

H. CASLER.
LUBRICATOR.

APPLICATION FILED OCT. 25, 1904.

2 SHEETS—SHEET 1.

Fig. 1

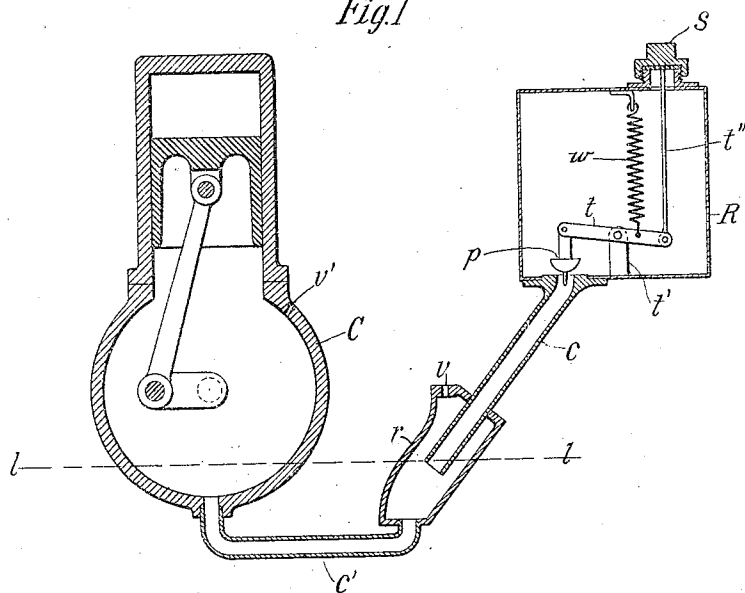
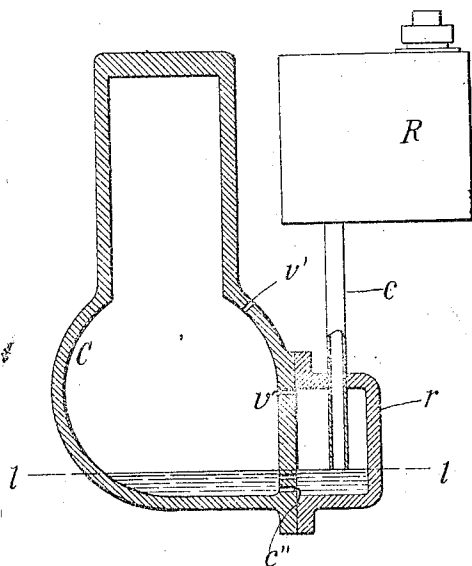


Fig. 2



Herman Casler,

Inventor

Witnesses
Raphaël Ketter
Ad. Dunham

By his Attorneys
Kerr, Page & Cooper

No. 797,046.

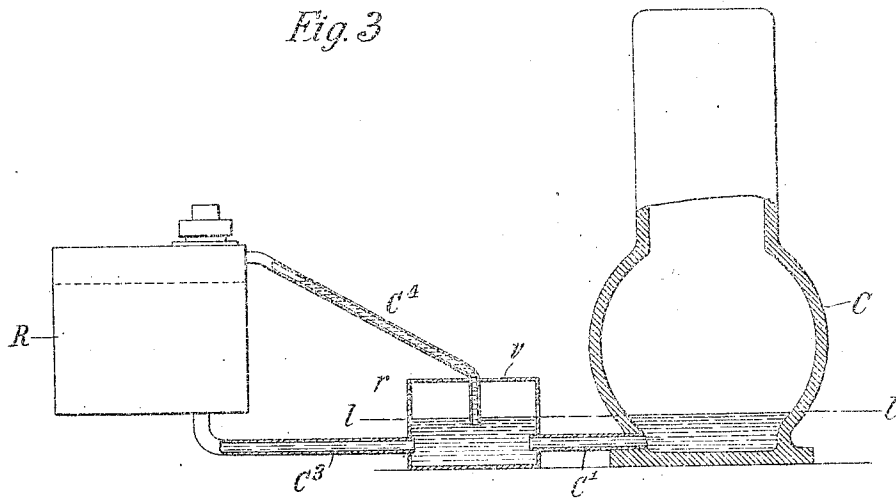
PATENTED AUG. 15, 1905.

