May 27, 1924.

1,495,715

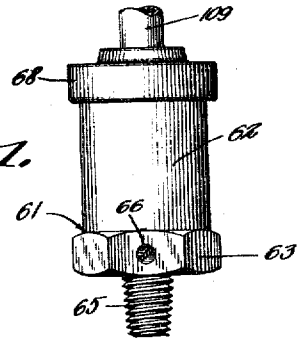
J. K. ROBINSON

OIL CUP

Filed March 17, 1923

2 Sheets-Sheet 1

Fig. 1.



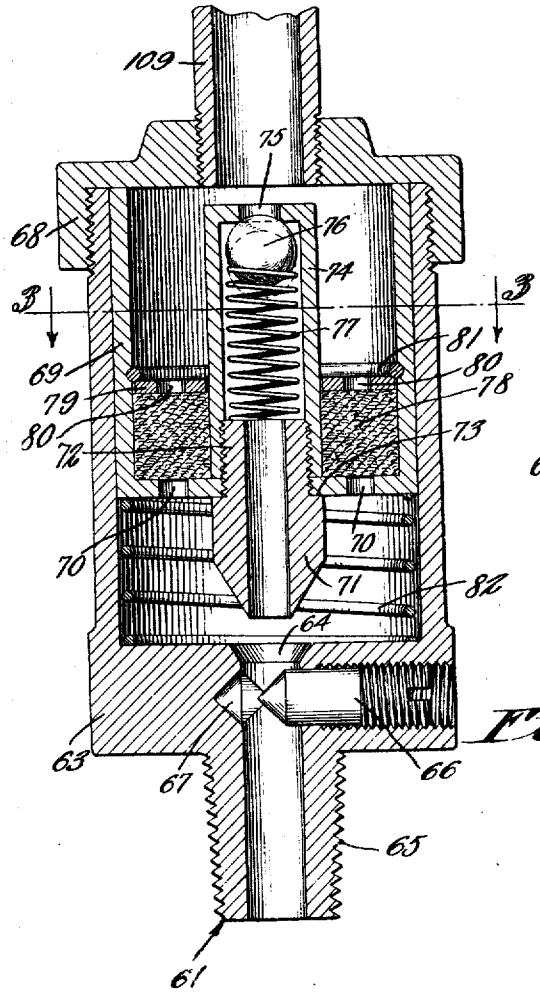
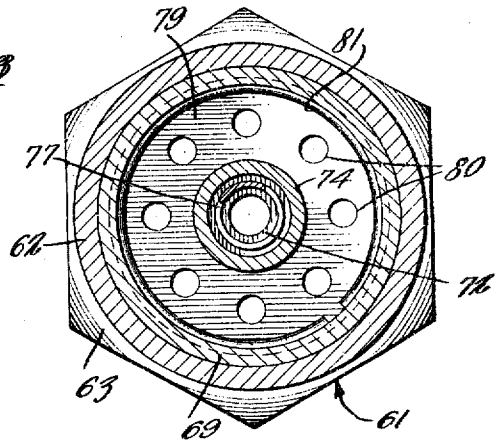


Fig. 2.

Fig. 3.



J. K. Robinson,
Inventor.

By C. A. Snow & Co.
Attorneys

May 27, 1924. 1,495,715

J. K. ROBINSON

OIL CUP

Filed March 17, 1923 2 Sheets-Sheet 2

Fig. 4.

