H. S. BLYNT.

LUBRICATOR.

APPLICATION FILED FEB. 24, 1910.

1,008,584. Patented Nov. 14, 1911.

Fig. 1.

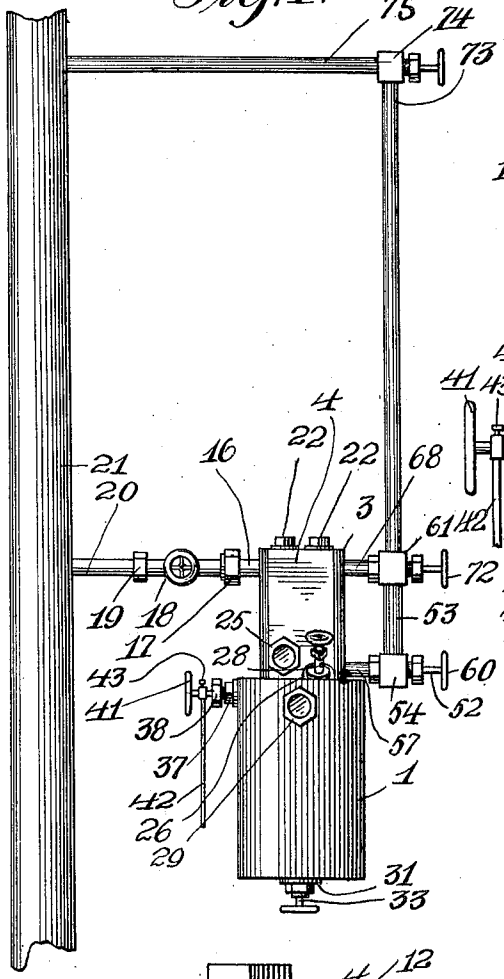


Fig. 2.

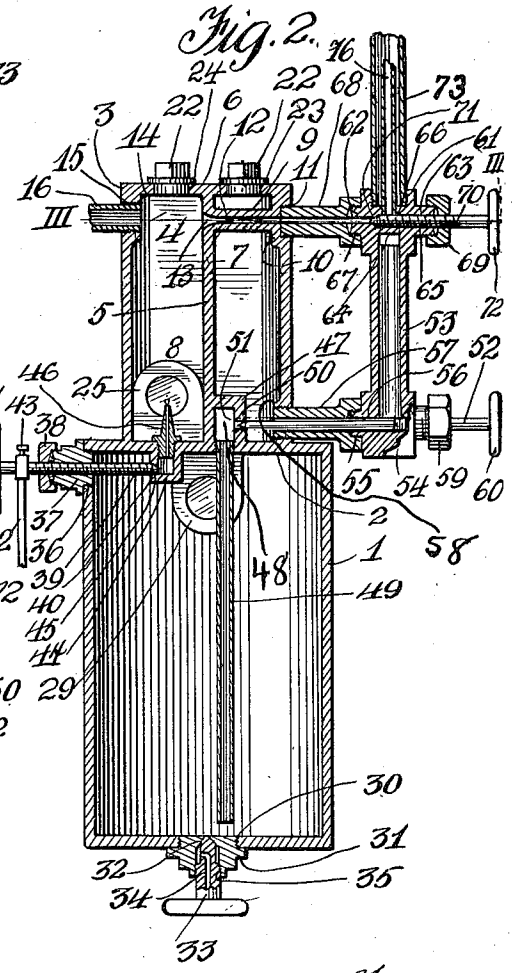


Fig. 3.

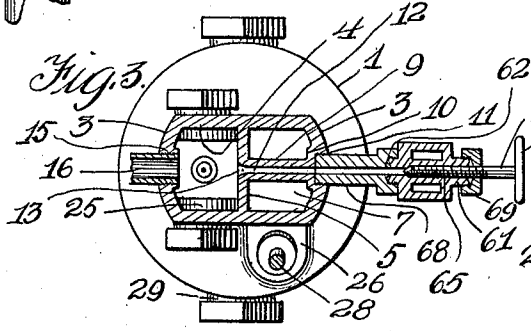
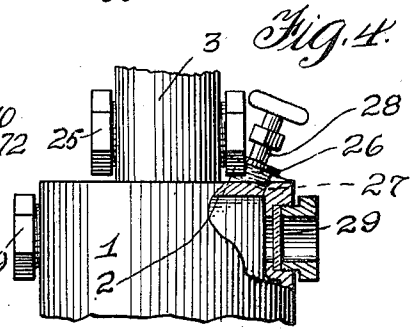


Fig. 4.



