A. W. MANZEL.

FORCE FEED LUBRICATOR.

APPLICATION FILED JULY 2, 1909.

1,014,403.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

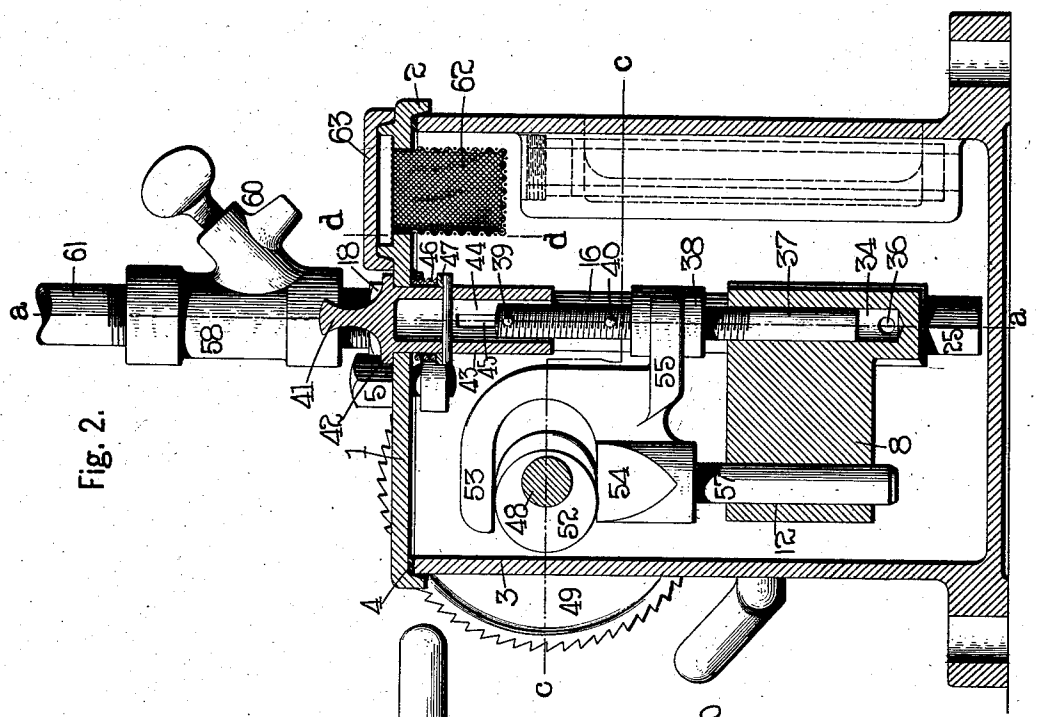

Fig. 2.

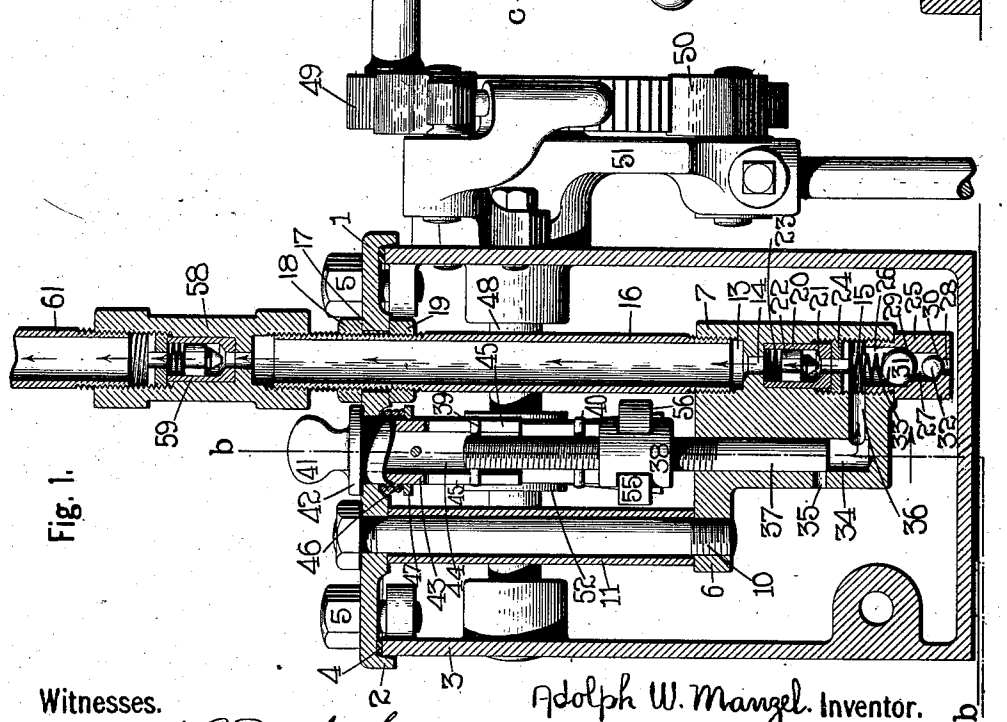

Fig. 1.

