

April 14, 1953

C. H. CHAPMAN ET AL

2,634,845

CHECK OPERATED, PREDETERMINED STOP MECHANISM

Filed Aug. 18, 1948

3 Sheets-Sheet 1

Fig. 1

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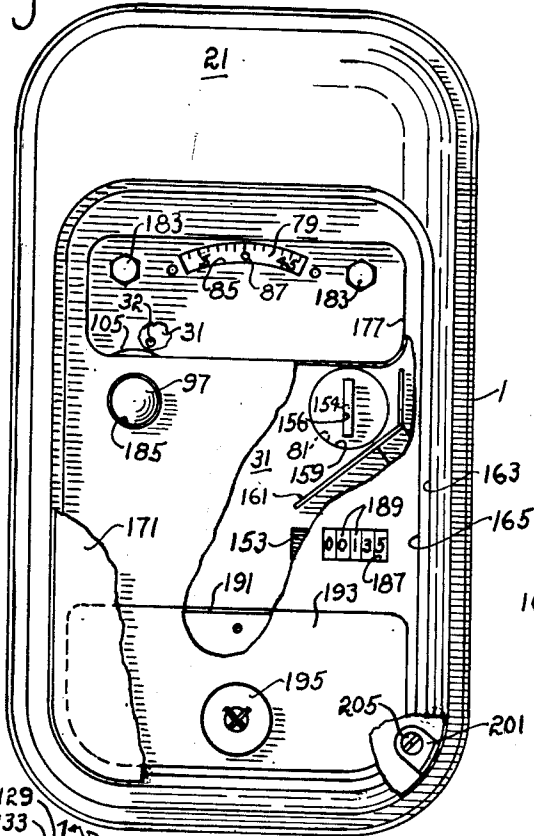


Fig. 4

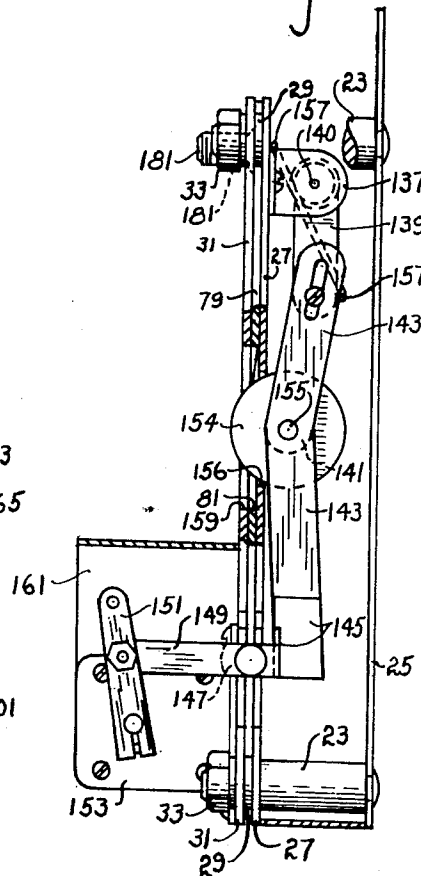
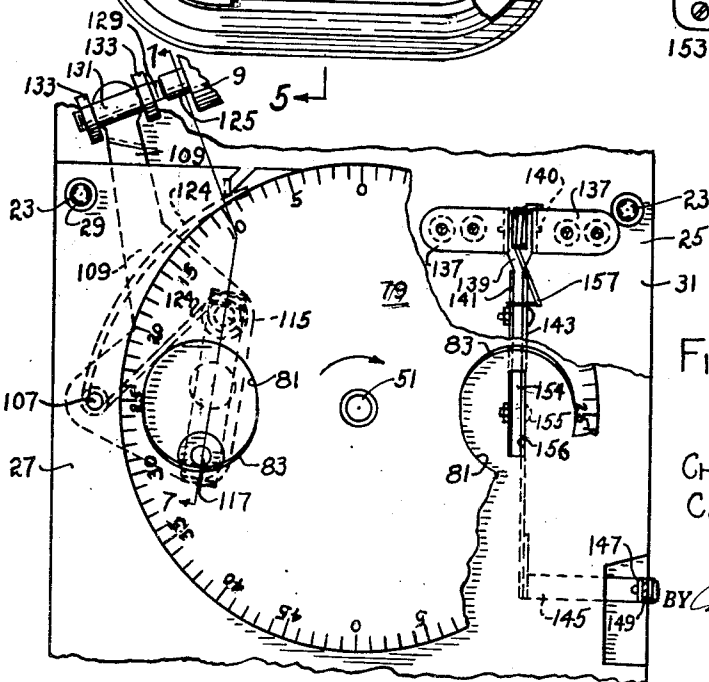


