No. 837,905. PATENTED DEC. 4, 1906.

F. W. KNOTT.

LUBRICATOR.

APPLICATION FILED MAR. 8, 1905.

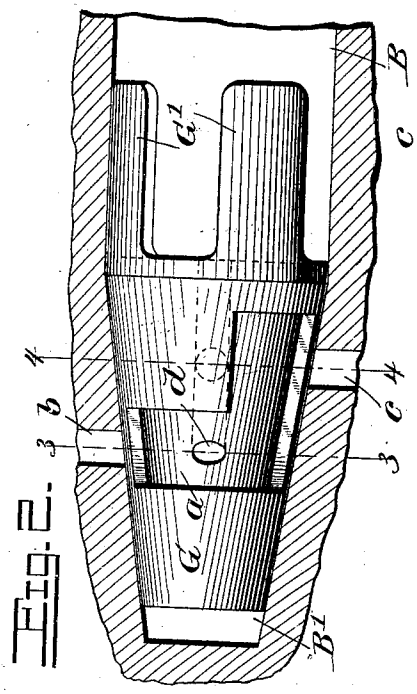

Fig. 2.

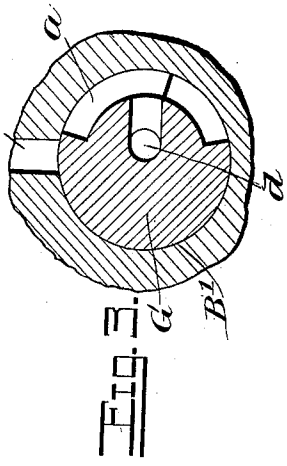

Fig. 3.

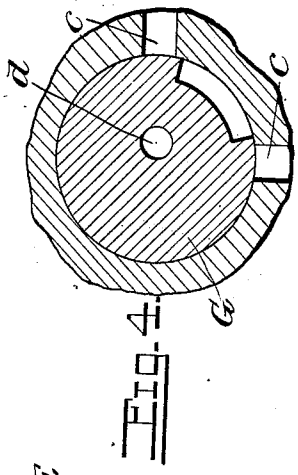

Fig. 4.

