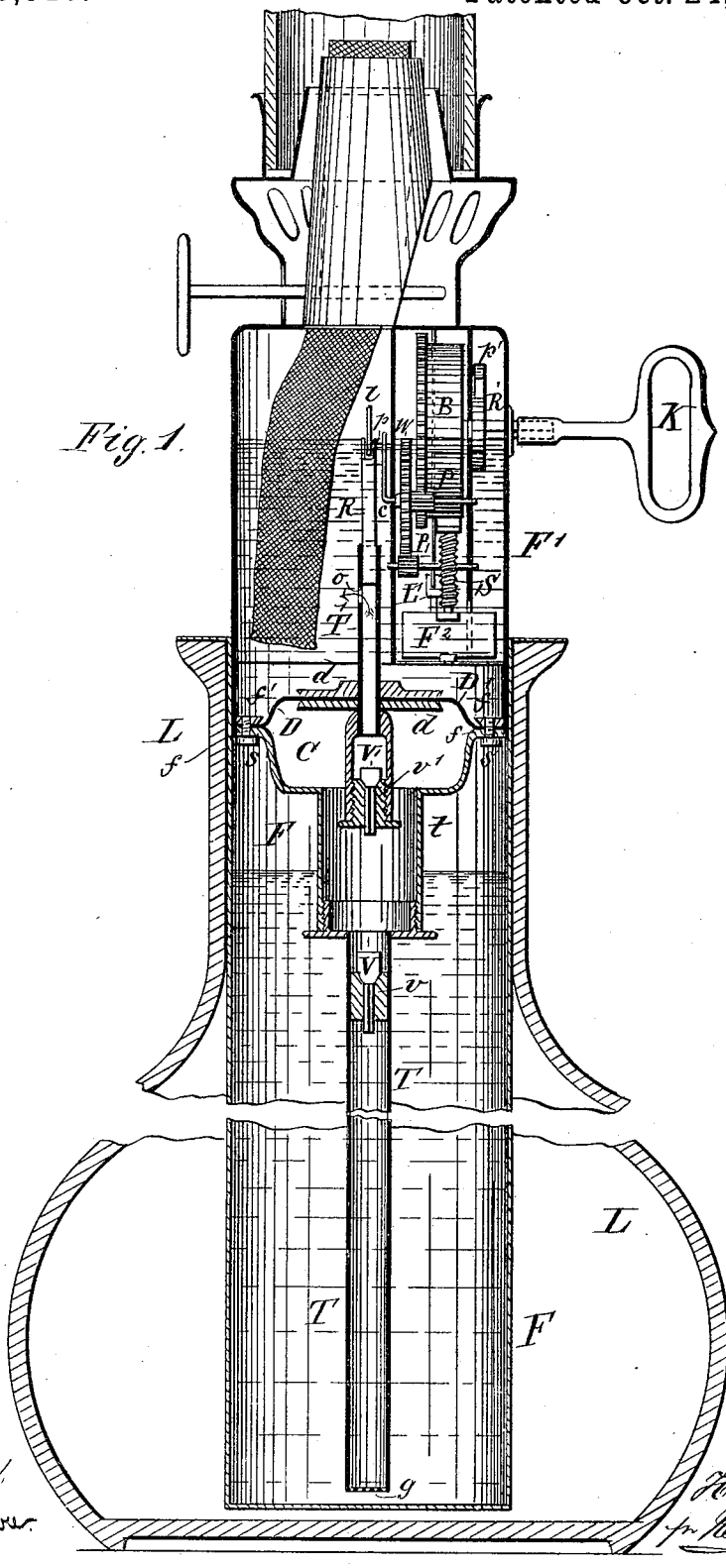
(No Model.) 2 Sheets—Sheet 1.

H. PEIGNIET.

LAMP.

No. 266,510. Patented Oct. 24, 1882.

Fig. 1.



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

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Fig. 2

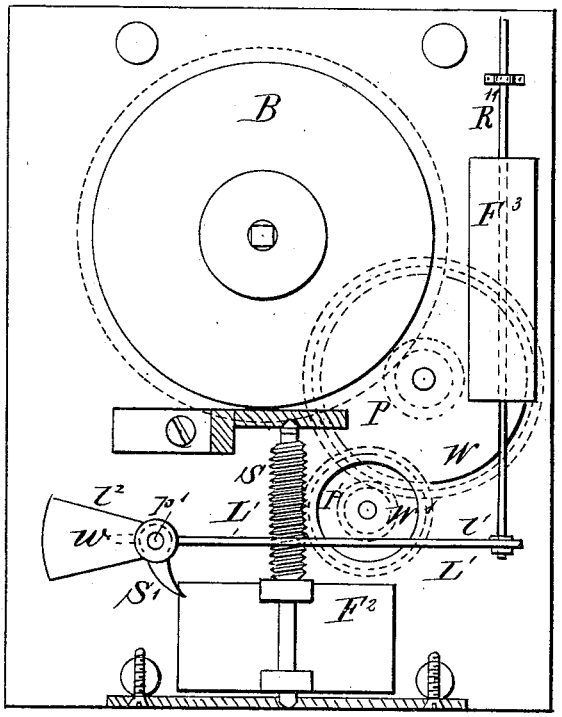


Fig. 3.

