

Jan. 13, 1931.

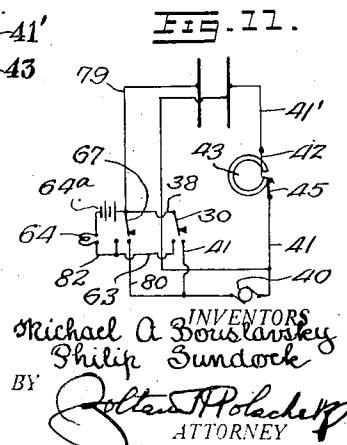
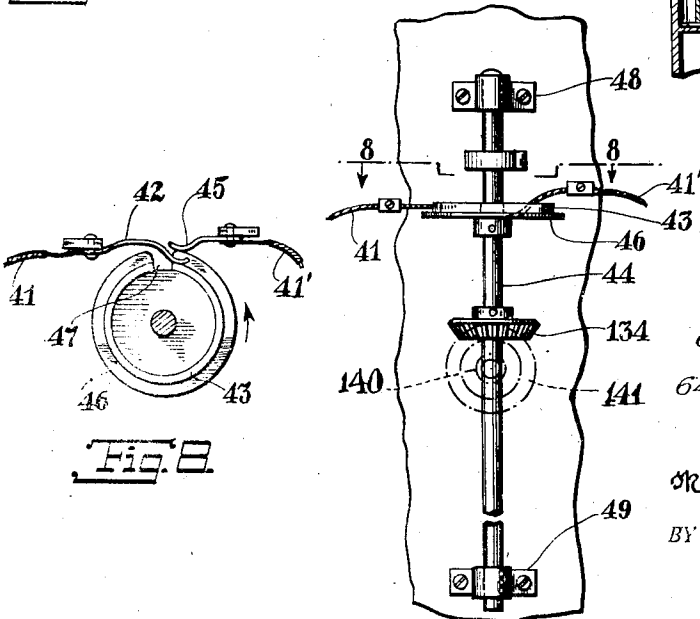
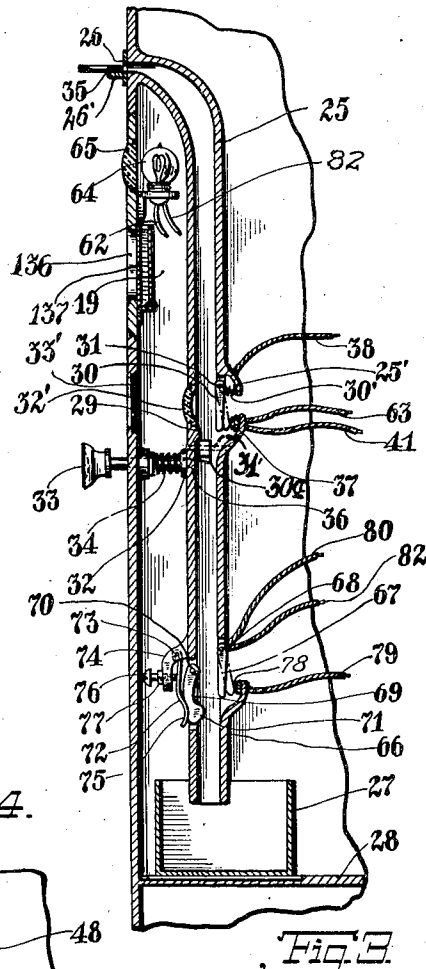
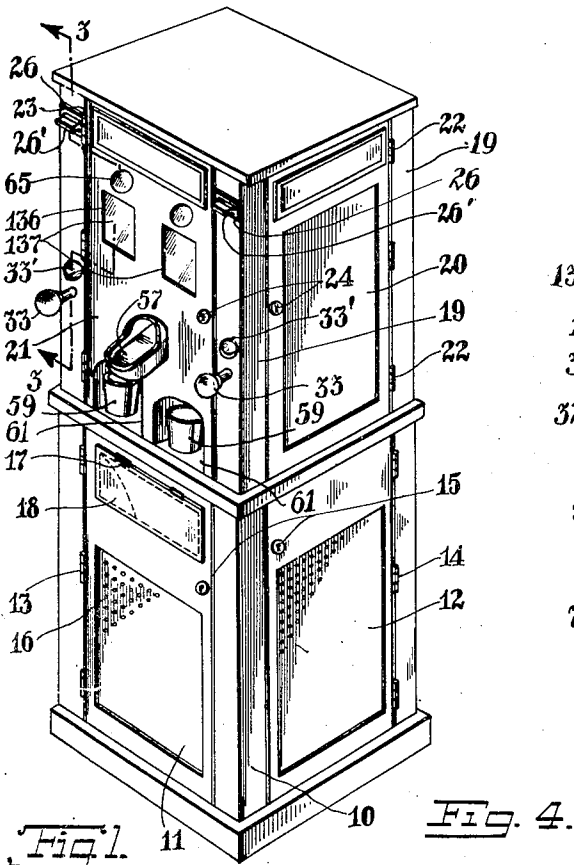
M. A. BORISLAVSKY ET AL