Fig. 3

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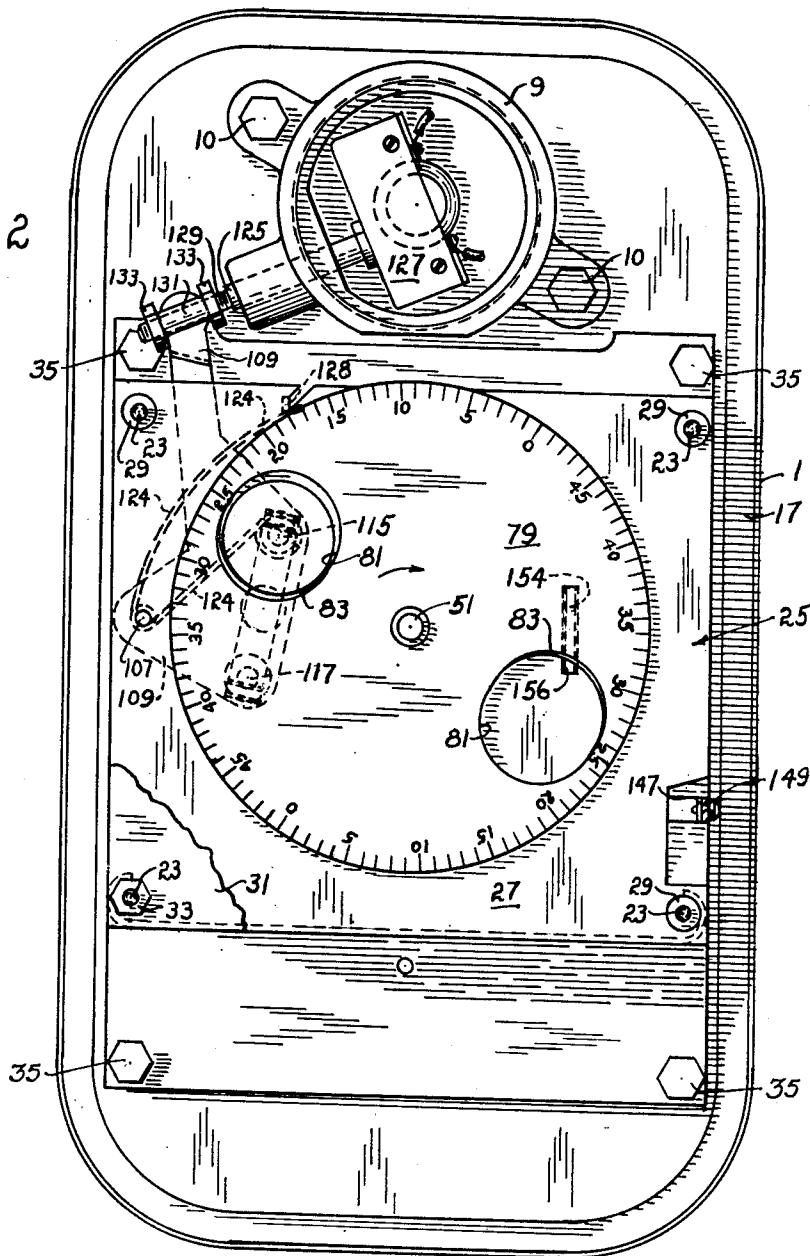
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Fig. 2



