(No Model.) 2 Sheets—Sheet 1.

J. POWELL.

LUBRICATOR.

No. 326,520. Patented Sept. 15, 1885.

FIG. 1.

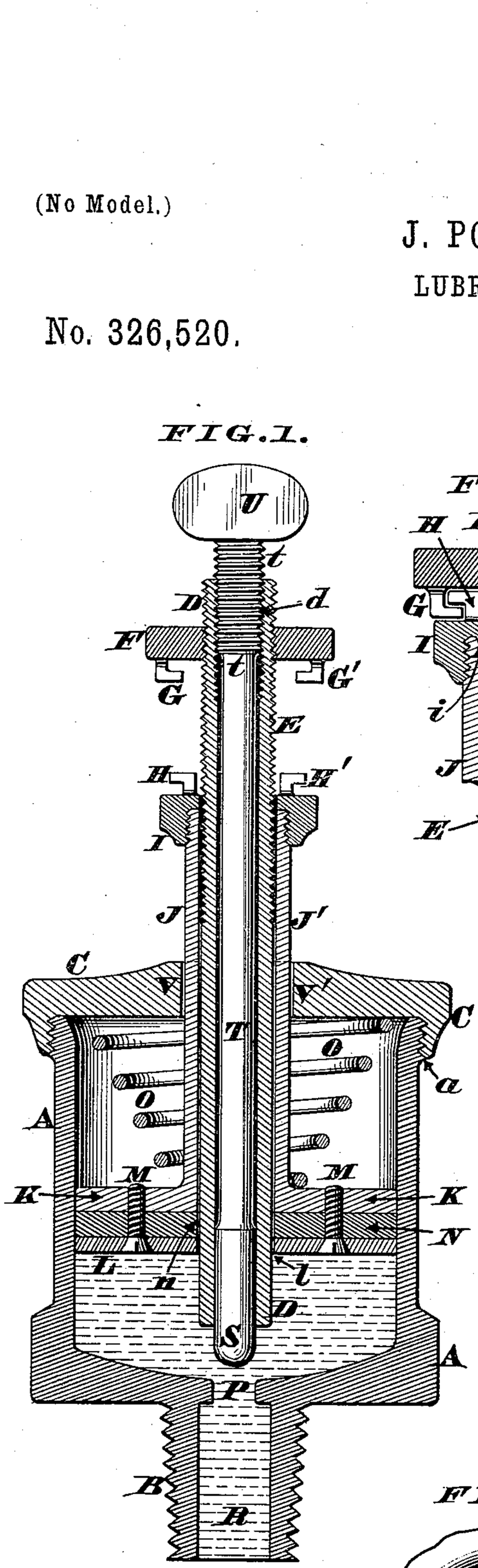


FIG. 4.

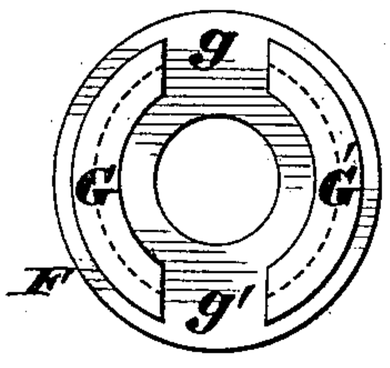


FIG. 3.

