C. REID.

LUBRICATOR.

APPLICATION FILED JULY 25, 1910.

990,008. Patented Apr. 18, 1911.

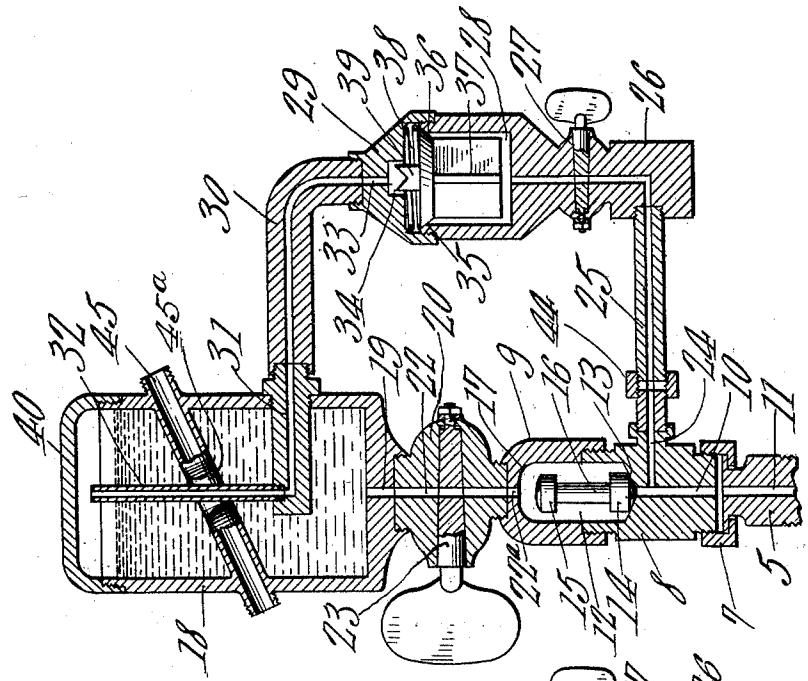

Fig. 2.

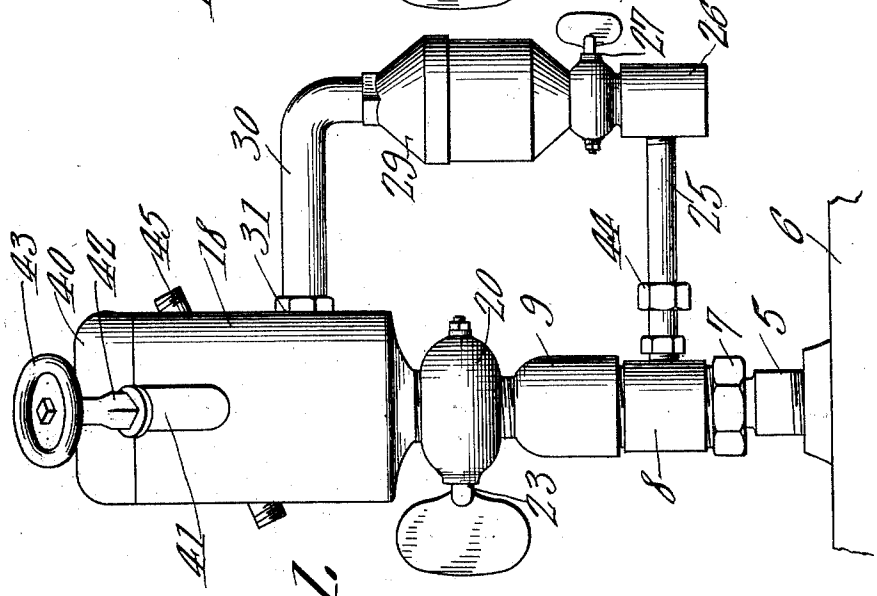

Fig. 1.

Witnesses

J. Tomlin

Washington

Charles Reid,

Inventor

by C. A. Snow & Co.

