April 7, 1964 H. W. BLEIMAN 3,128,011

COIN OPERATED VENDING MACHINE

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FIG. 1

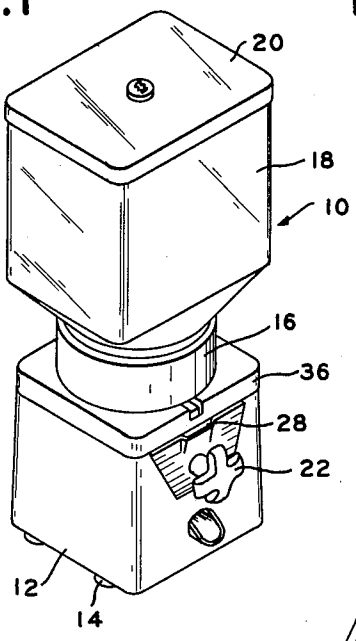


FIG. 5

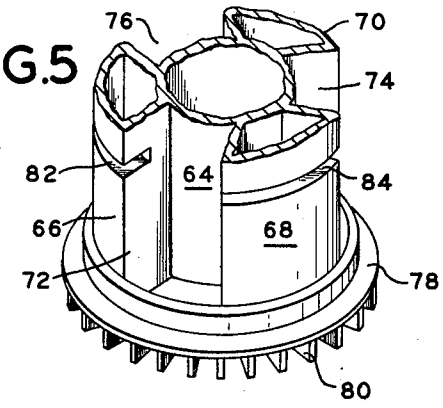


FIG. 3

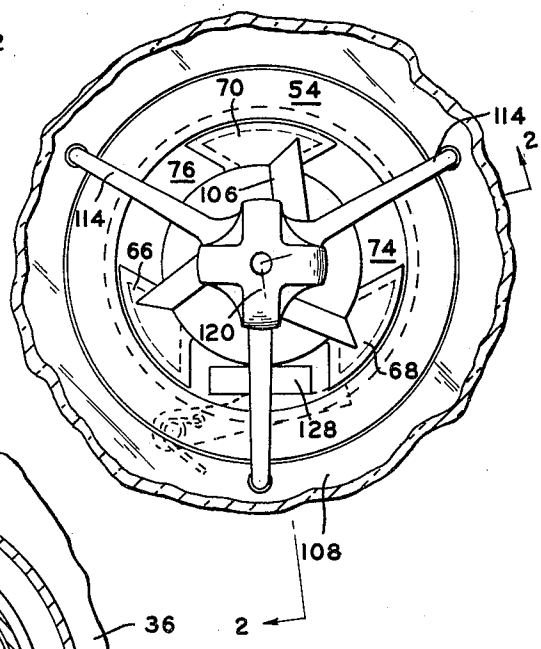
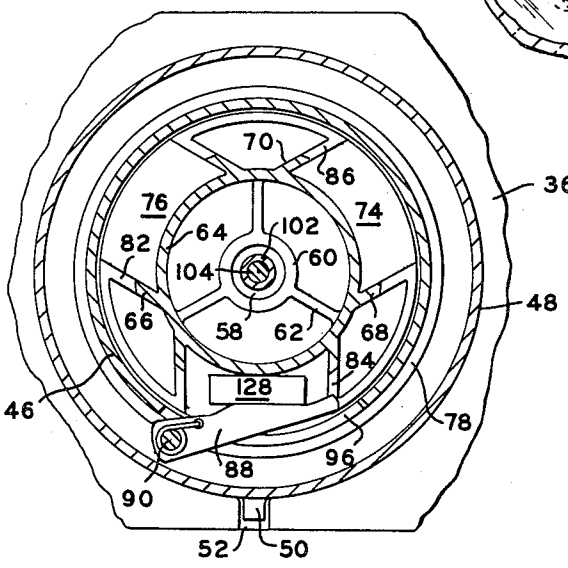