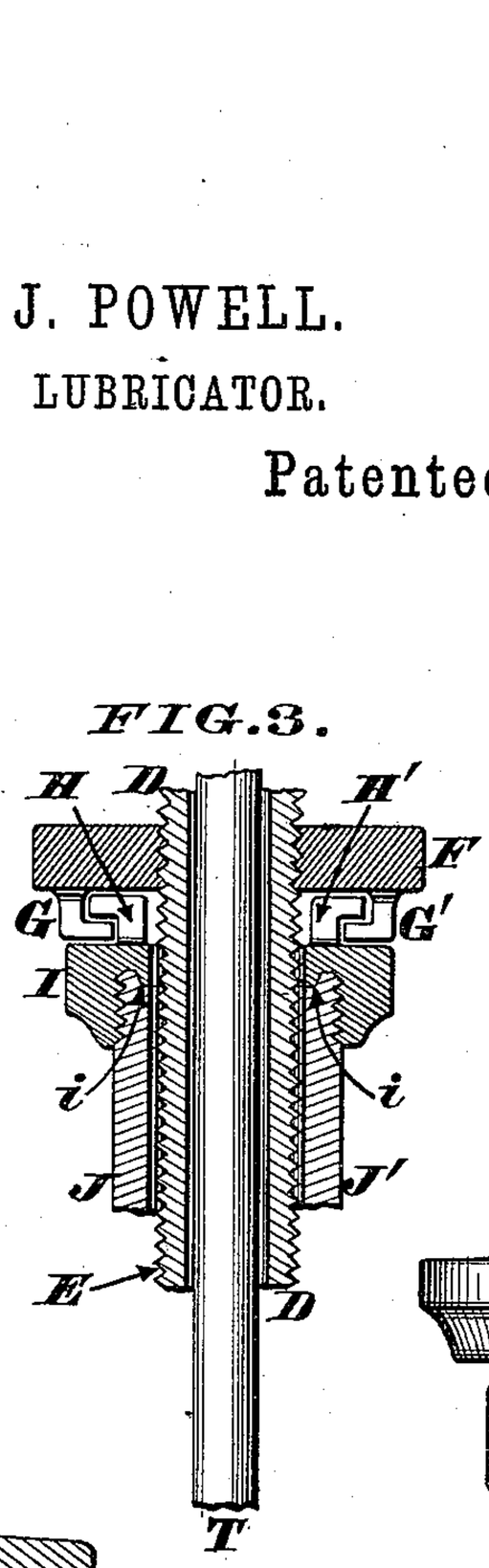


FIG. 2.

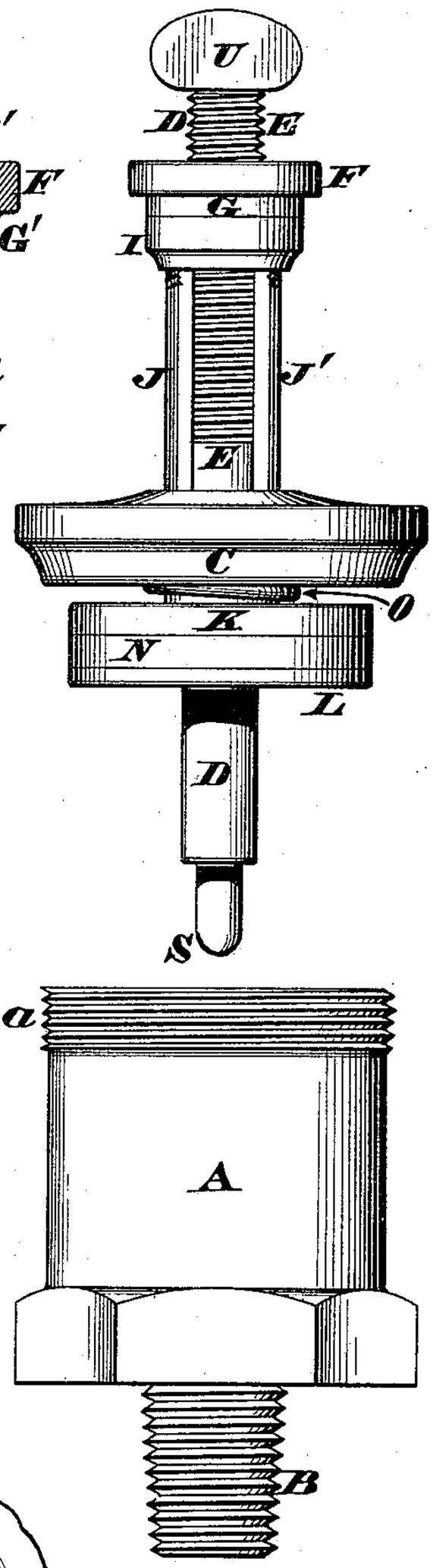
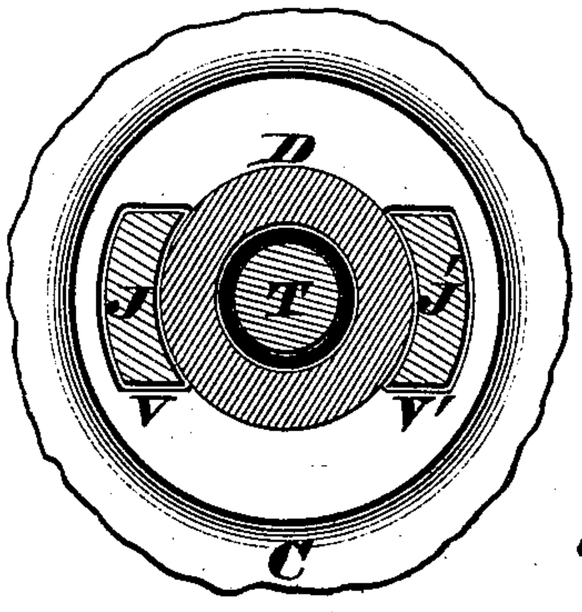


