(No Model.) 2 Sheets—Sheet 1.

J. BROOKS & W. A. SWEETSER.

LUBRICATOR.

No. 344,811. Patented July 6, 1886.

Fig. 1.

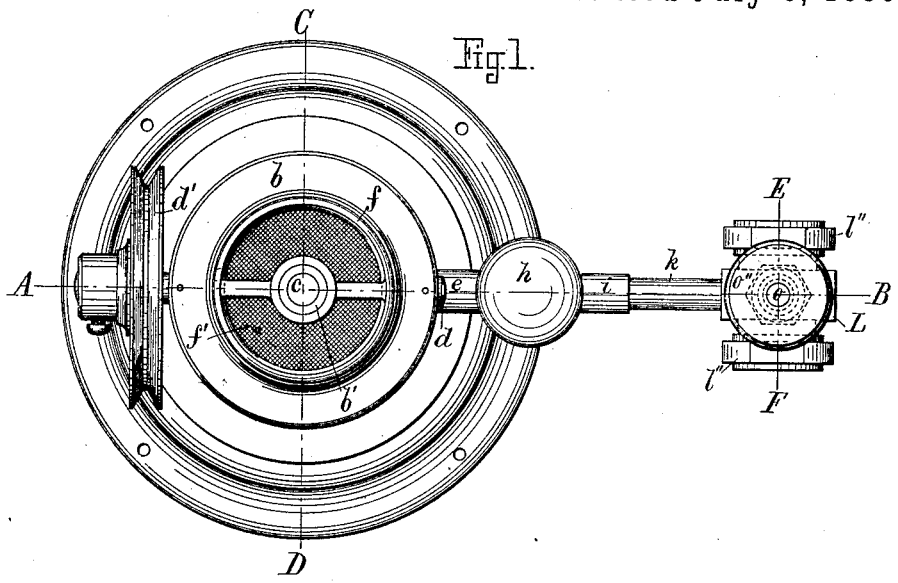
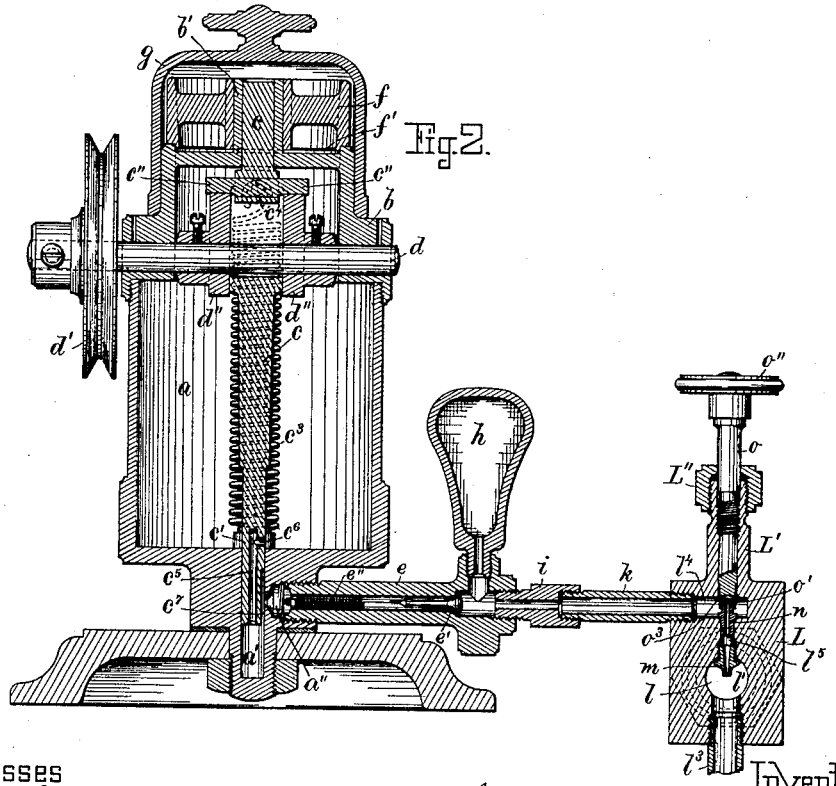


Fig. 2.



