

(No Model.)

J. F. LEWIS.
LUBRICATOR.

No. 568,407.

Patented Sept. 29, 1896.

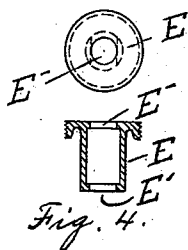


Fig. 4.

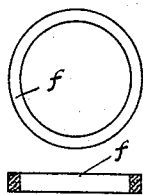


Fig. 5.

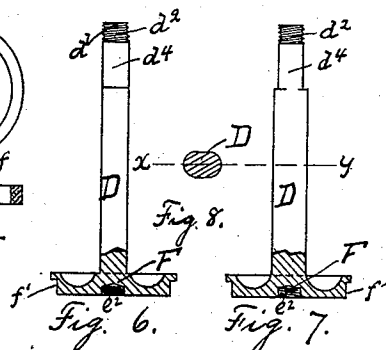


Fig. 6.

Fig. 7.

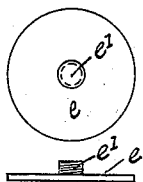


Fig. 3.

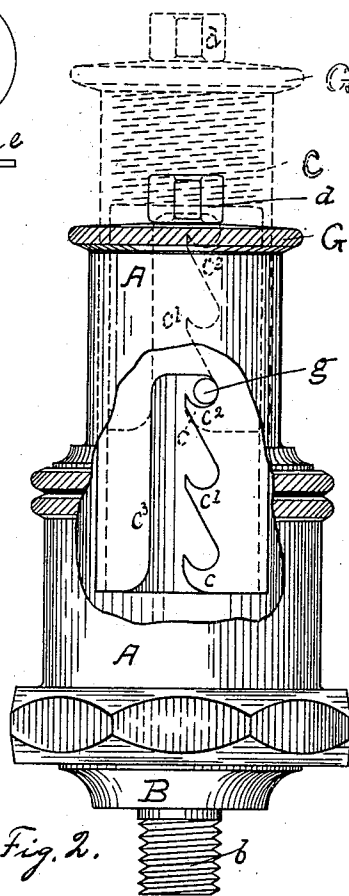
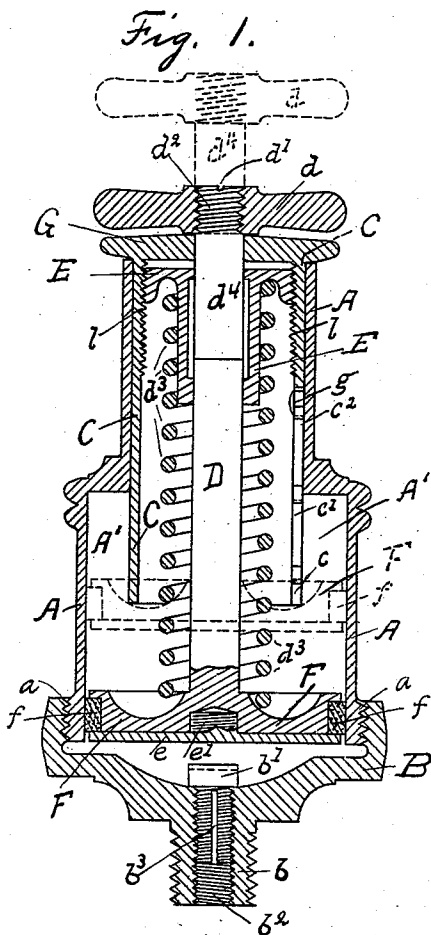


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN F. LEWIS, OF SCRANTON, PENNSYLVANIA.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 568,407, dated September 29, 1896.

Application filed February 20, 1896. Serial No. 579,923. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. LEWIS, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Grease-Cups; and I 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 accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of grease-cups which are designed to feed a semisoft or buttery grease regularly into journals of machinery; and the object of the present invention is to furnish a grease-cup in which the pressure applied to the plunger is adjustable to correspond to different degrees of fullness of the cup, and also to different degrees of temperature or softness of the lubricant. Other objects are to provide a dust-proof case and an indicator to show whether adjustment is needed, the whole being designed as an improvement on my inventions, for which Letters Patent of the United States were obtained October 30, 1888, No. 392,161, and July 16, 1889, No. 407,226.

The improvements consist in the novel construction and combination of parts herein described, and illustrated in the accompanying drawings.