FIG. 5.



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(No Model.) 2 Sheets—Sheet 2.

J. POWELL.

LUBRICATOR.

No. 326,520. Patented Sept. 15, 1885.

FIG. 6.

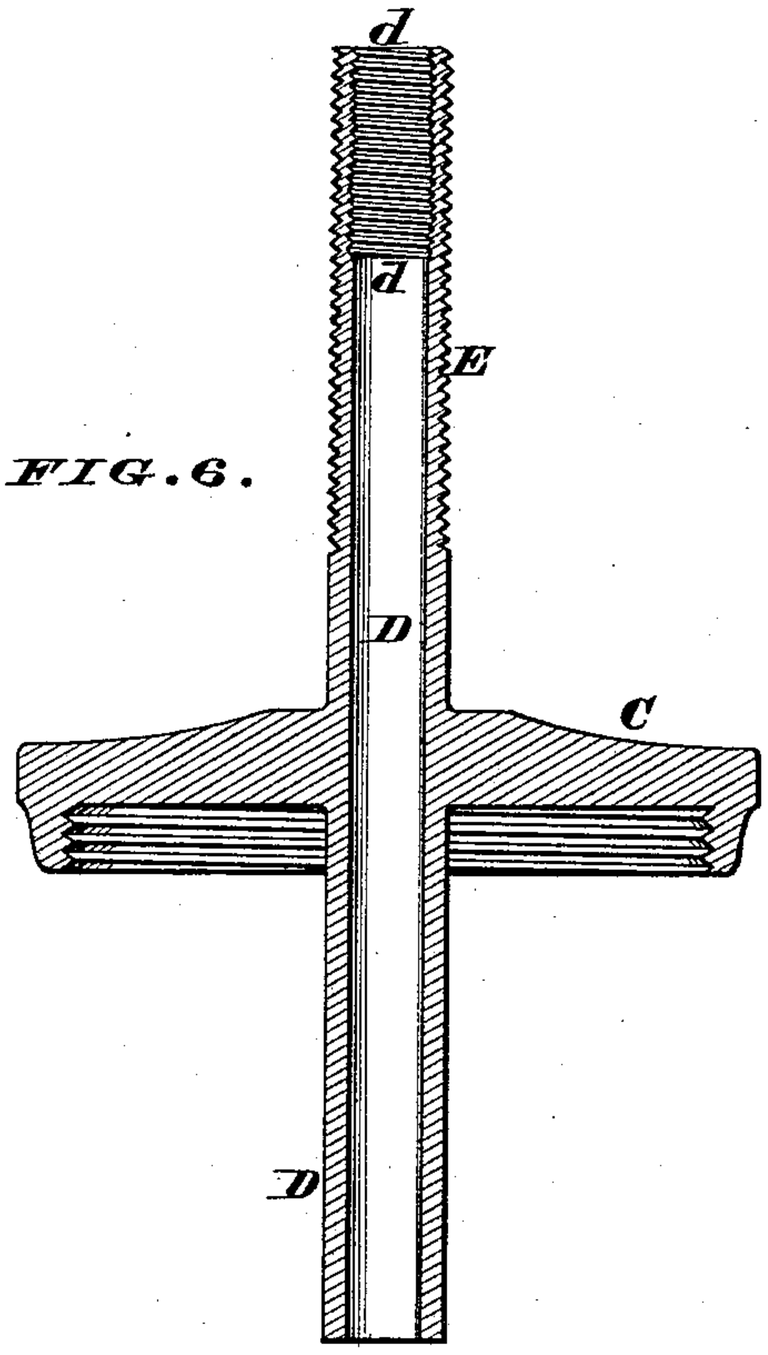


FIG. 7.

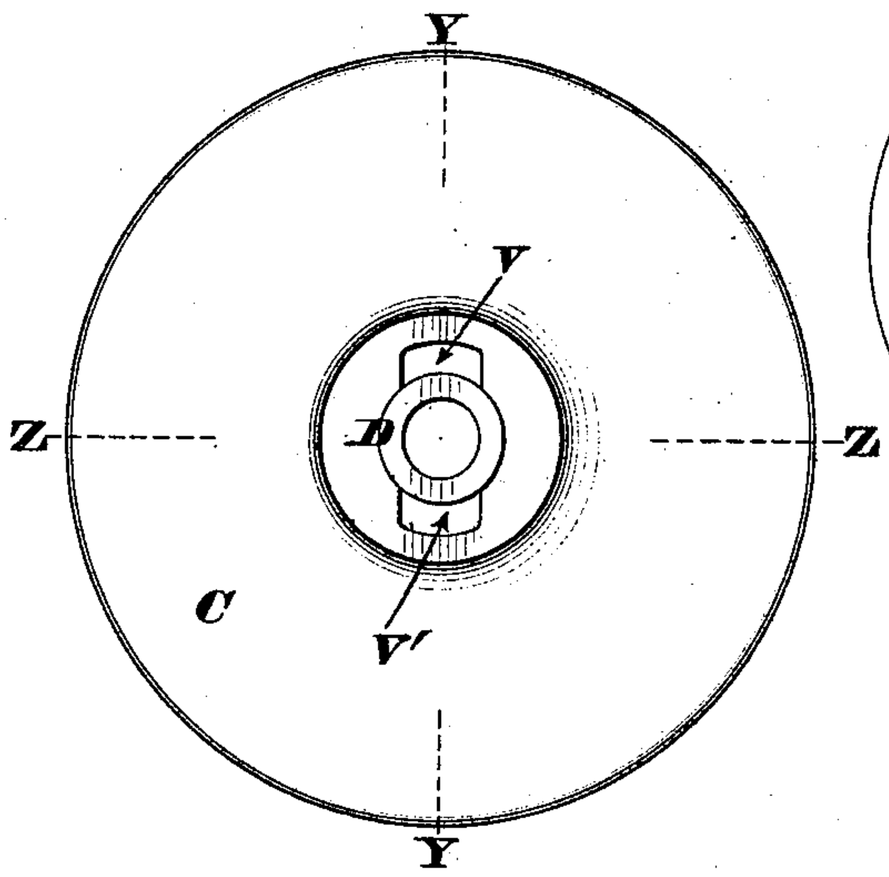


FIG. 8.