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LUBRICATOR.

1,008,584. Specification of Letters Patent. Patented Nov. 14, 1911.

Application filed February 24, 1910. Serial No. 545,677.

To all whom it may concern:

Be it known that I, HERBERT S. BLYNT, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Lubricators, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to lubricators and is an improvement upon my Patent No. 946,484 on a grease lubricator patented January 11th, 1910, this patent showing the lubricator adapted to be used in connection with the steam lines of engines.

The objects of my invention are to furnish a lubricator with positive and reliable means for maintaining the grease or oil within the lubricator in a liquid and workable state, preventing freezing or coagulation, and to provide a lubricator with means for collecting the condensate, as well as heating the latter.

Other objects of my invention are to provide a lubricator that will be simple in construction, durable, and easy to manufacture, and to furnish a lubricator of the above type with effective means for controlling the action or discharge of lubricant from the lubricator.

Further objects of the invention are to provide a lubricator of the above type with a chamber that will be normally filled with water or condensate, thus permitting of the lubricator being immediately placed in action, and to furnish the lubricator with means whereby the contents of the feed chamber and the drops of lubricant will not be agitated or disintegrated by the action of steam entering the chamber to convey the drops of lubricant to the parts of the engine to be lubricated.

Still further objects of my invention are to provide a lubricator body that can be easily machined to receive the parts thereof, and to furnish means in connection with the lubricator whereby an engineer can easily determine the correct position of the controlling valve.

With these and such other objects in view as may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts to be hereinafter specifically described and then claimed.

Reference will now be had to the drawings forming a part of this specification, wherein there is illustrated the preferred embodiments of my invention, but it is to be understood that the structural elements thereof can be varied or changed, as to the size, shape and manner of assemblage without departing from the spirit and scope of the appended claims.

In the drawings: Figure 1 is a side elevation of the lubricator as connected to a steam line. Fig. 2 is an enlarged vertical sectional view of the same. Fig. 3 is a horizontal sectional view of the lubricator taken on the line III—III of Fig. 2. Fig. 4 is a front elevation of a portion of the lubricator.

Like numerals of reference designate corresponding parts throughout the several views.

The reference numeral 1 denotes a cylindrical metallic reservoir and formed integral with the closed upper end 2 of said reservoir is a cylindrical casing 3 of less diameter than the reservoir 1, said casing having the opposite sides thereof flattened, as at 4, thus permitting of a chuck easily gripping the casing 3 while the various ports, openings, and surfaces of the casing 3 and the reservoir 1 are being machined and dressed. In making the casing 3 integral with the reservoir 1 I aim to reduce the expense of manufacture, and in casting these two parts provision is made upon the inner sides of the casing 3 for such bosses as are necessary for the connection of pipes to said casing, thus removing all projections and protuberances upon the exterior of the reservoir and casing and thereby allowing the reservoir and casing to be easily dressed in a machine.

5 denotes a vertical partition within the casing 3, said partition connecting the flat sides 4 of the casing and the closed top 2 of the reservoir with the closed top 6 of said casing. This partition divides the casing 3 into what I term a collecting chamber and a feed chamber, said chambers being designated 7 and 8 respectively. The partition 5 adjacent to the upper edge thereof is connected by an integral web 9 to a boss 10 formed on the inner side of the casing 3, said boss being provided with an interiorly threaded socket 11, while the web 9 is provided with a longitudinal port 12, said port establishing communication between the socket 11 and the upper part of the feed chamber 8. This port is adapted to admit live steam to the upper part of said cham-

ber, and the end of the port is enlarged, flared or tapered, as at 13, whereby the live steam can expand as it enters the chamber 8, thus preventing the steam from agitating or chopping the contents of the feed chamber.

