No. 765,387. PATENTED JULY 19, 1904.

C. & J. JACOBSON.

LUBRICATOR.

APPLICATION FILED SEPT. 17, 1902.

NO MODEL. 2 SHEETS--SHEET 1.

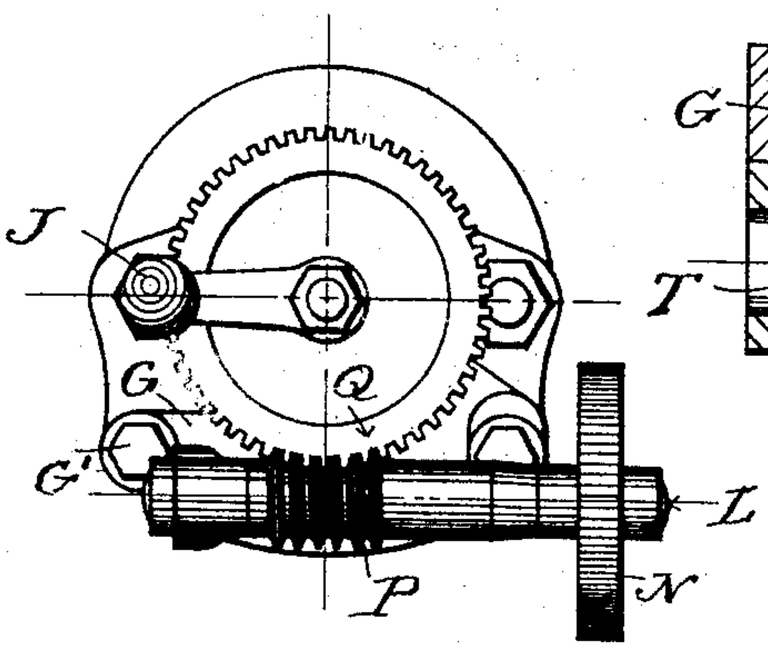

FIG. 2

