

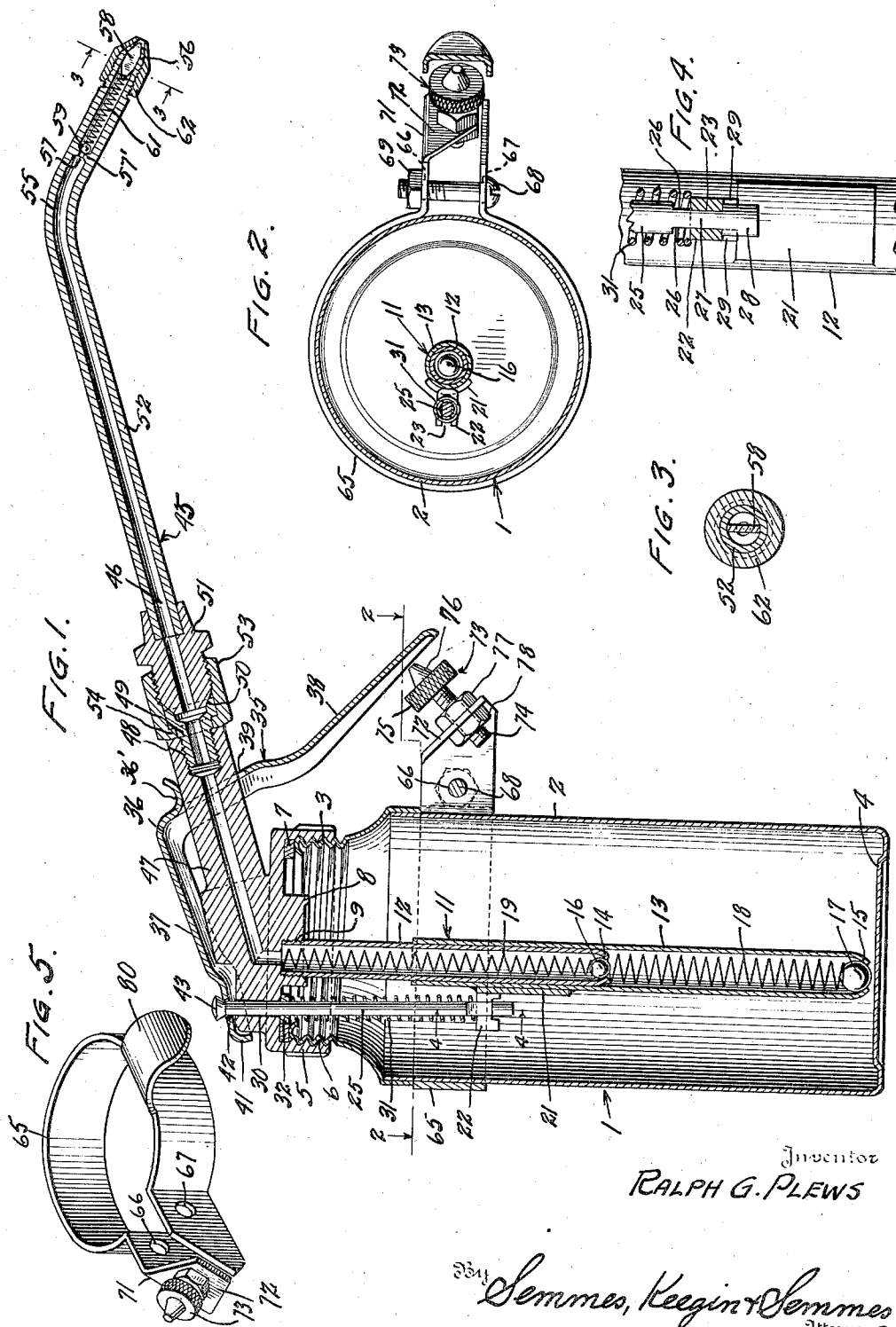
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OIL EJECTOR

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OIL EJECTOR

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12 Claims. (Cl. 221—51)

This invention relates to an oil ejector, and more particularly to an oil ejector which is readily adjustable for limiting and varying the quantity of oil delivered by a single movement of the pump.

