

(No Model.)

2 Sheets—Sheet 1.

J. SCHÜLKE.
REGENERATIVE HYDROCARBON LAMP.

No. 542,899.

Patented July 16, 1895.

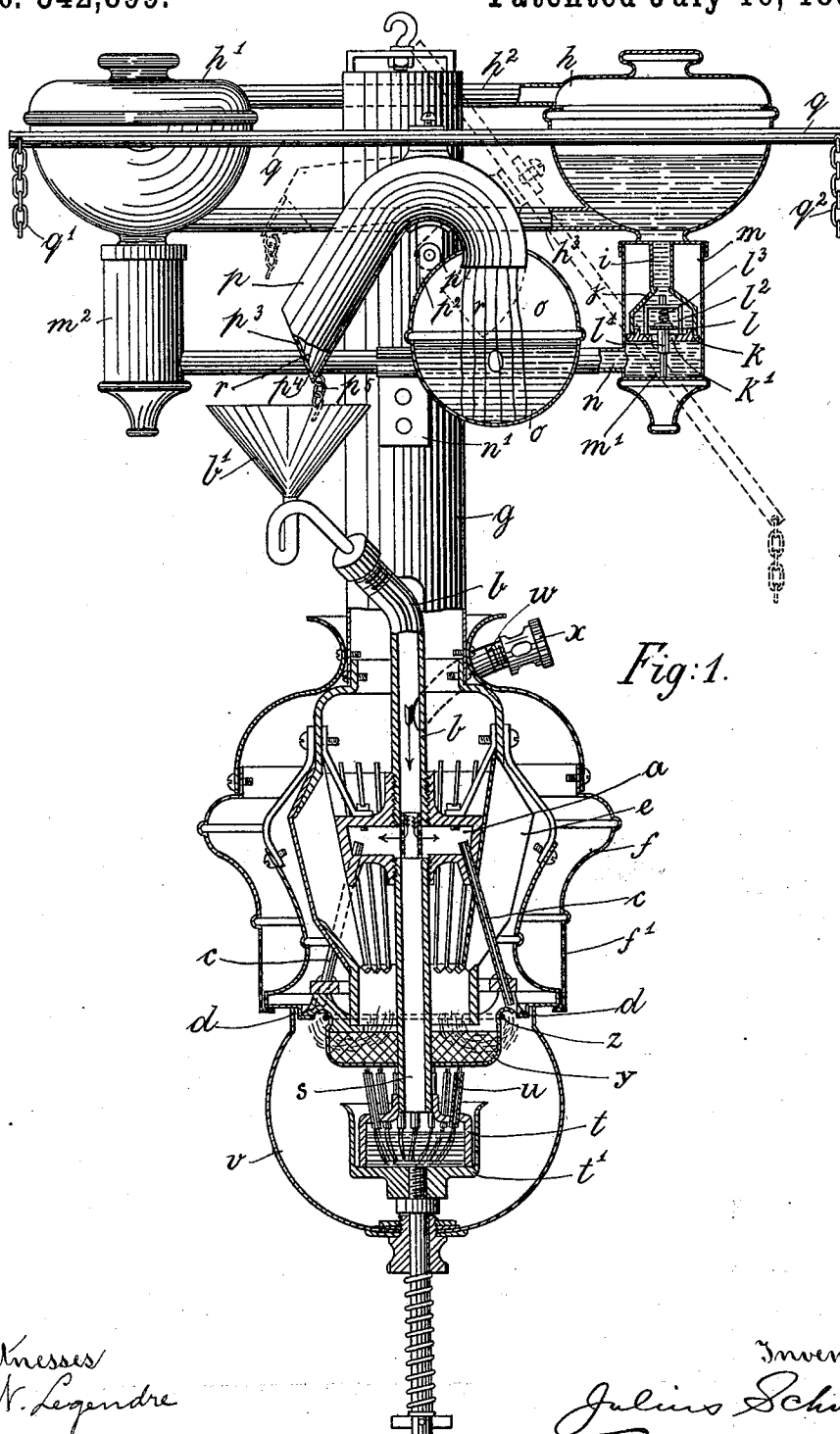


Fig. 1.

