April 2, 1957 T. R. THOMAS 2,787,222

LUBRICANT PUMP

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FIG. 1.

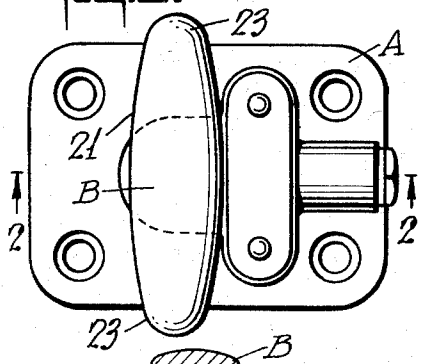


FIG. 2.

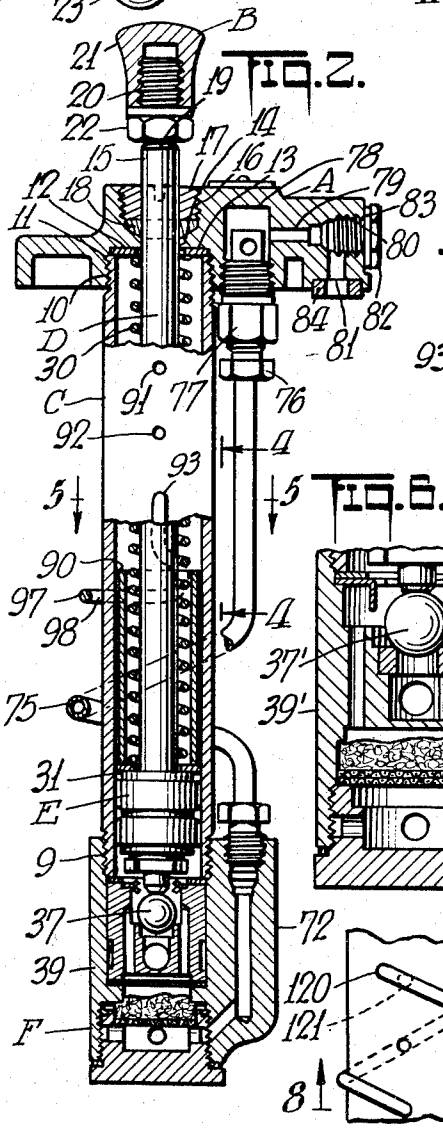


FIG. 3.

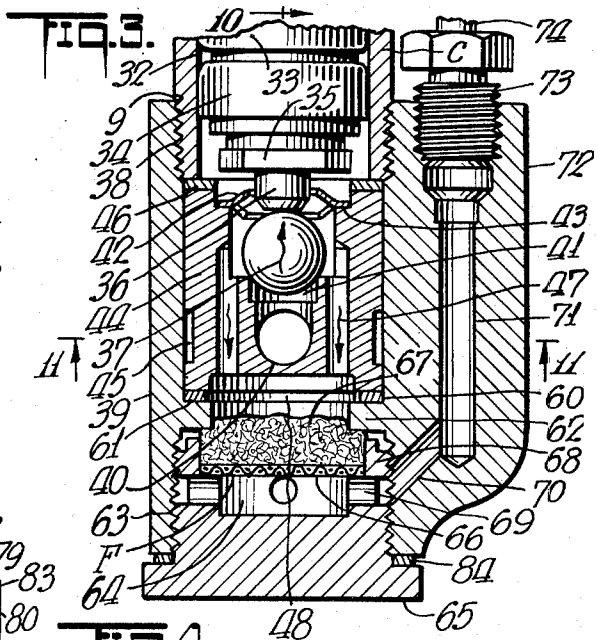


FIG. 4.

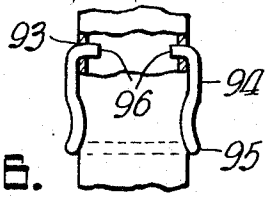


FIG. 5.

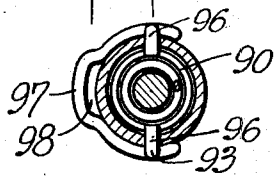


FIG. 6.

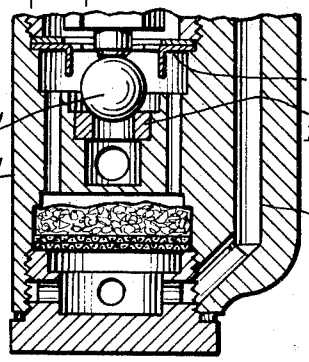


FIG. 8.

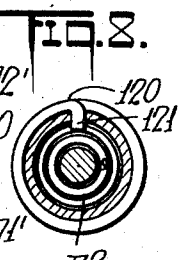


FIG. 9.