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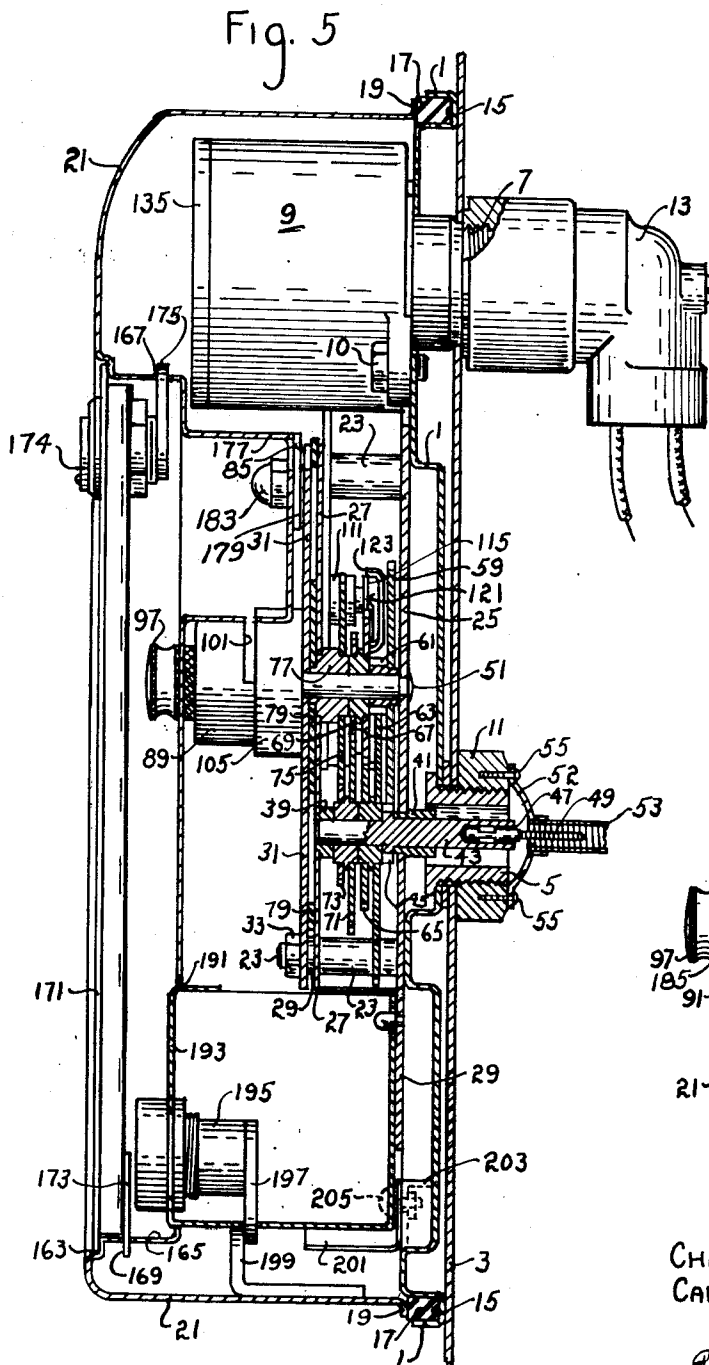
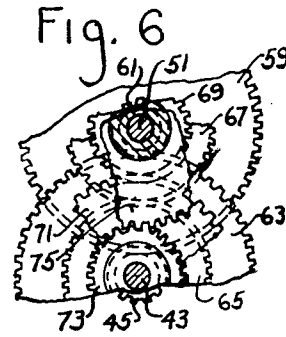
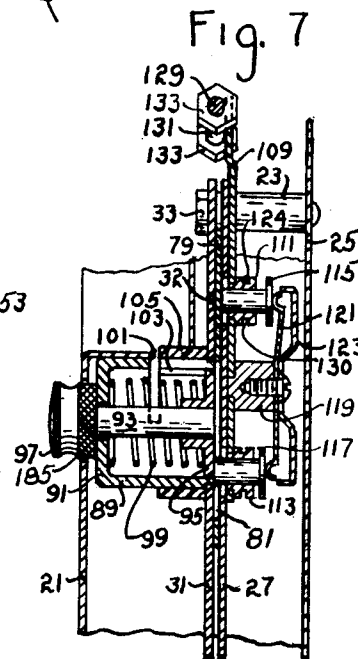
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CHECK OPERATED, PREDETERMINED STOP MECHANISM

