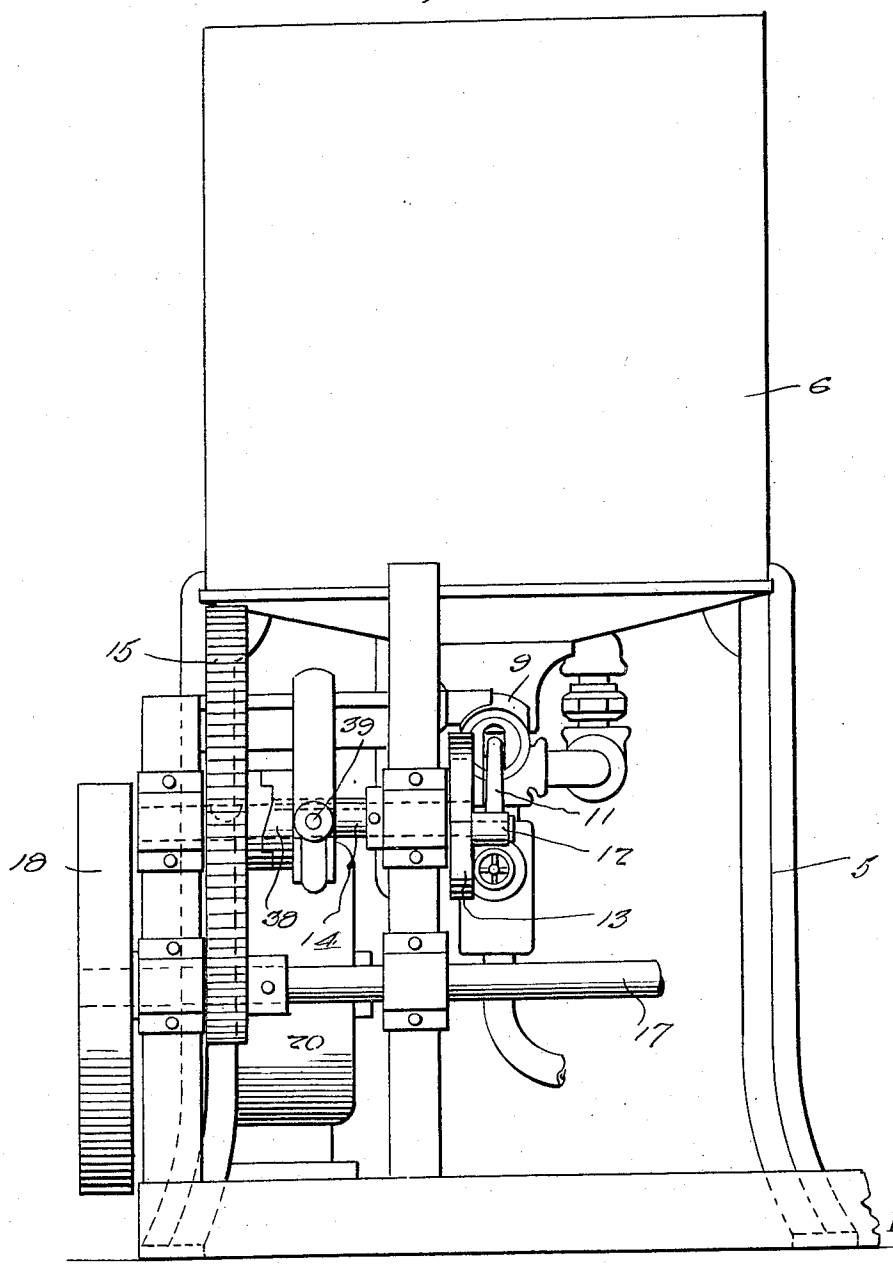
April 7, 1931. E. J. ADAMS 1,799,492

GREASE DISPENSER

Filed Aug. 22, 1928 3 Sheets-Sheet 1

Fig. 1.



