June 6, 1933. C. G. WILSON 1,912,748

GEAR LUBRICANT DISPENSER

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Fig. 1.

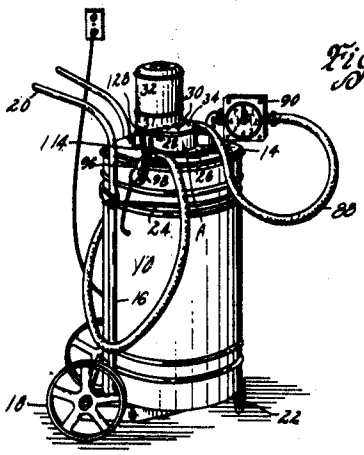


Fig. 7.

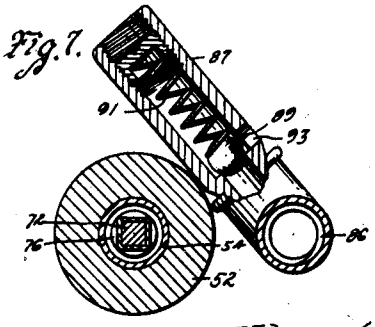


Fig. 6.

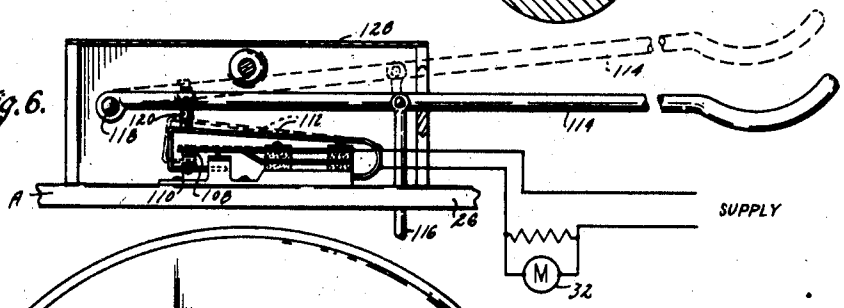
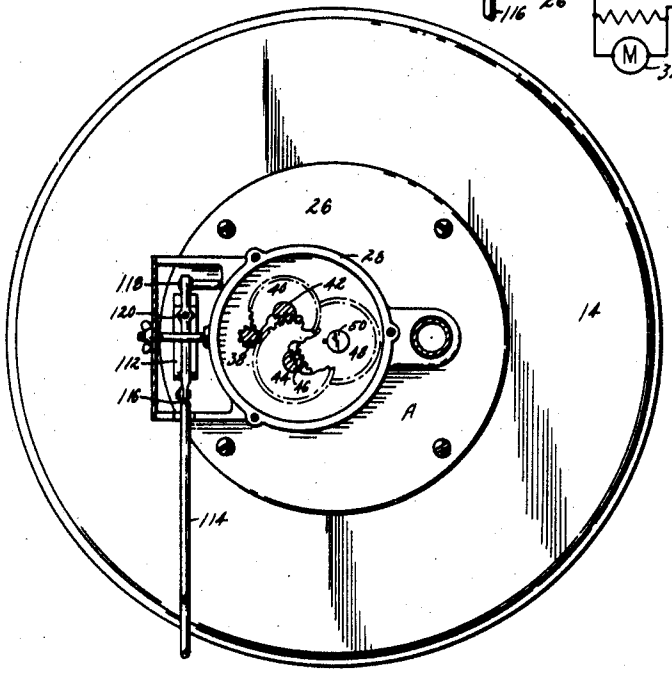


Fig. 5.



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Fig. 3.

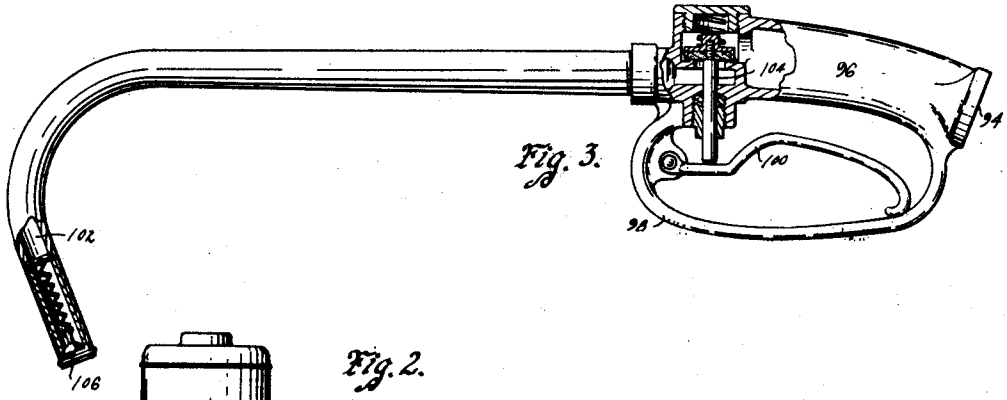


Fig. 2.