In the care of many types of machinery, especially those used in the textile industry, it has hitherto been difficult to oil the machinery without soiling the textiles because of an accumulation of excess oil. As parts of such machinery are designed to require minute quantities of oil at regular intervals, the use of an oil can which delivers a large quantity of oil at each discharge is not very efficient, as usually the use of such an oil can requires the skill of the operator to prevent flooding the oil cups, which leads to a subsequent soiling of the materials to be manufactured.

One of the objects of this invention is to overcome the above mentioned difficulties of the prior art.

Another object of this invention is to provide an oil ejector actuated by a pump, upon which is carried a readily adjustable device for limiting the length of the stroke of the pump.

Still another object of this invention is to provide an oil ejector provided with a pump of relatively small bore.

Yet another object of this invention is to provide an oil ejector having a spout in which is mounted a check valve to eliminate the after-drip of oil which may remain in the spout.

A further object of this invention is to provide a method for oiling machinery for manufacturing materials which would be injured by the accumulation of excess oil upon the moving parts of the machinery.

Briefly, this invention relates to an oil ejector which is so constructed that the quantity of oil delivered by a single operation of its pump mechanism may be limited to a predetermined amount or may be readily varied. The oil ejector which constitutes this invention consists of a container which carries a pump of any length, depending upon the size of the container. The pump, however, is of relatively small bore in order to vary the amount of oil delivered more efficiently.

The pump is actuated by a suitable lever and the exterior of the receptacle is provided with an adjustable projection to limit the movement of the lever, but which, when moved to an inoperative position, leaves the lever free to allow a full movement of the pump piston, thus delivering a maximum quantity of oil.

In this manner, the amount of oil delivered by one operation of the pump piston can be accurately regulated. Due to the small bore and consequent longer stroke per unit of oil ejected from the pump, the quantity of oil may be even more closely determined.

In the end of the spout may be placed a check valve which, when the pressure on the valve has been relieved by the completion of the upward stroke of the pump, will close and hence eliminate any after-drip of oil which may remain in the spout after completion of the pumping stroke.

In the drawing:

Fig. 1 is a vertical, sectional view of the oil ejector taken centrally through the pump, certain parts being shown in side elevation.

Fig. 2 is a view taken along line 2—2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a view taken along line 3—3 of Fig. 1 looking in the direction of the arrows.

Fig. 4 is a view taken along line 4—4 of Fig. 1 looking in the direction of the arrows.

Fig. 5 is a perspective view of a modified form of the clamp.

While for purposes of illustration I have shown my device for limiting the movement of the piston of an oil ejector as applied to a hollow piston pump oiler, it is obvious that this device may be used in connection with other types of oil ejectors. It is, therefore, understood that the inventive concept extends to other types of oil ejectors as well.

As shown in the drawing, the oil ejector consists in an oil receptacle designated generally by the numeral 1, which consists of a cylindrical wall 2, the upper end of which is provided with a screw-threaded neck 3, and which is provided at its lower end with a closed bottom 4. A cap 5, provided with a screw-thread 6, is adapted to be carried by the neck portion 3. The cap 5 is also provided on its interior side with a gasket 7, to insure a tight oil fit, and a centrally located boss 8, which is screw-threaded at 9 to carry the screw-threaded end of a pump 11.

The pump 11 is suspended vertically within the receptacle 1 from the cap 5, and consists of a stationary cylinder 12 or piston and a movable cylinder 13 which is slidably mounted on the stationary cylinder. The lower ends of both these cylinders are drawn to provide valve seats 14 and 15, which support ball valves 16 and 17 respectively. The movable cylinder 13 carries a helical spring 18, which is tensioned between the ball valve 17 and the lower end of the cylinder 12 to hold the ball 17 against its seat 15.

The stationary cylinder 12 is also provided with a helical spring 19, which is tensioned between the boss 8 and the ball valve 16 so as to hold the ball valve 17 in closed position.

5 Rigidly secured to the exterior surface of the movable cylinder 13 is a bracket 21 having an outstanding horizontally disposed arm 22. As best shown in Figure 4, the arm 22 is bifurcated as at 23, into which is fitted a vertical pump operating rod 25, one end of which is transversely slotted as shown at 26 to form a contracted neck 27 and a head 28. The neck is adapted to enter the bifurcated arm 22 and to be held in position by the head 28, engaging notches 29 formed in the arm 22.

