June 4, 1929. W. S. TOWNSEND ET AL 1,715,522

GREASE PUMP

Filed Sept. 5, 1925

Fig. 1

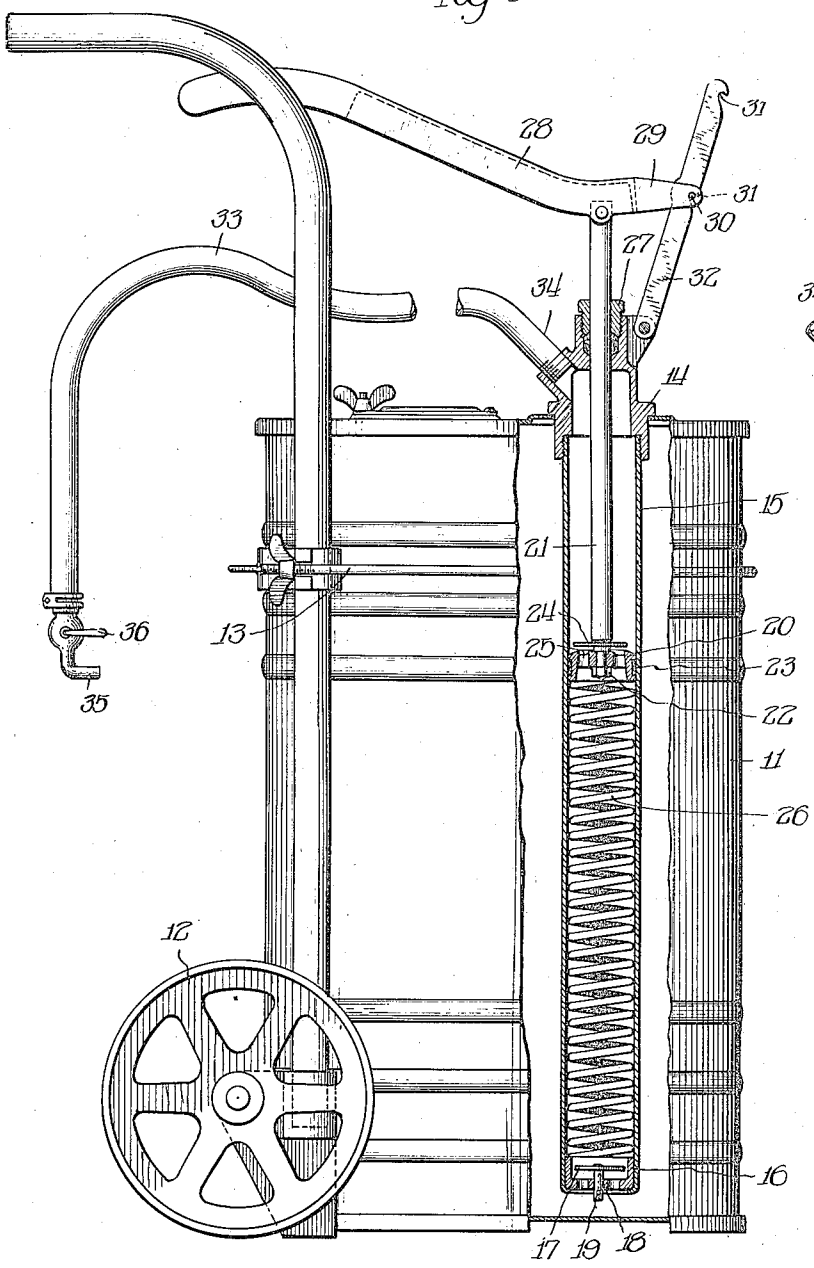
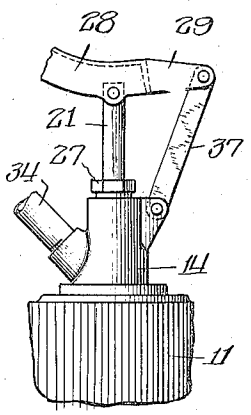


Fig. 2



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Patented June 4, 1929. 1,715,522

UNITED STATES PATENT OFFICE.

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GREASE PUMP.

Application filed September 5, 1925. Serial No. 54,733.

This invention relates to a new and improved grease pump or the like and more particularly, to a grease pump adapted to automatically discharge the material being handled. In types of grease pumps now in general use, a power stroke of the pump handle in one direction is necessary to fill the pump cylinder or similar chamber and a power stroke in the opposite direction is necessary to discharge the material being handled.

It is an object of the present invention to provide a grease pump or the like in which means are provided for moving the pumping elements in one direction and more particularly, in the direction adapted to discharge the material.

It is also an object to provide in such a pump an adjustable fulcrum for the pump mechanism whereby the length of pump stroke may be controlled.

It is a further object to provide a pump of this character in which the discharge orifice is valve controlled so that the discharge of the grease or other material may be regulated independently of the return stroke of the piston.

It is a further object to provide a construction which is simple in design and operation and adapted for commercial manufacture.

Other and further objects will appear as the description proceeds.

We have illustrated in the accompanying drawings a preferred embodiment of our invention.

In the drawings:—

Figure 1 is a side elevation partly in section showing the pump and its relation to a grease container, and

Figure 2 is a fragmentary view showing a modified form of fulcrum.

