P. B. JOHNSON.

APPARATUS FOR DELIVERING HEAVY LUBRICATING OIL OR GREASE.

APPLICATION FILED APR. 2, 1919.

1,333,547. Patented Mar. 9, 1920.

Fig. 1.

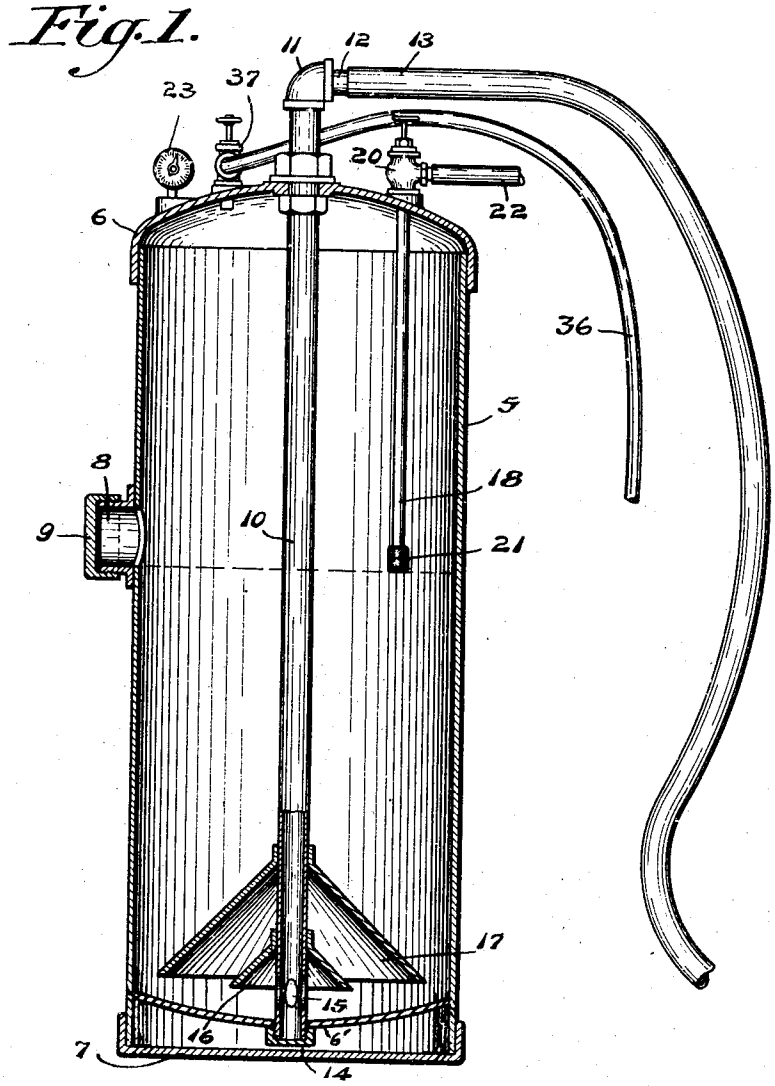
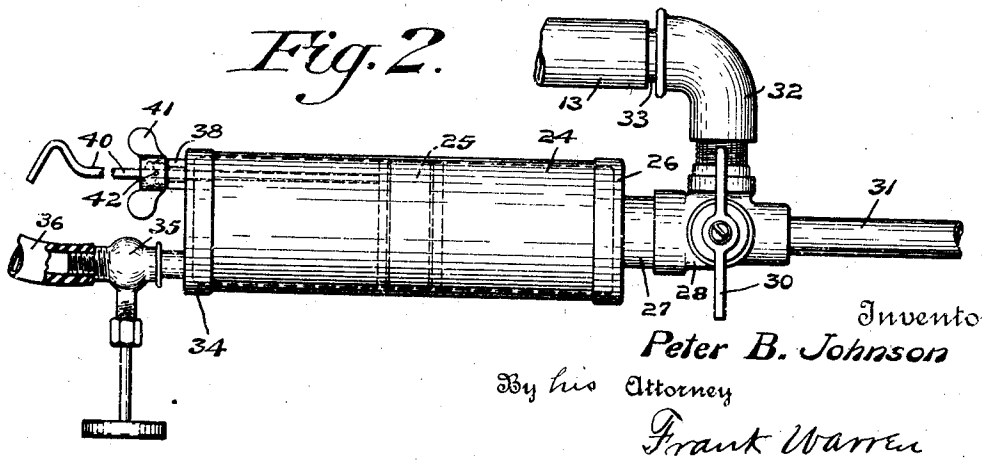


Fig. 2.



Inventor

Peter B. Johnson

By his Attorney

Frank Warren

UNITED STATES PATENT OFFICE.

PETER B. JOHNSON, OF SEATTLE, WASHINGTON.

APPARATUS FOR DELIVERING HEAVY LUBRICATING OIL OR GREASE.

1,333,547. Specification of Letters Patent. Patented Mar. 9, 1920.

Application filed April 2, 1919. Serial No. 287,066.