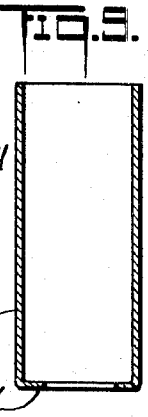


FIG. 7.

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Fig. 10.

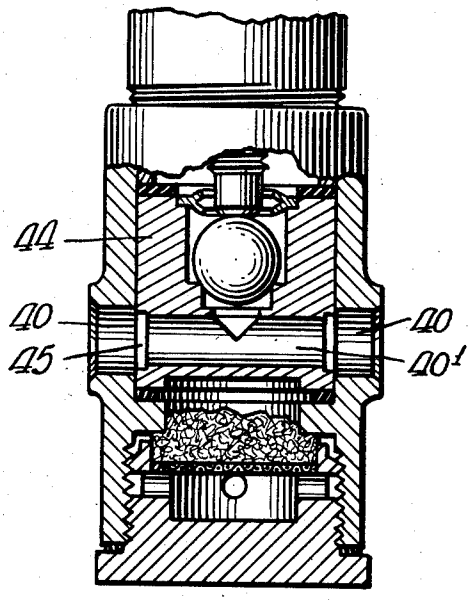
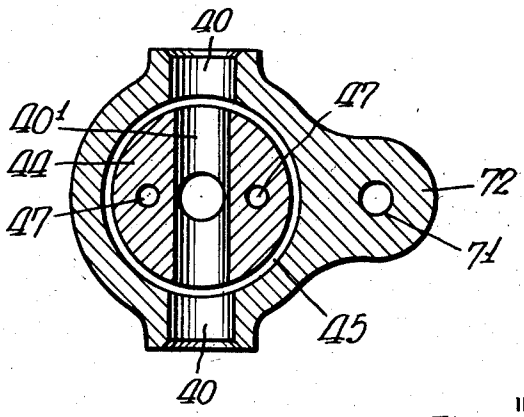


Fig. 11.



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United States Patent Office 2,787,222 Patented Apr. 2, 1957

2,787,222

LUBRICANT PUMP

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Application February 23, 1954, Serial No. 412,005

6 Claims. (Cl. 103—38)

The present invention relates to lubrication and particularly relates to a manually operated pump arrangement for distributing lubricant under pressure.

It is among the objects of the present invention to provide a compact, durable, inexpensive, reliable pump which may be readily installed without undue space consumption upon available machine parts or structures and which may be readily associated with reservoir constructions.

Although the present invention has a broad application to lubricating pumps in general, it has a specific application to centralized lubricating installations of the high restriction flow metering type in which a central pump forces lubricant under high pressure into a branch distributing system and which charge of lubricant is then distributed to a plurality of spaced bearings in accurately proportioned amounts by high restriction flow metering outlet fittings.

It is among the further objects of the present invention to provide a small manually operated pump construction which will assure delivery of a predetermined metered charge to the branch distributing piping system under such pressures as to activate said flow metering fittings and assure proper lubricant proportionment.

Still further objects and advantages will appear in the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation only and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the present invention.

In accomplishing the above object, it has been found most satisfactory to provide an elongated cylindrical member which serves both as a cylinder to carry the piston and which at its lower end carries the inlet and outlet valving arrangement as well as an inlet strainer and at its upper end carries the mounted cover with outlet connections to an interior bore system as well as an exterior tubing distributing system.

A particular feature of the present invention resides in the fact that the tube connection from the outlet of the pump to the outlet in the cover, consists of a coil member extending around the mounted tube and that there is provided a stroke adjustment which enables ready variation in the amount of lubricant distributed for each operation or reciprocation of the pump.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

Fig. 1 is a top plan view showing the cover of the pump and the operating end of the manual lever.

Fig. 2 is a transverse vertical sectional view taken upon the line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary sectional view showing the lower part of the section of Fig. 2 upon an enlarged scale as compared to Fig. 2.

Fig. 4 is a fragmentary side elevational view taken upon line 4—4 of Fig. 2.

Fig. 5 is a transverse horizontal view taken upon the line 5—5 of Fig. 2.

Fig. 6 is a fragmentary transverse sectional view similar to Fig. 3 of an alternative embodiment.

Fig. 7 is a side elevational view showing another type of coil locking arrangement on the main support cylinder.

Fig. 8 is a transverse horizontal sectional view upon the line 8—8 of Fig. 7.

Fig. 9 is a side sectional view showing an alternative interior cup construction.