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,634,845

CHECK OPERATED, PREDETERMINED STOP MECHANISM

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Application August 18, 1948, Serial No. 44,896

7 Claims. (Cl. 194—9)

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This invention relates to check operated, predetermined stop mechanisms for use with liquid dispensing apparatus for the wholesale selling of gasoline and other similar products and represents an improvement over that disclosed in Patent Number 2,247,480 issued July 1, 1941, to R. H. Damon et al.

It is an object of the invention to produce a stop mechanism which will be simple and sturdy.

Another object is to provide a stop mechanism which will be economical to manufacture.

Yet another object of the invention is to provide a structure which is positive in operation and which will not jam.

A further object of the invention is to provide a construction which requires no seals to render it tamper proof.

Still another object of the invention is to provide means for preventing fraudulent operation of the dispenser.

These and other objects will become apparent from a study of this specification and the drawings which are attached hereto and are made a part hereof, and in which:

Figure 1 is a front elevation of the device with the door removed and parts broken away to show the token discharge means.

Figure 2 is a front elevation of the device with the cover removed to show the indicator, token handling means and the switch mechanism.

Figure 3 is a view similar to Figure 2 showing the device in the switch "off" position.

Figure 4 is a side elevation with parts broken away to show the check ejection and registering means.

Figure 5 is a sectional view taken substantially on the line 5—5 of Figure 1 showing the gearing and driving mechanism.

Figure 6 is a front elevation, with parts broken away, showing the gearing.

Figure 7 is a section taken substantially on the line 7—7 of Figure 3 showing the switch and check accumulating mechanisms.

Referring now to Figures 1 and 5, the numeral 1 represents a back plate which is supported on the pump housing 3 by means of a bushing 5 and the outlet stub 7 of the switch box 9. The box is mounted on back plate 1 by cap screws 10. A nut 11 holds the parts in place at a point below the center of the device while conduit L 13 holds them at a point above this center.

The plate 1 has a groove 15 to receive a gasket 17 and the flange 19 of a cover or case 21 rests on the gasket to seal the joint.

Four shoulder studs 23 are riveted into the gear support plate 25 and an intermediate plate 27 is mounted thereon against the shoulders. Spacers 29 and a front plate 31 are the mounted thereon and held in place by nuts 33.

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The support plate is held in place on the back plate 1 by means of cap screws 35 which enter nuts (not shown) welded to the back plate.

Aligned bushings 39 and 41 are fixed in the front and support plates respectively in alignment with bushing 5.

A shaft 43 is mounted in 39 and 41 and has a 12-tooth pinion 45 adjacent plate 25. The end of shaft 43 which extends into bushing 5 is provided with a drive socket 47 which receives the end of a flexible drive shaft 49. The end bell 52 of the shaft housing 53 is held on bushing 5 by screws 55.

A trunnion pin 57 is riveted in plate 25 and extends through the front plate 31. It is disposed vertically above and parallel to shaft 43.