14 denotes a boss upon the inner side of the casing 3 opposite the flared end of the port 12, and this boss is provided with an opening 15 having the walls thereof threaded to receive the end of a pipe 16, said pipe being connected by a union 17 to a valve 18 and the valve 18 by a union 19 to a pipe 20 tapping into a steam pipe 21 adapted to lead to an engine.

22 denotes plugs threaded in openings 23 and 24 provided therefor in the top of the casing 3, these openings communicating with the chambers 7 and 8, whereby the plugs 22 can be easily removed and the chambers filled with water.

25 denotes sight glasses mounted in the flat sides 4 of the casing 3 whereby the interior of the lower part of the feed chamber 8 can be observed, for a purpose that will presently appear.

26 denotes a boss carried by the top of the reservoir 1 at one side of the casing 3, said boss having an opening 27 formed therein, whereby the reservoir 1 can be filled with a lubricant. The opening 27 of the boss 26 is adapted to be closed by a detachable plug 28.

29 denotes sight glasses carried by opposite sides of the reservoir adjacent to the closed top 2 thereof, whereby the interior of the reservoir can be observed and the quantity of lubricant contained therein determined.

30 denotes an opening in the bottom of the reservoir 1, said opening having the walls thereof threaded for a plug 31 having a valve seat 32 formed therein for a needle valve 33, said valve having the stem thereof provided with a longitudinal port 34, one end of said port terminating in one side of the stem, while the opposite end of said port terminates at the bottom of the knob or handle 35 carried by the valve. This valve serves functionally as a drain valve for removing the contents of the reservoir 1.

36 denotes an opening formed in the side wall of the reservoir 1 adjacent to the closed top 2 thereof, said opening having the walls thereof threaded to receive a stuffing box 37 having a detachable gland 38. Adjustably mounted in the stuffing box 37 is a screw 39 having the inner end thereof tapered to form a valve 40, while the outer end of said screw is provided with a handle 41.

42 denotes an arm adjustably mounted upon the screw 39 adjacent to the handle 41, said arm being arranged at right angles to the screw and retained in position by a set screw 43. The arm 42 is adapted to be set relatively to the screw 39, whereby when the screw is rotated and the arm 42 engages the pipe 16 or the valve 18, the valve 40 will be opened a pre-described distance, and when the arm 42 is swung out of engagement with the valve 18, the valve 40 will be closed. It is through the medium of the arm 42 that an engineer can readily determine when the valve 40 is properly set, and whenever it is desired to adjust the seating of the valve 40 the arm 42 is re-adjusted.

44 denotes a depending cup carried by the closed top 2 of the reservoir 1 and communicating with the feed chamber 8. The side wall of this cup 44 is provided with a valve seat 45 adapted to receive the valve 40, said valve controlling the communication between the chamber 8 and the reservoir 1. The inner walls of the cup 44 are threaded adjacent to the upper end of the cup to receive a nipple 46, said nipple controlling the passage of the lubricant from the reservoir 1 into the feed chamber 8. The upper end of the nipple 46 is in a line with the sight glasses 25, whereby as the lubricant is emitted from the nipple by the hydrostatic pressure within the reservoir 1, the size of the drops of lubricant can be easily observed, also the frequency at which the drops are emitted.

47 denotes a boss carried by the closed top 2 of the reservoir 1 at the base of the partition 5 and within the collecting chamber 7, said boss having a cavity 48 formed therein adapted to communicate with a deposit pipe 49 having the upper end thereof mounted in the closed top 2 of the reservoir, while the lower end of said deposit pipe extends to within proximity of the bottom of the reservoir 1. The side wall of the boss 47 is provided with an opening forming a valve set at 50 for the tapered or valvular end 51 of a screw 52, said screw controlling the communication between the collecting chamber 7 and the deposit pipe 49.