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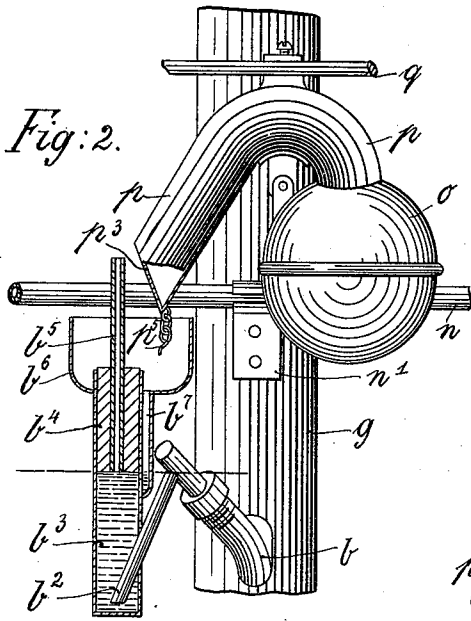


Fig:4.

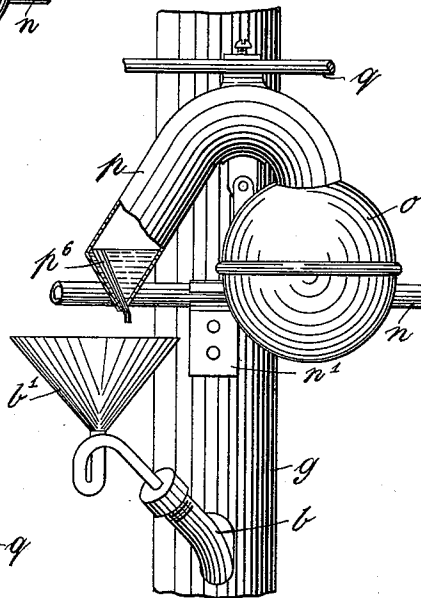
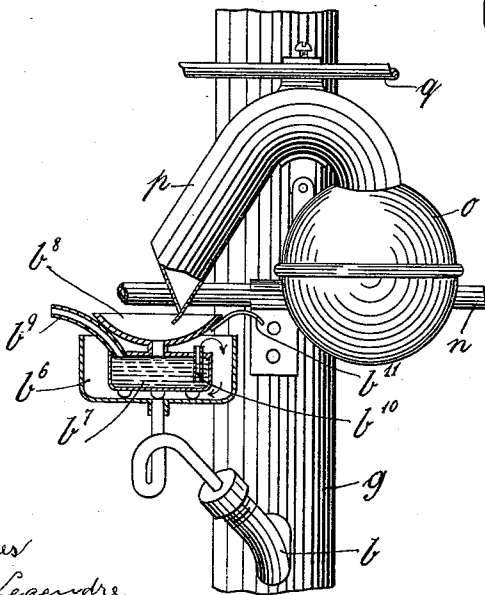


Fig:3.



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UNITED STATES PATENT OFFICE.

JULIUS SCHÜLKE, OF BERLIN, GERMANY.

REGENERATIVE HYDROCARBON-LAMP.

SPECIFICATION forming part of Letters Patent No. 542,899, dated July 16, 1895.

Application filed July 19, 1894. Serial No. 517,958. (No model.)

To all whom it may concern:

Be it known that I, JULIUS SCHÜLKE, engineer, a subject of the Emperor of Germany, and a resident of 15 Engel Ufer, in the city of Berlin, in the Empire of Germany, have invented new and useful Improvements in Regenerative Hydrocarbon-Lamps, of which the following is a full, clear, and exact description.

This invention relates to a regenerative hydrocarbon-lamp in which petroleum is gasified and then burned without wicks being necessary.

According to my invention the petroleum receptacles are arranged in such manner that the fluid in the outlet-reservoir is maintained at a constant level. Further, I provide an arrangement for effecting a regular dripping of the combustible material into the pipes, &c., leading to the gasifying-retort without the use of valves or cocks, and also devices by means of which the petroleum is only fed to the retort after the lamp has been sufficiently heated—for instance, by burning spirit—in order to gasify the oil. The lamp is also provided with a device for allowing the air to mix with the gasified petroleum in the gasifying-retort.