1,789,064

LIQUID VENDING MACHINE

Filed Jan. 5, 1928

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

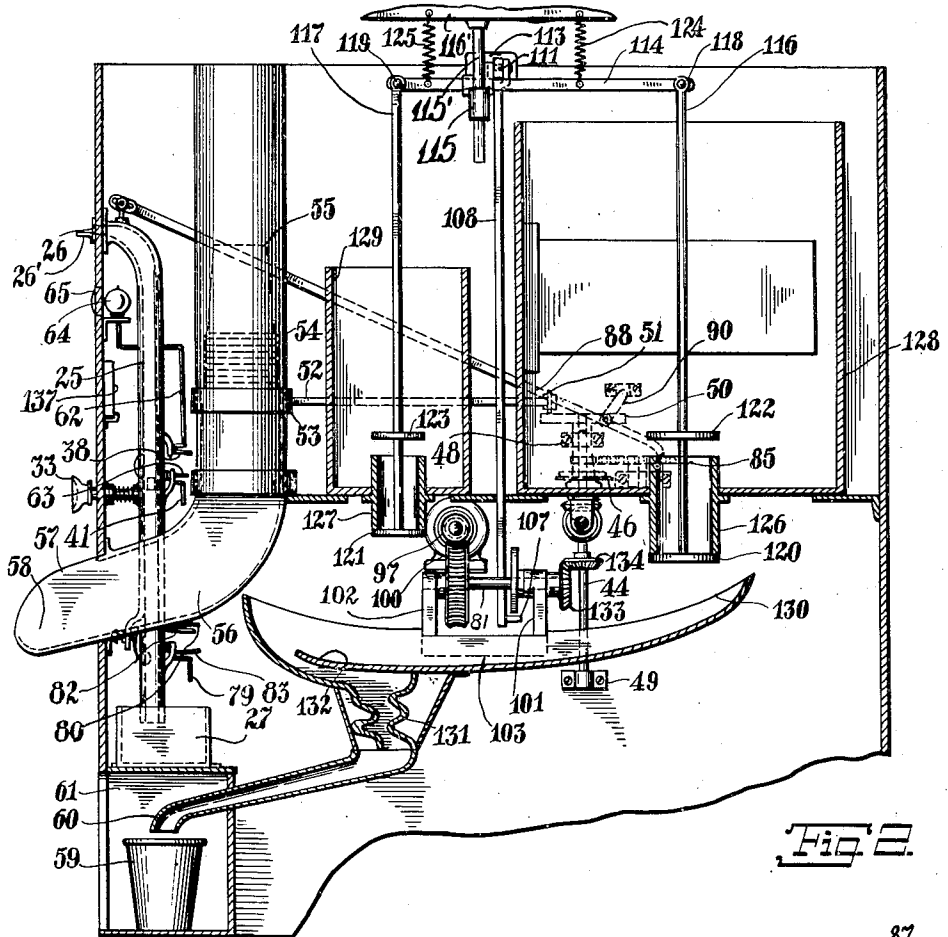


Fig. 2.

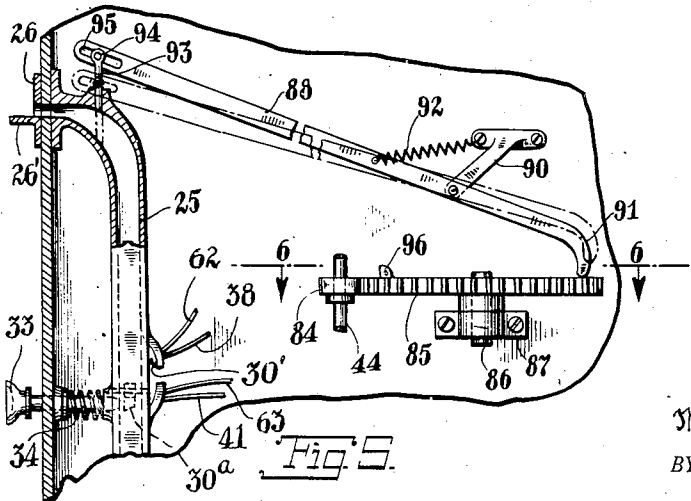


Fig. 3.

