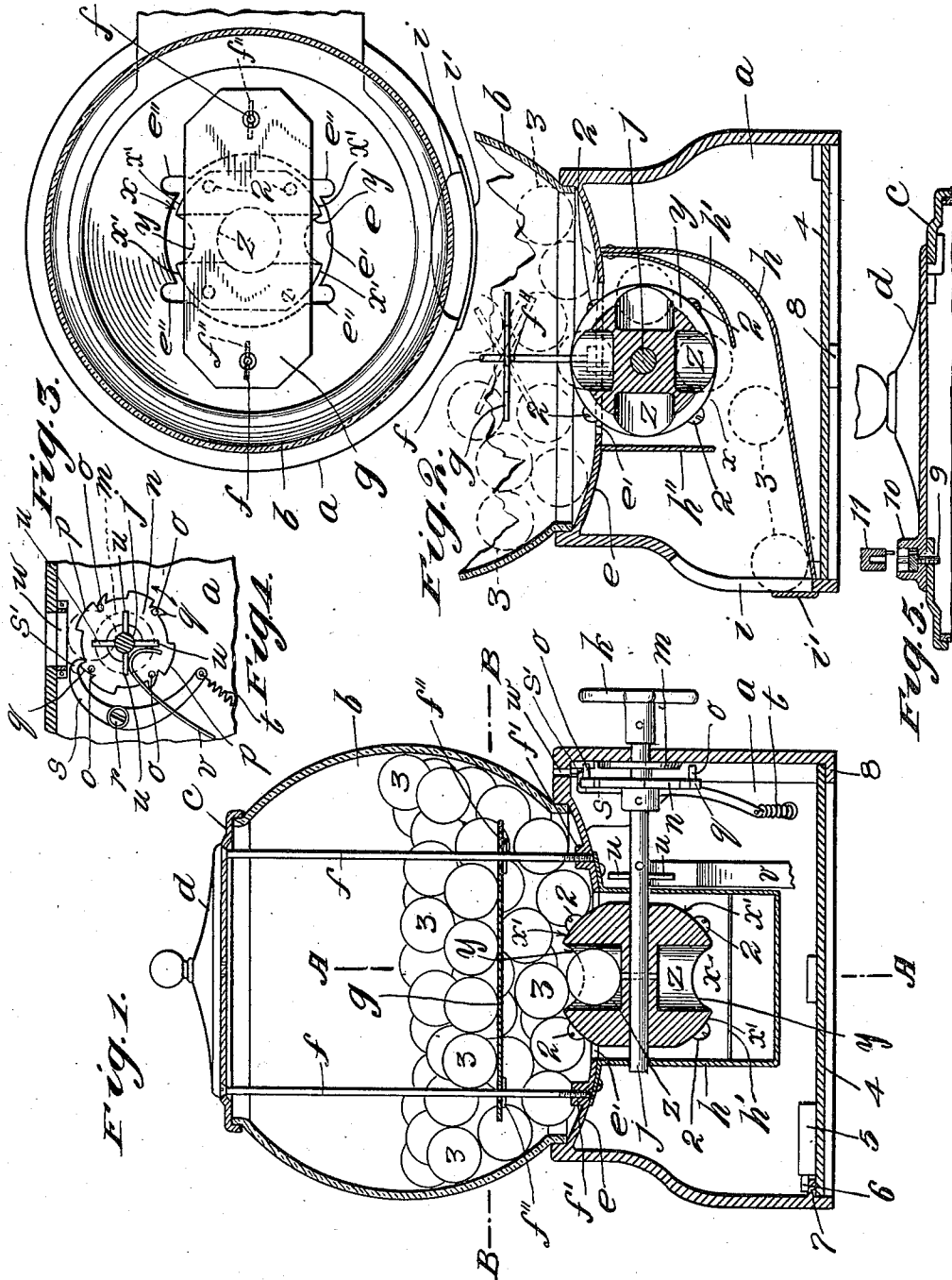


W. MILLARD.
VENDING MACHINE.
APPLICATION FILED MAY 5, 1911.

1,013,674.

Patented Jan. 2, 1912.