Witnesses
Henry Chadbourn.
D. E. Kempster.

Inventors
John Brooks & Wm. A. Sweetser
by Albert G. Davis & Co. Their Atts.

(No Model.) 2 Sheets—Sheet 2.

J. BROOKS & W. A. SWEETSER.

LUBRICATOR.

No. 344,811. Patented July 6, 1886.

Fig. 3.

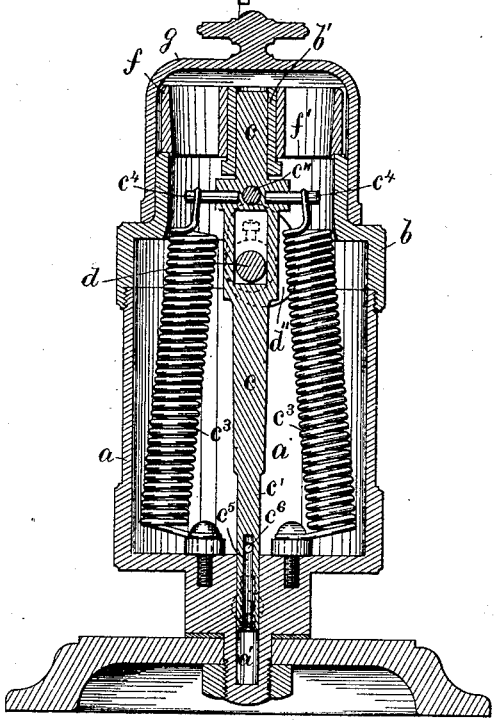


Fig. 4.

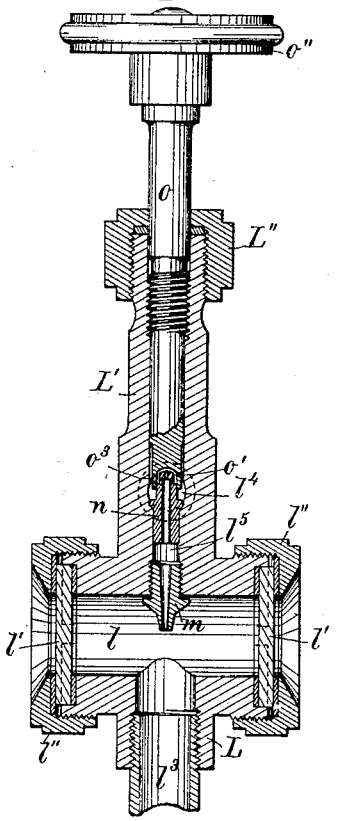


Fig. 6.

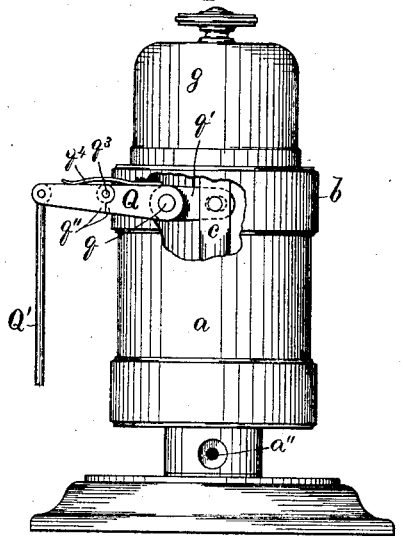
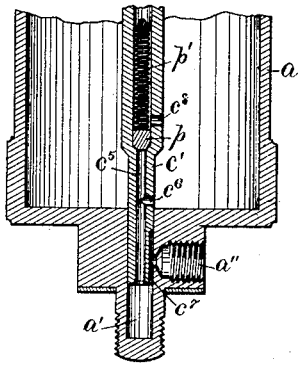


Fig. 5.



