(No Model.)

# J. STEWART.

## OIL CUP.

No. 347,839. Patented Aug. 24, 1886.

Fig. 1.

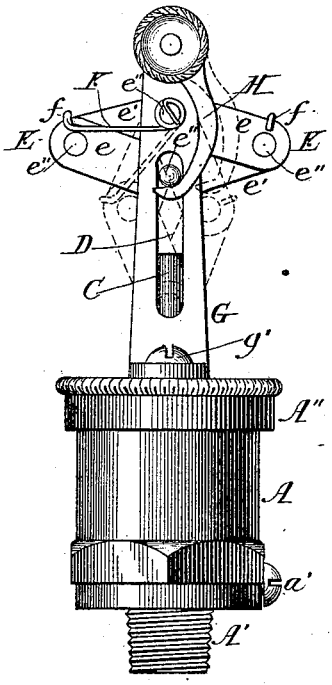



Fig. 2.

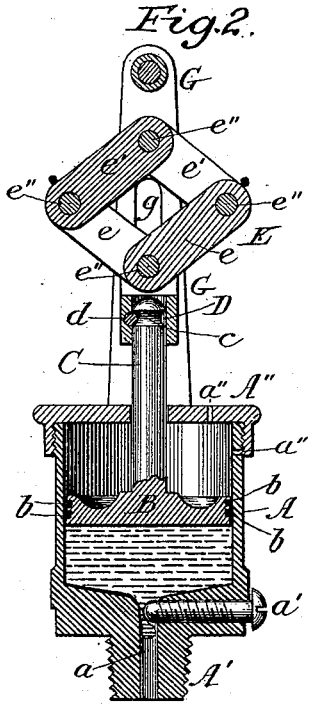
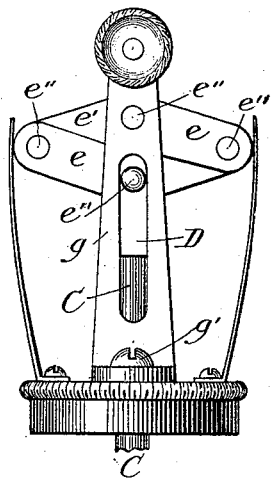



Fig. 3.

Fig. 4.



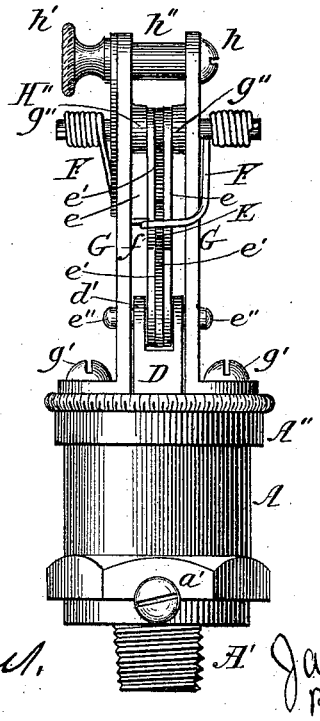
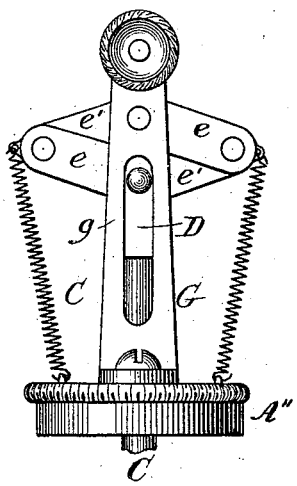




Fig. 5.




Witnesses:
Albert H. Adams.
Harry F. Jones.

Inventor
James Stewart
By West & Bond
His attys.

# UNITED STATES PATENT OFFICE.

JAMES STEWART, OF CHICAGO, ILLINOIS.

## OIL-CUP.

SPECIFICATION forming part of Letters Patent No. 347,839, dated August 24, 1886.

Application filed January 21, 1886. Serial No. 189,331. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES STEWART, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Oil-Cups, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation; Fig. 2, a vertical section; Fig. 3, an elevation of the end side of the pressure-regulating devices; Figs. 4 and 5, elevations showing modifications in the springs controlling the actuating devices for the piston or plunger.

Pressure feed-cups embodying in their construction a reservoir in which a piston or plunger operates to feed the grease have heretofore been constructed; but such construction of oil-cups has been defective in that the pressure would decrease with the descent of the piston or plunger; and the object of this invention is to obviate this defect and to give the piston a constant and equal pressure for the entire descent thereof, thus producing a uniform feed from the cup; and its nature consists in providing a piston or plunger located and operating in the feed-cup and actuated by levers or links and controlling-springs, all as hereinafter more specifically described, and pointed out in the claims as new.

In the drawings, A represents the body or main portion of the oil cup or receptacle having, as shown at its discharge end a nipple, A′, screw-threaded on its exterior for attachment to the part to be lubricated, through which nipple and the bottom of the body an opening, *a*, leads for the feed of the oil, and, as shown, the upper end of the body A on the exterior is screw-threaded to receive a cap, A″, and through the wall of A, just above where the attaching-flange of the cap A″ terminates when the cap is closed down, is an orifice *a″* for the discharge of air in filling the cup or receptacle, and, as shown, a hole, *a″*, is also provided through the cap A″ for the discharge of air in raising the piston or plunger. The discharge of oil through the passage or hole *a* is controlled in the arrangement shown by a screw, *a′*, the diameter of which corresponds to the diameter of the hole *a*, so that when the end of the stem is projected across the hole *a* the outlet for the oil is effectually closed, and by means of this screw *a′* the size of the opening for the discharge can be regulated as may be desired, to regulate the feed of the oil.

