(No Model.) 2 Sheets—Sheet 1.

W. F. VAN GUYSLING.

LUBRICATOR.

No. 554,429. Patented Feb. 11, 1896.

Fig. 1

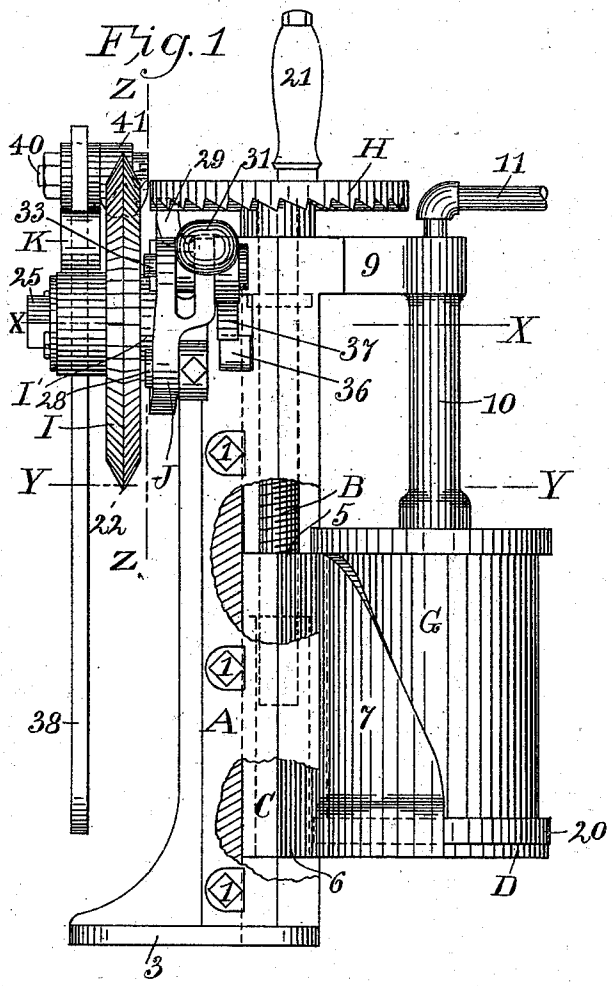


Fig. 2.

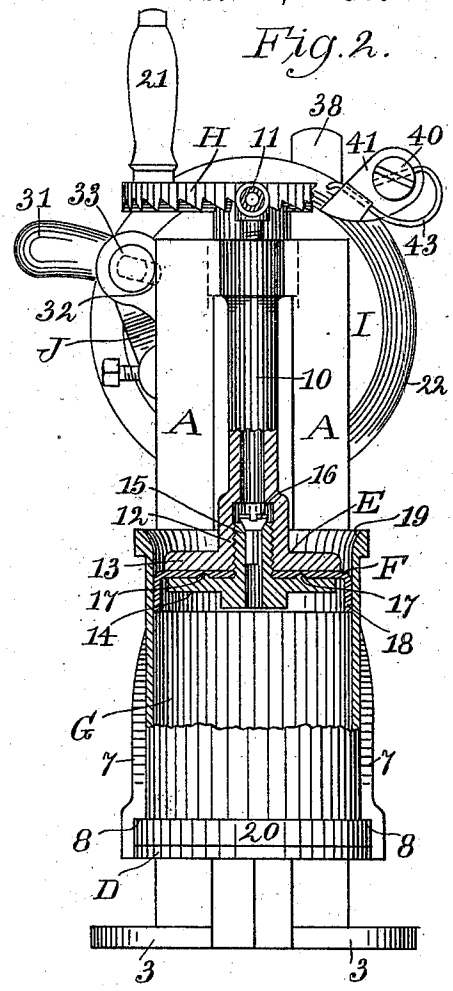


Fig. 6.

