

15-1 LUBRICATOR,

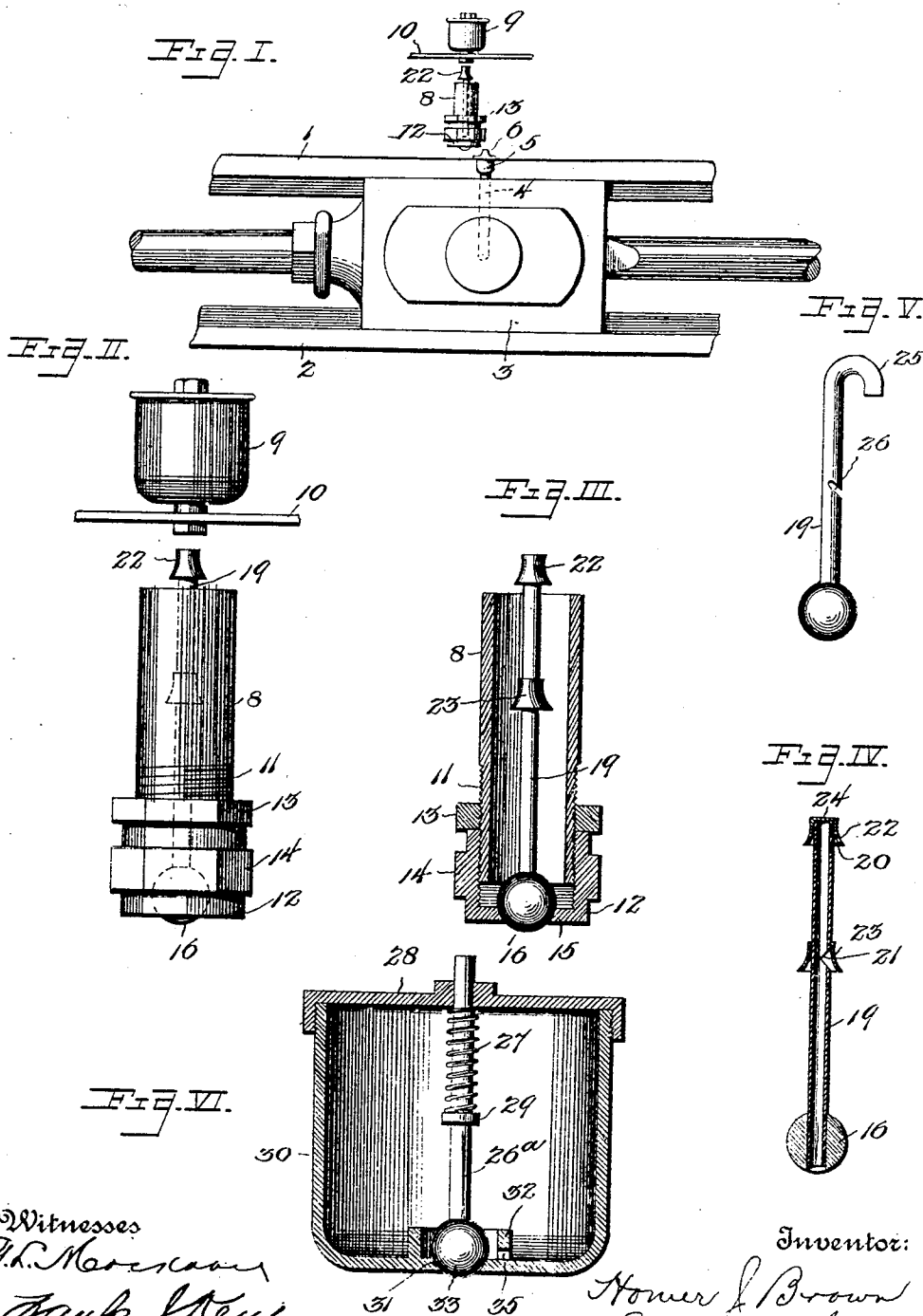
Lubricator, Gravity Fed,
Automatic Valve
Vertical reciprocating valve,
Mechanically operated,
Spring retained.

No. 814,269.

PATENTED MAR. 6, 1906.

H. J. BROWN.
LUBRICATOR.

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Witnesses
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UNITED STATES PATENT OFFICE.

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LUBRICATOR.