FIG. 4



INVENTOR.
HOWARD W. BLEIMAN

BY Arthur H. Seidel

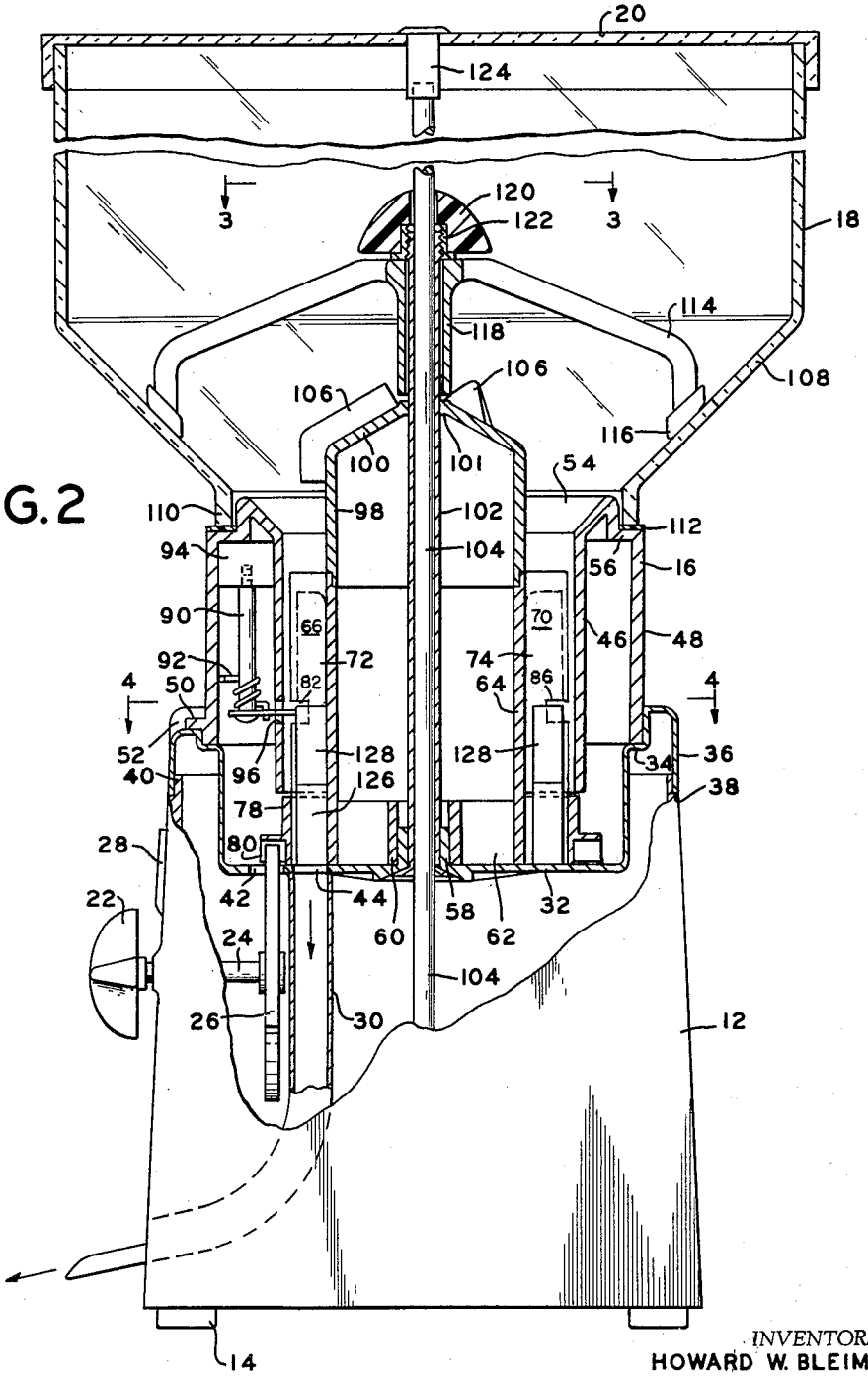
ATTORNEY

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FIG. 2



INVENTOR.
HOWARD W. BLEIMAN

BY

Arthur H. Seidel

ATTORNEY

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COIN OPERATED VENDING MACHINE

Howard W. Bleiman, 8518 Forrest Ave., Philadelphia 50, Pa.