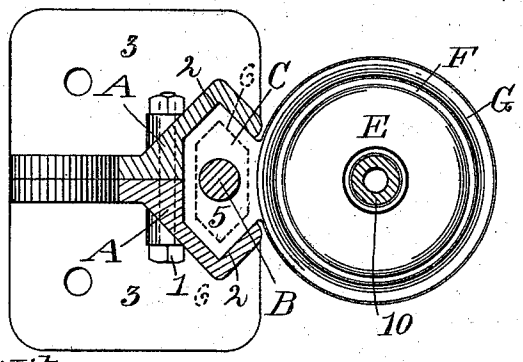
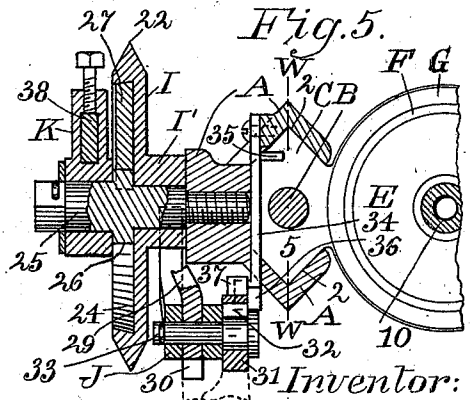


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

W. F. VAN GUYSLING.

LUBRICATOR.

No. 554,429. Patented Feb. 11, 1896.

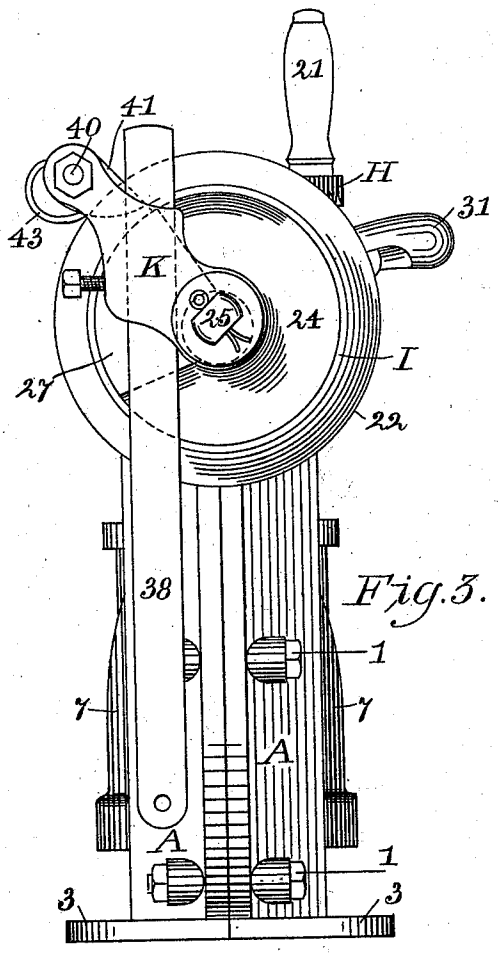


Fig. 3.

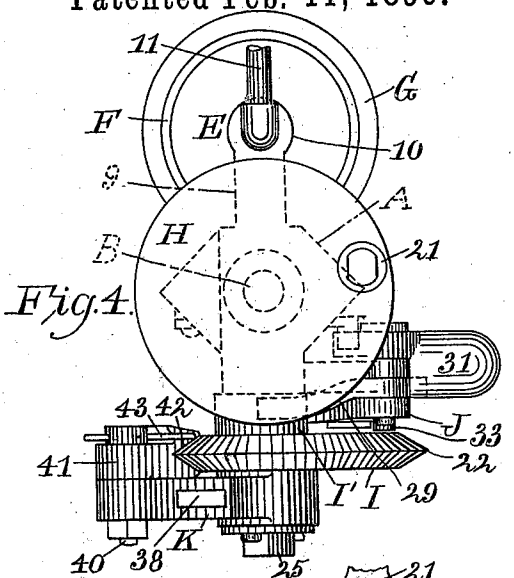


Fig. 4.