I will now describe my invention with reference to the accompanying drawings, in which—

Figure 1 is a view of the complete lamp in part vertical section. Figs. 2, 3, and 4 show, partly in section, elevations of modified devices by means of which the petroleum can only be fed to the gasifying-retort after the necessary quantity of spirit for preheating the lamp has been burned.

The lamp consists essentially of the gasifying-retort *a*, communicating with the petroleum feed-pipe *b* and with the gas-pipes *c*. The lower ends of the latter pass through the ring *d*, whose openings or orifices admit the air heated by the folded mantle *e* on both sides of the small flames, and thereby cause same to spread out. This air enters through openings *f'* of the casing *f*, on which latter the chimney *g* is fixed.

It is of special importance with this class of lamps that the feeding of the combustible material or oil can be exactly regulated.

The oil is put into the receptacles *h h'*, which are made of suitable form and size, and of which any desired number may be employed. These receptacles *h h'*, connected by pipes *h² h³*, are closed both at their upper and lower ends; only the one receptacle *h* is provided with a cylindrical neck-like extension *i*, with enlarged end or mouth *j*, whose lid *k* has an orifice *k'*, through which the spindle *l'* of the valve *l* passes, which spindle is guided by a support or bracket *l²*, the valve being controlled by a spring *l³*. After charging the receptacles through a suitable opening, preferably closed by a screw-stopper, (not shown in the drawings,) the neck *i* of the receptacle, with the valve *l*, is inserted into a casing *m*, against the bottom *m'* of which the spindle *l'* abuts, so that the valve *l* is opened against the tension of the spring *l³*. The oil now passes from the receptacle *h* and the receptacle or receptacles connected with same into the casing *m* until the orifice *k'* is closed by the level of the fluid in such casing. The oil is thus fed from the receptacle in accordance with the quantity being consumed, so that the fluid is maintained at a constant level.

A reservoir *o*, communicating by a pipe *n* with the casing *m*, is provided at its upper end with an opening, through which one end of a siphon-like pipe *p* passes. This pipe *p* is so hinged by brackets *p' p²* or in other suitable manner to the chimney *g* or other stationary part of the lamp, that it can be pulled down or lifted by means of chains *q' q²* of the arm *q* until it reaches the position shown by dotted lines in Fig. 1. The free end of the pipe *p* is closed by a plate *p³*, provided with an orifice or recess *p⁴*, through which the petroleum or oil drawn up from the reservoir *o* by the capillary attraction of the wick or fibrous material *r*, with which the pipe *p* is filled, can drip. The oil in the reservoir *o* is kept at a constant level corresponding to that in the casing *m*.

The petroleum only drips through the orifice *p⁴*, near which a few links of chain *p⁵* are attached, from which the oil drips when the free end of the pipe *p* is lowered by pulling down the lever *q* until the orifice *p⁴* is below the level of the fluid in the reservoir *o*. When

the pipe p is returned to the position shown by the dotted lines in Fig. 1, no oil drips from same. According to the extent of tilting the pipe p , therefore, a regulation of the feed of the oil is provided.

In the example shown in the drawings the two receptacles h h' for the oil communicate with each other by tubes h^2 h^3 and are supported by the casings m m^2 , connected by a cross-bar n , partly forming a tube, such cross-bar at the same time serving for attaching the reservoirs to the chimney by a holder n' or another suitable attachment. The casing m^2 is only fixed for making the lamp symmetrical and securely supporting the receptacle h' , no oil, however, passing into such casing m^2 from the closed receptacle h' , so that it is not necessary to provide another valve, as in the casing m .

The dripping petroleum falls into a funnel b' in immediate connection with the feed-pipe b . The spirit or like combustible material for heating the lamp is also fed through the pipe b , such spirit passing from the reservoir a through the pipe s to a cup t , placed within a second cup t' , and through which the burner-tube u passes, the combustible material being fed to the latter by wicks. The wicks are lighted by opening the glass globe v and extinguish themselves when the quantity of spirit necessary for heating the lamp sufficiently is exhausted.