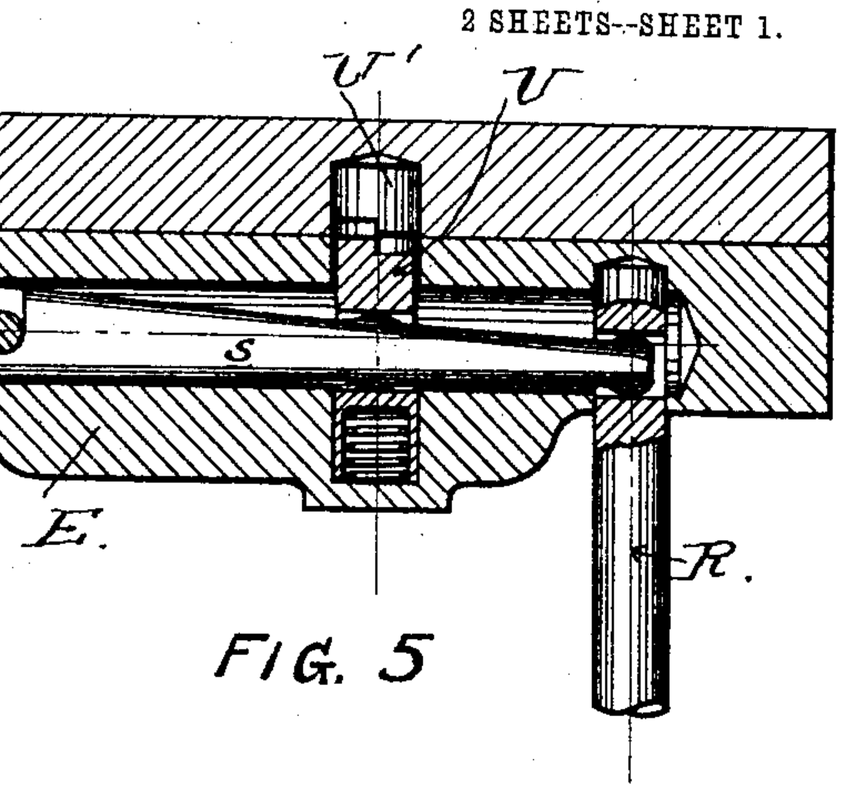

FIG. 5

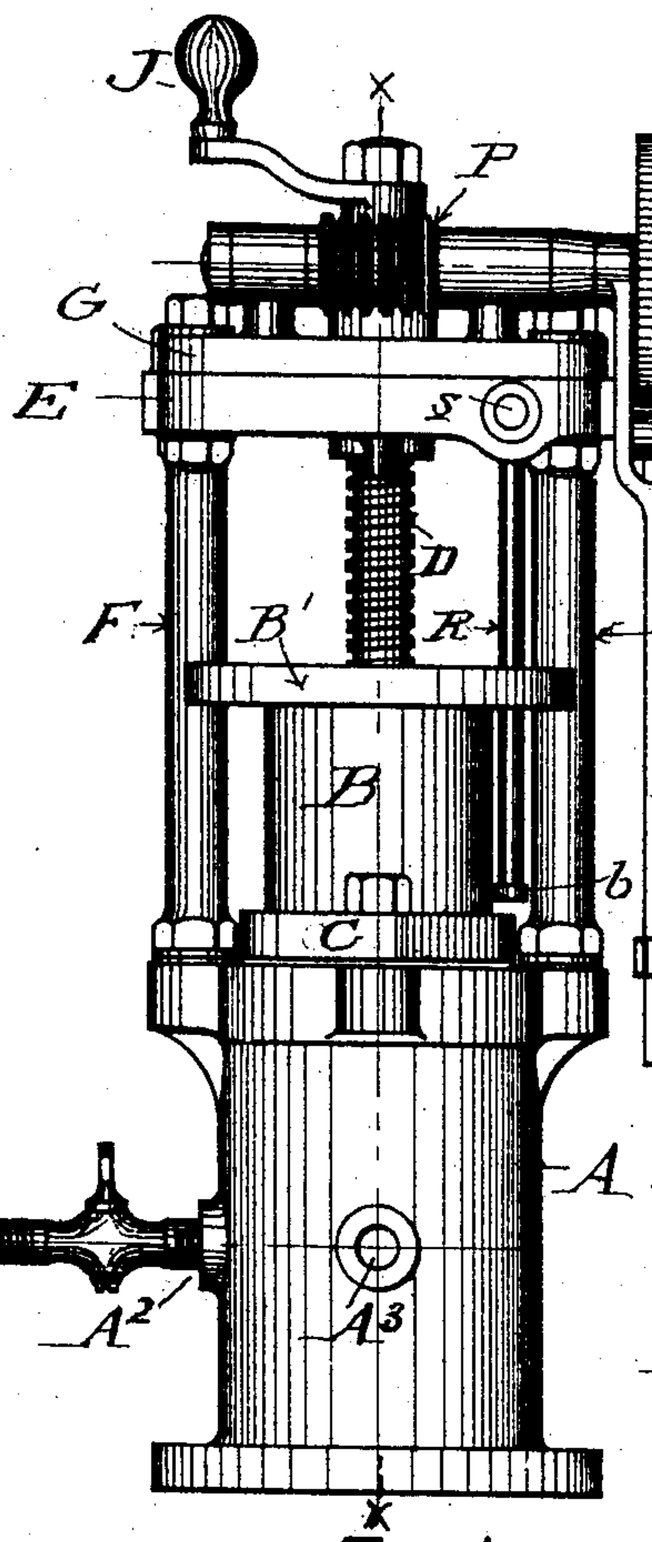

FIG. 1

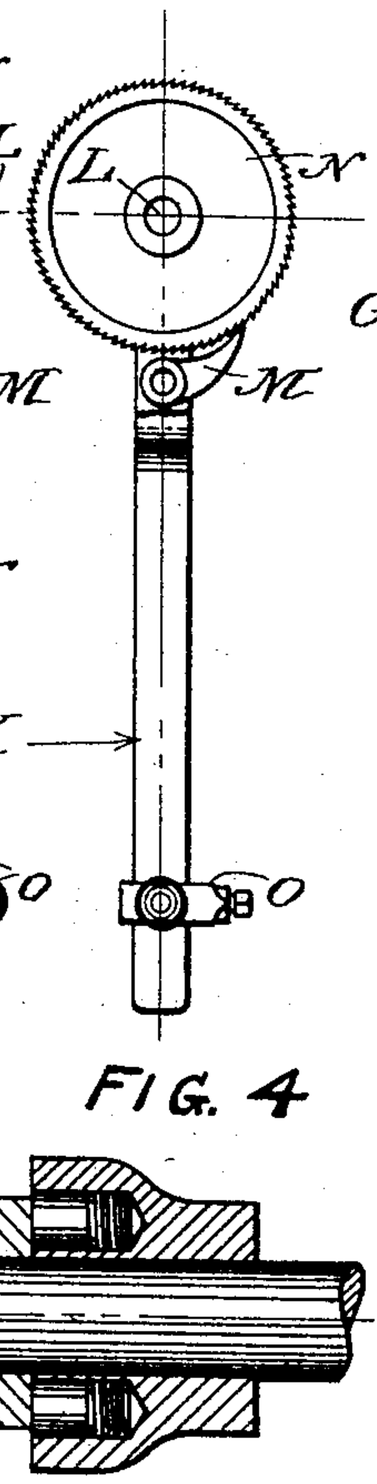

FIG. 4

FIG. 6

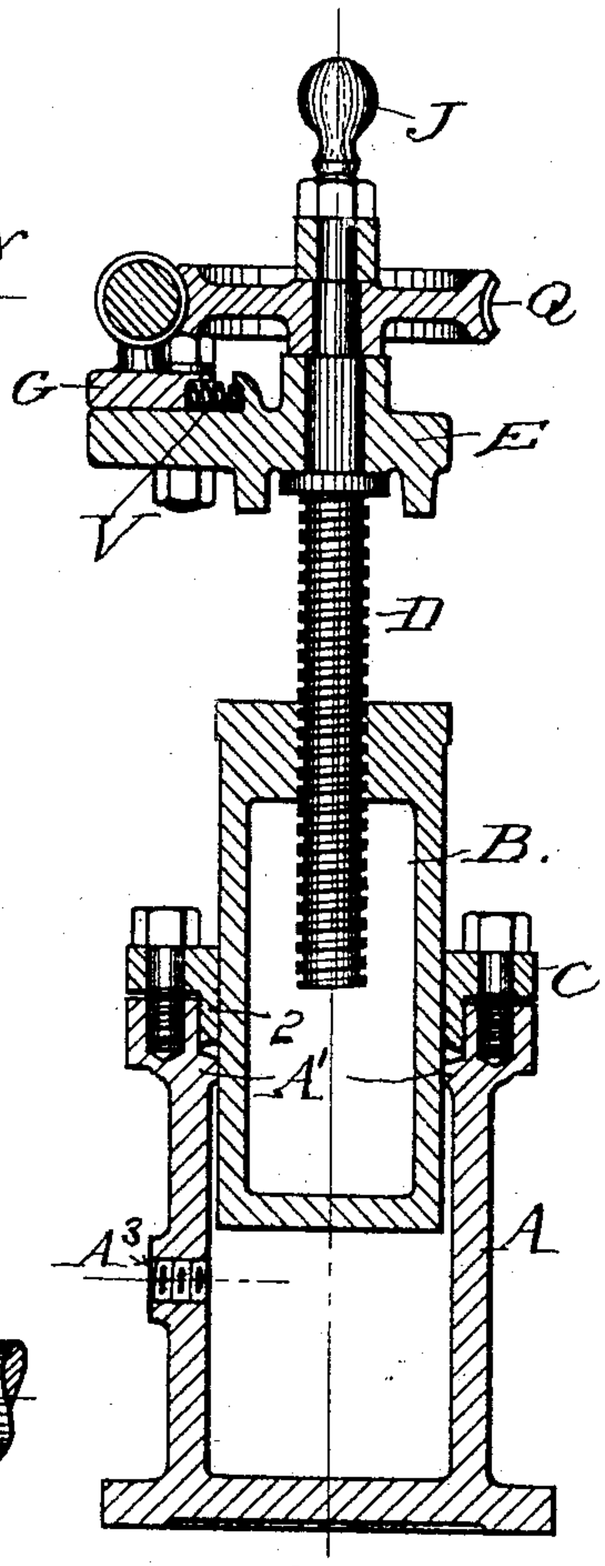

FIG. 3

WITNESSES:
M. W. Miles,
T. H. Buckhead

INVENTORS
Charles Jacobson
Jacob Jacobson
BY
T. Walter Fowler.
their ATTORNEY.

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NO MODEL. 2 SHEETS—SHEET 2.

