May 30, 1933. H. M. AUSTIN 1,912,171

COIN CONTROLLED DRINK DISPENSING APPARATUS

Filed Oct. 12, 1928 3 Sheets-Sheet 1

FIG. I.

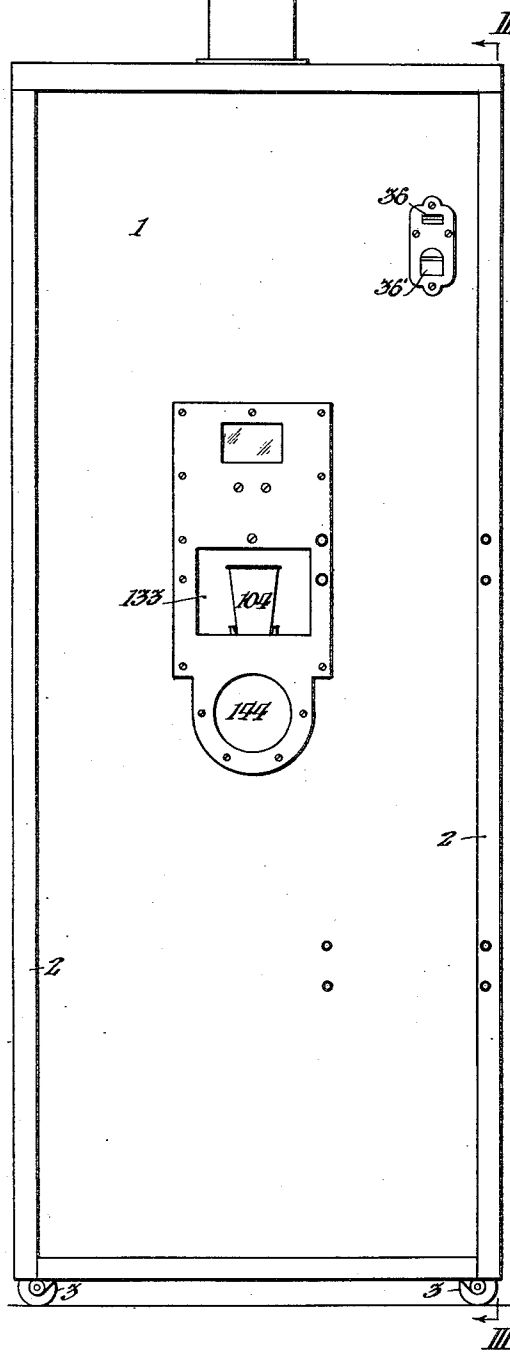
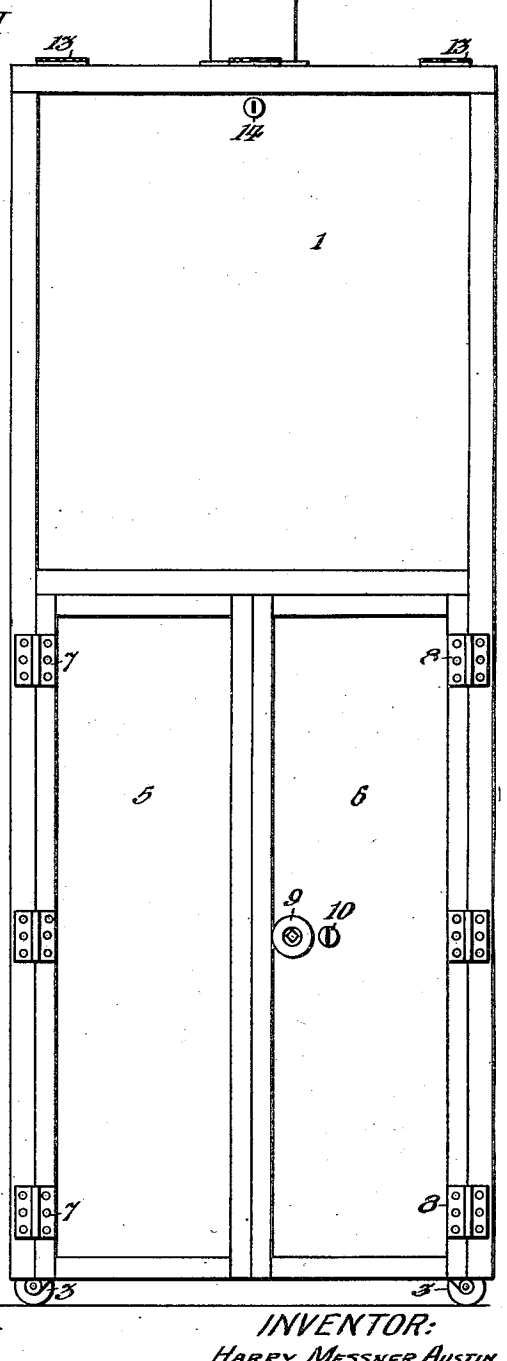


FIG. II.