The quantity of spirit found necessary for heating the lamp is either fed directly into the funnel b' , and the pipe p for feeding the oil only lowered after the lamp has been heated, or special devices may be employed by means of which the oil can be immediately fed. Modifications of such arrangement are shown in Figs. 2, 3, and 4.

In Fig. 2 a receptacle b^3 is connected with the petroleum feed-pipe b by a pipe b^2 . The receptacle b^3 is confined by stopper b^4 with air-pipe b^5 to the space required for receiving the necessary quantity of spirit which is poured into the cup b^6 and reaches the receptacle b^3 through the pipe b^7 . After the necessary quantity of spirit has been poured into the cup b^6 , the pipe p can be lowered for the immediate feeding of the oil. The petroleum dripping from p^5 into the cup b^6 being lighter than such spirit, forces the spirit out of the receptacle b^3 through the pipe b^2 to the pipe b , and from thence through chamber a and pipe s to the cup t . When all the spirit is forced out the petroleum to be gasified enters the lamp or the pipe b in the same manner. After the lamp is extinguished the chamber b^3 is still full of petroleum, which, when filling the chamber with spirit for the next heating, would pass into the lamp if the chamber had not been previously removed and emptied. To avoid this the device shown in Fig.

3 is recommended. It consists of a removable reservoir b^7 , holding the necessary quantity of spirit for heating the lamp and placed in the cup b^6 , such reservoir being provided with dripping-dish b^8 , air-pipe b^9 , overflow-pipe b^{10} , and handle b^{11} . As before described, the spirit is forced from the reservoir by the lighter oil dripping from the pipe p up the pipe b^{10} , into the cup b^6 , and from thence into the pipe b . The oil then takes the same course. The oil remaining in the cup b^7 after the lamp has been extinguished is poured out of the reservoir b^7 through the pipe b^9 before recharging with spirit for the next heating.

The arrangement shown in Fig. 4 dispenses with an intermediate receptacle for the spirit. A pipe p^6 is fixed in the end of a closed pipe p , and is of such a length that the oil which collects in the end of the closed pipe p when in the lowered position only passes through the pipe p^6 when the spirit for heating the lamp, which is put directly into the funnel b' , is exhausted—that is, when the lamp is sufficiently heated. When the pipe p is returned to its raised position, the petroleum collected in the end of same flows back into the reservoir.

In order that the air can mix with the gasified petroleum before being burned, a pipe w , passing through the casing f of the lamp and communicating with pipe b , is provided with a perforated screw-cap x on its screwed end, so that the air drawn into the lamp can be regulated.

An incandescent body y may be secured to the ring d by means of a wire z or other suitable device.

Having now described my invention, I declare that what I claim, and wish to secure by Letters Patent, is—

1. In a lamp, an oil supply, a reservoir connected thereto, a pivoted pipe connected to the top of the reservoir, a wick placed in the pipe and extending down into the reservoir, and means connected to the pipe for tilting it, combined with a pipe, into which the oil drips, and a burner where the oil is vaporized and burned, substantially as shown.

2. In a lamp, an oil supply, provided with a valve in its lower end, a chamber into which the lower end of the oil supply projects; a reservoir connected to said chamber, a pipe, provided with a wick, and pivoted in the top of the reservoir, a rod connected to the pipe, and cords, chains, or wires connected to the ends of the rod for operating it; combined with a pipe into which the oil drips, and burner at the lower end of the pipe, substantially as described.

3. A main reservoir, a pipe leading therefrom, a second reservoir connected to the main one, by the pipe, and a curved pipe piv-

oted above the reservoir *c*, and having a wick placed therein, combined with a tilting rod for adjusting the curved pipe, and a pipe, connecting with the retort, and into which
5 the oil is fed, substantially as shown.

4. The second reservoir *c*, the tilting curved pipe pivoted above the reservoir, and the wick placed in the pipe, combined with a receptacle for holding spirits, and the pipe *b*, the recep-

tacle being connected with the pipe, substantially as specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JULIUS SCHÜLKE.

Witnesses:

JOHN MATTES, Jr.,
W. HAUPT.