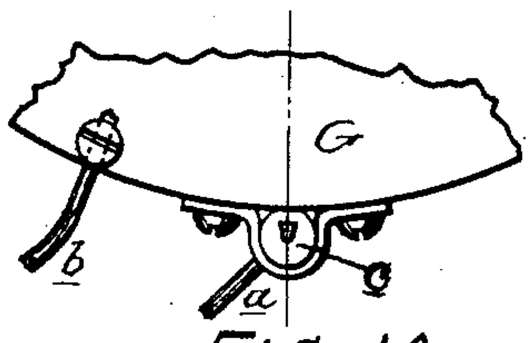
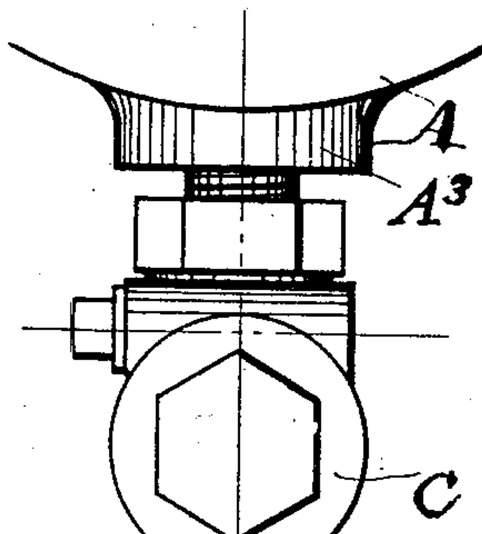


FIG. 10.



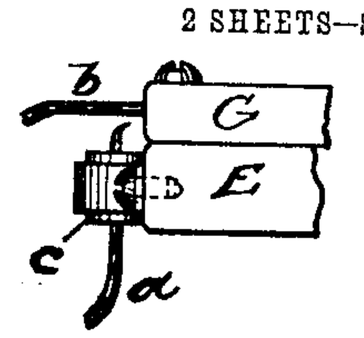


FIG. 11.

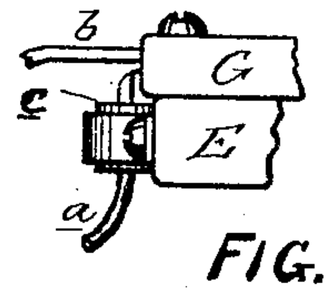


FIG. 12.

