(No Model.) 2 Sheets—Sheet 1.

W. F. VAN GUYSLING.

LUBRICATOR.

No. 597,698. Patented Jan. 18, 1898.

Fig. 1.

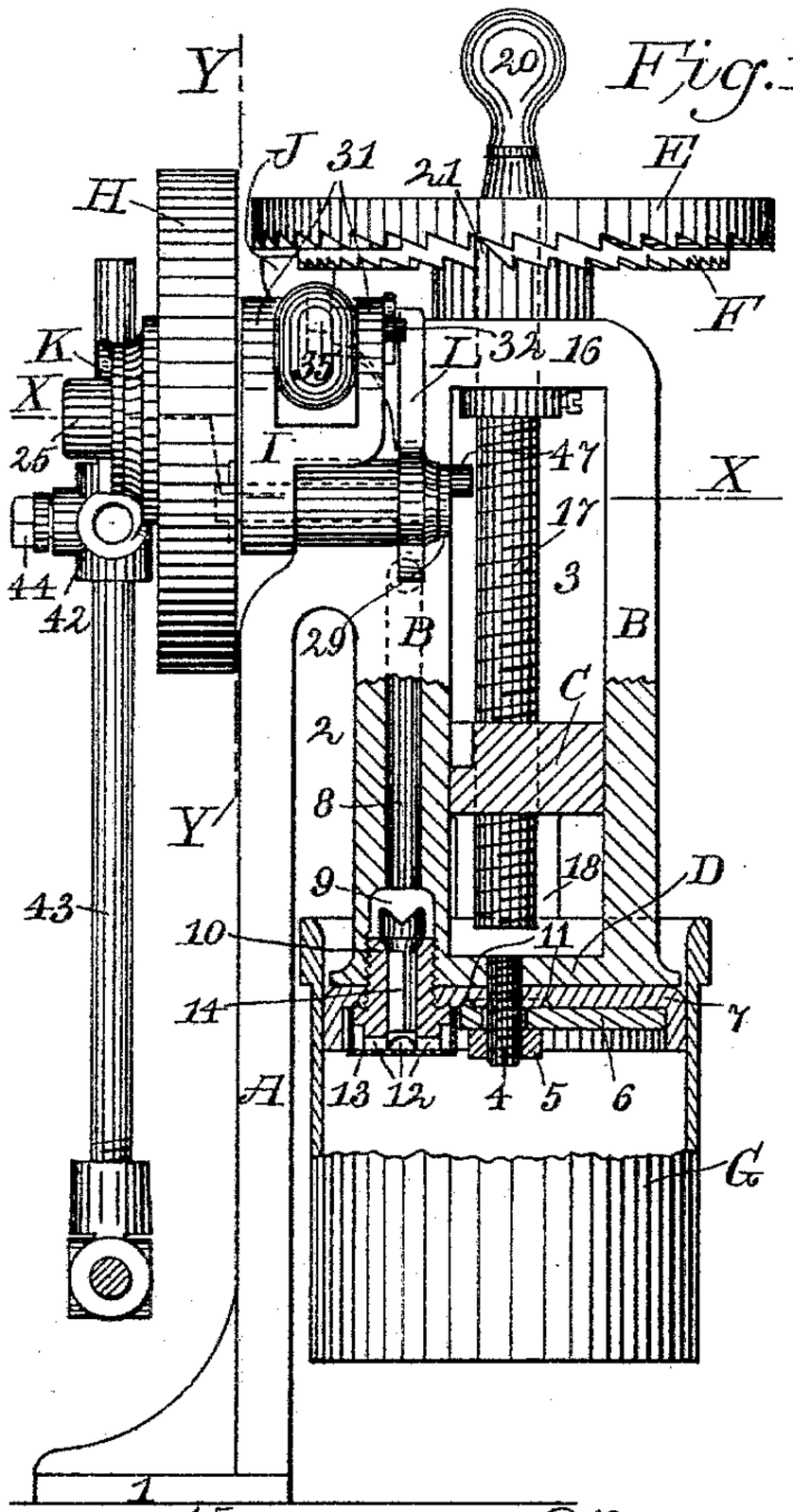


Fig. 2.

