Aug. 30, 1932. K. D. PETTIT ET AL 1,874,060

BEVERAGE DISPENSING APPARATUS

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Fig. 2

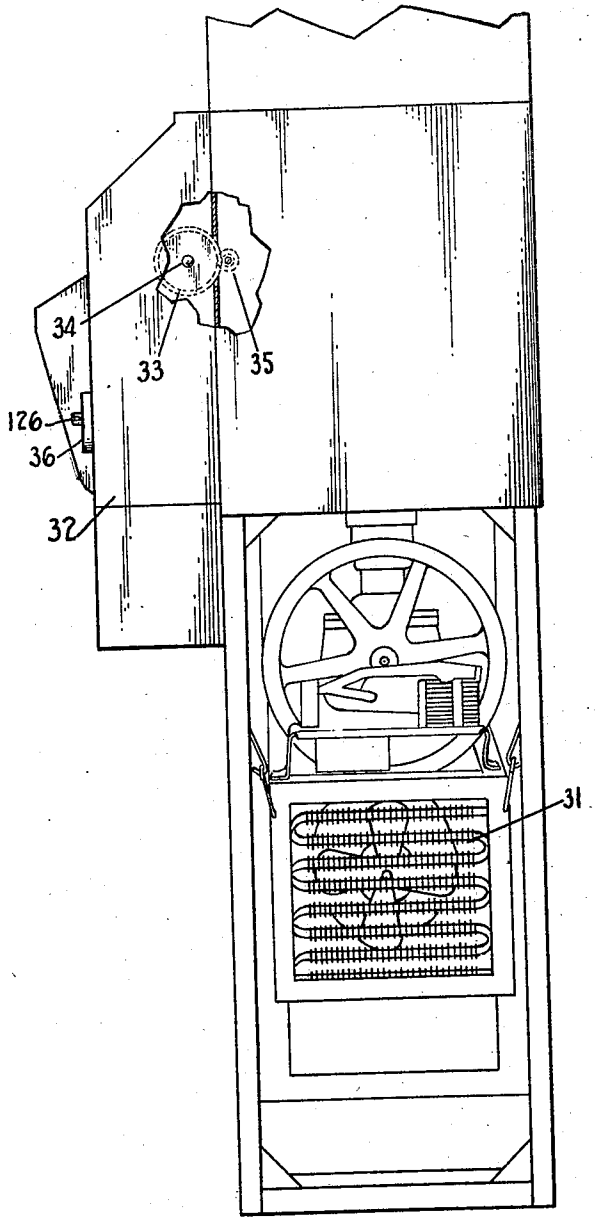
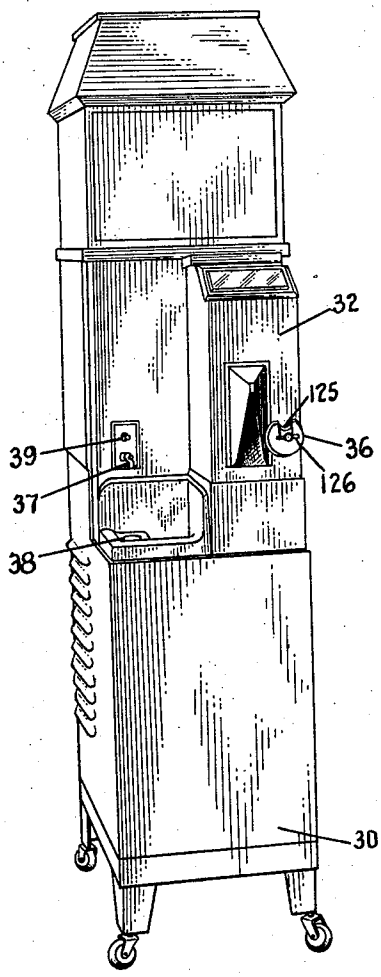


Fig. 1



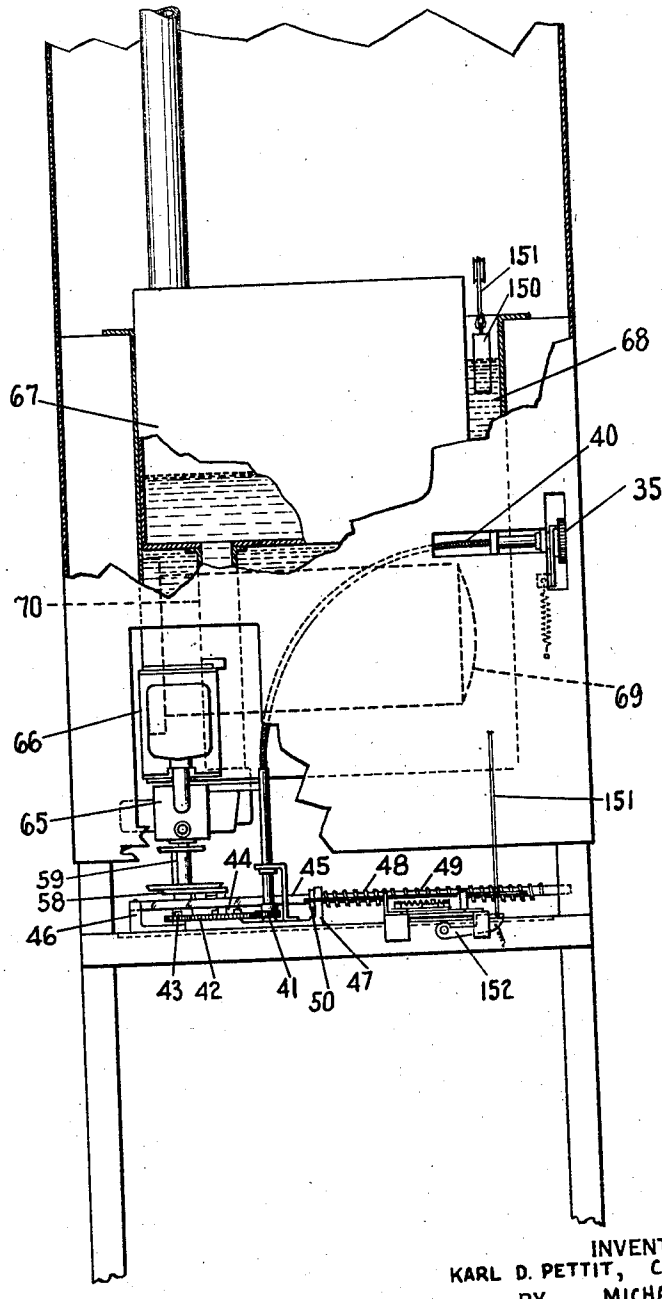
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BEVERAGE DISPENSING APPARATUS