In the drawings, the grease container 11 is supported upon the truck 12 being secured thereto by the band 13. The pump assembly is inserted into the container through an opening in the top thereof, the pump top 14 fitting into and closing the opening. The pump cylinder 15 is threaded into the pump top 14 and extends downwardly into the container. The cylinder 15 carries at its lower end the foot valve spider 16 which carries the foot valve plate 17, foot valve stem 18 and foot valve stop pin 19.

The piston 20 is secured to the lower end of the piston rod 21 by nut 22 and carries the packing 23 engaging the cylinder wall. The piston valve plate 24 is fitted on a shouldered portion of the piston rod 21 and is adapted to close the piston ports 25. The coil spring 26 lies closely adjacent the inner wall of the cylinder 15 and has its lower end bearing on the foot valve spider member 16 while its upper end engages the lower edge of the piston 20.

The piston rod 21 passes through the gland 27 in the upper end of the pump top 14 and is pivotally connected to the pump lever 28. The extended portion of the pump lever is provided with a pin 30, which is adapted to engage a selected hook portion 31 of the fulcrum member 32. The discharge hose 33 is connected to the pump top 14 at 34 and the discharge end of the hose is provided with a nozzle 35 controlled by valve 36.

In the form of construction shown in Figure 2, the pump lever 28 is provided with a single fulcrum link 37, rather than with the adjustable type of fulcrum shown in Figure 1.

In the operation of the pump, when the pump lever 28 is swung downwardly to force the piston down into the cylinder, any material in the lower portion of the cylinder will force the foot valve against the spider and the material will be trapped in the cylinder. As the piston moves down, the material will thus be forced up through the ports 25 in the piston and beyond the piston valve plate 24. As the pump operating handle is released the spring 26 will force the piston upwardly. The material above the piston immediately causes the seating of the valve plate 24 and the piston and valve plate force the material in the upper part of the cylinder to flow out through the tube 33.

The discharge of material may be controlled by the valve 36. As the hose and cylinder are filled with the material, the piston cannot rise until the valve 36 is opened and the material will then be forced from the nozzle 35 with such pressure as may be afforded by the strength of the spring 26. The amount of compression of the spring 26 under a full stroke may be varied by using different fulcrum points on the fulcrum link 32 to thereby vary the path of the piston stroke. This will substantially vary the amount of material discharged at each stroke and will also be the means for selectively discharging materials of different viscosities as

it will be appreciated that more force may be necessary for the successful discharge of the heavier materials. As the piston rises the vacuum created below the piston will cause the foot valve plate 17 to rise under pressure of the material in the container and this material will flow up into the lower portion of the cylinder. It will be noted that the spring 26 is located adjacent the cylinder walls and will not materially interfere with the flow of material through the cylinder.

We have shown one preferred form of our invention by way of illustration, but it is to be understood we contemplate such changes and modifications as come within the spirit and scope of the accompanying claims.

We claim:—

1. In a grease pump or the like, a pump cylinder having a remote valve controlled flexible outlet, a valve in the cylinder, a piston above said cylinder valve, a valve in said piston, a spring in the cylinder below the piston, and piston operating means whereby the piston may be forced into the cylinder to pass grease above the cylinder, and store energy in the spring for discharging grease, the spring acting to discharge grease only when the outlet valve is open.

2. In a device of the character described, the combination of a container, discharge means therefor including a piston disposed in a discharge cylinder, said cylinder having a portion terminating in a fitting provided with a flexible hose connection and another portion of said cylinder terminating adjacent the bottom of said container, said last named portion being provided with a one-way valve permitting supply to said cylinder upon discharge therefrom, resilient means associated with said piston for actuating said piston to discharge, a rigid piston rod associated with said piston adapted to be actuated to store energy in said resilent means and operate said piston, a valve provided therein to fill said cylinder above said piston, a fulcrumed lever pivoted to said piston rod for actuating same, and remote control means including a valve connected to said flexible hose for permitting actuation of said resilient means, piston and said one-way valve to recharge the cylinder below said piston.

3. In a grease pump or the like having a chamber, a piston therein, automatic means for moving said piston to discharge a predetermined quantity of grease and to refill said chamber, a lever and rigid piston rod cooperating with said piston for energizing said automatic means and to move the piston into a position to discharge grease, and means providing a plurality of fulcrums for said lever whereby the degree of energy stored in said automatic means may be varied and the path through which the stroke of said piston operates may be varied.

4. In a device of the character described, the combination of a container, automatic discharge means therefor, said means including a discharge cylinder, an expulsion and replenishing piston therefor, resilient means adapted to operate said piston to expel the contents from said cylinder, piston actuating means including a rigid piston rod pivoted to an operating handle, said handle being movably fulcrumed with respect to said cylinder for storing energy in said resilient means and operating to charge said discharge cylinder, and multi-fulcrum means associated with said discharge cylinder and handle for controlling the amount of energy stored in said resilient means and for permitting expelling operation of said piston and resilient means.

5. In a device of the character described, the combination of a container, discharge means therefor including a discharge cylinder and a piston mounted therein, said cylinder having a portion terminating in a fitting provided with a flexible hose connection, resilient means associated with said piston for actuating said piston to discharge, a rigid piston rod associated with said piston adapted to be actuated to store energy in said resilient means and operate said piston to fill said cylinder, means for actuating said piston rod, multi-fulcrum means for said last mentioned means for varying the path of the piston stroke and degree of energy stored in said resilent means, and remote control means associated with said flexible connection for permitting actuation of said resilient means.

Signed at Cleveland, Ohio, this 28th day of August, 1925.

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