick. The endless chain N is placed in a trough-shaped piece of metal, R, which is

fastened at top and bottom to the lamp-bowl, and in which are formed the bearings for the sprocket-wheels.

To form the trough N a piece of metal of suitable size (see Fig. 3) is perforated at the points marked 4, and the metal between each perforation and the edge is slit, as shown at 5. The metal is bent on the broken lines 6. After it is bent the journals of the sprocket-wheels (the endless chain having been placed over them) are inserted in the perforations 4. This is done by turning aside the metal on either side of each slit 5 and then returning it when the journals are in place. A washer, 7, (see Fig. 2,) fits over each journal, and is soldered to the trough R, except for one of the upper journals, where its place is supplied by the tube S. This tube is soldered to the trough, and also to the wall of the lamp bowl. It and the washers form the bearings for the sprocket-wheels. The trough fits in a socket, 9, at the bottom, and at the top is soldered to the lamp-bowl or oil-reservoir. The journal 25 of the upper sprocket-wheel is perforated to receive the rod 10 (provided with a milled wheel at its outer end) for turning the said wheel, and thereby revolving the endless chain, so as to raise or lower the wick-holder and wick, according to the direction in which it is revolved. The rod is not inserted until after the lamp has been nickel-plated and polished, so that during polishing there is no projection to interfere with that operation, and after it nothing remains to be done which cannot easily be performed without injuring the polish.

One great advantage of the endless-chain mechanism over the mechanisms heretofore used in this class of lamps for raising and lowering a wick is that it enables a much longer portion of the wick to be fed to the burner.

Surrounding the wick-holder is a cylinder, S, which is preferably of perforated metal, although the perforations are not essential. This cylinder is lined with felt or other absorbent material, T, which presses against the outside of the wick-holder, and serves to supply oil to the wick when the latter is above the level of the oil in the reservoir. The interposed wick-holder does not prevent the transmission of oil by capillary attraction from the felt to the wick, because they come in contact through the large perforations or openings which are made or left in the sides of the wick-holder. The felt being of greater capillary capacity than the wick, also enables oils to be drawn up to the burner which would not be drawn up by the wick alone.

The openings in the wick-holder, as shown in Fig. 1, consist of perforations or slots in a piece of metal which is bent into a cylindrical form; but they may be formed in other ways. Thus, for example, spaces may be left between pieces or strips fastened together to compose the wick-holder, as shown in Fig. 4, in which the wick-holder is formed of two rings, 50 51, connected by strips 52, soldered to said rings.

The cylinder S, as shown, depends from the screw-ring at top of the lamp-bowl. It is slotted for the passage of the projection 1 on the endless chain N.

The chimney holder or basket G is provided with a ledge, 11, and spring-fingers 12, for supporting the chimney, as usual.

The chimney H, preferably employed, is of the peculiar form shown—that is to say, it is contracted above and below the flame-spreader or button. This is not a new form, but it is not a common one, and has never been applied to a lamp with a central draft-tube. It is liable to be melted at and below the contraction 13 above the flame. To prevent this the chimney-holder is provided with the perforated cap or deflector W inside the chimney. This cap is arranged opposite the inside wall of the chimney, so that the draft up the chimney induces jets of air through the perforations and causes them to play against said wall. The air on rising tends to hug this wall. Thus the temperature of the chimney is kept low. Preferably glass of as good conductivity as possible (lead glass, for example) is employed in the chimney.

The chimney-holder G rest upon the bead 14 on the tube F. Below it a gutter, 15, is formed in the collar M′, and there are perforations in the bottom of this gutter to allow any oil which may collect therein to return to the bowl or oil-reservoir A.