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Fig. 3



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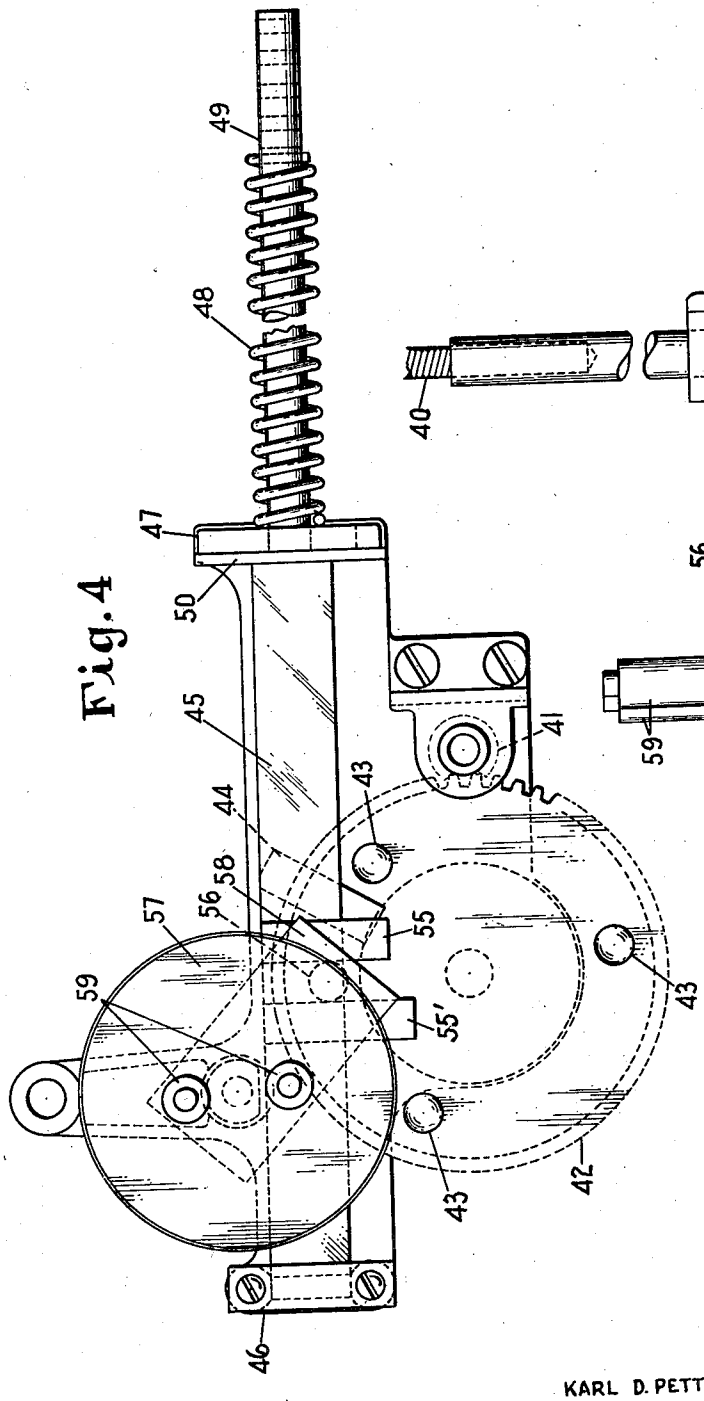


Fig. 4

Fig. 5

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BEVERAGE DISPENSING APPARATUS

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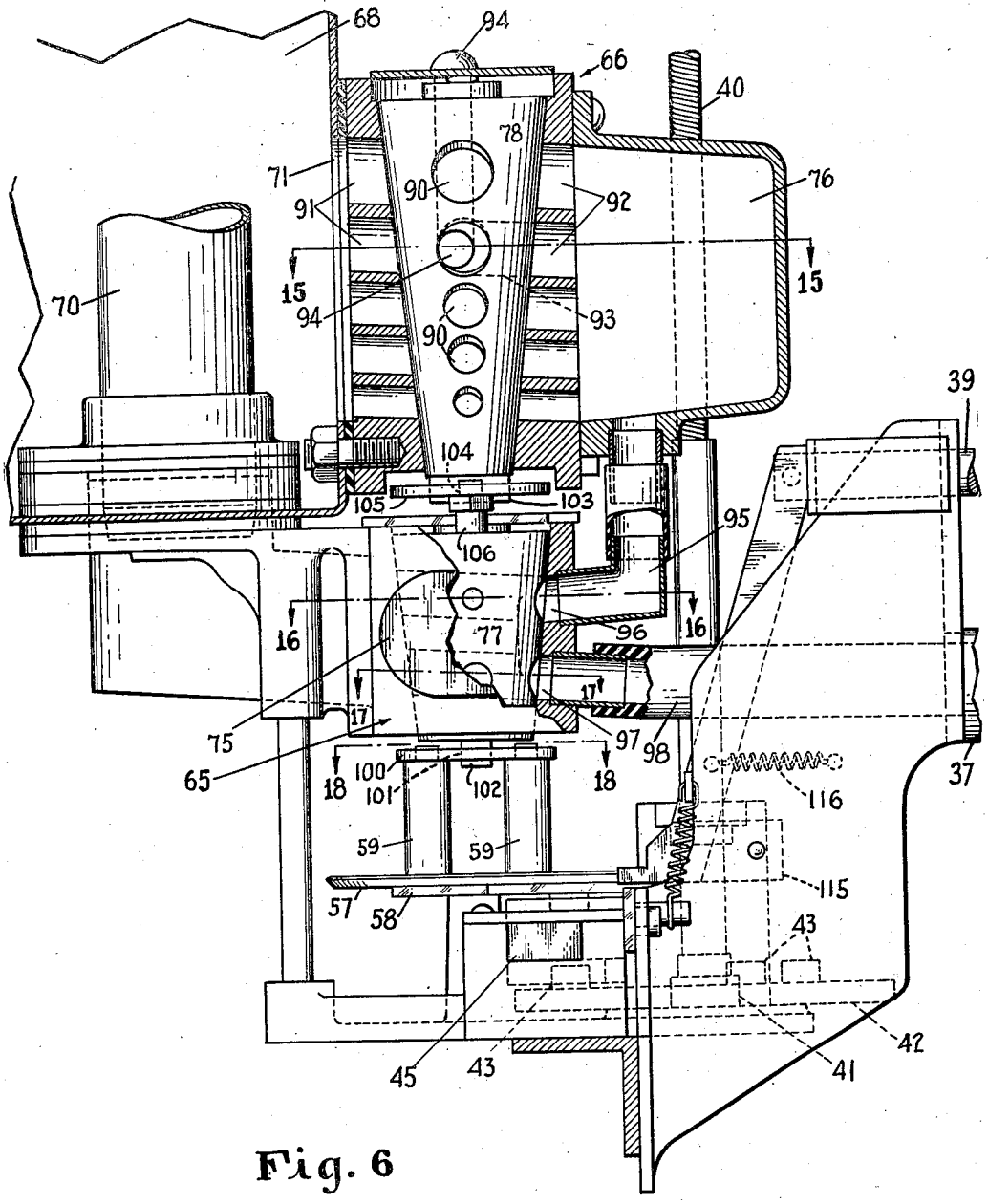


Fig. 6

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BEVERAGE DISPENSING APPARATUS

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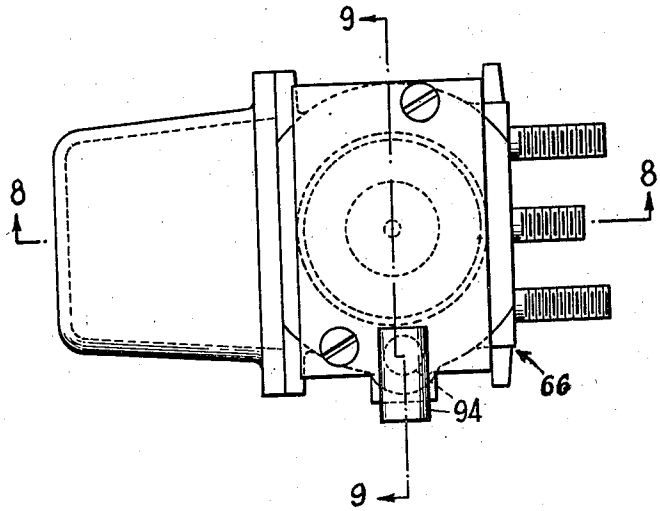


