March 18, 1930. W. BRAUER 1,750,701

PRESSURE FEED LUBRICATOR

Filed Oct. 17, 1928

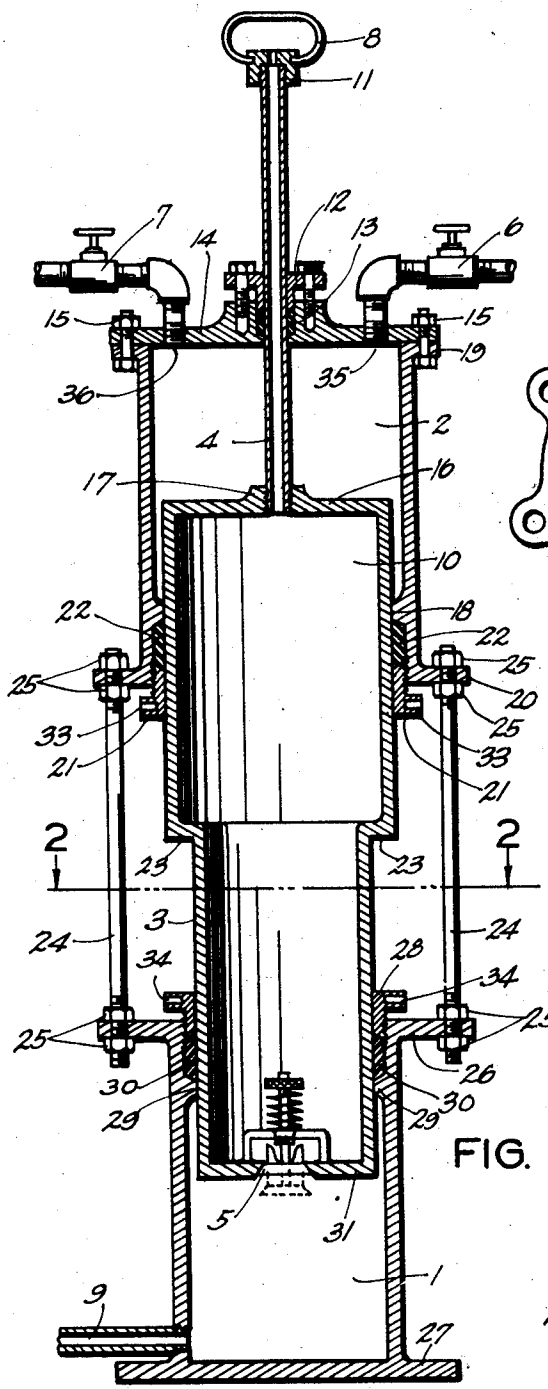


FIG. 1.

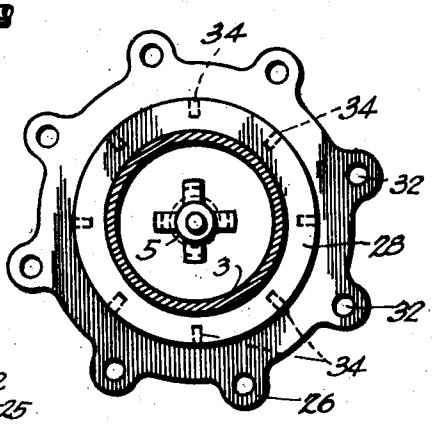


FIG. 2.

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PRESSURE-FEED LUBRICATOR

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My invention relates to pressure feed lubricators for supplying lubricant to engines, pumps, compressors and the like.

The principal objects of my invention are to provide a device of this character which is new, novel, practical, useful and of utility; a device which will feed lubricating oil to engines, pumps, compressors or other like machines where the oil cannot be introduced by gravity feed on account of back pressure; a device which is an improvement over and can be used in place of the present force feed and condensing type lubricators; to provide a device of fewer and less intricate parts; a device which does not have to depend upon condensation for its operation.

With these and other objects in view as will more fully appear my invention consists in the construction, novel features, and combination of parts hereinafter more fully described, pointed out in the claims hereto appended, and illustrated in the accompanying one-sheet drawing, of which,

Figure 1 is a vertical sectional view; and Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1.

Like characters of reference designate like parts in all the figures.

It is understood that various changes in the form, proportion, size, shape, weight and other details of construction, within the scope of my invention may be resorted to without departing from the spirit or broad principle of my invention and without sacrificing any of the advantages thereof; also that the drawings are to be interpreted as being illustrative and not restrictive.