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COIN CONTROLLED DRINK DISPENSING APPARATUS

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FIG. III.

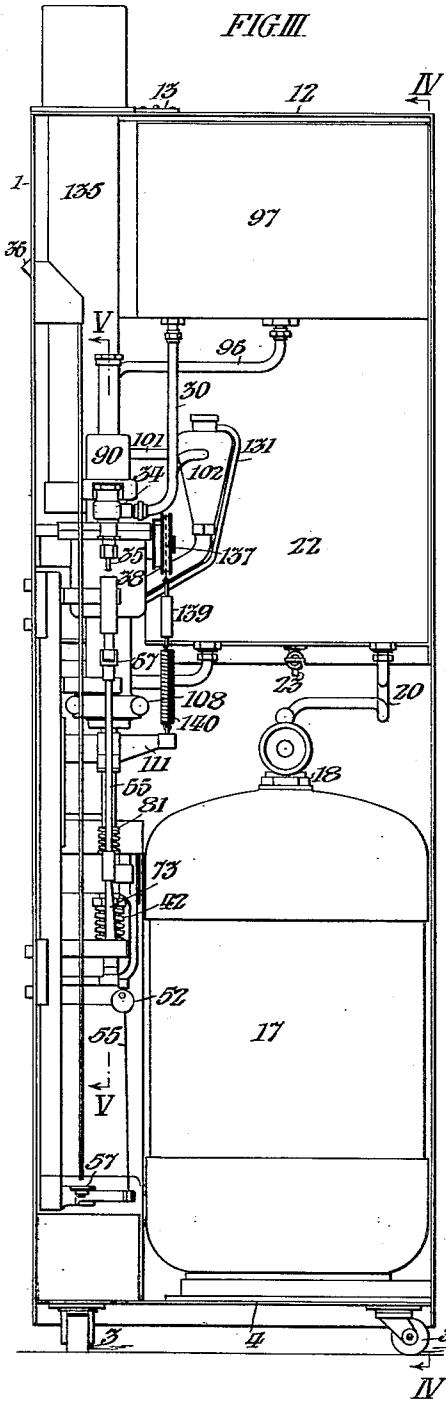
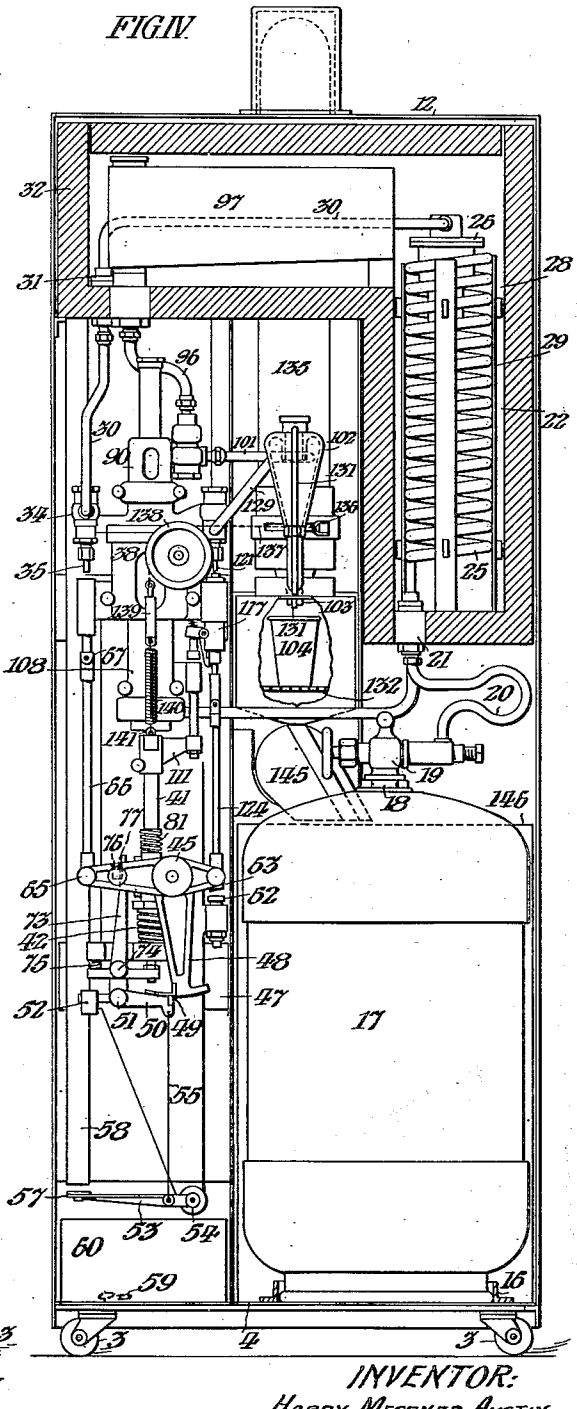