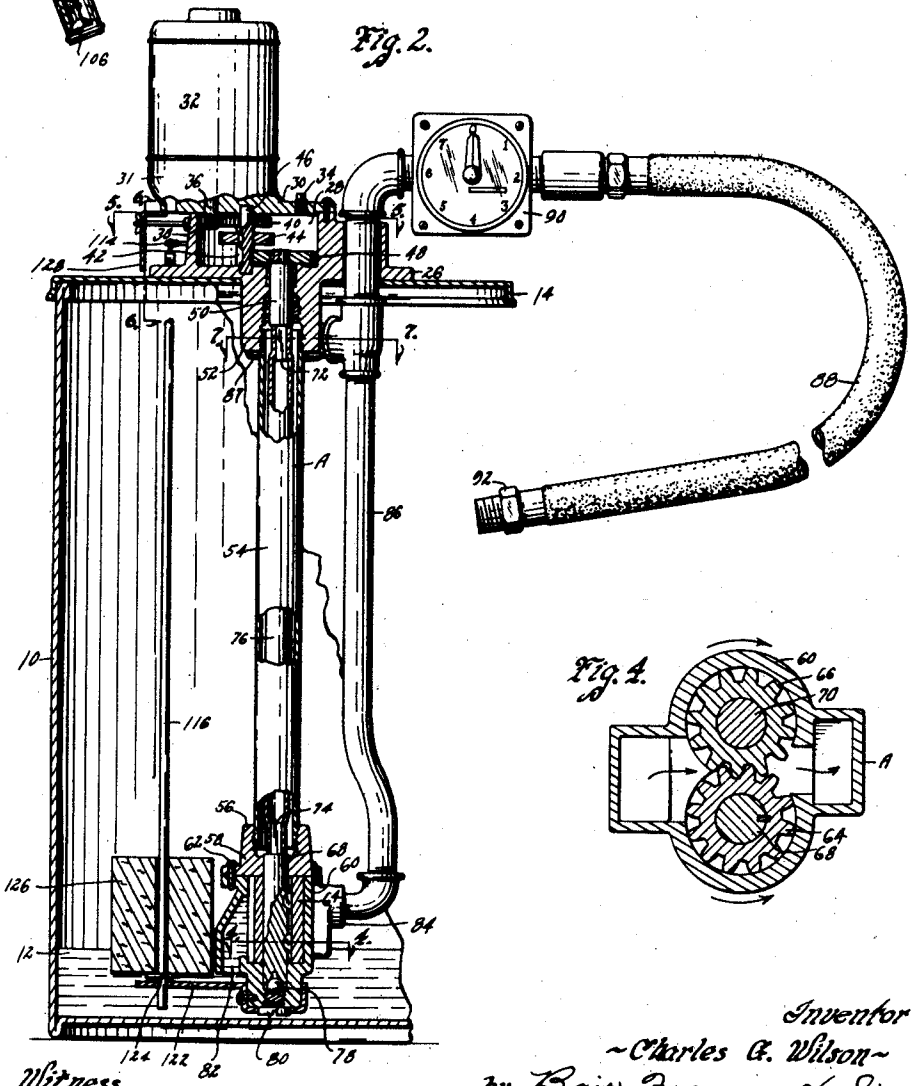


Fig. 4.

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UNITED STATES PATENT OFFICE

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GEAR LUBRICANT DISPENSER

Application filed November 24, 1930. Serial No. 497,821.

The object of my invention is to provide a gear lubricant dispenser which is simple, durable and comparatively inexpensive to manufacture.

A further object of my invention is to provide a dispensing means for gear lubricant or the like adapted for use in garages and service stations, the device being readily portable and conveniently operable for dispensing gear lubricant and discharging it into gear or transmission cases with a minimum of time and effort.