Referring to the drawings, Figure 1 is a view in vertical cross-section of one of my grease-cups, showing part of its adjustment in dotted lines and the stem of the plunger not in cross-section. Fig. 2 is a view taken at right angles to that of Fig. 1, showing the casing of my grease-cup with part of it broken away to assist in showing the adjustment, which is also partly shown by dotted lines. Fig. 3 shows an edge and under side view of one of the details of the plunger. Fig. 4 shows a top view and vertical cross-section of one of the details of the upper part of my grease-cup. Fig. 5 shows a top view and vertical cross-section of a packing-ring used on the plunger. Fig. 6 is a detail view of the plunger and stem. Fig. 7 is a view of the same, taken at right angles to that of Fig. 6.

Fig. 8 is a view of the plunger-stem in cross-section on the line xy of Fig. 7. Figs. 3, 4, 5, 6, 7, and 8 are drawn to a scale one-half of that used in Figs. 1 and 2.

Similar letters of reference refer to similar parts throughout all the views.

A designates the barrel or cylindrical cup of my device, the upper part of which is narrower and is designed to contain the spring d^3 and other mechanical parts, while the lower part (designated A') constitutes the receptacle of the lubricant, into which is fitted the plunger F, designed to slide upward and downward through the whole length of the receptacle A', and being furnished with a packing-ring of cork or other suitable material, (designated f ;) which prevents grease from escaping to the upper side of the plunger. The cylinder A has a threaded connection a with the base-piece B, which base-piece is provided with a threaded shank b , by which it is attached to the journal to be lubricated. The shank b is provided with a hole b^2 for the passage of grease, which hole may be plugged partially with the plug b' , which is threaded to be screwed into the threaded hole b^2 from above, and the said plug is biparted, b^3 , so that the farther it is screwed into the hole b^2 the more nearly is the exit for the grease shut off. This plug may be dispensed with unless the grease becomes too thin by reason of heat or other causes. The ring f is held in position by means of the disk e , Fig. 3, which is attached to the plunger by means of the shank e' , screwed into the socket e^2 , so that the rim of the said disk engages with the said packing-ring f and holds it solid.

The plunger-stem D has its upper part d^4 entirely cylindrical, but the remaining part is a larger cylinder with two slabs in parallel planes taken off opposite sides, so that a cross-section thereof is as represented in Fig. 8. The upper end of said stem is also provided with the threaded shank d^2 , to which is screwed the knob or handle d , so that the stem may be turned with a screw-driver. The upper part of the barrel A is filled by a slotted thimble C, inserted into it from above, which thimble is provided with a cap G, having a hole in its center, through which d^4 of the plunger-rod D extends, it being inserted from

the opposite end of the barrel. One of the sides of the said thimble is also parted by a vertical slot, and one of the edges thus exposed is provided with hooks c , c' , and c'' , which are adapted to engage with the stub or projection g on the inner side of the barrel A, thus affording three separate adjustments of the mechanism for driving the plunger, each adjustment being adapted to different degrees of fullness of the receptacle A'.

The upper part of the inner surface of the thimble C is furnished with a threaded portion l , adapted to form a threaded connection with the crown of the sheath or band E, the upper part of which sheath or band has a round hole in its center, through which passes the upper round part of the plunger-stem d^4 , and the lower extension of said hole fitting over the flattened part of the stem D, so that when the stem D is turned it causes the sheath E to turn with it, and thus by means of its threaded crown causes it to climb down the thread l of the thimble C. The crown or flange of the sheath E serves as a seat for the helical spring d^3 , which encircles the plunger-stem and is disposed between the plunger on the flange aforesaid and the sheath E. The object of the sheath E in this relation is to increase the strength or pressure of the helical spring not as an adjustment for the different degrees of fullness of the receptacle A', but as an adjustment to suit variations in the softness of the lubricant. Thus for a very stiff composition as a lubricant the handle d is turned until the sheath E runs to the lower end of its course and compresses the spring d^3 into the shortest distance permissible by the construction; but when a softer lubricant is used the handle d is turned in an opposite direction, so that the sheath E climbs upward of the thread l and thus releases the tension on the spring d^3 to the degree required. The hooks aforesaid on the thimble C are adapted for adjusting the plunger to different degrees of fullness of the receptacle A', and they may be as few or as many as is desired. I find, ordinarily, three are quite sufficient. The ends of the hooks should be far enough from the plain edge c^3 to permit the free passage of the stub g between the said plain edge and the ends of the hooks.