FIG. IV.



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COIN CONTROLLED DRINK DISPENSING APPARATUS

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FIG. V.

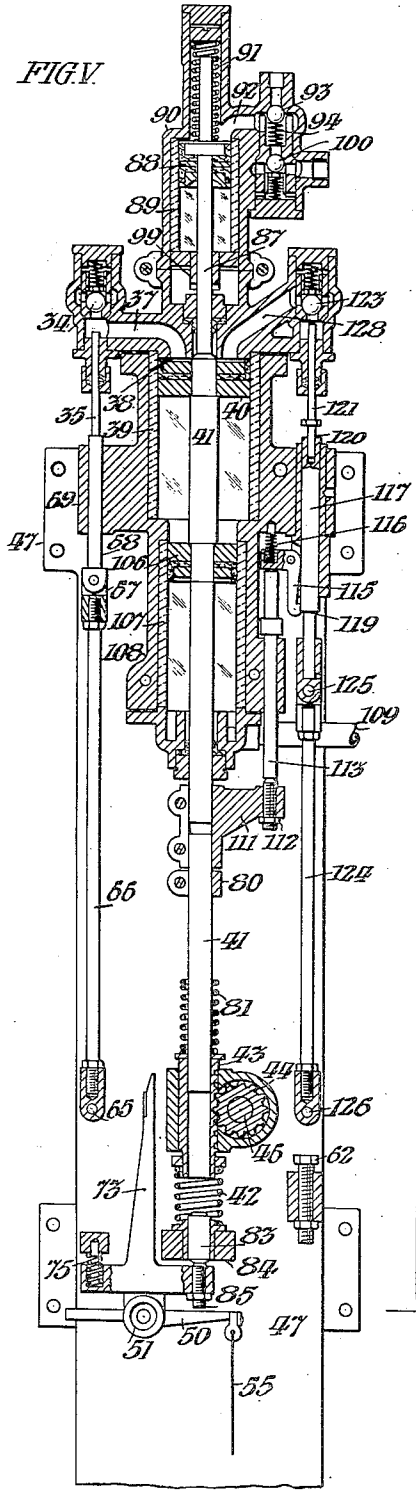


FIG. VI.

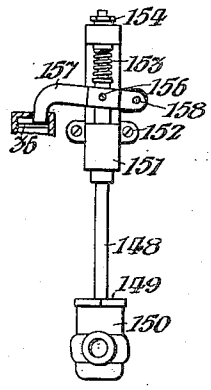
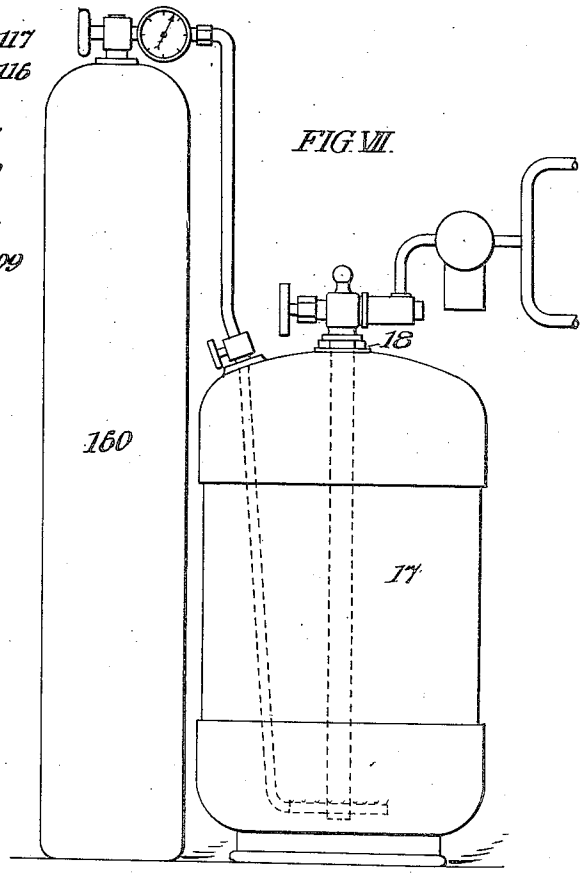