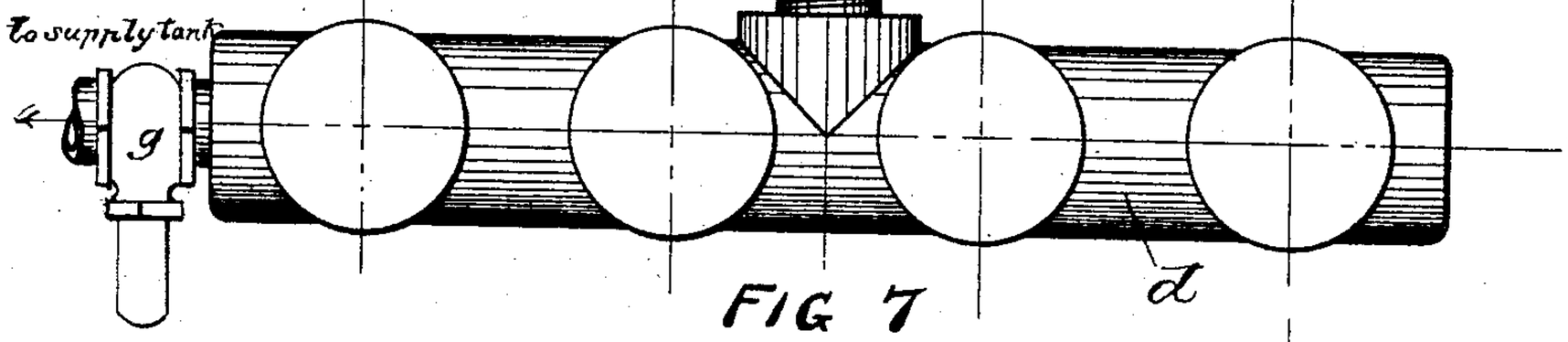


FIG 7

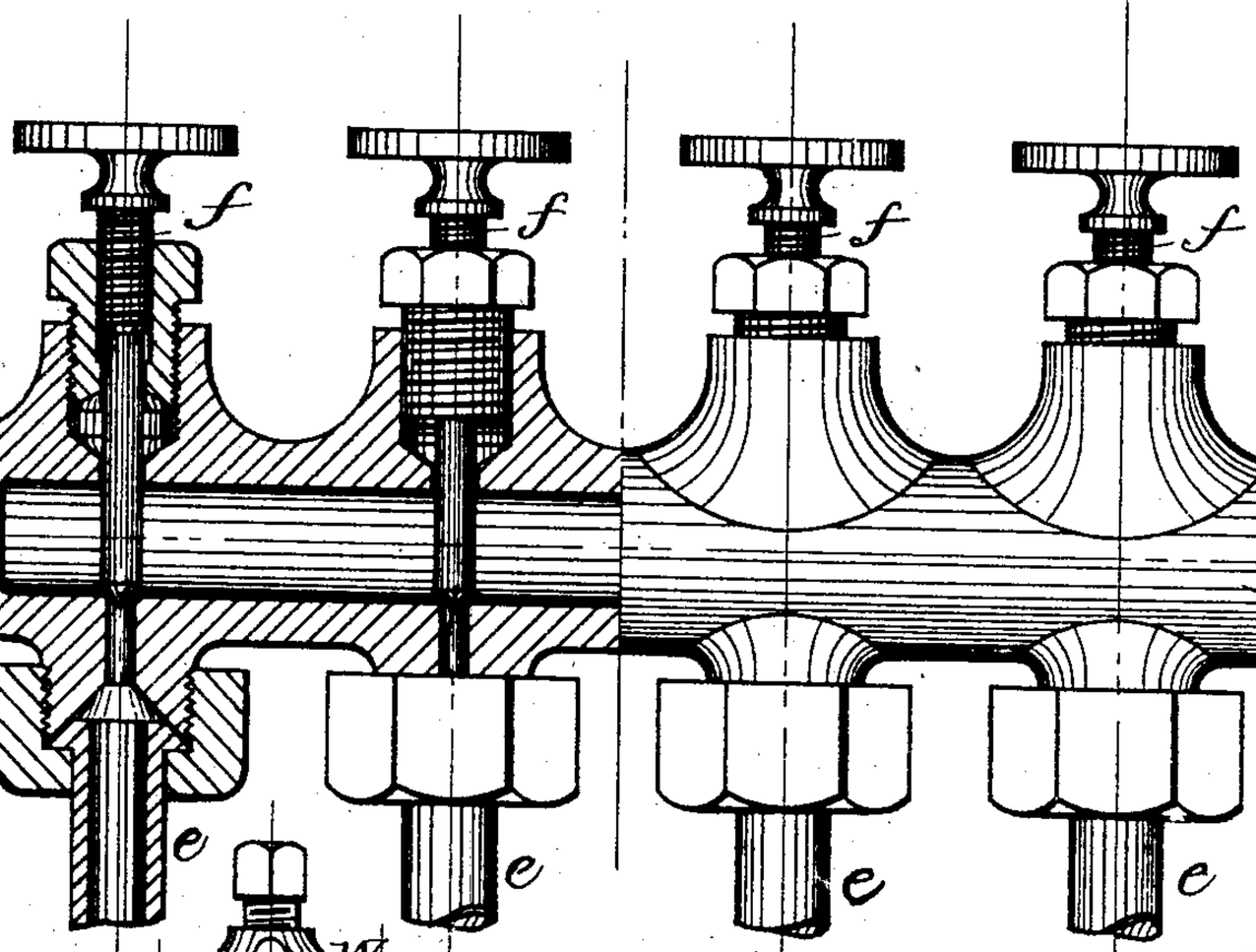


FIG. 8.

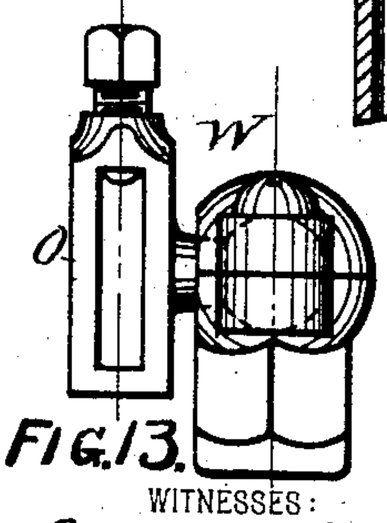


FIG. 13.

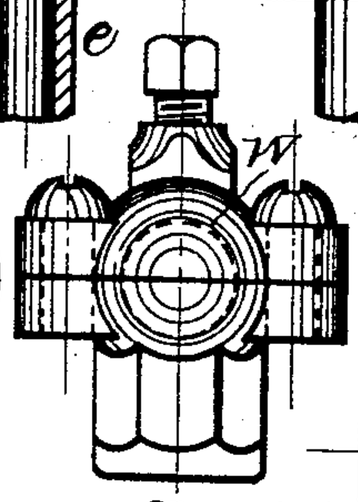


FIG. 14.

