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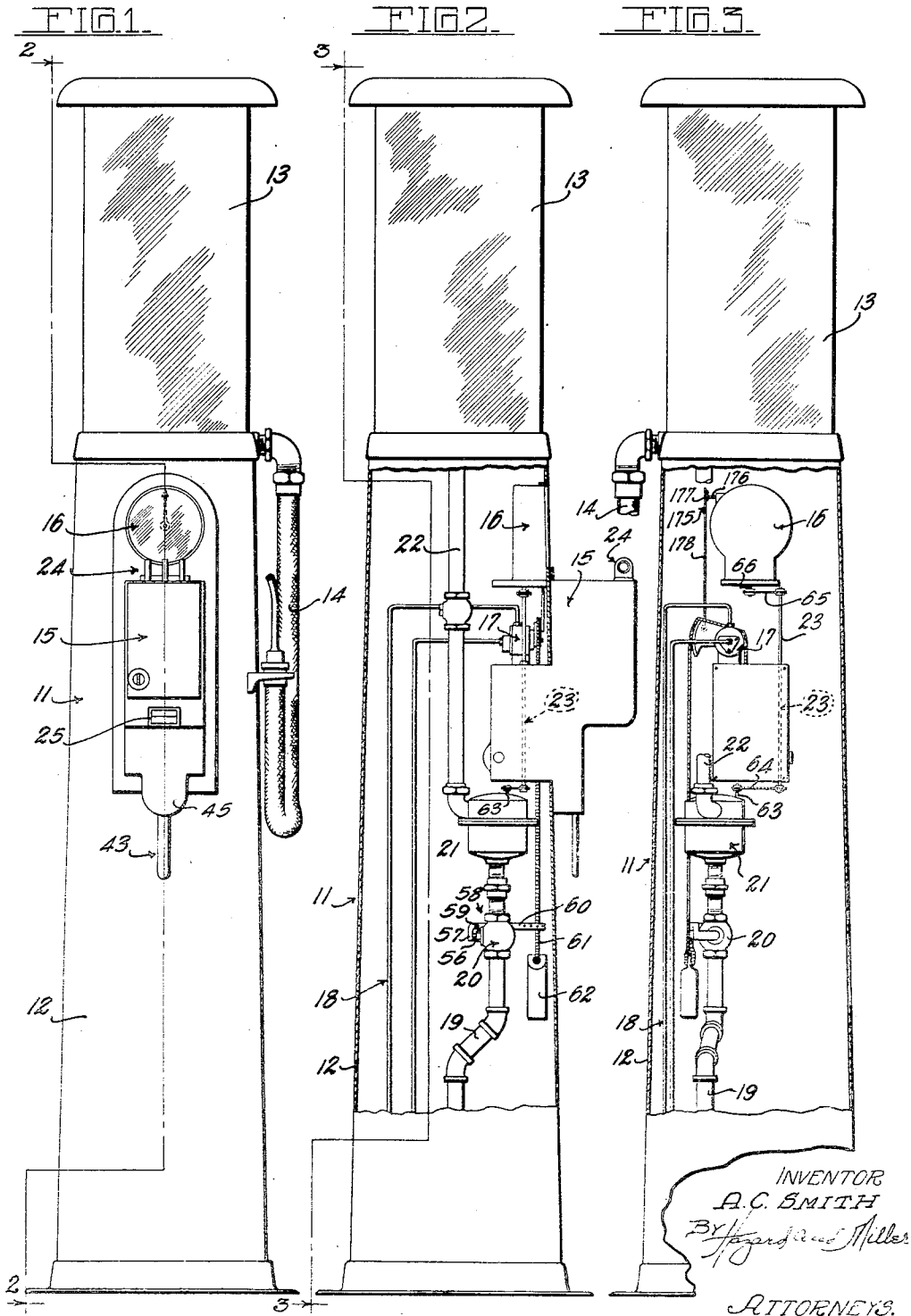
A. C. SMITH

1,967,633

DISPENSING PUMP

Filed Oct. 22, 1931

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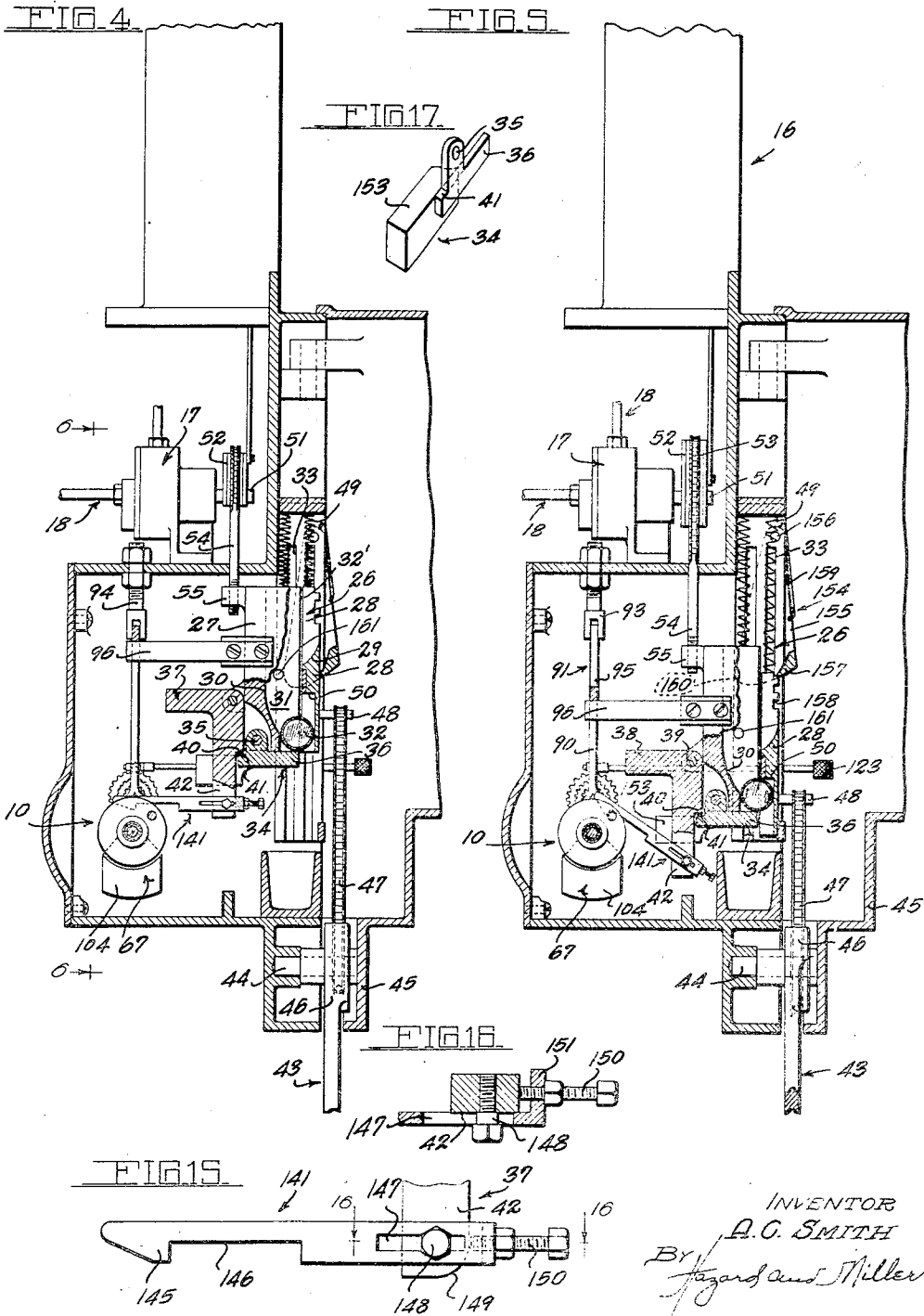