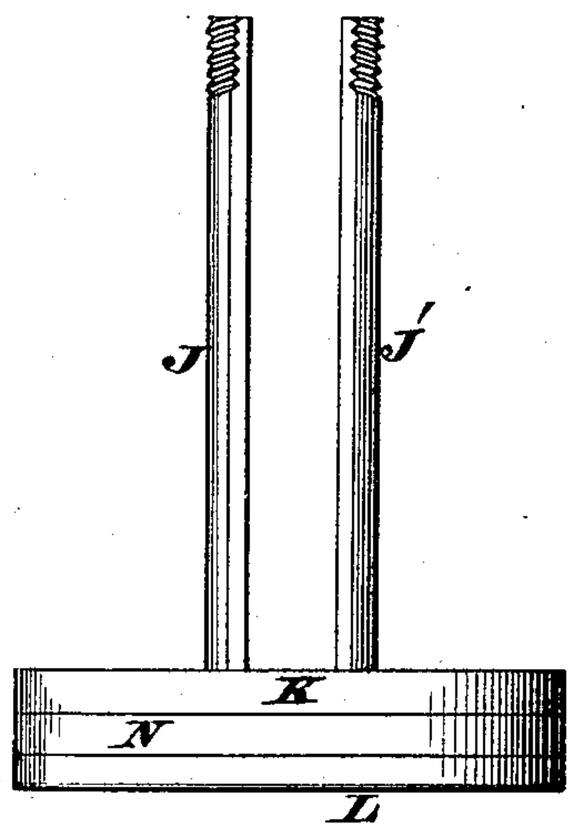


FIG. 9.

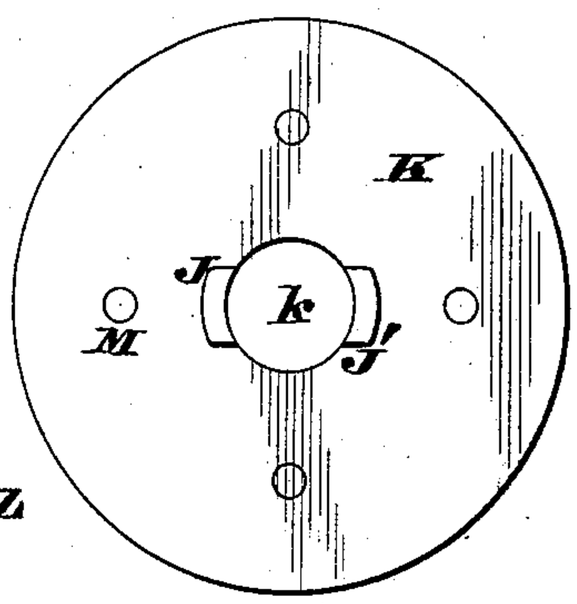
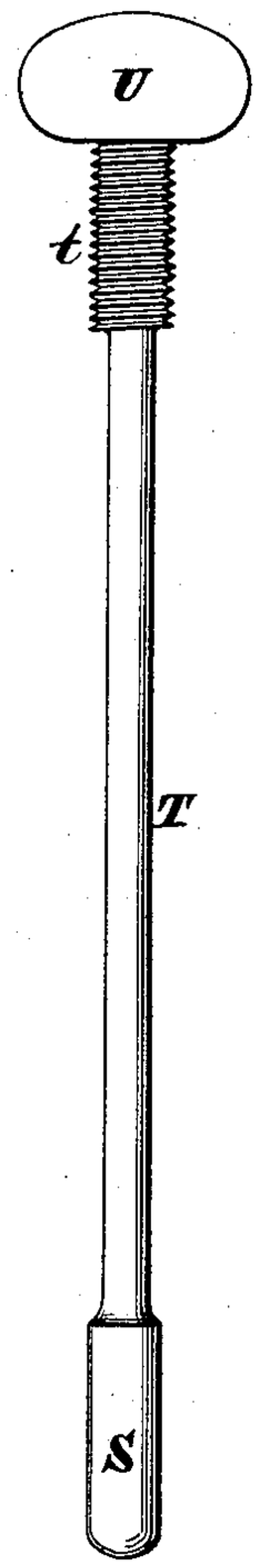


FIG. 10.



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UNITED STATES PATENT OFFICE.

JAMES POWELL, OF CINCINNATI, OHIO.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 326,520, dated September 15, 1885.

Application filed April 23, 1885. (No model.)