As the shaft 43 rotates to drive pinion 45, the latter drives a 60-tooth gear 59 which rotates on trunnion 51. This gear has fixed to it a 12-tooth pinion 61 which drives a 60-tooth gear 63 which rotates on shaft 43. The gear 63 has a 36-tooth gear 65 fixed to it which drives a 36-tooth gear 67 mounted for rotation on the trunnion.

Gear 67 carries a 24-tooth pinion 69 which drives a 48-tooth gear 71 which rotates on the shaft 43 and gear 71 carries a 24-tooth pinion 73 which drives a 48-tooth gear 75 rotating on the trunnion.

The hub 77 of gear 75 has fixed to it the combined check receiving and indicator or control disc 79 which is disposed between plates 27 and 31.

It will be seen that this gearing will produce one revolution of disc 79 for each one hundred revolutions of the shafts 49, 43; and since the shafts are driven at the rate of one revolution per gallon of liquid dispensed, each half revolution of the disc will represent the dispensing of 50 gallons which is the value of the check used to preset the mechanism.

The disc 79 has two diametrically opposed holes 81 formed therein for the reception of checks. The face of the disc is graduated adjacent its periphery from zero to fifty in a counterclockwise direction (Figs. 2 and 3) starting at the ends of the diameter which is normal to that of the centers of the holes.

The trailing edges of the holes 81 are bevelled at 83 to prevent jamming of a check. The disc is shown in its normal or switch "off" position in Figure 3 and in this position one of the zero indicia appears in the window 85 in line with the index 87, to be described below.

When the disc occupies the Figure 3 position, the left-hand hole is in alignment with a check magazine 89 in the form of a cylinder attached to the front plate 31 and with its axis normal thereto. The outer end of the cylinder is closed by a head 91 and a plunger 93 is slidably mounted in the head, coaxially of the tube, and carries

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check follower 95 in the tube and an operating knob 97 outside of the head. A spring 99 is confined between the head and follower to urge the latter toward the disc.

The tube is slotted at 101 part way around the circumference at the top to permit insertion of checks. The top of the tube is cut away at 103 from the slot to the open end of the tube and a plastic ring 105 is cemented or otherwise fixed to the exterior of the tube so that the edges of the deposited checks may be viewed. The portion cut away is not large enough, however, to permit withdrawal of any of the checks.

Pivoted on a stud 107 fixed in plates 27 and 31 but lying between plates 27 and 25, closely adjacent plate 27, is a switch control lever 109 (Figs. 2, 3 and 7). The lower end of the lever has two bushings 111 and 113 fixed therein for the reception of headed seekers 115 and 117 respectively. It also carries a stud 119 centered between the bushings on which is supported a two-armed spring 121 and a corresponding spring support 123, both of which project out over the heads of the seekers on which the ends of the spring bear.

A spring 124 is fulcrumed on pin 107 and one end is hooked under a projection 128 on plate 31 while the other end is hooked in a groove 130 in bushing 111. This spring tends to rotate the lever in a clockwise direction. A hole 32 is formed in plate 31 in the region occupied by the small end of seeker 115 for releasing the pin should the device be fraudulently operated, as will be fully explained below.

The upper end of the arm 109 is disposed adjacent a plunger 125 which is slidable in the switch box 9 to actuate a normally open switch 127. The outer end of the plunger is threaded at 129 and a sleeve 131 having hexagon end flanges 133 is screwed thereon. The flanges span the end of lever 109 so that motion thereof will be transmitted to the plunger. A screwed cover 135 is supplied for box 9.

The seekers 115 and 117 are so located that they are in the path traversed by holes 81, 83 so that if no token is entered in the hole as it passes either seeker, the latter will enter and as it is contacted by the trailing edge of the hole, it will be moved upward thereby and will rotate lever 109 in a counterclockwise direction against the action of spring 124 to pull plunger 125 away from switch 127 which will then open.

A token ejection and counting mechanism, shown in Figures 1, 3 and 4, is provided at the opposite side of the machine from the lever.