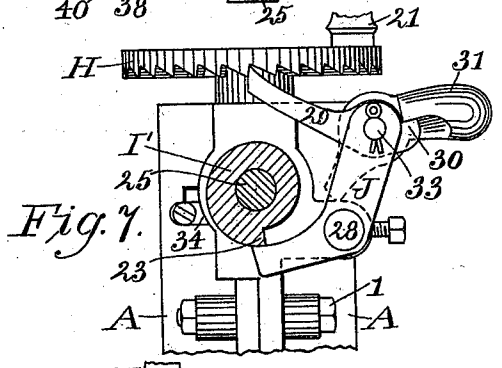


Fig. 7.

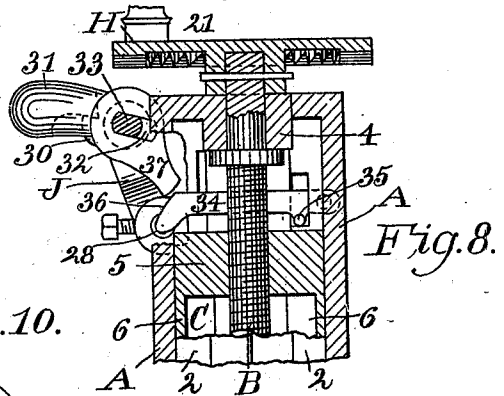


Fig. 8.

Fig. 9.

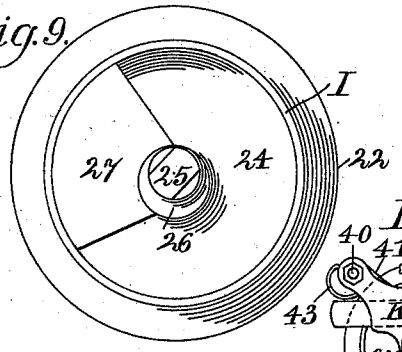
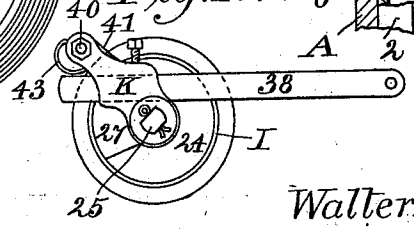


Fig. 10.



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UNITED STATES PATENT OFFICE.

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

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 554,429, dated February 11, 1896.

Application filed June 19, 1895. Serial No. 553,305. (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 full and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in that class of lubricators which are operated automatically by the machine to which the lubricator is applied and by which a certain quantity of the lubricant will be positively applied to the part of the machine which the device is designed to lubricate; and it consists of a stationary piston, a removable lubricant-cup fitted to move upwardly on said piston, and mechanism for automatically effecting the upward movement of said cup to force the lubricant therefrom, as herein set forth.

In the accompanying drawings, Figure 1 is a side elevation of my invention; Fig. 2, a front elevation, with the stationary piston and part of the lubricant-cup shown in vertical section. Fig. 3 is a rear elevation of the device; Fig. 4, a plan view. Figs. 5 and 6 are respectively horizontal sections of Fig. 1 at the lines X X and Y Y; Fig. 7, a vertical section at the line Z Z on Fig. 1; Fig. 8, a vertical section of Fig. 5 at the line W W; Fig. 9, a detached rear elevation of the friction-clutch wheel; and Fig. 10 is a rear elevation, on a reduced scale, of the arm and lever for operating the friction-clutch wheel.

As represented in the drawings, A designates the bracket or frame which carries the operative mechanism of my apparatus. Said bracket is preferably made of two corresponding parts, which are joined vertically and are secured together by bolts 1, and each part is provided with a vertical groove 2, which is preferably made V-shaped, so that when the two parts are joined together said grooves will form a guide, for a purpose shortly explained. A foot 3 is formed on each part of the bracket for the purpose of securing the apparatus in position; but the form and position of said foot may be varied to suit the position in which the apparatus is to be placed. The upper end of the bracket is provided with a boss 4, in which a feed-screw B is fitted to rotate.

C is a movable carrier that is provided with a head 5, in which the feed-screw B engages to move said carrier in a vertical direction. Said head and its pendant 6 are fitted to slide in the grooves 2 of the bracket A. The carrier C has a shelf D, formed on a horizontal plane, and semicircular sides 7, which connect the shelf D to head 5. A groove 8 is formed at the lower part of the sides 7, at the upper side of the shelf D, so as to afford a hold of the lubricant-cup, as hereinafter described.