To all whom it may concern:

Be it known that I, PETER B. JOHNSON, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a certain new and useful Improvement in Apparatus for Delivering Heavy Lubricating Oil or Grease, of which the following is a specification.

My invention relates to improvements in apparatus for delivering heavy lubricating oil or grease in measured quantities into gear boxes, transmission housings and like places, and the object of my invention is to provide an apparatus which comprises a pressure tank wherein heavy lubricating oil or grease may be stored and a measuring receptacle or grease gun connected with said tank by flexible tubing which grease gun is provided with suitable valves that may be manipulated to cause the measuring receptacle to fill with heavy lubricating oil or grease and then cause such heavy oil or grease to be ejected and delivered to any desired point.

Another object is to provide means within the storage tank for preventing the compressed air from forcing its way through the lubricating oil or grease.

A still further object is to provide a grease gun that is arranged to be operated by the air pressure from the storage tank and that has a gage connected therewith so that the operator can determine the amount of oil or grease there is in the grease gun.

A still further object is to provide an apparatus in which the valves, that control the loading and discharging means, are connected with the grease gun whereby said apparatus may be operated by a single person.

The invention consists in the novel construction, adaptation and combination of parts as will be more clearly hereinafter described and claimed.

I accomplish these objects by devices illustrated in the accompanying drawings, wherein—

Figure 1 is a view in vertical mid-section of a storage tank constructed in accordance with my invention, certain parts being shown in elevation; and

Fig. 2 is an enlarged view in elevation of a grease gun that is designed to be used in connection with the tank shown in Fig. 1, certain parts of which being shown by dotted lines and certain other parts of which being partly broken away.

Referring to the drawings, throughout which like reference numerals indicate like parts, 5 designates a cylindrical pressure tank that is provided with a top end 6, an inner bottom 6′ and a bottom end 7 which may be rigid with the tank or removable therefrom as desired. The wall of the tank 5 is provided at a point a little more than half the distance from the bottom to the top thereof with a grease inlet vent 8 that is arranged to be closed by a cap 9.

Extending into the tank 5 through the top 6 and the inner bottom 6′ and terminating near the bottom 7 is a centrally arranged grease outlet pipe 10, the upper end of which is connected by an elbow 11 and a short pipe 12 with a long flexible hose 13.

The bottom end of the pipe 10 is closed by a cap 14 and is provided just above the inner bottom 6′ with relatively large openings 15 through which grease may enter. Secured to the pipe 10 just above the openings 15 is a relatively small cone-shaped shell or guard member 16 and secured to the pipe 10 above the small cone-shaped guard member 16 is a larger cone-shaped guard member 17, the peripheral edges of which extend outwardly so that they are only a short distance from the inner wall of the tank 5. The guard members 16 and 17 and the inner bottom 6′ serve to guide the grease in its movement to the holes 15 and serve to maintain a sufficient body of grease between the holes 15 and the air in the top of the tank 5 so that the air will not force its way downwardly through the grease and upwardly through the pipe 10.

18 is a tube or pipe that is connected with a valve 20 and projects downwardly into the tank 5 to substantially the level of the grease inlet 8, the bottom end of the tube 18 being covered with a screen 21 of relatively fine mesh through which the heavy lubricating grease will not pass. The valve 20 on the upper end of the pipe 18 is connected by a hose or tube 22 with a suitable air pump, not shown, by which a suction or a pressure may be created within the tank 5.

23 is a pressure gage that communicates with the interior of the tank 5 for the purpose of indicating the plus or minus pressure therein.

The grease gun, shown in Fig. 2, comprises a tubular receptacle 24 having a piston 25 freely movable therein. The forward end of the tubular receptacle 24 is pro-

vided with a cap 26 having a r shank 27 that is connected with a valve casing 28 wherein is disposed a three way valve of any well known form of construction that is arranged to be operated by a hand hold 30.

The end of the valve casing 28 is connected with a tubular grease discharge spout 31 which may be curved in any desired manner to facilitate its insertion into gear housings and like inaccessible places. The side of the valve casing 28 is connected by an elbow fitting 32 and pipe 33 with the outer or free end of the hose 13 that connects with the pipe 10 in the tank 5.

The rear end of the tubular receptacle 24 is provided with a cap 34 that is connected with a valve 35, which valve is connected by a flexible tube or hose 36 with another valve 37 that communicates with the upper interior portion of the tank 5 so that when the valves 35 and 37 are both opened air under pressure may pass from the upper end of the tank 5 to the rear end of the grease gun.

The cap 34 is also provided with a boss 38 through which a gage wire 40 is arranged to project, the gage wire 40 enabling the operator to determine the position of the piston 25 and to thereby determine the amount of grease that there is in the tubular member 24. The end of the boss 38 is threaded for the reception of a wing nut 41 which may serve to hold packing around the gage wire 40 and in which is provided a perforation 42 through which air may escape slowly when the wing nut is loosened. When the grease gun is filled and the piston 25 is moving rearwardly as hereinafter described the wing nut 41 may be loosened to permit the escape of air from the rear end of the receptacle 24 and before compressed air is admitted through the valve 35 then wing nut 41 may be tightened to prevent the escape of air during the discharging stroke of the piston 25.

