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AUTOMATIC FEED CONTROL FOR LIQUIDS

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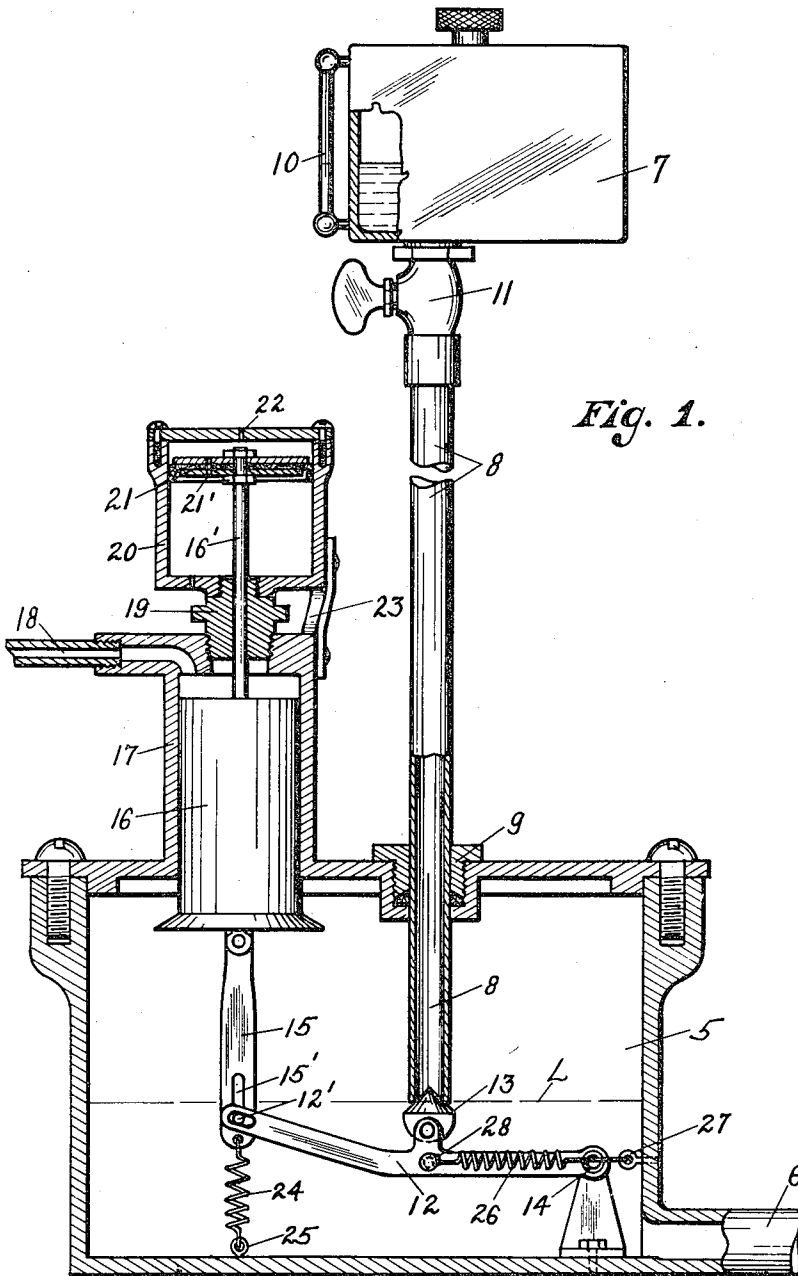


Fig. 1.

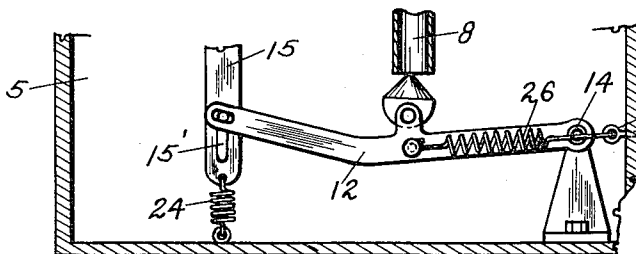


Fig. 2.