Witnesses:
M. Reimer.
M. Hamilton.

William Millard Inventor
By his Attorney
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UNITED STATES PATENT OFFICE.

WILLIAM MILLARD, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO
ALBALL MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF
NEW YORK.

VENDING-MACHINE.

1,013,674.

Specification of Letters Patent.

Patented Jan. 2, 1912.

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To all whom it may concern:

Be it known that I, WILLIAM MILLARD, a subject of Great Britain, residing in the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in vending machines and particularly to improvements in vending machines designed and adapted to vend commodities in the shape of balls; and an object of this invention is to provide a vending machine of the character just mentioned which will be simple in construction, comparatively cheap in manufacture and most efficient and durable in operation and use.

Another object of this invention is to provide a vending machine of the character just described with means which will insure the feeding of the balls one by one and which will prevent the "bridging" of the balls; that is, which will prevent the formation of the balls into layers or lumps, as by caking or sticking together.

In the drawings illustrating the principle of this invention and the best mode now known to me of applying that principle, Figure 1 is a central vertical section through my new vending machine; Fig. 2 is a fragmentary section on the line A—A of Fig. 1; Fig. 3 is a section on the line B—B of Fig. 1; Fig. 4 is a detail illustrating the coin-controlled mechanism; and Fig. 5 is a detail of the lock for the lid.

The base *a* is hollow and carries a casing *b* of glass which is somewhat rounded in contour or formed with a central swell. On the top of the casing *b* is fitted an annular cover-plate *c* the central opening in which is closed by a lid *d*. The casing *b* constitutes the side wall of a receptacle the bottom of which is formed by the top *e* of the base *a*. A pair of long screw-bolts *f* pass through holes in the cover-plate *c* and their threaded lower ends engage in suitable sockets *f'* formed in the top *e* of the base *a*. Through each of the bolts *f* there passes a pin *f''* which supports a plate *g* free to tilt thereon. In the top *e* there is formed a central hole *e'* and recesses *e''*; and below the central opening *e'* there is fastened to the top *e* a chute *h* which leads to an opening *i* formed

in the side wall of the base *a* and across which extends a stop-plate *i'*. The chute *h* is provided with a guide-plate or apron *h'* and with a guard-plate *h''*. In the side walls of the chute *h* there is rotatably mounted the inner end of a shaft *j*, the outer end of which projects beyond the base *a* and is there provided with a suitable knob *k*. Just within the base *a* there is fastened thereto an annular plate *m* through which passes the shaft *j* and between the plate and the chute *h* there is mounted upon the shaft *j* a ratchet-wheel *n* from which projects axially of the shaft *j* and toward the collar *m* a series of pins *o*. The peripheral edge of the ratchet *n* is formed with radially-disposed lugs *p* and with ratchet teeth *q*. Pivoted on the screw-pin *r* is a pawl *s* the toe *s'* of which is adapted to engage the teeth *q* of the ratchet *n* and the other end of which is connected to one end of a coil spring *t*, the other end of the latter being fastened to the inside of the casing *a*. Between the ratchet *n* and the chute *h* there project from the shaft *k* four arms *u* which are at right angles to each other. One end of a leaf-spring *v* is fastened to the base *a* and its other end is curved and free to engage between a pair of the arms *u* and thereby to press one of the teeth *q* into engagement with the toe *s'* of the pawl *r*. In a slot in the top of the base *a* there is fitted a coin chute *w* through which a coin may be dropped and will then rest upon the shaft *j* between a pair of the pins *o*. Upon the shaft *j* and in the chute *h* there is mounted a ball-shaped feed-roller or ejector *x* formed with a circumferential centrally-disposed groove *y* in the bottom wall of which there are formed four pockets *z* shaped to receive one of the gum-balls *3*. Projecting from the feed-roller *x* are screw-heads *2* which serve as agitators to shake the balls of gum *3* as the feed-roller *x* is normally rotated. To permit the agitators to pass through the top *e* the latter is formed with recesses *e''*.