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5 Claims. (Cl. 221—68)

This invention relates to a coin operated vending machine, and more particularly, to a coin operated vending machine for vending rectangular shaped articles such as bubble gum, candy, etc.

A large number of vending machines, coin operated or otherwise, have been proposed heretofore. Such machines have been entirely satisfactory when the articles to be dispensed are spherical in nature. Spherical articles such as gum balls present little or no problem in dispensing since they roll freely, are capable of being readily agitated, and generally present no problem when it is desired to dispense the articles one at a time.

The vending machines adapted for use with spherical articles cannot be utilized for dispensing rectangular shaped articles. For example, in recent years a large number of gum manufacturers have been producing bubble gum in rectangular shapes. Such rectangular shaped bubble gum cannot be utilized with the gum ball machines proposed heretofore. The rectangular shape of the bubble gum does not permit it to roll, renders it easily susceptible to jamming, and presents difficulties in dispensing the gum. The apparatus of the present invention overcomes these difficulties by the provision of a novel sloping surface adjacent the open end of the container, by providing a novel rotor, and by providing a novel latching means which precludes dispensing more than one article at a time.

The vending machine of the present invention is structurally interrelated in a manner which facilitates quick disassembly. Novel agitator means is provided for constantly stirring the articles. The agitator means is of a nature which forces the articles radially outwardly against a sloping surface.

A spring biased retainer arm is provided at a level so as to engage the second one of a plurality of articles stacked one on top of the other within a passage between the outer periphery of the rotor and a ring shaped housing. In this manner, the articles may be disposed upright, sideways or a mixture thereof and yet only the lowermost article will be dispensed. The rotor is rotatably mounted and a chute is provided in the base of the machine for receiving the article intended to be dispensed.

It is an object of the present invention to provide a novel vending machine.

It is another object of the present invention to provide a novel coin operated vending machine for dispensing rectangular articles.

It is another object of the present invention to provide a vending machine for dispensing rectangular articles one at a time.

It is still another object of the present invention to provide a vending machine for dispensing individual rectangular articles from a container, with the supply of articles in the container being agitated each time an article is dispensed.

Other objects will appear hereinafter.

For the purpose of illustrating the invention there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a perspective view of the vending machine of the present invention.

FIGURE 2 is a partial longitudinal sectional view of

the vending machine illustrated in FIGURE 1 and taken along the line 2—2 in FIGURE 3.

FIGURE 3 is a sectional view taken along the lines 3—3 in FIGURE 2.

FIGURE 4 is a sectional view taken along the lines 4—4 in FIGURE 2.

FIGURE 5 is a partial perspective view of the lower portion of the rotor illustrated in section in FIGURES 2 and 4.

Referring to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 a perspective view of the vending machine of the present invention designated generally as **10**.

The vending machine **10** includes a generally rectangular shaped hollow base **12** mounted on legs **14**. A central ring shaped housing **16** is mounted on the base **12** and a container **18** for articles to be dispensed is supported on the housing **16**. The container **18** is preferably a transparent plastic material and is provided with a cover **20** having a lip portion which overlaps the upper edge of the container.

The base **12** supports a rotatably mounted shaft **24** having an actuator handle **22** on one end thereof. A circular gear **26** is fixedly secured to the other end of the shaft **24**. The base **12** is also provided with a conventional coin slot **28** and a conventional mechanism responsive to the coin to unlatch the shaft **24** so that the gear **26** may be rotated by manual rotation of the handle **22**. A delivery chute **30** is disposed within the base **12** and extends through one wall thereof beneath the handle **22**.

The upper end of the base **12** is covered by a support plate **32**. The support plate **32** is provided with an upwardly directed flange at its outer periphery, said flange having a shoulder portion **34** adjacent its uper edge. Said support plate **32** terminates peripherally in a downward directed flange **36** which overlaps a lip **40** on the upper edge of the base **12** and rests on a shoulder **38**. The support plate **32** is provided with an elongated slot **42** to accommodate a portion of the gear **26**. The support plate **32** is also provided with an elongated slot **44** which is in communication with the chute **30**.