Fig. 7

Fig. 8

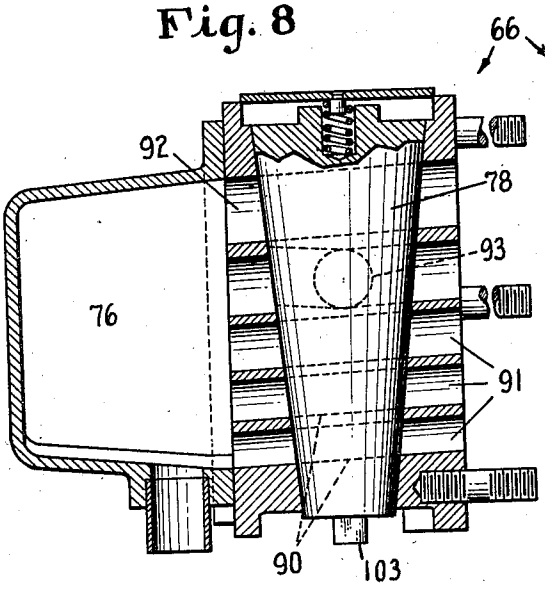
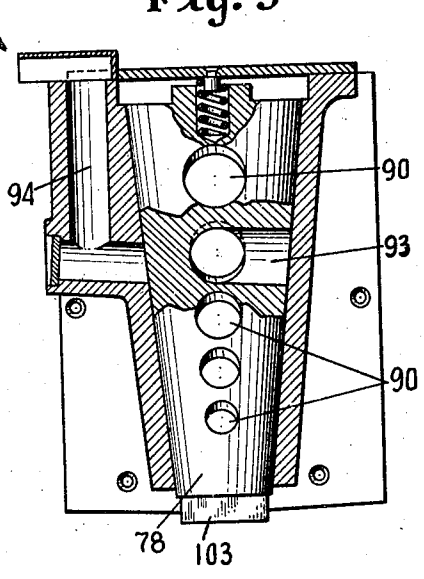


Fig. 9



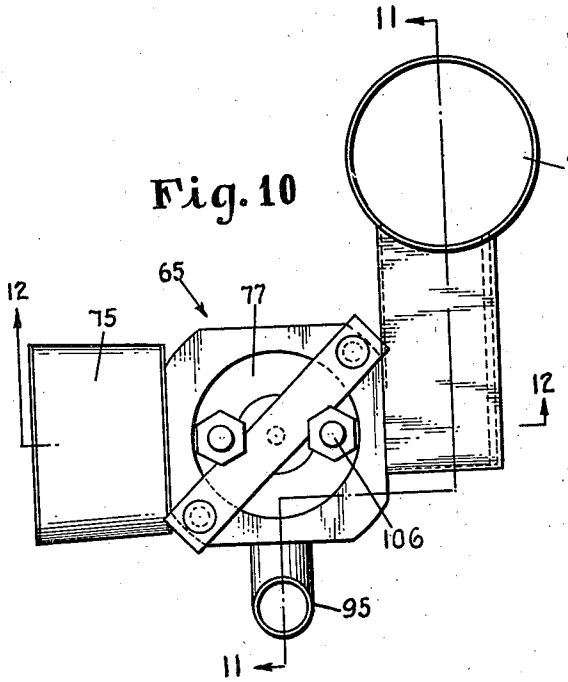
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BEVERAGE DISPENSING APPARATUS

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Fig. 10



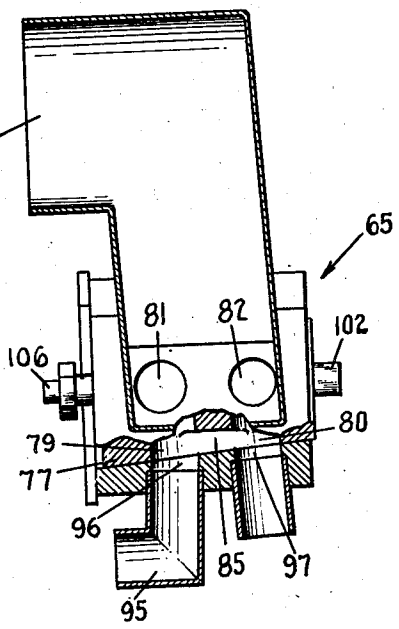


Fig. 11

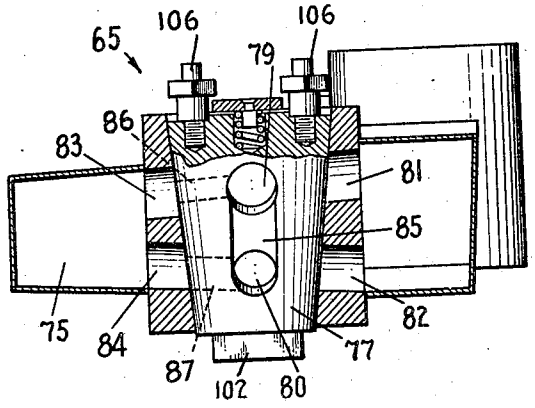


Fig. 12

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BEVERAGE DISPENSING APPARATUS

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Fig. 13

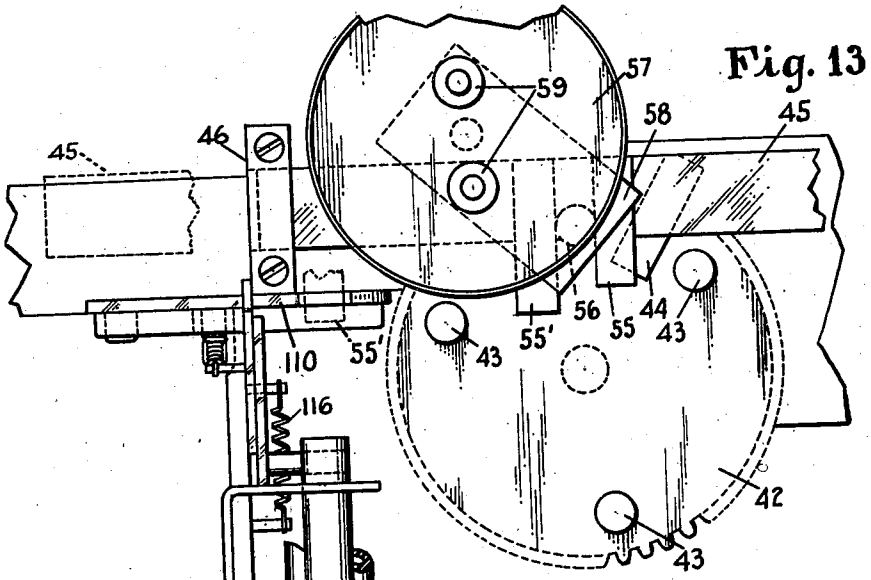
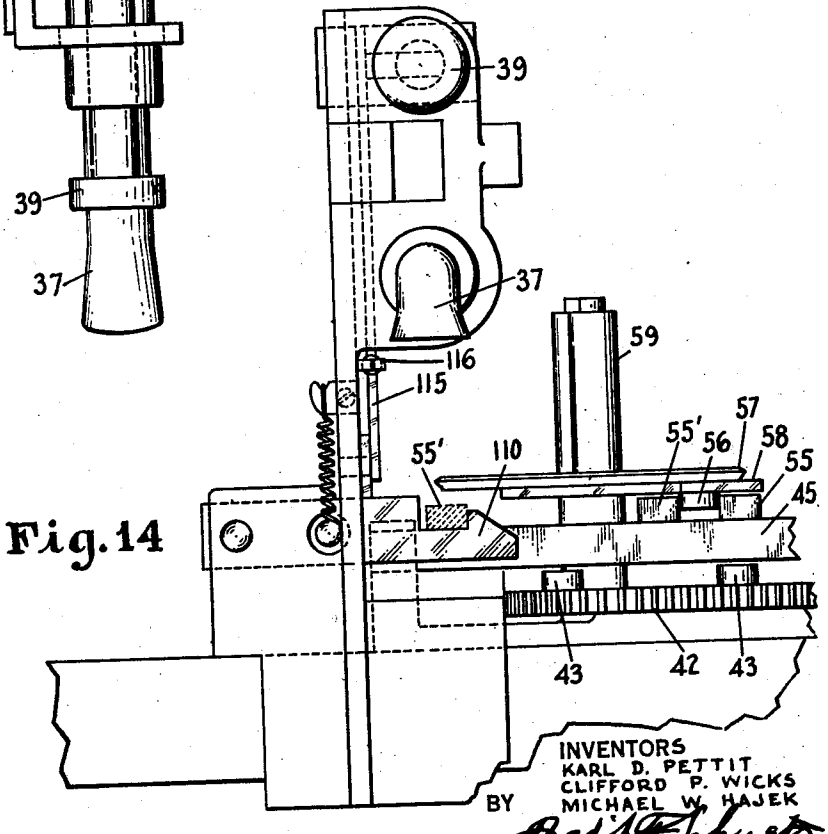