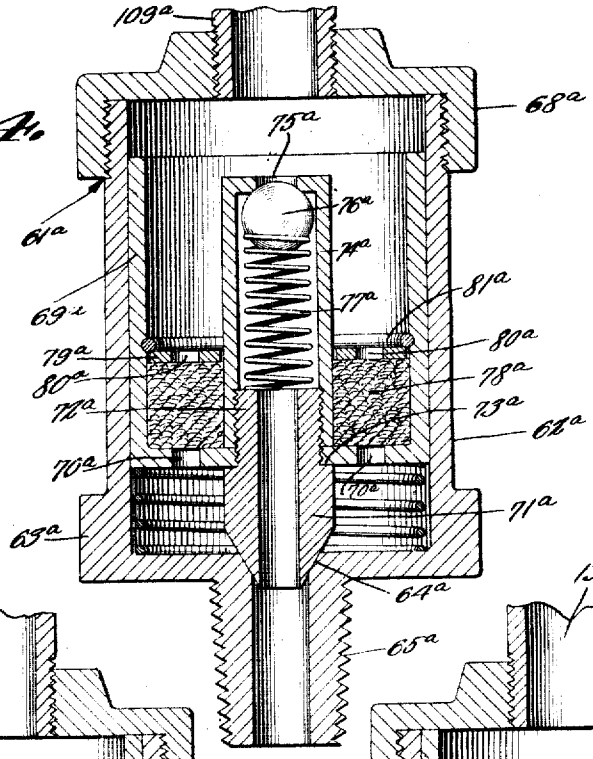


Fig. 5.

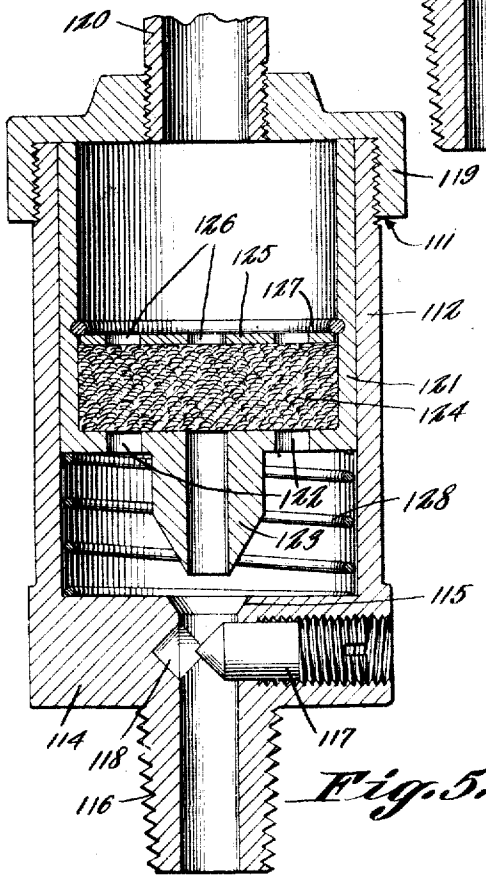
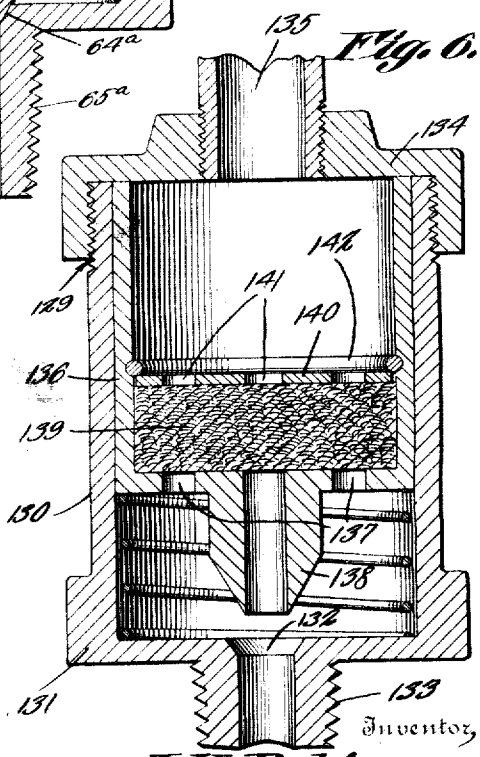


Fig. 6.



Inventor,
J. K. Robinson.
By C. A. Snow & Co.
Attorneys

Patented May 27, 1924. 1,495,715

UNITED STATES PATENT OFFICE.

JAMES K. ROBINSON, OF JACKSONVILLE, FLORIDA, ASSIGNOR OF ONE-FOURTH TO S. S. RICKETT AND ONE-FOURTH TO C. C. ROBERTSON, BOTH OF JACKSONVILLE, FLORIDA.

OIL CUP.

Application filed March 17, 1923. Serial No. 625,904.