The central ring-shaped housing **16** is annular in plan view. The housing **16** includes an inner wall **46** connected to and spaced from an outer wall **48**. The lower edge of the outer wall **48** rests on the shoulder portion **34**. As seen more clearly in FIGURES 2 and 4, the upper edge of the flange portion **36** is provided with a recess **52** receiving a tongue **50** on the outer wall **48**. The relationship between the tongue **50** and the recess **52** precludes rotary motion of the housing **16**.

As shown more clearly in FIGURE 2, the inner wall **46** is interconnected with the outer wall **48** at their upper edges by means of a tapered wall **54** having a recessed outer peripheral shoulder **56**. The base portion of the support plate **32** is provided with an upright boss **58** which is annular in transverse cross section. A hub **60** surrounds the boss **58** and is rotatably supported on the base portion of the plate **32**. The hub **60** is interconnected with an annular rotor **64** by means of fins **62** as shown more clearly in FIGURE 4. The rotor **64** is proportioned so that its length is greater than its diameter. The rotor **64** is positioned so that it may rotate about a vertical axis in FIGURE 2. The outer peripheral surface of the rotor **64** is provided with three hollow radially outwardly directed ribs **66**, **68** and **70**. While three such ribs are illustrated in the drawing, it will be appreciated that the number of ribs may be increased or decreased. The outer periphery of the ribs **66–70** are spaced from the inner peripheral surface of the inner wall **46**. The ribs **66–70** cooperate with said inner peripheral surface of the inner wall **46** to define three passageways or

recesses 72, 74 and 76. The ribs and recesses are respectively spaced 120° apart.

A gear 78 is fixedly secured to the outer peripheral surface of the ribs 66–70 and extends radially outwardly from the rotor 64. The gear 78 is provided with downwardly directed teeth 80 which are meshingly engaged with the teeth on the gear 26. Each of the ribs 66–70 are provided with a slot in the same horizontal plane. Thus, the rib 66 is provided with a slot 82 extending radially inwardly from its outer peripheral surface. Likewise, the rib 68 is provided with a slot 84 and the rib 70 is provided with a slot 86. The purpose of the slots 82–86 will be made clear hereinafter.

A retainer arm 88 is mounted in a horizontal disposition on a pivot pin 90 mounted in an upright disposition between the inner and outer walls 46 and 48, respectively. A torsion spring 92 surrounds the pin 90 and biases a side edge of the arm 88 into the slots on the ribs 66–70. In order that the arm 88 may extend into the slots on the ribs, the wall 46 is provided with a horizontally disposed slot 96 through which the arm 88 extends.

As shown more clearly in FIGURE 2, the rotor 64 is provided with a cup-shaped head 98 terminating in a tapered wall 100 and an apex 101. The lower edge of the head 98 is fixedly secured to the rotor 64 adjacent the upper edge of the ribs in any convenient manner such as by welding. A hollow sleeve 102 extends through the boss 58 and an aperture in the apex 101. The lowermost end of the sleeve 102 is provided with a flange which overlaps the support plate 32. The upper end of the sleeve 102 is provided with threads on its outer peripheral surface.

A rod 104 has one end (not shown) connected to the bottom wall of the base 12. The rod 104 extends through the sleeve 102 to a point adjacent the cover 20. The tapered wall 100 on the cup-shaped head 98 is provided with agitator blades 106. The agitator blades 106 extend at an angle so as to be tangent to the apex 101. The tangential disposition of the agitator blades 106 assures that the articles will be caused to move radially outwardly with a spinning motion each time the rotor 64 is rotated.

As shown more clearly in FIGURE 2, the container 18 is provided with a tapered wall 108 adjacent its lowermost end. The tapered wall 108 is at substantially the same taper as the wall 54. The lowermost edge of the wall 108 is provided with a longitudinally extending flange 110. The flange 110 surrounds the tapered wall 54 and rests on a gasket 112 which in turn is disposed on the shoulder 56. The flange 110 is maintained in contact with the gasket 112 by means of a spider mechanism. The spider mechanism includes spider legs 114 having shoes 116 disposed in abutting contact with the tapered wall 108.

