R. K. FEAMSTER.

AUTOMATIC OIL CUP.

APPLICATION FILED DEC. 23, 1910.

990,245. Patented Apr. 25, 1911.

Fig. 1.

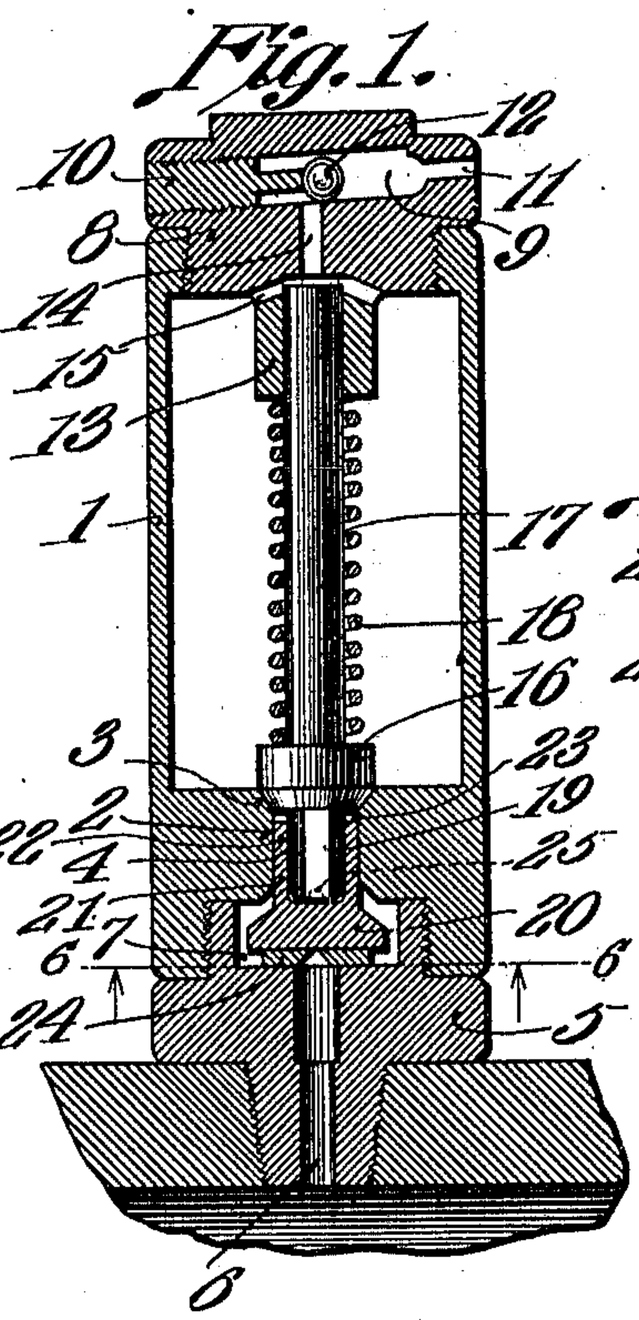


Fig. 2.

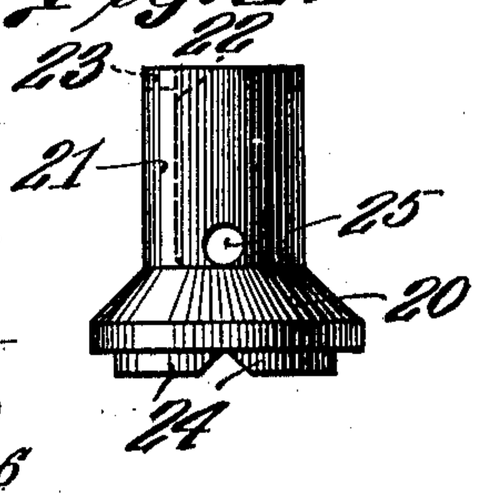
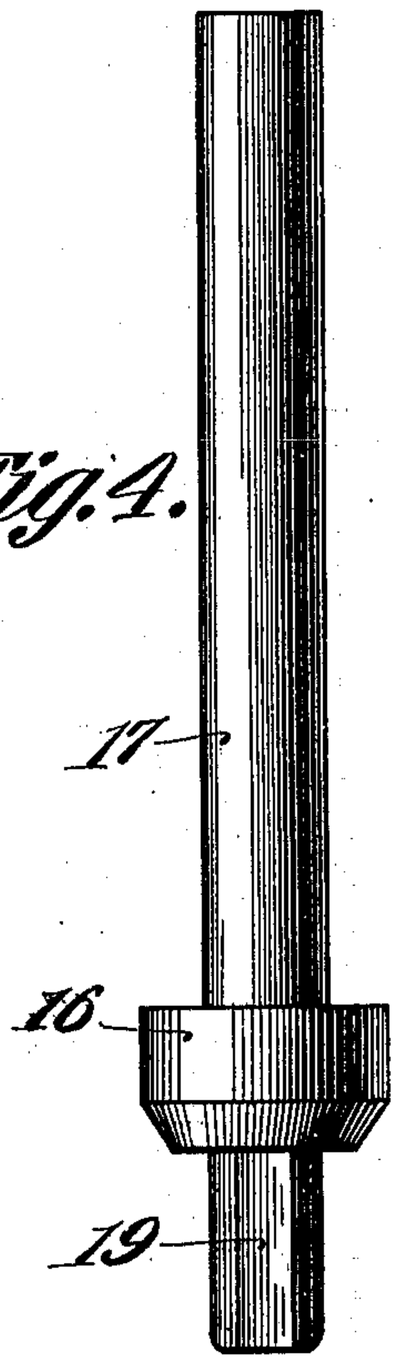