Witnesses

Henry Chadbourn.

D. E. Kempster.

Inventors

John Brooks & Wm. A. Sweetser.

by Albert Andrews their atty

UNITED STATES PATENT OFFICE.

JOHN BROOKS AND WILLIAM A. SWEETSER, OF BROCKTON, MASS.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 344,811, dated July 6, 1886.

Application filed November 4, 1885. Serial No. 181,818. (No model.)

To all whom it may concern:

Be it known that we, JOHN BROOKS and WILLIAM A. SWEETSER, both citizens of the United States, and residing at Brockton, in the county of Plymouth and State of Massachusetts, have jointly invented certain new and useful Improvements in Lubricators; and we do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements in lubricators, and it is carried out as follows, reference being had to the accompanying drawings, where—

Figure 1 represents a plan view of the invention. Fig. 2 represents a central longitudinal section on the line A B, shown in Fig. 1. Fig. 3 represents a central longitudinal section on the line C D, also shown in Fig. 1. Fig. 4 represents an enlarged section on the line E F, shown in Fig. 1. Fig. 5 represents a modification of the plunger for forcing the oil from the cup, and Fig. 6 represents a modification of the mechanism for operating the plunger.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

This invention relates to that class of lubricators in which the lubricant is forced, by means of a pump or plunger, from a cup or other receptacle to the part or parts of the machinery to be lubricated. Heretofore such pump or plunger has been operated positively and rigidly while in the act of forcing the oil out from the cup, and this is objectionable; for if the fine exit-opening for the lubricant should become clogged up and the pump continued to be worked positively against the compressed lubricant, a serious damage or breakage of the pump or its connecting mechanism is liable to occur. To obviate such difficulty, we construct our improved lubricator in such a manner as to cause the lubricant to be forced out from the cup by a yielding pressure, by springs or weights adapted to yield in case any clogging of the exit-openings should occur.

a is the cup or receptacle for the lubricant, provided in its upper end with a detachable head, *v*, that is preferably screwed onto the upper open end of the cup *a*, as shown.

c is the pump-rod or plunger-rod, its upper end being guided in a bearing-sleeve, *v'*, in the head *v*, as shown.

c' is the lower end of the pump-rod *c*, and it forms the pump or plunger by which the lubricant is forced out from the cup *a*. Such lower pump or plunger is arranged to move up and down in the cylindrical bore *a'* in the bottom of the cup *a*.

d is a shaft passing through the head *b*, and having bearings in the same. Said shaft has attached to one of its outer ends a cord-pulley, *d'*, to which a rotary motion is imparted, by means of a belt or cord, from any suitable rotary source.

To the rotary-shaft *d* is secured a pair of cams, *d''* *d''*, which, as the shaft is rotated, come in contact with projections *c''* *c''* on the upper end of the pump-rod *c*, and thus tend to positively raise said rod for each revolution of said shaft *d*. As soon as the cams *d''* cease to act on the projections *c''* on the pump-rod *c*, the latter is forced downward with a yielding pressure by means of the coiled springs c^3 c^3, secured in their upper ends to projections c^4 c^4 on the rod *c*, and in their lower ends to the bottom of the interior portion of cup *a*, or other stationary portion of the latter. Thus it will be seen that as the shaft *d* is rotated it will cause the pump-rod *c* to be raised positively by the cams *d''* against the influence of the springs c^3 c^3, and when the rod *c* is released from the said cams *d''* it is forced down with a yielding pressure by means of the springs c^3 c^3.

a'' is a side opening leading from the cylinder *a'* in the lower end of cup *a*, and communicating with the pipe *e*, in which is located a check-valve, *e'*, of any well-known construction, such check-valve being normally held on its seat by the influence of a spring, *e''*, as shown. We make in the lower end of the plunger *c'* a central perforation, c^5; and a lateral perforation, c^6, made through the side of said plunger *c'* at a suitable distance from its lower end, communicates with the central perforation, c^5, as shown.

