

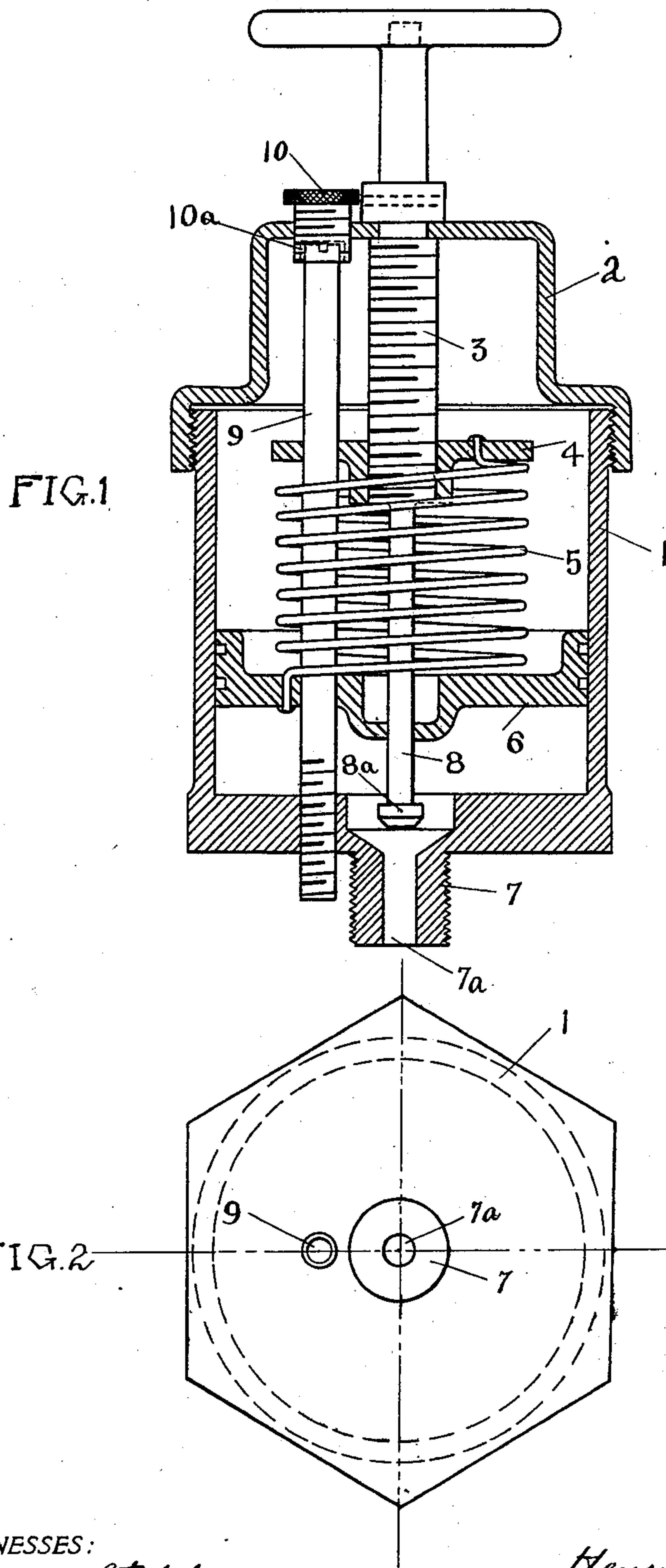
No. 674,126.

Patented May 14, 1901.

H. W. SIMMS.
AUTOMATIC LUBRICATOR.

(Application filed Oct. 1, 1900.)

(No Model.)



WITNESSES:
William Stephens
L. G. Willcox.

INVENTOR.
Henry W. Simms
BY
Geo. B. Willcox ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY W. SIMMS, OF BAY CITY, MICHIGAN.

AUTOMATIC LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 674,126, dated May 14, 1901.

Application filed October 1, 1900. Serial No. 31,638. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. SIMMS, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Automatic Lubricators; and I do hereby 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.

This invention pertains to lubricators, and more particularly to the automatic or "force feed" type of grease-cups.

The improvements consist, as will be fully set forth hereinafter, in certain constructions and arrangement of the parts of a lubricator whereby I accomplish the objects of my invention. These objects are, first, to provide an automatic grease-cup with means for keeping the feed-spring at any desired tension regardless of the amount of grease in the cup or whether the plunger is at the top or the bottom of its travel; secondly, to provide a tube passing through both the plunger and the spring-regulating follower that shall serve not only to prevent the plunger and follower from turning when the feed-screw rotates, but also forming a lock to prevent the cup from jarring loose or unscrewing from the journal-box; thirdly, to provide a central rod depending from the feeding-screw passing through the plunger and adapted to engage the plunger when it is to be removed from the cup, and also serving to keep the grease-discharge opening free from obstructions, and, fourthly, to produce a compact cup of simple construction having few moving parts, all of which are inclosed within the cup and having means not only for preventing the cup and its cover from turning, but also for locking the plunger, the feed-spring, and its follower from turning and affording means for injecting oil, cleansing fluids, &c., into the journal-bearing independent of the main feed.

The device is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the cup. Fig. 2 is a bottom view.