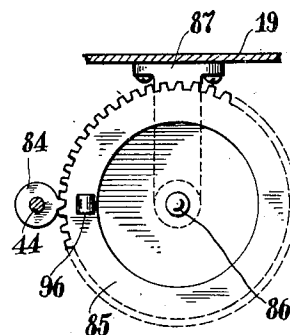


Fig. 4.

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3 Sheets-Sheet 3

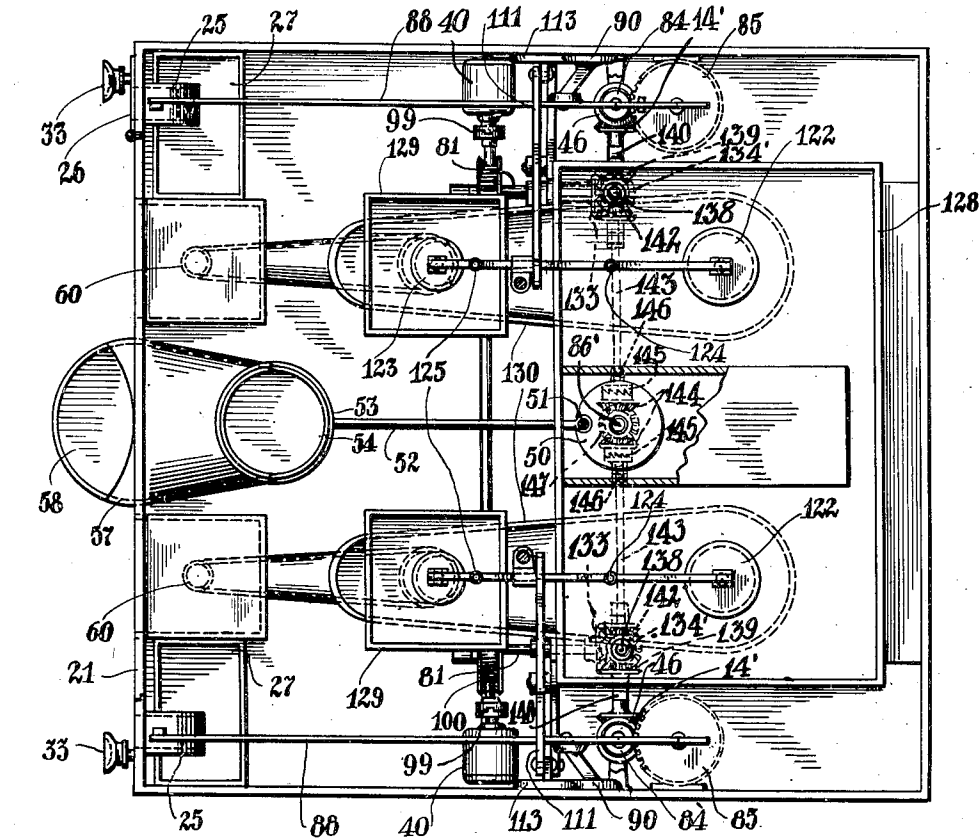


Fig. 1

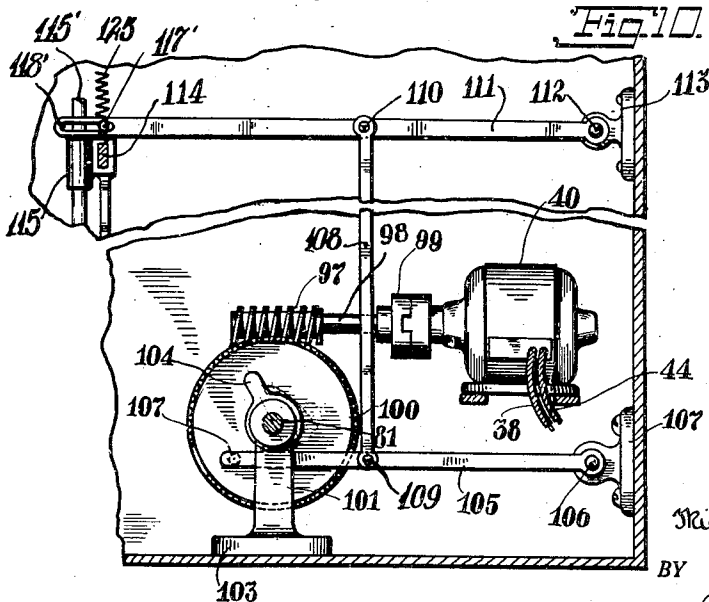
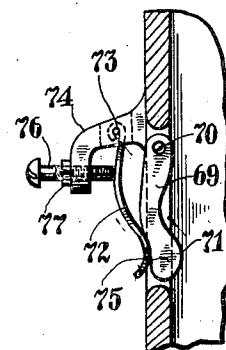


Fig. 2



UNITED STATES PATENT OFFICE

MICHAEL A. BORISLAVSKY AND PHILIP SUNDCK, OF BROOKLYN, NEW YORK

LIQUID-VENDING MACHINE

Application filed January 5, 1928. Serial No. 244,823.

This invention relates to a new and useful device in the nature of a liquid vending machine especially adapted for the mixing of a predetermined quantity of ice water and any desired liquid fruit juice, or the like, and a means of pouring the mixture into a suitable paper cup, which is released for this purpose, when a coin is inserted in the said machine.

10 The object of the invention is to provide a liquid vending machine of novel construction and arrangement of parts hereinafter more fully described, claimed and illustrated in the accompanying drawings.

15 Fig. 1 is a perspective view of our improved device.

Fig. 2 is a vertical central sectional view.

Fig. 3 is a detail sectional view of the coin tube, as embodied in our improved device.

20 Fig. 4 is a detail side elevational view of the paper cup release operating mechanism as embodied in our improved device.

Fig. 5 is a side elevational view of the coin tube closing mechanism as embodied in our improved device.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary side elevational view of the liquid release mechanism.

Fig. 8 is a sectional view taken on the line 8—8 of Fig. 4.

Fig. 9 is an enlarged sectional detail view of the coin delay operating mechanism as embodied in our improved device.

Fig. 10 is a top plan view of our improved machine showing the top of the cabinet removed.

Fig. 11 is a schematic wiring diagram of the device.

As here embodied our improved liquid vending machine comprises a lower cabinet 10, of box like construction provided with doors 11 and 12, hinged thereto, as at 13 and 14, respectively, and provided with suitable locks 15. The said doors 11 and 12 are made preferably of sheet metal, perforated as at 16. The cabinet 10 is constructed to hold or contain ice, or a commercial ice machine may be installed therein, prefer-

