ATTACHMENT FOR DISPENSING AND MEASURING PUMPS

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FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

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This invention relates to dispensing and measuring pumps for liquids such as oils, grease, or other fluids in liquid and semi-liquid state, which pumps ordinarily employ registering devices or meters of the fluid operated type, directly actuated by the dispensed liquid flowing therethrough. Meters of the type referred to above register any fluid forced therethrough, even air or gas. Therefore, an exact measure of the quantity of liquid to be discharged cannot be registered when such liquid is mixed with air or gas, and/or when the pump is partly filled with liquid and partly with air; a condition which arises when the storage tank is almost empty or when its content are in a semi-liquid state.

The general object of the present invention is to provide a dispensing pump with means for by-passing a charge of oil or grease or a portion thereof back into the storage tank, until the remainder of the charge is free from air and gas. Fraudulent or accidental dispensing of short measure is thereby prevented. The controlling means consist of a tubular member rigidly connected to said cover member, and communicates with a pump cylinder 4, which extends downwardly into tank 3 close to the bottom thereof. Secured to the lower end of cylinder 4 is an attachment member 6, by means of which the cylinder is supported by or secured to the tank bottom 30. The bottom wall 31 of attachment member 6, which is situated below the limit of the stroke of valve 5 to provide clearance between the valve seat and said attachment and said piston, is provided with a central aperture 32, normally closed by a ball valve 8. A rack bar 9 secured to piston 5 co-operates with a pinion shaft 10, in turn actuated by a handle 11. The upper end 12 of pump body B is screw-threaded for fluid tight attachment to the pressure activated valve mechanism M, which communicates with a liquid meter L through passage 20, and with tank 3 through passage 21 and down pipe or tube 14. A hose connection 16, attached to outlet 15 of meter L, is employed to transfer the liquid to a dispensing nozzle (not shown).

During pumping operations, the valve piston 5, unseats the ball valve 8 from its seat 7, draws oil or grease from tank 3, up through opening 32, on its upward stroke and on its downward stroke into cylinder 4 and forces the charge present in said cylinder upwardly into and through the hollow body of the pump, through the valve mechanism M, and thence to the liquid meter L, or...
through tubing 14 back into tank 3, according to the position of a shiftable piston valve member 17, forming part of valve mechanism M. Valve 17 is guided for reciprocating movement in valve chamber 18, which communicates with pump body B, meter L, and tubing 14, passages 19, 20, and 21, respectively, being provided for such purpose, and communication between these passages is controlled by the valve. A spring 22 normally holds the valve 17 to its Figure 2 position in which position of the valve communication between passages 19 and 20 is closed, until such time as the force of the spring is overcome by the pressure of the charge of oil and grease in cylinder 4. This spring seats at opposite ends against the inner face of end wall 23 of piston valve 17 and against the inner end of a plug member 24. End wall 23 is provided with a centrally disposed perforation or opening 25, axially aligned with a fixed cylindrical needle valve member 26 formed on and projecting inwardly from plug member 24. Valve 17, when in position for passage 20 abuts against the rim 27 of a screen member 27' seated in a recessed portion 28 of passage 19. The down pipe or tube 14, previously referred to is threadedly connected to and communicates through passage 21 with the valve chamber 18. The recess 28', provided in the wall of this chamber 18 and extending from passage 21 to the end of chamber 18, thus prevents entire closing of by-pass passage 21 by valve 17, so that said valve may readily be shifted when subjected to the pressure of liquid pumped through passage 19, to and through screen 27' and thence against the end wall 23 of valve 17.

During the discharging stroke of piston 5, the valve 17 will be shifted by the pressure of the liquid to the position shown in Fig. 3, provided the liquid pressure upon the perforated wall 23 of valve 17 exceeds the force of spring 22. In Fig. 3 position the liquid will be discharged through passage 20 into and through meter L, and thence through hose 16. The tension of spring 22 is such that sufficient pressure to shift valve 17 can be built up only after practically all air and gas have been expelled from the oil or grease. Consequently, valve 17 will remain stationary, and the air and gas together with the oil or grease will be by-passed through ring-shaped passage 29, opening 28 and around valve member 26, into valve chamber 18, and thence through passage 21 and tubing 14 into tank 3. When the air and air and liquid mixture has been by-passed the pressure exerted against valve 17 increases immediately and piston valve 17 is shifted to Fig. 3 position, thus permitting dispensing of the liquid through meter L.