15 The pump rod 25 extends through an aperture 30 in the cap 5, and a helical spring 31 is positioned around the rod 25 and is tensioned between the bifurcated arm 22 and a washer 32 adjacent the aperture 30 to cause the pump to assume its extended position.

20 The finger or trigger piece 35, by being bent at 36 to form two legs 37 and 38, is substantially L-shaped. The leg portion 38 is provided with a central slot 39 situated adjacent the bend 36 and is curved at its lower extremity to form a trigger-like lever. One edge of the slot 39 is curved to form a rocker 36'. The leg 37 follows the contour of the top of the oil receptacle 1 and is bent at its extremity to form a flange 41. Adjacent the flange is an aperture 42 through which the oil rod protrudes and is retained in position by means of the head 43.

30 Mounted centrally on the cap below the leg 37 of the finger piece 35 is an oil spout, designated generally by the numeral 45. This spout consists of several sections, all of which contain a centrally located oil passageway 46, the extremities of which, when the several sections of the spout are connected together, join one with the other to form a continuous passage for the oil. This oil passageway 46 communicates with the stationary cylinder 12 of the pump 11, and the operation of the pump will force oil through the central passageway 46 in the several sections of the spout.

35 The oil spout 45 consists of a portion 47 which is either integral with the cap 5 or securely fastened thereto. The finger piece 35 is mounted on this portion by means of the slot 39 and the rocker 36' serves as a fulcrum for its operation. The upper extremity of the portion 47 is provided with interior screw-threads 48 which carry a screw-threaded flanged nut 49 provided with a tapered socket 50. A screw-threaded fitting 51, attached to one end of a spout 52, is also tapered to fit into the socket 50. A threaded union 53, internally flanged as at 54, holds the above-described structure securely together.

40 The spout 52 may be curved as at 55 and terminates in a screw-threaded tapered portion 56. The oil passageway 46 in the oil spout 52 is provided adjacent the tapered end 56 with a constricted passageway 57, which is formed by an interiorly carried circular flange 57'.

45 As best shown in Figure 3, a wedge 58 may be carried in the tapered end 56, and a ball valve 59 is held in position against the circular flange 57 by a helical spring 61 which is tensioned between the ball valve and the wedge 58.

50 With this check valve arrangement in the end of the spout, it is possible to avoid any after-drip of oil, because, when the pump 11 is not exerting pressure upon the passageway 46, the ball valve 59 is held firmly against the constricted passage-

way 56 by the tension spring 61, and no oil is allowed to escape past this point. A threaded collar 62 may be threaded onto the tapered end 56 to protect the spout 52 and to give the desired exterior contour.

5 As best shown in Figure 2, an adjustable clamp 65 is provided which encircles the cylindrical side 2 of the oil receptacle 1 and is provided with suitably spaced apertures 66 and 67. A screw-threaded bolt 68, having an adjusting nut 69, is carried in the apertures 66 and 67, and, by adjustment of this bolt, the clamp 65 may be readily secured in any desired position on the cylindrical side 2.

15 One extremity of the clamp 65 is bent over as shown at 71 to form a platform having an aperture 72. The aperture 72 carries a stop member 73 consisting of a threaded stem 74, a knurled nut portion 75, and a projection 76. This stop member 73 is mounted in the aperture 72 by means of lock nuts 77 and 78. The tightening of these two nuts 77 and 78 against the platform 71 will cause the stop 73 to be rigidly secured in any desired position.

20 Fig. 5 shows a modified form of clamp 65, which may be provided with a finger support 80, the outer extremity of which is curved downwardly so as to fit over the thumb of the operator of the oil ejector.

30 In order to operate the oil receptacle, the finger piece 35 is drawn towards the receptacle by means of the index finger of the operator, which thereby causes the pump rod 25 to be drawn upward against the spring 31. This movement of the pump rod 25 causes an upward movement of the horizontal arm 22 which carries along with it the bracket 21 which is securely attached to the movable portion 13 of the pump 11. In this initial movement, the valve 17 remains closed under the pressure of the spring 18, and the air is expelled past the valve 16. Return movement of the member 15 causes a partial vacuum, and oil consequently flows into the lower cylinder past the valve 17.

