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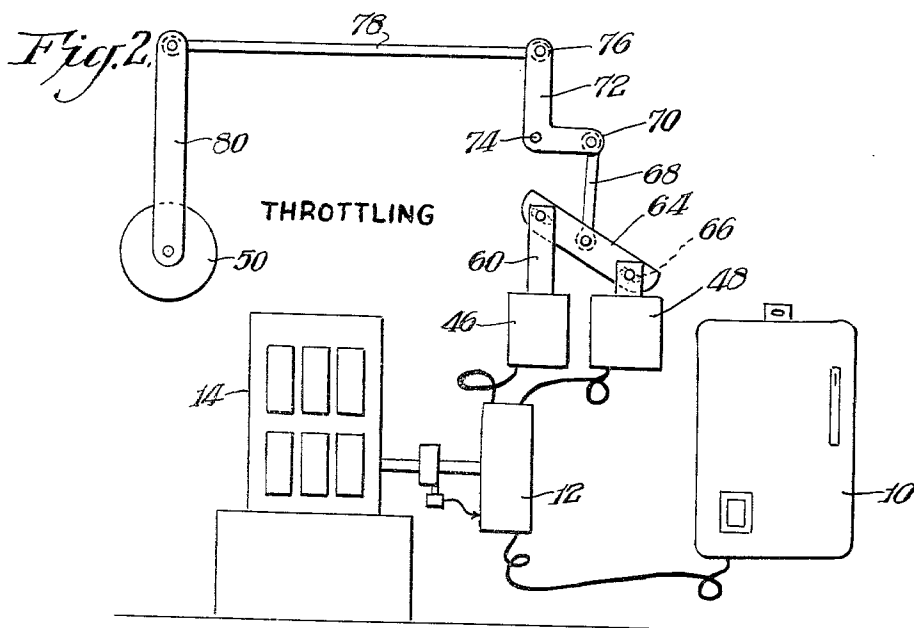
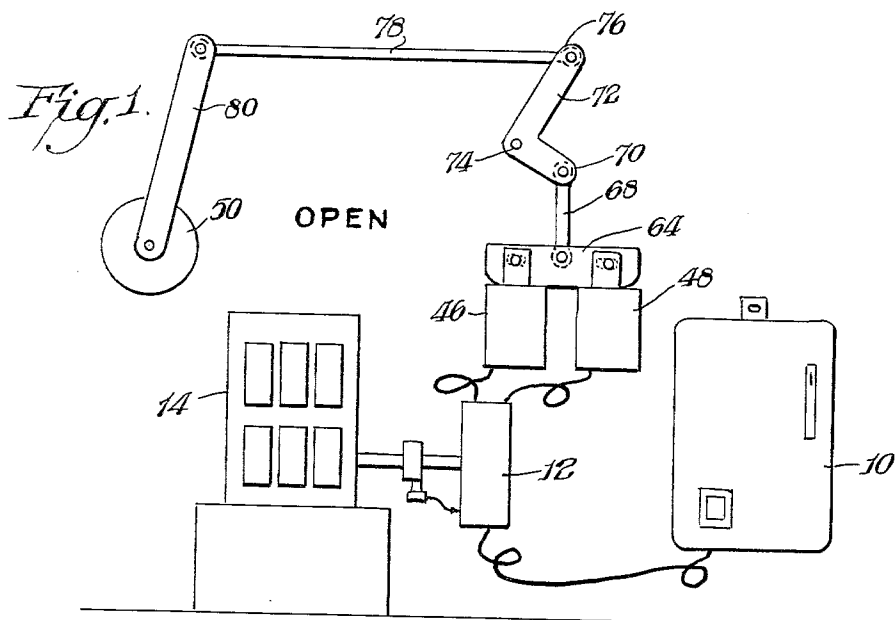
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3,216,614