Witnesses.

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2 SHEETS—SHEET 2.

Fig. 3.

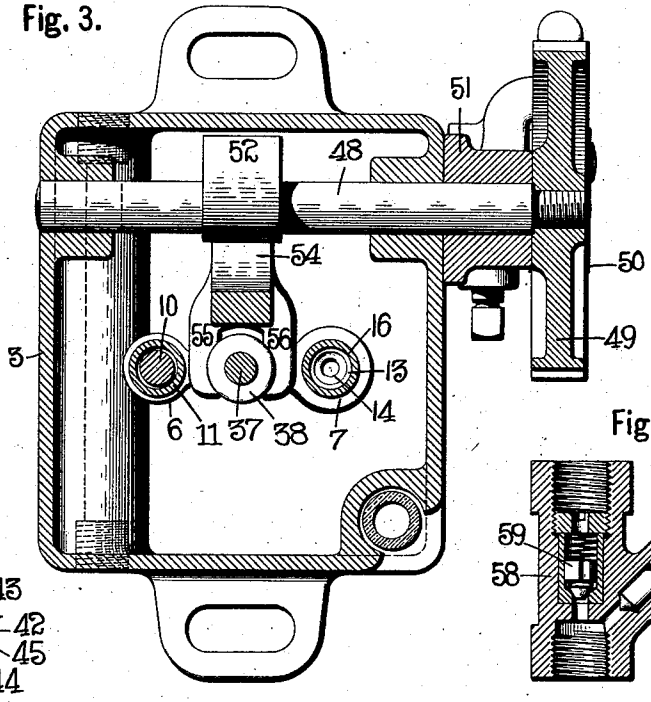


Fig. 6.

Fig. 5.

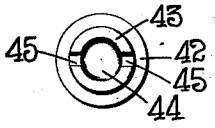


Fig. 4.

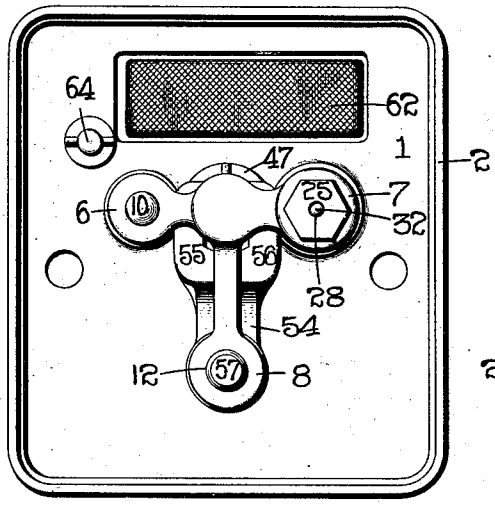


Fig. 7.

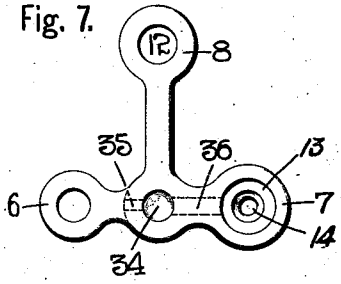
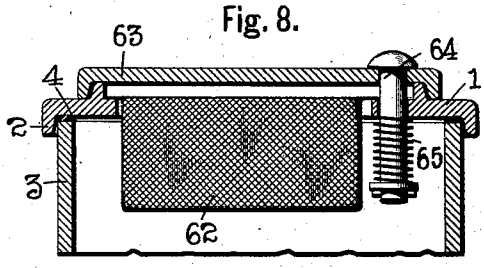


Fig. 8.



Witnesses.

Frederick P. Duchscherer.

George A. Neubauer.

Adolph W. Manzel Inventor.

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UNITED STATES PATENT OFFICE.

ADOLPH W. MANZEL, OF BUFFALO, NEW YORK, ASSIGNOR TO MANZEL BROTHERS COMPANY, OF BUFFALO, NEW YORK.

FORCE-FEED LUBRICATOR.

1,014,403. Specification of Letters Patent. Patented Jan. 9, 1912.