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DISPENSING PUMP

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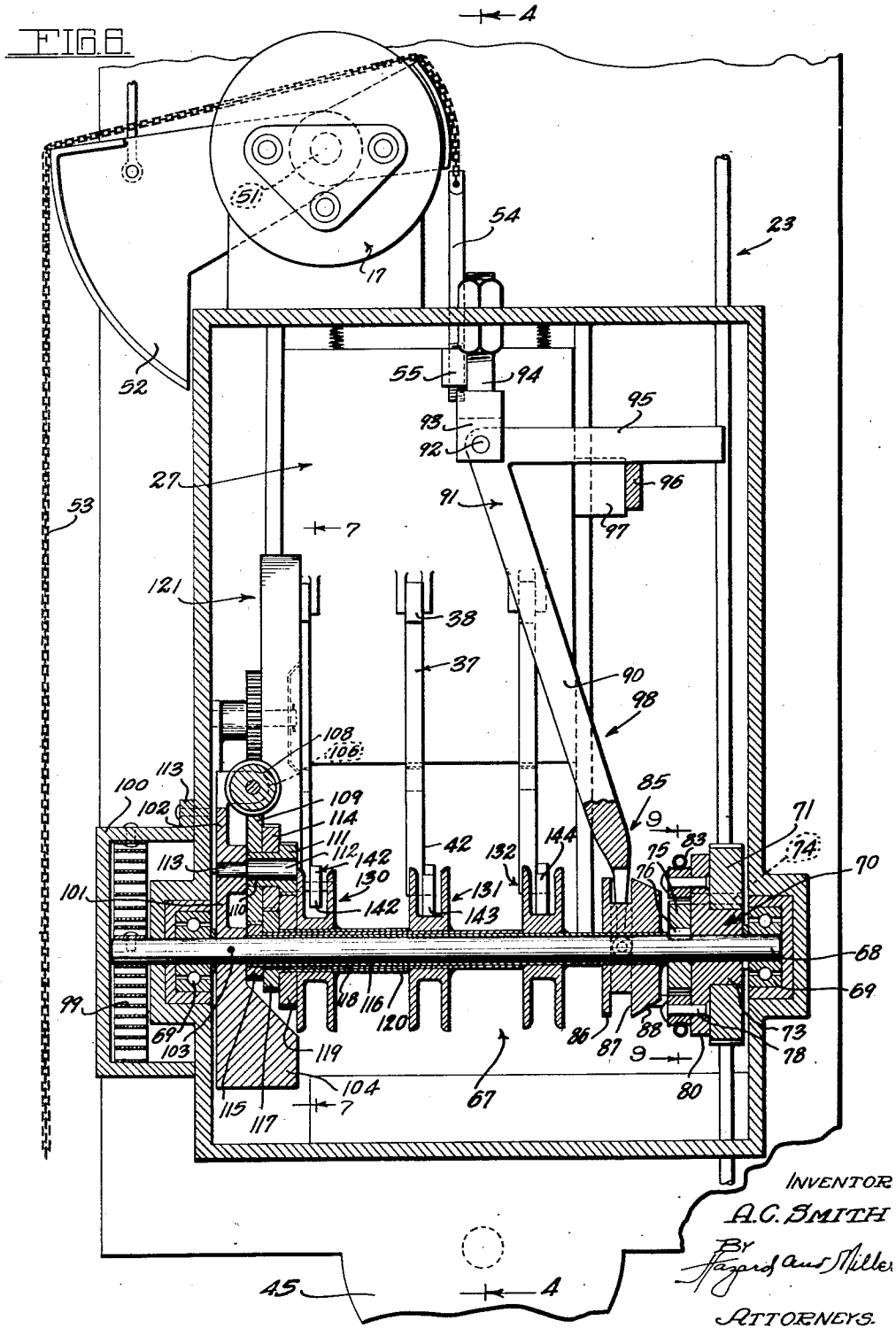
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FIG 7
8