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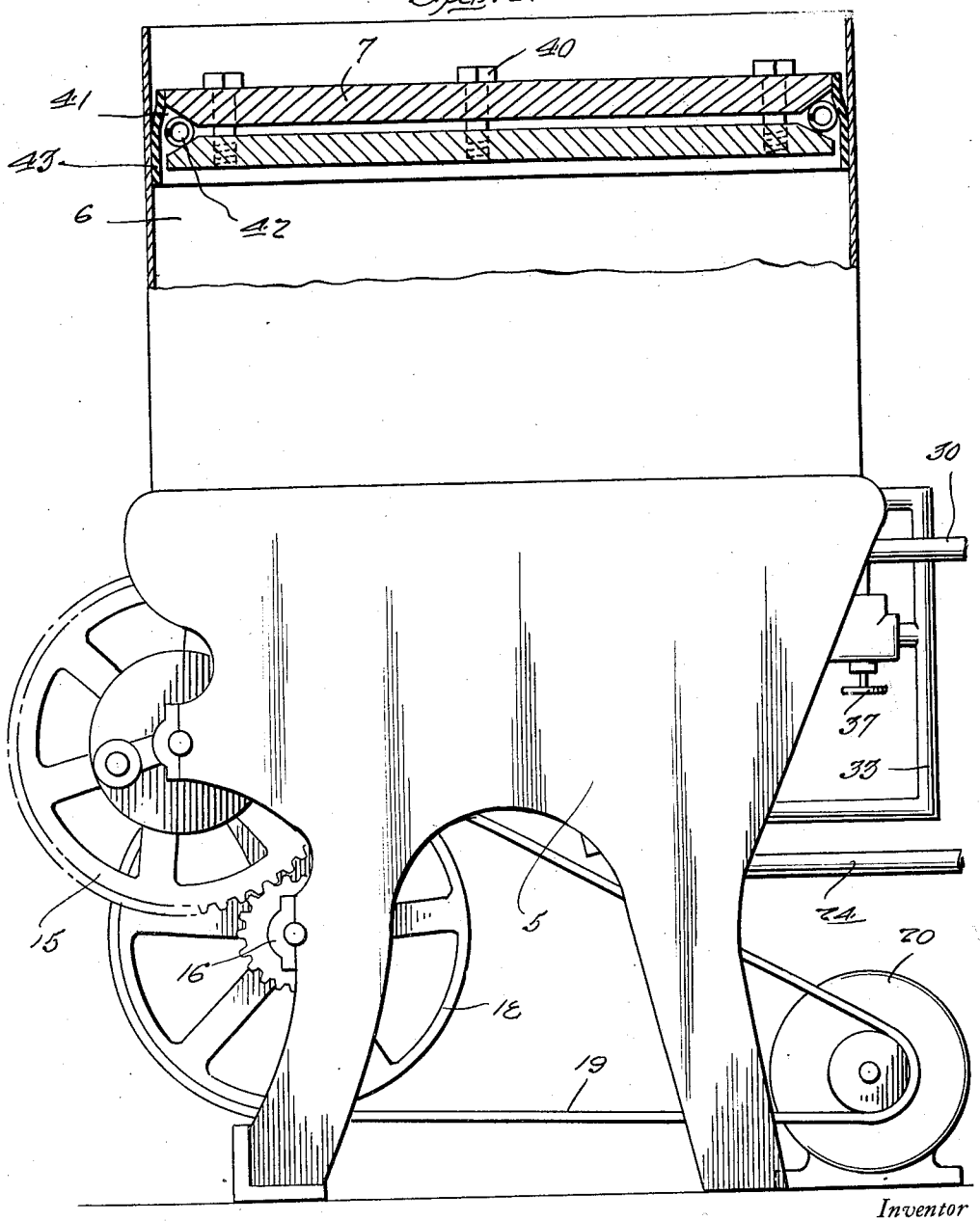
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GREASE DISPENSER

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Fig. 2.



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April 7, 1931. E. J. ADAMS 1,799,492