FIG. VII.



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Patented May 30, 1933 1,912,171

UNITED STATES PATENT OFFICE

HARRY MESSNER AUSTIN, OF CHESTNUT HILL, PENNSYLVANIA, ASSIGNOR TO CHARLES BLUM, OF PHILADELPHIA, PENNSYLVANIA

COIN-CONTROLLED DRINK DISPENSING APPARATUS

Application filed October 12, 1928. Serial No. 311,997.

Ordinarily, such mechanism is of two types, to wit, either the dispensing mechanism must be directly manually operated by or for the coin depositor, or it must be indirectly manually operated by or on behalf of the owner of the dispensing mechanism; the latter being directly operated by a spring which must be manually wound. The first type is disadvantageous because many prospective customers object to the labor incident to operating the dispensing mechanism. The second type aforesaid is objectionable because it necessitates frequent attendance on behalf of the owner of the apparatus to maintain the latter in operative condition.

Therefore, it is an object and effect of my invention to provide apparatus wherein the dispensing mechanism is automatically operative by the internal pressure of a portion of the drink dispensed; without any manual labor on behalf of either the purchaser or the seller of said drink. The form of my invention hereinafter described is adapted to dispense a mixed drink, including water charged with carbonic acid gas under pressure, upon deposit of a coin or check; utilizing the initial pressure of such carbonated water to effect the operation of the dispensing mechanism upon release of a portion of that pressure by the weight of the deposited coin or check. However, in that form of my invention, the dispensing mechanism is directly operated, in one direction, by a spring; which spring is initially stressed in the opposite direction, to set it in operative position, by the pressure of the carbonated water.

The form of apparatus hereinafter described is adapted to dispense a mixture of said carbonated water and a liquid flavoring material, such as a fruit syrup, and includes a paper cup magazine and means for successively dispensing cups therefrom in time and position to receive the drink dispensed; the dispensation of the cup being effected by the deposit of the coin which effects the dispensation of the drink. In other words; in that form of my invention, the dispensation of cups upon deposition of coins or checks is effected automatically by the initial pressure of the liquid to be dispensed altho, as above noted, the power thus derived from the carbonated water is first stored in a spring which is set in operative position by the pressure of the water released by the deposits of a coin.

As hereinafter described, I prefer to mount my improved dispensing apparatus in a portable cabinet, which is independent of its environment, to the extent that it may be bodily shifted from place to place without interference with its operativeness, and, to include in said cabinet a container for carbonic acid gas, apart from the water to be carbonated; said cabinet being adapted to receive and seclude a water container which may be readily connected to such gas container, to be charged with gas or be disconnected therefrom to be recharged with water.

My invention includes the various novel features of construction and arrangement and method of operation herein set forth. However, the coin controlled mechanism herein contemplated is claimed in my copending application Serial No. 367,646 filed June 1, 1929, for Letters Patent of the United States.

In said drawings; Fig. I is a front elevation of a portable cabinet containing a preferred form of my improved dispensing apparatus.

Fig. II is a rear elevation of said cabinet.

Fig. III is a vertical sectional view of said cabinet, taken on the line III, III in Fig. I; the right hand side wall of the cabinet, as seen in Fig. I, being removed to show the interior mechanism in elevation.

Fig. IV is a vertical sectional view of said cabinet and the ice box in the upper portion thereof, taken on the line IV, IV in Fig. III; the rear wall of the cabinet and ice box being removed to show the interior mechanism in elevation.

Fig. V is a vertical sectional view, taken on the line V, V in Fig. III, thru the common axis of the liquid dispensing cylinders, and their appurtenances; in a plane parallel with that of Fig. IV.