As shown in Figure 4 particularly, a pair of ears 137 are attached to the rear of plate 27 in spaced relation and a lever 139 is mounted on a pivot pin 140 supported by the ears. A pair of extension arms 141, 143 span and are fixed rigidly to the lever. Arm 143 carries a lateral arm 145 which has a forwardly bent ear 147. A link 149 connects this ear with the operating lever 151 of a counter 153.

A roller 154 is rotatably mounted at 155 on the arms 141, 143 and a spring 157 is mounted on the pivot 140 and has one end bearing on plate 27 and the other end on the rear side of the lever 139 or its arms.

The roller is positioned so that it is approximately centered in one of the holes 81 when the disc 79 is in its stopping position and it projects through a slot 156 in plate 27.

As the hole appears, the roller will bear on the check therein and when the hole 159 in the front

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plate 31, which is substantially the same size as the holes 81, is substantially aligned therewith (as shown in Fig. 1), the spring 157 will operate lever 139 and arms 141, 143 in a clockwise direction (Fig. 4). Roll 154 will eject the check from the disc through hole 159 onto a chute or deflector 161 which is fixed to the front of plate 31 and the check will gravitate to the check drawer described below.

As stated above, the cover 21 has a flange 19 which seats on gasket 17. It is preferably a drawn stamping and has a shallow recess 163 which merges with a deeper recess 165 (Figs. 1 and 5).

The latter is slotted top and bottom at 167 and 169 and a door 171, having a projection 173 adapted to enter slot 169 and a lock 174 having a dog 185 adapted to enter slot 167, fits in the recess 163.

A third recess 177 is formed below the top of recess 165 and is relatively deep. This recess extends directly above the magazine tube 89 and the plastic tube 105 extends through a cut out in the bottom of the recess so that the interior of the magazine is visible.

As stated above, an arcuate opening 85 is formed in the rear wall of the recess to display the indicia on the outer portion of the disc 79. A transparent member 179 is fixed over the opening and bears the indexing mark 87.

Two studs 181 are fixed to the plate 31 and project through holes in the rear wall of the recess and acorn nuts 183 are screwed thereon to hold the top end of the cover in position.

The button 97 projects through a hole 185 in the case so as to be accessible when the door 171 is removed.

A second, rectangular hole 187 is formed in the case in front of the register to display the indicia 189 thereof.

A third hole 191 is formed in the case adjacent the lower portion of recess 165 for the reception of a check drawer 193. A lock 195 is fitted in the front wall of the drawer and has a locking dog 197 which engages a locking lug 199 which is fixed to the bottom of the case.

The case has ears 201 (Figs. 1 and 5) welded thereto which project over a pad 203 formed in the back plate and screws 205 pass through the ears and enter the pad to hold the case on the back plate. It will be seen from Figure 5 that the screws 205 are accessible only when the drawer 193 is removed. Accordingly, the cover cannot be removed by any person who does not possess the key to the drawer lock.

Operation

Assuming that the device is locked up and empty, the disc 79, seekers 115, 117, switch arm 109 and rod 125 will be in the Figure 3 position and the switch 127 will be open.

Since, as set forth in the Damon et al. patent, this switch is in series with the motor switch of the dispenser, it will be impossible to dispense liquid.

The operator who has the key to lock 174 (but not lock 195) will remove the door, pull out knob 97 and insert one or more checks in front of follower 95 through slot 101 in the tube and release the knob. Since a hole 81 in the disc is aligned with the magazine, the spring 99 will force one of the deposited checks into the hole 81.

Since the seeker 117 is forced into the hole 81 from the side opposite the magazine by reason

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of spring 121, and is held against the lower edge of the hole by the tension of spring 124, the insertion of a check in the hole 81 as described forces the seeker out and as soon as it clears the hole, spring 124 moves lever 109 clockwise to push rod 129 into housing 9 and to close switch 127.