Attorneys

LUBRICATION,
Lubricators, Gravity feed,
Automatic cut-off,
Vertically reciprocating valve,
Fluid pressure operated.

UNITED STATES PATENT OFFICE.

CHARLES REID, OF PRINCETON, WEST VIRGINIA.

LUBRICATOR.

990,008. Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed July 25, 1910. Serial No. 573,638.

To all whom it may concern:

Be it known that I, CHARLES REID, a citizen of the United States, residing at Princeton, in the county of Mercer and State of West Virginia, have invented a new and useful Lubricator, of which the following is a specification.

The lubricator which is the subject of the present invention is designed more particularly for attachment to the cylinders of air compressors, the object of the invention being to automatically supply the cylinder with a small quantity of oil on each suction stroke.

A further object of the invention is to provide the lubricating device of the kind stated in which the cylinder pressure is placed on the oil during the compression stroke to obtain a force feed, the oil being fed to the cylinder during the suction stroke past a valve which opens during this stroke, and closes on the compression stroke.

The invention consists in a novel construction and arrangement of parts to be hereinafter described and claimed, and in order that it may be fully understood, reference is had to the accompanying drawing forming a part of this specification, in which drawing—

Figure 1 is an elevation of the device, and Fig. 2 is a vertical sectional view thereof.

Referring more particularly to the drawing, 5 denotes a choke fitting which is connected to the cylinder 6 of the compressor, a fragment of said cylinder only being shown. To the choke fitting is connected, by means of an ordinary coupling 7, a valve casing 8 having a separable portion 9 which is connected by a screw joint as shown in Fig. 2. The valve casing has a bore 10 which communicates at one end with the bore 11 of the choke fitting, and opens at its opposite end into the chamber 12 of the valve casing. The last mentioned end of the bore is surrounded by a valve seat 13 which is engageable by one end of a double seating feed valve, the seating ends of said valve being indicated at 14 and 15, respectively, said ends being enlargements of a stem 16, and suitably shaped to engage the respective seats, the end 14 engaging the seat 13, and the end 15 engaging a seat 17 in the chamber 12, opposite the seat 13, which seat 17 is at the upper end of the chamber, the seat 13 being at the lower end thereof. The feed valve fits sufficiently loose in the chamber 12 so as to move freely between the seats, and also to permit the flow of oil past the valve, and its ends are rounded to insure proper seating whether occupying a vertical or inclined position.

The oil reservoir is indicated at 18, the same having a bottom outlet 19 which is connected to a valve casing 20, said valve casing being connected to the upper end of the portion 9 of the hereinbefore described valve casing. One end of the passage-way 22 through the valve casing 20 is in communication with the outlet 19 of the reservoir 18, and the other end of said passage communicates with a port 22^a opening through the seat 17 into the chamber 12. The casing 20 contains a valve plug 23 which controls the flow through the passage-way 22 of said casing.

The bore 10 has a lateral branch 24 which opens through one side of the valve casing 8, and connected to said side of the valve casing so as to be in communication with said branch, is a pipe 25 which leads to and is connected with a valve casing 26 containing an ordinary valve plug 27. The valve casing 26 is formed with a chamber 28 which is closed by a cap 29 to which is connected a pipe 30 leading to, and connected to a nipple 31 which enters the reservoir 18. To the inner end of the nipple is connected a vertical tube 32 which is open at its upper end, said upper end being located above the oil level in the reservoir. In the cap 29 is a passage 33 which forms a continuation of the bore of the pipe 30, and opens into the chamber 28, that end of the passage which opens into said chamber being enlarged as indicated at 34.

The upper end of the chamber 28 has beveled valve seat 35 which is adapted to be engaged by a check valve 36, said check valve, when seated, shutting off communication between the chamber 28 and the passage 33. The valve is formed with guide wings 37 on its lower side, and is held seated by a coiled spring 38 interposed between the top of the valve and the cap 29. The top of the valve is also formed with a lug 39 which is located so as to enter the enlargement 34 of the passage 33. The top of the lug has a V-shaped notch as clearly shown in Fig. 2 so as to leave the end of the passage 33 uncovered when the valve 38 is off its seat. The lug is also loose in the enlargement 34.