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AUTOMATIC FEED CONTROL FOR LIQUIDS

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7 Claims. (Cl. 184—103)

My invention relates to automatic feed control for liquids, and is particularly adapted for the automatic control of an oil supply from a reserve tank or reservoir to the crank case of an automobile or other mechanism where it is necessary to maintain a certain oil level if the best results are to be secured.

The invention herein presented is a further improvement over my invention as shown and described in my pending application Serial No. 510,574, and among the salient objects of this present invention are to simplify and make more economical and practical in construction and arrangement my invention as shown in the application above referred to; to provide an automatic feed control of the character referred to without a float; and to provide an improved means for retarding the opening of the valve permitting the inflow of fresh oil into a crank case or other chamber until the oil on the walls of the crank case or chamber has settled down into the case to establish the true oil level.

In order to further explain my invention, I have illustrated an improved form or embodiment thereon of the accompanying sheet of drawing, which I will now describe.

Figure 1 is a vertical sectional view through a mechanism embodying my improved automatic feed control, showing the reserve tank in elevation; and

Figure 2 is a fragmentary, sectional view of the reservoir with parts moved.

Referring more in detail to the drawing, 5 designates a reservoir which can be connected with the main crank case or other chamber (not shown) in such a way as to maintain the same general liquid level, said connection being through a pipe 6, or other structure in which both chambers will have the same liquid level, indicated by the line L. A reserve tank or reservoir for oil or liquid supply is designated 7, and is connected by means of a pipe 8 with the reservoir 5, said pipe passing through a stuffing box 9, and having its lower end terminating at the normal level of liquid.

The reserve tank is also provided with a visible gauge 10, and the pipe 8 is provided with a valve 11, for shutting off the flow of oil when desired for any reason. Pivotaly mounted in the reservoir 5, is a lever 12, carrying intermediate its ends a conical valve element 13, designed to close the lower end of the supply pipe 8, one end of said lever being pivotaly supported at 14, and the other end thereof being connected by means of a link 15, with a cylindrical member 16, mov-

ing in a cylindrical extension 17 in the top of the reservoir 5, said cylindrical extension being connected by means of a pipe 18 with the mainfold of a motor, or other means for creating a suction through said pipe 18, and within said cylindrical extension 17, for raising said cylindrical member 16, and thus lifting the lever 12, and the valve element 13 to close the lower end of the pipe 8. Said cylindrical member 16 is shown as having a flaring lower end, which may be provided to more effectively close the cylindrical extension 17, when said member 16 is raised. Said cylindrical member 16 is shown provided with a rod or stem 16', which extends through a stuffing box 19, up into a dash pot 20, and is provided within said dash pot 20 with a piston-like member 21, which fits closely within said dash pot and functions to retard the downward movement of the cylindrical member 16, when the suction through the pipe 18 is stopped. The dash pot 20 is provided with a small orifice 22, to permit the slow inflow of air. The dash pot, if made as a separate member and connected through the medium of the stuffing box 19, may be connected with a member 23, at its side with the cylindrical extension 17 to hold it from turning and to steady it. Said piston 21 has a small bleed port 21'.

The connecting link 15, from the lever 12, is provided with a slot 15', at its lower end, and the connection with the end of the lever 12 is by means of a pin 12' through said slot, for the purpose of providing a lost motion. A spring 24 is attached to the lower end of said link 15, and to the floor of the reservoir, as at 25. This normally draws downwardly on said link and cylindrical member to return it when the suction is cut off, and as the dash pot permits it to move downwardly slowly. A second coiled spring 26 is attached to the side of the reservoir, as at 27, and is extended to the middle of the lever 12, and attached thereto, as at 28, to operate as a quick moving means for said lever as it crosses center in either direction. It will be seen that the link 15 can move the distance represented by the length of the slot 15' without moving the valve 13.