Fig. VI is a fragmentary elevation of parts shown in Fig. V, but with accessory means for automatically closing the coin slot upon

failure of the supply of carbonated water or flavoring material.

Fig. VII shows a modified form of my invention, wherein a gas container is provided to successively charge a plurality of water containers.

In said figures, the dispensing mechanism is secluded in the rectangular casing or cabinet 1 which is independently portable. Said cabinet has its outer walls conveniently formed of plane sheet metal, reinforced by angle bars 2 at the corners thereof and supported by four dirigible rollers 3 beneath the cabinet floor 4. The interior of said cabinet is accessible from the rear which is provided with double doors 5 and 6 connected to the side walls of the cabinet by hinges 7 and 8. Said door 6 is provided with locking means 9 and 10.

The top of said cabinet 1 is provided with the door 12 hinged at 13 and provided with locking means 14. The floor 4 of said cabinet 1 is provided with the seat 16 to position the removable container 17 in which carbonated water may be initially stored under high pressure, say, two hundred pounds per square inch. Said container 17 has the outlet fitting 18 at the top thereof for detachable connection with the coupling 19 at the end of the flexible copper conduit 20 which extends to the manifold 21 in the bottom of the ice box 22, the interior of which is accessible when said door 12 is opened and which may be drained thru the stop cock 23. The carbonated water coil 25 extends from said manifold 21 to the pressure reducing valve 26 in the compartment 28 of the ice box, in which said coil and valve are supported by the frame 29. Said valve 26 is adjustable to pass water at lower pressure, say, eighteen pounds per square inch, into the conduit 30, which extends thru the coupling 31, in the bottom of the compartment 32 of the ice box, to the valve 34. As hereinafter described, said valve 34 is adapted to be opened by upward movement of the plunger 35, consequent upon the deposit of a coin or check in the slot 36 in the front of the cabinet, if said coin is accepted. If the coin is rejected by the apparatus, it is rendered accessible to the depositor in the pocket 36′ immediately below said slot 36, as indicated in Fig. I.

Said valve 34 thus controls the emission of carbonated water from the container 17 and admission thereof thru the duct 37 to the upper portion of the cylinder 38. Said cylinder is formed of metal which is not corroded by the action of the components of the drinks dispensed, for instance, Monel metal, and is preferably lined with the glass cylinder 39 in which the piston 40 is raised to the position shown in Fig. V, by the piston rod 41 under upward pressure carbonated water, as hereinafter described.

Said piston 40 and its rod 41 are thrust downwardly by the pressure of the carbonated water when the latter is admitted to the duct 37 by opening the valve 35. Such movement compresses the main spring 42 beneath the rack 43 to set it in the stressed position shown, in which it is temporarily detained, ready for reverse movement, to lift said rack and initiate the dispensing operation, as hereinafter described.

Said piston rod 41 is made in several axially adjustable sections, as indicated in Fig. V, merely to facilitate the initial calibration of the apparatus, and slides freely in the rack 43, which meshes with the pinion 44 on the hub of the bell crank lever 45, hereinafter termed the main lever to turn the latter on the stationary fulcrum stud 46 in the frame plate 47, which latter is rigidly secured on the wall of the cabinet 1, in the position shown in Figs. III and IV. To detain said main spring 42 in such stressed condition, said lever 45 has the arm 48 with the detent abutment 49 adapted to be engaged by the detent lever 50, which is fulcrumed at 51 and has the counterbalance 52 continually tending to tilt it into engagement with said lever arm 48, in the position shown in Figs. III and IV.

Said detent lever 50 is adapted to be tripped and released from engagement with said lever 45 (to permit the spring 42 to initiate the dispensing operation), by the tripping lever 53, best shown in Fig. IV, which is fulcrumed at 54 upon said frame 47 and operatively connected with said detent lever 50, by the link 55. The counterweight 52 of said detent lever 50 normally upholds the latter and said tripping lever 53 in the position shown in Fig. IV. In that position, said tripping lever presents its platen end 57 in registry with the chute 58 thru which properly proportioned coins or checks 59 fall when deposited in the slot 36 shown in Fig. I. Any such deposited check strikes said lever with such force as to turn it down far enough to release said detent lever 50 before the coin falls from said lever platen 57 into the removable coin box 60 which rests upon the floor 4 of said cabinet. When thus released, the lever 45 turns clockwise, under pressure of the spring 42. In order to precisely limit such turning movement of the lever 45 under pressure of said spring 42, I provide the adjustable screw abutment 62 in said frame 47, as shown in Fig. V, to encounter the end of the arm 63 of said lever.

