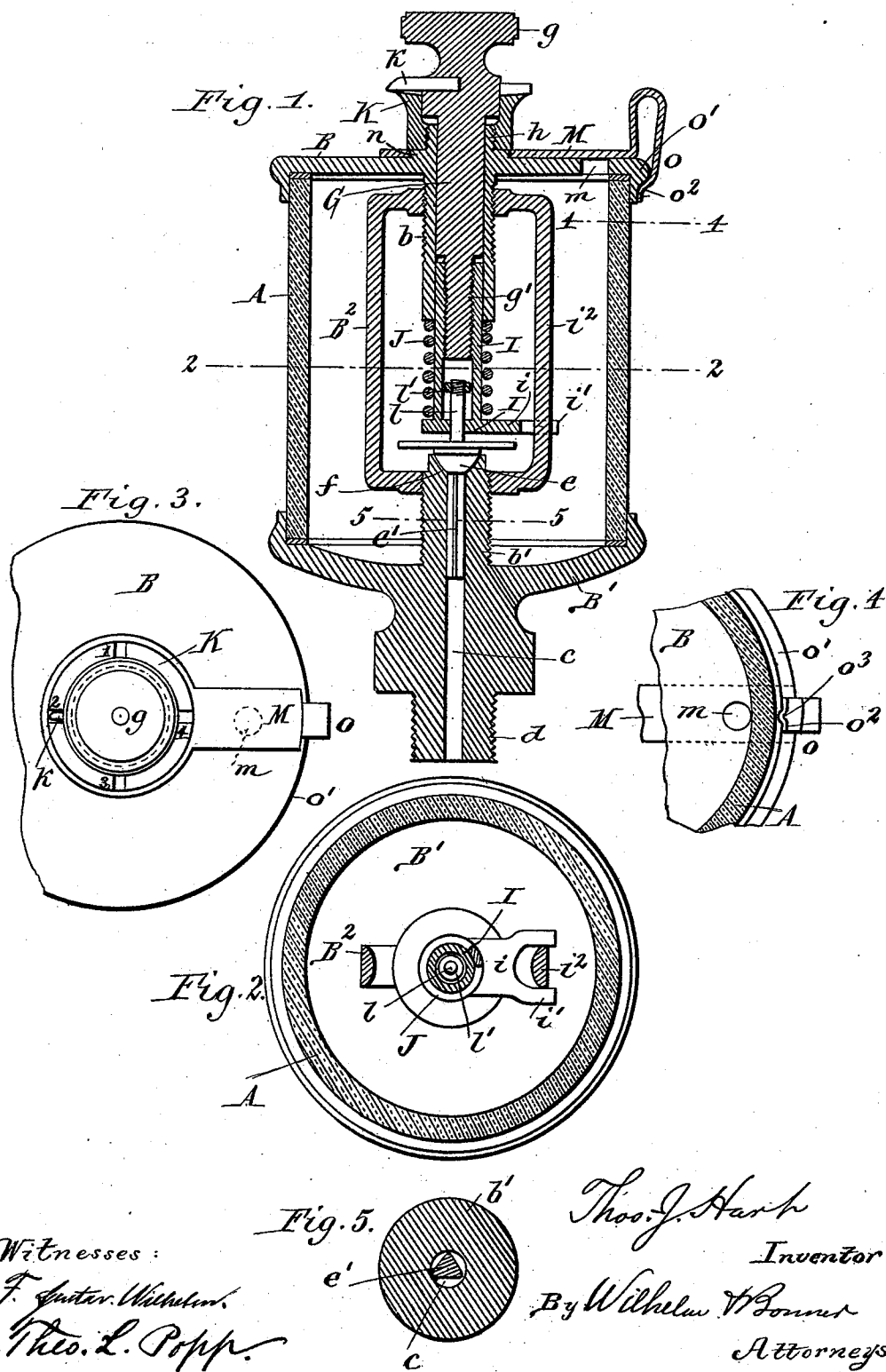


(No Model.)

T. J. HART.
LUBRICATOR.

No. 528,429.

Patented Oct. 30, 1894.



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS J. HART, OF BUFFALO, NEW YORK, ASSIGNOR TO THE SHERWOOD MANUFACTURING COMPANY, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 528,429, dated October 30, 1894.

Application filed February 23, 1893. Serial No. 463,349. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. HART, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Lubricators, of which the following is a specification.

This invention relates more particularly to automatic lubricators of that class which are designed for oiling the crank pins of steam engines, and in which the outlet valve is opened by the upward impulse received by it from the revolving crank pin during the upward stroke of the latter, the valve being allowed to descend and close by gravity during the downward stroke of the crank pin. As the discharge valve is closed when the engine is at rest, the oil in the discharge passage is liable to become thickened or gummed and clog the passage, so that when the engine is started the crank pin is dry or not sufficiently lubricated.

