

(No Model.)

W. F. VAN GUYSLING.
LUBRICATOR.

No. 527,516.

Patented Oct. 16, 1894.

Fig. 1.

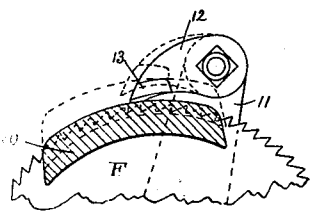
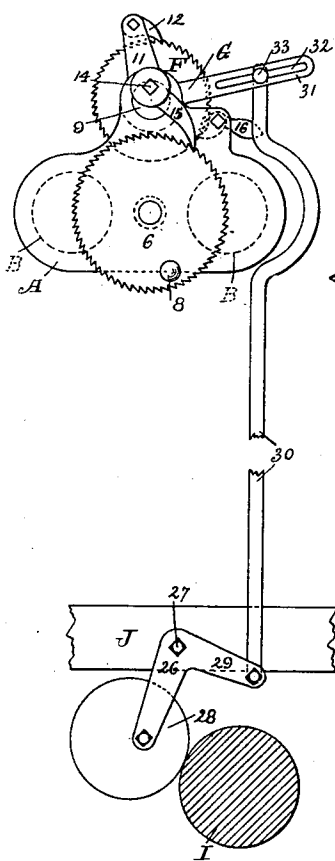


Fig. 5.

WITNESSES:

John W. Fisher
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Fig. 2.

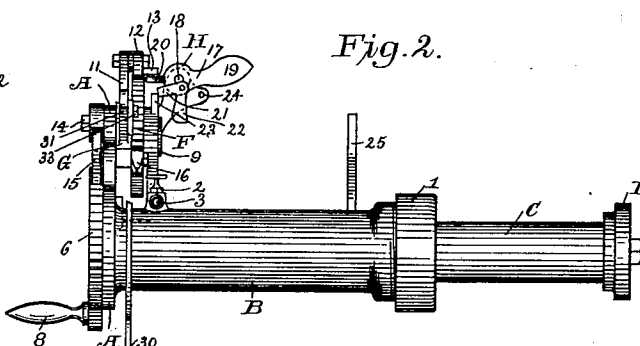


Fig. 3.

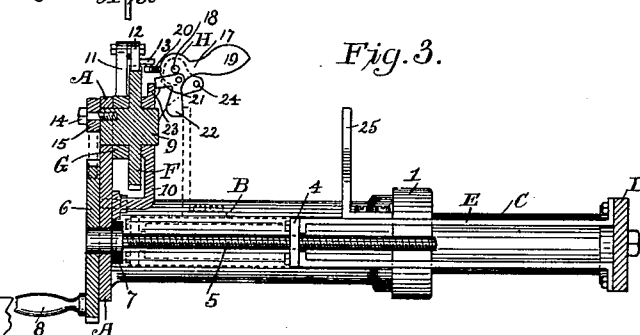
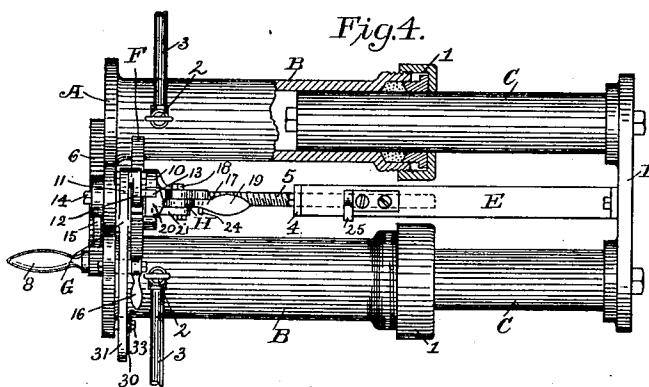


Fig. 4.



INVENTOR,

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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. 527,516, dated October 16, 1894.

Application filed January 10, 1894. Serial No. 496,360. (No model.)

To all whom it may concern:

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

My invention relates to a device for lubricating moving parts of machinery and is operated by said machinery in such manner that a constant and predetermined quantity of lubricant will be positively applied to the machinery in a given time, and it consists of the construction herein described and pointed out in the claims forming part of this specification.

In the accompanying drawings, which are herein referred to and form part of this specification, Figure 1 is a front elevation of my lubricator, showing the preferred manner of operating the moving mechanism when applied to a locomotive. Fig. 2 is a side elevation of my lubricator. Fig. 3 is a longitudinal section of the same. Fig. 4 is a plan view, and Fig. 5 is an enlarged and detached detail of a device for automatically stopping the operation of the lubricator when the supply of lubricant is exhausted from the apparatus.