Said lever 45 is pivotally connected at 65 with the connecting rod 66 which is pivotally connected at 67 with the plunger 68 which is mounted for vertical reciprocation in the bearing 69 on said frame 47, in alinement with said valve plunger 35. Consequently, the above described clockwise turning movement of said lever 45, under pressure of the spring 42, uplifts the valve 34

and admits carbonated water under pressure from the container 17 to force the piston 40 and its rod 41 downwardly.

During such downward movement of said piston 40 and its rod 41; the lever 45 is upheld in its raised position by the locking lever 73 which is fulcrumed at 74 on said frame 47 and continually pressed to turn counterclockwise, by the spring 75, to bear against the stud 76 projecting from said lever 45 in position to be engaged in the recess 77 of said locking lever 73 when said lever 45 approaches the upper limit of its movement; so that said lever 45 is upheld to hold the water valve 34 open until said locking lever 73 is subsequently turned clockwise to release it, as hereinafter described.

In the downward movement of said piston 40 and its rod 41 above contemplated; said rod slips thru the rack 43 until the adjustable abutment 80 on said rod compresses the spring 81 to exert a downward thrust upon the rack 43 greater than the upward thrust of the spring 42. However, before that condition is reached; the lower end of said rod 41 encounters the plunger 83 which is mounted for vertical reciprocation in the bearing 84 on the frame 47, in registry with the adjusting screw 85 in said locking lever 73; so as to tilt the latter clockwise, disengage the recess 77 thereof from the stud 76 on the bell crank lever 45 and thus release the latter for restoration to its original position shown in Fig. IV. Whereupon, the remainder of the downward movement of said rod 41 effects downward movement of said rack 43 to effect such restoration of said lever 45.

As shown in Fig. V; said piston rod 41 has, in axial alinement therewith, a piston rod 87 carrying the piston 88 which is mounted to reciprocate in the glass lining 89 of the syrup cylinder 90. Said piston 88 is continually thrust downwardly by the spring 91; so that when said water piston 40 is lowered, as above contemplated, it permits said syrup piston 88 to be thrust downwardly by its spring 91 to create a partial vacuum in the duct 92 such as to open the check valve 93 which is normally closed by the spring 94. Said valve controls the passage of flavoring syrup thru the conduit 96 from the container 97 in the ice box 22; so that, when the piston 40 moves downwardly, under pressure of the carbonated water, as above described, said spring 91 is permitted to thrust downwardly the syrup piston 88 and draw into the syrup cylinder 90 a charge of syrup, the amount of which is determined by the axial movement of said piston 88, limited by the axially adjustable screw bearing 99. Reverse, upward, movement of said syrup piston 88, effected by the upward movement of the piston 40, and its rod 41, discharges the aforesaid measured quantity of syrup back thru the duct 92, but out past the check valve 100 and thru the conduit 101 to the drink mixing chamber 102 which, as indicated in Fig. IV, is funnel-shaped and provided with the discharge conduit 103 leading to the cup 104 which, by mechanism hereinafter described, has been dispensed in time and position to receive the mixed drink, as a consequence of the deposit of said coin or check.

Such upward movement of the piston rod 41 is effected by the piston 106 thereon which is mounted to reciprocate in the glass lining 107 in the cylinder 108 which, as shown in Fig. V, is in axial alinement with said cylinder 38 but of smaller diameter. The interior of said cylinder 108 is continually under pressure of the carbonated water, thru the conduit 109 from the manifold 21; but the pressure upon said piston 106 is dominated by the pressure upon the piston 40, which is of larger area. In other words, said piston rod 41 is moved downwardly by the difference in pressure of the carbonated water upon the two pistons 40 and 106, but is moved upward by the pressure of the water beneath the piston 106 when the pressure of the water above the piston 40 is permitted to escape by the discharge of a portion of the water to form the drink, as follows:

Said piston rod 41 carries the bracket 111 having the adjustable screw 112 in alinement with the plunger 113 which normally upholds the latch 115 against the pressure of the spring 116 of the latter. The aforesaid downward movement of the piston rod 41, of course, permits said plunger 113 to be lowered, thus releasing said latch, which then presses against the side of the plunger 117, as indicated in Fig. V, in readiness to engage beneath the shoulder 119 on said plunger, when the latter is uplifted, and to maintain it in uplifted position. Said plunger 117 has the axially adjustable screw 120, at the upper end thereof, for adjustment of the valve plunger 121 to open the check valve 123 when said plunger 117 is uplifted by the connecting rod 124 which is pivotally connected to said plunger 117 at 125 and pivotally connected at 126 with the arm 63 on the lever 45.