Fig. 14



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BEVERAGE DISPENSING APPARATUS

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Fig. 15

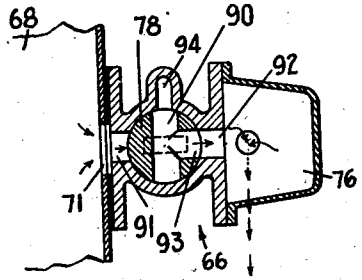


Fig. 16

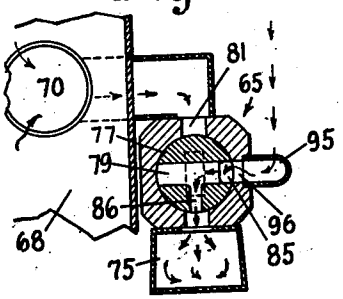


Fig. 17

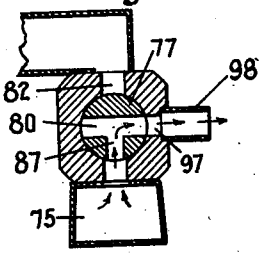
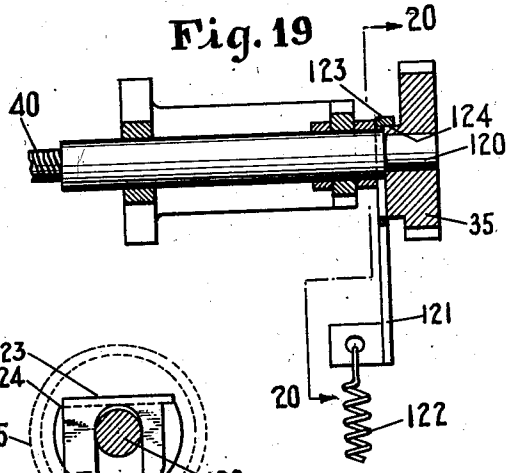


Fig. 19



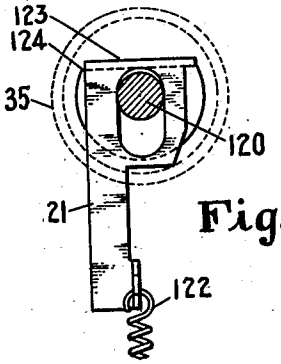


Fig. 20

Fig. 18

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BEVERAGE DISPENSING APPARATUS

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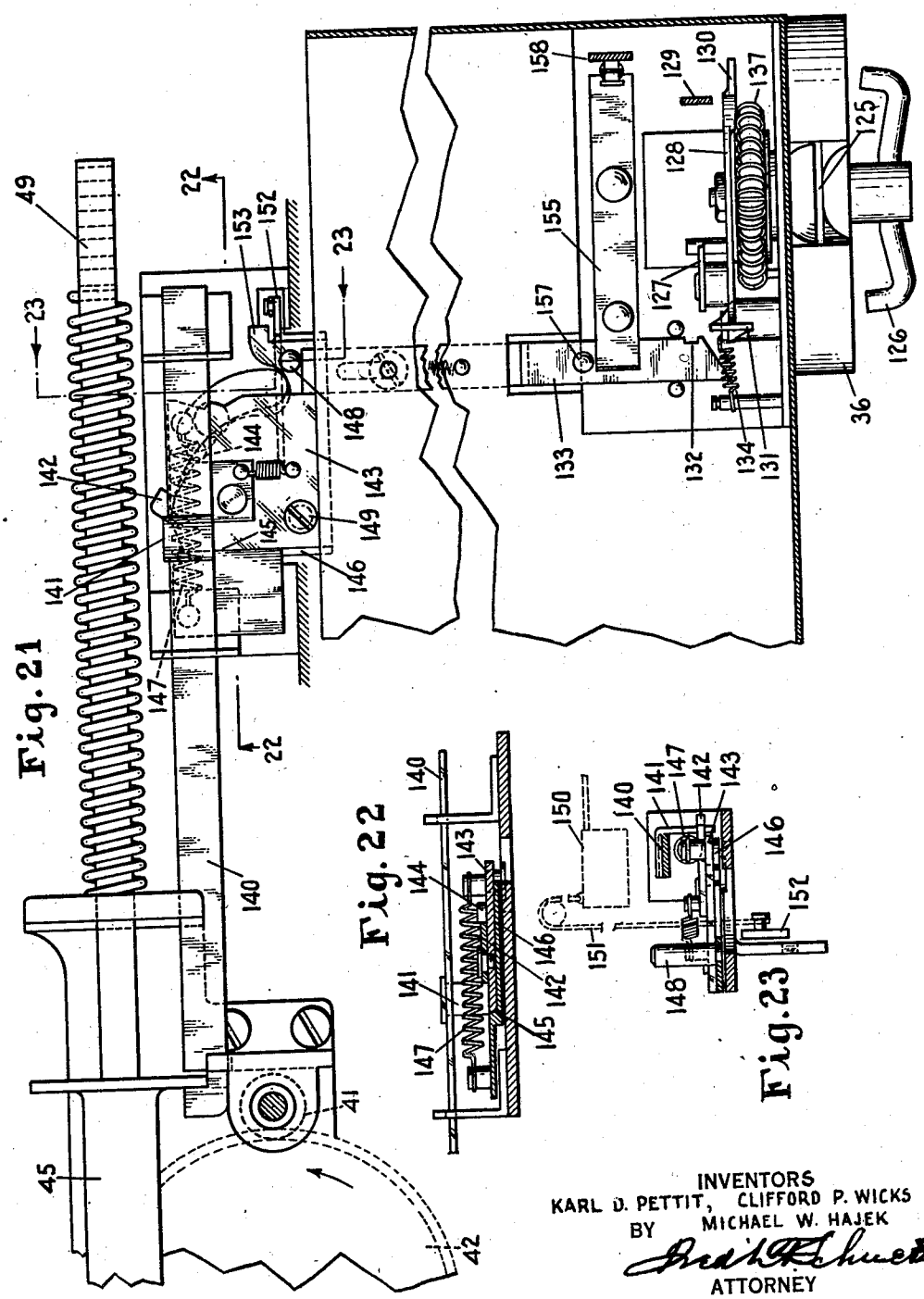