ably of the electric or gas operating type. The cabinet 10, has hinged thereto, as at 17, a door 18, opening into a separate compartment built in the upper portion thereof, which is adapted to receive the used or discarded paper cups, which are supplied as hereinafter set forth.

The upper cabinet 19, of box like construction, similar to the above mentioned cabinet 10 is mounted on the cabinet 10 or may be constructed integral therewith. The doors 20 and 21 are hinged as at 22 and 23, respectively, to the cabinet 19 and are provided with suitable locks 24.

A coin tube 25 is intercommunicative with the slot 26 formed in the front of the cabinet 19 and extends therefrom downwardly and terminates directly over the coin box 27 positioned on the base 28 of the cabinet 19. The coin tube 25 has formed therein intermediately an offset portion 29, or passage. A coin receiver 26' having formed therein a recess adapted to receive a coin is secured to the front of the upper cabinet 19, directly in front of the slot 26. The lever 30 is hinged at its upper extremity as at 31 to the coin tube 25 and normally hangs downwardly freely engaging in the side offset portion 29. The pin 32 is slidably mounted in the coin tube 25 directly below the said offset portion and extends horizontally through an aperture provided in the front of the cabinet 19. The pin 32 is provided with an enlarged head 33. The expansion spring 34 is positioned or wound on the pin 32 as a means of normally urging the said pin outwardly. The above described construction is such as will permit a coin when placed in the coin receiver 26' to fall through the tube 25 and to strike the offset portion 29, forcing the coin against the free extremity of the pivoted lever 30, causing the said lever to contact with the contact point 37, which will complete an electric circuit by means of the electric wire 41 operatively connected to the lever 30 and to the motor 40 and the electric wire 38 connected to live wires 38^a and by wires 41' to the contact point 42, engaging the circuit breaker 43 connected to the contact point 45 en-

gaging the said circuit breaker and to the motor 40. The circuit breaker 43 is mounted on the shaft 44 and is provided with a gap 47. The above described construction is such as will permit the shaft 44 to be rotated or turned slightly less than one revolution. The mechanism intermediate the motor 40 and the shaft 44 will be hereinafter fully described and set forth.