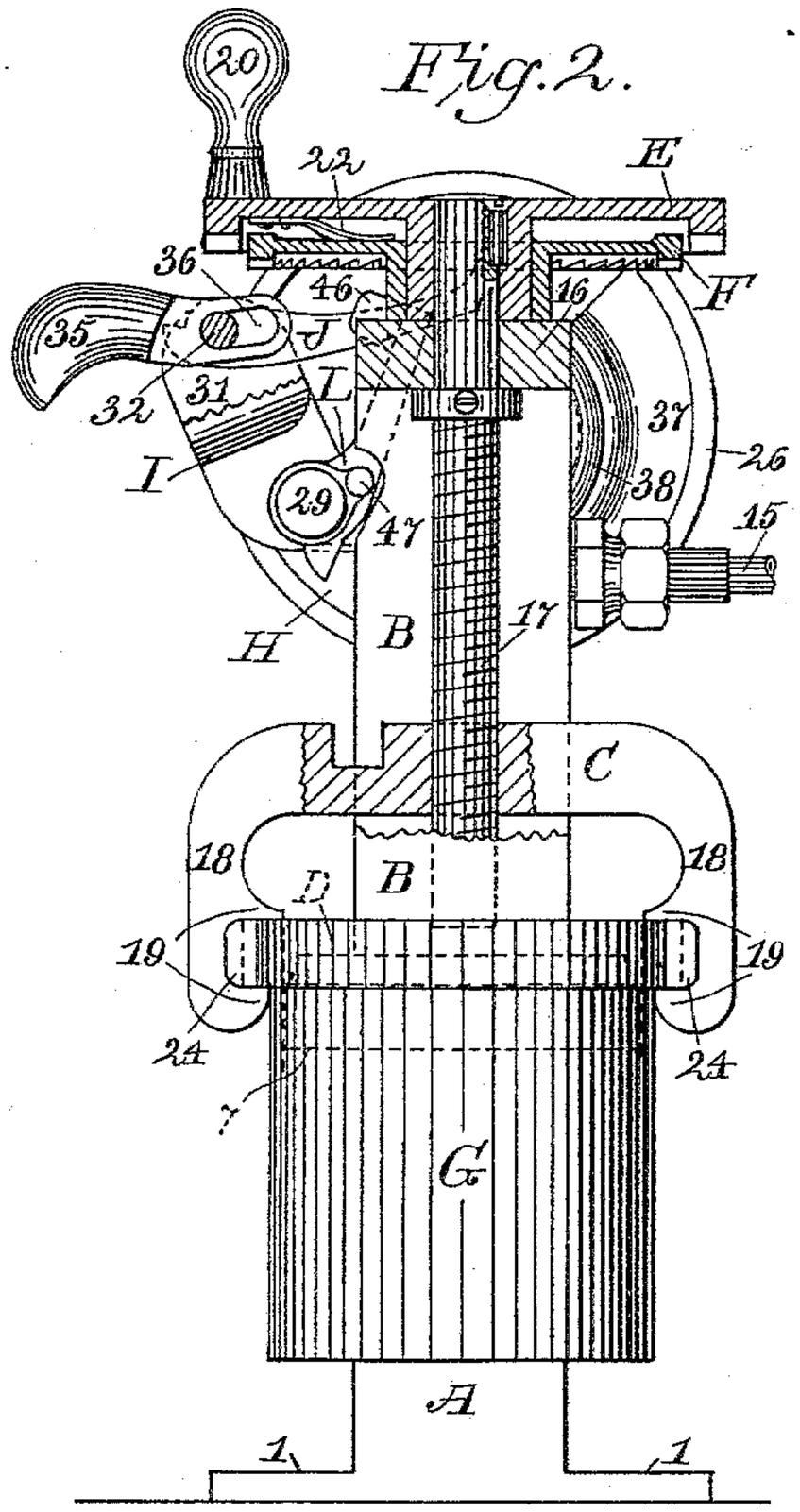


Fig. 5.