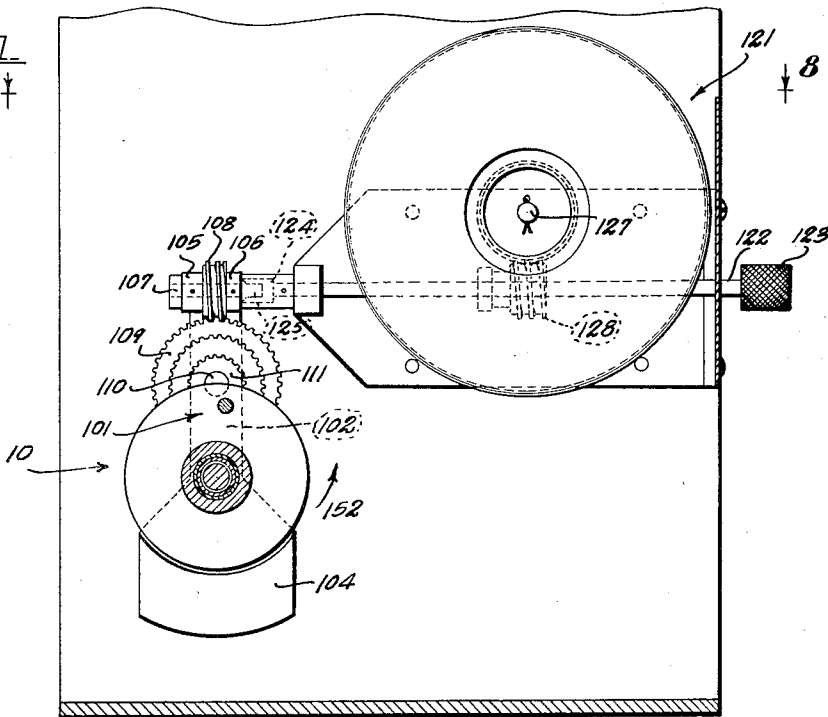


FIG 8

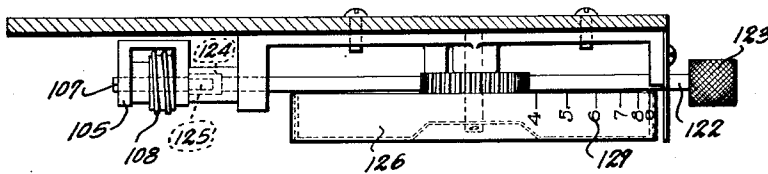


FIG 9

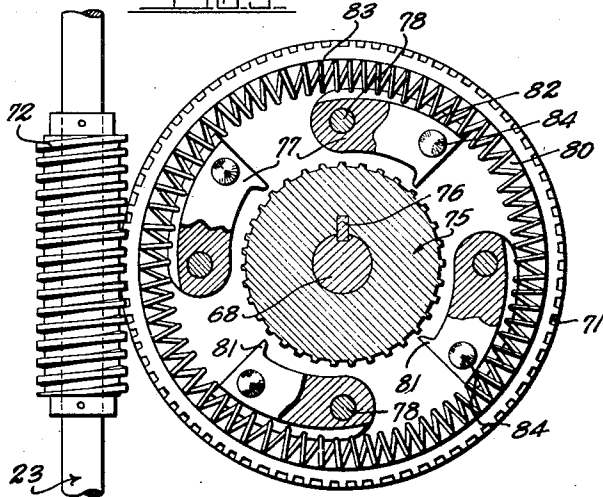
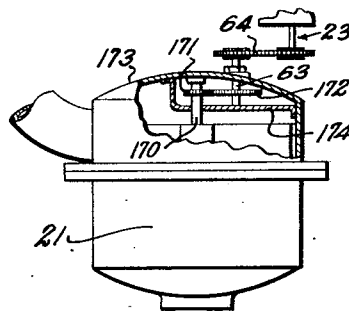


FIG 10



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July 24, 1934.

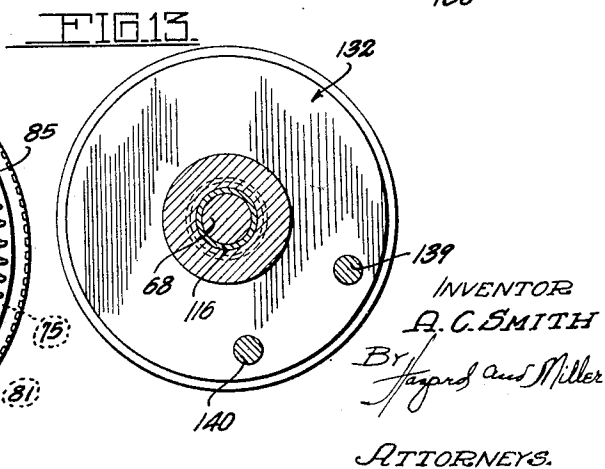
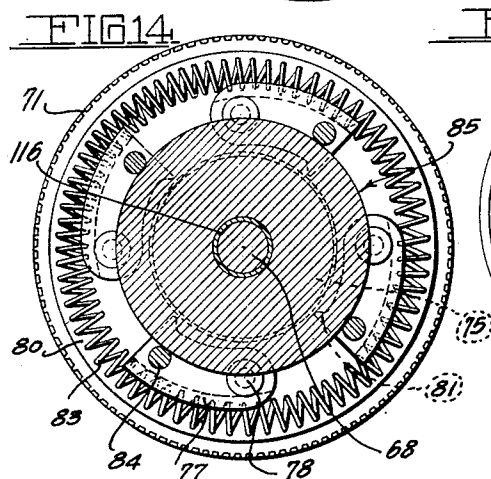
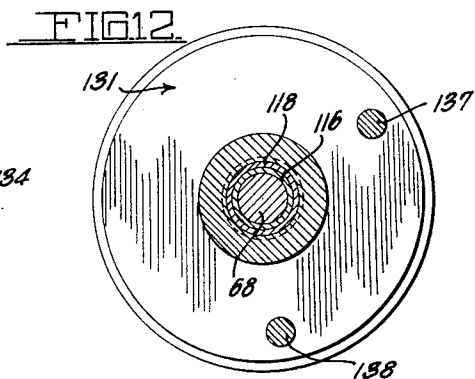
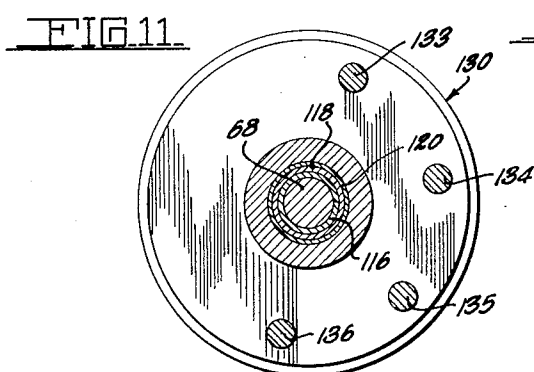
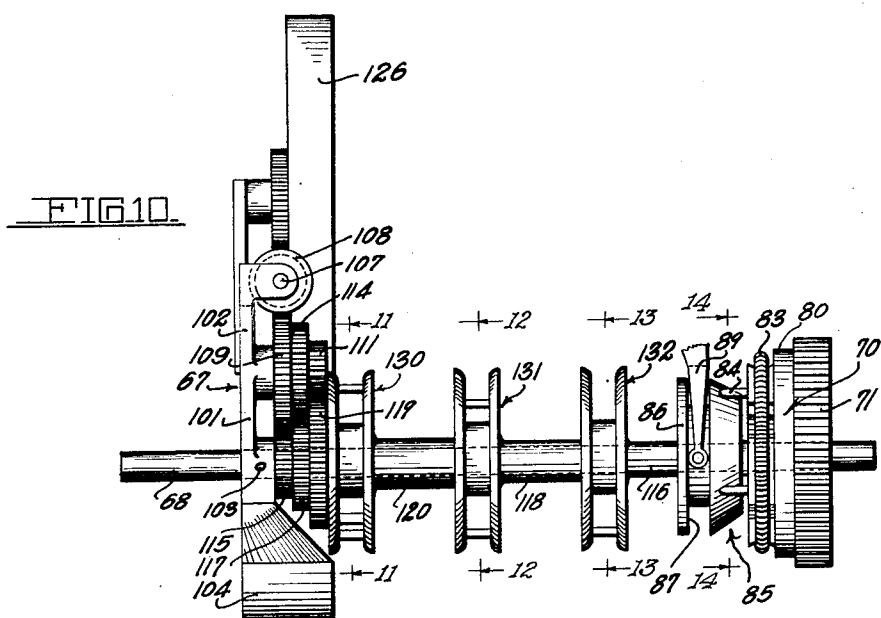
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1,967,633