Below the side opening c^6 on plunger *c'* is made a cut-away portion, c^7, extending to the bottom or lower end of said plunger *c'*, as shown. During the up and down motion of rod *c* the cut-away portion c^7 never goes above the upper end of the cylinder *a'* in the bottom

of cup *a*, and during the upward stroke of said rod *c* the side perforation c^6 rises above the cylinder *a'*, so as to allow the lubricant in cup *a* to enter said perforation. c^6 and pass down through central perforation, c^5, into the lower end of cylinder *a'*; but as the rod *c* is forced downward its plunger *c'* is made to enter the cylinder *a'* far enough to cause the side opening c^6 to be closed against the interior of cylinder *a'*, and by the further descent of the plunger the lubricant contained in cylinder *a'* is forced up in the cut-away portion c^7 and out through the side perforation *a''* into the pipe *e*.

f is a detachable ring located in the upper end of cup *a*, and provided at its bottom with a fine-wire netting, *f'*, serving as a strainer for the oil delivered to cup *a*. Such strainer may, if so desired, be dispensed with, and the oil strained previous to its being fed to cup *a*.

g is a detachable cover slipped over the upper end of cup *a*, to prevent dust and dirt or grit from getting into the cup *a*.

To the pipe *e*, back of the check-valve *e'*, is secured the air-chamber *h*, which, during the action of the plunger *c'*, is partly filled with the lubricant and partly with compressed air, by which an even flow and delivery of the lubricant is effected.

To the outer end of pipe *e* is screwed the coupling *i*, to the other end of which is screwed the pipe *k*, leading to the sight feed-box L, which latter has a transverse perforation, *l*, covered in its ends by means of the transparent glasses *l' l'*, which are secured air-tight to the sides of box L by means of packings and glands *l'' l''*, as shown in Fig. 4.

l^3 is the delivery-pipe for the lubricant, leading from the passage *l* to the part of the engine or machinery that is to be lubricated. Where the pipe *k* enters the box L is made a horizontal channel or chamber, l^4, that is connected to the sight-feed chamber *l* by means of vertical opening or channel l^5, as shown in Figs. 2 and 4. In the lower end of channel l^5 is located the longitudinally-perforated nipple or dropper *m*, the lower delivery end of which terminates at or near the center of the sight-feed chamber *l*, so as to permit the delivery of the oil to be ascertained by looking through the glasses *l' l'*.

For the purpose of adjusting and regulating the flow of oil through the nipple *m*, we locate in the upper end of channel l^5 the tube *n*, having a reduced perforation in its upper end, as shown in Fig. 4. The upper end of such tube *n* projects into the chamber l^4, and over its upper end fits the cup-shaped cylindrical lower end, *o'*, of the adjustable screw-rod *o*, that is adjustable in the screw-threaded shank L' in the upper end of box L, as shown in Figs. 2 and 4, and is provided with a wheel or handle, *o''*, by which it can be turned and adjusted.

L'' is a stuffing-gland with packing for the rod *o*, as usual.

Through the cup-shaped end *o'* is made a side perforation, o^3, (shown in Fig. 4,) to permit the oil coming from pipe *k* to pass through it up into said cup *o'* and down through the tube *n*; thence into vertical channel l^5 and out through the perforated dropper *m*, from which it flows or drops into pipe l^3, leading to the part to be lubricated. It will thus be seen that by adjusting the position of screw-shaft *o* within the screw-threaded shank L' the flow or feed of the lubricant can be adjusted with the greatest nicety, according to circumstances, and by screwing down the rod *o*, so that its lower end comes in contact with the upper end of tube *n*, the flow of oil can be entirely shut off, if so desired, and this can be done without injury to any of the connecting parts between the cup *a* and the sight-feed box L, as the springs c^3 c^3, by which the plunger *c'* is forced dowward, will compensate for any increase in the pressure between the cup and sight-feed box, and thus prevent the bursting or breaking of any of said parts.

