(No Model.)

R. L. DORAN.

SYSTEM OF LIGHTING FOR HYDROCARBON LAMPS.

No. 591,622. Patented Oct. 12, 1897.

Fig. 1

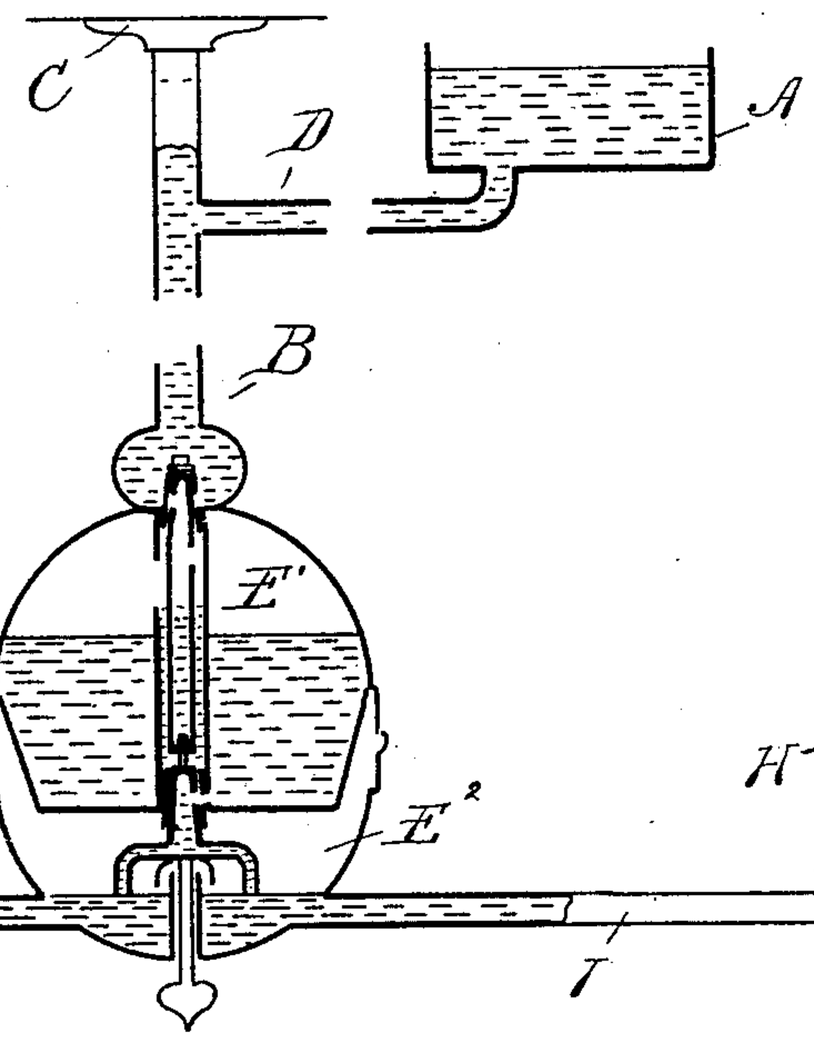


Fig. 2

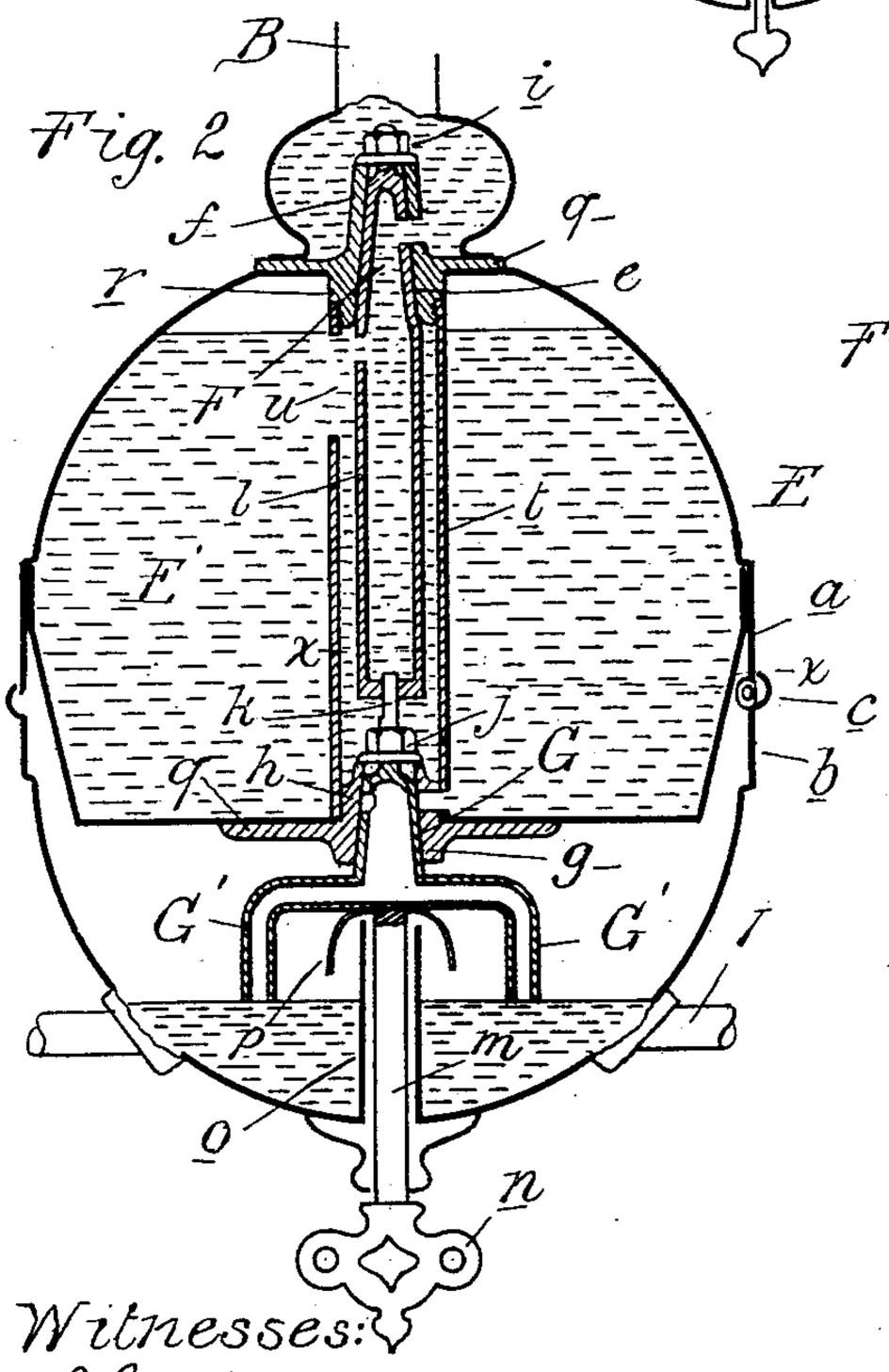
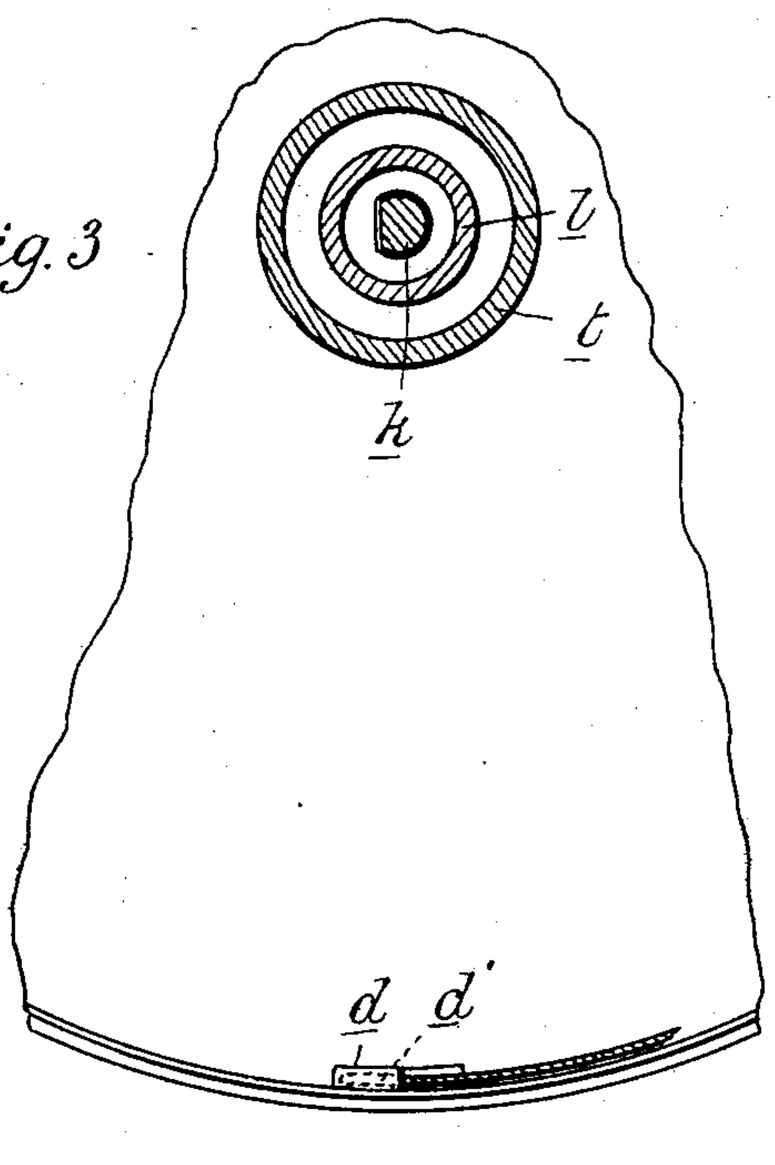