DISPENSING PUMP

Filed Oct. 22, 1931

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

1,967,633

DISPENSING PUMP

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Application October 22, 1931, Serial No. 570,402

13 Claims. (Cl. 194—82)

My invention relates to a dispensing pump, particularly adapted for dispensing a liquid, such as gasoline.

My invention pertains to a type of device which, preferably, is coin controlled and controls the pumping and measuring of definite quantities of the liquid in accordance with the value of the coin used to actuate the machine. In this type of device, the machine may be self-servicing and not require an attendant as the purchaser, by depositing a coin or coins, may obtain the quantity of liquid for the value of such coin or coins.

In the above type of dispensing pump, an object and feature of my invention is an arrangement for dispensing liquids by the use of one or a number of coins, each of a different value, whereby the machine will dispense liquid to the value of a single coin or to the total value of two or more coins, the machine being first set for operation to dispense the liquid in accordance with the market value of such liquid. In this connection, an object and feature of my invention is the provision of a plurality of coin slots each having their own chute and designed to receive coins of different values and such coins controlling the machine whereby a single coin of low value permits the operation of the pump for the shortest length of time and thereby dispenses the minimum quantity of liquid, a coin of the next higher value allows the actuation of the pump for a still longer time, and in sequence other coins of higher values will control the operation of the pump for a specified length of time in accordance with the market value of the liquid and the particular coin used. In addition to this, the machine, in effect, controls a totaling arrangement whereby with two coins the pump will operate the length of time for each of such coins in sequence and thus dispense the quantity of liquid corresponding to the value of such coins at the market price of the liquid. Therefore, presuming that gasoline is being dispensed by the pump, I may have coin slots and chutes for fifty, twenty-five, and ten cent pieces, in which case, presuming the price of the gasoline were twenty cents a gallon, the ten cent coin would cause the machine to vend one-half gallon, the twenty-five cent piece would cause the machine to vend a gallon and a quarter, and the fifty cent piece would cause the vending of two and one-half gallons. The ten and the twenty-five cent pieces, making a total of thirty-five cents would cause the vending of a gallon and three-quarters, the ten and fifty cent pieces, making a total of sixty cents, would vend three gallons, etc., and any combination of coins could be used.

Another important object and feature of my invention is a provision for changing the setting of the machine in accordance with the changes of the market price of the liquid to be dispensed. Thus, if the price decreases, the machine may be set to vend a greater amount of liquid for the same coins used, or if the price increases, the machine may be set to dispense a lesser amount, the dispensing being regulated through the medium of the control of the pump.

Another object and feature of my invention is a provision by which the pump controlled by the coins may be used to actuate a measuring meter and from the meter a power drive is obtained to regulate the time of operation of the pump, this power drive having a control for a shut-off mechanism to release the coins and shut off the pump after a predetermined operation of vending or dispensing the specific quantities of liquid. In connection with the power drive, in order to reset the device without shifting the driving gears, I employ an automatic releasing clutch which is actuated by the coin control mechanism for interconnecting the regulating or totaling mechanism with the power drive.

A particular feature of my invention is the employment of distinct and separate coin chutes for the different value coins each controlled by a gate and the chutes being, preferably, divided in coin carriers, both being movable simultaneously when a coin is in position or either one being movable when no coins are in the chutes; however, having the provision that a single coin in any chute is sufficient to interlock the two carriers. Cooperating with the gates which control the coin chutes are triggers, one for each gate, such triggers being controlled by a mechanism operated by the quantity of liquid dispensed, whereby for single coins in any one chute such coin is released and the machine stopped after a predetermined quantity of liquid has been dispensed, but if two or more coins are used simultaneously, the triggers for the lowest and the low value coins are released and then engaged again in locking position with the gates and again released when a quantity of liquid equal to the value of such two or more coins has been dispensed. By this means the triggers controlling the coin chutes having coins therein are all released when the total quantity of liquid equal to the value of the coins has been dispensed.

Another feature of my invention involves the employment of rotatable disks with pins thereon which actuate links to control the triggers and to change the setting of the machine for the dif-

ferent market prices of the liquid; these various disks with their pins may be initially set, one relative to the other, to take count of varying prices of the liquid.

5 My invention is illustrated in connection with the accompanying drawings, in which:

Fig. 1 is an elevation of a dispensing machine having my invention incorporated therein;

10 Fig. 2 is a vertical section on the line 2—2 of Fig. 1 in the direction of the arrows, the immediate mechanism of my invention being illustrated in elevation;

Fig. 3 is a vertical section on the line 3—3 of Fig. 2 in the direction of the arrows, the immediate mechanism of my invention being illustrated in elevation;

Fig. 4 is a vertical section on the line 4—4 of Fig. 6 in the direction of the arrows, showing part of the coin controlled mechanism and the totaling or regulating devices cooperating therewith; this shows some of the moving parts in the position in the beginning of the operation;

Fig. 5 is a view similar to Fig. 4 with various parts in a position prior to releasing of the coins;

25 Fig. 6 is a section on the line 6—6 of Fig. 4 in the direction of the arrows;

Fig. 7 is a section on the line 7—7 of Fig. 6 in the direction of the arrows, showing part of the unit change mechanism changing the measurement in accordance with a change of price of the liquid;

Fig. 8 is a horizontal section on the line 8—8 of Fig. 7 in the direction of the arrows;

35 Fig. 9 is a vertical section on the line 9—9 of Fig. 6 in the direction of the arrows, showing part of the releasable drive from the power shaft for actuating the regulating mechanism;