E is a stationary piston which is secured to an arm 9, projecting from the forward side of the bracket A. Said piston is provided with a tubular stem 10, which connects with the arm 9, and to said stem a pipe 11 is connected to form a communication with the bore of the stem 10, so as to convey the lubricant to the point where it is to be applied. The lower end of the stem 10 has its bore enlarged, and a screw-thread 12 is cut in such enlargement. A circular flange 13, whose lower face is flush with the lower end of the tubular stem, is formed on the latter to form the head of the stationary piston. A follower 14, provided with a tubular stem 15, fitted to screw into the screw-thread 12, has a check-valve 16, arranged to stop a backflow of the lubricant from the pipe 11 when the lubricant-cup is removed from the carrier C or when the latter is moved downward preparatory to refilling the lubricant-cup. A cupped packing F is interposed between the flange 13 and the upper face of the follower 14, and the latter is preferably provided with an annular rib 17, which by being pressed into the packing F prevents the latter from being laterally displaced. The packing F is preferably made of leather and has a flange 18 extending downwardly therefrom, and when the pressure is applied to the lubricant said flange will be pressed outward to form a close joint with the bore of the lubricant-cup.

G is the lubricant-cup, preferably made of drawn metallic tubing, having an open top, which is slightly flared, as at 19, and a closed bottom. The lower end of the perimeter of said lubricant-cup is provided with a circum-

ferential rib 20, which is fitted to engage with the groove 8 of the carrier C, so that when the latter is moved downward the lubricant-cup G will not be raised from the shelf D by reason of a vacuum being formed in the lubricant-cup when the latter is moving downward.

H is a ratchet-wheel whose teeth are formed on its lower face, which is secured to the upper end of the feed-screw B for the purpose of imparting a rotary motion to the latter to effect an upward movement of the carrier C and its superimposed lubricant-cup G, in order to force the lubricant, in required quantity, from the lubricant-cup G, and thence through the pipe 11 to the part of the machine to which the lubricant is to be applied. For the purpose of turning the feed-screw B by hand the ratchet-wheel H is provided with a handle 21, that is arranged eccentrically to the center of said feed-screw.

I is a friction-clutch wheel whose perimeter is preferably formed with a V-shaped edge 22, and one of the flat faces of said wheel—the side nearer the bracket A—has a hub I′, having the form of a volute, so as to form a shoulder 23, formed on a radial line. The opposite face of the wheel I has a circular recess 24, that is concentric to the center of said wheel. The wheel I is arranged to rotate intermittently on a fixed stud 25, secured in the bracket A. The stud 25 is provided with a collar 26, which is integral with said stud and has a plane face that bears against the outer face of the wheel I to secure the latter in place on said stud, and the perimeter of said collar is formed eccentrically to the center of the stud 25.

A segmental plate 27, whose outer edge is formed to fit the concavity of the wall of the recess 24 and whose inner edge fits the perimeter of the collar 26, lies loosely in said recess and is arranged so that when the wheel I is turned in the proper direction said plate will present no resistance to the motion of said wheel, but on reversing the direction of movement of the wheel I the plate 27 will be clamped between the wall of the recess 24 and the perimeter of the collar 26, thereby positively preventing a backward movement of the wheel I. The segmental plate 27 is retained in position in the recess 24 by the hub of the arm K. A bell-crank J is pivoted on a stud 28, secured in the bracket A, and the lower arm of said bell-crank is arranged to bear against the perimeter of the hub I′, so as to allow the free end of a pawl 29, that is carried by the upper arm of the bell-crank J, to engage in the teeth of the ratchet-wheel H and effect a slight movement of the ratchet-wheel with each impulse of the wheel I when the latter has completed a revolution, so that the lower arm of the bell-crank J, by passing the shoulder 23, will bear against the smaller part of the hub I′, and thereby the upper arm of the bell-crank will fall back to allow the end of the pawl 29 to engage with the next succeeding tooth of the ratchet-wheel H. The pawl 29 is loosely pivoted to the upper arm of the bell-crank J, and at its outer end said pawl has a shoulder 30, which when the parts are in position to effect the feeding of the lubricant will engage with a gravity-arm 31 to lock the pawl 29 and gravity-arm together as one piece and hold the inner end of the pawl 29 in engagement with the teeth of the ratchet-wheel H.