As represented in the drawings, A designates a plate which forms a support for the operative parts of my lubricator, and which carries one or more lubricant-cylinders, B, but preferably, two of said cylinders are provided for the reason that they divide the strain on the operating parts more evenly. Each of said cylinders is provided with a stuffing-box, 1, of any well-known form, and is fitted to receive a plunger C, which, for the purpose of securing the least weight with sufficient strength, is formed of light metallic tubing with the inner end closed to prevent the flow of lubricant into the bore of the plunger. Said plungers are attached to a cross-head, D, in any suitable manner. Each cylinder B is provided with a filling-hole provided with a screw-plug, 2, or other suitable closure, and from each feeding-hole, or other suitable part of a cylinder, a lubricant-pipe, 3, leads to any point where the lubricant is to be applied.

E designates a yoke formed on, or attached,

to the cross-head D and provided with a screw-threaded nut, 4, into which a feed-screw, 5, is fitted to revolve and effect the required movements of the plungers C. To the outer end of said feed-screw a ratchet-wheel, 6, is secured so as to bear against the outer face of the plate A and prevent an inward movement of the feed-screw, and a collar, 7, on said feed-screw, bears against the inner face of said plate and prevents the feed-screw from moving outward.

A handle, 8, fixed in the ratchet-wheel 6 affords the means for turning the feed-screw by hand when occasion requires. F designates a second ratchet-wheel provided with a shaft or pivots, 9, journaled in the plate A and in a bracket, 10, secured to said plate. A bell-crank, G, is fitted to vibrate on the shaft 9, and an arm, 11, of said bell-crank is provided with a pawl, 12, that is fitted to engage with the teeth of the ratchet-wheel F and impart an intermittent rotary motion to the latter. Said pawl is provided with a laterally-projecting finger, 13, for a purpose shortly explained. In the outer end of the shaft 9, a stud or pin, 14, is arranged eccentrically to the center of said shaft and is provided with a pawl, 15, that is fitted to engage with the teeth of the ratchet-wheel 6 in such manner that an intermittent rotary motion will be imparted to the feed-screw 5 to effect the inward stroke of the plungers C. A check-pawl, 16—shown in dotted lines on Fig. 1—is arranged to engage with the teeth of the ratchet-wheel F, so as to prevent a retrograde movement of the latter.

H designates an automatic-tripper for disengaging the pawl 12 from the teeth of the ratchet-wheel F. As shown in the drawings, said tripper consists of a lever, 17, arranged to vibrate on a pivot, 18, and provided with a weight, 19, that will normally depress that end of the lever. The opposite end of the latter has a convex guard, 20, which, when the weighted end of said lever is depressed, will engage with the finger 13 and raise the pawl 12, thereby disengaging the latter from the teeth of the ratchet-wheel F, and such disengagement will continue until the tripper is restored to a position to allow the pawl 12 to re-engage with the teeth of the ratchet-wheel F.

A detent, 21, is loosely pivoted to the lever 17 and is provided with a pendent-weight, 22, that will normally tend to swing the detent 21 into a depressed position, where it will engage with a shoulder, 23, of the bracket 10, or other adjacent part, and retain the lever 17 in an elevated position, as shown in Fig. 2, whereby the guard 20 will be depressed and allow the pawl 12 to engage with the teeth of the ratchet-wheel F.

A stop, 24, prevents the weighted end of the lever 17 from being depressed below a point required to bring the guard 20 to its proper elevation to effect the disengagement of the pawl 12 from the ratchet-wheel F.

An arm, 25, attached to the yoke E, is adapted to engage with the pendent 22 and effect the disengagement of the arm 21 from the shoulder 23, thereby allowing the lever 17 to swing so as to raise the guard 20 to effect the disengagement of the pawl 12 from the teeth of the ratchet-wheel F, and thereby stopping the inward stroke of the plungers C.

In Fig. 1 I have shown a preferred manner of applying my lubricator to a locomotive, and in said figure, I designate one of the driving-wheel shafts, and J an adjacent portion of the engine-frame. A bell-crank, 26, pivoted, as at 27, to said frame, is provided with an eccentrically-pivoted wheel or disk, 28, that is loosely pivoted to the pendent arm of the bell-crank 26, and is arranged to have its periphery bear constantly against the periphery of the shaft I, so that said disk, by its frictional contact with the shaft, will acquire a corresponding number of revolutions from said shaft. The eccentricity of the disk 28 will impart a vibratory motion to the bell-crank 26, and the number of vibrations of said bell-crank will correspond to the number of revolutions of the shaft I, provided said shaft and disk are of the same diameter, and it is obvious that, by increasing the diameter of the disk 28, in respect to the diameter of the shaft I, the number of vibrations of the bell-crank 26 will be correspondingly reduced from the number of revolutions of said shaft, and that, by reducing the diameter of the disk 28, so that it will be less than that of said shaft, the number of vibrations of said bell-crank will be increased in the ratio that the diameter of the shaft I bears to the diameter of said disk. By this arrangement provision is made for either increasing or diminishing the number of vibrations of the bell-cranks G and 26 as occasion may require.