Fig. 10 is an enlarged elevation taken in the direction of the arrow 10 of Figs. 4, 5, or 7, showing part of the power drive shaft, the regulating disks, the releasing clutch, and the shifting mechanism for adjusting the unit quantity of measure in accordance with change of price;

45 Fig. 11 is a vertical section on the line 11—11 of Fig. 10 in the direction of the arrows, showing a section through the lowest value control disk;

Fig. 12 is a section on the line 12—12 of Fig. 10, showing a section through the medium value control disk;

50 Fig. 13 is a section on the line 13—13 of Fig. 10 in the direction of the arrows through the highest value control disk;

Fig. 14 is a section on the line 14—14 of Fig. 10 in the direction of the arrows, showing part of the release clutch mechanism;

Fig. 15 is an elevation of one of the releasing links connected to a trigger;

60 Fig. 16 is a section on the line 16—16 of Fig. 15 in the direction of the arrows;

Fig. 17 is a perspective view of one of the tilting gates of the coin arrester;

Fig. 18 is an elevation partly broken away of the meter, showing a drive therefrom.

65 Referring first to the construction of Figs. 1, 2, and 3. This illustrates a conventional gasoline dispensing stand 11 having a pedestal 12, a glass receptacle 13 into which the gasoline is pumped, and a discharge hose 14. Attached to the pedestal I install a coin chute mechanism 15. This may be partly outside of the pedestal and partly within. A gauge 16 is illustrated as mounted within the pedestal and having a face exposed through an opening. There is a control valve 17 illustrated as mounted on part of the

coin chute mechanism 15 which, through the medium of air pipes 18, controls a pump usually in an underground tank. A liquid is pumped upwardly through a pipe 19, this having a valve 20 with an automatic shut-off, as hereinunder detailed. The liquid passes through a meter 21 and from the meter through a pipe 22 to the receptacle 13. It is manifest that, if desired, the liquid may be discharged directly from the pipe 22 into the hose 14. In the construction illustrated, a drive shaft 23 is indicated as conveying the driving motion from the meter to the gauge, thus operating the gauge in conformity with the liquid passing through the measuring meter.

Referring next to the coin chute mechanism 15. This is illustrated as having a plurality of coin slots 24, in the present instance, three being shown, for coins of different values, which, for convenience, may be considered for ten, twenty-five, and fifty cent pieces. Each of these coin slots leads through a chute, and part of the mechanism has a slug ejector whereby slugs may be ejected at the opening 25. This, however, forms no immediate part of my present invention. A cover cap with a lock is preferably provided on the casing and closes the coin chute mechanism. The coins are led by the chutes into movable coin carriers designated generally at 26 (note Figs. 4 and 5). There is an inner carrier 27 which is connected to the control mechanism, and an outer carrier 28 which is manually operated. The outer carrier 28 has a surface 29 and the inner carrier a surface 30 forming the lower portion of the coin chute 31, a coin being indicated at 32. These carriers are separated, there being adjoining faces 32', and each carrier operates in guide slots or the equivalent 33, thus restricting each carrier to a rectilinear vertical movement.

Any one of the designated coins or any combination of these may be deposited in the coin slots and each led by its own chute to the position indicated in which the coins are brought to rest by a tilting gate 34. This gate is indicated as pivoted at 35 on the inner coin carrier and has an end 36 projecting into the coin slot 31 and blocking the movements of the coins. For each value of coin there is a trigger 37. Each trigger has a counterweighted upper end 38, these triggers being mounted on pivot pins 39 on the inner coin carrier, and each trigger is provided with a notch 40 which engages a notched end 41 of the gate 34. Each of the triggers has a flat side 42 at its lower end.

The manual control and starting of the device comprises a handle lever 43 which is mounted on a pivot 44 in a housing structure 45 extending below the coin chute mechanism and its casing. This lever has a hub 46 with a flexible chain 47 secured thereto, which chain extends upwardly to a pin 48, which pin is secured to the outer carrier 28, which carrier normally could, therefore, be moved downwardly by operating the lever, and is retracted by a retraction spring 49 secured to the upper end of such carrier. However, when a coin is blocked by the gate 34 in any one of the coin chutes and the lever 43 is operated, it causes a shoulder 50 on the outer carrier to engage the coin and the coin acts as an intermediary in transmitting the downward movement through the gate 34 to the inner carrier. Hence, the inner carrier with the trigger 37 is moved downwardly. This action controls the valve 17 as the stem 51 of such valve has a

hub 52 thereon, to which is connected a chain 53, such chain being attached to a rod 54, this rod being connected to a lug 55 on the upper end of the inner carrier. Therefore, the downward movement of the inner carrier, which can only move downwardly when the outer one is pulled down through the intermediary of a coin, controls the air valve 17 to admit the air flow through the pipes 18 and, hence, to the pump, which pump is not illustrated, being of standard construction.

When the pump operates, the liquid is pumped upwardly, as above mentioned, through the pipe 19, which pump has the control valve 20; such valve is indicated as having a stem 56 engaged by the end 57 of a bell crank lever 58 (note Figs. 2 and 3). This bell crank is pivoted at 59, close to the end 57, and such bell crank has a long arm 60 to which is adjustably connected the lower end 61 of the chain 53, this end also carrying a counterweight 62. Therefore, as soon as the valve 17 is actuated to start the operation of the pump, the valve 20 is opened to allow upward flow of the liquid. This liquid, as above mentioned, flows through the meter 21, which meter may be of standard construction. The meter, however, is used to rotate the shaft 23, there being illustrated a shaft 63 extending out of the meter box and having a sprocket chain drive 64 to the vertical shaft 23. This shaft is mounted in suitable journals, preferably in the inner portion of the coin chute box 15. At the upper end of this shaft there is a chain drive 65 to a hub shaft 66, which actuates the gauge 16 to show the amount of liquid passing through the meter.

This shaft 23 is the drive shaft for regulating the totaling and regulating mechanism 67. The regulating mechanism regulates when the release of the coins of different values will take place and the totaling mechanism totals the quantity of liquid dispensed to the value of one coin or the plurality of coins. This mechanism employs a shaft 68 mounted in anti-friction bearings 69 (note Fig. 6), which shaft has a bushing 70 rotatably mounted thereon and keyed to such bushing there is a worm wheel 71 which meshes with the worm 72 on the shaft 23. This worm wheel fits on a hub portion 73 of the bushing 70 and is attached thereto by pins 74. Fixedly secured to the shaft 68 there is a ratchet wheel 75, this being illustrated as connected to the shaft by a key 76. Such ratchet wheel is engaged by pawls 77 mounted on pivot pins 78 (note Fig. 9), these pins being secured to the flange portion 80 of the bushing 70 and each pawl having a tooth 81 to engage the teeth of the ratchet wheel 75. Each pawl is provided with a grooved outer surface 82 around which fits a garter spring 83. The tension of this spring normally tends to force the teeth of the pawl into engagement with the ratchet wheel and such pawls are retracted by means of pins 84 on the pawls extending inwardly of the machine in an opposite direction to the pivots 78, which pins are actuated by the clutch mechanism 85.