A transparent member 32' is mounted in the tube 25 directly in front of the lever 30, a similar transparent member 33' being mounted in the front of the upper cabinet 19, directly in front of the member 32', as a means of permitting the operator of our improved device to see the coin inserted in the tube 25, prior to the operation of the pin 32.

The expansion spring 30' is secured to the lever 30 and to the lug element 25' of the coin tubes 25 as a means of normally holding the lever 30 in disengagement with the contact point 37 and as a means of returning the lever 30 to its normal position when the said coin is released.

The disc 50 is secured to the upper extremity of the shaft 86' and is provided with an eccentric pin 51. The rod 52 is pivotally mounted at one extremity on the pin 51 and is operatively connected to the paper cup release mechanism 53 mounted in the tube 54 as a means of releasing one of the cups 55 placed in the tube 56 in a vertical pile, permitting the said cup to fall downwardly through the tube 56 and lodge as at 58 in the lower portion 57 of the tube 56 which extends somewhat outside the door 21. It should be understood that the cup thus released may be taken by the person inserting the coin in our improved machine and placed in the compartment 61 under the spout 60 as designated by the reference numeral 59.

Suitable electric light wires 62 and 63 are connected to the lever 30 and to the contact point 37 and are connected to any suitable source of electric current as a battery 64^a shown in Fig. 11 and to the electric light bulb 64, positioned directly at the rear of the transparent members 65 mounted in the door 21 as a means of lighting the said bulbs when the paper cup is released.

The coin tube 25 is provided with a somewhat enlarged portion 66 in proximity of the lower extremities thereof. The lever 67 is hinged as at 68 at the coin tubes 25 and normally is positioned vertically downwardly therefrom, their free extremities engaging in the said enlarged portion 66 of the coin tube 25. The delay lever 69 is hinged as at 70 to the coin tube 25 directly in front of the lever 67 and is provided with an enlarged lower extremity 71 projecting inwardly. The leaf spring 72 is pivotally mounted on the pin 73 carried in the lug elements 74 of the coin tube 25, its free ex-

trinity 75 engaging the free extremity of the delay lever 69. The adjusting screw 76 is threadedly mounted in the lug element 74 and is adapted to adjustably engage the intermediate portion of the springs 72 and are held in any desired position or tension by means of the nuts 77 threadedly mounted in the screws 76.

The above described construction is such as will permit the coin when released by means of pushing the pin 32 inwardly by the person placing the said coin in our improved machine, to cause the coin to fall downwardly in the coin tube 25 and strike the enlarged lower extremity 71 of the delay lever 69.

The pin 32 is provided with an enlarged head 33, or knob. The expansion spring 34 is positioned or wound on the pin 32 as a means of normally holding the pin in an outwardly extended position. The block 30^a is slidably mounted on the pin 31' carried in the tube 25. The latter described construction is such as will permit the coin to be released when the block 30^a is forced inwardly by the pressing of the pin 32.

It should be understood that the spring 72 will be adjustably tensioned so as to permit the lever 67 to be pivoted outwardly, causing the free extremity of the lever 67 to engage the contact point 78, the required time interval to permit the said lever to complete an electric circuit through the wires 79 and 80 connected, respectively, to the contact point 78 and to the lever 67 and to the motor 40 so as to rotate the shaft 44 slightly to complete together with the before mentioned rotation a revolution for the purpose as hereinafter set forth. It should be understood that the said coin will then fall into one of the coin boxes 27 and may be removed therefrom by the owner or lessee of our improved machine.

Wires 62 and 83 are connected, respectively, to the lever 67 and to the contact point 78 and to the said bulbs 64 as a means of lighting the said bulbs when the motor is in operation.