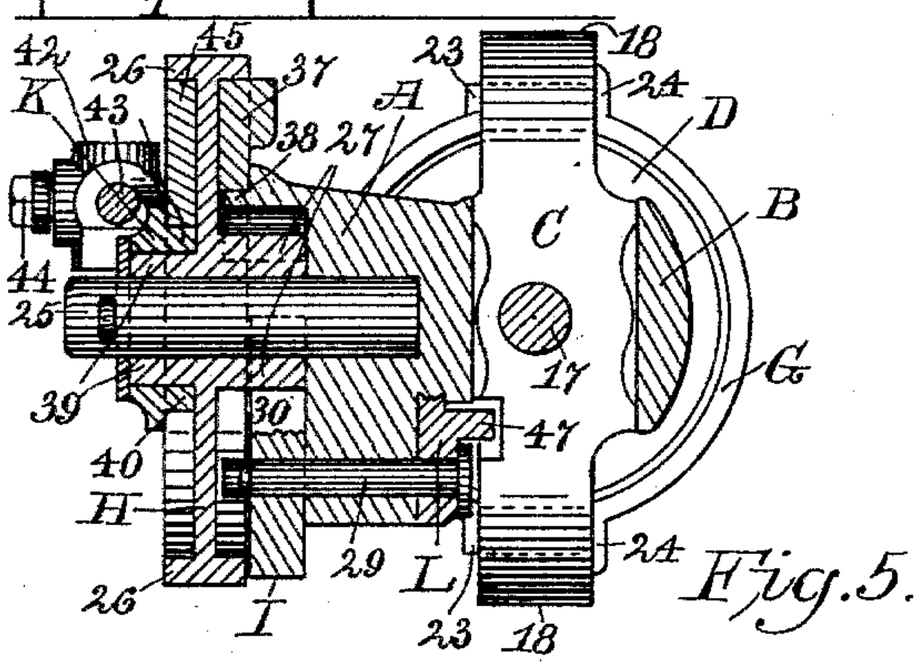
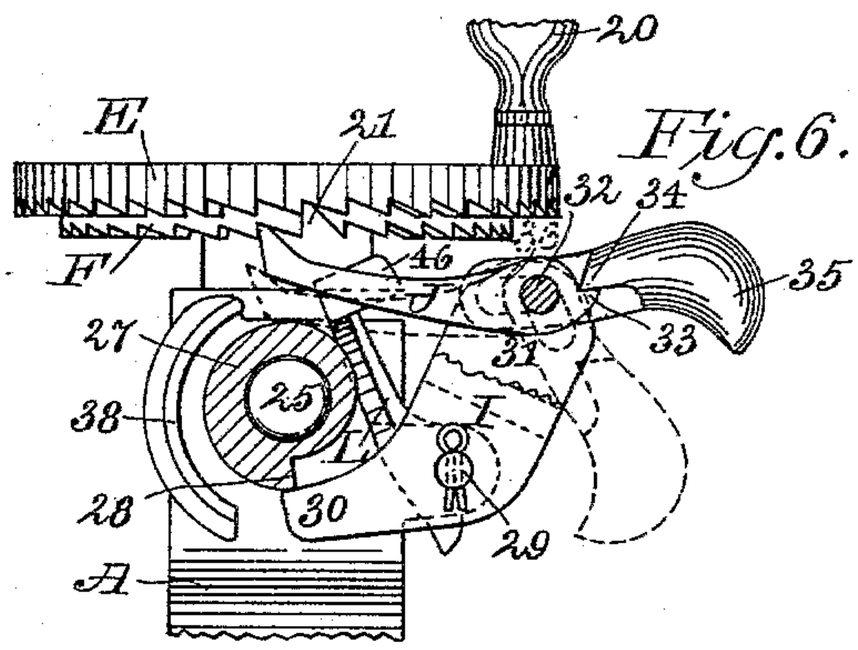


Fig. 6.



Witnesses:
J. W. Fisher
E. Ludolske

Inventor;
Walter F. Van Guysling.
by William A. Low
Attorney.

(No Model.) 2 Sheets—Sheet 2.

W. F. VAN GUYSLING.

LUBRICATOR.

No. 597,698. Patented Jan. 18, 1898.