The reservoir 18 is closed by a screw cap

40, and it is also provided with a filling nipple 41 which is closed by a screw plug 42 provided with a handle 43. The pipe 25 is in two sections as shown in Fig. 2, said sections being connected by a suitable coupling 44.

Passing slantingly through the reservoir 18 is a flue 45 adapted to be connected to the source of steam supply, said flue being provided for the purpose of heating the oil, and thus preventing the same from becoming too thick in cold weather. The flue is made inclined so as to be self-draining, and is provided with a U-bend 45[a] that straddles the tube 32.

The preferred embodiment of the invention has been shown and described, but it will be evident that various minor changes in the structural details may be resorted to without a departure from the spirit of the invention.

The device operates as follows: On the compression stroke of the pump or compressor, the feed valve 14—15 closes, its head 15 engaging the seat 17. At the same time the pressure in the cylinder opens the check valve 36, and said pressure is placed on the surface of the oil in the reservoir 18. The pressure flows through the bore 11 of the choke fitting, into the bore 10 of the valve casing 8, and thence through the branch 24 into the pipe 25 which carries the pressure to the casing 26 through which it flows into the chamber 28, and thence past the valve 36 into the passage 33, and then by the way of the pipe 30, and the nipple 31 into the tube 32, from the upper end of which it is discharged into the reservoir above the oil level therein. The pressure flowing through the bore 10 also effects the engagement of the head 15 of the feed valve with the seat 17 to shut off the oil from the chamber 12 and permits the contained charge to escape to the cylinder. On the suction stroke of the pump or compressor, the valve 36 is closed by its spring 38, and the feed valve drops by gravity to the seat 13. At the end of the suction stroke the valve has again closed that end of the bore 10 which opens into the chamber 12, by engaging the seat 13, Fig. 2 showing the valve in this position. On the next compression stroke, the valve is again forced off the seat 13 to engage the seat 17, and the herein described operation is repeated.

What is claimed is:

1. In a lubricator, the combination with a fluid pressure apparatus; of a lubricant reservoir, means for leading the fluid pressure into the reservoir, a valve for preventing return of said fluid pressure from the reservoir, a lubricant outlet from the reservoir to the fluid pressure apparatus, and a double acting fluid pressure actuated valve controlling the lubricant outlet.

2. In a lubricator, the combination with a fluid pressure apparatus; of a lubricant reservoir, means for leading the fluid pressure into the reservoir, a valve interposed in said means and exposed in the fluid pressure, said valve opening to permit passage of the fluid pressure into the reservoir, a valve casing connected to the lubricant reservoir and the fluid pressure apparatus and having a double valve seat, and a double valve controlling said seats, said valve being exposed to the fluid pressure and actuated thereby.

3. In a lubricator, the combination with a fluid pressure apparatus; of a lubricant reservoir, a valve casing connected to the reservoir and the fluid pressure apparatus and having a double valve seat, a double valve controlling said seat, said valve being exposed to the fluid pressure, and actuated thereby, a branch leading from the valve casing, a valve casing connected to said branch, a check valve operating in said casing, and a conduit leading from the check valve casing into the lubricant reservoir, and opening thereinto above the oil level therein.

4. In a lubricator, the combination with a fluid pressure apparatus; of a lubricant reservoir, means for leading the fluid pressure into the reservoir, a valve casing connected to the reservoir and the fluid pressure apparatus, one end of said valve casing having a port which is connected to the reservoir, and the other end of the valve having a passage which is connected to the fluid pressure apparatus, and said casing having a chamber into which said port and passage open, valve seats formed around the ends of the port and the passage which open into the chamber, and a double valve operating in said chamber and alternately engaging the valve seats therein.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHARLES REID.

Witnesses:
S. C. Hill,
William Crichton Clarke.