To all whom it may concern:

Be it known that I, JAMES K. ROBINSON, a citizen of the United States, residing at Jacksonville, in the county of Duval and State of Florida, have invented a new and useful Oil Cup, of which the following is a specification.

The device forming the subject matter of this application is an oil cup, capable of use in the oiling system shown in my co-pending application for Letters Patent on an oiling system, Serial No. 625,320 filed on the 15th day of March, 1923 but capable of general use.

The invention aims to provide novel means whereby a slow feeding of oil may be secured under pressure, novel means being supplied whereby, at the will of an operator, a charge of oil may be emitted, to dislodge an obstruction located along the channel which is to be lubricated.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that, within the scope of what is claimed, changes in the precise embodiment of the invention shown can be made without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 shows in elevation, an oil cup constructed in accordance with the invention; Figure 2 is a longitudinal section of the oil cup; Figure 3 is a cross section on the line 3—3 of Figure 2; Figure 4 is a longitudinal section showing a modified form of oil cup; Figure 5 is a longitudinal section showing a further modification; Figure 6 is a longitudinal section wherein another modification appears.

As delineated in Figures 1, 2 and 3, the oil cup is designated generally by the numeral 61, and includes a body 62 having a base 63 provided with internal seat 64, the base being supplied with a nipple or outlet 65. A valve plug 66 is threaded into the base 63 and controls the passage of oil through the nipple, the base 63 being equipped with a seat 67 adapted to receive the inner end of the valve plug. A cap 68 is threaded on the body 62, or is secured thereto otherwise, oil being delivered under pressure into the oil cup through a conduit 109 carried by the cap 68.

An inverted cup-shaped plunger 69 is mounted for reciprocation in the body 62 of the oil cup 61 and is provided in its bottom with outlets 70. The plunger 69 carries a hollow valve 71 shaped so as to cooperate with the seat 64, the valve having a reduced neck 72 defining a shoulder 73. The neck 72 of the valve is threaded into the bottom of the plunger 69, the shoulder 73 engaging the lower surface of the bottom of the plunger. A tubular guide 74 is threaded on the neck 72 of the valve 71 and engages the bottom or base of the plunger 69, the guide 74 coacting with the shoulder 73 to hold the valve 71 on the plunger 69. In the top of the guide 74 there is a reduced opening 75. A ball valve 76 is movably mounted in the guide 74 and is adapted to close the opening 75. A compression spring 77 is disposed in the guide 74, one end of the compression spring engaging the ball valve 76, and the other end of the spring engaging the end of the neck 72 of the valve 71, the spring constituting means for maintaining the valve 76 seated. A retarder 78, preferably in the form of a pad, is located within the plunger 69 and rests on the bottom of the plunger. The retarder or pad 78 is so constructed that oil may pass through it slowly, under pressure. A cover plate 79 extends about the guide 74 and rests on the retarder 78, the cover plate being supplied with openings 80. A spring retainer 81 engages the plunger 69 and coacts with the cover plate 79 to hold the last specified element in place. A compression spring 82 is disposed within the body 62 of the oil cup 61 and cooperates with the plunger 69 to force the plunger upwardly into contact with the cap 68 as shown in Figure 2. The spring 77 which maintains the ball valve 76 closed with respect to the opening 75 is considerably stronger than the spring 82 which forces the plunger 69 upwardly.

In practical operation, oil under pressure is supplied to the cup 61 through the conduit 109, the plunger 69 moving down-

wardly until the valve 71, cooperating with the seat 64, closes the outlet or nipple 65. When pressure is reduced in the conduit 109, the plunger 69 resumes the position shown in Figure 2, the plunger then being full of oil. Under a greatly reduced pressure, the oil in the plunger is forced downwardly through the openings 80 in the plate 79, through the retarder 78 and through the openings 70 in the bottom of the plunger 69, a slow supply of oil being provided for the nipple 65 and it being possible to regulate this supply to a nicety, by manipulating the valve 66.