Fig. 10 is a fragmentary transverse longitudinal sectional view taken upon the line 10—10 of Fig. 3 showing the flow passages into the pump cylinder, upon an enlarged scale as compared to Fig. 3.

Fig. 11 is a transverse sectional view upon the line 11—11 of Fig. 3.

Referring to the embodiment of Figs. 1, 2 and 3, there is shown a cover A, an actuating handle B, a cylindrical cylinder member C, a connecting rod member D, a piston member E, and a strainer member F.

The cylinder member C is the basic connecting structure and it is threaded at its upper end 10 and its lower end 9 for attachment to associated structures.

The upper threaded end 10 is screwed into a tapped opening 11 in the cover A and its end portion is clamped against the gasket 12 in the bottom of the socket 13.

The cover has an opening 14 through which projects the connecting rod D at the upper end 15.

The connecting rod extends through the socket 16 in which is screwed the plug 17 which jams down the sealing material 18 in the lower part of the socket.

The top of the connecting rod is threaded as indicated at 19 and it is received in the tapped recess 20 in the handle member 21 and also the lock nut 22.

The handle 21 has the extensions 23 which enable it to be more readily grasped and lifted by the hand.

The connecting rod D is encircled by the coil return spring 30 which extends between the gasket 12 and the washer 31 in the lower part of the cylinder C directly above the piston E.

The piston E closely fits the interior wall 32 of the cylinder C and it has the double opposite facing cups 33 and 34 which are held together on the lower end of the connecting rod D by the nut 35.

The end of the connecting rod has a stud or extension 36 which serves to contact the ball check valve at the end of the discharge stroke and thus serve as a stop for the piston, connecting rod, and handle.

The threaded lower end line of the cylinder C is threaded into the tapped recess 38 in the casting 39.

The casting 39 in the side thereof has an opening 40 which serves as the lubricant inlet opening and which permits the lubricant to flow into the chamber 41 when the piston E is drawn upwardly.

The chamber 41 receives the ball check 37 which is held in position by the peripheral plate member 42.

This plate member fits into the shoulder 43 in the insert 44 which is positioned in the recess 38 of the member 39.

On top of the insert 44 is the gasket 46 which forms a seal for the lower end of the cylinder C. At the bottom of the insert 44 is the gasket 60 which forms a seal between the bottom of the recess 38 in the body 39 and the lower end of the insert 44.

On the up-stroke, as shown in Figs. 3, 10 and 11, the lubricant will flow upwardly from the opening 40 in the casting 39 through or around the peripheral groove 45 and then into the cross holes 40'.

Where the cross holes 40 in the casting 39 and the cross holes 40' in the insert 44 are lined up, the lubricant will flow directly from the opening 40 to the opening 40'. Where they are not lined up, the communication will be established through the peripheral groove 45.

The chamber 48 acts as an inlet chamber for the strainer unit F.

The chamber receives the gasket 60 which forms a seal between the bottom of the insert 44 and interior shoulder 61 formed by the projection 62 on the interior of the unit 39.

The lower portion of the unit 39 is tapped as indicated at 63 to receive the end plug 65. This end plug 65 will carry the filter unit F consisting of the back screen 66 and the felt filtering layer 67.

The screen is held in the ring 68 which is screwed into the recess 63.

Below the screen 66 is the strained oil chamber 64. From the strained oil chamber 64 the oil will flow through the radial passageway 69, the oblique passageway 70 into the vertical passageway 71.

The vertical passageway 71 is formed in an extension or protuberance 72 in the side of the body 39.

The upper end of the passageway is connected by the compression coupling connection 73 to the tubing 74.

The tubing 74 is coiled around the tube C as indicated at 75 and then extends upwardly to the compression coupling connection 76.

This connection 76 has a check valve connection 77 into the recess 78 which receives the lubricant discharged under pressure from the piston E.

The lubricant then flows in the bore 79 in the cover A to either the outlet connection 80 or the internal bore connection 81.

The outlet connection 80 is sealed by means of a plug 82 and gasket 83, when the interior bore connection 81 is used to conduct the oil flow to the machine. The interior bore 81 has a sealing gasket 84.

When it is desired to use the tapped outlet connection 80 for transmission of oil to the machine, plug 82 and gasket 83 are removed and a compression-fitting type connection, similar to one shown at 76, is made up.

It is not feasible to use both outlet connections simultaneously.

Interiorly of the cylinder C is positioned the adjusting sleeve or tube 90. The sleeve or tube 90 rests upon the washer 31.

The cylinder is provided with three sets of adjusting openings or cross holes 91, 92 and 93, which, for example, serve for one-half inch setting, one inch setting and one and one-half inch setting of the stroke.

