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RETRACTIBLE DISCHARGE NOZZLE FOR PUMPS

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This invention relates to dispensing pumps and 
is particularly adapted for use with lubricant 
container barrels or drums in which the lubricant 
is shipped or transported, as the objective 
of the invention is a concealed pump in which 
the entire mechanism, including the discharge 
tube or nozzle, is contained within a housing in 
the fluid container and is thereby protected 
against loss or injury.

Another object of the invention is to produce 
a pump construction which is convenient and 
readily accessible and may be used to discharge 
a measured quantity of oil either into a container 
or to the point of use without possibility of soil-
ing the hands or clothes.

A further object of the invention is to produce 
a pump of the concealed type set forth, in which 
the discharge tube or spout is automatically with-
drawn into or projected from the barrel or con-
tainer, in accordance with predetermined oper-
ation of the pump mechanism.

Another object of the invention is to produce 
a disappearing discharge tube construction which 
is of flexible nature whereby it is possible for the 
operator to discharge measured quantities of 
fluid directly to the point of use, for example, 
directly into the crank case of an internal combus-
tion engine.

A still further object of the invention is to 
produce a strong, durable, efficient and inexpens-
ive mechanism of the character set forth; and 
in order that the invention may be fully under-
stood, reference is to be had to the accompanying 
drawing, in which:

Figure 1 is a central vertical section through a 
reciprocating pump embodying the invention.

Figure 2 is a top plan view of the pump with 
the sealing or closing cap removed.

Figure 3 is a section on the line III—III of 
Figure 4.

Figure 4 is a central vertical section through a 
rotary pump construction embodying the inven-
tion.

In the said drawing, where like reference char-
acters identify corresponding parts in all of the 
figures, 1 indicates a fragment of a container such 
as a shipping drum or oil or the like, said drum 
being provided with the customary threaded 
opening 2 in one of its heads.

Threaded into the opening 2 is a casting 3, pro-
vided with a flange 4 for sealing engagement with 
the barrel head, and formed above the flange with 
a threaded portion receiving a screw cap or clo-
sure 5, when the container is being transported 
or shipped.

The casting or collar member 3 carries a pump 
barrel or compression chamber 6 of any desirable 
length, preferably extending to the bottom of 
the barrel if the end of the pump is not provided 
with a flexible pick up or intake member which 
automatically seeks the bottom of the barrel, as 
will hereinafter appear. The wall of the casting 
3 is enlarged and is provided with a bore or pas-
sageway 7, normally closed at its upper end by 
the screw cap 8 to guard against loss or escape 
of oil into the upper part of the casting 3, said 
passageway leading into the container above the 
liquid level, and being provided with a branch 
passageway 8 leading into the upper part of the 
compression chamber 6. The passageway 8 is 
normally held closed against the admission of 
air by a ball valve 9 held down on its seat by a 
spring 10 adjusted by a sleeve 11 threaded within 
the upper end of the passageway 7. The ball 
valve is adapted to be unseated under certain con-
ditions, as will hereinafter appear.

Extending through an opening in the casting 3 
is a delivery tube or spout 13, which is preferably 
of flexible character, and of suitable length, not 
however equal to the length of the pump barrel 
or compression chamber. The bottom end of the 
discharge tube 13 is connected to a floating piston 
or partition 14 which is sealed against the pump 
barrel, in both directions, by means of suitable 
cup washers 15. Mounted in said delivery tube 
is a check valve 16 to prevent the entry of air 
into the compression chamber 6.

Mounted to reciprocate within the compression 
chamber 6 is a pump piston or plunger 17 sealed 
against the pump barrel, in both directions, by 
cup washers 18. Rigidly connected to the pump 
piston is a tube 19 passing up through the piston 
14 and through an opening in the casting 3, and 
equipped at its upper end with a pivoted operating 
handle 20 having a cam 21. Said tube 19 is pro-
vided with a brace portion 22 rigid with the pis-
ton 17 so that said pump piston cannot twist or 
bind in the pump barrel 6.

The tube 19 contains an extensible rod 23 to 
allow for wear in a valve seat hereinafter men-
tioned, and has its upper end reduced to form a 
stud 24 received within a slot 25 in the face of the 
cam 21 to hold the extensible rod against rotating 
movement, said rod being elevated by means of 
a spring 26, when the cam is rotated to unlocked 
position as will hereinafter appear. Tapped into 
the lower section of the rod 23 and extending 
through a slot 27 in the tube 19, is a right angle 
guide and stop member 28 slidingly received 
within a bore in the upper end of a check valve
29 closing a port 30 in the center of the piston 17, it being noted that when the cam is in the position shown in Figure 1, the valve 29 is held against opening movement.

5 The operation of this type of construction is substantially as follows: The discharge capacity of the pump on the up stroke of the piston 17, is in accordance with the length and diameter of the valve 29, the compression chamber or pump barrel. When the pump is inserted into a container, the valve 29 is locked closed by the cam 21, and it will be evident that (no leaking occurring), the pump barrel and discharge tube will stand free of liquid. When it is desired to pump a quantity from the container, the operator swings the handle to release the rod 23 and then pulls upwardly on the handle to move the piston 17. This operation of the handle moves the cam 21 to release the rod 23 for operation by spring 26 to release the piston valve 29; and the oil or liquid in the container will follow up into the pump barrel below the piston 17, as air will enter the drum through the vent or passage 7 above the liquid level. The upward pull on the pump piston 17 forces the floating piston 14 upward through contact of the brass 22 with the underside of the floating piston.