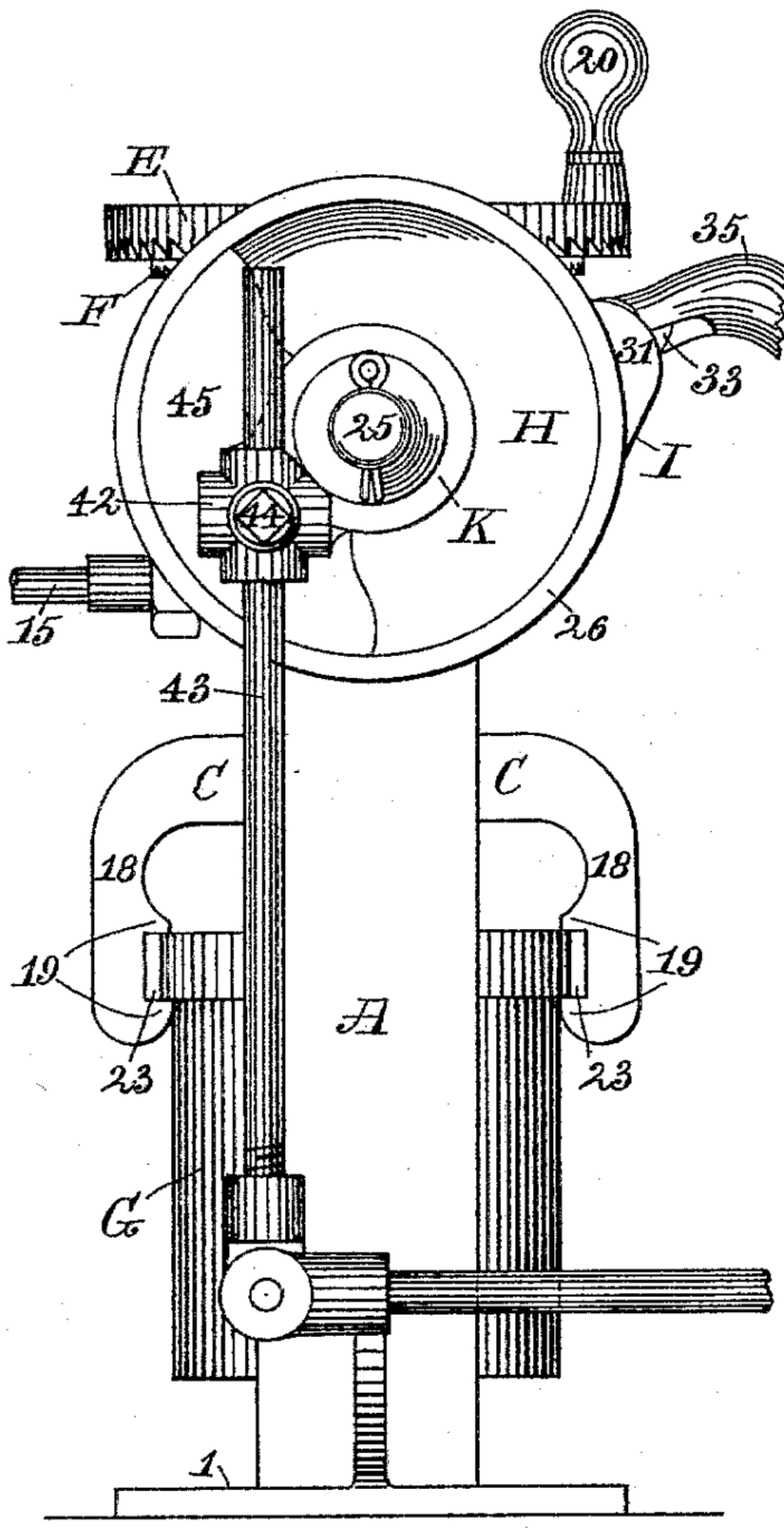


Fig. 3.

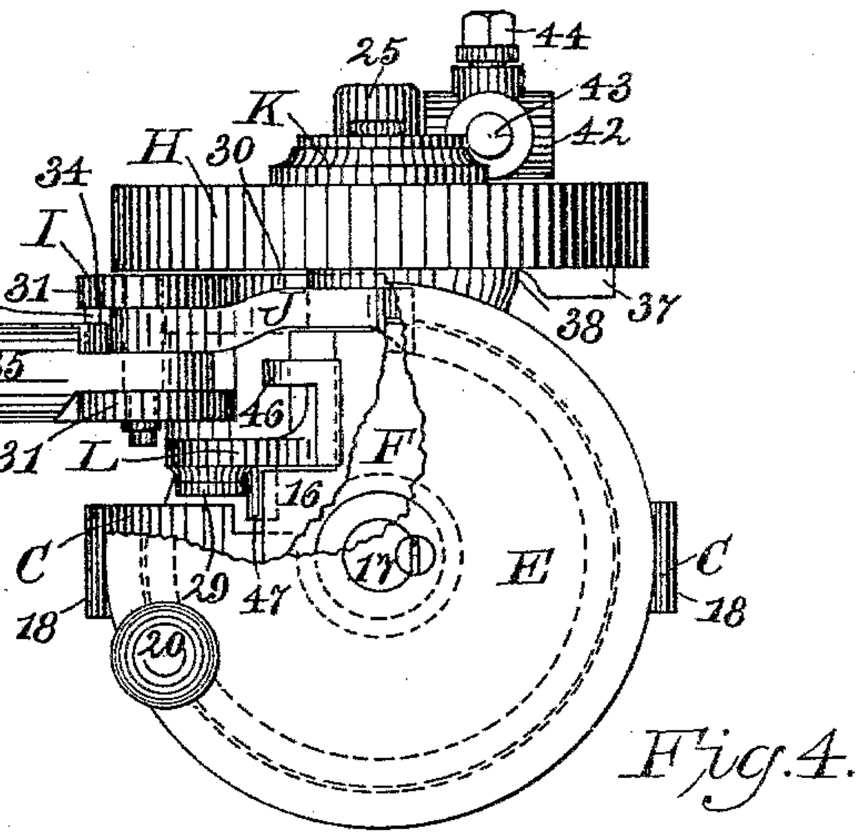


Fig. 4.