The wire 94 has a lower loop portion 95 extending around the cylinder C and it has two inturned prongs 96 which fit in the openings 91, 92 or 93. These prongs 96 will limit the upward movement of the sleeve 90 when moved upwardly by the washer 31.

The adjustment of the spring 94 is shown at the lowermost position with the shortest stroke, say one-half inch.

The insertion of the prongs 96 in the openings 91 and 92 will give a longer stroke adjustment.

This adjustment is desirably made with the piston in upright position as shown in Fig. 2 so the sleeve or tube 90 will not obstruct any of the openings 91, 92 or 93.

As an alternative arrangement, where it is not desired to restrict the position of the pump when adjusting the stroke, the cup 100 may be employed.

This cup has an inturned, peripheral flange 101 which will extend under the top of the piston E so that it will be positively moved with the piston. This flange 101 obviates the need for washer 31.

In the arrangement shown in Figs. 1, 2 and 3, the

stroke may then be conveniently adjusted by changing the position of the adjustment clip 94.

Either the sleeve 90 or the cup 100 will limit the upward stroke of the piston E, depending upon the position of the clip 94.

It will also be noted that the filter F may be readily removed and replaced by unscrewing the plug 65.

The plug 65 has a lubricant-tight connection because of the gasket 84.

It will be noted that the clip 94 has a bulged-out portion 97, leaving a space 98 in which a screw-driver may be readily inserted.

In the alternative construction shown in Fig. 6, correspondingly functioning parts are indicated by the same numerals and letters which are, however, primed.

In this construction, there is a separate pressed-in valve seat 110 for the ball check 37'.

The cup or flange retaining washer 42' may have downturned, inside flanges.

It will be noted that the openings or bores 71 or 71' may be so drilled as not to require plugging of the end of the bore at the bottom of the member 39 or 39'.

In the embodiment of Fig. 7 and Fig. 8, the adjustment clip 120 may fit in separate openings, with the lower, inwardly projecting portion 121 serving as a stop for the piston E^2.

It is thus apparent that the applicant has provided a simple, lightweight, readily installed pump, which has a convenient stroke adjustment and in which the strainer may be readily removed without reconstruction or dismantling of the pump.

As many changes could be made in the above lubricant pump and many widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

Having now particularly described and ascertained the nature of the invention, and in what manner the same is to be performed, what is claimed is:

1. A manually operated central lubricant pump for a centralized machine lubricating installation of the type having a cylinder receiving a reciprocating piston with a connecting rod and a return spring, said pump comprising an elongated tubular member forming the main pump supporting structure and also forming the cylinder structure and the enclosure for the piston, return spring and connecting rod, said tubular member being characterized by receiving at its upper and lower ends a pump mounting bracket at its upper end and a removable filter and outlet unit at its lower end, said tubular member having an internal sleeve and an external bifurcated clip to adjust the pump stroke, said clip and sleeve engaging each other by way of longitudinally spaced openings in the sides of the tubular member, said sleeve being positioned on top of said piston and said clip limiting the movement of said sleeve.

2. The pump of claim 1, said pump being provided with an outlet connection from the outlet unit to the top bracket, said outlet connection consisting of a tube coiled around said tubular member.

3. A manually operated adjustable stroke centralized lubricating pump of the type having a cylinder with a reciprocating piston having a connecting rod with a handle and with a coil spring encircling the connecting rod, an inlet ball check valve and an outlet strainer, said pump comprising a main elongated tubular structure serving as said pump cylinder and as an enclosure for the connecting rod, the piston, the coil return spring, and a stroke adjusting sleeve, and adjustable means on the outside of the cylinder to control the stroke of said piston and said tubular structure carrying by threaded connections at one end a mounting cover having inlet and outlet connections and at the other end a closure member, said closure member having internally threaded ends, one end screwed

onto the tubular structure and a plug screwed onto the other end receiving a strainer and an insert in said closure member receiving the ball check and having a seat for the ball check.

4. The pump of claim 3, said cylinder having the connections in the mounting cover and the closure member aligned with each other and a tube extending therebetween and coiling around the cylinder.

5. The pump of claim 3, in which said adjustable means consists of a bifurcated spring wire clip having inturned end members and in which said cylinder has pairs of spaced aligned diametrically opposite openings to receive the ends of said clip and serve as a stop for said sleeve.

6. The pump of claim 3, said piston having an axial extension and said extension at the end of its stroke being

stopped by said check valve and said closure member consisting of an outer sleeve receiving an outlet lubricant connection, an inside sleeve press-fitted into said outside sleeve and having a ball check chamber receiving said ball check and an end plug receiving said strainer.

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