53 denotes a tubular member, said member having the lower end thereof provided with a body 54 having one side formed with an exteriorly threaded nipple 55. The body 54 and the nipple 55 are provided with a threaded opening 56 for the screw 52, said screw extending through a coupling-piece 57 connecting the nipple 55 with the side of the casing 3. The inner side of the casing 3 is formed with a boss 58 having an opening formed therein with the walls of said opening threaded to receive the threaded end of the coupling-piece 57. The screw 52 extends through a stuffing box and gland 59 carried by the body 54, and the outer end of the screw 52 is provided with a suitable handle 60, whereby the valvular end 51 of the screw can be easily adjusted relatively to the seat 50 of the boss 47. The tubular member 53 constitutes a condensate

collector and the communication between this collector and the reservoir 1 is controlled by the screw 52 and its appurtenant parts, which constitute means for controlling the admission of the condensate to the reservoir.

61 denotes a body formed integral with the upper end of the tubular member 53, and this body has the opposite sides thereof provided with nipples 62 and 63, while the interior of the body has a central web 64. The web 64 and the nipple 63 are provided with a threaded bore 65 and communicating with this bore is a vertical port 66 formed in the web 64 and a port 67 formed in the nipple 62. The port 67 is adapted to communicate with the longitudinal port 12 of the casing 3 by a coupling member 68 having one end thereof screwed upon the nipple 62, while the opposite end thereof is screwed into the socket 11 of the boss 10. The nipple 63 is provided with a stuffing box 69 and adjustably mounted in the bore 65 of the body 61 is a screw 70 having the inner end thereof tapered to form a valve 71 adapted to close the communication between the port 66 and the port 67. The outer end of the screw 70 is provided with a handle 72, and this screw constitutes a valve or means adapted to control the passage of live steam through the port 66 into the port 12 of the casing 3.

73 denotes a condensate pipe having the lower end thereof connected to the body 61, whereby the condensate from said pipe can pass around the web 64 into the condensate collector. The condensate pipe 73 has the upper end thereof connected to a valve 74, and this valve is connected by a pipe 75 to the steam pipe 21.

76 denotes a live steam pipe of a less diameter than the condensate pipe 73, said live steam pipe being arranged within the pipe 73 with the lower end thereof fastened in the port 66. The pipe 76 can be made of various lengths, as will hereinafter appear, and this pipe is adapted to convey live steam to the upper part of the feed chamber 8, through the medium of the bore 65, ports 67, coupling members 68, and port 12.

Before describing the various modifications of my invention, reference will first be had to the operation of the lubricator just described. It is preferable to place the lubricator in a suitable position near an engine and to connect the receptacle or reservoir 1 to the steam pipe or line 21, as shown in Fig. 1, this steam pipe or line supplying steam to the chests and valves of the engine. Assuming that the valves 74, 70, 52, 41, and 18 are closed, that the chambers 7 and 8 contain water and that the reservoir 1 contains a lubricant, the engineer to place the lubricator in operation first opens the valve 74 admitting steam to the live steam pipe 76 and the condensate pipe 73, the steam passing around the web 64 into the tubular member 53 constituting the condensate collector. The valve 52 is next opened and the steam from the tubular member 69 will pass through the coupling member 57 into the cavity 48 and downwardly through the deposit pipe 49 to the bottom of the reservoir 1, creating a hydrostatic pressure that elevates and normally maintains the lubricant in the upper part of the reservoir. The valve 39 is now opened admitting a quantity of lubricant to the cup 44 and from this cup the lubricant is adapted to pass upwardly through the nipple 46 and be fed in drops to the upper part of the feed chamber 8 which contains water. The valve 70 is now opened admitting live steam from the pipe 76 to the port 12 of the web 9, and as this steam enters the upper part of the feed chamber 8, the lubricant that accumulates upon the upper surface of the water within the feed chamber 8 is carried into the pipe 16, and with the valve 18 open through the pipe 20 into the steam pipe 21. As the steam condenses it accumulates in the chamber 7, backs up in the tubular member 53 and surrounds the live steam pipe 76 within the condensate pipe 73. The condensate surrounding the pipe 76 is retained in a warm condition by the steam passing through the pipe 76, and the height of this pipe within the pipe 73 controls the amount of condensate held in suspension and consequently the hydrostatic pressure in the reservoir 1. By regulating the height of the pipe 76 the hydrostatic pressure can be increased or decreased, whereby the flow of lubricant from the nipple 46 can be increased or decreased to a nicety, without requiring a continual adjustment of the valve 39. The condensate within the collecting chamber 7 serves functionally as an auxiliary supply, for instance as heretofore referred to when first placing the lubricator in operation. With the valve 52 open the combined pressure of the condensate within the tubular member 53 and the collecting chamber 7 is sufficient to create a sufficient pressure within the bottom of the reservoir 1 that will cause the lubricant to be emitted by the nipple 46 with considerable rapidity, and besides controlling the frequency of flow through the medium of the height of the pipe 76, it can be controlled by adjusting the valve 39. With the live steam from the pipe 76 passing through the web 64, coupling member 68 into the port 12 of the web 9, this steam is adapted to retain the condensate surrounding the webs 64 and 9 in a warm condition, thereby increasing the efficiency of the condensate as a medium for retaining the lubricant within the lower part of the reservoir in a liquid and workable state, thus preventing any coagulation of the lubricant that would