The spider legs 114 extend outwardly from a hub sleeve 118. The lowermost end of the hub sleeve 118 is slightly spaced from the apex 101. A knob 120 is provided with an internal sleeve 122. The internal sleeve 122 is threaded to the upper end of the sleeve 102. Thus, rotation of the knob 120 causes the shoes 116 to impart a downward force to the wall 108 thereby maintaining the flange 110 in contact with the gasket 112.

The upper end of the rod 104 is releasably connected to a lock mechanism 124 of conventional construction. The lock mechanism 124 is preferably of the key operated type. The lock mechanism 124 is provided with a flange which overlies the upper edge of the cover 20. When the lock mechanism 124 is unlocked, the cover 20 may be removed upwardly thereby providing access to the interior of the container 18.

The operation of the vending machine of the present invention is as follows:

The container 18 will be filled with rectangular shaped articles such as bubble gum. The relative disposition of the elements will be as illustrated in FIGURE 2 except for the presence of the package of gum 126. The package of gum 126 will have passed through the slot 44 and the chute 30 by the prior user of the machine. The package of gum 128 next above the package of gum 126 will be retained by the arm 88 against the outer peripheral surface of the rotor 64.

As the next user places a coin through the coin slot 28, a conventional mechanism, not shown, will permit rotation of the handle 22. As the handle 22 is rotated, the gear 26 rotates the gear 78 through an arc of 120°. Since the gear 78 is fixed secured to the rotor 64, the rotor 64 also rotates through a similar arc. Such rotation will place the recess 76 in line with the chute 30. Packages of gum 126 and 128 will be in the position as illustratted in FIGURE 2. The package of gum 126 will immediately fall through the slot 44 and the chute 30. The package of gum next above, namely package of gum 128 will be retained by the arm 88. In addition, all packages of gum within the recess 76 above the package of gum 128 will likewise be held in their relative disposition. As the rotor 64 is rotated to this new disposition, the package of gum held by the arm 88 will be permitted to fall onto the upper surface of the plate 32 when the recess within which it is disposed is moved beyond the slot 44.

Each time that the rotor 64 is rotated, the agitator blades 106 cause the packages of gum to be spun radially outwardly against the tapered walls 54 and 108. Such radially outward spinning is required so as to assure that the rectangular shaped packages are in a disposition so as to align themselves with the recesses 72–76.

The plane of the arm 88 is spaced from the plane of the base of the plate 32 by a distance which is greater than the largest transverse dimension of the package 126 but less than the combined height of the packages 126 and 128. Accordingly, positive assurance is provided that the second package will always be retained by the arm 88 so that only one package will be dispensed for each coin deposited in the slot 28.

Since the rotor 64 is provided with three ribs and three recesses, the handle 22 may only rotate 120°. As the number of ribs and recesses is increased or decreased, the angle of rotation for the handle 22 will likewise increase or decrease. Each time that a package is dispensed through the chute 30, and the rotor 64 is rotated through an arc of 120°, each package in the recess drops downwardly for a distance corresponding to the dimensions of the package so that space is provided in that particular recess for receiving another package from the container 18. It will be noted that the tapered walls 54 and 108 are in line with one another so that rectangular packages may slide toward the rotor and enter one of the recesses 72–76. At any given time, assuming a sufficient supply of packages in the container 18, each of the recesses are filled with rectangular packages one on top of another except for the recess disposed over the slot 44. Such last mentioned recess will be filled except for the space below the second package counting upwardly in FIGURE 2. Such space is the space previously occupied by the package which has been dispensed.

When it is desired to refill the container 18, the lock mechanism 124 is unlocked with a key and the cover 20 may then be removed. Thereafter, the packages may be disposed within the container 18 in random manner substantially filling the same. When it is desired to disassemble the machine 10, the cover 20 is removed as just described. Thereafter, the knob 120 is rotated until it is clear of the threaded portion on the sleeve 102. Thereafter, the hub sleeve with its integral spider legs may be removed. Such removal of the hub sleeve 118 and spider legs enables the container 18 to be removed vertically in FIGURE 2. Thereafter, it will be seen that the rotor 64 may be exposed by raising the ring shaped housing 16 upwardly. Before raising the ring shaped housing 16 upwardly, the arm 88 should be biased against the effect of the spring 90.