Said valve 123 controls the flow of carbonated water from the cylinder 38 thru the duct 128 to the conduit 129 extending into the mixing chamber 102.

As the gas from the carbonated water tends to rise to the top of said mixing chamber 102; I prefer to provide the latter with the gas vent conduit 131, extending from the top thereof downwardly, adjoining the liquid discharge conduit 103; so as to discharge the gas into the stream of liquid flowing into the cup 104.

In order to dispense the cups 104 in time and position, upon the grating 132 in the recess 133 in the front of the cabinet, to receive the drinks which are dispensed as above de-

scribed; I mount, in said cabinet, the tubular cup magazine 135 adapted to contain a vertical series of said cups and having, at the bottom thereof, the cup dispensing lever 136 which is spring pressed to the position shown in Fig. IV, in which it upholds said series of cups but, when drawn to the left in said figure, releases a single cup to permit it to fall upon said grating in the position shown in Figs. I and IV. Such cup dispensing movement of said lever 136 is conveniently effected by the chain 137 which extends over the idle drum 138 to the adjustable coupling 139 which is connected by the spring 140 with the eye 141 on said bracket 111; so that when said bracket is lowered, by the piston rod 41, as above described, said cup dispensing lever is shifted to the desired extent, altho the motion of said bracket is of greater extent.

The mechanism above described operates as follows: With all of the parts in their respective positions shown in Figs. I to IV inclusive; upon deposit of a suitable coin or check in the slot 36 in the front of the cabinet 1; said coin falls thru the chute 58 upon the tripping lever 53 and thus pulls down the detent lever 50 and releases the bell crank lever 45 to turn clockwise under pressure of the spring 42. As a consequence thereof, and by the means above described; the water valve 34 is opened and the piston 40 driven downwardly by the pressure of the carbonated water thus released into the cylinder 38. Such downward movement frees the plunger 87 of the syrup dispensing piston 88 which is thrust downward by the spring 91. Such movement restores said spring 42 to the compressed position shown, while said valve 34 is held open by detention of said lever 45 in the position shown, by the locking lever 73. However, at the limit of the downward movement of said piston rod 41, said locking lever 73 is tilted clockwise, by the plunger 83, to release and permit said lever 45 to turn counterclockwise, thus upwardly thrusting the plunger 121, to open the water dispensing valve 123 by the plunger 121. Said valve 123 is held open for a sufficient time thereafter, by the latch 115 engaging beneath the shoulder 119 on said plunger 117 under pressure of the spring 116. The pressure of the carbonated water above said piston 40 being thus relieved by the escape of a portion of the carbonated water into the mixing chamber 102, past said valve 123; the piston 106 is permitted to act, by the constant pressure of the carbonated water beneath it, to uplift said piston 40 to the position shown in Fig. V; thus not only discharging the carbonated water from the cylinder 38, but also discharging the flavoring syrup from the cylinder 90 into the mixing chamber 102 and thence into the cup 104. Such upward movement of the piston rod 41, by the piston 106, restores the mechanism to the initial position shown in Fig. V; in which position it is ready to begin another cup and drink dispensing operation, upon deposit of another coin or check. The discarded cups may be dropped thru the opening 144 in the front of the cabinet 1, into the chute 145 leading into the waste cup receptacle 146 shown in Fig. IV. Said receptacle rests loosely upon the floor 4 of the cabinet and may be removed and emptied and replaced when the door 6 is opened.