35 On each subsequent up-stroke, the valve 17 remains closed, and the oil within the movable cylinder 13 is forced past the valve 16 into the stationary cylinder 12, and is discharged through the passageway 46 and against the valve 59 which opens and allows the oil to pass from the oil ejector. After the passage of the stream of oil, the pressure is relieved on the valve 59 and it at once returns to its seat on the flange 57, thereby avoiding any after-drip.

40 In order to regulate the amount of oil delivered by one stroke of the pump 11, the bolt 75 is adjusted so as to limit the movement of finger piece 35 by reason of the projection 76 coming in contact with the under portion of the leg 38, which in turn limits the movement of the cylinder 13 of the pump 11. The relative position of the stop 75 and the finger piece 35 may be readily adjusted by the operator to vary the amount of oil delivered from a single small drop to several drops per pump stroke. By having the clamp 65 rotatably mounted on the oil container, the clamp can always be adjusted so that the projection 76 will be in line with the movement of the finger piece 38. This adjustment is necessary due to compressibility of the gasket 7, due to use. Rotatably mounting the clamp 65 will also permit the stop 75 being moved from the path of the finger piece 35 to give a full stroke of the pump 11 if desired.

45 It is believed obvious from the above descrip-

tion that I have provided an oil ejector provided with means with which it is possible to exactly control the amount of oil delivered by a single action of the pump. By the use of a pump with a relatively small bore, it is possible to control the regulation of the discharge to an even finer degree of accuracy.

While for purposes of illustration I have shown an oil ejector having a spout and finger piece member carried by the cap, it is obvious that many changes could be made without exceeding the scope of this invention. The use of a check valve in the outer end of the spout and a finger support carried by the clamp member is, of course, a modification of the main inventive concept.

I, therefore, wish to be limited only by the prior art and the scope of the appended claims.

I claim:

1. In a fluid ejecting device, the combination of an oil receptacle, a cap, a spout carried by the cap, a pump carried by the cap and communicating therethrough with the spout, an angular-shaped finger piece one end of which extends down the side of the oil receptacle in advance of the cap and the other end extends rearwardly over the cap and connects with the pump, and an adjustable projection carried by said oil receptacle for limiting the movement of said finger piece.

2. In a fluid ejecting device, the combination of an oil receptacle, a cap, a spout carried by the cap, a vertically disposed pump carried by the cap and communicating therethrough with the spout, an angular-shaped finger piece one end of which extends down the side of the oil receptacle in advance of the cap and the other end extends rearwardly over the cap and connects with the pump, an adjustable clamp carried by the oil receptacle, an adjustable projection mounted on said adjustable clamp to limit the movement of said finger piece, and a finger support carried by the said clamp to aid in supporting the oil ejector in the hand of an operator.

3. In a fluid ejecting device, the combination of a cap, a spout carried by the cap, a vertically disposed pump carried by the cap and communicating therethrough with the spout, a finger piece provided adjacent the cap and having an opening for receiving the spout and having the end with the opening therein extending downwardly in advance of the cap and the other end extending rearwardly and overlying the cap, an operating connection extending between the latter end of the finger piece and the pump and passing slidably through the cap, and an adjustable projection mounted on the oil receptacle to limit the movement of said finger piece.

4. In a fluid ejecting device, the combination of an oil receptacle, a pump mounted on the oil receptacle, an actuation member carried by said oil receptacle for actuating the pump, and a clamp carried by the oil receptacle, said clamp carrying an adjustable projection for limiting the movement of the said finger piece.

5. In a fluid ejecting device, the combination of an oil receptacle, a pump mounted on the oil receptacle, an actuation member carried by said oil receptacle for actuating the pump, a clamp carried by the oil receptacle, said clamp carrying an adjustable projection for limiting the movement of the said finger piece, and a finger support carried by said clamp to aid in supporting the oil ejector in the hand of the operator.