B is a piston or plunger, located in the cup or receptacle A and having in its periphery suitable packing, *b*, to make a tight joint between the piston and the wall of A.

C is a stem to which the piston or head B is attached.

D is a cross-head to which the end of the stem C is connected, the connection as shown being made by forming a groove, *c*, in the upper end of stem C to receive a pin, *d*, passing through the head D, which connection allows the piston to turn freely, and at the same time connects the stem C and head D in a firm manner.

E is a governor formed of a series of arms or links, *e e′*, arranged on the toggle principle, and, as shown, the arms or links *e* are double, and receive between their ends the ends of the links *e′*, the ends being pivotally connected one to the other by suitable pins or pivots, *e″*, and, as shown, the lower pin *e″* also connects the ends of the lower arms or links *e e′* to the cross-head D, the pin passing through ears *d′* on the cross-head, between which ears the ends of the arms or links *e e′* come, and the pin *e″*, connecting the upper ends of the upper arms or links *e e′*, passes through the standards which support the governor.

F represents springs for controlling the movement of the governor E. Each spring has one end coiled around the projecting end of the pivoting-pin *e″* for the upper ends of the top links *e e′*, and, as shown, the end of the pin is slotted to receive the end of the coil and hold the spring F against turning. The other end, *f*, of the spring F is turned at right angles and lapped over the toggle at the knuckle or knee thereof, as shown in Figs. 1, 2, and 3.

G represents standards or uprights attached to the cap or cover A″, by screws *g′* passing through feet on the ends of the uprights. Each standard G is provided with a longitudinal slot, *g*, to receive the end of the lower pin or pivot *e″*, and form a guide for the movement of the governor-arms, and the upper pin *e″*

also passes through the standards G to suspend the governor-arms, and, as shown, between the upper arms or links and the face of each standard is a washer or ring, $g''$, to fill the space and hold the arms central with the movement of the piston-stem C.

H is a hook for holding the piston in its elevated position, the end of the hook passing beneath the end of the lower pin $e''$, as shown in Fig. 1, for this purpose. This hook H is carried by a screw, $h$, in the arrangement shown, and, as shown, is held in postion on the end of the screw by a thumb-nut, $h'$, and the screw $h$ and the thumb-nut $h'$ also furnish the means for binding the upper ends of the standards G against the end of an interposed tube or collar, $h''$, as shown in Fig. 3.

The operation is as follows: The cup or receptacle is to be filled by removing the top or cover A″, and in removing the top or cover the piston or plunger B is raised and locked in an elevated position by catching the end of the hook H under the projecting end of the pin $e''$, as shown in Fig. 1, and when the stick of grease has been inserted the cap or cover is screwed down, bringing the piston into position above the stick of lubricant in the cup, and the air between the plunger and the stick of lubricant is discharged through the opening $a''$ in the wall of the cup; and in raising the plunger for removal of the cap and plunger the air above the plunger is discharged through the opening $a''$ in the cap or cover. The latch H is swung out of engagement with the pin $e''$, allowing the springs F to act on the governor E, and carry the piston or plunger B down, pressing on the stick of lubricant to feed it gradually down, and this pressure will be equal at all points in the descent of the plunger for the reason that at the commencement the arms or links are extended out, furnishing a greater resistance against the action of the springs, and at the same time the springs are under their greatest tension, and as the arms straighten, the tension of the springs decreases proportionately, maintaining an equalization of the pressure during the entire descent of the piston or plunger, and the amount of discharge is regulated by the screw $a'$ the end of which can be adjusted to leave a smaller or greater opening for a decreased or increased discharge. The cup when emptied can be again filled by removing the cover and plunger, and when filled the cover and plunger can be replaced and the latch H withdrawn from engagement, bringing the parts into operation.

As shown in Figs. 1, 2, and 3, the controlling-spring F is in the form of an arm reaching out and over the toggle arms or links, but other arrangements of springs for controlling the movements of the toggle arms or links can be provided, and two forms of arranging such controlling-springs are shown in Figs. 4 and 5. The springs in Fig. 4 are flat and attached at their lower ends to the cap or cover A″, and their upper ends arranged to bear against the toggles at the joint with sufficient force to control the downward movement, and maintain a regular descent and pressure for the piston or plunger; and, as shown in Fig. 5, the controlling springs are in the form of coils, one end being attached to the cap or cover A″, and the other to the toggle arms or links at the knuckle or joint, and operating to produce a uniform movement for the toggle arms or links and a regular descent and pressure for the piston or plunger; and this feature of controlling the descent of the piston or plunger and producing a regular and uniform pressure during the entire descent constitutes the essential feature of the invention, and it is produced by the toggle-governor E, controlled by spring-power.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with an oil cup or receptacle, of a plunger located and operating within the cup, and forced downwardly by spring-pressure, and governing mechanism for maintaining such pressure uniform, substantially as described.

2. An oil cup or receptacle and a plunger operating therein, in combination with the toggle-governor E, and controlling springs for maintaining a uniform pressure during the entire descent of the plunger, substantially as specified.

3. An oil cup or receptacle, and a plunger located and operating therein and having a stem, C, in combination with a head, D, a toggle-governor, E, and controlling-springs F, substantially as and for the purpose specified.

4. An oil-cup having a plunger located and operating therein and provided with a stem, C, in combination with a cross head, D, toggle-governor E, springs F, standards G, and hook H, substantially as and for the purpose specified.

JAMES STEWART.

Witnesses:
ALBERT H. ADAMS,
HARRY T. JONES.