This clutch comprises a clutch wheel 86 having an annular groove 87 therein and a cone-shaped surface 88, this cone-shaped surface engaging the pins 84 in its longitudinal movement of the shaft 68, and the clutch wheel itself is operated by the yoke 89, which yoke is connected to the long arm 90 of a bell crank 91 (note Figs. 6 and 10). This bell crank has a pivot 92 on a block 93 which is supported on a bolt 94, this being adjustable in the portion of the coin chute casing

inside of the pedestal. The short arm 95 of the bell crank is counterweighted and is designed to bear upon a projecting arm 96 secured to a lug 97 of the inner coin carrier. Therefore, on downward movement of this inner coin carrier, which can only be done when the coin is in the proper place, the bell crank 91 is moved in the direction of the arrow 98, this disengaging the cone surface 88 of the clutch wheel 86 from the pins 84, allowing the garter spring 83 to interengage the pawls 77 and the ratchet wheel 75. Therefore, a driving connection is obtained from the shaft 23 by its worm 72, the worm wheel 71, the bushing 80, the pawls, and the ratchet wheel 75, to the shaft 68. A spirally coiled retraction spring 99 is attached to the end of this shaft 68, one end of the spring being secured to a housing 100 and tensioned to reverse the movement of the shaft opposite to that given by the shaft 23. This reversal is made at the end of the operation, as hereinunder detailed, in which case the arm 96 is moved upwardly, lifting the arm 95 of the bell crank 91 and shifting the lower end 90 in the opposite direction to the arrow 98 and thereby moving the clutch wheel into engagement with the pins 84 and retracting the pawls 77. This allows a reverse rotation of the shaft 68 inside of the bushing 70 without reverse movement of the worm wheel 71, and, hence, the reversal of the shaft 23. This reverse movement of the shaft is necessary for resetting of various devices as hereinunder detailed.

The shaft 68 is interlinked with the totalling and regulating mechanism 67 through the medium of an arm 101, which arm has a normally upwardly extending shank 102 secured to the shaft 68 by a pin 103 having a heavy counterweight 104 at the bottom. This arm at the top has a pair of journals 105 and 106 spaced apart and in these journals there is a stub shaft 107 carrying a worm 108. This worm meshes with a large worm wheel 109 which is mounted on a hub section 110 of a small gear 111 (note Fig. 6), which hub is rotatable on a pin 112, which pin has its fixed end 113 secured to the shank 102 of the arm 101. An intermediate gear 114 is also fitted on the hub 110 and such gear and the gear 109 are secured to the hub so that these three gears 111, 114, and 109 operate together.

The gear 109 meshes with a pinion 115, which is mounted on an inner sleeve 116 on the shaft 68. The gear 114 meshes with a pinion 117 on the intermediate sleeve 118 which is carried on the outside of the sleeve 116. The smallest gear 111 meshes with the large gear 119, which is secured to the outer sleeve 120, these sleeves being rotatable one on the other and on the shaft 68. Having reference to the ratio of coins set forth; that is: the ten, twenty-five, and fifty cent pieces, the gear 109 and the gear 115 have a ratio of two and one-half to one, the gear 114 and the gear 117 of one to one, the gear 111 and the gear 119 of one to two and one-half.

The shaft 68 does not make a complete revolution but only makes part of a single rotation, and in so doing, as it carries the arm 101 with the set of gears 109, 114, and 111 secured thereto, manifestly, these gears being held stationary by the worm 108 mounted in the journals 105 and 106 cause the rotation of the gears 115, 117, and 119 on the three sleeves 116, 118, and 120, respectively, and cause the rotation of these sleeves with the shaft 68 and in the same direction.

The mechanism for adjusting the relative initial position of the three sleeves above mentioned is used to regulate the amount of liquid which will be pumped and dispensed in accordance with the market price at which this is being vended in relation to the particular coins deposited and this employs a regulating mechanism designated generally by the numeral 121 (note Figs. 7 and 8). This mechanism employs a shaft 122 having a finger grip end 123, this shaft being suitably journaled and housed entirely inside of the coin chute casing box or the pedestal of the machine so that it is inaccessible to the public. This shaft has a socket 124 on the end opposite the finger grip, which socket engages a stem 125 of the stub shaft 107. Therefore, by rotating the shaft 122 in either direction, the gears 109, 114, and 111 may be rotated and thus change the relative position of the gears 115, 117, and 119 and the sleeves to which such gears are connected. In order that the party setting the device may be apprised of the correct selling price at which the machine is set, a drum 126 is mounted on a shaft 127 suitably journaled, which shaft is driven by a worm 128 on the shaft 122. The drum is provided with a series of numerals 129 which designate the market price of the liquid being dispensed. Hence, as the sleeves are driven, they rotate the quantity regulating disks 130, 131, and 132, these being mounted respectively on the outer sleeve 120, intermediate sleeve 118, and the inner sleeve 116. (Note Figs. 6 and 10 to 13). The disk 130 cooperates with the ten cent coin chute and has four pins, 133, 134, 135, and 136, thereon. The disk 131 which cooperates with the twenty-five cent chute has pins 137 and 138 thereon. The disk 132 which operates with the fifty cent chute has pins 139 and 140 thereon. These disks are formed of parallel plates with pins secured between the plates. These pins are used to engage the trigger actuating link mechanism 141 having the links 142, 143, and 144 (note Figs. 4, 5, 6, 15, and 16). These links have a hook 145 at the outer end behind which there is a notch 146. They have a longitudinal slot 147 and fit against the flat side 42 of the triggers 37. A bolt 148 extends through the slot 147 and into the lower end of the trigger 37. There is a circular or partly cylindrical bottom surface 149 on the lower part of the trigger, which is concentric with this bolt, and against this may engage an adjusting bolt 150 which extends through an end flange 151 on each of the links designated by the assembly 141. (See Figs. 15 and 16.)