COIN OPERATED DISPENSING APPARATUS

Filed May 7, 1963

2 Sheets-Sheet 1



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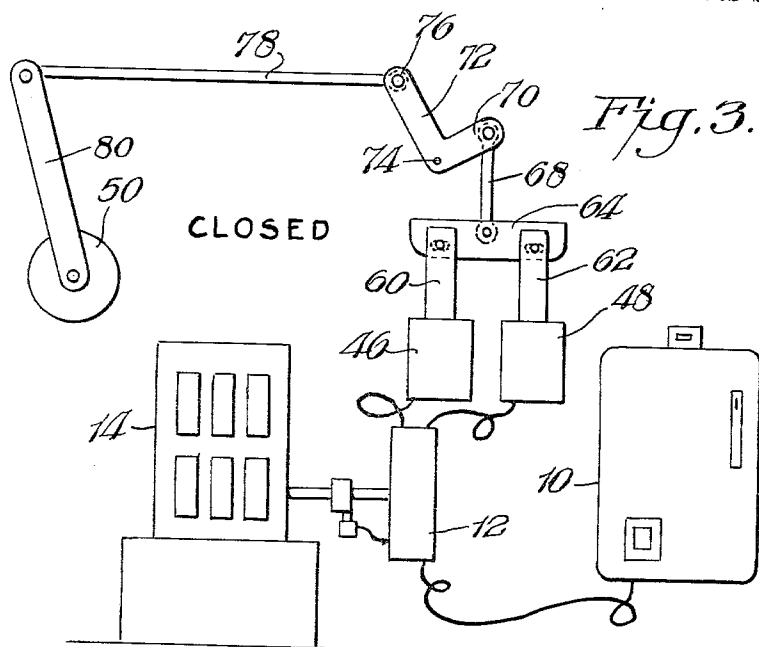
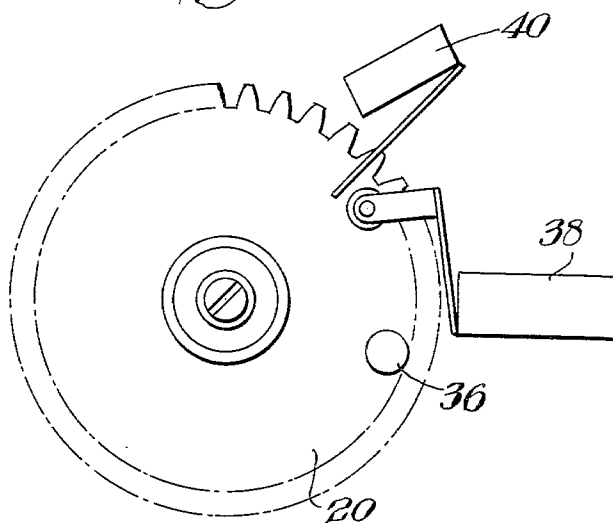


Fig. 4.



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COIN OPERATED DISPENSING APPARATUS
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1 Claim. (Cl. 222-2)

This invention relates to a coin operated dispensing apparatus and more particularly to a coin operated dispensing apparatus having a two-stage valve mechanism.

The interest in coin operated dispensers has increased with the growing merchandising method of self-service. For example, coin operated gasoline dispensers make possible 24-hour sales without 24-hour attendance. The dispensers can also be installed for emergency service on remote stretches of heavily traveled highways between widely spread service stations. For such dispensers to effectively operate, the dispensers must include some means of presetting the amount of material to be dispensed in accordance with the value of the coins deposited. Additionally, before the dispensing operation is completed, it is desirable to slow down the flow for smooth "top-off" action.

Accordingly, an object of this invention is to provide a coin operated dispensing apparatus having a simple, economical and effective valve control system for accurately dispensing a preset quantity of material.

A further object of this invention is to provide a coin operated dispensing apparatus having a valve control system which reduces the rate of flow at a predetermined time prior to the completion of a dispensing operation.

In accordance with this invention the valve of the coin operated dispensing apparatus has an open position, a throttling position and a closed position. The valve is moved to its respective positions by a control linkage connected to reciprocal plungers on a pair of solenoids. The solenoids are connected to switch means which is operated by a counter. When coins are inserted in the dispensing apparatus, the valve is in its open position. At a predetermined time before the completion of the dispensing operation, the counter through the solenoids and control linkage operates the valve to its throttling position and finally to its closed position when a preset quantity of fluid has been dispensed.

Advantageously, the control linkage may comprise a tilting bar connected at each end to a reciprocal plunger and connected intermediate its ends to the valve so that the tilting bar moves in response to movement of each reciprocal plunger and the movement is transmitted to the valve. In a further advantageous form of the invention, the valve is connected to the tilting bar through a bell crank which transmits the movement of the tilting bar.

Novel features and advantages of the present invention will become apparent to one skilled in the art from a reading of the following description in conjunction with the accompanying drawings wherein similar reference characters refer to similar parts and in which:

FIGS. 1, 2 and 3 show schematic views of the valve control system of an embodiment of this invention in the open, throttling and closed position, respectively; and

FIG. 4 shows a schematic view of one type of counter used in the embodiment of the invention shown in FIGS. 1-3.