The operation of my device is explained as follows: The base-piece B being attached by means of the shank b to the journal to be lubricated, the grease-cup being empty, now when it is desired to fill the same for use the barrel is unscrewed from the base and the thimble C is slid upward until the plunger F has reached the upper end of its course. The cup then being held in an inverted position is filled and pressed full of the lubricant to be used and again attached by means of the threads a to B. Now by taking hold of the milled rim of the cap G and pressing downward, compressing the spring until the hook c is opposite the stub g , by a slight turn said

hook will engage with the stub. This holds the plunger tight against the upper surface of the lubricating material in the chamber A' and forces the plunger-rod outward through the cap G to the position shown by dotted lines in Fig. 1, thus indicating that the cup is set and in acting order. The whole pressure of the spring d^3 is thus exerted on the lubricant, and as it gradually disappears through the hole b^2 the plunger-rod moves inwardly of the top of the cup until the handle d rests on the cap G, thus indicating that the cup has ceased to act in feeding the grease. It is then proper for the attending machinist to press the thimble C downward until a second hook c' engages with the stub g , when the cup will act again in a similar manner as when hooked in the first hook c , and so on until all the hooks have been used and the cup is empty.

A particular feature of this invention is that when the cup is set in a certain hook it cannot be again set to a second or third hook until all of the grease is expelled, which can be expelled by the first or previous setting, as it will be noticed that if an attempt were made to set it lower than one hook the lower rim of the thimble C would strike the plunger F and could not be pressed down a sufficient distance to reach a second hook until the plunger had expelled enough of the lubricant to let itself out of the way of the said lower rim. This is an important provision, because different workmen about the machinery where the cup is used might each undertake to set the cup, thinking that it had not been set, and thus create too great a pressure and a too rapid flow of the lubricant, but in my device this cannot occur, as when the cup is once set it cannot be reset or the pressure increased until the plunger F has gone the distance equal to that between any two hooks.

Of course I do not wish to confine myself to the particular construction here referred to, as it is evident that many of the details may be varied without departing from the spirit of my invention.

What I claim is—

1. The herein-described grease-cup consisting of the combination of a receptacle A' a plunger therein actuated by a coiled spring surrounding the stem of said plunger, with the thimble C surrounding said coiled spring and plunger-stem, the sheath E having a threaded connection with the inner sides of said thimble and fitted to the plunger-stem so as to revolve with it but allowing the said stem to slide lengthwise through said sheath, a plunger-stem adapted to turn the said sheath and allow it the sheath to slide lengthwise of the stem and means for turning the said stem and sheath so as to drive the sheath upward or downward for the purpose of decreasing and increasing the tension of said coiled spring substantially as shown.

2. In a grease-cup the combination of a spring-actuated plunger, the barrel A and

thimble C, the said thimble having one of its sides slotted and one of the thus exposed edges provided with a plurality of equidistant hooks adapted to engage, in consecutive order only, with a stub on the barrel A in the process of exhausting grease from the cup, the construction, by reason of interference of the lower edge of said thimble with the plunger, permitting of engagement with the next succeeding hook only after the plunger shall have been forced downward a distance corresponding to that between consecutive hooks, substantially in the manner and for the purposes specified.

3. The combination of the plunger-stem D adapted to receive the sheath E, the thimble C inwardly threaded, the sheath E adapted to be revolved with and by the said plunger-stem and having a threaded portion extending to and adapted to engage with the inwardly-threaded portion of the said thimble, the helical spring d^3 disposed around the said plunger-stem between the said sheath and plunger F, the plunger F fitted into the receptacle A', and the grease-receptacle A' all

arranged for joint operation as and for the purposes shown and described.

4. In a grease-cup of the kind described the combination of the barrel A having a narrowed upper portion, the thimble C fitted to slide into the said upper portion, said thimble having a hole in the top adapted to allow protrusion of the plunger-stem and also having a slotted side and series of hooks adapted to engage in consecutive order only with a stub on the side of said barrel, the plunger F and plunger-stem D having a portion d^4 adapted to extend out through the said hole in the top of said thimble for the purpose of indicating the state and position of parts and contents of the cup, and means for increasing and decreasing the pressure on the plunger, substantially as shown and for the purposes specified.

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

JOHN F. LEWIS.

Witnesses:

H. C. REYNOLDS,
E. A. SHAFER.