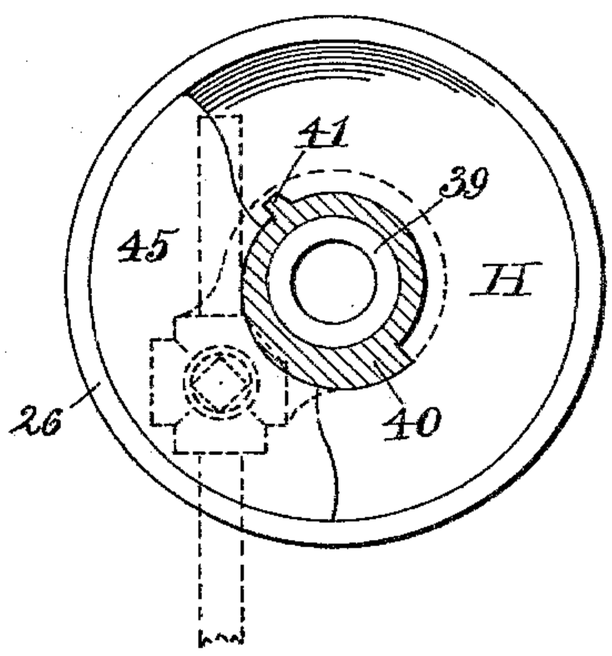


Fig. 7.

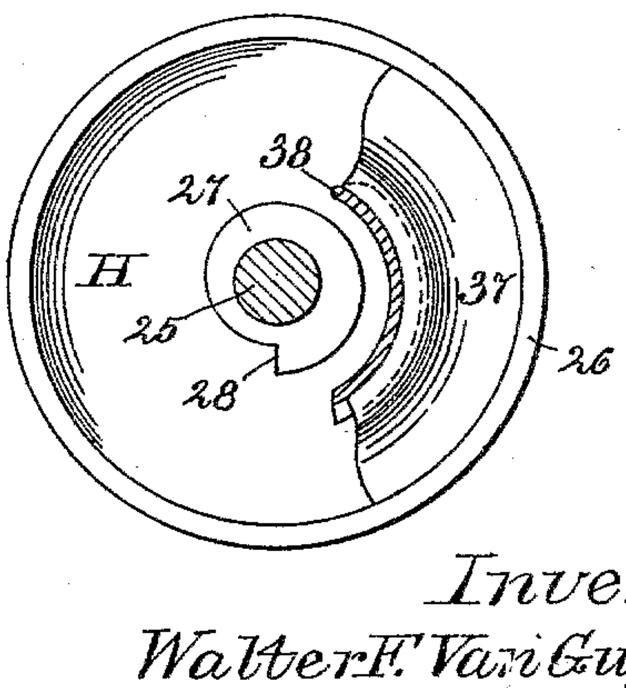


Fig. 8.

Witnesses:
J. W. Fisher.
C. Luddeke.

Inventor;
Walter F. Van Guysling.
by William H. Low.
Attorney.

UNITED STATES PATENT OFFICE.

WALTER F. VAN GUYSLING, OF ALBANY, NEW YORK, ASSIGNOR OF THREE-FIFTHS TO FREDERICK TILLINGHAST, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 597,698, dated January 18, 1898.

Application filed June 23, 1896. Serial No. 596,589. (No model.)

To all whom it may concern:

Be it known that I, WALTER F. VAN GUYSLING, of Albany, in the county of Albany and State of New York, have invented new and useful Improvements in Automatic Lubricators, of which the following is a specification.

This invention relates to improvements on that class of lubricators which are mechanically operated by the machines to which they are applied to automatically deliver a prescribed quantity of lubricant in a given time to a part of the machine they are designed to lubricate.

The object of my invention is to provide an efficient, durable, and reliable apparatus by which lubricants of different kinds, varying from the lightest to the heaviest, can be automatically applied to a part requiring lubrication.

In the accompanying drawings, which are herein referred to and form part of this specification, Figure 1 is a side elevation of my improved lubricator with portions broken out to expose underlying parts; Fig. 2, a front elevation with parts broken out; Fig. 3, a rear elevation; Fig. 4, a plan view; Fig. 5, a horizontal section at the line X X; Fig. 6, a vertical section at the line Y Y; and Figs. 7 and 8 respectively a detached front elevation and a detached rear elevation of the friction-wheel and corresponding clamping-plates, the adjacent eccentric bearings being shown in vertical section.