Fig. 4.



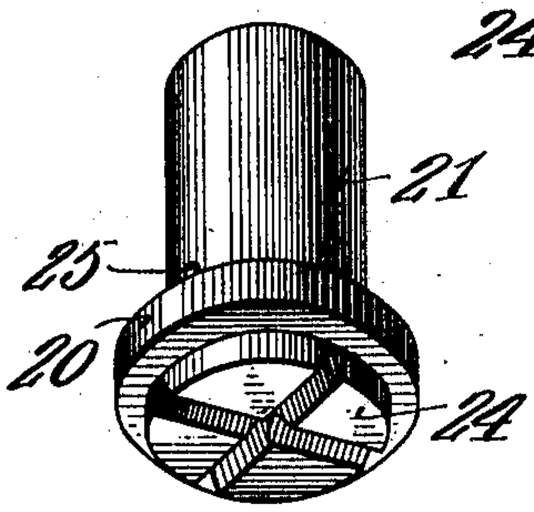


Fig. 3.

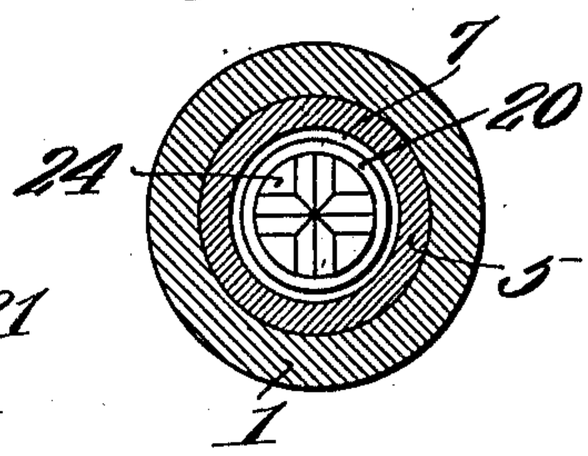


Fig. 6.

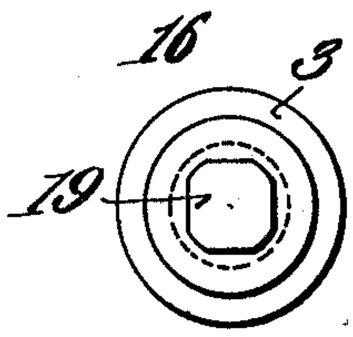


Fig. 5.

Witnesses

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AUTOMATIC OIL-CUP.

990,245. Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed December 23, 1910. Serial No. 598,967.

To all whom it may concern:

Be it known that I, ROYDEN K. FEAMSTER, a citizen of the United States, residing at Salisbury, in the county of Rowan and State of North Carolina, have invented a new and useful Automatic Oil-Cup, of which the following is a specification.

This invention has relation to automatic oil cups and consists in the novel construction and arrangement of its parts hereinafter shown and described.

The object of the invention is to provide an automatic oil cup adapted to be used upon the cylinders of air pumps and upon cylinders of internal combustion engines and like machines, for the purpose of feeding the oil to the said cylinders while the machines are in operation in regular and predetermined quantities.

With this object in view, the cup includes a body having in its bottom a port provided with valve seats at its end. Coöperating valves are arranged to operate with the seats and within the said port for the purpose of regulating the quantity of oil to be fed. These valves are operated by the compression and suction from the piston in the cylinder which is oiled. A fitting is detachably connected with the lower end of the said body and is provided with a cavity in which one of the said valves normally rests. A detachable cap is applied to the upper end of the body and the upper valve at the bottom of the body is held against its seat under the tension of a spring which is interposed between the said valve and the said cap. A check valve mechanism is provided in the cap and is adapted to permit the free influx of air but is forced to closed position when excessive pressure is created within the body thereby preventing the contents of the said body from being forced out through the port of the said valve.