Fig. 3



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UNITED STATES PATENT OFFICE.

ROBERT L. DORAN, OF BAY CITY, MICHIGAN, ASSIGNOR OF ONE-HALF TO THOMAS E. WEBSTER, OF SAME PLACE.

SYSTEM OF LIGHTING FOR HYDROCARBON-LAMPS.

SPECIFICATION forming part of Letters Patent No. 591,622, dated October 12, 1897.

Application filed November 24, 1896. Serial No. 613,252. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. DORAN, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Systems of Lighting for Hydrocarbon-Lamps, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates more specifically to means for supplying a lamp or system of lamps with oil; and it consists in the peculiar construction of a self-flowing oil-fountain from which the burners are normally supplied and of an elevated storage-tank from which said oil-fountain is supplied at will under the control of valves of peculiar construction, all arranged with particular reference to making the whole device absolutely safe and free from danger, while at the same time it is exceedingly simple and convenient.

In the drawings, Figure 1 is a diagrammatic vertical central section of a system of hydrocarbon-lamps to which my invention is applied and with the parts shown in the position as in the normal operation. Fig. 2 represents a portion of Fig. 1, on an enlarged scale, with the parts represented as in the act of filling the oil-fountain. Fig. 3 is a horizontal section on line *x x*, Fig. 2.

A is a storage-tank placed anywhere in the building where it is most convenient, the only requirement being that it be at a higher elevation than the lamps which it is intended to supply.

B is a hollow hanger, preferably made of tubing and securely fastened at its upper end to the ceiling of the room in any convenient manner, such as by means of a rosette or centerpiece C. The upper end of this hanger communicates with the atmosphere and extends above the level of the oil in the storage-tank at all times.

D is a discharge-pipe leading from the storage-tank into the hanger. The pipe is commonly carried near the ceiling of the room.

E is the oil-fountain, consisting of the upper or primary reservoir E′ and the secondary reservoir E^2, placed beneath. These two reservoirs are preferably united and made to form complementary parts to form in appearance a single vessel, which in the drawings is shown to be of spherical form. To this end the upper reservoir E′ is provided with a peripheral depending skirt *a*, while the lower reservoir is provided with a rim *b*, around the top, of corresponding diameter, which rim at the extreme edge is provided with the bead *c*, all so arranged as to bring the rim and skirt in juxtaposition for joining the two together by means of suitable locking devices, such as shown in Fig. 3, wherein *d* is a socket on the upper edge of the rim and *d′* a pin on the lower edge of the skirt, the two being adapted to engage into each other when the skirt and rim are fitted upon each other and suitably turned.