As represented in the drawings, A designates a standard on which the operating parts of the apparatus are supported and which has a foot or flange 1 formed on its lower end for securing the lubricator in place. At or near its upper end vertical guides B are formed integrally therewith, and an opening 2 is formed between the standard and inner guide for the purpose of forming a clear and unobstructed space that will allow one side of a lubricant-cup to pass thereinto without impediment or hindrance, and an opening 3 is formed between said guides for the purpose of receiving and guiding a yoke C, which carries the lubricant-cup. The lower end of the guides B are connected to a circular head D, which constitutes a stationary piston of my lubricator. In said head a screw-stud 4 is fixed and is provided with a nut 5 for securing a disk 6, which clamps a cup-shaped leather packing 7 to the head D. A discharge-passage 8, formed in one of the guides B, has its lower end enlarged to form a valve-chamber 9, in which a valve-seat 10 is secured. The disk 6 and leather packing 7 are each provided with an opening which corresponds in position to the valve-chamber 9 to allow the valve-seat 10 to be inserted in its proper place. The disk 6 has a rim 11 or other means of indentation formed on its upper face for the purpose of indenting the leather packing 7, so as to retain the latter in position. The valve-seat 10 has its lower end cut to form grooves 12, which communicate with the central opening of said valve-seat, and a perforated strainer 13 is placed to cover the lower end of the valve-seat for the purpose of excluding all matter that might clog the opening through the valve-seat or prevent the valve 14 from closing properly on said seat. The valve 14 forms a closure for the opening of the valve-seat 10 and prevents an escape of lubricant from the discharge-passage 8 after the lubricant-cup is removed from the apparatus. The discharge-passage 8 communicates with a discharge-pipe 15, which conveys the lubricant to a place where it is required to be applied.

In a cross-bar 16 of the guides B a vertical feed-screw 17 is journaled, and the portion of said feed-screw that is provided with a screw-thread engages in a screw-threaded hole in the upper bar of the yoke C. The latter is provided with pendent arms 18 at opposite ends of said yoke, and each of said arms has horizontal lugs 19 to form grooves for a purpose hereinafter expressed. To the upper end of the feed-screw 17 a ratchet-wheel E is secured, and said wheel has its teeth formed on its lower face, and for the purpose of manually imparting motion to said wheel a handle 20 is secured thereto. The lower face of the wheel E is recessed to receive a second ratchet-wheel F, which is loosely journaled on the hub of the ratchet-wheel E and is incapable of imparting motion to the feed-screw 17.

The ratchet-wheels E and F are preferably provided with a corresponding number of teeth, which are positioned alike on both wheels, but the upper end of the spaces be-

tween the teeth of ratchet-wheel F are generally formed on or a little lower than the plane of the lower ends of the teeth on the ratchet-wheel E, thereby preventing a pawl by which the ratchet-wheel E is operated from engaging with every one of the teeth of the ratchet-wheel E, but the ratchet-wheel F has one or several of the spaces between adjoining teeth cut, as at 21, to a level with the upper terminal of the spaces between the teeth of the ratchet-wheel E, so that when a space 21 is brought to a position where the end of a pawl can enter said space and take against a tooth of the ratchet-wheel E an impulse will be imparted to the latter to give a partial rotation to the feed-screw 17. In order to prevent a backward movement of the ratchet-wheel F by reason of a drag of the pawl thereon, a spring 22 is interposed between the adjacent faces of the ratchet-wheels E and F, but when preferred any suitable means for preventing such backward movement may be substituted for said spring.

G is an open-top lubricant-cup having a slightly-flaring enlargement at the upper end of its bore for the purpose of facilitating the insertion of the stationary piston into said cup. The latter has on the outer side of its upper end oppositely-located lugs 23, fitted to engage in the horizontal grooves formed by the lugs 19 on the yoke C. The lugs 23 are each provided with a stop 24, which takes against the yoke C when the lubricant-cup attains its proper position in said yoke.

H is a friction-wheel that is fitted to rotate intermittently on a stud 25, fixed in the rearmost side of the upper part of the standard A. Said friction-wheel is recessed at its opposite flat sides to form a concentric rim 26 at each side of said wheel. On a flat face of the wheel H—the face nearest the standard A—a hub 27 is formed with a cam-shaped perimeter, which preferably has the form of a volute, thereby forming a shoulder 28, produced by a radial line drawn from the smaller curve to the larger one, but when the lubricator is to be used on a machine that is run at a high rate of speed said hub can be made eccentrically to the center of the wheel H, and thereby all noise and spasmodic action of the lubricator will be avoided. A bent lever I is fulcrumed on a pin 29, which is inserted in the standard A, and a lower arm 30 of said lever has its free end arranged to bear upon the perimeter of the hub 27, whereby the bent lever I will be oscillated in one direction until the end of the arm 30 passes the shoulder 28, when the gravity of said bent lever will suddenly carry the end of the arm 30 into contact with the smaller part of the hub 27.