A further object is to provide a dispenser of this general character comprising a container for the gear lubricant, the container being preferably supported on a hand truck for convenience in moving the dispenser from one place to another and being electrically operated for dispensing the lubricant from the container, whereby to affect operation it is merely necessary to "plug in" an extension cord to any convenient electrical outlet.

Another object is to provide a novel arrangement for supporting the electric motor power means used for operating a dispensing pump on a cover for the container with the pump and a control mechanism for the motor all mounted on this cover together with a discharge tube extending from the cover through which the gear lubricant may be dispensed or discharged, thus providing all of the mechanism on a single support as a complete unit.

Still a further object is to provide a switch operable to open circuit position by placing a discharge nozzle on the discharge tube over a supporting hook of the switch structure to cut off the supply of electric current to the motor.

Still a further object is to provide an automatic means for actuating the switch to open position when the gear lubricant reaches a predetermined low level, whereby the operator may then know that the container needs refilling or a new full container used. The automatic movement of the switch to open position prevents the lubricant pump from sucking in air and thereby affecting the accuracy of a meter used for determining the amount of gear lubricant dispensed through the discharge nozzle.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of a dispenser embodying my invention.

Figure 2 is a vertical sectional view through the same.

Figure 3 is a side elevation, partly in section, showing a discharge nozzle of the cut-off type used in connection with the dispenser shown in Figure 2.

Figure 4 is a detail sectional view on the line 4—4 of Figure 2 showing the parts enlarged and illustrating a dispensing pump.

Figure 5 is a sectional view on the line 5—5 of Figure 2 showing a gearing arrangement.

Figure 6 is a sectional view on the line 6—6 of Figure 2 showing a control mechanism or switch; and

Figure 7 is an enlarged sectional view on the line 7—7 of Figure 2 showing the details of a release valve.

On the accompanying drawings, I have used the reference character A to indicate generally the dispenser. It may be used for gear lubricant or any other suitable liquid or semi-liquid commodity.

My improved dispenser includes a container 10 into which the gear lubricant 12 or other contents may be introduced or in many instances the container 10 is supplied by the seller of the lubricant and my dispensing mechanism I have therefore designed as a unit mounted on a cover 14 so that it can be placed on the container 10 until it is pumped empty and then placed on another full one and so on.

I preferably provide a truck 16 for the container 10 having supporting wheels 18 and handles 20 for convenience in wheeling the dispenser from one position to another. A supporting leg is indicated at 22. By means

of a U bolt 24, the container 10 may be securely attached to the truck 16.

A flange 26 is secured to the cover 14 and a gear casing 28 is formed on this flange. A cover 30 is provided for the gear casing 28. The cover 30 has formed thereon a support 31 for an electric motor 32. A removable plug 34 is provided for convenience in filling the gear casing 28 with lubricant.

A shaft 36 of the motor 32 terminates in a pinion 38. The pinion 38 meshes with a gear 40, which is secured to a shaft 42 having pinion teeth cut in it. The pinion teeth in the shaft 42 mesh with the teeth of a gear 44, which is mounted on a shaft 46. Pinion teeth are cut into the shaft 46 and mesh with the teeth of a drive gear 48.

The drive gear 48 is secured to a stub shaft 50. The shafts 42 and 46 have their ends journalled in sockets of the flange 26 and the cover plate 30, as best shown in Figure 2. The stub shaft 50 extends downwardly through a packing boss 52 formed on the lower surface of the flange 26 and extending through an opening in the cover 14.

A supporting tube 54 extends downwardly from the boss 52 with which it screw-threadedly coacts and has its lower end screwed into a boss 56 of a pump cover plate 58. A pump casing 60 is secured to the cover plate 58 by screws or the like 62. As best shown in Figure 4, the pump is of gear construction, the drive gear being indicated at 64 and the idler gear at 66. The drive gear 64 is secured to a pump shaft 68, while the idler gear 66 is mounted on a stub shaft 70.

The stub shaft 50, extending downwardly through the packing boss 52, has an angular lower end 72, while the pump shaft 68 has an upwardly extending angular end 74. A drive shaft 76 of tubular construction having angular sockets in its ends serves as an operative means of connection between the stub shaft 50 and the pump shaft 68. A thrust bearing 78 retained in position by a plug 80 takes care of the downward end thrust of the pump shaft 68.