The star wheel 84 is secured to the shaft 44 rotatively mounted in the brackets 48 and 49, secured to the inside of the upper cabinet 19, and meshes with the gear 85 secured to the stub shaft 86 rotatively mounted in the bracket 87 secured inside the cabinet 19. The bellcrank 88 is pivotally mounted on the pin 89 carried in the bracket 90 secured inside the cabinet 19. The lower free extremity 91 of the bellcrank 88 is normally held in engagement with the upper surface of the gear 85 by means of the tension spring 92. The coin tube shutter 93 slidably engages in a slot formed in the coin tube 25 in proximity to the slot 26 and has secured thereto at its upper extremity a pin 94 engaging in an elongated slot 95 formed in

the upper extremity of the bellcrank 88. The gear 85 is provided with a protruding portion 96 adapted to engage the free extremity 91 of the bellcrank 88 as a means of permitting the shutter 93 to close the passage formed in the coin tube 25 preventing coins from being inserted in the said coin tube 25. It is to be understood that the described mechanism is of proper ratio to function when the supply of paper cups in the tube 54 is nearly or practically exhausted.

The electric motor 40 is mounted in the cabinet 19 and is operatively connected to the worm 97 mounted on the shaft 98 connected by means of the coupling 99 to the armature shaft of the motor 40. The worm 97 meshes with the worm gear 100 and is secured to the above mentioned shaft 81, rotatively mounted in the elements 101 and 102 of the bracket 103 secured inside the cabinet 19. The cam 104 is secured to the shaft 81. The lever 105 is pivotally attached at one extremity as at 106 by a pin, or the like, carried by the bracket 107 secured inside the cabinet 19. The pin 106 is secured to and extended from the lever 105 at one extremity thereof and is adapted to be engaged by the cam 104 for the purpose as hereinafter set forth. The rod 108 is pivotally secured as at 109 intermediately to the lever 105 and is similarly secured as at 110, intermediately to the lever 111. The lever 111 is pivotally mounted on the pin 112, carried in the bracket 113 secured to the cabinet 19. The cross arm 114 is mounted in and oppositely extended from the block 115, slidably mounted on the rod 115', secured to and extended downwardly from the cover 116'. The pin 117' is secured to and extended from the block 115 and engages in an elongated opening 118' formed in the extended extremity of the lever 111. The valve rods 116 and 117 are pivotally attached as at 118 and 119, respectively, to the extremities of the cross arm 114. The discs 120 and 121 are secured, respectively, to the lower extremities or the valve rods 116 and 117, similar discs 122 and 123 are secured, respectively, to the valve rods 116 and 117, somewhat above the said discs 120 and 121, respectively.

Tension springs 124 and 125 are secured to the cross arm 114, equi-distant from the pin 115 and are secured to the top of the cabinet 19, as a means of normally holding the discs 120 and 121 in engagement with the lower extremities of the outlet tubes 126 and 127 secured to the containers 128 and 129, respectively. The above described construction is such as will permit the said shaft 81, when rotated as above set forth to rotate the cam 104, permitting the said cam to engage the pin 107, as a means of permitting the water placed in the container 128 and fruit juice placed in the container

129 to flow into the outlet tubes 126 and 127, respectively. It is obvious that any predetermined quantity of water and fruit juice may be thus drawn off from the said containers.

The basin 130 or container is positioned under the outlet tubes 126 and 127 and is of bowl-shaped construction, provided with an outlet 131, of zig-zag shape and having an upper extended lip 132 or portion, somewhat raised above the lower portion or bottom of the said basin 130 as a means of mixing the said water and fruit juice released from the containers 128 and 129. The outlet 131 is connected to the above mentioned spout 60, the latter described construction is such as will permit the mixture to flow into the above mentioned cup 59.

It is to be understood that a pair, or more, of the above mentioned mechanisms are provided for the purpose of vending, independently two or more fruit juice drinks, which are preferably of different flavors, as a means of enhancing the value of our improved device.

The bevel gears 133 secured to the above mentioned shafts 81 mesh with the bevel pinions 134' rotatively mounted on the stub shafts 138 carried in suitable brackets secured to the inside of the upper cabinet 19. The bevel pinions 139 mesh with the pinion 134, and are secured to the shafts 140 rotatively mounted in suitable brackets secured to the inside of the cabinet 19. The bevel pinions 141 are secured to the shafts 140 and mesh with the above mentioned pinions 134 secured to the said shafts 44 so that the shafts 44 make one revolution for each revolution of shafts 81. The bevel pinions 142 are secured to the shafts 143, rotatively mounted in suitable brackets secured to the inside of the upper cabinet 19. The bevel gears 144 are freely mounted on the shafts 143, and are provided with clutch elements adapted to engage the clutch collars 145 slidably secured to the shafts 143, and held in engagement with the said clutch elements, by means of the expansion springs 146 co-axial on the shafts 143. The bevel pinions 144 mesh with the bevel gear 147 secured to the above mentioned shaft. The above described construction is such as will permit either of the motors 40 when operated or rotated as above set forth to release a paper cup in the manner as above set forth.