To all whom it may concern:

Be it known that I, JAMES POWELL, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Lubricators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to those devices which employ a spring-actuated piston for the purpose of insuring a forced feed of grease or other dense lubricant from a cup, cylinder, or similar reservoir; and the first part of my improvements consists in making the rod of such pistons tubular, and fitting therein a plug or stem whose inner end acts as a cut-off that regulates or entirely stops the flow of grease, as occasion may require.

The second part of my improvements consists in providing a lubricator with a pair of clutch-nuts, which are capable of engagement when it is desired to retract and lock the spring-piston preparatory to filling the cup or cylinder, as hereinafter more fully described.

The third part of my improvements comprises a novel construction of piston, which effectually prevents the escape of grease either at the sides of the cup or at the central opening, where the tube that surrounds the plug or valve-stem passes through said piston, as hereinafter more fully described.

The fourth part of my invention consists in enlarging the discharge channel or passage immediately below the outlet proper of the cup, so as to produce a comparatively free delivery of the grease, as hereinafter more fully described.

The fifth part of my invention consists in making the piston-rod of two tubular segments, and applying to the exposed end of the same a nut having an annular flange or bead that prevents said segments being compressed when said nut is screwed thereon, as hereinafter more fully described.

In the annexed drawings, Figure 1 is an axial section of my improved grease-cup, taken at the line *y y* of Fig. 7, the controlling-valve being raised from off the discharge-opening. Fig. 2 is an elevation of the device drawn to a reduced scale, the piston being removed from the cup or cylinder and drawn up close to the cap of the latter and locked in position. Fig. 3 is an enlarged section showing the clutch-nuts coupled together. Fig. 4 is a plan of one of said nuts. Fig. 5 is an enlarged transverse section of the device, taken directly above the cap of the lubricator. Fig. 6 is an axial section of the cap and its integral tube, said section being taken at the line *z z* of Fig. 7, which latter illustration is a plan of said tube and cap. Fig. 8 is an elevation of the piston detached from the lubricator. Fig. 9 is a plan of said piston. Fig. 10 is an elevation of the valve-stem.

The cup or cylinder A has at its lower end a screw-threaded stem or shank, B, wherewith the attachment is made to a journal-bearing or other device to be lubricated, while the upper end of said cup is threaded at *a* for the engagement of the cap C. Projecting from this cap C is a tube, D, open at each end and screw-threaded externally at E, to permit the engagement of the upper clutch-nut, F, said nut having on its under side a pair of undercut flanges, G G′, separated by openings or intervals *g g′*, as more clearly seen in Fig. 4. Adapted to engage with these undercut flanges G G′ are hooks H H′, projecting from the top of the lower clutch-nut, I, the latter being capable of screwing onto the tubular segments J J′ of the piston K. Furthermore, this nut I has an annular flange or bead, *i*, (seen in Fig. 3,) which flange grasps the inner sides of the segmental tubes J J′, and thereby prevents the compression of the upper ends of said tubes when said nut is screwed thereon.

Piston K has a follower, L, secured in place by screws M, a leather or other suitable packing-ring, N, being interposed between said piston and follower. The follower has a central circular opening, *l*, the packing a similar opening, *n*, and the piston a corresponding opening, *k*, as more clearly seen in Fig. 9, through which openings is passed the tube D, previously alluded to.

Interposed between the cap C and piston K is a spring, O, formed of a number of coils that reduce in diameter as they approach said piston.

The bottom of cup A dishes to the center and has an outlet, P, which is comparatively

short and contracted with reference to the discharge-channel R, with which it communicates. Adapted to close this outlet P is a plug-valve, S, at the lower end of a rod or stem, T, the upper portion thereof being threaded at *t* to engage with the internal screw, *d*, of tube D.

U is a thumb-piece or handle for operating the valve-stem.

V V′ are slots in the cap C, to permit the passage of the tubular segments J J′.