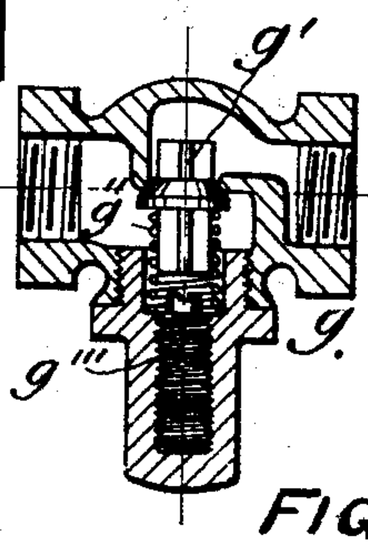


FIG. 9.

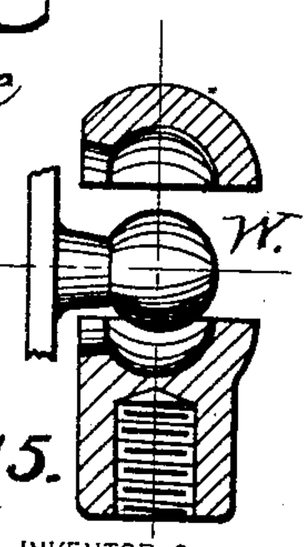


FIG. 15.

WITNESSES:

M. W. Miles.

T. H. Buckhead

INVENTOR'S

Charles Jacobson,

Jacob Jacobson,

BY

T. Walter Fowler

their ATTORNEY.

No. 765,387. Patented July 19, 1904.

UNITED STATES PATENT OFFICE.

CHARLES JACOBSON AND JACOB JACOBSON, OF WARREN, PENNSYLVANIA.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 765,387, dated July 19, 1904.

Application filed September 17, 1902. Serial No. 123,755. (No model.)

To all whom it may concern:

Be it known that we, CHARLES JACOBSON, a citizen of the United States, and JACOB JACOBSON, a subject of the King of Sweden and Norway, both residing at Warren, in the county of Warren and State of Pennsylvania, have invented new and useful Improvements in Lubricators, of which the following is a specification.

This invention relates to certain new and useful improvements in devices for supplying oil or lubricating material to the running parts of an engine or other piece of machinery; and the invention consists of the parts and the constructions and combinations of parts which we will hereinafter describe and claim.

In the accompanying drawings, in which similar characters of reference indicate corresponding parts throughout the several figures, Figure 1 is a side elevation of a lubricator embodying our invention. Fig. 2 is a top plan view. Fig. 3 is a vertical sectional view on the line *x x* of Fig. 1, showing the feed-screw in elevation. Figs. 4, 5, and 6 are details of construction to be hereinafter referred to. Fig. 7 illustrates a plan view of a distributing-tube for the lubricant. Fig. 8 is a part elevation and part-sectional view of the distributing-tube. Fig. 9 is a sectional view of a safety-valve. Figs. 10, 11, and 12 illustrate contact-wires for producing an alarm or signal. Figs. 13, 14, and 15 illustrate a ball-and-socket connection.

In carrying out our invention we employ a body or cylinder A, of any desired or appropriate size and material, adapted as a reservoir or receiver for the oil or lubricant that is to be supplied to the moving parts of the engine or other machine or structure, said cylinder or body having an inlet at A^2, through which the lubricant is received from a reservoir or other source of supply, and having an outlet at A^3, by means of which and suitable connections, to be hereinafter referred to, the lubricant is forced to its place of desired deposit. This cylinder or body A is also shown as provided with a base-flange by means of which it may be bolted or otherwise fixed to a proper bed or foundation-support, and the opposite or upper end of the cylinder is provided with a cap-plate C, fixed in place by tap-screws and provided with a suitable stuffing-box 2. The interior of the upper portion of the cylinder has a flange at A′, which is appropriately turned or finished to form a close working fit with a piston B, the diameter of which is preferably but slightly less than the inner diameter of the cylinder in which it operates, said piston adapted to move up and down in the cylinder and to displace the oil or lubricant therein and cause it to flow through the outlet and connections to the engine or parts to be lubricated. The piston is actuated by a feed-screw D, which passes through a threaded opening in the top of the same. Rising from the top of the cylinder are suitable vertical posts or guides F, to the upper end of which is fixed a cap E, in which the upper end of the feed-screw D is journaled to rotate freely, but not to move endwise, whereby when the screw is actuated, as we will presently describe, the piston is moved either up or down in the cylinder A, according to the direction in which said screw is turned, and as the bore of the cylinder below the flange or bearing A′ is somewhat in excess of the diameter of the piston it is evident that when the latter is forced down into the cylinder a portion of the oil or lubricant therein is forced out of the cylinder through the outlet A^3. The feed-screw is intended primarily to be actuated automatically by the impulses of an engine or other motor or machine, although it might be operated by hand, and in furtherance of its automatic action we have shown a lever K, which is designed to have an appropriate connection with an engine or other machine to which the lubricator is to be so attached that the oil or lubricant is automatically supplied to said engine or machine. In Figs. 13, 14, and 15 we illustrate in detail a form of ball-and-socket joint W, which will be found useful as a connection between the lever K and the actuating part of the engine or machine alluded to. The aforesaid lever K has one end forked and loosely mounted upon a shaft L, said lever carrying a pawl or dog M, which engages the teeth of a ratchet-wheel N, fixed to said shaft,