As a means of providing display or advertising novelty, we have provided a small container 135 of fruit juice, similar to that contained in the above mentioned containers 129, placed in somewhat enlarged containers 136, of water, positioned inside the door 21, directly at the rear of the transparent members 137 mounted in the said door.

In operation of the device a coin is dropped into the coin tube 25 and falls downward until arrested by the pin 32. In this position of the coin it presses against the lever 30 for closing an electric circuit thru the lamp 64 and thru the electric motor 40. The lamps light for providing illumination and the electric motor 40 operates for turning the shaft 81 nearly thru a complete revolution.

During turning of the shaft 81 thru the said portion of a revolution the rod 52 is operated for dispensing a cup. The make and break 43 is also turned thru slightly less than a complete revolution and it is this make and break which breaks the circuit thru the electric motor for stopping the motor. An operator of the machine takes the cup from the holder 58 and engages the cup beneath the spout 60 as seen in Fig. 2 of the drawing. Then at his leisure he presses the head 33 inwards for freeing the coin which next drops down along the coin tube 25.

As the coin passes the delay lever 66 and the switch lever 67 it momentarily closes a circuit thru the lamps 64 for again lighting the lamps, and thru the electric motor 40. The motion of the electric motor this time is very slight, just sufficient to rotate the make and break 43 slightly so as to complete one revolution when taken together with its incompleted revolution. During the slight second action of the motor 40 a cam 104 acts against the pin 107 for momentarily opening the valves 120 and 121 so that the water and fruit juice drawn from the containers 126 and 127 may discharge into the large bowl 130.

Attention is called that the cam 104 is so constructed that the valves 120 and 121 remain open for a very short period of time, but this is sufficient to discharge the desired quantity of liquid. Then the liquid contained in the bowl 130 may flow thru the passages connected with the bowl so as to discharge from the spout 60 and fill the cup 59. The spring 72 may be adjustably tensioned so as to change the delay of the coin passing thru the coin tube 25 and acting against the lever 71, so as to adjust the device for obtaining a full cup of the drink dispensed.

While we have shown and described a preferred embodiment of our invention, it is to be understood that we do not limit ourselves to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims, and to the rights of using a plurality of paper cup devices also to a plurality of liquid vending units.

Having thus described our improved machine, what we claim as new and desire to

protect by Letters Patent of the United States is as follows:

1. In a liquid vending machine, the combination with a shaft connected with a cup dispensing means and arranged for dispensing one cup during one complete revolution and completing the dispensing slightly before the end of said revolution, of a cam fixed on the shaft, a container for a liquid and formed with a bottom outlet tube, a valve within the tube and consisting of a bottom disc engaging the bottom of the tube and connected with a top disc slightly spaced from the top to the tube, a valve rod connected with the valve, means for normally maintaining the valve rod in a raised position, a lever connected with said means and adjacent said cam, and said cam being arranged for moving the lever for lowering the valve rod and then allowing the lever to seek its original position for raising the valve rod and both movements taking place after said shaft turned for dispensing a cup and before the complete single rotation of said shaft.

2. In a liquid vending machine, the combination with a shaft connected with a cup dispensing means and arranged for dispensing one cup during one complete revolution and completing the dispensing slightly before the end of said revolution, of a cam fixed on the shaft, a container for a liquid and formed with a bottom outlet tube, a valve within the tube and consisting of a bottom disc engaging the bottom of the tube and connected with a top disc slightly spaced from the top of the tube, a valve rod connected with the valve, springs for normally maintaining the valve rod in a raised position, a lever connected with said means and adjacent said cam, and said cam being arranged for moving the lever for lowering the valve rod and then allowing the lever to seek its original position for raising the valve rod and both movements taking place after said shaft turned for dispensing a cup and before the complete single rotation of said shaft.

In testimony whereof we have affixed our signatures.

MICHAEL A. BORISLAVSKY.
PHILIP SUNDCK.