Fig. 21

Fig. 22

Fig. 23

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BEVERAGE DISPENSING APPARATUS

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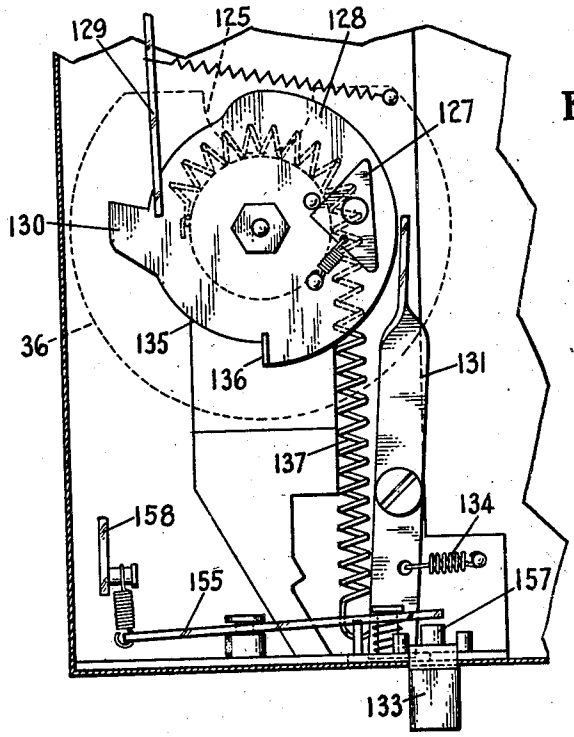


Fig. 24

Fig. 25

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Patented Aug. 30, 1932 1,874,060

UNITED STATES PATENT OFFICE

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BEVERAGE DISPENSING APPARATUS

Application filed August 9, 1928. Serial No. 298,417.

The invention relates to apparatus for automatically dispensing beverages, as by the insertion into a coin slot of a proper coin; and is concerned more particularly with apparatus suitable for the dispensing and vending of beverages which are composed of several ingredients, for example, a fruit juice or syrup and ice water, and wherein the several ingredients are maintained separate until it is desired to serve the beverage. This feature is of especial value in connection with the dispensing of certain ingredients such, for example, as orange juice, which should not be mixed with water or the like until ready to be drawn off for use because the flavor or bouquet of the beverage is improved when freshly mixed at the time of serving, and, further, certain fruit juices and syrups quickly spoil if kept diluted with water ready for serving.

The invention has for its object apparatus of this nature whereby the various ingredients are separately stored and properly cooled, and wherein measuring and mixing means are provided by which predetermined quantities of the respective ingredients are first measured out into suitable compartments and then mixed together to form a beverage and delivered by manipulation of an actuating member associated with said means.

A further object of the invention resides in the provision of means for dispensing a cup substantially simultaneously with a measuring operation, but not until the same has been completed, so that the ingredients composing the beverage and thus measured out may be received in the cup or container thereby provided.

A still further object of the invention contemplates the combination of such beverage vending apparatus with automatic apparatus for manufacturing the cups, for example, of the nature of the machine more especially set forth in U. S. Letters Patents Nos. 1,359,772, 1,574,324 and 1,646,802 to Weckbaugh, suitable timing means being included between the cup-forming mechanism and the measuring and mixing mechanisms whereby to withhold the delivery of a cup until the beverage is ready to be drawn.

When the entire apparatus is to be coin-operated, provision is to be made for sealing of the coin slot against entrance of additional coins as soon as one coin has been inserted and for maintaining the entrance slot sealed until the mixing and dispensing of a charge have been accomplished.

Further objects of the invention reside in the provision of means for insuring a return to proper starting position of connecting drive mechanism for the measuring and mixing device of the dispensing apparatus; also, the attainment of a substantial agitation of the syrup to insure a uniform condition of the same. Additional objects of the invention relate to details in the construction of the novel measuring and mixing portion of the dispensing apparatus, more especially in the arrangement for expediting upward return flow of entrapped air through the main body of liquid, thereby obviating the necessity for vents when the respective measuring devices are filling from their supply reservoirs; also, in the arrangement for facilitating discharge of the beverage to insure a comparatively rapid flow at the end of the discharge period. A still further object of the invention relates to a novel arrangement of the outlets from the respective measuring compartments whereby the same are both located immediately adjacently the outlet for the mixed beverage, thus affording means for delivery of a properly mixed beverage during the entire time of discharge.

In carrying out the invention, two or more storage tanks or containers are provided, for example, one for water and one for the syrup or juice to which the water is subsequently to be added, these tanks being preferably so arranged that the latter is located within the former and both being adapted to communicate with a novel combined measuring and mixing device. The latter embodies a measuring compartment of predetermined capacity for the syrup or juice and a measuring compartment, also of predetermined capacity, for the water to be mixed therewith and located, preferably, above the for-

mer compartment, the device, furthermore, when suitably manipulated, being adapted to mix and discharge the two said predetermined or measured portions into a suitable container or cup presented manually to receive the beverage.

This cup may be of any well-known or special design, and provision is made for the same to be dispensed simultaneously with the aforesaid measuring operation but its delivery being withheld until the measuring operation is substantially completed. In connection with the filling of the syrup measuring compartment, novel means are afforded for venting the mechanism, the venting action at the same time being made to agitate the syrup in a syrup-supplying tube and prevent the settlement therein of any matter held in suspension, so that a uniform condition of the syrup to be dispensed is maintained at all times.

To control the delivery of a cup for receiving the beverage drawn from the measuring and mixing mechanisms, suitable timing means are included between these and the cup-making apparatus whereby it is not possible for a cup to be available until the proper quantities of syrup and water have been drawn into their respective measuring compartments, thereby obviating premature manipulation of the mixing and discharge mechanism.

In this manner no time is lost because of the measuring operation as during this period a container for the beverage is being provided, particularly in the case of a cup simultaneously manufactured; and a sanitary container is afforded suitable to receive a perfectly fresh drink which, furthermore, is arranged to be iced in the provision of proper refrigerating means associated with the storage tanks or receptacles for the liquids.

The nature of the invention, however, will best be understood when described in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view of the novel beverage vending apparatus.

Fig. 2 is a fragmentary enlarged side elevation thereof with portions of the casing wall broken away to disclose the interior.

Fig. 3 is a fragmentary interior elevation, with portions broken away, of the liquid dispensing portion of the apparatus.

Fig. 4 is a detail plan view and Fig. 5 a similar elevation illustrating the timing mechanism provided between the cup-dispensing mechanism and the liquid-dispensing mechanism.

Fig. 6 is a detail elevation, partly in section, illustrating the liquid-dispensing mechanism.