My lubricator is filled and operated in the following manner: The piston K is first drawn up quite close to the cap C, as seen in Fig. 2, and is locked in position by causing the hooks H H′ of nut I to pass through the intervals *g g′*, that separate the undercut flanges G G′ of the other nut F, and then turning the latter until said hooks engage with said flanges, as seen in Fig. 3. This close approach of the piston to the cap is permitted on account of the coils of the spring O fitting one within the other, because each coil is of a different diameter to its immediate neighbor. The cup or cylinder A is then filled with grease or other turgid lubricant, after which act the cap C is screwed onto said cup, the position of stem T *t* being such as to cause the plug S to close the outlet P as soon as said cap is applied. The upper nut, F, is now turned until the hooks H H′ of the lower nut, I, are brought in line with the intervals or breaks *g g′* of the flanges G G′, at which moment the spring O exerts its force and drives the piston down until it rests on the surface of the grease contained in the cup. It is evident the grease is now subjected to the pressure of the spring, but cannot escape from the cup A, because the outlet P is closed by the plug S. As soon, however, as the thumb-piece U is turned so as to cause the screw *t* to raise the stem T, and thereby lift the plug S, the grease at once escapes through the outlet P and discharge-channel R. By making this channel comparatively large in diameter with reference to the outlet, the friction incidental to the passage of a dense fluid through a long contracted passage is obviated, and the result is a steady and uniform discharge of grease, the supply of which can be regulated at any time by properly manipulating the handle or other adjusting device U.

If the spring should break or become weakened by constant use, or if the grease should be rendered very stiff in winter-time, the upper nut, F, can be screwed down against the lower nut, I, and then by occasionally turning said upper nut the piston will be depressed and the lubricant ejected, as desired. By simply tightening the screws M the compressible packing N will be expanded laterally and caused to fit very snugly against the interior of the cup and the exterior of the tube D. The method of applying the tube D to the cap C is immaterial, provided said tube is preserved in a proper position with reference to the other members of the grease-cup. As seen in Fig. 5, that portion of the tube between the slots V V′ may have solder applied thereto for the purpose of making a rigid connection with the cap; or said tube and cap may be cast together, so as to be integral therewith.

I claim as my invention—

1. The combination, in a grease-cup, of a spring-actuated piston for ejecting the lubricant and a cut-off for regulating the escape of the same, said cut-off being located within the tubular rod that carries said piston, substantially as described.

2. The combination, in a grease-cup, of a spring-actuated piston for expelling the lubricant, a tube projecting from the cap of the reservoir, and a cut-off traversing said tube, the latter being threaded externally to receive a nut, wherewith pressure is brought to bear against the hollow rod that carries said piston, substantially as described.

3. The combination, in a grease cup, of a spring-actuated piston for expelling the lubricant, a tube projecting from the cap of the reservoir, and a cut-off traversing said tube, the latter being threaded externally to receive a clutch-nut, which is adapted to engage with a clutch-nut applied to the hollow or divided rod that carries said piston, substantially as herein described.

4. The combination, in a grease-cup, of the cut-off S, closing against a contracted outlet, P, in the bottom of said cup, which outlet communicates with a discharge-channel, R, of relatively greater capacity, said cut-off being operated by a rod or stem traversing the piston that ejects the grease, substantially as herein described.

5. In combination with a grease-cup having a piston, K, and hollow rod J J′, traversed by a tube, D, which latter projects from the cap of the reservoir in the manner described, the expansible packing N, follower L, and clamping device M, said packing and follower being pierced, respectively, at *n* and *l*, to permit the passage of said tube, as herein explained.

6. An improved lubricator or grease-cup consisting of the reservoir A, having the screw-thread *a*, contracted outlet P, and enlarged discharge-channel R, the cap C, having slots V V′, the tube D, screw-threaded internally at *d* and externally at E, the clutch-nut F, having undercut flanges G G′, separated by intervals *g g′*, the clutch-nut I, having hooks H H′, the tubular segments J J′, carrying the ejecting-piston M, the spring O, interposed between said piston and cap C, and the cut-off S T, located within the tube D and provided with a screw, *t*, engaging with the screw *d* of said tube, for the purpose specified.

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

JAMES POWELL.

Witnesses:
JAMES H. LAYMAN,
RANKIN D. JONES.