As shown in Fig. VI; accessory means for automatically closing the coin slot 36 upon failure of the supply of carbonated water may include the plunger 148 mounted to reciprocate in the cap 149 in the top of the casing 150 containing said check valve 34. The upper end of said plunger is fitted in the slide bearing 151 rigidly connected with the side wall of the cabinet 1, by the screws 152. Said plunger 148, which is thus subjected to the pressure of the carbonated water from the conduit 30 leading to said valve casing 150, is normally thrust upwardly to compress the spring 153 to the position shown in Fig. VI; the pressure of said spring being adjustable by axial movement of the screw abutment 154 in said bearing 151. Said plunger 148 is pivotally connected, by the screw 156, with the slot closure lever 157 which is fulcrumed at 158 on said bearing 151. The parts aforesaid being adjusted to normally present the end of said closure lever 157 in the position shown in Fig. VI; failure of the pressure of the carbonated water causes said plunger 148 to drop under the thrust of the spring 153 to lower said lever 157 in front of the slot 36 and close the latter. It is obvious that a similar device may be connected with the syrup conduit, to close said slot 36 upon failure of the supply of flavoring material.

In the form of my invention above described, the carbonated water container 17 is such as is ordinarily commercially employed in connection with ordinary drink dispensing mechanism; such containers being removed from the dispensing apparatus, recharged with water, and the latter re-charged with gas by the manufacturer of the carbonated water. If such containers be used in conjunction with my dispensing apparatus aforesaid, it is necessary to change the same when the internal pressure of carbonated water therein is lowered to about sixty pounds per square inch from the initial pressure of, say, two hundred pounds per square inch. However, as indicated diagrammatically in Fig. VII, I may include in the cabinet 1, beside the carbonated water container 17, a container 160 originally charged with carbonic acid gas under high pressure and containing sufficient gas to recharge the water container 17 five times. In that form of my invention, it is only necessary to replenish the water in the single container 17 and re-subject the

same to the pressure of the gas in the container 160; whereby the fresh water is charged with said gas.

Therefore, I do not desire to limit myself to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention, as defined in the appended claims.

I claim:

1. In a fluid pressure operative dispensing device, the combination with means forming two piston chambers; pistons in the respective chambers; a piston rod common to said pistons; means for admitting the same liquid under pressure to both chambers; a spring in cooperative relation with said piston rod and opposed to the pressure of said liquid in one of said chambers; and releasing means, adapted to exhaust the liquid from one of said chambers; whereby said piston rod is alternately moved in opposite directions, to effect dispensation of a measured portion of said liquid, by pressure from said liquid.

2. Apparatus as in claim 1; including a third piston chamber, a piston for that third chamber also carried by said rod; means for supplying flavoring material to said third chamber; and means for directing said flavoring material for dispensation with the liquid dispensed from the other of said chambers.

3. In coin controlled mechanism, a main lever, pivoted intermediate of its length, and having plunger means at respectively opposite ends thereof, adapted for operative connection with dispensing mechanism, including a fluid pressure device; a main spring, in cooperative relation with said pressure device, and tending to shift said lever in one direction, to render one end thereof operative upon said dispensing mechanism; a locking lever arranged to engage said main lever and temporarily hold it in such operative position; and means for tripping said locking lever, including a plunger in coaxial relation with said spring; whereby said locking lever may be tripped to permit said lever to be restored to inoperative position and said spring reset in that position, by said fluid pressure device.

4. Coin controlled mechanism as in claim 3; including a collar on said plunger, another spring in coaxial relation with said plunger adapted to be stressed by contact with said collar, when said plunger is moved axially in one direction, to such a degree as to overpower and reset said main spring when said locking lever is released.

5. In coin controlled mechanism, the combination with an oscillatory lever having means for operative connection with dispensing mechanism, including a fluid pressure device in cooperative relation with a main reciprocatory plunger; of a gear rigidly connected with said lever, in coaxial relation with its fulcrum; a rack, carried by and in reciprocatory coaxial relation with said plunger, in mesh with said gear; a spring, in coaxial relation with said plunger, tending to thrust said rack in one direction, to operate said dispensing mechanism; and means carried by said plunger for both moving said rack in one direction of axial movement of said plunger, and for stressing said main spring; whereby said rack, lever, and main spring may be moved by said plunger, under stress of said fluid pressure device.

6. Coin controlled mechanism as in claim 5; including a locking lever arranged to engage said main lever in the position to which it may be shifted by said main spring, when the latter is released.

7. Coin controlled mechanism as in claim 5; including a locking lever arranged to engage said main lever in the position to which it may be shifted by said main spring, when the latter is released; and means adapted to operatively connect said plunger and locking lever and trip the latter to release said main lever before said main spring is restored to stressed position.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this twenty-fourth day of September, 1928.

HARRY MESSNER AUSTIN.