An upper arm 31 of the bent lever I is bifurcated, and a cylindrical pin 32 is inserted through and immovably secured in the two limbs of said arm in such manner that the pin 32 cannot be moved or rocked in any direction, and a pawl J is loosely pivoted on the pin 32. The free end of said pawl is formed sufficiently wide to span over adjacent teeth of the two ratchet-wheels E and F when a space 21 comes to a position that will enable the end of said pawl to take against a tooth of the ratchet-wheel E. The fulcrumed end of the pawl J is provided with a shoulder 33, that engages with a projection 34 of a weighted lever 35 and locks said pawl and weighted lever together to move as one piece. Said weighted lever has a slotted opening 36, which forms a loose joint on the pin 32 and allows the weighted lever to be moved to disengage the shoulder 33 from the projection 34, and thereby allowing the weighted lever to drop into the position indicated by dotted lines in Fig. 6 to stop the automatic operation of the lubricator until the shoulder 33 is reëngaged with the projection 34. In the recess in the wheel H that is nearest the standard A there is placed a loose plate 37, having the form of a segment of an eccentric ring. The outer edge of said plate is formed to fit the rim 26 of the friction-wheel H, and its inner edge is fitted to bear against the convex face of a curved standing flange 38, which is attached to the standard A with its convex face eccentric to the center of the stud 27. The plate 37 is formed and arranged, in respect to the space between the rim 26 and flange 38, to allow the friction-wheel H to move freely in one direction; but on a reversal of said movement the plate 37 will be carried into a position where its edges will be in frictional contact with the rim 26 and flange 38, and thereby the wheel H will be prevented from rotating in a wrong direction.

The outer plane face of the friction-wheel H has a hub 39, that is formed concentrically to the center of said wheel, and an arm K is fitted to oscillate on said hub. On the inner face of said arm a cam 40 is formed and preferably has the shape of a volute on its perimeter. Said cam has a spur or stop 41 projecting from its periphery to prevent a retrograde movement of a loose clamping-plate hereinafter referred to from being carried too far. The arm K has at its outer side a cross-shaped socket 42, provided with openings which cross each other at right angles. Said openings are designed to receive a sliding arm 43, which can be inserted in either of them, according to the position, either horizontal or vertical, of its relation to the moving part of a machine from which it derives its motion. At the intersection of the openings of the socket 42 a set-screw 44 is inserted to bear upon and secure in place the arm 43 when placed in either opening of said socket. An endwise adjustment of the arm 43 in the socket 42 is provided for the purpose of varying the distance between the center of the stud 27 and the outer end of said arm, which adjustment is necessary for regulating the quantity of lubricant to be discharged during a given time.

In the outer recess of the friction-wheel H a clamping-plate 45 is loosely placed. Said clamping-plate has the form of a segment of

an eccentric ring, whose outer edge conforms to the inner side of the rim 26, and its inner edge will approximately conform to the curvature of the cam 40. The clamping-plate 45 will allow the arm K to move in one direction without affecting the wheel H; but immediately on a reversal of the movement of said arm the plate 45 will be in frictional contact with the wheel H and impart to the latter a movement corresponding in direction and degree to the movement then being made by the arm K. It should be understood that the plates 37 and 45 are arranged in the recesses of the friction-wheel H with their larger ends in reversed directions, so that as soon as one of said plates is released from its frictional contact with the rim 26 the other plate will instantly take in like contact with the part or parts with which it coacts, and these alternating changes will be effected in a positive manner without the aid of springs or their equivalents.

L is an arm which is fulcrumed on the pin 29 and is adapted to automatically disengage the pawl J from the ratchet-wheel E, and thereby the apparatus is rendered inoperative during such disengagement. The upper end of the arm L is provided with an offset limb 46, which ranges in line with the arm of the bent lever I, that contains the slotted opening 36. Near its pivoted end the arm L is provided with a stud 47, which extends laterally into a position to engage with the yoke C when the latter has nearly completed the upward phase of its movement, and then, by the continued upward movement of said yoke, the arm L will be suddenly tilted toward the weighted lever 35 to effect the disengagement of its projection 34 from the shoulder 33, thereby effecting a disengagement of the pawl J from the teeth of the ratchet-wheels and allowing the weighted lever 35 to tilt downward. To reëngage the pawl J with the teeth of the ratchet-wheels, the end of said pawl is swung upward and the weighted lever 35 is first tilted and then pushed inward until such reëngagement is effected to restore the apparatus to a condition for continuing its automatic operation.