In the accompanying drawing—Figure 1 is a vertical sectional view of the automatic oil cup. Fig. 2 is a side elevation of one of the valves used in the oil cup. Fig. 3 is a perspective view of the said valve. Fig. 4 is a side elevation of the other valve used in the oil cup. Fig. 5 is a plan view of the valve shown in Fig. 4. Fig. 6 is a sectional view of the cup cut on the line 6—6 of Fig. 1.

The lubricator consists of a body 1 having in its bottom a port 2 provided in its upper end with a valve seat 3 and at its lower end with a valve seat 4. A fitting 5 is screw threaded in the lower end of the body 1 below the bottom thereof and is provided with a bore 6 which at its upper end enters a cavity 7 provided in the upper end of the said fitting 5. The cap 8 is provided with an inclined bore 9 one end of which is closed by a plug 10. The bore 9 at the opposite end thereof from that which receives the plug 10 is provided with a reduced outlet 11. A ball 12 is located in the bore 9 between the reduced outlet 11 and the inner end of the plug 10. When the cup is in position upon the cylinder of an engine, the ball 12 will gravitate in the bore 9 and rest against the inner end of the plug 10. The cap 8 is provided upon its lower side with a boss 13 and a duct 14 passes through the lower portion of the cap 8 and at its upper end enters the bore 9 and at its lower end communicates with branches 15 which have their outlets at the opposite sides of the upper portion of the boss 13.

A valve 16 is arranged to operate upon the seat 3 of the port 2 and the said valve is provided with a stem 17 which projects upwardly and enters the boss 13 of the cap 8. The upper end of the said stem 17 at times is adapted to close against the lower end of the duct 14. A coiled spring 18 surrounds the stem 17 and is interposed between the lower end of the boss 13 and the upper surface of the valve 16. The said spring is under tension with a tendency to hold the valve 16 closed against the seat 3 of the port 2. The valve 16 is provided upon its lower side with a centrally positioned non-cylindrical projection 19. A valve 20 is located in the cavity 7 of the fitting 5 and is provided upon its upper side with a cylindrical sleeve 21 which fits snugly but slidably in the port 2 provided in the bottom of the body 1. The sleeve 21 is provided with a cylindrical bore 22 which slidably receives the non-cylindrical projection 19 of the valve 16. The sleeve 21 is provided at its upper edge with recesses 23. The valve 20 is provided upon its lower side with spaced lugs 24 which normally rest upon the bottom of the cavity 7 and holds the lower surface of the said valve 20 elevated above the said bottom of the said cavity. Under normal conditions the upper end of the sleeve 21 is spaced from the lower face of the valve 16 and the lower end of the projection 19 of the said valve 16 is spaced from the bottom of the cylindrical bore 22 provided in the

said sleeve 21. The said sleeve 21 is provided in its side with a duct 25, the inner end of which communicates with the bore 22 just above the bottom of the same and the outer end of which communicates with the interior of the cavity 7 when the valve 20 is in its lowermost position in the said cavity.

In operation, when the body 1 contains lubricating oil and the device is connected with a cylinder when the piston in the cylinder creates suction through the bore 6 of the fitting 5 the valve 20 descends to its lowermost position in the cavity 7 and the valve 16 is pushed down against the seat 3 at the upper end of the port 2. When the piston in the cylinder creates pressure in the bore 6 of the fitting 5, the valve 20 is moved up away from the bottom of the cavity 7 until it seats against the seat 4 at the lower end of the port 2. This upward movement upon the part of the valve 20 carries the sleeve 21 in an upward direction and when the parts of the valve 20 and the said sleeve come in contact with the adjacent parts of the valve 16, the said valve 16 is moved away from the seat 3 against the downward pressure of the spring 18. Thus, the recesses 23 at the upper edge of the sleeve 21 are carried above the seat 3 and the oil may flow down from the body 1 through the said recesses 23 and through the spaces between the non-cylindrical projection 19 and the sides of the cylindrical bore 22 of the sleeve 21 into the lower portion of the said bore 22. When the valve 16 moves in an upward direction as indicated, the upper end of the stem 17 closes against the lower end of the port 14 and communication through the said port from the exterior of the body 1 to the interior thereof is temporarily interrupted. Then when suction is created in the bore 6 of the fitting 5 by the piston in the cylinder, the valve 20 is drawn to its lowermost position and the valve 16 will follow the same until it rests upon the seat 3 at the upper end of the bore 2 in the bottom of the body 1. Thus some of the oil is cut off from that contained within the body and is carried down and when the bottom of the bore 22 in the sleeve 21 moves away from the lower end of the projection 19 at the under side of the valve 16 the oil which is thus trapped or cut off may flow or is drawn out through the port 25 into the cavity 7 from which it may flow down through the bore 6 into the cylinder of the machine. Thus it will be seen that a simple and an effective device is provided for automatically feeding lubricating oil in predetermined quantities from the oil cup to the cylinders. When compression is created in the bore 6 of the fitting 5, the valve 20 is moved against the seat 4 as above indicated and this prevents under normal conditions the said pressure from entering the body 1. However, should any foreign substance be in the oil and prevent the valve 20 from seating against the seat 4, the pressure in an upward direction through the body 1 will be exerted through the branches 15 of the duct 14 against the ball 12 and will carry the said ball up along the bore 9 until it seats against the reduced outlet 11 of the bore. Thus the said ball will act as an emergency safety device to prevent the pressure from blowing the contents of the body 1 up through the branches 15 of the duct 14 and bore 9 and out at the top of the cup. At the same time the said bore 9 and duct 14 with its branches 15 serve as means for admitting air into the interior of the body 1 as the oil is withdrawn from the same.