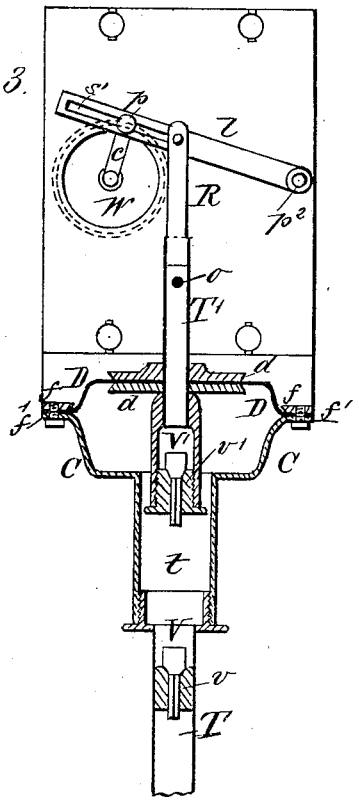
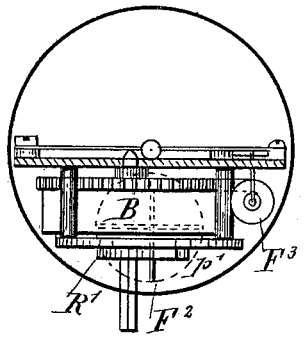


Fig. 4



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UNITED STATES PATENT OFFICE.

HENRY PEIGNIET, OF PARIS, FRANCE.

LAMP.

SPECIFICATION forming part of Letters Patent No. 266,510, dated October 24, 1882.

Application filed August 14, 1882. (No model.) Patented in France October 11, 1881, No. 145,260; in England February 9, 1882, No. 630, and in Belgium May 19, 1882, No. 57,962.

To all whom it may concern:

Be it known that I, HENRY PEIGNIET, a citizen of France, residing at Paris, in the Department of the Seine, have invented certain new and useful Improvements in Lamps Fed with Petroleum and other Mineral Oils; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the acompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of lamps in which hydrocarbon or analogous essential or volatile oils are burned. All lamps of this class as heretofore constructed, excepting those which embody the oil-feeding principle of the so-called "student-lamp," are dangerous by reason of the proximity of the oil-fount to the burner, due to the fact that capillary attraction extends over a comparatively small surface of the wick. The necessity of this constructive feature is a source of danger in itself, inasmuch as such lamps are what is commonly called "top-heavy," or, in other words, their center of gravity is removed from their base to a point some distance above such base, and renders them liable to be upset. Such a lamp could necessarily not maintain its upright position unless provision is made to counterbalance to a greater or less extent this displacement of the center of gravity. This, however, tends to make such lamps more or less clumsy and very heavy, without entirely obviating their liability of being readily upset—a disadvantage from which even the so-called "student-lamp" is not entirely free.

The object of my invention is to so construct a lamp of this class as to entirely obviate these dangerous and disadvantageous constructive features; and it consists, first, in the combination, in a lamp for burning hydrocarbon or analogous essential or volatile oils, of a main oil reservoir or fount, a superposed small auxiliary reservoir or fount from which the wick is fed, and means for transferring the oil from the former to the latter fount whenever this is required; secondly, in a lamp of the class described, the combination of a main oil-fount, a superposed small oil-fount from which the wick is fed, and means for automatically transferring the oil from the former to the latter fount whenever the level of the oil in said smaller fount falls below a certain point; thirdly, in certain details of construction, all as hereinafter more fully described.

Inasmuch as a lamp in which are combined a main oil-fount, a smaller auxiliary fount located in proximity to the wick-tube, or within which such tube may plunge, and means for transferring the oil from the main to the auxiliary reservoir whenever this is required, comprehends my invention, broadly, it is obvious that various means may be employed to carry it into practical effect—for instance, providing a pump operated by a crank or a key from the outside of the lamp, whereby oil may be pumped from the main into the auxiliary fount, would answer the purposes for which this invention is designed, yet in view of the limited capacity of the auxiliary reservoir the replenishing thereof would require attention at short intervals, to obviate which I propose to so construct the pump as to be operated automatically whenever the level of the oil within the auxiliary fount sinks to a given point. To this end various means may also be employed—as, for instance, a float may be so connected with a train of clock-gearing as to set the same into operation as soon as such float sinks to a given level, and said train of gearing may be so connected with a pump-rod as to operate the pump and feed the auxiliary reservoir until the float again rises to a certain level to stop the operating-gearing or throw the pump-rod out of gear or out of engagement with such train of gearing.