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2 SHEETS—SHEET 2.

Fig. 3



Witnesses
Raphaël Heller
W. S. Drenham

Herman Casler Inventor
By his Attorneys
Kerr, Page & Cooper

UNITED STATES PATENT OFFICE.

HERMAN CASLER, OF CANASTOTA, NEW YORK.

LUBRICATOR.

No. 797,046.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERMAN CASLER, a citizen of the United States, residing at Canastota, in the county of Madison and State of New York, have invented certain new and useful Improvements in Lubricators, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

My invention relates to devices for supplying oil to moving parts, and has for its object to provide a lubricating apparatus which will maintain a uniform supply of the lubricant. Various devices having the same purpose have been proposed; but so far as I am aware these have generally included movable valves, pistons, or other moving parts. While such devices may operate with more or less success for a time, they lack the desired degree of durability. They deteriorate by reason of the wear of valves or other moving elements, and their operation is thereby impaired. I have therefore been led to devise my present invention, which eliminates all moving parts in its normal operation. It also makes provision for a considerable supply of oil, if desired, so that the automatic operation of the device may go on for a practically indefinite period without attention. It is obvious that a lubricator possessing such capabilities is adapted to very wide application in the arts and, in fact, may be used with satisfactory results wherever a uniform supply of liquid lubricant is desired.

In carrying out my invention I employ a receptacle or reservoir which may contain the desired quantity of oil and deliver the latter to the part or parts to be lubricated through a suitable conduit or tube. The flow of oil through the conduit is governed by pneumatic pressure, which in turn is controlled by variation in the quantity of oil already delivered. For such purpose I prefer to employ in connection with the feed-conduit an auxiliary reservoir or vessel wherein a constant level of oil may be maintained, so that the supply therefrom to the part or parts to be lubricated will be uniform.

In the accompanying drawings I have shown several forms of the invention, all applied to the crank-case of an explosive-engine for the purpose of supplying oil to the crank case or chamber, thereby constituting what is known as a "splashing-oiler."

Figure 1 is a sectional view showing the

preferred form. Fig. 2 is a slightly-modified form, and Fig. 3 is a still further modification.

Referring now more particularly to Fig. 1, R indicates an air-tight reservoir of any convenient size. Extending from the same, preferably from the bottom, is an oil-conduit *c*, reaching into the auxiliary reservoir *r*, of any suitable size and shape. In the embodiment illustrated the latter is provided with an air-vent *v*. The crank-case of an explosive-engine is diagrammatically indicated at C, and from the lower part of the same to the auxiliary reservoir *r* extends a conduit or pipe *d*.

The operation of the above construction will now be readily understood. The reservoir *r* and conduit *c* are so arranged relative to the crank-case C that the conduit terminates in the plane of the oil-level (indicated by the line / /) which it is desired should be maintained in the crank-chamber. The air-tight reservoir R being supplied with a suitable quantity of oil, air will enter through the vent *v* and thence pass up the conduit *c*, permitting oil to flow down into the intermediate reservoir *r*. When, however, the oil in the latter rises high enough to cover the orifice of the supply-pipe, the supply of air to the main reservoir will be cut off, and the air-pressure in the auxiliary chamber *r* will prevent further downflow of oil through the conduit *c*. In the meantime the crank-case has also been supplied with oil up to the same level as in the intermediate reservoir. As the oil is consumed in the engine its level falls until the orifice of the conduit *c* is uncovered to an extent sufficient to permit air to enter the same and pass up into the reservoir R. The partial vacuum therein being thus relieved, a small quantity of oil will flow out, raising the level in the crank-case and intermediate chamber until the orifice of the supply-pipe is again covered, thus restoring the oil-level and cutting off the further admission of air, as before. This operation is entirely automatic and takes place whenever an additional quantity of oil is needed in the crank-case. It will of course be noted that for the proper operation of the apparatus the air-pressure in the crank-case and intermediate chamber must be the same, while that in the supply-reservoir is less by an amount equal to the weight of the column of oil in the conduit *c*. The crank-case in the present embodiments must be in communication with the atmosphere, and as merely indicative of this

relation I have shown a vent in the crank-chamber at v' .