In Fig. 5 the bowl or oil-reservoir A′ is provided with the usual threaded socket, 17, and the burner, including the means for holding and for raising and lowering the wick, is separate from the lamp-bowl. Hollow branching arms 18 extend from the screw 19, which fits the socket 17, and support the burner-tubes B′ and F′. The tube F′ is lined to within a short distance of the top with felt or absorbent material T′, which is sewed or otherwise secured to wicking 20, which passes through the hollow arms 18 and screw 19 into the bowl A′. The wicking 20 draws up the oil from the oil-reservoir and delivers it to the felt T′, which in turn delivers it to the wick D′. This wick is held in the wick-holder C′, which is connected with the endless chains N′, running over sprocket-wheels journaled in or on the tube F′.

The tube for holding the button or flame-spreader is shown at I′.

The chimney-holder and chimney shown are lettered the same as in Fig. 1.

The height of the burner could be lessened by supporting the chimney-holder by a bead lower down on the tube F′, as indicated in dotted lines at 27.

In Fig. 6 an arrrangement is shown whereby several burners can be supplied from a common reservoir or lamp. Hollow arms 21 project from the screw 19, and each supports a burner substantially like that shown in Fig. 5. The outer end of the arm is fastened in the side of the tube F′, which is lined with felt supplied with oil by the wicking 20. The in-

ner burner or draft-tube, B′, is extended below the other, and carries a cup, 22, as in the common student's lamp.

Modifications may be made in details without departing from the spirit of the invention, and parts of the invention may be used separately.

Having now described the invention and the manner of carrying the same into effect, what I claim, and desire to secure by Letters Patent, is—

1. In combination with a wick-holder and an endless chain for raising and lowering the same, means, substantially such as the perforated projection and lugs and the removable connecting-pin described, whereby the wick-holder is detachably connected with said chain, as set forth.

2. The combination, with the central draft-tube, the endless chain, and the wick-holder detachably connected with said chain, of the outer tube surrounding the draft-tube and wick and detachably connected with its support, so that the outer tube being removed the wick-holder may be detached from the chain and be removed also, substantially as described.

3. The combination, with the wick and wick-holder, of the stationary absorbent or capillary body outside of and around said wick, having a vertical slot on one side, and the wick-raising mechanism connected with the wick-holder through said slot, substantially as described.

4. The combination, in a wick-raising mechanism, of a wheel, a perforated journal for said wheel, a bearing for said journal open at the end to leave the said journal accessible, and an operating-rod fixed in said journal for turning said wheel, the accessibility of the journal permitting the operating-rod to be inserted in said journal after the other parts have been assembled, substantially as described.

5. The combination, with the wheel of a wick lowering and raising mechanism, to which the power is applied, and the lamp-bowl or oil-reservoir, of a perforated journal, and a stationary tube open at the ends and surrounding said journal and extending to the side of the lamp-bowl or oil-reservoir, with which it makes a close joint, the perforation being lengthwise of said journal to receive a rod for revolving said wheel, substantially as described.

6. The combination, with the bowl or oil-reservoir of a lamp, of the endless chain therein, the sprocket-wheels, the trough which incloses said chain and in which the wheels are journaled, and the operating-rod, one of said sprocket-wheels having a tubular journal, and the operating-rod fitting in said journal, and the said rod, wheels, and chain forming a wick raising and lowering mechanism, substantially as described.

7. The combination, in a lamp, of the following elements: a bowl or oil-reservoir, a tube passing through and projecting above the same, a wick-holder surrounding said tube and sliding upon the same, the slotted cylinder depending from a ring at the top of the bowl or reservoir, the exterior tube surrounding the aforesaid tube detachably connected with the bowl or reservoir and supporting the chimney holder or basket, and the endless chain provided with a projection extending through the slot in the said cylinder and detachably connected with the wick-holder, substantially as described.

8. In a lamp, the combination, with the draft-tube and the button for spreading the flame, of the small tube, the grooved plug in the end of the tube, and the rod fixed in said plug and supporting the button, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HERMAN FRASCH.

Witnesses:
C. J. HEDRICK,
PHILIP MAURO.