An inlet for the pump is indicated at 82 and an outlet therefor at 84.

By means of piping 86, the outlet 84 is connected with a discharge tube 88. A release valve 87 having a spring closed ball 89 is provided in the piping 86. A flow meter 90 is interposed in the discharge line for measuring the flow of gear lubricant therethrough. A fitting 92 on the discharge end of the discharge tube 88 is adapted to screw into a threaded end 94 of a discharge nozzle. The discharge nozzle has a handle portion 96, a trigger guard 98, a trigger 100 and a discharge pipe 102. By means of a spring pressed valve member 104, the trigger 100 may be manipulated for allowing the flow of gear lubricant from the hollow handle 96 into the discharge pipe 102. A spring closed discharge valve 106 is located in the discharge end of the discharge pipe 102 to close this end whenever the valve 104 is closed.

Automatic control

For controlling the operation of the power means or motor 32, I provide a switch structure, best shown in Figure 6, having contacts 108 and 110. Due to the resiliency of a supporting arm 112 for the contact 110 there is a normal tendency for the contacts 108 and 110 to remain in engagement with each other, as shown in dotted lines. The spring 112 is sufficiently strong to lift a supporting arm 114 and a rod 116. The arm 114 is pivoted at 118 and carries an insulating pin 120 for coaction with the spring contact arm 112. The rod 116 extends downwardly through the cover 14 into the container 10 and through a rod supporting arm 122.

A stop 124 is provided on the rod 116 and a float 126 is freely slidable vertically relative to the rod. A cover plate 128 is provided for the switch casing.

Practical operation

In the operation of my device, it may be wheeled to any convenient location and plugged in for connection with the electric circuit. The cut-off discharge nozzle is supported on the supporting arm 114 and after the proper plugs have been removed for receiving the gear lubricant within a gear or transmission casing, the nozzle is removed from the hook 114, which allows the contacts 108 and 110 to engage with each other. Since the contacts are in circuit with the motor 32, they will cause it to commence operation as soon as the supporting arm 114 is moved upwardly.

The valve 104 will of course be closed and the gear lubricant under pressure which is being pumped up through the piping 86 by the pump gears 64 and 66 will open the release valve 87 by raising the ball 89 from its seat against the action of the spring 91. The gear lubricant will then flow out of the opening 93 and fall back into the container 10.

When the trigger 100 is raised, the gear lubricant will be pumped through the discharge pipe 102, opening the valve 106 whereby the gear lubricant will be discharged into the gear or transmission casing, the pipe 102 being inserted through a plug opening usually provided for this purpose.

When the operator is through with the dispenser, by merely replacing the nozzle on its supporting hook 114 the electric circuit of the motor 32 is broken, thereby stopping the operation of the pump.

When the lubricant reaches a predetermined low level, the float member 126 will engage the stop flange 124 and the

weight of the float will pull the arm 114 downwardly, as shown in full lines in Figure 6, thus stopping the operation of the pump. This both warns the operator that the container 10 is empty and also prevents air from being sucked into the pump and discharged through the meter 90, thus rendering its reading inaccurate.

It will be noted that the switch is automatically controlled from within the container by the level of grease therein and likewise controlled when the operator hangs the nozzle 96 on the hook portion of the arm 114.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. A dispenser including a container, a tube, power means for dispensing the contents of the container therefrom and through said tube, a single control mechanism for said power means, a member supported by said contents and associated with said control mechanism for moving the same to inoperative position when said contents reach a predetermined low level and means on said control mechanism for supporting said tube when it is not in use and thereby also moving the control mechanism to inoperative position because of the weight of the tube on the supporting means.

2. In a dispenser of the class described, a container, a cover therefor, power means supported on said cover, a supporting tube extending downwardly from said cover and located within said container, a pump supported on the lower end thereof, a drive shaft through said supporting tube for connecting said power means with said pump, a discharge pipe extending from said pump, a discharge tube extending from said discharge pipe, control mechanism on said cover for controlling the operation of said power means, a rod extending downwardly from said control mechanism into said container, a float on said rod and a stop on said rod adjacent the bottom of said container whereby a predetermined low level of the contents of said container will allow the weight of said float to pull said rod downwardly and actuate said control mechanism to stop the operation of said power means and a guide arm extending from said pump, said rod extending through said guide arm and being slidable relative thereto.

Des Moines, Iowa, November 4, 1930.

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