6. In a fluid ejecting device, the combination of an oil receptacle having a neck, a spout, and a finger piece carried by the neck of said oil receptacle, a pump mounted on said oil receptacle and communicating with the spout, means connecting with said finger piece to actuate the pump, and a clamp carried by the body of said oil receptacle, said clamp carrying an adjustable projection for limiting the movement of the said finger piece.

7. In a fluid ejecting device, the combination of an oil receptacle, a pump mounted on said receptacle, a lever to operate the pump, said lever being attached to the top of the receptacle and depending therefrom, an adjustable clamp mounted on the receptacle, said clamp having a settable extensible projection extending outward and upward therefrom and adapted to engage the lever at one extreme of its path of movement.

8. In a fluid ejecting device, the combination of an oil receptacle, a pump for the oil receptacle, an actuation member for actuating the pump, a contacting element for limiting the movement of the actuation member, a support member for holding the contacting element in place, said support member having an operating position wherein the contacting element is held in the path of the actuation member, means for resistably holding the contacting element in said path, said support member also having an inoperative position wherein the contacting member is held out of the path of the actuation member, said contacting element having during the operative position of the support member an indefinite number of positions variably limiting the path of the actuation member, the supporting member moving from operative to inoperative position in a direction substantially lateral to the direction of motion of the actuation member.

9. In a fluid ejecting device, the combination of an oil receptacle, a pump for the oil receptacle, an actuation member for actuating the pump, a contacting element for limiting the movement of the actuation member, a support member for holding the contacting element in place, said support member having an operating position wherein the contacting element is held in the path of the actuation member, means for resistably holding the contacting element in said path, said support member also having an inoperative position wherein the contacting member is held out of the path of the actuation member, said contacting element having during the operative position of the support member an indefinite number of positions variably limiting the path of the actuation member, the supporting member moving from operative to inoperative position in a direction substantially lateral to the direction of motion of the actuation member, said supporting member not affecting the setting of the contacting element by movement from operative position to inoperative position and back to operative position.

10. In a fluid ejecting device having an oil receptacle, a pump for the oil receptacle, an actuation member for actuating the pump, the elements comprising a stop clamp adapted to fit around the receptacle, said clamp having a bellied-out portion for fitting almost completely around the receptacle, out-turned ears fitting on the ends of said bellied-out portion, means associated with said ears to draw said ends into closer proximity, whereby said clamp is held fixedly to

the receptacle, a wing portion carried by one of said ears, said wing portion extending away from the line of its supporting ear so as to place one end of said bolt away from said bellied-out portion, said wing portion carrying a limiting bolt, said bolt being adapted to settably extend from the wing in an indefinite number of lengths.

11. In a fluid ejecting device having an oil receptacle, a pump for the oil receptacle, an actuation member for actuating the pump, the elements comprising a stop clamp adapted to fit around the receptacle, said clamp having a bellied-out portion for fitting almost completely around the receptacle, out-turned ears fitting on the ends of said bellied-out portion, means associated with said ears to draw said ends into closer proximity, whereby said clamp is held fixedly to the receptacle, a wing portion carried by one of said ears, said wing portion carrying a limiting bolt, said bolt being adapted to settably extend from the wing in an indefinite number of lengths, said wing extending in a plane adapted to place one end of said bolt upward from the plane of the encircling bellied-out portion, said wing portion extending away from the plane of its supporting ear so as to place the upper end

of said bolt away from said bellied-out portion.

12. In a fluid ejecting device having an oil receptacle, a pump for the oil receptacle, an actuation member for actuating the pump, the elements comprising a stop clamp adapted to fit around the receptacle, said clamp having a bellied-out portion for fitting almost completely around the receptacle, out-turned ears fitting on the ends of said bellied-out portion, means associated with said ears to draw said ends into closer proximity, whereby said clamp is held fixedly to the receptacle, a wing portion carried by one of said ears having an aperture therein, a limiting bolt passing through said aperture, nuts threaded on the bolt and next to the wing portion for holding the bolt in position, said wing portion extending away from the line of its supporting ear so as to place the head of said bolt away from said bellied-out portion, said wing extending in a plane adapted to place the head of said bolt upward from the plane of the encircling bellied-out portion, said bolt being adapted to settably extend from the wing in an indefinite number of lengths.

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