The hub of the gravity-arm 31 is provided with a slotted opening 32, that fits on a flattened portion of a pivot 33, which is loosely fitted in the upper arm of the bell-crank J and which carries the gravity-arm 31. The slotted opening 32 is long enough to allow the gravity-arm to be moved back sufficiently to disengage the latter from the shoulder 30, thereby allowing the pawl 29 to swing downward to disengage itself from the teeth of the ratchet-wheel H.

In order to effect an automatic disengagement of the pawl 29 from the teeth of the ratchet-wheel H, to stop the discharge of the lubricant from the lubricator, an arm 34 is pivoted to the bracket A to lie in the path of the carrier C. The head 5 of said carrier will, take against a pin 35 or other part or attachment of the arm 34, and thereby cause the free end of the latter to swing upward. On the free end of the arm 34 an inclined face 36 is formed, and by the upward movement of said arm the face 36 is carried into contact with the end of an arm 37, which forms part of the gravity-arm 31, and by the continued upward movement of the arm 34 the gravity-arm will be pushed outward and disengaged from the shoulder 30, thereby effecting a release of the pawl 29 and allowing the latter to swing downward and become released from its engagement with the teeth of the ratchet-wheel H.

An arm K is loosely pivoted to the fixed stud 25, and is provided with a mortise in which an adjustable arm 38 is fitted to slide endwise in order to allow the end of said arm, to which power is applied, to be adjusted closer to and farther from the center of the stud 25 to vary the degree of movement of each impulse of the feed-screw B to effect the required discharge of the lubricant to suit the requirements of the machine to which the lubricator is applied.

To the outer end of the arm K a friction-pawl 41 is pivoted on a pivot 40, and is provided with a V-shaped notch 42, or other conformation, formed to fit the periphery of the wheel I. The arm K can be changed in its position in respect to the wheel I so as to adapt the apparatus for receiving its motion with the arm 38 arranged in a vertical position, as shown in Figs. 1 and 3, or with said arm arranged in a horizontal position, as shown in Fig. 9, but to make such changes in the arrangement of the arm 38 the arm K is shifted to bring different sides of it next to the wheel I, and the pawl 41 must be shifted correspondingly. A spring 43 is attached to

the pivot 40 and is fitted to bear upon the upper face of the friction-pawl 41 and press the latter into frictional contact with the periphery of the wheel I.

My invention operates in the following manner: The adjustable arm 38 having been adjusted to the proper length to produce the requisite movement of the friction-clutch wheel I to feed a proper quantity of the lubricant in a given time, and the end of said arm being connected to a moving part of the machine which this apparatus is to lubricate, so as to impart a vibratory movement to the arm 38, the lubricant-cup G having been filled with lubricant and placed upon the shelf D of the carrier C, the gravity-arm 31 is moved into position to engage with the shoulder 30 and hold the end of the pawl 29 in engagement with one of the teeth of the ratchet-wheel H, thereby imparting an intermittent rotatory motion to the feed-screw B to effect an upward movement of the lubricant-cup G on the stationary piston E. By this movement of the lubricant-cup on the stationary piston the lubricant will be gradually forced from the lubricant-cup and compelled to pass through the pipe 11 to be discharged at the point to be lubricated. When the lubricant is properly exhausted from the lubricant-cup, the gravity-arm 31 will be automatically disconnected from the pawl 29, in the manner hereinbefore described, to stop the feeding movement of the screw B, and the latter will be turned to move the carrier C downward sufficiently to allow the lubricant-cup G to be removed from the carrier C to be recharged with lubricant, after which said cup can be replaced in position and the gravity-arm 31 re-engaged with the pawl 29, thereby allowing the apparatus to resume its function.