The pins on the disks mounted on the sleeves are used to engage in the notches 146 and to engage the hook end 145 to each of these links, and as the disks, as a whole, are rotated in the direction of the arrow 152 (note Fig. 7) each pin will give an upward pull on its respective link as indicated in Fig. 5, and cause the release of the notched end 41 of the gates 34, there being one of these gates for each coin slot, each of which gates has a counterweighted end 153 (note Figs. 4, 5, and 17.) When the triggers are tilted upwardly the gates are free to move downwardly and drop the coins. If there is only one coin being used in one slot at a time and the gate holding this coin is free to open, by release of its trigger, then the counterweight on the end of the chain 53 is free to function in pulling upwardly on the inner coin carrier. This causes the coin to drop by forcing the gate open.

In order to prevent a person from actuating the coin carrier downwardly part of the distance and

then allowing this to return up, a locking mechanism 154 is utilized. This locking mechanism employs a pivoted pawl 155 mounted on a pivot 156 on the fixed part of the coin box, which trigger has a tooth 157 engaging in ratchet teeth 158 on the outer coin carrier 26. A spring 159 tends to hold the tooth in engagement with the teeth. The pawl has a cam-shaped surface 160 extending along one side of the carrier and this is engaged by a pin 161 on the upward movement of the inner carrier, thus forcing the pawl outwardly and releasing its tooth 157 from the ratchet 158, thereby also allowing the outer coin carrier to move upwardly under the action of its retraction spring 49.

When a single coin, when such is used, or two of the coins, when two are used, or all of the coins, when all are used, in the coin chutes, are dropped, and the coin carrier returns to its upper position, the valve 17 is closed, thus stopping the pump and the supply of liquid dispensed by the hose.

The manner of operation and functioning of the different disks having the pins is as follows: The leading pins 133, 137, and 139 are so positioned on their respective disks that if any of the single coins, such as the ten, twenty-five, and fifty cent pieces, are used in the coin slots, the ten cent disk 130 will, by means of the pin 133, release the trigger for the ten cent coin slot and will drop the ten cent piece when the proper quantity of liquid has been dispensed in accordance with the value of such coin, and then the machine will stop. Similarly with the twenty-five cent piece, if used singly, the pin 137 on the disk 131 operates the link and, hence, the trigger controlling the twenty-five cent chute, and allows dropping of the coin and stopping of the machine. Also, with the fifty cent coin, the pin 139 on the disk 132 causes the stoppage of the machine at the proper time when fifty cents worth of liquid has been dispensed.

Presuming a ten and a twenty-five cent piece are inserted, then when the pin 133 pulls the trigger corresponding to the ten cent chute, the gate controlling this chute is released but does not drop open on account of its counterweighted end 153 and this pin rides off the hook. The pin 137 on the disk 131, likewise, releases the gate of the twenty-five cent chute after the trigger controlling the ten cent chute has returned to its operative latching position for release of the ten cent control gate, but the pin 134 comes into action when the ten cents worth more of liquid has been vended, making the value of thirty-five cents. This releases the ten cent coin chute. Thus in both the twenty-five and ten cent chute the coins may drop, the link for the twenty-five cent chute engaging the pin 137 on being released until the ten cent link has been retracted by the pin 134.

To vend sixty cents worth of liquid, using the fifty and the ten cent pieces, likewise, the pins 133 and 134 operate the link for the ten cent chute and allow this to return to its locking position before the pin 139 on the disk 132 releases the link controlling the fifty cent chute. When this latter link is released, the ten cent coin still prevents upward movement of the coin carrier on account of its gate being locked by its own trigger, and it is not until the pin 135 on the ten cent control disk 130 engages and releases its links that the gate controlling the ten cent chute is released, and during this period of movement of the shaft carrying the sleeves and the disk and operated from a meter, gives sixty cents worth of liquid.

To obtain seventy-five cents worth of liquid by depositing both a twenty-five and fifty cent piece, the pin 137 on the twenty-five cent control disk 131 releases the twenty-five cent gate and again permits such gate to come to its locked position. The pin 139 releases the fifty cent chute and again allows this to come to its locked position, but such pin holds the trigger for the twenty-five cent chute unlocked until the pin 138 on the twenty-five cent control disk 131 releases the twenty-five cent chute gate and, therefore, as both of these gates are released, both the twenty-five cent and fifty cent coins are dropped on the upward movement of the coin carrier.

The action with the three coins, ten, twenty-five, and fifty cents, giving a total of eighty-five cents, is through the action of the ten cent coin retaining the carrier in its lowered position while the link connected to the twenty-five cent chute passes the pins 137. The pin 139 on the fifty cent control disk is passed, and all of the chutes are locked closed. Then the links for the twenty-five and fifty cent chutes engage respectively the pins 138 and 140 on the respective disks 131 and 132, which cause the unlocking of these chutes by retracting the triggers, and while these are still maintained unlocked, the link connected to the ten cent control trigger is engaged by the pin 136 on the ten cent control disk 130, this then releasing the gate of the ten cent chute, and as all the triggers are simultaneously withdrawn, the three gates are released and the three coins may be dropped by the upward movement of the coin carrier, thus causing a vending of eighty-five cents worth of liquid.

In adjusting the relative position of the disks through the mediums of their respective sleeves and the varied carriers, it will be noted that when the shaft 122 is rotated by hand the fifty cent control disk is rotated five times as much as the ten cent control disk and the twenty-five cent control disk two and one-half times that of the ten cent control disk.

When setting the device for different basic prices of liquid, presuming the price of the gasoline or other liquid to be dispensed is twenty cents a gallon, then the various disks are set through the medium of rotating the shaft 122 and also by effecting slight adjustments of the links through the medium of the bolts 150, this being regulated so that the dial 126 will show to the party making the adjustment the figure 20, indicating twenty cents per gallon as the price. Thus, it will be found that for ten cents one-half gallon will be dispensed, for twenty-five cents one and one-quarter gallon, and for fifty cents two and one-half gallons. Also, if the basic price fluctuates, either raising or lowering, the changes in the positions of the various disks, hence, their pins, require these disks to have a less or a greater degree of travel in relation to that for the price above stated. Hence the machine may readily be adjusted to dispense the proper quantities of liquid to give full value in quantity for the coinage deposited in the coin slots and chutes, whether these coins be single, two in number, or all of the chutes filled with coins.

As above mentioned, the meter 21 is used to convey a drive to the shaft 23, from this shaft to the gauge. The particular drive arrangement is illustrated in Fig. 18, in which the meter has a vertical shaft 170 with a gear 171 thereon meshing with a gear 172 on the shaft 63, this latter shaft being journaled in the top 173 of the meter

and a plate 174. The sprocket chain drive 64 is from the shaft 63 to the shaft 23. (Note Figs. 17, 2, and 3.)