In the modified form of our invention illustrated in Figures 7-11, the threaded extension 35, of pressure actuated valve member of mechanism M, is attached to the goose neck upper 12' of pump unit or body F, by means of a tubular connecting member 11. This tubular member 35 is threaded at one end to receive the threaded extension 35 and at its other end is formed with a semi-circular extension or clamping portion 37, in turn provided with oppositely disposed apertured ears 38. The goose neck end 12' and the inner curved face 39 of clamping portion 37, just referred to are formed with shoulders or ribs 40 and 41 respectively.

When the member 36 has been threadedly attached to the threaded extension 35, and the goose neck seated within or upon the curved clamping face 39, shoulder 41 will engage behind the shoulder 40. A complemental clamping member 42 is then placed over the exposed portion of the goose neck and clamped thereto and to the extension 38 by means of bolts 43. The curved inner face 44 of member 42 is also provided with a rib or shoulder 45 which engages behind the rib or shoulder 40 on the goose neck. It will of course be understood that the ribs 39 and 45 on the respective clamping parts or members 38 and 42 are of arcuate shape whereas the rib or shoulder 40 on the goose neck is in the form of a complete circle or ring. The end of the goose neck will seat against an asbestos or copper ring-shaped washer or gasket 46, thus effecting a tight seal between the goose neck and the end of threaded extension 35.

What we claim is:

1. An attachment for a liquid dispensing pump, comprising a body, a valve chamber within said body, inlet, outlet, and by-pass passages communicating with said valve chamber, a pressure operated piston valve shiftably arranged within said valve chamber controlling said inlet and outlet passage, a perforation in the end wall of said valve and a needle valve centrally mounted within said chamber and co-operating with said perforation in the end wall of said piston valve for preventing communication of said by-pass passage and said inlet passage, when said outlet passage communicates with said inlet passage at predetermined pressures therein.

2. An attachment for a liquid dispensing pump, comprising a body, a valve chamber within said body, inlet, outlet, and by-pass passages communicating with said valve chamber, a hollow piston valve within said chamber controlling said passages and including a perforated end wall, means for controlling said perforation in said end wall when said valve is shifted and yielding means forcibly shifting said valve so that said outlet passage is closed and said perforation in said end wall and said by-pass passage is open.

3. An attachment for a liquid dispensing pump according to claim 2 including an elongated recess within the wall of said chamber...
and communicating with said by-pass passage to prevent building up of pressure in said valve chamber when said valve is shifted while said by-pass is closed.

4. A liquid dispensing and measuring device, comprising a tank, a dispensing pump and a liquid meter in combination with an attachment connected to said pump and said liquid meter for controlling the flow of liquid between said pump and said meter, said attachment including means to permit communication of said pump with said meter and said tank, and including pressure actuated valve means controlling such communication by the build up pressure of the liquid during discharging proceedings of said pump.

5. A liquid dispensing and measuring device, comprising a tank, a dispensing pump mounted on said tank, and a liquid meter in combination with an attachment connected to said pump supporting said liquid meter and controlling the flow of liquid between said pump and said meter, said attachment including a chamber, a series of passages communicating with said pump, said meter, and said tank, and pressure actuated valve means controlling said passages for sending the liquid discharged from said pump through said meter or back into said tank.

6. An attachment for a liquid dispensing pump, comprising a body, a valve chamber within said body, inlet, outlet, and by-pass passages communicating with said valve chamber, a pressure operated valve shiftably arranged within said valve chamber controlling communication of said outlet and by-pass passage with said inlet passage at predetermined pressures therein, means for securing the body detachably to the goose neck of a pump, said means comprising a tubular threaded clamp member, having a curved ribbed portion, and a co-acting curved member for clamping the goose neck to said curved rib portion.

In testimony whereof we affix our signatures.

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