It may happen that the part to be lubricated, or some portion of the oil channel therein, or perhaps the bore of the nipple 65, may be clogged. Under such circumstances, oil under pressure is fed into the cup 61, through the conduit 109, until the part 69 moves downwardly, the spring 82 being compressed, and the valve 71 cooperating with the seat 64 to prevent oil from passing into the nipple 65 due to pressure exerted on the retarder 78. Then, the pressure of oil within the cup 61 builds up, and ultimately the spring 77 yields suddenly, it being recalled that this spring is stronger than the spring 82. When the spring 77 yields, the valve 76 moves to an open position, under the increased oil pressure and a charge of oil is shot, almost with an explosive force, through the bore of the hollow valve 71 (which is seated), and through the nipple 65, any obstruction in the path of the advancing oil being swept away.

In the modification delineated in Figure 4, parts hereinbefore described have been designated by numerals previously used, with the suffix "a". The modification consists in omitting the valve 66 of Figure 2.

In Figure 5, the oil cup is denoted generally by the numeral 111 and includes a body 112 carrying a cap 119 with which the oil pressure pipe 120 is assembled. The body 112 of the oil cup includes a base 114 provided with a seat 115, the base having an outlet or nipple 116. A valve plug 117 is threaded into the base 114 and cooperates with a seat 118 in the base, the valve being adapted to control the flow of oil, to a fine degree, through the outlet or nipple 116.

An inverted cup-shaped plunger 121 is mounted for reciprocation in the body 112 and is provided in its bottom with outlets 122. The plunger or valve member 121 includes a hollow element or valve 123 adapted to coact with the seat 115. A retarder 124 is disposed in the plunger 121 and is of the sort hereinbefore described, a cover plate 125 resting on the retarder and having openings 126, the retainer for the cover plate being marked by the numeral 127. A compression spring 128 is interposed between the bottom of the plunger 121 and the base 114 of the cup body and tends to thrust the plunger 121 upwardly into contact with the cap 119.

In practical operation, oil under pressure is delivered through the conduit 120 and the plunger 121 moves downwardly, the spring 128 being compressed, the valve 123 coacting with the seat 117, and the cup being filled with oil. Upon a diminution of pressure, the plunger 121 moves to the position shown in Figure 5, under the action of the spring 128, the valve 123 being opened with respect to the seat 115, and, thereupon, under a greatly reduced pressure, oil flows slowly through the openings 126 of the plate 125, through the retarder 124, through the openings 122 in the base of the plunger 121, and into the nipple 116.

The form shown in Figure 6 of the drawings is constructed like the form shown in Figure 5, saving for the fact that valve 117 of Figure 5 is omitted. The form depicted in Figure 6 may, therefore, be dismissed with a brief catalogue of parts, the oil cup being denoted generally by the numeral 129 and including a body 130, a base 131 having a seat 132, the base being supplied with a nipple or outlet 133. The cap appears at 134 and the oil pressure pipe at 135. The numeral 136 designates the inverted cup-shaped plunger provided with outlets 137, the plunger carrying a hollow valve 138 adapted to coact with the seat 132. The retarder is marked by the numeral 139 and is held in place by a cover plate 140 having openings 141, a retainer 142 holding the cover plate in place.

The form shown in Figure 6 operates like the form shown in Figure 5, saving for the fact that there is no auxiliary control, such as secured by the valve 117 of Figure 5.

What is claimed is:—

1. An oil cup comprising a body having an outlet, a plunger slidable in the body and provided with means for closing the outlet when the plunger is advanced, an oil retarder carried by the plunger, means for supplying oil under pressure to the body to advance the plunger, and spring means for retracting the plunger when pressure is decreased.

2. A device of the class described constructed as set forth in claim 1 and further characterized by the provision of a valve under the control of an operator and so located as to govern the flow through the outlet.

3. An oil cup comprising a body having an outlet, a plunger slidable in the body, an oil retarder on the plunger, the plunger having a passage which is independent of the retarder, the passage discharging into the outlet, means carried by the plunger for closing the outlet to prevent the flow of oil through the outlet, by way of the retarder

when the plunger is advanced, a valve controlling the passage, a first spring means for closing the valve, a second spring means for moving the plunger to open position with respect to the outlet, the first spring means being stronger than the second spring means, and mechanism for supplying oil under pressure to the cup.

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

JAMES K. ROBINSON.

Witnesses:
HENRIK J. SCHMIDT,
C. W. SMITH.