One embodiment of my invention is shown as follows: I provide an oil cylinder 1 of smaller diameter than the steam or air cylinder 2, the hollow plunger 3 being adapted for vertical reciprocation within said cylinders 1 and 2, its lower end 31 exerting pressure upon the oil contained in cylinder 1 and its enlarged upper end 16 receiving pressure from steam or air in cylinder 2, the said plunger 3 and cylinders 1 and 2 being perfectly alined upon the same vertical axis. The filler pipe and gauge pole 4, provided with handle 8 secured to said pipe 4 by the perforated cap 11 is threaded into boss 17 on upper end 16 of plunger 3 and serves as a means for introducing oil into said hollow plunger 3 from which said oil passes through check valve 5 and into oil cylinder 1. The oil is forced out of cylinder 1 by the pressure exerted by end 31 of plunger 3 and through oil line 9 to the engine or pump being lubricated, the amount of oil flowing through oil line 9 may be regulated by sight feeds. Pressure is supplied to cylinder 2, by opening valve 6 and admitting steam or air through inlet pipe 35. The pressure in said cylinder 2 is released by closing said valve 6 and opening valve 7 and allowing the steam to escape through exhaust pipe 36. The interior hollow space 10 in the enlarged upper end of plunger 3 provides storage space for oil when filling the lubricator. In order to prevent leakage of steam pressure around pipe 4 I provide stuffing box 12 for securing and holding packing material 13, said box 12 being adjustably bolted to cylinder head 14 in the usual manner. Bolts 15 removably hold said head 14 to flange 19 at the top of cylinder 2. Adjacent the bottom of cylinder 2 I provide an internal shoulder 18 against which packing gland 21 forces packing 22 and prevents the escape of steam pressure around the outside of oil storage space 10. Gland 21 is threaded into the bottom of cylinder 2 and its position can be regulated as desired by a suitable wrench inserted in the plurality of adjusting pin holes 33. The change in size of plunger 3 is shown at 23. The flange 20 on the bottom of cylinder 2 supplies means for bolting the upper ends of a plurality of spacer rods 24 to said cylinder 2 with nuts 25 and in like manner flange 26 on the upper end of cylinder 1 forms an anchorage for said rods 24, thus holding the said cylinders 1 and 2 in proper adjustably spaced relationship with one another in order that the plunger 3 may have vertical reciprocation within both of said cylinders. Flange 27 on the bottom of cylinder 1 forms a suitable base for the lubricator. Packing gland 28, internal shoulder 29 and packing 30 prevent leakage of any oil from cylinder 1, gland 28 is threaded into cylinder 1 and is

supplied with adjusting pin holes 34. The plurality of holes 32 in flange 26 as best seen in Fig. 2 provide means for anchoring spacer rods 24 to cylinder 1.

To operate the device the lubricator is first filled with oil, valve 6 being closed to shut off the steam or air pressure and valve 7 is opened to release the pressure on surface 16 of plunger 3 in cylinder 2, plunger 3 is raised by means of handle 8 and filler pipe 4 until boss 17 on surface 16 strikes cylinder head 14. Oil is then poured in through filler pipe 4 and by the time the storage space 10 is full the weight of oil in said plunger will open valve 5, allowing the oil to run into cylinder 1. Valve 7 is then closed, valve 6 is opened the steam is admitted and the lubricator is in operation. The difference in area of surface 16 receiving the steam pressure and the area of surface 31 exerting pressure upon the oil creates force sufficient to drive the oil through oil line 9 and back into the engine, pump or compressor to the surfaces requiring lubrication. When all of the oil in cylinder 1 has been forced out and used up, filler pipe 4 will have been lowered until handle 8 is adjacent stuffing box 12, the said filler pipe thus acting as a gauging pole. To re-fill the oil cylinder 1, close valve 6, open valve 7, raise plunger 3 by means of handle 8; this forms a suction in cylinder 1 which opens valve 5 and permits oil from storage space 10 to flow into oil cylinder 1 and replenish the supply for the machinery. Storage space 10 is refilled through filler pipe 4 and the lubricator is set for another cycle of operations.

From the foregoing description it will be seen that my improved pressure feed lubricator consists of but few simple parts which are subject to very little wear or breakage and when once filled and adjusted is practically automatic in operation, it visibly reveals that it is empty, is easily and quickly refilled and requires no attention between fillings.