Having described the invention, what I claim as new and desire to secure by Letters Patent is:

1. An automatic oil cup comprising a body having in its bottom a bore provided at its ends with valve seats, a fitting attached to the body and provided with a cavity located below the bore in the bottom of the body, a valve located in the cavity of the fitting and adapted at times to engage the seat at the lower end of the port in the bottom of the body, said valve having a sleeve which is snugly and slidably received in said port, the sleeve of said valve being provided with a bore and having in its side a port which communicates with said bore, a valve located in the body and normally held against the seat at the upper end of the bore in the bottom of the body, the last said valve having a projection which enters the bore in the sleeve of the first mentioned valve but is spaced from the inner wall of the same.

2. An automatic oil cup comprising a body having its bottom provided with a bore and having valve seats at the ends of the said bore, a cap closing the upper end of the body, a fitting attached to the lower end of the body and provided with a cavity which surrounds the lower end of the port in the bottom of the body, a valve located in said cavity and adapted to close against the lower valve seat at the bottom of the body, said valve having a sleeve which is slidably received within the port in the bottom of the body, said sleeve being provided with a bore and having in its side a port which communicates with the bore at the bottom thereof, a valve located in the body and adapted to close against the seat at the upper end of the port, the last mentioned valve having a projection which is received within the bore of the sleeve of the first mentioned valve and which is spaced from the side of the said bore and a spring interposed between said cap and the valve located within the body.

3. An automatic oiler comprising a body

having in its bottom a port provided at its ends with valve seats, a fitting attached to the lower end of the body and provided with a cavity which receives the lower end of the port in the bottom of the body, a valve located in said cavity and adapted at times to close against the lower seat at the bottom of the body, said valve having a sleeve which is snugly received within the port in the bottom of the body, said sleeve being provided with a bore and having in its side a port which communicates with the bore above the bottom thereof, said sleeve having recesses at its upper edge, a valve located in the body and adapted to close against the upper seat at the bottom of the body, the last mentioned valve having at its lower side a projection which enters the bore in the sleeve of the first mentioned valve and which is spaced from the side of the said bore.

4. An automatic oiler comprising a body having its bottom provided with a port having valve seats at its ends, a fitting attached to the lower end of the body and provided with a cavity which surrounds the port in the bottom of the body, a valve located in said cavity and adapted at times to close against the lower seat at the bottom of the body, said valve having a sleeve which is snugly received within the port at the bottom of the body, said sleeve having a bore and provided in its side with a port which communicates with the bore above the bottom thereof, a detachable cap mounted upon the body and having a boss, said cap having a duct which communicates with the interior of the body above the opening in the said boss, a valve provided in the cap for establishing and interrupting communication with the exterior through the said duct, a valve located in the body and adapted to seat upon the upper seat at the bottom of the body, said valve having at its lower side a projection which is received within the bore of the sleeve of the first mentioned valve and which is spaced from the side of the said bore, a stem carried by said valve, the upper end of said stem being slidably received within the boss of the cap, the upper end of the said sleeve terminating short of the lower end of the duct in the cap, and means interposed between the cap and the valve within the body for holding the said valve against the upper seat at the bottom of the body.

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

ROYDEN KEITH FEAMSTER.

Witnesses:
H. C. WILSON,
E. J. MCCORMICK.