GREASE DISPENSER

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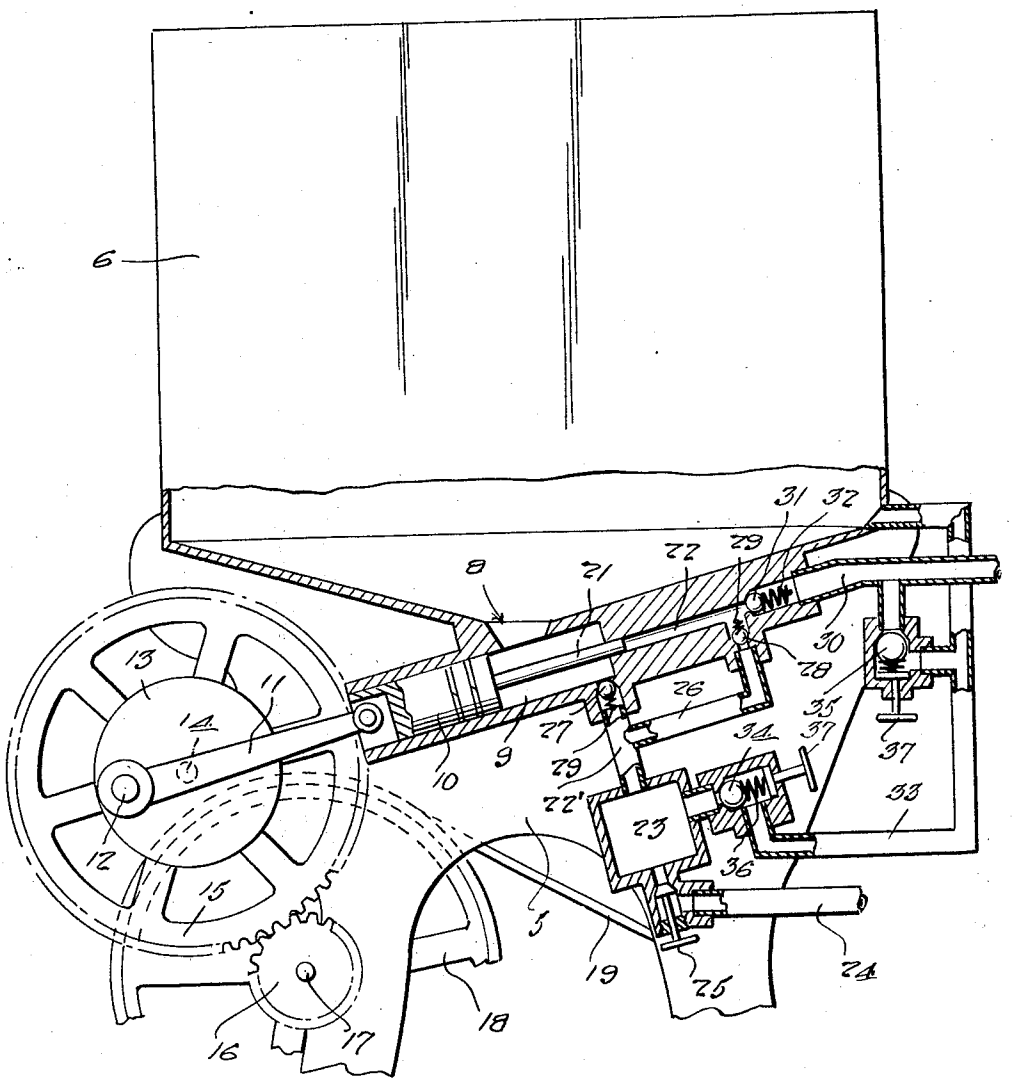


Fig. 3.

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UNITED STATES PATENT OFFICE

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GREASE DISPENSER

Application filed August 22, 1928. Serial No. 301,354.

The present invention relates to a grease dispensing apparatus and has for an object to provide pressure dispensing means adapted to selectively dispense grease from the apparatus under high or low pressure.

A further object of the invention is to provide separate discharge tubes for the high and low pressure to supply units and to provide a common pressure generating means for the high and low pressure supply unit and to provide pressure adjusting means for each of said units whereby to selectively control the operation of each thereof.

A still further object of the invention is to provide a low pressure supply unit from which the material may be fed either into the high pressure supply unit or through the low pressure feed tube.

Another object of the invention is to provide a grease dispensing apparatus of this character adapted particularly for use in supplying grease under either high or low pressure to motor vehicles and industrial or other machinery, which is of a simple and practical construction, efficient and reliable in performance, admirably adapted to handle grease of various viscosity relatively inexpensive to manufacture and maintain in operation and otherwise well adapted to the purpose for which the same is intended.

Other objects and advantages reside in the special construction and combination of the various elements comprising the invention, reference being had to the accompanying drawings forming a part hereof, wherein:

Figure 1 is an end elevational view,

Figure 2 is a side elevational view thereof with the supply tank and hopper shown in section illustrating the construction of the follower employed for forcing the material into cleaning position into the pressure unit, and

Figure 3 is a vertical sectional view through the pressure creating a supply unit and illustrating the relative position of the feed pipe extending therefrom.