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

1. In an automatic lubricator, the combination with a stationary piston, E, a tubular stem, 10, to which said piston is secured and which forms a discharge-duct for the lubricant, and a check-valve, 16, arranged in the bore of said stem, of an upwardly-moving carrier, C, and an open-top lubricant-cup, G, borne by—and removable from—said carrier; said lubricant-cup being arranged to be moved upwardly on the piston E, and the check-valve 16 forming a closure for the tubular stem 10 when the lubricant-cup is removed from said carrier, as herein specified.

2. In an automatic lubricator, the combination of a bracket, A, provided with guides, 2, a stationary piston, E, connected to said bracket by a tubular stem, 10, which forms a discharge-duct for the lubricant, a carrier, C, fitted to reciprocate in said guides and provided with a shelf, D, an open-top lubricant-cup, G, removably placed on said shelf and fitted to reciprocate on the piston E, and a discharge-pipe, 11, having an open communication with the tubular stem 10, substantially as specified.

3. In an automatic lubricator, the combination of a friction feed-wheel, I, journaled on a stationary stud, 25, secured in the bracket A, a vibratile arm, K, fitted to oscillate on said stud, a friction-pawl, 41, pivoted on the arm K and fitted to grip the periphery of said feed-wheel, and an adjustable arm, 38, fitted to slide in the arm K; the latter and its attached pawl 41 being reversible in respect to said feed-wheel, substantially as specified.

4. In an automatic lubricator, the combination of an open-top lubricant-cup, G, a carrier, C, that is independent of but adapted to carry said lubricant-cup, a feed-screw, B, arranged to impart motion to said carrier, a ratchet-wheel, H, secured to said feed-screw, a vibratile bell-crank, J, having a pawl, 29, arranged to take against the teeth of said ratchet-wheel and provided with a shoulder, 30, which extends in an opposite direction from said pawl, a gravity-arm, 31, fitted to slide loosely on a pivot, 33, in said bell-crank; said gravity-arm having an arm, 37, extending therefrom, and an arm, 34, pivoted to the bracket of the lubricator and provided with means—substantially as specified—to take against said carrier to effect an automatic disengagement of the pawl 29 from the ratchet-wheel H; said gravity-arm being adapted to be operated manually to suspend the action of the lubricator, substantially as specified.

5. In an automatic lubricator, the combination of a friction feed-wheel loosely pivoted to a stationary stud; said feed-wheel having a hub that has the form of a fusee to produce a shoulder, 23, formed radially thereon, a bell-crank whose lower arm is fitted to ride on the periphery of said hub and whose upper arm is provided with a pawl, 29, arranged to engage a ratchet-wheel, H, secured to a feed-screw for moving a lubricant-cup; the pawl 29 having a shoulder, 30, formed on its outer end, and a gravity-arm, 31, arranged to engage with the shoulder 30 for the purpose of pressing the pawl 29 to engage with the teeth of the ratchet-wheel, as herein specified.

6. In an automatic lubricator, the combination of a feed-screw, B, a ratchet-wheel, H, secured to said feed-screw, a pawl, 29, having one of its ends fitted to take against the teeth of said ratchet-wheel and its opposite end provided with a shoulder, 30, which extends oppositely from said pawl, a gravity-arm, 31, fitted to slide on the pivot for said pawl and arranged to lock said pawl and gravity-arm together, and means—substantially as described—for automatically disengaging the gravity-arm 31 from said pawl, substantially as specified.

7. In an automatic lubricator, the combination, with a friction feed-wheel, I, loosely journaled on a stationary stud, 25, and arranged to rotate intermittently on the latter; said feed-wheel having in its outer plane face

a circular chamber, 14, formed concentrically to the axis of said wheel; the stud 25 having a collar, 26, that is integral therewith and is eccentric to the center of the stud, of a segmental plate, 27, composed of a single piece whose outer edge has a curvature corresponding to that of the wall of the chamber 14 and whose inner edge has a curvature that corresponds to the periphery of the collar 26; said segmental plate being loosely placed in the chamber 14 and having no positive connection with the wheel I and collar 26 until gripped between them, as and for the purpose specified.

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