In carrying out my invention I preferably employ a double-acting pump, and in the accompanying drawings I have illustrated one of the many methods by which the invention may be made practicable, and in these drawings—

Figure 1 represents in vertical section a lamp constructed according to my invention. Fig. 2 is a vertical section of the auxiliary reservoir, taken at right angles to that of Fig. 1 and from the side of the winding up mechanism of the train of gearing that actuates the pump. Fig. 3 is vertical section of the double-

acting pump, and Fig. 4 is a transverse section of the auxiliary reservoir, showing the train of gearing in plan view.

In the above figures of drawings like letters of reference are employed to indicate like parts.

L is the body of the lamp, which may be of any desired construction and of any suitable material. It may in itself constitute the main oil-fount, or may contain said fount within it. As shown in Fig. 1, a main tubular fount, F, is suspended within the body L of the lamp, and into its upper end is fitted, in any convenient or preferred manner, a smaller auxiliary fount, F′, so connected with the main fount as to be conveniently removed for filling the latter whenever required. If desired, the two founts may be permanently connected with each other, and suitable provision made for replenishing the oil in the main fount. I prefer, however, to make these founts detachable from each other, as it affords the necessary facilities for inspecting and cleaning or repairing the pump or its operating mechanism as well as the founts. A pump the operating-rod of which carries a piston of any usual or preferred and suitable construction may be employed; but it is well known that such pumps require a comparatively great amount of power for operating them, and when operated automatically it would perhaps be difficult to locate a mechanism of sufficient power within the limited space afforded in the auxiliary fount of a lamp. In view of this I prefer to employ a diaphragm-plunger, as shown, the pump being constructed as follow:

C is a cup, provided with an annular flange, *f*, and a short tube, *t*, depending from the center of said cup. To the end of this tube is screwed a smaller suction-tube, T, that extends nearly to the bottom of the fount F, and which may have its lower end closed by a wire-gauze, *g*, or a perforated diaphragm, to prevent access of any sediment from the oil to the interior of said tube; or the latter may be open at both ends. The tube T contains a valve-seat, *v*, and a suction-valve, V, which may be located upon any point of its length. I preferably locate the valve V as close as possible to the upper end of tube T, where it is screwed to tube *t*, so as to afford ready access thereto. Near its lower end the auxiliary fount F′ is provided with a flange, *f′*, and between this flange and the flange *f* of the cup C is secured, preferably by means of screws *s*, a flexible diaphragm, D, of any suitable material impenetrable to and not affected by the oil used, such as bladder or gold-beater's skin or other analogous material. This diaphragm is further clamped between two rigid plates or diaphragms, *d d*, of metal or other suitable material, secured upon a pipe or tube, T′, that carries at its lower end a valve-casing having a valve-seat, *v′*, and a valve, V′, similar to the valve in tube T. As will be seen, the cup C and diaphragm D constitute the partition between the two founts F and F′, as well as the pump-barrel and plunger, said tube T′ being provided with a discharge-orifice, *o*. It is evident that by reciprocating the tube T′ the valve V will be lifted from its seat and the oil from fount F will be drawn into the cup C on the upward movement of the said tube, and on its downward movement the said valve V will be forced into its seat and the valve V′ lifted, and the oil in cup C will be forced through tube T′ and its discharge-orifice *o* into the wick-fount F′. This receiprocating movement may be imparted to the tube T′ by hand, and this would simply require a shaft carrying at one end a crank or eccentric, to which the tube T′ is connected, and at the other any suitable means for rotating said shaft, such as a crank or key. To replenish the fount F′ by operating the pump by hand would, however, require constant attention, and in order to maintain a uniform light a level-indicator would be required, so that the quantity of oil in F′ may be ascertained at any time without its being indicated by the diminution of the flame; or the fount F′ would have to be constructed either partly or wholly of glass. To avoid these difficulties I operate the pump automatically in the following manner: The tube T′ is connected with a rod, R, that is pivoted upon a lever, *l*, at or near its center. The lever at one end is pivoted upon a stud or pin, p^2, attached to the fount F′, and at its opposite end said lever *l* is connected to the wrist-pin *p* of a crank, *c*, said wrist-pin operating within a slot, *s′*, formed in the free end of the lever *l*. The crank *c* is rigidly mounted upon the shaft of a gear-wheel, W, which shaft also carries a pinion, P, that meshes with the toothed rim of a spring motor or barrel, B, the shaft of which barrel carries the usual ratchet, R′, and spring or weighted pawl *p′*, for obvious purposes. The spring of the motor or barrel is wound up from the outside of the lamp by a key, K, in the usual manner. The gear-wheel W meshes with a pinion, P′, whose shaft carries a worm-wheel, W′, that meshes with a worm-spindle, S, which latter carries at its foot a fly, F^2.