Fig. 7 is a plan view of the valve controlling the supply of water and the water measuring compartment, and Figs. 8 and 9 are vertical sections taken respectively on the lines 8—8 and 9—9, Fig. 7 of the drawings, and looking in the direction of the arrows.

Fig. 10 is a plan view of the valve controlling the supply of syrup or juice and the juice measuring compartment; and Figs. 11 and 12 are vertical sections therethrough taken respectively on the lines 11—11 and 12—12, Fig. 10 of the drawings, and looking in the direction of the arrows.

Fig. 13 is a fragmentary detail plan view of the release apparatus for effecting discharge of the beverage and restoration of the various members to their normal position; while Fig. 14 is a fragmentary detail front elevation thereof.

Figs. 15, 16 and 17 are fragmentary horizontal sections taken respectively on the lines 15—15, 16—16 and 17—17, Fig. 6 of the drawings, looking in the direction of the arrows; and illustrate corresponding positions of the different valve members and outlet ports during the delivery of the beverage.

Fig. 18 is a fragmentary plan view illustrating the corresponding position of the timing mechanism at this stage of the cycle of operations, and also a portion of the means for unsealing the coin slot or opening.

Fig. 19 is a longitudinal section of the means employed for always insuring proper location of the timing mechanism drive gear.

Fig. 20 is a vertical section therethrough taken on the line 20—20, Fig. 19.

Fig. 21 is a detail horizontal section through a portion of the enclosing casing illustrating the mechanism for unsealing the coin slot or opening; and Figs. 22 and 23 are vertical sections thereof taken respectively on the lines 22—22 and 23—23, Fig. 21, and looking in the direction of the arrows.

Figs. 24 and 25 are fragmentary vertical sections through a portion of the enclosing casing and show on an enlarged scale, and respectively in rear view and side elevation, the coin slot mechanism and locking means therefor.

Referring to the drawings, 30 designates a portable cabinet in which the various mechanisms constituting the beverage dispensing apparatus are mounted and enclosed, the lower portion, for example, housing the refrigerating apparatus 31 utilized for cooling to the desired temperature the beverage-constituting liquids subsequently to be mixed. These liquids are to be stored in the upper portion of the cabinet to feed by gravity, their supply and delivery being regulated and controlled as hereinafter set forth.

At an intermediate position and to one side of the front of the cabinet is mounted apparatus 32 for affording a suitable receptacle or cup for receiving the delivered beverage. It is preferred to provide such receptacles automatically and in synchronism with the operation of measuring the beverage in-

gredients so that no receptacle will be available until the liquids have been suitably measured out from their storage supplies and are ready for delivery. As a particularly satisfactory cup-supplying apparatus for this purpose there may be installed automatic apparatus for dispensing and also for manufacturing these cups, for example, cup-manufacturing apparatus of the nature more especially set forth in Weckbaugh U. S. Letters Patents Nos. 1,359,772, 1,574,324 and 1,646,802.

The beverage measuring and delivery mechanism is therefore arranged to be connected to an operative element of the said cup-manufacturing apparatus so that the operations of the two mechanisms may be synchronized. For example, by means of the gear wheel 33, the cam shaft 34 of the cup-making apparatus may be geared to the gear wheel 35 for the beverage dispensing mechanism; and the former mechanism is preferably set in operation by inserting a coin in a suitable coin slot mechanism 36 of the cup-manufacturing apparatus.

There is further provided at the front of the cabinet a spout or outlet 37 through which the beveage is to be delivered into a cup held below the same and over the drip-pan or drain 38 located beneath said outlet at the front of the cabinet. In order to effect the delivery of the beverage after the required quantities have been measured out, it is necessary to manually operate a suitable member, as the plunger 39 projecting from the front of the cabinet and preferably positioned above the spout 37.

From the gear 35, rotation is communicated through a flexible shaft 40 to the timing mechanism for controlling the measuring and delivery of the beverage. As indicated more particularly in Figs. 3, 4 and 5 of the drawings, the flexible shaft 40 is connected with a driving pinion 41 meshing in turn with the gear wheel 42 having a series of pins 43 circularly disposed on and projecting upwardly from its upper surface. As shown, these pins are disposed 120° apart; and, as the wheel 42 is rotated, are designed to engage successively with a projection or block 44 of a reciprocable rod member 45. The latter is mounted to slide in bearings 46 and 47, being normally urged in a direction opposed to the action of a driving pin 43 by means of a spring 48 coiled about the end 49 of said rod, which rod also has an inner collar 50 designed to limit the extent of outward movement of said rod through engagement with the bearing 47.

Provision is made for holding temporarily the said rod after it has been moved inwardly the desired distance and in opposition to the action of spring 48, a pin 43 then clearing the block 44 so as to permit rod 45 to return to its normal position upon release of suitable catch or detent means, as will hereinafter be more fully set forth.

The said rod, moreover, has projecting upwardly from its upper surface a pair of separated driving guides 55 and 55′ for engagement with a pin 56 extending therebetween downwardly from the lower surface of a rotatable actuating member 57, or rather an arm 58 attached to and extending radially therefrom. The said actuating member in turn carries a pair of diametrically disposed and upwardly projecting driving studs 59. These studs, through the reciprocations of the rod 45, are designed to transmit oscillating angular movement to the measuring and mixing members hereinafter described and in accordance with the rotation of the gear wheel 42 whose movement, in turn, is synchronized with the movement of cam shaft 34 of the cup-dispensing mechanism. It will be understood that a definite angular movement will thus be imparted to the driving studs 59 through the inward movement of rod 45 which is then temporarily held in retracted position as aforesaid; and upon release of the retracted rod, spring 48 will again force the same outwardly and reverse thereby the angular movement of the said driving studs to return the mechanism to normal inactive position.

This angular movement of the studs is taken advantage of to rock the measuring, mixing and delivery valve mechanisms first to measure out a predetermined volume of the syrup or juice and water and then upon release of the said rod to cause the valves to be turned to a position for discharging the juice together with the measured volume of water. The latter flushes, also, the juice from the valve and juice measuring compartment and mixes therewith in the course of delivery, being finally discharged through the outlet 37 and into a suitable container or cup which has, during the period of retraction of the rod 45, been delivered or manufactured and delivered by the apparatus 32.

The aforesaid valve mechanism for thus measuring and mixing the liquids to compose the beverage is shown more particularly in Figs. 6 to 12, inclusive. As indicated therein, the valve mechanism really comprises two coaxial valve members which are to be jointly operated as hereinafter set forth, the one valve member 65 serving for the measuring and delivery of the juice or syrup to be mixed with water measured and delivered by the other valve member 66. The latter is mounted above the former so that a gravity flow of water may be provided, serving to flush the lower or juice controlling valve member 65. To supply the latter with the particular juice for the beverage desired, a storage tank or supply reservoir 67 is mounted within the water supply tank or reservoir 68 in which is located the cooling element 69 of the refrigerating unit. A pipe

70 passing through the water reservoir 68 conveys the juice from reservoir 67 to the valve member 65 while the water reservoir 68 is normally in direct communication with its said valve member 66 through a longitudinal opening 71 in the wall of the former.

Provision is made, however, to draw predetermined volumes from these reservoirs, for example, a measuring compartment 75 is provided for the juice and a measuring compartment 76 for the water, both compartments being associated with the respective valve members. Normally, however, the said valve members 65 and 66 arrest the flow of liquids into their respective measuring compartments; and it is only when the beverage vending apparatus is set in operation, as aforesaid, that the said liquids are caused to flow out of their reservoirs into the compartments.