If the piston 17 is moved its full stroke, the piston 14 will contact with the casting 3 and the discharge tube 13 will be fully projected from its housing. Upon the down stroke of the piston 17 caused by pressure on the handle 20, as valve 29 will immediately open, the floating piston 14 and the discharge tube 13 will remain at the top of the compression chamber 6, and the pump barrel will be fully charged with oil entering port 30 under atmospheric pressure.

When the piston 17 has reached its limit of downward movement, the pump barrel or compression chamber will stand substantially filled with liquid and upon the next up stroke of the piston, the entire charge of liquid will be discharged through the discharge tube 13, unseatting the ball check valve 14 and such movement. If by chance any of the oil should work by the floating piston 14, it will be discharged into the vent passage 7 by the unseating of the valve 9, and will then flow back into the container.

The described operations of the pump piston, which take place with the advantage pointed out as desirable, and while I have described and illustrated certain embodiments of the invention, it is to be understood that I reserve the right to all changes falling within the spirit of the invention and without the ambit of the prior art.

I claim:

1. In a pump, a compression chamber, a pump piston for compressing fluid in said chamber, means to actuate said piston, a floating fluid-actuated piston in said chamber, and a discharge tube carried by said floating piston.

2. In a pump, a compression chamber, a pump for supplying fluid to the compression chamber, a floating fluid-actuated piston in the compression chamber, and a discharge tube carried by said floating piston.

3. In a pump, a compression chamber, a reciprocating pump piston in said compression chamber, means to actuate said piston, a floating piston in said chamber, a discharge tube carried by said floating piston, a check valve in said tube to prevent air passing into the compression chamber and a manually controllable valve arranged to cooperate with the pump to induce a vacuous condition in the compression chamber.

4. In a pump, a compression chamber, a pump
for supplying fluid to the compression chamber, a floating piston in the compression chamber, a discharge tube carried by said floating piston, and a manually operated valve carried by said floating piston.

5. The combination of a container having an opening, a member detachably fitted in said opening and having a vent leading into the container, a pump suspended from and sustained by said member, and a discharge tube and apparatus associated with the pump and tube to selectively insure automatic movement of the tube in accordance with predetermined operation of the pump.

6. The combination of a container having an opening, a member detachably fitted into said opening and having a vent leading into the container, a compression chamber suspended from said member, a pump to force fluid into the compression chamber, a valve controlled passageway from the compression chamber to the vent, and a floating piston in the compression chamber intermediate the passageway and the pump.

7. In a pump, a compression chamber, a reciprocating pump piston in said compression chamber, a valve in said piston, means to actuate the piston, a floating piston in said chamber, a discharge tube carried by the floating piston, a valve controlling said discharge tube, and manually operable means to lock the valve in said piston against opening movement.

8. The combination in a pump having a pumping mechanism, of a compression chamber into and from which fluid may be forced by said pump mechanism, a floating piston in said compression chamber independent of the pump mechanism, a discharge tube connected to said floating piston, and a valve arranged to cooperate with the pump to induce a vacuous condition in the compression chamber.

9. The combination in a pump having a pumping mechanism, of a compression chamber into and from which fluid may be forced by said pump mechanism, a floating piston in said compression chamber independent of the pump mechanism, a discharge tube connected to said floating piston, and a valve in the piston arranged to cooperate with the pump to induce a vacuous condition in the compression chamber.

10. The combination in a pump having a pumping mechanism, of a compression chamber into and from which fluid may be forced by said pumping mechanism, a floating piston in said compression chamber independent of the pump mechanism, a discharge tube connected to said floating piston, and a valve in the discharge tube arranged to cooperate with the pump to induce a vacuous condition in the compression chamber.

11. The combination in a pump having a reciprocatory pump piston, of a compression chamber within which said piston reciprocates, a floating piston in said compression chamber adapted to be moved in one direction by contact with the pump piston, a discharge tube connected to the floating piston, and a valve arranged to cooperate with the pump to induce a vacuous condition in the compression chamber.

12. The combination in a pump having a rotary pump mechanism, of a compression chamber into and from which fluid may be forced by said pump mechanism, a floating piston in said compression chamber independent of the pump mechanism, and a manually closable valve arranged to cooperate with the pump to induce a vacuous condition in the compression chamber.

13. In a barrel pump, a piston cylinder, a pumping piston in said cylinder, a rod extending exteriorly of the pump for actuating the piston, a floating piston in the cylinder independent of the pump piston and having sealing engagement in both directions with the cylinder and pump rod, and a valve in the pump piston arranged to cooperate with the pump to induce a vacuous condition in the compression chamber.

14. In a barrel pump, a piston cylinder, a pumping piston in said cylinder, a valve in said piston, a hollow pump rod extending exteriorly of the pump for actuating the piston, a manual control rod within the pump rod for maintaining the piston valve closed, a floating piston in the cylinder having sealing engagement with the cylinder and pump rod, a discharge tube connected to the floating piston, and a valve controlling the discharge tube.

15. In a barrel pump, a suspension cage, a double-acting rotary pump carried by said cage, a compression chamber connected with the outlet opening of the pump, a floating piston in said compression chamber, a discharge tube connected to the floating piston, and a manually closable valve in said tube arranged to cooperate with the pump to induce a vacuous condition in the compression chamber.

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