Referring now to the drawings in detail, the invention comprises a supporting frame indicated at 5 upon the upper portion of which is arranged a grease supply tank or hopper 6, preferably open at its upper end and which may be of any desirable construction, such as for instance of a rectangular formation as shown in the present embodiment of the invention and having a follower 7 arranged therein and of sufficient weight to normally force the material within the tank toward the lower portion thereof for discharging through the opening 8 at the base of the tank.

The opening 8 leads into a cylinder 9, which may be cast integral with the bottom portion of the tank, as illustrated in Figure 3, or if preferred may be separately constructed and suitably attached thereto, and within which is operatively arranged a piston 10, to the outer end of which is attached a connecting rod 11 operated by a crank pin 12 eccentrically carried on a wheel 13 rotatably mounted on a shaft 14. The shaft 14 also carries a spur gear 15 operatively engaged with a pinion gear 16 keyed on a shaft 17 together with a pulley wheel 18, which pulley wheel is operatively connected with the belt drive 19 extending to a motor 20.

The inner end of the piston 10 is provided with a longitudinally extending plunger 21 slidably arranged within a bore 22 formed at the base of the supply tank together with the cylinder 9.

As will be seen from an inspection of Figure 3 of the drawings the discharge opening 8 from the supply tank is engaged with the cylinder 9 through the side wall thereof intermediate the ends of the cylinder thus forming the inner end of the cylinder into a compression chamber. With the piston 10 disposed in its outermost position the grease is adapted to enter the cylinder and upon the

inward movement of said piston a predetermined quantity thereof will be compressed in a forward portion of the cylinder.

A discharge pipe 22′ communicates with the compression end of the cylinder adapted to feed the grease therefrom into a low pressure supply chamber 23, and the base of which is connected a discharge hose 24, which preferably is of a flexible nature and adapted to extend to the parts of the motor vehicle or other machinery desired to be supplied with a quantity of the grease under pressure.

A manually operated control valve 25 is disposed between the feed pipe 24 and the lower pressure supply chamber 23 adapted to close communication with the former when desired.

A high pressure feed pipe 26 is connected at one end to the feed pipe 22′ with its opposite end communicating with the bore 22 and its end thereof remote from the cylinder 9. Ball check valves 27 and 28 are disposed respectively between the feed pipes 22′ and the cylinder 9 and between the pipe 26 and the bore 22, each of said valves being yieldably retained in closed position by means of a coil spring 29, the valve 27 being adapted to be moved into open position during the compression stroke of the piston 10 and the valve 28 being disposed for similar movement upon the suction stroke of the plunger 21.

The bore 22 has its outer end connected with a high pressure feed pipe 30, constructed similar to the lower pressure feed pipe 24 and also having a ball check valve 31 interposed between the bore and the pipe normally retained in closed position by means of a coil spring 32. The discharge ends of each of the pressure feed pipes 24 and 30 are provided with suitable nozzles (not shown) having hand controlled valves of a type well known in the art for controlling the discharge of grease from the respective pipes.

A return pipe 3 connects the lower portion of the supply tank 6 with both the low pressure supply chamber 23 and the high pressure feed pipe 30 communication with such return pipe and the low pressure supply chamber 23 being controlled by an adjustable pressure valve 34, a similar valve 35 being interposed between the return pipe 33 and the high pressure discharge pipe 30. Each of the valves 34 and 35 are normally retained in closed position by a yieldable coil spring 36, the tension of which may be regulated through the adjustament of the hand wheel 37.

In the operation of the device it will be apparent that the grease fed into the cylinder 9 will be forced through the pipe 22′ into the low pressure supply chamber 23 and out of the discharge pipe 24 whenever the control valve 25 is arranged in open position. Upon closing the valve 25 the grease will then pass from the pipe 22 through the high pressure feed pipe 26 into the bore 22 and forced therefrom by the plunger 21 out through the high pressure discharge pipe 30. It will be apparent that through the adjustment of the valve 34 and 35 the quantity of grease discharged from the respective pipes 24 and 30 may be suitably controlled. Any excess in the amount of grease for the low pressure supply chamber 23 and the high pressure discharge pipe 30 may thus be returned to the supply tank 6 by way of the return pipe 33.