In order to prevent the reserve liquid in the tank 7 from running down into the reservoir 5 when the valve 13 is moved from the end of the pipe 8, said tank 7 is made air tight and the feed therefrom can only be made as air finds its way up through the pipe 8, and as soon as the oil or liquid in the reservoir 5 has reached the end of said pipe 8, it closes it and the further flow of liquid is stopped.

Thus I have provided a simple, practical and efficient means for automatically and slowly feeding oil from a reserve to the chamber in which it is being used for the purpose of maintaining a normal level in said chamber, and while I have illustrated a preferred form or embodiment of said invention, I do not limit it to the details of construction and arrangement shown and described, except as I may be limited by the hereto appended claims.

I claim:

1. An automatic feed control for liquids including a reservoir for reserve liquid, a pipe therefrom to a chamber to which said liquid is to be supplied, said pipe extending into said chamber, a valve member adapted to close the end of said pipe, means for moving said valve member to closed position, said means being operated by the operation of the mechanism using the liquid and said valve opening when said mechanism is inoperative, said reserve reservoir and said pipe being air tight, whereby liquid can only run therefrom when said pipe is open and as air is permitted to find its way up said pipe.

2. An automatic feed control for liquids to mechanism using the same and including a reserve reservoir for liquid with a pipe therefrom to a chamber from which said liquid is used, said reservoir and pipe being air tight and the lower end of said pipe being open, a valve for closing the end of said pipe, means operated by the operation of said mechanism for causing said valve to close the end of the pipe, said valve being adapted to be opened when said mechanism is not operating, the lower end of said pipe being positioned at a predetermined level for liquid in said chamber, whereby to be closed by liquid therein at said level.

3. In combination, means providing a chamber for liquid to be used, a reservoir for reserve liquid above said chamber with a pipe therefrom extended into said chamber and terminating at a predetermined level for liquid therein, said reservoir and pipe being air tight for slow feed by gravity from said reservoir to said chamber, a valve adapted to close said pipe, and means for automatically causing said valve to close the end of the pipe while the liquid in said chamber is being used.

4. In combination with a crank case of an

engine, means providing a chamber in communication therewith, a reservoir for reserve lubricant with a pipe therefrom extending into said chamber, said reservoir and pipe being air tight for slow feed, when the level of lubricant is below the end of said pipe, a valve for closing the end of said pipe, said valve being connected with means for closing the same during operation of said engine, and means for retarding the opening of said valve when said engine stops.

5. In combination with the crank case of an engine, means providing a chamber in communication therewith, a reservoir for lubricant with a pipe therefrom extended into said chamber to a predetermined level for lubricant in said crank case, said reservoir and pipe being air tight above the lubricant, a valve mechanism adapted to the end of said pipe within said chamber for closing the same, means operated when said engine is in operation for automatically closing said valve, dash pot means for retarding the opening movement of said valve when said engine stops, and means for accelerating the movement of said valve following its initial movement.

6. In combination with the crank case of an engine, means providing a chamber in communication therewith, a reservoir for lubricant, a pipe therefrom and extended into said chamber for gravity feed, said reservoir and pipe being air tight above the lubricant, a valve in said chamber for closing said pipe, means operated by said engine for closing said valve when the engine is operating, means for retarding the opening movement of said valve when said engine stops, and means for giving an accelerated movement to said valve following its initial movement to open or closed positions.

7. In combination with a crank case of an engine, means providing a chamber in communication therewith, a reservoir for lubricant, a pipe therefrom, extended down into said chamber to the lubricant therein, a valve mechanism adapted to the end of said pipe within said chamber, means connected with said valve mechanism and adapted to be operated when the engine is running to close said valve, means connected therewith for retarding the opening movement of said valve when the engine stops, and means for yieldingly moving said valve mechanism.

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