No. 814,269.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HOMER J. BROWN, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Lubricators, of which the following is a complete specification, reference being had to the accompanying drawings.

My invention belongs to the class of automatic intermittent-feed lubricators which, being carried in part upon a movable member to be lubricated, is adapted at a determinate point or points in the movement of said member to vent the lubricant which it contains in determinate quantities.

The object of my invention is to produce such a lubricator which is reliable in operation, which is adapted to be readily operated by hand or manipulated for the purpose of removing obstructions or the like in the device, and which is also adapted automatically to feed its lubricant in the case of any emergency which may interrupt the performance of its ordinary functions.

In the accompanying drawings, Figure I is a side elevation of one form of embodiment of my invention as applied to the cross-head of an engine, said application being presented only in order to illustrate the principle of my invention. Fig. II is a side elevation of the fixed portion of my lubricator, as shown in Fig. I. Fig. III is a central vertical section of the feed-well shown in Fig. II, the valve and stem being shown in elevation. Fig. IV is a central vertical section of the valve and stem shown in elevation in Fig. III. Fig. V illustrates in side elevation a slight modification of the valve and stem. Fig. VI is a view similar to Fig. III, illustrating a modified form of embodiment of my invention, in which the reservoir and feed-well are combined in a single structure.

Referring to the numerals on the drawings, 1 and 2 indicate the two parts of a cross-head guide, between which a cross-head 3 works. 4 indicates a pipe leading to the part to be lubricated and which being carried around so as to clear the cross-head guide terminates in a cup 5, carrying a suitably-projecting wiper 6. Of the parts above enumerated the cross-head and guide being presented simply by way of example require no special description, and the cup and wiper are also well known in that class of lubricators to which my invention belongs. The cross-head, with its appurtenant members, is intended to rep-

resent as a whole the movable member upon whose motion the automatic operation of my lubricating device depends.

Coming now to the consideration of that which constitutes distinctively my present invention, 8 indicates a feed-well which is carried in operative relation both to the moving actuating member or wiper 6 and a fixed lubricant-reservoir 9. The feed-well 8 is assumed in Fig. I to be fixedly supported in any suitable position by means unnecessary to illustrate and the reservoir 9 to be carried above the same by a support diagrammatically indicated by the reference-numeral 10. The reservoir 9 (shown in Figs. I and II) may be of the type of any ordinary or preferred form of gravity or other feed cup. The feed-well 8 may be varied widely as to details of shape and construction. As shown in Figs. I to III, inclusive, it consists simply of a section of tubing having its lower end provided with threads 11. The threads 11 are designed to accommodate the internally-threaded cap 12 and a jam-nut 13, the cap 12 being preferably provided with a medially-located hexagonal zone 14 for the accommodation of a wrench. It being important that the distance between the bottom of the feed-well, or, in the form of embodiment of my invention illustrated, the bottom of the cap 12, should be variable with respect to the wiper 6 for reasons which will presently more clearly appear, I provide the means of adjustment specified—to wit, the cap threaded upon the end of the feed-well and the jam-nut 13 for fixing the parts in any position to which they may be adjusted.

In the bottom of the feed-well—that is, with reference to the subject-matter of Figs. I to III—in the bottom of the cap 12 I provide a valve-seat 15, which is shaped to accommodate a valve 16. The valve-seat is of course fitted to the valve, which is preferably of globular shape. It is designed that the valve shall project sufficiently through the valve-seat to enable the wiper 6 to make contact with and lift it without exerting any force of impact against the bottom of the feed-well, although it is practicable for it to barely make contact therewith. It is obvious that the distance through which the valve is lifted by the wiper may depend in part upon the extent to which the valve projects through the valve-seat and also in valves of globular form that the diameter of the valve-seat will also

Vertically reciprocating valve,

increased proportionately to the extent of projection ~~Spring retained~~ through the valve-seat. It may therefore be seen that it is possible in great measure to control the amount of oil or similar lubricant discharged through the valve-seat by regulating the relative sizes of the valve and valve-seat, respectively. If, for example, the valve-seat be small and the valve be made to project barely into operative contact with the wiper 6, the feed-well can be made to discharge its contents drop by drop with each sweep of the wiper. On the other hand, by providing a considerable lift to the valve the quantity of each intermittent discharge from the feed-well may be very greatly increased. Moreover, without varying the relative sizes of the valve and valve-seat the lift of the valve may be varied by raising and lowering the valve-seat with respect to the wiper, and it is for this reason that I prefer to employ the means of adjustment represented by the cap 12, threaded to the lower extremity of the feed-well.