The shell 1 has a removable recessed cover 2, in which is swiveled a central screw 3, ar-

anged to rotate without advancing. Threaded upon the screw is a disk or follower 4, arranged to bear upon the upper end of a coiled spring 5, the lower end of which rests upon the upper surface of the plunger 6, by which the grease or other lubricant is expelled through the hole 7^a of the threaded nipple 7. Fixed to the lower end of the screw 3 is a downwardly-projecting central rod 8, which passes by a sliding fit through the plunger 6 and extends nearly to the bottom of the cup, where it is provided with an enlarged end 8^a or equivalent projection that prevents its detachment from the plunger.

A vertical tube 9 extends through the follower, the plunger, and the bottom of the cup, projecting below the bottom a short distance, so as to enter a hole provided for it in the journal-box, thus securely locking the cup against turning or jarring loose and at the same time preventing the follower, the plunger, and the spring from turning when the screw rotates. A hole is provided in the cover 2, registering with the top of the tube 9 and fitted with a removable cap or plug 10, that has its lower end provided with a suitable recess 10^a to receive the end of the tube, and thereby close the tube, at the same time locking the cover 2 against unscrewing. The arrangement and operation of this tube 9 are fully set forth in my application for lubricator, Serial No. 31,639, executed the 25th day of September, 1900, and filed on even date herewith.

The operation of the cup is as follows: The nipple 7 having been screwed into the journal-box, the cup is turned until the lower end of the tube 9 registers with the hole provided for it in the journal-box, when it is screwed down until it enters the hole, thus locking the cup against turning. The cup having been filled, the screw 3 and plunger 6, with its spring 5 and follower 4, are inserted in the cup, the follower having been previously screwed up into the recess of the cover. The cover is then screwed on, being turned so that its hole registers with the top of the tube 9. By inserting the upper plug or cap 10 the tube is closed and the cover 2 is locked in place. Turning the screw 3 forces the follower 4 down, compressing the spring 5 and increasing the pressure on the plunger 6, which forces the grease

into the bearing. The lower end 8^a of the rod 8 revolves in proximity to the exit 7^a and prevents the opening from becoming obstructed. Both the follower and the plunger are prevented from rotating by the tube 9, which still permits their progressive movement. As the cup empties a turn or two of the handle restores the full pressure of the spring 5, thus keeping a uniform pressure on the grease, and consequently giving a uniform rate of feed, which is essential to the best economy. When the cup is to be refilled, the cap 10 is withdrawn sufficiently to clear the tube 9, the cover 2 is unscrewed, and the follower, the spring, and the plunger are removed by means of the handle of the screw 3.

To prevent binding between the plunger 6 and the walls of the cup when the plunger is being withdrawn, due to uneven yielding of the spring 5, I provide the rod 8, the projection 8^a of which engages the center of the plunger, thus withdrawing it easily. To permit the plunger to travel the full length of the cup and likewise to admit of using a long screw 3, I find it convenient to recess the plunger 6, as shown, to receive the end of the screw 3 when the plunger is at the top of its travel, and to provide a corresponding recess in the bottom of the cup to conform to the plunger when the latter is at the bottom of its travel.

What I claim is—

1. In a lubricator comprising a cup having a removable cover, the combination of a spring-pressed plunger; a central screw swiveled in the cover; a follower-disk traveling on the screw; a compressible spring between the follower and the plunger; a central rod projecting below the screw through the plunger and having an enlarged end; a tube passing at one side of the axis through the follower and through the plunger, preventing them from turning yet permitting their progressive movement, the lower end of said tube projecting through the bottom of the cup to engage the journal-box and lock the cup against turning; and a cap in the cover to engage the upper end of the tube and lock the cover against turning.

2. In a lubricator comprising a cup having

a removable cover, the combination of a spring-pressed plunger; a central screw swiveled in the cover; a follower-disk traveling on the screw; a compressible spring between the follower and the plunger; a central rod projecting below the screw through the plunger, and having an enlarged head; a tube passing at one side of the axis through the plunger and follower, and secured to the bottom of the cup, for preventing the follower and plunger from turning and yet permitting their progressive movement.

3. In a lubricator, the combination with a cup having a removable cover, of a spring-compressed plunger; a central screw swiveled in the cover, a follower traveling on the screw and a coiled spring compressibly mounted between the follower and the plunger and a connection extending the length of the cup and through its bottom, serving as a means for preventing the follower and plunger from turning when the screw rotates.

4. In a lubricator, the automatic feeding mechanism herein described, comprising in combination a spring-pressed plunger, a central screw swiveled to the cover of the lubricator, a follower traveling on said screw, a compressible spring mounted between the follower and the plunger, and a central rod projecting below the screw, passing through the center of the plunger and having an enlarged end below the plunger, substantially as described.

5. In a spring-regulated feed for grease-cups, the combination of a spring-pressed plunger a follower above the plunger a swiveled screw for advancing the same, and a compressible spring interposed between the follower and the plunger, together with a tube passing at one side of the axis through the follower and through the plunger, preventing them from turning yet permitting their progressive movement.

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

HENRY W. SIMMS.

Witnesses:

GEO. B. WILLCOX,
WILLIAM STEPHENS.