A suitable clutch mechanism indicated at 38 in Figure 1 of the drawings may be interposed between the gear wheel 15 and the wheel 13 provided with the crank pin 12, said clutch being operable to a control lever 39 whereby to control the rotation of the opposite end of the shaft 14 upon which said gear and wheel 15 and 13 respectively are mounted.

Furthermore it will be understood that any desirable number of the grease dispensing apparatuses may be operatively connected with the single motor 20, the supply tank 6 of each apparatus being provided with grease of a different viscosity for use with machinery of different types. By providing each apparatus with a clutch mechanism as above explained the operation of the dispensing apparatus may be selectively controlled.

Since the suction stroke of the piston 10 is utilized to draw the grease into the cylinder 9, it is important, when using heavy grease, to keep the body of the grease in the hopper 6 closely packed to prevent the formation of air pockets therein which would destroy the force of the suction stroke and for this purpose the follower 7 is provided, which comprises a pair of superimposed weighted plates of a slightly less diameter than the interior of the hopper and placed on top of the grease therein, the plates being secured together for relative adjustment by screws 40. The edges of the plates are beveled toward their adjacent faces whereby to form a groove 41 thereabout and within which is arranged a coil spring 42 extending circumferentially of the plates.

To the edge of the upper plate is attached a flexible skirt 43 constituting a washer forming a snug fit with the walls of the hopper and yieldably pressed thereagainst by the spring 41 whereby to prevent escape of the grease about the edges of the follower. The follower thus serves to keep the grease packed in the hopper for feeding into the cylinder 9.

It is obvious that the invention is susceptible of various changes and modifications, without departing from the spirit or scope of the invention or sacrificing any of its advantages, and I accordingly claim all such forms of the device to which I am entitled.

Having thus described my invention, what I claim as new is:

1. A grease dispensing apparatus of the class described comprising a low pressure, grease dispensing unit, a high pressure grease dispensing unit, discharge pipes communicating with each of said units, common pressure generating means for said units, a feed pipe connecting said units, a return pipe communicating with each of the units, a cut off valve for said low pressure feed unit arranged when in open position to permit the discharge of grease through its communicating discharge pipe and arranged when in closed position to diverge grease fed thereto into said return pipe and manually adjustable pressure control means between each of said units and said return pipe.

2. A grease dispensing apparatus of the class described comprising a supply tank having its bottom portion provided with a discharge opening, a cylinder formed at the bottom of said tank communicating with said opening and having a piston operatively arranged therein, drive means for said piston, said cylinder having its inner end terminating in a longitudinally extending bore, a plunger carried on the inner end of the piston and mounted for sliding movement in said bore, a feed pipe communicating with the inner end of the cylinder, a low pressure supply chamber connected with said feed pipe, said chamber having a discharge pipe communicating therewith, a cut off valve interposed between said chamber and the discharge pipe, a feed pipe connecting said bore with said first named feed pipe, check valves interposed in each of said pipes, the valve in said first named pipe being arranged for opening movement upon the compression stroke of the piston and the valve in said last named pipe being arranged for closing movement upon the compression stroke of said plunger, a discharge pipe communicating with the outer end of the bore, a return pipe connecting said last named discharge pipe and said low pressure feed chamber with the supply tank and pressure control valves adjustably arranged in said return pipe between said discharge pipe and said low pressure supply chamber.

3. In a grease dispensing apparatus of the type specified in claim 2 wherein a grease follower is operatively associated with the piston whereby to prevent the formation of air pockets in the grease upon the feeding thereof into the cylinder, said follower comprising a pair of superimposed weighted plates adjustably secured to each other and having a groove formed about the edge thereof, a coil spring seated therein and a skirted washer attached to the edge of the upper plate and yieldably held against the wall of the cylinder by said spring.

4. A dispensing apparatus of the class described comprising high and low pressure dispensing units each having individual discharge pipes connected therewith, common pressure generating means for said units, discharge control means for said units adapted to control communication through the respective discharge pipes and a return pipe communicating with each of the units operable to receive the material from the respective units upon a pre-determined adjustment of said discharge control means.

In testimony whereof I affix my signature.

EDWIN J. ADAMS.