The upper reservoir E′ is secured to the lower end of the hanger and is adapted to communicate therewith through the valve-controlled passage F, which passage opens into the reservoir E′ at or near the top thereof, all so arranged that the oil from the storage-tank may flow through the hanger B and passage F into the reservoir E′ and fill the same nearly but not quite to the top, thereby forming an air-trap in the reservoir above the mouth of said passage when it is full.

The upper reservoir E′ is adapted to communicate with the lower reservoir E^2 through a valve-controlled passage G, which passage G terminates into one or more self-regulating nozzles G′, which extend to the level of the oil intended to be maintained in said reservoir for feeding the burners H, which communicate with this reservoir by means of the feed-tubes I, as in the usual construction of this class of lamps.

The passages F and G are so arranged that if one is open the other is closed by reason of having the valves controlling the passages connected for joint operation.

The preferable way which I employ is as follows: The passage F is formed through a hollow valve-plug *e*, which is seated in a conical valve-seat *f*, secured in the top of the reservoir E′, and the valve-passage G is similarly formed through a hollow valve-plug *g*, arranged in axial line with the valve-plug *e* and seated in a conical valve-case *h*, secured in the bottom of the reservoir E′. The valve-plug *e* is held to its seat by an adjusting-nut

and washer *i*, and it extends down in proximity to the lower valve-plug *g*, which is held to its seat by a nut and washer *j*. The lower valve *g* has an extension *k*, which engages with the downward extension *l* by means of a slip-joint connection, as shown in Fig. 3, whereby the turning of one valve-plug will also actuate the other valve-plug. The lower plug-valve *g* is secured to a downwardly-extending stem *m*, which projects through the bottom of the oil-fountain and has a suitable thumb-piece *n*. Inside and surrounding the stem *m* is a tube *o*, which prevents the escape of the oil from the reservoir E^2, and the top of the stem above this tube is provided with a shield or deflector *p*. The feed-tubes I may be of any desired ornamental shape and communicate with the reservoir E^2 below the level of the oil therein and are adapted to maintain the same level of the oil in the burner H, which, as shown in the drawings, are a well-known form of Argand burner as used in connection with self-flowing oil-fountains.

In practice it will be seen that if the valves are adjusted as in Fig. 1 communication is closed from the hanger B into the oil-fountain, while the latter is in free communication with the burner. Thus as the oil is consumed in the burners the surface of the oil in the reservoirs E^2, as soon as it lowers below the mouth of the nozzles G′, will permit air to enter through the passage G into the upper reservoir and permit the displacement of a suitable quantity of oil, thus acting on the principle of the self-flowing oil-fountain. The quantity of oil contained in the upper reservoir E′ is calculated to be sufficient to maintain the burners for the ordinary time of burning the lights, and when the amount is exhausted the attendant turns the thumb-piece *n* so as to reverse the position of the valves to open the passage F and close the passage G. This permits the oil from the storage-tank to flow into the reservoir E′ and fill it to within a short distance of the top. At the same time no oil can flow into the reservoir E^2. While the oil is thus flowing into the reservoir E′, the air displaced therein will escape through the passage F and hanger B and escape through the open top thereof. When the oil-reservoir E′ is filled, the attendant reverses the valve to its normal position, thereby cutting off all further communication between the storage-reservoir and the oil-fountain. Thus my device is very convenient, and it will be seen that it permits still of a more simple operation by using the thumb-piece *n* for extinguishing the burners as well as turning on the supply. Thus if the attendant wishes to extinguish the burners he merely turns the thumb-piece *n* into the position which opens the passage F and closes the passage G, the oil in the lower reservoir being then soon exhausted without renewal will extinguish the burners, while at the same time the reservoir E′ becomes replenished, and this condition may be left to exist until the operator again wants to light the burners the next evening.