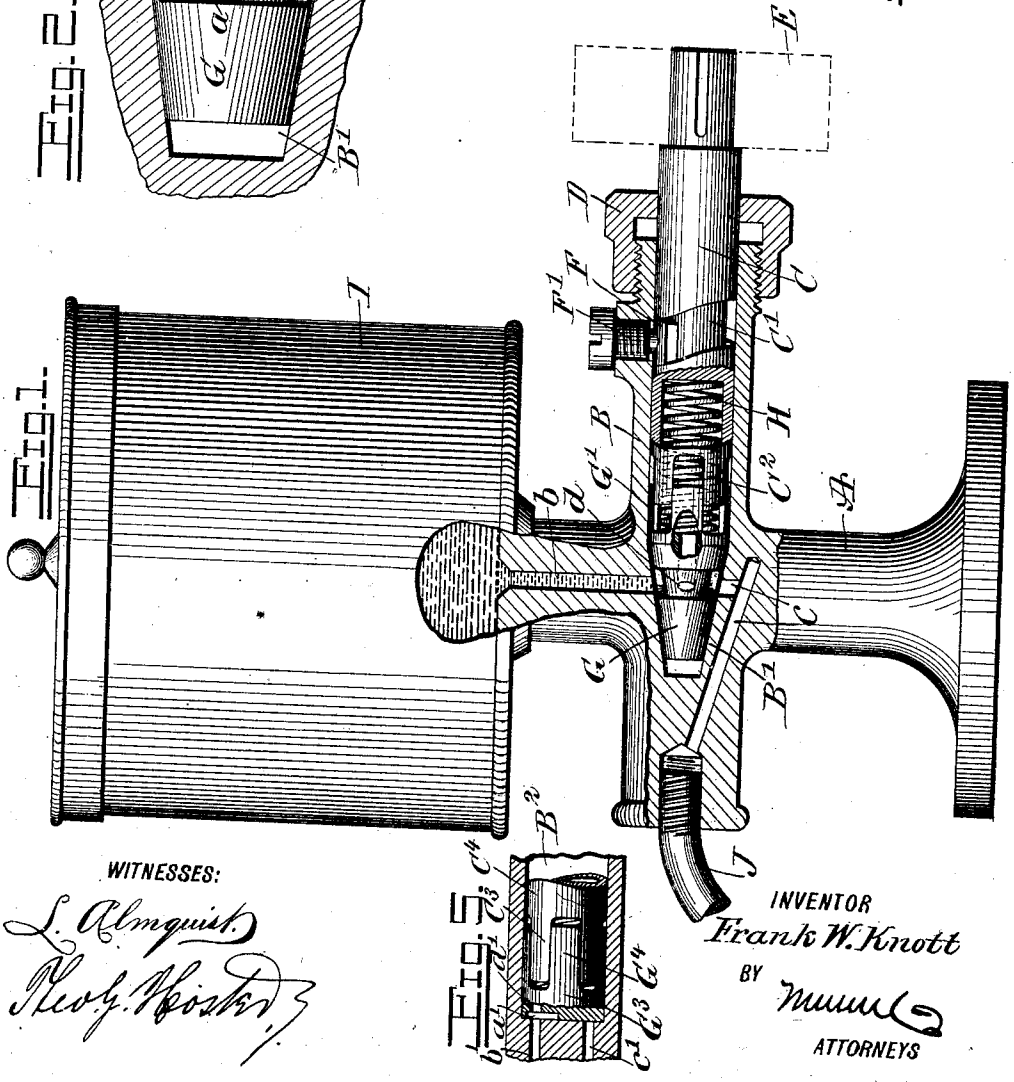

Fig. 1.

Fig. 5.

WITNESSES:

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LUBRICATOR.

No. 837,905. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed March 8, 1905. Serial No. 248,964.

To all whom it may concern:

Be it known that I, FRANK WILLIAM KNOTT, a citizen of the United States, and a resident of Madison, in the county of Dane and State of Wisconsin, have invented a new and Improved Lubricator, of which the following is a full, clear, and exact description.

The invention relates to force-feed lubricators; and its object is to provide a new and improved lubricator arranged to automatically and periodically force the desired quantity of the lubricant to the bearing, cylinder, or other part or parts to be lubricated.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is an enlarged sectional side elevation of the valve and connections. Fig. 3 is a cross-section of the same on the line 3 3 of Fig. 2. Fig. 4 is a similar view of the same on the line 4 4 of Fig. 2, and Fig. 5 is a sectional side elevation of a modified form of the improvement.

On a suitably-constructed stand or frame A is arranged a cylinder B, in which is mounted to turn and to reciprocate a plunger C, extending through a suitable stuffing-box D to the outside of the cylinder B, the outer end of the said plunger carrying a pulley E, connected by a belt with other machinery for imparting a continuous rotary motion to the said plunger C. In order to reciprocate the plunger C in the direction of its length within the cylinder B, a spiral groove is formed on the peripheral surface of the plunger, and this spiral groove is engaged by a shoe F, swiveled on a screw F′, screwing in the cylinder B, as plainly indicated in Fig. 1, so that when the plunger C is rotated the shoe F, traveling in the spiral groove C′, causes a reciprocation of the plunger C.

The inner end of the cylinder B terminates in a valve-seat B′ for a valve G, adapted to be rotated by the plunger C, the valve G being for this purpose provided with wings G′, extending between wings C^2, formed on the inner end of the plunger C, and hence when the plunger C is rotated the wings C^2 act on the wings G′ to turn the valve G in its seat B′, the wings G′ and C^2 being of sufficient length to remain in gear during the reciprocating movement of the plunger C. A spring H, held in a recess on the inner end of the plunger C, presses the valve G to hold the same firmly to its seat B′.

In the peripheral face of the valve G, which is preferably made conical, as shown in Figs. 1 and 2, is formed a recess *a*, adapted to connect alternately with ports *b* and *c*, of which the port *b* leads to a lubricant-supply in the form of a cup I, containing the lubricant, as plainly shown in Fig. 1, and the port *c* leads to a pipe J, connected with the part or parts to be lubricated. From the recess *a* also leads a port *d* into the cylinder B, and the arrangement is such that when the plunger C is on the outward or suction stroke then the recess *a* registers with the port *d*, so that the lubricant is drawn into the inner end of the cylinder B from the cup I by way of the port *b*, recess *a*, and port *d*. As soon as the recess *a* is moved out of register with the port *b* and into register with the port *c* then the plunger C is at the return or inward stroke, thus forcing the lubricant out of the cylinder B by way of the port *d*, recess *a*, and port *c* to force the lubricant, by way of the pipe J, to the part or parts to be lubricated.

If desired, the recess *a* may be enlarged sidewise, as indicated in Fig. 2, and a number of discharge-ports *c* may be employed to allow of lubricating successively a number of parts during each revolution of the plunger C.