In order to permit of this transfer from a reservoir to the corresponding measuring chamber, the valve members comprise oscillatable conical plugs 77 and 78 respectively and provided with through ports. The plug 77 to this end is provided with an upper port 79 and a lower port 80, and these ports, in turn, are adapted to register when properly turned with admission openings 81 and 82 respectively as well as discharge openings 83 and 84 respectively of the valve body to afford a passageway through the valve member. The ports 79 and 80 are inclined downwardly from the admission openings 81 and 82, and, furthermore, their ends for final discharge are cut inwardly to afford a connecting passageway 85 for the purpose hereinafter set forth. By inclining downwardly these ports, as shown, final discharge of the juice and flushing of the measuring chamber 75 is facilitated and return flow of entrapped air through the main body of liquid expedited.

A further upper port 86 and a lower port 87, located at right angles to the respective ports 79 and 80 communicate therewith and are adapted to communicate as well with the measuring chamber 75 when the valve is in position for discharging juice therefrom. The diameter of the upper port 86 is, preferably, also less than that of the lower port 87 to regulate the speed of delivery of the outflowing juice; while the diameter of the port 87 is made sufficiently large to prevent clogging of the more solid portions of the juice or syrup. Until the level of the receding mixture of juice and water is below the port 86, this port will serve to regulate the outward flow, and thereupon acts solely as a vent.

Similarly, the water control valve member 66 is provided with a series of axially disposed transverse ports 90 through its plug 78 which are designed to register with admission openings 91 and discharge openings 92 of the valve body when said plug is turned the required extent.

These ports, as well as the admission and discharge openings, are inclined from the reservoir opening 71 toward the measuring compartment to insure drainage thereto and to facilitate the upward return flow of the entrapped air; and a further port 93 is provided in the plug at right angles to one of the ports 90, and when turned the proper extent will register with a vent 94 designed to place the measuring chamber 76 in communication with the outside atmosphere so that said chamber may be discharged of its water content, the plug 78 in this position also blocking off the admission openings 91. This position is indicated more clearly in Fig. 15 of the drawings, while Figs. 16 and 17 show the position of the various elements of the juice controlling valve when in the discharging position, the water from the compartment 76 passing through a pipe 95 to an admission opening 96 of the valve member 65 and communicating with the port 79 of its plug and from the latter through the connecting passageway 85 to the port 80 which, in turn, is then in communication with an outlet opening 97 of the valve member and connected through the outlet pipe 98 with the discharge spout 37.

It will be noted that when the elements for the control of the juice are in the position indicated in Figs. 16 and 17 of the drawings, the ports 86 and 87 are in communication with the reservoir 75 so that the juice will run out of the lower port 87 into port 80 with the water passing downwardly through the longitudinal passageway 85 to be intimately mixed therewith; and as the ports 79 and 80 connecting with ports 86 and 87 are provided respectively at the upper and lower ends of this passageway, a certain proportion of water flowing from the pipe 95 and admission opening 96 into the discharge passageway 85 will be diverted through the upper port 86, the amount being controllable by the relation of the diameters of the port 86 and the passageway 85. By this expedient, the juice in the measuring compartment will be thoroughly diluted with water and the compartment readily flushed of juice, the retention of small quantities of which therein might be objectionable.

To bring the respective plugs 77 and 78 simultaneously into the desired measuring and discharge positions, the driving studs 59 are reduced at their outer ends to receive a disk 100 having a diametral slot 101 and into which is designed to fit a downwardly directed projection or key 102 of the plug 77. In similar manner the lower end of plug 78 is provided with a projection or key 103 which extends into a slot 104 of a disk 105 carried on the reduced outer ends of a pair of diametrically disposed studs 106 screwed into the

upper end of the plug 77. As hereinbefore described, the timing mechanism will effect the intermittent rotation of driving studs 59, the studs being held in fixed position after having been angularly moved 90°.

To retain the driving studs 59 and thereby the plugs 77 and 78 in the advanced position a depressible spring-actuated detent 110, Figs. 13 and 14, is designed to receive one of the driving blocks, as the block 55', which is mounted on and transversely of the rod 45 and prevents thus the return under the action of the spring 48 when said rod has been retracted the required amount to properly position the driving studs. When thus positioned and correspondingly setting the plugs of the valve members, juice will flow from the supply reservoir 67 into the measuring compartment 75 as the ports are then registering with the inlet and discharge openings and at the same time the water will flow from the reservoir 68 into the measuring compartment 76 as the ports of plug 78 are also in communication with the admission and discharge openings. This will serve to measure out the proper quantities of the two liquids composing the beverage to be dispensed; and the same may then be discharged by restoring the plugs 77 and 78 to their normal positions, the two liquids mixing as hereinbefore described.

The timing of this measuring operation is so adjusted that the rod 45 will not become locked until the cup-dispensing mechanism has delivered a cup; or, in the present instance has completed the fabrication and delivery of a cup. Such receptacle is then available to receive the beverage which is supplied by releasing the rod 45 in tripping the detent 110. When this occurs, spring 48 will rapidly withdraw the rod and cause thereby return of said plugs to their normal position and the discharge of the beverage through the spout 37.

This release of the rod is conveniently effected by pushing inwardly the plunger 39, the same through a linkage system 115 serving to throw the detent 110, plunger 39 then being returned under the action of a spring 116 and the detent returned to normal position for holding again the rod on its subsequent return upon further operation of the vending apparatus.

Provision has been made, also, to insure that the timing drive means always begin at the same position in order that proper movement may be imparted the valve members, it being understood that replenishment of the cups or cup material requires a bodily separation of the machine 32 with gear 33 from the gear 35. Any angular displacement of this gear 35 would, of course, be reproduced through the connecting drive shaft 40 and might result in objectionable positioning of the valve plugs. The shaft 120 on which the said gear 35 is secured has, therefore, mounted over the same for vertical movement a positioning member as the slotted bar 121 straddling said shaft and normally drawn downwardly under the influence of a spring 122. A projecting lip 123 thereof is arranged to extend over and bear upon the flattened surface 124 of the hub of said gear to snap the latter into place, thus serving to maintain and return to proper position the gear 35 and its transmitting shaft 40 in the event of any temporary displacement.

Furthermore, as the apparatus is designed for coin operation, provision has been made to close the entrance slot 125 of the coin mechanism 36 immediately after inserting a coin so that a second coin may not be inserted until after the completion of the delivery of a cup and release of the beverage, as on the return of the valve plugs to their normal positions in which the measuring compartments are in direct communication with the outlet spout 37 to thoroughly drain the same and are also cut off from their supply sources.

This occurs when the plunger 39 has been pushed inwardly to release the detent 110 and thereby rod 45, the beverage in the meantime being dispensed and the entrance slot cleared for a repetition of the operations.

To this end, after a coin has been inserted through the coin slot, handle member 126 of the same is given, say, a half turn clockwise which, when the said handle is released, sets in operation the cup-forming mechanism by any well known or special means through engagement of a pawl 127, on a disk 128 within the cup machine casing, with the starting link 129. In thus rotating the handle member and disk, a tooth 130 projecting from its circumference engages the upper end of a lever 131 to force same outwardly and thereby disengages its lower end from a notch 132 of a sliding bar 133 spring-drawn in a direction away from said lower end.