The construction and arrangement of the valves present an absolute safeguard from danger, which is a paramount condition to the use of these devices in buildings and which condition has never heretofore been presented by any arrangement which depends upon the automatic operation of float-valves. Further, it will be seen that the hydrostatic pressure of the oil in the storage-tank can have absolutely no effect or influence on the maintenance of the oil-level in the reservoir E^2, and even if the valves should leak the leakage cannot take place to the outside, as both valves are entirely inclosed within the oil-fountain. Moreover, if they are once properly adjusted there is hardly any possibility of their becoming leaky, as both valves can be independently adjusted, and any slight movement or expansion cannot affect the valves by reason of the loose connection between them. Increased stiffness is given to the construction by providing the upper and lower valve-seats with lateral flanges *q*, to which the walls of the reservoir are soldered, and with inwardly-projecting screw-threaded nipples *r*, which are connected by a tube *t*, which has an opening *u* opposite the lower mouth of the passage F. The shield *p* also effectually guards the stem *m* from any oil running down on it.

The valves are reversed by a half-turn, which is made the limit of their movement, and the parts and passages through the valve-plugs are so arranged that one passage is closed before the other opens, and by reason of forming the air-trap in the top of the reservoir E′ the oil will freely flow from it after it has been filled, as this part of the reservoir necessarily contains an under pressure when the filling is completed.

What I claim as my invention is—

1. The combination, in a lamp, of an upper reservoir, a lower reservoir secured thereto, a self-regulating discharge-nozzle from the upper into the lower reservoir, a hollow hanger extending upwardly from the top of the reservoir to the ceiling and provided with an open top and means for securing it to the ceiling, a storage-tank located below the top of said hanger and provided with a discharge connection into the hanger, and two connected valves, one between the hanger and the upper reservoir and the other in the self-regulating discharge-nozzle.

2. The combination in a lamp, of a self-flowing fountain composed of an upper and lower reservoir and a self-regulating discharge-nozzle terminating at its upper end in a hollow valve-plug forming in connection with a valve-seat in the bottom of the upper reservoir, a valve for closing the passage through said discharge-nozzle, a valve-stem carrying said nozzle and extending downwardly through the lower reservoir and car-

rying a finger-piece, and a tube in the lower reservoir through which the stem passes.

3. The combination in a lamp, of a self-flowing fountain composed of an upper and lower reservoir united together, a combined regulating discharge-nozzle and valve forming a passage from the upper into the lower reservoir, and provided with a valve-stem extending out through the bottom of the lower reservoir for closing or opening said passage at will, an elevated storage-reservoir, a hollow hanger through which the elevated storage-tank communicates into the top of the upper reservoir, and a plug-valve between the lower end of the hanger and the top of the upper reservoir provided with a hollow valve-plug arranged in vertical axial line with the discharge-nozzle and connected therewith for joint operation, the hollow valve-plug having its inlet-opening above the top of the upper reservoir and its outlet-opening below the top of the same to form a chamber for compressing the air in filling said reservoir.

4. The combination in a lamp, of a self-flowing oil-fountain composed of an upper reservoir E′ provided with means for filling the same at will while in position on the lamp, a lower reservoir E^2 united thereto and forming with said upper reservoir a closed vessel, the hollow plug-valve *g*, forming a combined valve and a regulating discharge-nozzle from the upper reservoir into the lower reservoir, the stem *m* of said plug-valve extending through the lower reservoir, and provided with an actuating thumb-piece below, the tube *o*, inclosing said stem within the lower reservoir and the shield *p*.

5. The combination in a lamp of the upper reservoir E^2 provided with means for filling the same at will, while in position on the lamp, the skirt *a* around said reservoir, the lower reservoir E^2 complementary to said upper reservoir and provided with a rim having locking means with the skirt *a* and the regulating discharge-nozzle in the bottom of the upper reservoir, said discharge-nozzle constituting a valve and provided with a stem *m* extending through the lower reservoir, substantially as described.

6. In a lamp, the combination of the upper and lower reservoirs E E^2 united together and forming complementary parts of a spherical vessel, the burners communicating with the lower reservoir, the connected plug-valves *e* and *g* arranged in axial line with each other respectively in the top and bottom of said upper reservoir and provided with flanges *q* and screw-nipples *r*, the tube *t* connecting said nipples, the regulating discharge-nozzle communicating with the valve *g*, the stem *m* extending therefrom through the lower reservoir and provided with a thumb-piece for operating the valves, the tubular open-ended hanger B connected at its lower end to the flange *q* of the valve in the top of the upper reservoir, and provided at its upper end with means for securing it to the ceiling and the storage-reservoir communicating into said hanger.

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

ROBERT L. DORAN.

Witnesses:
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