A lateral arm, 29, of the bell-crank 26 is connected—by a rod, 30—to a similar arm, 31, of the bell-crank G, so that a corresponding motion will be imparted to the latter. Preferably the arm 31 is provided with a slotted opening, 32, so that the position of a wrist-pin, 33, can be adjusted, in relation to its distance from the center of the shaft 9, so as to vary the travel of the pawl 12, on the

ratchet-wheel F, and, consequently, produce a greater or lesser number of revolutions of said ratchet-wheel for a given number of vibrations of the bell-crank G. By this arrangement, the shaft I can be revolved in either direction—which is absolutely necessary in locomotive engines, and other classes of machinery—without affecting the proper working of the device, for the vibrations of the lever G will then be effected in the manner just described.

I do not confine myself to the means herein described for imparting a vibratory motion to the bell-crank G, for the reason that such motion can be obtained from any vibratile or revoluble part of a machine, and I do not limit myself to the manner herein described for disengaging the pawl 12 from the ratchet-wheel F, as any means for automatically effecting that result will be equally good for the purpose.

My invention operates in the following manner: The apparatus being erected in place and the bell-crank G connected to a moving part of the machinery in such manner that a proper vibratory movement will be imparted to said bell-crank, and the lubricant-pipes 3 being connected to the parts to be lubricated, the pawl 15 is disengaged from the teeth of the ratchet-wheel 6 and the feed-screw 5 rotated, by means of the handle 8, to move the plungers C to the extremity of their outward stroke. The cylinders B are filled with lubricant through the filling-holes and the latter are closed by the screw-plugs 2. When the machinery, to which my lubricator is attached, is set in motion, the bell-crank G will receive a vibratory motion. Its pawl 12 will take against the teeth of the ratchet-wheel F and impart an intermittent rotary motion to the latter and to the shaft 9, which carries said ratchet-wheel, and each revolution of said shaft will impel the pawl 15 to move the ratchet-wheel 6 a partial revolution that will equal one or more teeth of the latter, according to the eccentricity of the stud 14 in the shaft 9. By this movement of the ratchet-wheel 6 a corresponding movement will be imparted to the feed-screw 5 to force the plungers C into the cylinders B to a distance proportionate to the pitch of the thread of the feed-screw multiplied by the fraction of a revolution imparted to said feed-screw, that is to say, if the pitch of the feed-screw is one-tenth of an inch and said feed-screw receives one-twentieth of a revolution by each revolution of the shaft 9, the plungers C will be advanced one two-hundredth of an inch during the same time, and a corresponding quantity of lubricant will be positively ejected from the cylinders at each advance of said plungers. When the plungers C are near the end of their inward stroke, the arm 25 will take against the pendant 22 to effect the disengagement of the arm 21 from the shoulder 23—said arm passing over the upper end of

the shoulder—allowing the weighted end of the lever 17 to suddenly fall to its depressed position and raising the guard 20 to effect the disengagement of the pawl 12 from the teeth of the ratchet-wheel F, thereby automatically stopping the operation of the lubricator. After the cylinders B have been refilled, in the manner herein described, and the several parts restored to their proper places, the apparatus will be in condition for a repetition of the operation just described.

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

1. An automatic lubricator consisting of a lubricant-cylinder, a plunger fitted to slide in said cylinder, a feed-screw arranged to move said plunger, a ratchet-wheel secured to said feed-screw, a second ratchet-wheel arranged to rotate independently of said feed-screw, and provided with a pawl that is eccentrically attached to its shaft; said pawl being arranged to engage with the ratchet-wheel of the feed-screw, and a vibratile-lever provided with a pawl fitted to engage with

said second ratchet-wheel, substantially as specified.

2. In an automatic lubricator, the combination of lubricant-cylinders, plungers arranged to slide in said cylinders and connected to a cross-head provided with a yoke carrying a screw-threaded nut, a feed-screw fitted to engage in said nut, a ratchet-wheel secured to said feed-screw, a second ratchet-wheel arranged to rotate independently of the feed-screw, a vibratile-lever provided with a pawl fitted to engage with the second ratchet-wheel, a pawl eccentrically connected with the second ratchet-wheel and arranged to engage with the ratchet-wheel of said feed-screw, and an automatic tripping-device—substantially as specified—for disengaging the plunger-moving mechanism, as and for the purpose specified.

WALTER F. VAN GUYSLING.

Witnesses:

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E. B. SEARLES.