The release of this bar permits the upper end of lever 131 to be moved, under the action of a spring 134, to contact with the circumference portion 135 of the disk, which is of lesser radius; and when the handle member 126 is then released, said upper end will be in a position to rest beneath a lip 136 extending from the surface of the disk and at right angles thereto. This prevents temporarily further return movement of the handle member and causes the coin slot 125 to remain sealed. At the same time the pawl 127 has engaged the link 129 and the operation of the cup mechanism has been initiated. A spring 137 insures the return of the disk 128 to the position aforesaid, as the handle member is released, as well as to cause the disk to return subsequently to its normal position in which the coin slot is again unsealed.

The disk 128, however, is maintained in the partially returned position during the entire period of operation of the cup mecha-

nism and until the plunger 39 has been pushed inwardly to discharge the beverage. This latter operation results also in the return of rod 45 which carries with it a slidable control rod 140 partaking at all times of the movement of the rod 45. The rod 140 carries in turn a projection 141 designed to engage with a spring-drawn pawl 142 mounted on a pivoted plate 143 and limited in its oscillation in one direction by a stop pin 144 on plate 143. The plate 143 is yieldingly mounted above a further pivoted plate 146, both being fulcrumed upon a common center 149, and spring drawn together by spring 147 so that normally the two plates co-act as one, due to the spring 147 holding plate 143 against the step 145 in the plate 146.

Normally, as the rod 45 returns, projection 141 rocks the plate 143 through its engagement with the pawl 142 and in so doing causes a pin 148 on the plate 146 to contact with the juxtaposed end of sliding bar 133 and return the latter back to the position in which the lower end of lever 131 engages with notch 132 of the said sliding bar. This results in the release of disk 128 through disengagement of the lip 136 from the lever 131 so that under the action of the spring 137 the coin mechanism is restored to its normal condition in which its coin slot 125 is again open for receiving a coin to effect a repetition of the cycle of operations.

Should, however, the supply of water, for example, or the supply of paper cups or material for same become substantially exhausted, provision has been made to prevent the return movement of the sliding bar 133, and consequently the opening of the coin slot 125, notwithstanding the return of the rod 45 to its normal position when the plunger 39 is pushed inwardly.

For example, in the first instance, a float 150 is provided in the water reservoir 68 and the same is connected through a cable 151 to one end of a lever 152 whose other end is designed to be moved, when the reservoir is substantially empty, to occupy a position such that it will lie in the plane of a tooth 153 of the plate 146 and prevent the latter from rocking to slide the bar 133.

Similarly, a lever 155 controlled from the cup mechanism through a link 158 interposes its one end in the plane of movement of a pin 157 projecting from the bar 133 when the supply of cups or material for same becomes exhausted and thus prevents the return movement of said bar. Although the plate 146 is thereby held against rocking in both instances, rod 45 may nevertheless complete its full return movement as the plate 143 merely yields sufficiently upon plate 146 through spring 147 to allow projection 141 to ride past the pawl 142, the plate 143 then returning to normal position under the influence of the spring 147.

We claim:

1. In combination: two receptacles to store liquids to be subsequently mixed together to form a beverage, valve members for each of the liquids and each associated with a measuring compartment normally cut off thereby from communication with its storage receptacle, means to actuate simultaneously said valve members to place the measuring compartments in communication with their respective receptacles, and means for delivering a container for receiving the mixed liquids, the same being connected with the valve members and timed to withhold delivery of a container until filling of the said compartments has substantially been completed.

2. In combination: two receptacles to store liquids to be subsequently mixed together to form a beverage, valve members for each of the liquids and each associated with a measuring compartment normally cut off thereby from communication with its storage receptacle, means to actuate simultaneously said valve members to place the measuring compartments in communication with their respective receptacles, means for delivering a container for receiving the mixed liquids, the same being connected with the valve members and including mechanism timed to withhold delivery of a container until filling of the said compartments has substantially been completed, and manually controlled means to actuate the valve members to effect the mixing and delivery of the measured liquids, restoring of the said valves to normal position and resetting of the timing mechanism.

3. In combination: two receptacles to store liquids to be subsequently mixed together to form a beverage, valve members for each of the liquids and each associated with a measuring compartment normally cut off from communication with its storage receptacle, means to actuate simultaneously said valve members to place the measuring compartments in communication with their respective receptacles, means for delivering a container for receiving the mixed liquids, the same being connected with the valve members and timed to withhold delivery of a container until filling of the said compartments has substantially been completed, manually controlled means to actuate the valve members to effect the delivery of the measured liquids, coin-actuated means for initiating the operation of the container delivery mechanism, and means to interlock the same with the manual means for actuating the said valve members whereby the said coin-actuated mechanism is immediately sealed upon insertion of a coin and remains sealed until the said manual means has been actuated.

4. A measuring and mixing unit for two liquids and embodying two plug members provided with through ports and simultaneously movable—one being adapted to com-

municate with one of the liquids and the other with the other of said liquids—and each provided with a measuring compartment, a vent pipe associated with one of the valve members and adapted to be placed thereby in communication with its measuring compartment, and the other of said valve members having a port adapted to communicate with the vented measuring compartment.

5. A measuring and mixing unit for two liquids and embodying two plug members provided with through ports and simultaneously movable—one being adapted to communicate with one of the liquids and the other with the other of said liquids—and each provided with a measuring compartment, a vent pipe associated with one of the valve members and adapted to be placed thereby in communication with its measuring compartment, and the other of said valve members having a port adapted to communicate with the vented measuring compartment when the plugs are positioned to cut off the supply connections, the said plugs then also being in communication with each other for mixing and delivery of the liquids.

6. In a dispensing machine, a syrup reservoir and a water reservoir, measuring chambers for the syrup and water, a discharge pipe for the syrup measuring chamber, and means whereby part of the water from the water measuring chamber is discharged directly through such discharge pipe and another part is discharged through the syrup measuring chamber.

7. In a dispensing machine, separate syrup and water reservoirs, a syrup measuring chamber, means for permitting air to escape from the syrup measuring chamber into the syrup reservoir as such chamber is being filled, a water measuring chamber, a discharge pipe connected with the syrup measuring chamber, a connection running from the water measuring chamber to such discharge pipe and to the upper part of the syrup measuring chamber, and means for venting the water measuring chamber so that syrup and water may flow out of the discharge pipe in mixture.

8. In a dispensing apparatus, separate reservoirs for water and syrup, separate measuring chambers for water and syrup, a discharge pipe, and discharge control means whereby at least a part of the water is caused to flow through one passage into the syrup measuring chamber to mix with syrup, and thence to flow out through a different passage to the discharge pipe.

9. In a beverage dispensing apparatus, a syrup reservoir, a syrup measuring chamber, a discharge pipe, means whereby the syrup measuring chamber may be connected to the syrup reservoir so that syrup may enter such chamber and air escape therefrom to the reservoir, and whereby such chamber may be disconnected from said reservoir and connected to the discharge pipe, and whereby substantially atmospheric pressure may be maintained in said chamber to permit the syrup to flow out of said chamber through said discharge pipe, and means whereby a predetermined amount of water is mixed with such syrup.

10. In a beverage dispensing apparatus, separate water and syrup reservoirs, a syrup measuring chamber, a discharge therefor, and means for mixing water with syrup flowing out of the measuring chamber without entering such measuring chamber and simultaneously therewith causing water to enter and mix with syrup in such measuring chamber.

In testimony whereof we affix our signatures.

KARL D. PETTIT.
CLIFFORD P. WICKS.
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