

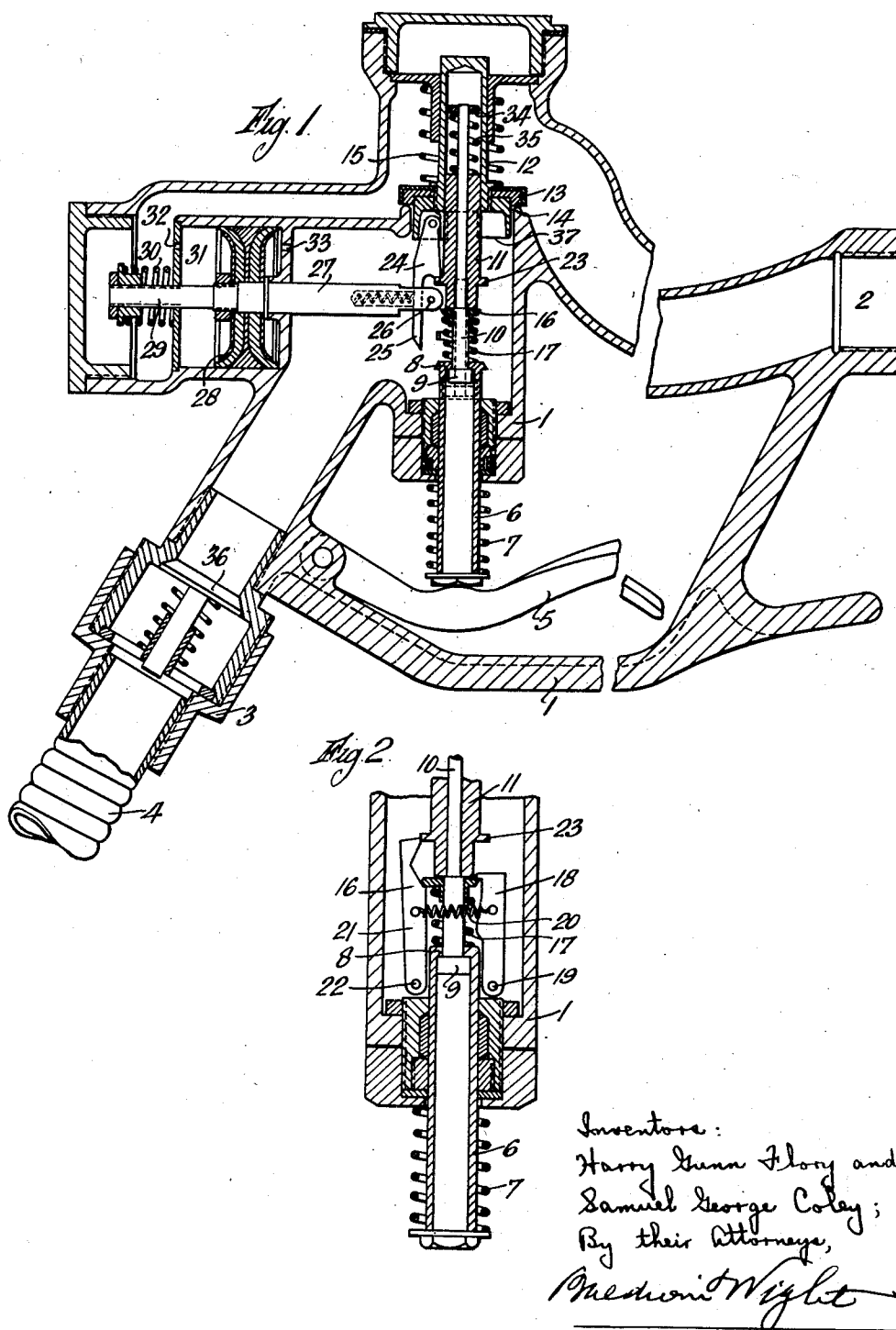
Dec. 13, 1932.

H. G. FLORY ET AL

1,890,847

VALVE

Filed Jan. 6, 1932



UNITED STATES PATENT OFFICE

HARRY GUNN FLORY AND SAMUEL GEORGE COLEY, OF LUTON, ENGLAND, ASSIGNORS
TO GEORGE KENT, LIMITED, OF LONDON, ENGLAND

VALVE

Application filed January 6, 1932. Serial No. 585,139.

This invention relates to liquid measuring apparatus and is more particularly concerned with the nozzle or like delivery device employed in connection therewith.

5 The main object of the present invention is to prevent the rate of discharge from being reduced to a value which is below the efficient registering rate of the meter, or as it is commonly termed to prevent the meter from being "milked".

10 The invention is illustrated in the accompanying drawing in which Figure 1 is a vertical section and Figure 2 a sectional view of part of the apparatus shown in Figure 1 drawn to a larger scale.

15 1 is a body having a connection 2 for the meter and a connection 3 for a discharge pipe or nozzle 4. On the body 1 is pivotally mounted an operating handle 5 which engages a sleeve 6 pressed by a spring 7 into contact with the handle 5. The upper end of the sleeve 6 is provided with an intumed flange 8 forming an abutment for a head 9 formed on a rod 10. The rod 10 passes through a sleeve 11 which is mounted to slide in a sleeve 12 secured to a valve disc 13 which normally seats on a seating 14 so as to cut off communication between the connection 2 and the pipe or nozzle 4, the valve being held in its closed position by a spring 15.