Having thus described my invention what is claimed and desired to be secured by Letters Patent is:

1. A device of the class described, comprising an oil cylinder at its lower end adapted for feeding oil to parts to be lubricated, and a larger vertically alined cylinder at its upper end adapted for delivering steam to a pressure plunger, a hollow plunger adapted for holding oil and for reciprocation within said lower and upper cylinders, a filler pipe and gauge pole in its upper end adapted for filling said plunger and gauging said device, the upper end of said plunger being adapted for receiving pressure within said steam cylinder and its lower end being adapted for delivering pressure on the oil in said oil cylinder, spacer and holding means for holding said upper and lower cylinders apart and in vertical alinement and for holding said plunger in reciprocating relationship with said cylinders.

2. A device of the class described, comprising an oil cylinder at its lower end, adapted for feeding oil to parts to be lubricated, and a larger vertically alined cylinder at its upper end adapted for delivering air pressure to a plunger, a hollow plunger adapted for holding oil and for reciprocation within said lower and upper cylinders, a filler pipe and gauge pole in its upper end adapted for filling said plunger and gauging said device, the upper end of said plunger being adapted for receiving pressure within said air cylinder and its lower end being adapted for delivering pressure on the oil in said oil cylinder, spacer and holding means for holding said upper and lower cylinders apart and in vertical alinement and for holding said plunger in reciprocating relationship with said cylinders.

3. A device of the class described, comprising a hollow plunger, adapted for holding and discharging oil, a filler pipe and gauge pole attached to the upper end of said plunger, a handle upon the upper end of said pole, its lower end operating within an oil cylinder and exerting pressure upon oil therein, its upper end being of larger diameter and operating within a steam cylinder, an oil cylinder adjacent the base of said device being adapted for feeding oil to parts to be lubricated, a steam cylinder of larger bore than said oil cylinder being adapted for receiving steam and exhausting the same and for delivering pressure on said plunger head, said hollow plunger reciprocatingly operating to force at its lower end oil from said cylinder into a machine to be lubricated against the back pressure of said machine by means of the pressure created by the difference of cross sectional areas of said steam cylinder and said oil cylinder.

4. A device of the class described, comprising a hollow plunger adapted for holding and discharging oil, its lower end operating within an oil cylinder and exerting pressure upon oil therein, its upper end being of larger diameter and operating within an air cylinder, and oil cylinder adjacent the base of said device being adapted for feeding oil to parts to be lubricated, an air cylinder of larger bore than said oil cylinder being adapted for receiving air and exhausting the same and for delivering pressure on said plunger head, said hollow plunger reciprocatingly operating to force at its lower end oil from said oil cylinder into a machine to be lubricated against the back pressure of said machine by means of the pressure created by the difference of cross sectional areas of said air cylinder and said oil cylinder.

5. A device of the class described, comprising a hollow plunger adapted for holding

and discharging oil, its lower end operating within an oil cylinder and exerting pressure upon the oil contained therein, the upper end of said hollow plunger being of larger diameter than said lower end and operating within a steam cylinder, said hollow plunger being adapted to receive pressure from within said steam cylinder and operating to force oil from said oil cylinder into a machine against the back pressure of said machine by means of the pressure created by the difference of cross-sectional areas of said steam cylinder and said oil cylinder.

6. A device of the class described, comprising a hollow plunger for holding oil, having a peripheral shoulder adjacent its center between its upper larger portion and its smaller lower portion, having a threaded boss in its upper end for receiving a filler pipe and gauge pole, and having a check valve in its lower end, an oil cylinder disposed below the lower end of said plunger having an outlet oil line adjacent its base, a base flange, an upper flange, internal shoulders for seating a packing and packing gland, a cylinder of larger bore than said oil cylinder disposed in vertical alinement therewith having an inlet pipe and closure for steam and air pressure and an outlet exhaust pipe and closure for emitting steam and air, having internal shoulders adjacent its lower end for seating packing and a packing gland, and having a flange at its lower end, spacer rods and bolting means thereon for positioning in said flanges in vertical alinement said upper larger steam and air cylinder and said lower oil cylinder, a filler pipe and gauge pole, having a handle at its upper end for raising same, threadedly connecting said boss in said plunger, adapted for working in a stuffing box seated on a boss in the central upper portion of said larger upper cylinder, said plunger being adapted for vertical reciprocation within said cylinders its upper end for receiving pressure within said upper cylinder and its lower end for exerting pressure upon the oil in said lower cylinder.

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