F^3 is a float, either of cork or other suitable material, mounted upon a rod, R″, that slides in and is guided by suitable brackets, and is connected at its lower end with the outer end of the long arm, *l′*, of a lever, L′, pivoted at *p′* upon a pin or stud. The short arm, l^2, of the lever L′ carries a counterbalancing-weight, *w*, and a pawl or stop, S′, which, when the float is in a certain position, engages one of the leaves or blades of the fly F^2, as shown in Fig. 2, to arrest the movement of the train of gearing above described.

To the upper end of the auxiliary fount F′ is secured the wick-tube and its appurtenances, of any preferred or usual construction, which need not be here particularly described, as they form no part of this invention, except so far as the combination of the wick-tube with the auxiliary fount and the oil-feeding mechanism is concerned.

The float F^3 and its rod being adjusted rela-

tively to the lever L′ and its stop S′, so as to disengage the latter from the fly F^2 when the float has fallen to a given level with the oil and again engage said fly when said float has been raised to a given level by the oil, as the latter is absorbed by the wick to feed the flame the float F^3 and its rod R″ sink and gradually tilt the lever L′ until the stop is disengaged from the fly F^2. This releases the train of gearing, which at once actuates the pumping devices to pump oil into the fount F′ until the oil pumped in has raised the float and its rod sufficiently high to tilt the lever L′ in a reverse direction and into a position to cause the stop S′ to engage the fly F^2 and arrest the movement of the train of gearing. In this manner I provide means whereby the fount F′ may be supplied with oil from the fount F for a comparatively long time, since a spring capable of operating the pump for a considerable length of time may be inclosed in a small barrel, and whereby the pump-operating mechanism requires winding at comparatively long intervals only.

Although I prefer to employ the pump and pump operating devices above described on account of their simplicity of construction and ease of operation, I do not wish to limit myself to their exclusive use, as other constructions of pump and pump-operating mechanism may be employed without departing from the nature of my invention.

What I claim is—

1. A lamp in which are combined a main oil-fount, an auxiliary or wick fount, a pump for transferring the oil from the former to the latter, a spring-operated train of gearing for actuating said pump, and appliances whereby said operating-gearing is automatically thrown out of or into operation when the oil in the auxiliary reservoir falls or rises to given levels, substantially as and for the purposes specified.

2. In a lamp of the class specified, the combination of a main oil-fount, a wick-tube, an auxiliary oil-fount interposed between said wick-tube and main oil-fount, a pump, a spring-motor, and operating-gearing to operate said pump, a float, and a lever and stop connected with and operated from said float, and arranged to automatically engage or release the pump-operating mechanism as the float rises or falls with the oil in said auxiliary fount, as set forth.

3. In a lamp of the class specified, a main oil-fount, a wick-tube, an auxiliary oil-fount connected with said wick-tube, and a pump-plunger constructed to form the partition between the two founts, as described.

4. In a lamp of the class specified, a main oil-fount, a wick-tube, an auxiliary oil-fount connected with said wick-tube, and a diaphragm pump-plunger carrying a valve, and constructed to form a flexible partition between the main and auxiliary founts, as described.

5. The combination, with the founts F F′, of the pump composed of the plunger-tube T′, carrying a valve, the flexible diaphragm D, the cup C, and tube T, carrying a valve also, and arranged for co-operation as described.

6. The combination, with the founts F F′ and a pump and its operating-lever, of the spring-motor B, the gear-wheel W, pinions P P′, worm-wheel W′, worm S, carrying the fly F^2, a stop that is normally in engagement with said fly, and appliances to automatically release the stop from the fly and set the pump in operation, as described, for the purpose specified.

7. The combination, with the founts F F′ and the plunger of a pump, of the rod R, slotted lever *l*, crank *c*, gear-wheel W, pinions P P′, worm-wheel W′, worm-spindle S, carrying a fly, a stop normally engaged with said fly, a spring-motor, and a float arranged to automatically release the fly and set the pump in operation, as and for the purposes set forth.

8. In oil-feeding devices of a lamp, the combination, with the fly of the train of feed-operating gear, of the float F^3, its rod R″, the lever L′, and the stop or pawl S′, all constructed and arranged for co-operation substantially as described.

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

HENRY PEIGNIET.

Witnesses:

ROBT. M. HOOPER,

JOSEPH S. J. EATON.