20 Secured to the rod 10 is a collar 16 and between the collar 16 and the flange 8 is interposed a spring 17 such as is capable of overcoming the spring 15. The collar 16 is normally held by a detent 18 pivotally mounted at 19 and connected by a spring 20 to a second detent 21 pivotally mounted at 22, this latter detent being adapted to engage under a flange 23 formed on the sleeve 11. 24 is a strut which is pivotally mounted on the valve disc 13 and is adapted normally to lie in contact with the flange 23. The strut 24 is provided with an extension 25 which is adapted to be engaged by a pin 26 on a rod 27 secured to a piston 28, the rod 27 extending beyond the piston as indicated at 29 having a spring 30 which tends to move the piston 28 to the left as shown in Figure 1. The piston 28 is mounted in a cylinder 31 having pressure ports 32, 33 through which pressure is applied

to both sides of the piston 28. Between the sleeve 11 and a head 34 on the rod 10 there is interposed a spring 35. 36 is a spring pressed valve which normally closes the outlet to the nozzle 4.

55 In operation when it is desired to deliver liquid through the pipe 4 the handle 5 is raised against the spring 7. The first movement of the handle 5 effects compression of the spring 17 for the reason that the collar 16 is held by the detent 18. As soon as the upper end of the sleeve 6 engages the detent 18 to rock it in a clockwise direction as seen in Figure 2, the spring 17 is suddenly released and quickly overcomes the action of the spring 15 and opens the valve 13, the valve being held in the open position by the detent 21 which drops into position under the flange 23. Thus it will be seen that it is impossible to open the valve to an extent less than that determined by the detent 21 this extent of opening being such as to ensure such a flow from the meter as the meter can efficiently register. If it be desired further to open the valve 13 this can be effected by continuing the movement of the handle 5. When the handle 5 is released the parts are returned to their original position the collar 16 moving the detent 21 from under the flange 23 to allow the valve to close while the upper end of the sleeve 6 allows the detent 18 to spring into position over the collar 16.

It will of course, be obvious that movement of the sleeve 11 is transmitted to the valve 13 through the strut 24. If the pipe 4 be fraudulently plugged in such a manner as to allow a very small flow of liquid below the efficient metering valve to pass, the pressure on the right hand side of the piston 28 would equalize the pressure on the left hand side of the piston and thus the spring 30 would cause the piston to move to the left as seen in Figure 1. This movement of the piston is transmitted through the rod 27 to the strut 24 which is thereby moved clear of the flange 23 and thus drive connection between the sleeve 11 and the valve disc is interrupted and will remain interrupted so long as the nozzle 4 remains plugged. Under this condition, that is when the piston 28 is moved to the left in

Figure 1, either no movement will be transmitted from the sleeve 11 to the valve disc 13 when the handle 5 is moved or alternatively, if the handle be in its raised position, the valve 13 will be allowed to be closed by its spring 15 by reason of the movement of the strut 24. Thus it will be necessary for the plug to be removed before the apparatus can again deliver liquid.

The valve 13 may be provided with a shroud 37 in the form of a skirt which extends around say two thirds of the valve 13: Such an arrangement prevents the area of opening of the valve from becoming as great as the cross sectional area of the inlet 2 which would result in causing equal pressures being applied on opposite sides of the piston 28 resulting in the strut 24 being moved to allow the valve 13 to be closed despite the legitimate opening of the valve.

What we claim is:—

1. In valve mechanism, the combination of a valve, an operating member, a detent device adapted to hold the valve in a predetermined degree of opening, means for effecting opening of the valve so that it can be held by the detent device, and a detent device which normally holds the said opening means inoperative, and is released by actuation of said operating member so that the valve is caused quickly to move and to be retained in the predetermined degree of opening.

2. In valve mechanism, the combination of a valve, an operating member, a pressure responsive device which is responsive to the pressure on both sides of the valve, and means controlled by the pressure responsive device for rendering the operating member inoperative when the pressures reach a predetermined relative value.

3. In valve mechanism the combination of a valve, an operating member, a detent device adapted to hold the valve in a predetermined degree of opening, means for effecting opening of the valve so that it can be held by the detent device, a detent device which normally holds the said opening means inoperative, and is released by actuation of operating member so that the valve is caused quickly to move and to be retained in the predetermined degree of opening, a pressure responsive device which is responsive to the pressure on both sides of the valve, and means controlled by the pressure responsive device for rendering the operating member inoperative when the pressures reach a predetermined relative value.

4. Mechanism as claimed in claim 1 comprising a spring for effecting opening of the valve, an abutment for the spring which is normally held from movement by one detent device, a second abutment for the spring which is adapted to be actuated to effect compression of the spring when the operating

member is actuated, and connections between the first abutment and the valve.

5. Mechanism as claimed in claim 2 in which the pressure responsive device controlled means comprises a strut device which is normally interposed between the valve and the operating member so as to transmit movement therebetween, and connections between the strut and the responsive member so that the strut is moved out of position when the pressures reach a predetermined relative value.

6. Mechanism as claimed in claim 2, in which the pressure responsive device comprises a piston which is subjected on both sides to the pressure conditions on the respective sides of the valve and a spring for urging the piston to move to render the operating member inoperative when the predetermined relative value of pressures is reached.

7. Mechanism as claimed in claim 1 in which the operating member comprises a reciprocable member which engages and releases the second mentioned detent device after the member has moved a predetermined distance, and including a spring for effecting opening of the valve, an abutment for the spring which is normally held from movement by one detent device, a second abutment for the spring which is actuated to effect compression of the spring when the operating member is actuated, and connections between the first abutment and the valve.

In testimony that we claim the foregoing as our invention we have signed our names this 24th day of December, 1931.

HARRY GUNN FLORY.
SAMUEL GEORGE COLEY.