whereby the wheel and shaft are turned a distance equal to the space between one or more of the teeth of the wheel by each impulse given the lever K by the engine or machine with which the latter is connected. The extent of this movement is, however, regulated by the position that the connecting member O of the ball-and-socket joint has on the lever, it being understood that the said joint connection is adjustable on the lever to regulate the throw or amount of movement of the latter. The movement of the shaft L, due to the action of the lever K and ratchet-wheel N, is relatively slow and is communicated to a worm P, which is fixed to the shaft and which is designed to be moved into and out of engagement with a worm-wheel Q, securely fixed to the upper portion of the feed-screw D, as shown in Fig. 3, whereby the movement of the engine or machine is transmitted, through the lever K, the ratchet-wheel N, the worm and the worm-wheel, to the feed-screw to cause the latter to be moved in its piston, as before described. The shaft L and its adjuncts are carried by a laterally-swinging member or plate G, lying upon the cap-plate E and hinged or pivoted thereto by a bolt G′ or equivalent means, said swinging plate G being spring-actuated and released by a trip mechanism set in operation by the piston B, as we will now indicate. Assuming that the feed-screw is operating to force the piston down and expel the lubricant, the downward travel of the piston is stopped at the desired time by means of a trip-rod R, which passes through the flange B′ of the piston and is provided with a head *b*, which is struck by the under side of the piston as the latter descends, thereby pulling the rod down. The upper end of this rod R is fitted to one end of a trip-pin *s*, (see Fig. 5,) located in a recess in the cap-plate E and fulcrumed at T, so that it may be freely moved by the rod R. The trip-pin *s* passes through the center of a plug U, located in the cap-plate E and disposed at right angles to the bore or chamber in which the trip-pin *s* is located, said plug having a portion of its upper face cut away to engage a like face on a stationary plug U′, fixed in the plate G in line with the plug U, said plug U being spring-supported at its base.

From the foregoing construction and arrangement of parts it will be manifest that when the trip-rod R is pulled down by the action of the piston, as before described, the trip-pin *s* is moved about its fulcrum T and plug U is pulled down and out of locking engagement with the stationary plug in the plate G. This releases the locked connection between the swinging plate G and the cap-plate E and allows the spring V, Fig. 3, to operate to force the plate G outward, swinging about its fulcrum G′ and carrying with it the shaft L and connections and removing the worm P from its engagement with the worm-wheel Q. This stops the rotation of the feed-screw, and consequently the downward movement of the piston. This piston is raised again by a reverse operation of the feed-screw, which may be effected by any suitable means, as by a handle J, fixed to the upper end of the screw and operated by hand. The raising of the piston allows a new supply of lubricant to flow into the cylinder through the inlet A^2, this supply being accelerated by locating the storage-tank or source of supply at a proper elevation above the inlet A^2 and by the partial vacuum produced in the cylinder by the upward movement of the piston.

Any suitable and well-known signal or alarm mechanism may be used in connection with this lubricator to give warning when the lubricant-supply requires replenishing. For instance, an electric bell (not shown) may be arranged in circuit with the lubricator by means of the wires *a b*, Figs. 10, 11, and 12, one of said wires, *b*, being in direct contact with the movable plate G and the other wire, *a*, being mounted in an insulating-block *c* and with the point of the said wire *a* normally out of contact with said plate and so disposed in the path thereof that when the plate is moved outward about its fulcrum G its edge will contact with the point of the wire *a*, and thus establish a circuit through the plate and cause the alarm to be sounded until the attendant's attention is attracted and the lubricator replenished and set in operation again.