It is not absolutely necessary that the valve G be made conical. For instance, as illustrated in Fig. 5, the valve G^3 may be cylindrical. In this case the valve G^3 is provided with wings G^4 for engagement with the wings C^3 of the plunger C^4 to rotate the valve by the reciprocating and rotating plunger C^4. The recess *a*′ in this case is formed in the end of the valve G^3 and is adapted to register alternately with the inlet-port *b*′ and the discharge-port *c*′, the recess *a*′ also having communication by the port *d*′ with the interior of the cylinder B^2.

By the arrangement described it will be seen that the pump, consisting of the cylinder B and the reciprocating and rotating plunger C, draws in the lubricant by way of the valve G and forces the lubricant out to the part or parts to be lubricated, the valve G being completely controlled by the said plunger. By having the spring H interposed between the plunger and the valve G the latter is always

held firmly to its seat to avoid leakage, and by the arrangement described it is not necessary to use check-valves or the like, as the recess *a* alternately connects with the inlet-port *b* and the discharge-port *c*.

The device is very simple and durable in construction, cheap to manufacture, and not liable to easily get out of order.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A lubricator comprising a valve controlling the inflow and outflow of the lubricant, and a pump having a plunger for actuating the valve and for drawing in the lubricant and forcing it out by way of the valve, the said plunger having a sliding connection with the valve and arranged to rotate the latter.

2. A lubricator comprising a valve mounted to turn and arranged to alternately connect with a lubricant-supply and a lubricant-discharge leading to the part to be lubricated, a pump-cylinder, and a plunger therein mounted to turn in the cylinder and arranged to reciprocate when turned, the plunger having an interlocking sliding connection with the said valve to turn the latter, and adapted when actuated to draw the lubricant into the cylinder by way of the valve and to force it out through the valve.

3. A lubricator comprising a valve alternately connecting with a lubricant-supply and a lubricant-discharge leading to the part to be lubricated, a pump-cylinder, a plunger mounted to turn and to reciprocate in the cylinder and having a sliding connection with the said valve, to actuate the same and to draw in the lubricant by way of the valve and to force it out through the valve, and means for rotating and reciprocating the said plunger.

4. A lubricator comprising a valve mounted to turn and alternately connecting with a lubricant-supply and a lubricant-discharge leading to the part to be lubricated, a pump-cylinder, a plunger therein, the said plunger being mounted to turn and to reciprocate in the cylinder and having a sliding connection with the said valve, to actuate the same and to draw in the lubricant by way of the valve and to force it out through the valve, and a spring interposed between the said plunger and valve.

5. A lubricator comprising a cylinder terminating in a valve-seat, a plunger mounted to turn and to reciprocate in the said cylinder, and a valve on the said seat, adapted to alternately connect with a supply and with a discharge, the said valve being in communication with the said cylinder and the said valve having a sliding connection with the said plunger, for the latter to rotate the valve.

6. A lubricator comprising a cylinder terminating in a valve-seat, a plunger mounted to turn and to reciprocate in the said cylinder, a valve on the said seat, adapted to alternately be connected with a supply and with a discharge, the said valve being in communication with the said cylinder and the said valve having a sliding connection with the said plunger, for the latter to rotate the valve, and a spring pressing the valve, to hold the same to its seat.

7. A lubricator comprising a cylinder terminating in a valve-seat, a plunger mounted to turn and to reciprocate in the said cylinder and provided on its inner end with wings, and a valve held on the said seat and provided with wings extending between the wings of the plunger whereby the valve turns when the plunger is turned, the said valve being in communication with the said cylinder and adapted to alternately connect with a supply and with a discharge.

8. A lubricator, comprising a vessel containing the lubricant, a cylinder provided with a valve-seat, a valve held on said seat and provided with a recess, adapted to communicate alternately with ports leading respectively to the said vessel and to a discharge, the said recess also communicating by a port with the interior of the cylinder, a plunger mounted to turn in the cylinder and having a sliding connection with the said valve to rotate the latter, the plunger being provided on its peripheral surface with a spiral groove, a screw screwing in the cylinder, a shoe swiveled on said screw and engaging the said spiral groove, to cause a reciprocation of the plunger when the latter is turned, and means for rotating the plunger.

9. A lubricator comprising a valve mounted to turn and alternately connecting with a lubricant-supply and a lubricant-discharge leading to the part to be lubricated, a pump-cylinder, a plunger therein, the said plunger being mounted to turn and to reciprocate in the cylinder and having a sliding connection with the said valve, to draw in the lubricant by way of the valve and to force it out through the valve, and a spring interposed between the said plunger and valve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK WILLIAM KNOTT.

Witnesses:
JOHN C. TOGSTAD,
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