One object of my invention is to so construct the lubricator that the oil may be discharged therefrom by hand, if desired, so that the outlet passage may be cleaned or flushed from time to time to prevent its clogging and so that in case the crank becomes dry from prolonged inactivity of the engine or from any other cause, it may be supplied with oil by hand, before starting the engine.

My invention has the further objects to improve the means for regulating the feed, and to provide the supply opening of the lubricator with a lid of simple construction which tightly closes the opening.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved lubricator. Fig. 2 is a horizontal section of the same in line 2—2, Fig. 1. Fig. 3 is a fragmentary top plan view of the lubricator. Fig. 4 is a fragmentary horizontal section in line 4—4, Fig. 1, looking upward. Fig. 5 is a cross section in line 5—5, Fig. 1, on an enlarged scale.

Like letters of reference refer to like parts in the several figures.

A represents the usual glass body of the lubricator; B the metallic upper head thereof and B' the bottom or lower head. These heads

are tied together and clamped against opposite ends of the cylindrical body by an internal yoke or open frame B², provided at its upper end with a screw threaded opening which engages with a hollow screw stem *b* depending from the underside of the upper head, and at its lower end with a similar opening engaging with a screw stem *b'* projecting upwardly from the lower head.

c is the outlet or discharge passage of the lubricator which extends downwardly through the lower screw stem *b'* and the usual screw nipple *d* by which latter the lubricator is attached to the connecting rod of the engine.

e is the valve which controls the flow of the oil through the outlet passage *c*. This valve is preferably conical and adapted to close against a corresponding seat *f* arranged at the upper end of the outlet passage. The valve is provided with a downwardly extending stem *e'* which is guided in the outlet passage, and which is made of triangular or other cross section which does not completely fill the passage, but still occupies a considerable portion of its area, so as also to serve as a plunger.

G is an upright adjusting rod arranged within the hollow screw stem *b* and projecting upwardly through a collar *h* formed on the upper side of the upper head B and terminating at its upper end in a knob or button *g* for manipulating it. The lower portion of this adjusting rod is reduced and provided with an external screw thread *g'*.

I is an adjustable stop arranged in the lubricator above the valve, whereby the opening movement of the valve is limited and regulated. This stop preferably consists of a tube or sleeve closed at its lower end and provided in its upper portion with an internal screw thread which engages with the external thread of the adjusting rod.

The sleeve *I* is free to be raised and lowered with the adjusting rod but is held against turning, so that by turning the adjusting rod in one or the other direction the sleeve is raised or lowered through its screw threaded connection with the adjusting rod, thereby varying the extent to which the outlet valve

is allowed to rise from its seat and increasing or diminishing the feed accordingly. In the construction shown in the drawings, the stop sleeve is held from rotation by an arm *i* projecting laterally from the lower end of the sleeve and having at its outer end a horizontal fork *i'* which embraces one of the upright members *i²* of the connecting yoke B². The adjusting rod is held against upward movement, during the adjustment of the stop sleeve, by a spiral spring J which surrounds said sleeve and bears with its upper end against the lower end of the screw stem *b* and with its lower end against the forked arm of the stop sleeve. The downward movement of the adjusting rod in the hollow screw stem *b* is limited by a radial pin *k* secured to the upper portion of the rod and resting upon an annular rim K arranged on the upper side of the top head B and having an internal screw thread which engages with an external thread formed on the adjacent collar *h*. This rim is provided in its upper edge with a number of radial notches or recesses, in one of which the pin of the adjusting rod is retained by the tension of the spring and whereby the rod is held in position after adjusting the stop sleeve. Four of these notches arranged equidistant are preferably employed so that the valve may be adjusted to the extent of but a quarter turn of the rod if desired. The several notches are preferably numbered 1, 2, 3, and 4, respectively, as shown, to facilitate the adjustment, the pin *k* serving as a guide or index finger as well as a retaining device.

When it is desired to adjust the stop sleeve the adjusting rod is lifted against the pressure of the spring sufficiently to allow the pin *k* to clear its retaining notch, and the rod is then turned backwardly or forwardly as may be necessary to effect the desired adjustment, after which the rod is released and its pin allowed to engage in the nearest retaining notch.

The outlet valve has a loose or slack connection with the stop sleeve, so that the same may be opened by hand, by seizing the knob of the adjusting rod and lifting from the latter sufficiently to raise the valve from its seat. For this purpose, the valve is provided with an upwardly extending stem *l* which passes loosely through an opening formed in the closed bottom of the stop sleeve and is provided at its upper end, within the sleeve, with a nut or stop *l'* which prevents the stem from becoming disconnected from the sleeve. In the ordinary operation of the lubricator, this stop nut does not come in contact with the bottom of the sleeve, but allows the outlet valve to rise and fall freely as the crank pin revolves.