Application filed July 2, 1909. Serial No. 505,629.

To all whom it may concern:

Be it known that I, ADOLPH W. MANZEL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a certain new and useful Improvement in Force-Feed Lubricators, of which the following is a specification.

This invention relates to an improved force feed lubricator which is chiefly adapted for use on traction engines.

The principal objects of the invention are to provide a comparatively simple, cheap and durable lubricator and to support the pumping mechanism from the cover so that it may be removed from the reservoir upon the removal of the cover.

The invention also relates to certain details of construction which will be hereinafter described and claimed reference being had to the accompanying drawings, in which:—

Figure 1 is a vertical central section through the improved lubricator on line *a a*, Fig. 2. Fig. 2 is a vertical section through the improved lubricator on line *b b*, Fig. 1. Fig. 3 is a horizontal section on line *c c*, Fig. 2. Fig. 4 is a detached bottom view of the cover of the reservoir with the pump mechanism attached thereto. Fig. 5 is a detached bottom plan view of the adjusting member. Fig. 6 is a detached central section through the coupling showing the check valve and the bleeder. Fig. 7 is a detached plan view of the T-shaped or three armed block. Fig. 8 is a fragmentary section through the reservoir and its cover on line *d d*, Fig. 2, showing the strainer.

In referring to the drawings in detail like numerals designate like parts.

The pumping mechanism is inclosed within the reservoir or box which contains the lubricant being hung pendant from the cover 1. This cover 1 is substantially flat having a slight marginal flange 2 which fits around the top edge of the body 3 of the box when the cover is placed thereon. A packing 4 of suitable material may be fitted between the adjacent surfaces of the cover and the top edge of the body to form a tight joint as shown in Figs. 1, 2 and 8. The cover is fastened in place on the body by bolts 5 which pass through the cover and inwardly extending horizontal ears located on the interior of the box near the top thereof, (see Fig. 1).

The pumping mechanism with the exceptions of the operating shaft and its ratchet driving mechanism is suspended wholly from the cover. The pumping mechanism is of that class which is known as a force feed, the lubricant being positively forced to the desired location by the reciprocating action of a plunger.

A three armed or substantially T-shaped block is hung from the cover and is formed substantially as shown in Fig. 7 having three arms, 6, 7 and 8, two of which extend in alinement with each other, with the other arm extending at substantially right angles from the juncture point of the two first mentioned arms. The arm 6 is fairly thin and is provided with a screw threaded opening—see Fig. 1 in which the lower end of a bolt 10 extending from the cover is screwed. A tube 11 is fitted around the bolt and serves to limit the entrance of the bolt end into the screw threaded opening as shown in Fig. 1. The end of the arm 8 is enlarged and is provided with a vertical opening 12 which extends entirely therethrough as shown in Fig. 7. The remaining arm 7 is also provided with an end enlargement having a vertical opening which extends entirely therethrough and said opening is formed of varying sizes in cross section, having a fairly large top portion 13 which reduces in size at its lower end to form an intermediate portion 14 of small diameter and a lower portion 15 of about the same size as the top portion 13. The lower end of a pipe 16 is screwed into the top portion 13 and said pipe extends vertically up through an opening 17 in the cover being secured to the cover by lock nuts 18 and 19 fitted on the pipe on opposite sides of the cover.

The upper part of the lower portion 15 of the opening through the arm 7 serves as a chamber to receive a removable valve cage 20 having a valve seat 21 and a valve 22 which is held yieldingly in engagement with the seat by a spring 23, (see Fig. 1). The lower part of the portion 15 is screw threaded and a perforated lock washer 24 is screwed therein against the cage 20 to secure the cage in place. A tubular plug 25 is screwed into the lower end of the portion 15 of the opening in the arm and

the vertical opening through said plug is formed in three portions 26, 27 and 28 which successively decrease in diameter from the top downward, shoulders 29 and 30 being formed at the termination of the lower portions 26 and 27 which serve as valve seats for ball valves 31 and 32. The upper ball 31 is considerably larger than the lower ball 32 and is yieldingly maintained in position against the shoulder 29 by a spiral spring 33, (see Fig. 1).

The block is enlarged at the juncture point of its three arms and a deep cylindrical recess 34 is formed therein, which has a relief port or overflow 35 located a short distance above its lower end which communicates with the interior of the box or reservoir, and an outlet port 36 which is located in a horizontal plane between the horizontal plane of the relief port 35 and a plane at or near the bottom of the recess, and affords communication between the recess and the lower portion 15 of the opening through the arm 7.