Thus, it will be seen that the assembly and disassembly of the machine **10** may be accomplished by unskilled workmen in an expeditious manner. The provision of longitudinally extending recesses **72–76** on the rotor **64** and the agitator blades **106** disposed tangentially with respect to the apex **101** provide for long trouble free operation.

The pin **90** is fixedly secured at its upper end to a mounting block **94** which may be an integral portion of the ring shaped housing **16**. The ring shaped housing **16** and the rotor **64** are preferably castings made from lightweight non-corrosive material such as plastics, aluminum, etc. In such a case, the gear **78** will be integrally cast with the rotor **64**. As used hereinafter, the arm **88** and the spring **92** cooperating with the slot **96** may be referred to as a means for preventing more than one rectangular shaped article to move from one of the recesses on the rotor **64** through the slot **44** into the chute **30**.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. A dispensing machine for dispensing rectangular shaped articles comprising a container, an annular ring-shaped housing, the bottom end of said container being in open communication with said housing, said housing being supported on a base having a delivery chute therein, a rotatably mounted rotor in said housing, means providing a longitudinally extending peripheral passage on the outer periphery of said rotor juxtaposed to the inner periphery of said housing, said passage being in communication with said chute in only one rotary position of said rotor, means for selectively rotating said rotor, means preventing more than one rectangular shaped article from moving from said passage into said chute each time the passage is disposed over said chute, said means including a spring-biased arm positioned between the upper and lower extremities of said passage for engagement with the article next above the lowermost article in said passage when said passage is in communication with said chute, means on said rotor for directing articles radially outwardly with respect to said rotor as said rotor is rotated, said last-mentioned means including agitator blades on said rotor above said passage, and said blades being substantially parallel to lines tangent to the periphery of said rotor.

2. A machine in accordance with claim 1 including a rod mounted in said base and passing through said rotor, said rotor being rotatably mounted about said rod, a hub surrounding said rod above said rotor, and spider legs extending from said hub to a tapered surface on said container for maintaining said container in assembled relationship with respect to said housing.

3. A dispensing machine for dispensing rectangular shaped articles comprising a container, an annular ring-shaped housing, the bottom of said container being in open communication with said housing, said housing being supported on a base and having an outer wall and an inner wall spaced from said outer wall, said base having a chute therein in communication with said housing, a rotatably mounted cylindrical rotor in said housing, said rotor having a plurality of ribs projecting radially outwardly from said rotor and terminating adjacent said inner wall, said ribs defining recesses therebetween, the dimensions of said recesses being greater than the dimensions of articles to be disposed within said container, said recesses being adapted to contain a plurality of articles one on top of the other, and means for turning said rotor and dispensing articles from said recesses one at a time, said means including a spring-biased arm mounted in the space between said inner and outer housing walls and extending through said inner wall above said chute, said ribs having horizontal slots therethrough for receiving said arms as said ribs pass over said chute.

4. A machine in accordance with claim 3 including agitator blades on the upper end of said rotor, said blades being substantially parallel to lines tangent to the outer periphery of said rotor, and a tapered wall juxtaposed to said blades against which said blades may direct articles during rotation of said rotor, said tapered wall including a portion of said housing and a portion of said container.

5. A machine in accordance with claim 4 wherein the number of said blades is equal to the number of said ribs, each blade being spaced immediately above one of said ribs whereby rectangular shaped articles within the container may be directed into the recesses between adjacent ribs.

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Disclaimer

3,128,011.—*Howard W. Bleiman*, Philadelphia, Pa. COIN OPERATED VENDING MACHINE. Patent dated Apr. 7, 1964. Disclaimer filed June 9, 1964, by the assignee, *Frank H. Fleer Corporation.*

Hereby enters this disclaimer to claims 1 and 3 of said patent.

[*Official Gazette August 25, 1964.*]