In Fig. 5 is shown a modification of the yielding plunger *c'*, for forcing the oil with a yielding pressure from the cup *a*; and it consists in arranging withing the central bore, c^5, (which in this case is continued upward a little further than shown in Figs. 2 and 3,) a yielding valve or piston, *p*, back of which is arranged a coiled spring, *p'*, as shown in said Fig. 5, and by this arrangement the piston *p* will yield upward in case the connecting-pipes to the sight-feed box should become clogged or stopped up, and permit the lubricant in cylinder *a'* to pass up through central passage, c^5 and out into cup *a*, either through the passage c^6 or through an additional passage, c^8, arranged above the normal position of the valve or piston *p*, as shown in Fig. 5. In this modification the rod *c* may be moved positively in both directions, as the spring *p'* serves the purpose of the springs c^3 c^3. (Shown in Figs. 2 and 3.)

Another modification is shown in Fig. 6 for imparting a yielding downward motion to the pump-rod *c*.

Instead of a rotary shaft, *d*, for operating the pump-rod *c*, as shown in Figs. 2 and 3, we locate in bearings in the head *b* a rock-shaft, *q*, (shown in Fig. 6,) and to it, within the cup *a*, is secured a lever, *q'*, the end of which is suitably connected to the pump-rod *c*, either by a link, slot and pin, or other well-known means, as may be desired.

To the rock-shaft *q*, outside of the cup *a*, is secured the jointed lever Q, that is jointed at q^3, and has stop-projections *q''* on the under side, and a spring, q^4, on the upper side, as shown.

Q' is a rod connected to the outer end of the jointed lever Q, its lower end being hinged to a crank or connected to an eccentric or other rotary or reciprocating motor of any kind, by means of which a rocking motion may be imparted to shaft *q*. In this manner it will be seen that should the plunger-rod *c* meet with too much resistance the spring q^4 will yield in

the same manner and for the same purpose as described relative to springs c^3 c^3.

Having thus fully described the nature, construction, and operation of our invention, we wish to secure by Letters Patent and claim—

1. In a lubricator, the combination of the following elements: a cup or receiver, a pump having springs for forcing it downward with a yielding pressure, a pump-cylinder, and a delivery pipe having check-valve, as described, and provided with an air-chamber located between the cup and the place where the oil is delivered, in a manner and for the purpose as set forth.

2. In a lubricator, the sight-feed box L, in combination with the oil-delivery tube *n* and adjustable valve-rod *o*, having cup-shaped lower end, *o'*, adapted to fit over the upper end of tube *n*, and provided with a side perforation, o^3, as and for the purpose set forth.

3. In a lubricator, the sight-feed box L, having sight-feed chamber *l*, transparent panes *l' l'*, supply-pipe *k*, and delivery-pipe l^3, in combination with the nozzle *m*, tube *n*, and adjustable valve-rod *o*, having cup-shaped lower end, *o'*, as and for the purpose set forth.

4. In a lubricator, the cup or receiver *a* and the reciprocatory pump or plunger *c'*, for forcing the oil with a yielding pressure from said cup, combined with the sight-feed box L, and an air-chamber, *h*, and check-valve *e'*, located between the cup and sight-feed box, substantially as and for the purpose set forth.

5. In a lubricator, the sight-feed box L, with its nozzle *m*, tube *n*, and adjustable valve-rod *o*, having cup-shaped lower end, *o'*, substantially as and for the purpose set forth.

6. The combination of cup or receiver *a*, cylinder *a'*, pump *c'*, pipe *e* and its check-valve *e'*, the air-chamber *h*, pipe *k*, and adjustable valve-rod *o*, for regulating the flow of the lubricant through the sight-feed box L, as and for the purpose set forth.

In testimony whereof we have affixed our signatures in presence of three witnesses.

JOHN BROOKS.
WM. A. SWEETSER.

Witnesses:
F. M. SULLIVAN,
WARREN T. PORTER,
JONAS R. PERKINS.