The dispensing apparatus may now be operated at will by manipulating the controls provided thereon but as it is operated, the meter thereof drives cable 49 at the rate of one revolution per gallon dispensed. The gearing 45 to 75 drives the disc 79 at the rate of one revolution for each one hundred of shaft 49 and in a clockwise direction (Figs. 1, 2 and 3). Accordingly, it will require fifty revolutions of shaft 49, equivalent to the dispensing of fifty gallons of liquid, to turn the disc 180 degrees and reverse the positions of the holes.

As the hole containing the token approaches coincidence with the hole 159 in plate 31, roller 154, under the action of spring 157, will push the token out onto the chute 161 whence it will gravitate into the drawer 193. Arm 143, 145, link 149 and lever 151 will advance the counter 151 one digit.

Assuming that more than one check was inserted initially, the next check will be picked up by the hole which comes into alignment with the magazine and the operation will continue until the checks are exhausted. Thereupon, as the empty hole 81 uncovers seeker 117, the latter will enter under action of spring 121 and when the seeker is picked up by the trailing edge of hole 81, the lever 109 will be rotated counter-clockwise (Fig. 3) pulling rod 125 from case 9 and permitting switch 127 to open and disable the dispenser until additional checks are inserted.

When this occurs the zero indicia of the disc 79 will be aligned with the index 87 (Fig. 1).

It is possible to insert a tool or other instrument through slot 101 in the magazine and push the seeker 117 out of the hole 81 and this will operate to start the device just as though a token had been used.

However, as soon as the hole 81 uncovers seeker 115, the latter will enter under action of spring 121 and when the trailing edge of the hole engages the seeker, lever 109 will again be rotated to open the switch. Thus the dispenser is again disabled and this time it cannot be started by the insertion of a token or by any action of the operator short of destruction of the machine. At the most, only about ten or twelve gallons can be pilfered until the machine disables the dispenser and thus establishes at once the fact that a fraud has occurred. This fraud must be disclosed to the owner of the liquid before the device can be placed in service again.

In order to restart the dispenser it is necessary for the party against whom the fraud was perpetrated and who holds the key to the check drawer to remove this drawer, remove screws 205 and nuts 181 and thereby free the cover for removal. Thereupon, a wire or the like may be inserted in the small hole 32 in plate 31 to push the seeker out of hole 81. This permits spring 124 to shift lever 109 and close switch 127. The machine will then permit the dispensing of the undispensed portion of the 50 gallons. The damaged party will, of course, collect the value of the fifty gallons of liquid and should place a check in the cash drawer since the register 153 will be operated just as though a check had

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been used. The case and drawer will then, of course, be reinstalled.

Collecting of the tokens and filling of the tank will be cared for by the holder of the key to the drawer lock 195 as fully explained in the Damon et al. patent.

The indicia and index indicate at all times the number of gallons dispensed from the check which is active and the register indicates the number of checks which have passed through the machine.

The proper stroke of plunger 125 in response to the action of arm 109 can be secured by adjusting the member 131—133 on the threads 129.

It should be noted that only two relatively small holes are required in the dispenser housing 3 for mounting the back plate 1 thereon.

It is obvious that various changes may be made in the form, structure and arrangement of parts without departing from the spirit of the invention. Accordingly, applicants do not desire to be limited to the specific embodiment disclosed herein primarily for purposes of illustration; but instead, they desire protection falling fairly within the scope of the appended claims.

What we claim to be new and desire to protect by Letters Patent of the United States is:

1. In a check presettable stop mechanism, the combination of a stop means, a drive shaft, a control element, means connecting said shaft to drive the element, check receiving means in said element, operating means for said stop means movable between starting and stopping positions, means for urging said operating means toward starting position, said operating means comprising first means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement thereby to stopping position, a second means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement to stopping position, said second means being disposed in spaced relation with respect to said first means adjacent the path of said check receiving means so that said first and second means will be successively encountered by said check receiving means, and means, accessible only by a partial disassembly of the mechanism, for disconnecting said element and said second connecting means.