The valve 16 is, by preference, as specified, of globular form; but it is not a simple sphere or ball, valves of that shape being old in the art to which my present invention belongs. On the contrary, it is distinguished by being provided with a stem 19, which preferably extends through the feed-well and projects from the top thereof, thereby affording means of manipulation. Besides constituting means for manipulating the valve the stem performs the functions both of a guide and of a make-weight, by which the valve is made to act more promptly and with greater certainty and precision than would be practicable in a simple ball-valve of practicable dimensions. The stem 19 may be also made to constitute an emergency-feed designed and adapted to insure a flow of oil even though the function of the valve should be temporarily interrupted from any cause. In order to accomplish the end last specified, the stem may be made hollow—as is clearly shown in Fig. IV, for example—in which form it may be provided at different heights with apertures 20 and 21, protected, respectively, as by skirted belts 22 and 23, the topmost belt being capped, as indicated at 24. The function of the belts 22 and 23 is to cover the bore and apertures of the tubular stem, so that oil or other lubricant fed from the reservoir 9 may ordinarily pass downward along the stem without entering its bore, but which, if it accumulates excessively in the bottom of the feed-well, may rise therein and pass out at one or another aperture communicating with the bore of the stem.

In Fig. V, I show in a tubular stem a modification of the belts 22 and 23, consisting, respectively, of a crook 25 in the upper end of the stem and an upward-cut kerf 26 in the body thereof. The tubular and apertured valve-stem is presented as a representative

emergency-feed, and it is obvious that an aperture in the side of the feed-well at a suitable height above the bottom thereof would serve the same purpose. It is also obvious that the stem 19 may be made hollow throughout, as clearly shown in Fig. IV, or solid, as indicated in the valve-stem 26^a, (shown in Fig. VI,) or it may be solid through the upper part of its length and hollow through the lower part; but these are details of construction to which I have no intention to limit myself in the premises.

It was specified above that one function of the valve-stem is to constitute a make-weight for the valve. Under certain practical conditions—as, for example, if the feed-well be mounted upon a part whose movement generates centrifugal force—the seating of the valve may be aided or compelled by the employment of such valve-seating mechanism as is represented by the coiled spring 27, coiled around the valve-stem and seated at opposite ends against a member fixed to the feed-well—as, for example, the screw-cap 28—and a member fixed to the valve-stem—for example, a collar 29, as shown in Fig. VI.

It has been specified that the feed-well 8 and reservoir 9 may be separate members in operative vertical alinement; but, as shown in Fig. VI, I contemplate the combination of the feed-well and reservoir in one structure. In that figure, 30 indicates the wall of an outside receptacle provided in its bottom with a valve-seat 31, which is surrounded within the receptacle 30 by a wall or curb 32. In practice the receptacle 30 is provided with a liquid lubricant which by the periodic actuation of the valve 33, working in the valve-seat 31, is adapted to be fed out in the manner already described. The height of the wall 32 within the receptacle 30 may be varied at will and may be extended even to the top of the receptacle by providing in it an aperture or apertures 35, by way whereof the lubricant may pass through it.

The description of the operation of my invention being deemed to have been sufficiently referred to throughout the body of the specification to enable one skilled in the art to perfectly comprehend my invention, further reference thereto is omitted.

What I claim is—

1. In a lubricator the combination with a feed-well and a valve-seat in the bottom thereof, of a valve provided with a hollow stem therein projecting through the valve-seat, and an aperture in the stem communicating with the bore thereof.

2. In a lubricator the combination with a feed-well and a valve-seat therein, of a valve having a hollow stem provided with an aperture communicating with the bore thereof, and means of protecting said aperture from inflow from above.

3. In a lubricator the combination with a

feed-well, valve-seat, and valve therein adapted to be automatically actuated, of emergency means of oil-supply from the feed-well, adapted to operate upon failure of the valve
5 to perform its function.

4. In an automatic lubricator the combination with a feed-well and cap, valve-seat, and valve projecting through the valve-seat, and an upwardly-directed valve-stem, of a

wiper and means for relatively adjusting the valve and wiper.

In testimony of all which I have hereunto subscribed my name.

HOMER J. BROWN.

Witnesses:

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