FIG. 4 shows schematically one type of counter which may be used for operating the valve control system of this invention. Counter 12 includes a spring loaded gear wheel 20 operatively connected to coin accumulator 10 and computer head 14 shown in FIGS. 1-3. When coins are inserted in the dispensing apparatus, solenoids 46, 48 shown in FIGS. 1-3 are energized to open valve 50 as

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later described in detail. Accumulator 10 causes gear wheel 20 to move clockwise one tooth for example for every five-cents worth of coin deposited in the apparatus. As the fluid is dispensed, computer head 14 causes gear wheel 20 to move counterclockwise. Gear wheel 20 includes pin 36 positioned to contact microswitch 38 when the last five-cents worth of fluid is about to be dispensed. Actuation of microswitch 38 causes solenoid 46 to be de-energized to move valve 50 to its throttling position, as latter described in detail. When the last five-cents worth of fluid has been dispensed, pin 36 contacts microswitch 40 to de-energize both solenoids 46, 48 and move valve 50 to its closed position, as latter described in detail.

As shown in FIGS. 1-3, the valve control comprises a pair of solenoids 46, 48 each having a reciprocal plunger 60, 62 respectively connected to a control linkage. The control linkage comprises a tilting bar 64 having a slot 66 which permits the bar to be tilted when solenoid 46 alone is de-energized as shown in FIG. 2. Link 68 connects tilting bar 64 intermediate its ends to one end 70 of bell crank 72. Bell crank 72 is pivoted at 74 to move in response to movement of tilting bar 64. The other end 76 of bell crank 72 is connected to valve handle 80 through connecting rod 78. Valve 50 may be any conventional two-stage valve having open, throttling and closed positions. Valve 50 is in an open position when it is moved a maximum distance in one direction (as shown in FIG. 1), is in a closed position when it is moved a maximum distance in an opposite direction (as shown in FIG. 3), and is in a throttling position when it is moved an intermediate distance (as shown in FIG. 2).

Before coins are inserted in the dispensing apparatus, both solenoids 46, 48 are de-energized causing plungers 60, 62 and tilting bar 64 to project a maximum distance, pivoting bell crank 72 counterclockwise its full extent and thus moving connecting rod 78 to operate valve handle 80 to its closed position shown in FIG. 3.

When coins are inserted in the dispenser, coin accumulator 10 moves gear wheel 20 in a clockwise or add direction. Both solenoids 46, 48 are energized so that tilting bar 64 is moved toward the solenoids thus pivoting bell crank 72 its full extent clockwise as shown in FIG. 1. This pivoting of bell crank 72 causes connecting rod 78 to operate valve handle 80 to its open position.

During the dispensing operation gear wheel 20 moves in a subtract direction toward microswitches 38, 40. As the last five-cents worth of fluid is about to be dispensed, pin 36 contacts microswitch 38 to de-energize solenoid 46. De-energization of solenoid 46 moves plunger 60 outwardly to tilt tilting bar 64 which results in pivoting bell crank 72 counterclockwise to the half position shown in FIG. 2 and thereby operating valve handle 80 to its throttling position.

At the end of the preset sale, pin 36 contacts microswitch 40 to return the valve to the closed position shown in FIG. 3.

What is claimed is:

A coin operated dispensing apparatus including a valve; said valve having an open, a closed and a throttling position; a control linkage connected to said valve to move said valve to its respective positions; a pair of solenoids; a reciprocal plunger on each of said solenoids; one of said reciprocal plungers being connected to one end of said control linkage and the other of said reciprocal plungers being connected to the other end of said control linkage; switch means connected to said pair of solenoids to control the movement of said reciprocal plungers and of said control linkage; a counter operatively connected to said switch means to operate said valve through said solenoids and said control linkage to said throttling posi-

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tion at a predetermined time before the completion of a dispensing operation and to said closed position when a preset quantity has been dispensed; said valve being in said open position when moved a maximum distance in one direction, being in said closed position when moved a maximum distance in an opposite direction and being in said throttling position when moved an intermediate distance; said control linkage comprising a tilting bar; said valve being connected to said tilting bar intermediate the ends of said tilting bar; both ends of said tilting bar moving in said one direction when coins are inserted in said apparatus to move said valve to said open position; said tilting bar being tilted at said predetermined time to move said valve to said throttling position; both ends of said tilting bar moving in said opposite direction when said preset quantity has been

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dispensed to move said valve to its closed position; said valve being connected to said tilting bar by means of a bell crank; and one end of said bell crank being connected to said tilting bar intermediate the ends of said tilting bar and the other end of said bell crank being connected to said valve whereby movement of said tilting bar is transmitted to said valve.

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