When the arm 43 is adjusted to a proper length and connected to a moving part of a machine from which it is to derive its motion, the lubricant-cup G being charged with lubricant and attached to the yoke C, my lubricator will operate in the following manner: The vibrations of the arm 43 will cause the friction-wheel H to make a partial revolution at each vibration; but as the pawl J is prevented by the teeth of the ratchet-wheel F from engaging with the teeth of the ratchet-wheel E until a space 21 of the ratchet-wheel F is brought into position where it allows the pawl J to take against a tooth of the ratchet-wheel E and impart a partial rotation to the feed-screw 17, whereby the lubricant-cup G will be moved upward to effect the discharge of a prescribed quantity of lubricant from said cup, the lubricant, on being forced from said cup through the passage 8 and pipe 15, will pass to the point it is intended to lubricate. When the lubricant-cup G is near the uppermost point of its movement, the stud 47 will take against the yoke C, and thereby the arm L will be suddenly impelled against the inner end of the weighted lever 35 to disengage the shoulder 33 from the projection 35, thereby allowing the pawl J to be disengaged from the ratchet-wheels and terminating the automatic operation of the lubricator, after which the feed-screw 17 can be operated by hand to carry the lubricant-cup to the lowest point of its movement, so as to be taken from the yoke C to be refilled and replaced in said yoke, thereby restoring the apparatus to a condition for a continuance of the operation just described.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination, with a stationary piston or head, D, formed directly on the lower end of fixed guides, B, an opening, 3, being formed between said guides, an eduction-channel, 8, being formed in one of said guides, a check-valve, 14, arranged in said channel, a feed-screw, 17, arranged pendently in the opening 3, and a yoke, C, having a screw-threaded opening fitted to engage on the threads of said feed-screw; said yoke being fitted to slide in the opening 3 and having horizontal grooves formed on its pendent arms, of a lubricant-cup, G, provided with lugs, 23, fitted to removably engage in the grooves of said yoke; said lubricant-cup being arranged to move upwardly on the piston D, as specified.

2. The combination of a standard, A, provided with guides, B, having a stationary head or piston, D, directly on the lower end of said guides; the latter being arranged—in respect to said standard—to form an opening, 2, that will allow an adjacent part of a lubricant-cup, G, to pass thereinto, an eduction-channel, 8, being formed in one of said guides, a valve-chamber, 9, formed in said channel, a valve-seat, 10, removably secured in said valve-chamber, an upwardly-opening check-valve, 11, which forms a closure for said valve-seat, and a strainer, 13, arranged to cover the lower face of said valve-seat, as specified.

3. The combination, with an oscillating lever, I, fulcrumed on a fixed pin, 29, secured in the standard A, a weighted lever, 35, fulcrumed on a cylindrical pivot, 32, that is immovably secured in said oscillating lever; said weighted lever having a projection, 34, and having a slotted opening, 36, through which the pivot 32 passes and which will permit the weighted lever to either slide or oscillate on said pivot, and a pawl, J, loosely journaled on the pivot 32 and having a shoulder, 33, that is adapted to engage the projection 34 and lock together said pawl and weighted lever to operate as one piece, of a

disengaging-arm, L, journaled on pin 29 and having an offset limb, 46, that is arranged to take against the inner end of said weighted lever and disengage the shoulder 33 from the pawl J; the arm L having a laterally-projecting stud, 47, that the yoke C—near the termination of its upward movement—will take against and effect the unlocking of said weighted lever from the pawl J, as specified.

4. The combination, with a friction-wheel, H, that is recessed in its outer flat side and is provided with a peripheral rim, 26, and having a concentric hub, 39, formed on its outer side, and an arm, K, fitted to oscillate on said hub; said arm being provided with a volute-shaped cam, 40, having a spur or stop, 41, projecting from its periphery, of a clamping-plate, 45, having the form of an eccentric segment placed loosely in said recess and arranged to be clamped between the rim 26 and the cam 40; said clamping-plate being adapted to take against the stop 41 and is thereby prevented from being displaced from its proper position, and means—substantially as set forth—for oscillating the arm K, as herein specified.

WALTER F. VAN GUYSLING.

Witnesses:
WM. H. LOW,
F. TILLINGHAST.