have a tendency to impair the operation of the lubricant.

What I claim, is:

1. In a lubricator, the combination with a steam supply pipe, of a reservoir adapted to communicate therewith, a condensate collector interposed between said steam supply pipe and said reservoir, a collecting chamber removed from said reservoir and adapted to receive the condensate, means adapted to control the passage of the condensate into said reservoir, a feed chamber carried by said reservoir and adapted to receive the contents of said reservoir, means adapted to convey steam from said steam supply pipe to the upper part of said feed chamber, said means including a connection having a flared port adapted to allow an expansion of the steam when entering said feed chamber.

2. In a lubricator, the combination with a steam supply pipe, of a reservoir, a condensate collector carried by the top of said reservoir and adapted to communicate with said steam supply pipe, a feed chamber carried by the top of said reservoir, and means interposed between the top of said condensate collector and the top of said feed chamber adapted to establish communication between said steam supply pipe and said feed chamber, said means providing for the expansion of steam prior to entering the top of said feed chamber.

3. A lubricator comprising a reservoir having a closed top and adapted to contain a body of lubricant discharged by hydrostatic pressure, a casing mounted upon the reservoir and provided with means to form said casing into a condensate collecting chamber and a feed chamber adapted to contain a body of water, said top provided with a depending recessed boss opening into the interior of the reservoir and further provided with an upwardly extending recessed boss opening into the collecting chamber, a nipple communicating with the feed chamber and with the recess of the depending boss, means for conducting condensate to the collecting chamber, means communicating with the recess of the upwardly extending boss for conducting condensate to the lower portion of the reservoir, means projecting into the upwardly extending boss for controlling the discharge of the condensate from the collecting chamber, means projecting into the depending boss for controlling the discharge of the lubricant from the reservoir to the feed chamber, and means for supplying steam to the upper portion of the feed chamber for discharging the lubricant therefrom.

4. A lubricator comprising a reservoir having a closed top and adapted to contain a body of lubricant discharged by hydrostatic pressure, a casing mounted upon the reservoir and provided with means to form said casing into a condensate collecting chamber and a feed chamber adapted to contain a body of water, said top provided with a depending recessed boss opening into the interior of the reservoir and further provided with an upwardly extending recessed boss opening into the collecting chamber, a nipple communicating with the feed chamber and with the recess of the depending boss, means for conducting condensate to the collecting chamber, means communicating with the recess of the upwardly extending boss for conducting condensate to the lower portion of the reservoir, means projecting into the upwardly extending boss for controlling the discharge of the condensate from the collecting chamber, means projecting into the depending boss for controlling the discharge of the lubricant from the reservoir to the feed chamber, a hollow web extending across the upper portion of the collecting chamber and opening into the feed chamber and communicating with the steam supply for supplying steam to the feed chamber to discharge the lubricant therefrom.

In testimony whereof I affix my signature in the presence of two witnesses.

HERBERT S. BLYNT.

Witnesses:

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JOHN L. STEPHANY.