2. In a check presettable stop mechanism, the combination of a stop means, a drive shaft, a control element, means connecting said shaft to drive the element, check receiving means in said element, operating means for said stop means movable between starting and stopping positions, means for urging said operating means toward starting position, said operating means comprising first means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement thereby to stopping position, a second means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement to stopping position, said second means being disposed in spaced relation with respect to said first means adjacent the path of said check receiving means so that said first and second means will be successively encountered by said check receiving means, and means accessible only by a partial disassembly of the mechanism for disconnecting said element and said second connecting means, said second means being so disposed rel-

ative to said control element that it will be operated after said first means.

3. In a check presettable stop mechanism, the combination of a stop means, a drive shaft, a control element, means connecting said shaft to drive the element, check receiving means in said element, operating means for said stop means movable between starting and stopping positions, means for urging said operating means toward starting position, said operating means comprising first means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement thereby to stopping position and a second means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement to stopping position, said second means being disposed in spaced relation with respect to said first means adjacent the path of said check receiving means so that said first and second means will be successively encountered by said check receiving means, a cover housing said mechanism and means under the cover and accessible only by removal of the cover for disconnecting said element and said second connecting means.

4. In a check presettable stop mechanism, the combination of a stop means, a drive shaft, a control element, means connecting said shaft to drive the element, check receiving means in said element, operating means for said stop means movable between starting and stopping positions, means for urging said operating means toward starting position, said operating means comprising first means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement thereby to stopping position and a second means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement to stopping position, said second means being disposed in spaced relation with respect to said first means adjacent the path of said check receiving means so that said first and second means will be successively encountered by said check receiving means, a plate covering said second connecting means, means forming an opening in said plate adjacent said connecting means for reception of a tool and a cover housing said mechanism, said plate and opening being disposed under the cover so as to be accessible only by removal of the cover.

5. In a check presettable stop mechanism, the combination of a stop means, a drive shaft, a control element, means connecting said shaft to drive the elements, check receiving means in said element, operating means for said stop means movable between starting and stopping positions, means for urging said operating means toward starting position, said operating means comprising first means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement thereby to stopping position and a second means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement to stopping position, said second means being disposed in spaced relation with respect to said first means adjacent the path of said check receiving means so that said first and second means will be successively encountered by said check re-

ceiving means, a cover housing said mechanism, means under the cover and accessible only by removal of the cover for disconnecting said element and said second connecting means, means forming an opening in the cover, a check receiver fitted in the opening, means for locking the receiver therein and means for holding the cover on said mechanism, said holding means being disposed under the cover and being accessible only through said opening.

6. In a check presettable stop mechanism, the combination of a stop means, a drive shaft, a control element, means connecting said shaft to drive the element, check receiving means in said element, operating means for said stop means movable between starting and stopping positions, means for urging said operating means toward starting position, said operating means comprising first means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement thereby to stopping position, a second means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement to stopping position, said second means being disposed in spaced relation with respect to said first means adjacent the path of said check receiving means so that said first and second means will be successively encountered by said check receiving means, and means for preventing access to said second means and the stop means operating means while the mechanism is assembled.

7. In a check presettable stop mechanism, the combination of a stop means, a drive shaft, a control element, means connecting said shaft to drive the element, check receiving means in said element, operating means for said stop means movable between starting and stopping positions, means for urging said operating means toward starting position, said operating means comprising first means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement thereby to stopping position, a second means responsive to the absence of a check in said receiving means for connecting the operating means to said element for movement to stopping position, said second means being disposed in spaced relation with respect to said first means adjacent the path of said check receiving means so that said first and second means will be successively encountered by said check receiving means, and lock controlled means for preventing access to said second means and the stop means operating means while the mechanism is assembled.

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