For the purpose of filling the tank R it is provided with a filling-aperture having a removable closure s —as, for example, one screwed upon a collar surrounding the aperture. To insure an air-tight joint at this point, a gasket or seat of yielding material—such as leather, rubber, lead, &c.—may be interposed between the cap and the neck. This is a familiar construction and need not be further described herein.

The removal of the cap s would of course relieve the partial vacuum in the reservoir and permit any oil therein to be discharged, raising the level in the crank-case, or even escaping through the vent in the intermediate reservoir. In order to prevent such an occurrence, I provide the upper orifice of the conduit c with a valve, as p , and also provide devices for closing the same whenever the filling-aperture is uncovered. A simple and convenient mechanism for this purpose is shown in Fig. 1. It consists of a lever i , fulcrumed on a standard t' and carrying on one end the valve-plug p . The latter may be of hemispherical form, as shown, to seat readily on the discharge-orifice and for the same purpose may be pivotally carried by the lever, so as to hang always in a vertical position. On the other end of the lever is a rod t'' , extending up into the filling-collar and of such length that the cap when secured in place will depress that end of the lever and raise the valve p from its seat. To the lever, on the same side of the fulcrum as the rod t'' , is secured a spring w , tending to raise that end, so that upon removal of the filling-cap the valve p will be instantly closed, thus preventing escape of oil which would otherwise occur by reason of the partial vacuum in the reservoir being relieved. Upon replacing the cap the rod t'' will be depressed, again raising the valve from its seat and restoring the system to its operative condition. It will of course be understood that the valve mechanism just described is merely one of a variety of devices which may be conveniently used for the same purpose.

The construction shown in Fig. 2 is similar to that of Fig. 1, except that the intermediate reservoir r is located directly on the crank-case. The necessity for a pipe to provide communication between the two is therefore eliminated, that purpose being served by one or more passages c'' through the wall of the crank-chamber. The conduit c is also shown in a vertical position instead of inclined, but the operation is of course not altered in principle thereby.

In Fig. 3 the oil-reservoir and intermediate chamber are connected by a conduit c' , which is substantially horizontal or so near such position that the passage of an air-bubble

through the same would be impeded, if not rendered impossible. In such a construction the chamber r is also in communication with the reservoir R through a tube c' , which extends into the former, as shown. Upon opening the valve which controls the inlet of the conduit c' oil from the reservoir will flow through the same and rise in the chamber r until the mouth of tube c' is covered. The oil will then rise in the latter tube until it reaches the level in the reservoir R, whereupon equilibrium will be established, as in the former cases, with a partial vacuum in the upper part of the reservoir R and the tube c' . When the level in chamber r falls below the mouth of tube c' , air will be admitted through the latter to the reservoir, allowing a quantity of oil to escape, raising the level in the chamber r and crank-case C.

It will be noted that in all of the forms described the pressure in the crank-case and intermediate chamber is that of the external atmosphere; but in engines in which the crank-chamber is used as a compression-chamber the intermediate reservoir r should be vented into the crank-chamber instead of the atmosphere, so that the pressure in the two will be the same. Otherwise the pressure in the latter would simply drive the oil in the former out through the vent into the atmosphere. Such a construction is typified in Fig. 2, in which case the vent v' indicates diagrammatically the port through which the air for the explosive charge is drawn into the crank-case. It is true that in this example the variations of pressure in the case C will alternately force the oil from the chamber r back into the reservoir and then allow it to flow down again. However, the outlet of the tube c will not be uncovered by such oscillations, but only by such reduction of the quantity of oil in the crank-case and chamber as is caused by consumption. The apparatus will therefore feed oil in the quantities required, as in the former instances.

It is obvious, of course, that the invention may be embodied in a variety of forms, and I therefore do not consider myself limited to that herein specifically shown and described.

What I claim is—

In a lubricator, the combination of an air-tight reservoir adapted to contain a supply of oil, having a filling-aperture, a removable closure for the opening, a chamber to receive oil from the reservoir, a conduit extending from the reservoir into the chamber, means for relieving a partial vacuum in the reservoir, and an automatic valve for cutting off the flow of oil through the conduit when the filling-aperture is opened, as set forth.

HERMAN CASLER.

Witnesses:

H. J. COLLINS,
H. K. MARVIN.