To properly distribute the oil or lubricant after it leaves the cylinder A, we prefer to employ a distributing-tube *d*, with as many branch pipes *e* as may be needed to supply the moving parts of the engine or machine with lubricant, each of said branch pipes having a controlling-valve *f*, adapted to control the supply to its particular pipe. Any well-known form of valve may be used, the valve shown in Fig. 8 being substantially of the "needle" type, adjustable by hand by the operator. Between the outlet A^3 of the cylinder and the distributing-tube *d* we also prefer to place a check-valve C, Fig. 7, adapted to prevent a backflow of oil into the cylinder. There is also introduced between the distributing-tube and the oil-supply tank (not shown) a safety-valve *g*, Figs. 7 and 9, provided with a valve *g′*, actuated by a spring *g″*, and should the small outlets of the distributing-tube become clogged and a pressure occur in this tube in excess of the pressure of the spring *g″* the valve *g′* will open and the surplus lubricant will escape through the safety-valve and will flow back into the supply-tank, thus relieving the excess of pressure in the tube. The tension of the spring *g″* is regulated by means of an appropriate plug *g‴*.

From this description it will be seen that we provide an automatic lubricator of simple arrangement actuated by the impulses of the engine or machine to supply periodic charges

of lubricant to said engine or machine, that all the parts are accessible for repair, and that the operation is positive with little or no danger of any of the passages clogging.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A lubricator comprising a cylinder or body adapted to receive lubricant; a force-feed mechanism; a shaft and means for imparting thereto a step-by-step rotation; intermeshing gears between the shaft and force-feed mechanism; a spring-pressed pivoted plate carrying said shaft; locking devices between the plate and a fixed part of the cylinder; a trip-pin within said fixed part and adapted to operate the locking devices; a member connected with the trip-pin and actuated by the force-feed mechanism when the latter is at its lowest point; and means connecting the shaft with the machine to be lubricated.

2. A lubricator comprising a cylinder or body adapted to receive lubricant; a piston to operate therein; a piston-feeding mechanism; an intermittently-operating mechanism and means whereby the same may be connected with a moving part of the machine to be lubricated; and means including a horizontal pivoted plate, locking devices between the same and a fixed part of the cylinder, a trip-rod engaging the locking devices and a member actuated by the piston for operating the trip-rod whereby the intermittently-operating mechanism may be automatically thrown out of connection with the piston-feeding mechanism when the piston reaches substantially its lowermost position in the cylinder.

3. A lubricator comprising a cylinder or body adapted to receive lubricant; a piston to operate therein; a piston-feeding mechanism; an intermittently-operating mechanism and means whereby the same may be connected to a moving part of the machine to be lubricated; a horizontal laterally-swinging supporting member for the intermittently-operating mechanism whereby said mechanism may be thrown into and out of connection with the piston-feeding mechanism; a horizontal plate by which said supporting member is carried said plate having an internal chamber, a trip member and locking devices therein; and a trip-rod between the trip member and the piston.

4. A lubricator comprising a cylinder or body adapted to receive lubricant; a piston to operate therein; a feed-screw engaging with the piston; a worm-wheel fixed to said feed-screw; a transverse shaft, having a worm to engage said worm-wheel; a horizontal pivotally-mounted support for said shaft whereby the worm may be thrown into and out of connection with the worm-wheel; means for imparting a step-by-step rotation to the shaft; a locking mechanism including a horizontal trip member, and locking-lugs between the swinging support and a fixed part of the lubricator; and means for releasing said locked connection when the piston has reached substantially its lowest position in the cylinder.

5. A lubricator comprising a cylinder or body to receive lubricant; a piston to operate therein; a feed-screw for the piston; means including a worm and worm-wheel connection for operating the screw; a swinging support for the worm whereby the same may be moved into and out of connection with the worm-wheel; a trip-pin fulcrumed within a fixed support and a trip-lug carried by said pin and movable thereby into and out of connection with the swinging support; a trip-rod actuated by the piston to move the trip-pin and release the locked connection of the support with said fixed part; and a spring acting on the swinging member to force the same outward and move the worm out of connection with the worm-wheel.

6. A lubricator comprising a cylinder or body and a piston to operate therein; piston-feeding devices; an intermittently-operating mechanism for actuating the piston-feeding devices; a swinging support for the intermittently-operating mechanism; means for holding the support in a locked position and with the intermittently-operating mechanism and piston-feeding devices in engagement; means for automatically releasing the support to break the engagement of said mechanism and feeding devices; and means by which an electric circuit is formed and a signal given when said support is released.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

CHARLES JACOBSON.
JACOB JACOBSON.

Witnesses:
FRANK J. LYONS,
GEO. H. GATES.