A release for the gauge 175 uses standard mechanism on the gauge which has a small rock shaft 176 with a lever arm 177, this being connected to a link 178, this link being attached to the hub 52. Therefore, after liquid has been dispensed and the hub and valve 17 returns to its normal position, the hand of the gauge 16 is tripped to allow this to return to normal position.

Various changes may be made in the details of construction without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. A liquid dispensing machine comprising, in combination, means to supply and to meter a liquid, a coin operated means, a control means interlinked with the metering means to control the release of the coins, means operated on release of the coins to discontinue said supply means, the coin operated means having an interconnection to the means to supply and meter a liquid to the value of a single coin or to the value of a plurality of coins of different values, and means to set said control means to vary the quantity of liquid dispensed in accordance with changes of the basic price of the liquid.

2. A liquid dispensing machine comprising, in combination, a liquid pump, a meter for the liquid, a coin operated mechanism, a control mechanism interconnecting the meter and the coin mechanism to release the coin after a predetermined amount of liquid has been dispensed in accordance with the value of such coin, and means operated by the releasing means for the coin to discontinue operation of the pump and thereby stop the meter, the coin operated mechanism having means to accommodate a single coin or a plurality of coins of different values, the means to release the coins being adapted to release a single coin if only one coin is used or to retain all of the coins until liquid to the value of such coins has been dispensed.

3. A liquid dispensing machine as claimed in claim 2, and a single means to change the setting of the control means to obtain a relative change in the release of the coins in accordance with changes in the basic price of the liquid.

4. A liquid dispensing machine comprising a plurality of coin controlled devices, a supply means for a liquid, a manually operated interconnecting means between the coin operated devices and the supply means to initiate the action of the supply means, an arrester for each of the coin controlled devices, a regulating means actuated by the supply of the liquid with an interconnecting mechanism to release the coin arresters, said means being operative when only one coin is used to release the coin after the vending of a predetermined amount of liquid to the value of such coin, and means operative on the release of the coin to discontinue the operation of the supply of liquid.

5. A liquid dispensing machine as claimed in claim 4, the regulating means being operative to restrain the release of one coin when more than one coin is utilized until liquid has been dispensed to the value of the plurality of coins, said timing means then being operative to cause the release of all of the coin arresters having coins retained thereby.

6. A liquid dispensing machine comprising a plurality of coin controlled devices, means to

operate a supply of liquid, a manual control mechanism and an interconnection between the coin operated devices and the supply means to initiate the operation of the supply means, a coin arrester for each coin operated device, a trigger for each arrester, a moving regulating mechanism having an operative connection to the supply means, and a releasing means for each trigger, the regulating means and releasing means being operative to release a single coin when liquid to the value of such coin has been dispensed and to restrain the release of a single coin when a plurality of coins are used in the different coin operated devices until liquid to the value of all of the coins used has been dispensed, said regulating means and releasing means then being operative to release all of the coins, and means operative on release of the coins to stop the operation of the supply means.

7. A liquid dispensing machine as claimed in claim 6, a totaling mechanism manually operated to shift the relative position of the regulating means as to each coin operated device to vary the regulating action of the operation of each trigger in accordance with changes of the basic price of the liquid being dispensed.

8. A liquid dispensing machine comprising a plurality of coin controlled devices having a slidable carriage in two relatively movable parts, a control means to actuate one of said parts and, hence, the other when one or more coins are in position, there being a coin arrester for each coin controlled device, means to operate a supply of liquid, means controlled by the movement of the carriage to initiate the operation of the supply means, a trigger for each arrester, a moving regulating mechanism having a plurality of disks, one for each coin, a releasing link operatively connected between each disk and each trigger, a means on each disk to operate each link and being operative to release a single coin from the coin arrester when liquid to the value of such coin has been dispensed and to restrain the release of a single coin when a plurality of coins are used in the different coin controlled devices until liquid to the value of all the coins used has been dispensed, said regulating means having the disks and the releasing triggers then being operative to release all the coins, and operative means on the release of the coins to stop the operation of the supply means.

9. A liquid dispensing machine as claimed in claim 8, the disks of the regulating means being relatively movable for setting the relative position of said disks in accordance with changes of the basic price of the liquid to be dispensed, and means to lock said disks together to rotate as a unit.

10. A liquid dispensing machine comprising a plurality of coin controlled devices, means to operate a supply of liquid, a manual control mechanism

and an interconnection between same and the coin controlled devices and the supply means to initiate the operation of the supply means, a coin arrester for each coin controlled device, a moving regulating mechanism with an interconnected drive operated by the supply of the liquid, said regulating means being operative to actuate a releasing device to release a single coin when liquid to the value of such coin has been dispensed and to restrain the release of a single coin when a plurality of coins are used in the different coin operated devices until liquid to the value of all of the coins used has been dispensed, said regulating means and releasing means then being operative to release all of the coins, and means operative on release of the coins to stop the operation of the supply means.

11. A liquid dispensing machine as claimed in claim 10, the regulating means comprising a plurality of disks with a mounting to permit said disks to rotate relative to each other, and means to lock said disks together to rotate as a unit, each coin arrester having a trigger connected thereto, a releasing link operatively connected to each trigger, and means on each disk to operate its releasing link.

12. A liquid dispensing machine comprising a plurality of coin controlled devices, means to operate a supply of liquid, a manual control means, and an interconnection between the coin controlled devices and the supply means to initiate the operation of the supply means, a coin arrester for each coin operated device, a trigger for each arrester, a regulating mechanism comprising a plurality of disks, each having a plurality of pins, means to interconnect said disks to operate as a unit, and a driving means between said unit actuated by the supply of the liquid, a releasing link connected to each trigger and operative to engage the pins on its corresponding disk, said pins and the releasing links being operative to release a single coin when liquid to the value of such coin has been dispensed and to restrain the release of a single coin when a plurality of coins are used in the different coin operated devices until liquid to the value of all of the coins used has been dispensed, said timing means and releasing means then being operative to release all of the coins, and means operative on release of the coins to stop the operation of the supply means.

13. A liquid dispensing machine as claimed in claim 12, said disks each being mounted on a sleeve, and the sleeve being mounted on a shaft, a gear connection between the shaft and the gears to permit turning of the gears to different positions relative to each other in accordance with the change of the basic price of the liquid, said gears also being operative to cause the rotation of the gears as a unit with said shaft, the shaft being driven by the liquid supply means.

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