A vertical plunger 37 has its lower portion slidably fitted in the recess 34 and is in part screw threaded and an interiorly screw threaded sleeve 38 is rotatably fitted on said plunger. The recess 34 constitutes both a feed chamber for the lubricant and a piston chamber for feeding plunger 37. Two horizontal pins 39 and 40 are fitted through the plunger and have their ends projecting on opposite sides. One of these pins is located at the upper end of the plunger and the other at a short distance below as shown in Figs. 1 and 2.

An adjusting member for the plunger is rotatably fitted in an opening in the cover and has a projecting top knob 41, an annular shoulder 42 which rests upon the top surface of the cover and a vertical depending portion 43 extending below the cover which is provided with a deep recess 44 in which the upper portion of the plunger slidably moves and two oppositely located vertical slots 45, in which the projecting ends of the pin 39 slidably move. The object of these pins is to provide means for connecting the plunger to the adjusting member so that the plunger may be adjusted without interfering with or stopping or limiting the reciprocating feeding action of the plunger. The adjusting member is yieldingly maintained in position by means of a spring 46 which is located between the cover and a washer 47 on the depending portion 43.

The plunger is vertically reciprocated from a horizontal shaft 48 which is journaled in suitable bearings in the box and has a ratchet wheel 49 at its outer projecting end. The ratchet wheel is turned to rotate the shaft by a pivoted dog 50 carried by a crank arm 51 which swings loosely on the shaft and is reciprocated from any movable portion of the machine or device requiring lubrication, being suitably connected therewith in any well known way. An eccentric 52 is mounted on the shaft as shown in Fig. 2. A power transmitting device or block which operatively connects the shaft to the plunger and serves to change the rotary movement of the shaft to the straight reciprocating movement of the plunger, has two horizontally extending forks 53 and 54 which are arranged in a vertical plane and two horizontally extending forks 55 and 56 which are arranged in the same horizontal plane and extend oppositely to the forks 53 and 54. The eccentric 52 is located in the space between the forks 53 and 54 and the sleeve 38 is cut away or recessed on its opposite sides to receive the forks 55 and 56 as shown in Fig. 1. A vertical stem or rod 57 depends from the lower fork 54 and is slidably fitted in the vertical opening 12 in the arm 8. This rod serves to support the power transmitting device or block against movement in any direction but the vertical.

A coupling 58 is screwed upon the upper end of the pipe 16 and has a valve 59 fitted therein and a bleeder or tester 60 extending therefrom to provide means for determining the volumn of the flow of oil. The end 61 of the pipe for conducting the oil or lubricant to the desired point is screwed into the upper portion of the coupling.

The box or reservoir may be provided with the usual sight glass (not shown in the drawings) for showing the amount of lubricant therein.

A strainer 62 of woven wire of box like form is fitted in an opening in the cover and a lid 63 for said opening is secured to the cover by means of a headed pin 64 which extends loosely through openings in the lid and cover. A spring 65 is fitted around the depending portion of the pin 64 below the lower surface of the cover and serves to yieldingly maintain the lid in position.

The operation of the pumping mechanism is as follows:—The shaft is rotated by turning the ratchet wheel which in turn through the power transmitting device or block imparts a reciprocating movement to the plunger. The upward movement of the plunger draws the lubricant into the valved plug 25 and thence through the communicating inlet port 36 into the deep recess which forms the feed chamber and the downward movement of the plunger forces the lubricant through the inlet port into the opening in the arm 7 and then vertically through the pipe 16 to the point desired. The feed is varied by vertically adjusting the plunger within the sleeve by turning the adjusting device.

I claim—

1. In a force feed lubricator, the combina-

tion with a box or reservoir having a cover, of a three armed block supported from the cover; said block being provided with a vertical opening forming a feed chamber, a vertical opening having valves therein, a horizontal communicating port between said openings and an outlet or overflow port extending from the feed chamber into communication with the interior of the box or reservoir, a plunger slidably mounted in the feed chamber and a conducting pipe extending from the valves opening through the cover, substantially as set forth.

2. In a force feed lubricator, the combination with a box or reservoir having a cover, of a multi-armed block supported from the cover, said block being provided with a vertical opening forming a feed chamber, a vertical opening having valves therein, a horizontal communicating port between said openings and an outlet or overflow port extending from the feed chamber into communication with the interior of the box or reservoir, said overflow port being located in a plane above the plane of the communicating port, a plunger slidably mounted in the feed chamber and a conducting pipe extending from the valved opening through the cover, substantially as set forth.

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Witnesses:
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