The operation of my invention is as follows: The device is set up and the grease gun shown in Fig. 2 is connected with the outer end of the hose 13 and the air tube 36. When the storage tank 5 is to be filled with grease the cap 9 is removed and the inlet vent 8 is connected by any suitable means, not shown, with a receptacle, as a barrel or tank wherein heavy lubricating grease or oil is stored; the valve 20 is then opened and a suction is exerted through the tube 18 to cause the oil or grease to be drawn into the tank 5 through such inlet vent 8. As the oil or grease is drawn into the tank 5 it will collect in the bottom of such tank and when the level of the grease or oil is high enough so that it surrounds the fine mesh screen 21 which covers the end of the tube 18 such tube will automatically be sealed owing to the fact that the relatively heavy oil or grease will not penetrate the mesh of the screen 21 even though suction is exerted within the tube 18.

As soon as the tank 5 has been filled to the level of the bottom end of the tube 18, as indicated by the dotted line in Fig. 1, the inlet vent 8 may be closed by the cap 9. Air may then be pumped into the upper end of the tank 5 until the gage 23 indicates that the pressure is sufficient to force the heavy oil or grease upwardly through the tube 10 and thence through the hose 13 to the grease gun. The valve 20 may then be closed leaving the device ready for operation.

When the grease gun is to be operated the three way valve in the casing 28 is turned so that the passageway from the hose 13 to the interior of the tubular member 24 is opened and the passageway to the spout 31 is closed, thereby permitting the air pressure in the tank 5 to force grease into the forward end of the tubular member 24 and to crowd the piston 25 to the rear end of such tubular member. As soon as the tubular member 24 is filled with oil or grease the three-way valve in the casing 28 may be turned to close the passageway to the hose 13 and open the passageway to the spout 31, which spout may then be placed at the point where it is desired to deliver the oil or grease and the valve 35 opened to admit air under pressure behind the piston 25 and force such piston toward the outer end of the tubular member 24 thereby forcing the oil or grease through the spout 31.

From the foregoing it will be seen that after my apparatus is charged and ready for operation very little attention will be required, the operator who is handling the grease gun being able to control the inlet and discharge of oil or grease, in measured quantities, by manipulation of the three-way valve 28 and the valve 35 and the air hose 36 and the grease tube 13 being of flexible material which will permit the grease gun to be inserted into gear boxes and differential housings, in locations difficult of access.

Obviously changes may be made in the form of construction and arrangement of parts of my invention without departing from the spirit thereof.

What I claim is:

1. Apparatus of the class described comprising a pressure tank, a tube extending downwardly through the top of said tank to a point near the bottom thereof and having openings adjacent its bottom end and a guard member arranged above said openings for directing downwardly moving grease toward the outer wall of said tank.

2. Apparatus of the class described comprising a pressure tank, means for admitting air under pressure to the upper portion of said tank; a pipe projecting into said tank, said pipe having grease inlet openings there-

in and a deflector for causing grease to travel in a circuitous path to reach said openings.

3. Apparatus of the class described comprising a pressure tank, means for introducing air under pressure into the upper portion of said tank; a pipe projecting through the top of said tank and terminating at a point near the bottom thereof, said pipe having openings near its bottom end; and a cone-shaped guard member arranged above the openings in said pipe, the periphery of which guard member being adjacent to but spaced from the walls of said tank.

4. Apparatus for handling heavy grease comprising a pressure tank having a grease inlet opening in one side thereof, a tube projecting downwardly from the top of said tank substantially to the level of said grease inlet opening; a screen covering the end of said tube; a combined air suction and air pressure pipe connected with the upper end of said tube; and a centrally arranged pipe projecting downwardly through the top of said tank and terminating near the bottom thereof. said tube having openings adjacent the bottom end thereof.

5. Apparatus for handling heavy grease comprising a pressure tank having a grease inlet opening, a tube projecting downwardly from the top of said tank substantially to the level of said inlet opening; a screen covering the end of said tube; a combined air suction and air pressure pipe connected with the upper end of said tube; a centrally arranged pipe projecting downwardly through said tank; and a conical guard member secured to the lower portion of said pipe, the peripheral edge of which guard member terminates adjacent to but is spaced from the walls of said tank.

6. Apparatus for delivering heavy grease comprising a pressure tank having a grease inlet opening; a tube projecting downwardly from the top of said tank substantially to the level of said grease inlet opening; a screen covering the end of said tube; combined air suction and air pressure means connected with the upper end of said tube; a centrally arranged pipe projecting downwardly through the top of said tank and terminating near the bottom thereof, said pipe having openings adjacent the bottom end thereof; a smaller guard member carried by said pipe and arranged a short distance above the openings therein; a larger guard member secured to said pipe above said smaller guard member the peripheral edge of said larger guard member terminating adjacent to but being spaced from the walls of said tank; a flexible tube connected with the upper end of said pipe; and a grease gun disposed on the end of said flexible tube.

In witness whereof, I hereunto subscribe my name this 25th day of March, A. D. 1919.

PETER B. JOHNSON.