When it is desired to oil the crank pin by hand preparatory to starting the engine, the adjusting rod is simply pulled by means of its knob, whereby the outlet valve is lifted from its seat and the oil allowed to pass to the crank pin. When it is desired to flush

or clear the outlet passage, the adjusting rod is reciprocated a number of times. The lower stem of the outlet valve, taking part in this movement, acts as a plunger, which causes the oil to be pumped through the outlet passage and thereby flushes the same. The spring J returns the adjusting rod and the stop sleeve to their normal depressed position upon releasing the rod and this pumping action does not therefore interfere with the feed adjustment of the lubricator.

m is the opening in the upper head of the lubricator through which the oil is introduced into the same, and M is a laterally swinging lid which closes said opening. This lid consists of a radial bar or plate having at its inner end an eye which encircles an annular boss *n* formed centrally on the upper side of the head B. This lid is provided at its outer end with a spring catch *o* which engages with the marginal bead or overhanging rim *o'* of the head B, and which holds the lid snugly against the upper side of the latter. This spring catch is constructed in the form of an upwardly projecting loop, the outer descending member of which terminates at its lower free end in a lip or offset portion *o²* which engages under the bead of the head and thus draws the outer portion of the lid down upon the head forming a tight joint. The bead of the head is provided opposite the supply opening of the lubricator with a locking notch and the free end of the spring catch is provided on its inner side with a rib or projection *o³* which interlocks with said notch and holds the lid in its closed position. The lid is readily opened by pressing it laterally, its catch springing outwardly and allowing its projection to leave the locking notch in the head. The loop of the spring catch serves as a handle for manipulating the lid. The click produced by the interlocking of the spring catch with this notch also serves as a guide which enables the attendant to reliably close the lid without special attention, it being only necessary to turn the lid in either direction until the catch clicks into engagement with the notch.

I claim as my invention—

1. In a lubricator adapted to be carried by a crank pin or other movable part, the combination with the oil receptacle having an outlet, of a loose valve controlling said passage and having a plunger arranged in said passage, and a lifting rod having a loose connection with said valve and capable of sliding longitudinally, whereby the rod and the plunger of the valve may be reciprocated for flushing the outlet passage, substantially as set forth.

2. In a lubricator adapted to be carried by a crank pin or other movable part, the combination with the oil receptacle having an outlet, of a valve applied to said passage and capable of rising freely from its seat, a lifting rod capable of sliding lengthwise, an independent stop for the valve, adjustably con-

connected with said lifting rod and a loose connection between said valve and said stop, substantially as set forth.

3. The combination with the oil receptacle of the lubricator and the outlet passage, of a loose valve controlling said passage, an adjusting rod capable of moving lengthwise in the lubricator and having a screw thread, a stop sleeve having a screw thread engaging with the screw thread of said adjusting rod and means for holding the sleeve from turning, substantially as set forth.

4. The combination with the oil receptacle of the lubricator having the outlet, of a loose valve applied to said outlet, an adjusting rod having a screw thread, an upright guide member arranged in the receptacle and a stop sleeve having a screw thread engaging with the thread of the adjusting rod, and a fork engaging with said guide member, substantially as set forth.

5. The combination with the oil receptacle of the lubricator having the outlet passage, of a loose valve controlling said passage, an adjusting rod capable of moving lengthwise in the lubricator, a stop sleeve adjustably mounted upon the adjusting rod, and a loose connection between said sleeve and the outlet valve, substantially as set forth.

6. The combination with the oil receptacle of the lubricator having the outlet passage, of a loose valve controlling said passage, an adjusting rod capable of moving lengthwise in the lubricator, a stop sleeve adjustably mounted upon the adjusting rod, a spring whereby the adjusting rod is held in its depressed position, and a loose connection between said stop-sleeve and the outlet valve, substantially as set forth.

7. In a lubricator adapted to be carried by

a crank pin or other movable part, the combination with the oil receptacle having an outlet, of an adjusting rod, a stop sleeve capable of vertical adjustment on said rod, a valve applied to said outlet, and a stem attached to said valve, arranged loosely in said stop sleeve and provided with a nut or stop whereby it is confined in the sleeve, substantially as set forth.

8. The combination with the oil receptacle having a retaining notch in its top, of the outlet passage for the oil, and a valve applied to said passage, an adjustable stop arranged above said valve, a vertically sliding adjusting rod carrying said stop and having a pin or projection engaging in said retaining notch, and a spring whereby the adjusting rod is depressed, substantially as set forth.

9. The combination with the oil receptacle of a lubricator having a supply aperture and a projecting marginal rim, of a laterally swinging lid adapted to close said aperture and provided at its outer end with a downwardly extending spring catch which engages under the rim of the receptacle, substantially as set forth.

10. The combination with the oil receptacle of the lubricator having a supply aperture and a marginal rim provided with a locking notch, of a laterally swinging lid adapted to close said aperture and provided at its outer end with a downwardly extending spring lip which engages under the rim of the receptacle and interlocks with the notch thereof, substantially as set forth.

Witness my hand this 18th day of February, 1893.

THOMAS J. HART.

Witnesses:

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JNO. J. BONNER.