The guard-plate *h''* prevents the surreptitious movement of the roll *x* by a person passing his hand through the opening *i* and also prevents a ball from being fed by a retrograde or counter clockwise motion of the feed-roller *x*. The guide-plate or apron *h'* holds the balls in the pockets until they have reached their lowermost position, when

they are allowed to fall to the bottom of the chute.

In the vending of balls of gum which are candied on their outer surface, it has been found that the balls will "bridge" or cake together in layers or lumps and that this effectually prevents their being fed one by one as is desirable in a vending machine. This caking is found to be produced to a greater or less extent by the weight of the balls in the upper part of the receptacle pressing together the balls in the bottom thereof. To take this pressure of the upper part of the balls from the lower part of the same, I have interposed the tiltable plate *g*. The normal turning of the feed-roller *x* in the ordinary operation of the machine will cause the agitator 2 to push upwardly the lowermost balls and to shake the plate *g*. In this way the balls are furthermore prevented from sticking or caking together and are kept in a condition where they will roll from above the plate *g* to below the same and thence into the pockets *z*.

It is to be observed that the partition wall *e*, which forms the top of the base *a* and the bottom of the receptacle for the balls 3 of gum, is dished and this formation of the wall *e* tends to cause the balls 3 to feed by gravity toward the groove *y* in the feed-roller *x*. It is further to be observed that the sides *x'* of the latter are inclined and slope away from the groove *y* instead of toward it. I am aware that it has heretofore been common to give to the walls of the groove in a feed-roller in this type of vending machine an inclination in the same direction as the bottom of the receptacle or toward the centrally-disposed groove. But I have found that where this is done, the balls have a tendency to stick together and form a layer which bridges the groove, instead of remaining separate and free to fall into the groove, as is necessary to the proper operation of a machine of this kind. Where, however, the walls of the feed-roller slope away from the central groove, as in my machine, there is a tendency for the balls over the groove and those adjacent to them and above the walls of the roller just outside the groove to separate from one another and not to stick together and bridge the groove. That is, the balls above the inclined walls run down hill away from the groove and so away from the balls just over the groove. The swell in the rounded casing *b* increases the capacity and tends to cause the balls to feed toward the feed-roller *x*.

The bottom plate 4 of the base *a* is provided with a lock 5, the bolt 6 of which is adapted to engage with the inwardly-projecting flange 7 which extends from the base *a*. The latter is also formed with an inwardly-extending flange 8 upon which rests an edge portion of the bottom plate 4.

The lid *d* overlies the heads of the screw-bolts *f* and prevents access to the latter for the purpose of removing them and thereby dismantling the machine to gain access to the balls 3. The lid *d* will be locked to the cover plate *f* in any suitable manner; for example, it may be fastened thereto by a screw 9 the head of which lies in a socket 10 formed in the lid and is of such peculiar form as to require a special wrench 11 to unscrew the same.

I claim:

1. A vending machine having a receptacle the bottom of which is formed with an opening for the escape of the articles to be vended; an ejector shaft mounted in close proximity to said opening; and a plate mounted away from said shaft and above said opening and free to tilt and arranged to relieve the articles below the plate from the weight of the articles above the same; said plate by its tilting movement maintaining the free circulation of the articles to be vended and preventing bridging by the same.
2. A vending machine having a receptacle the bottom of which is formed with an opening for the escape of the articles to be vended; an ejector mounted in close proximity to said opening; a plate mounted free to tilt above said opening and arranged to relieve the articles below the plate from the weight of the articles above the same; and agitating devices for agitating the articles below said tiltable plate; the latter being moved by the movement of the articles below it and transmitting said movement to the articles above it.
3. A vending machine having a receptacle the bottom of which is formed with an opening for the escape of the articles to be vended; an ejector shaft; and an ejector mounted thereon in close proximity to said opening and formed with a circumferential groove, the walls of said ejector on both sides of said groove and outside the same sloping therefrom downwardly toward said shaft.
4. A vending machine having a receptacle the bottom of which is formed with an opening and the side wall of which is formed with a swell above the bottom; an ejector shaft; and an ejector mounted thereon in close proximity to said opening and formed with a circumferential groove, the walls of said ejector on both sides of said groove and outside the same sloping downwardly therefrom toward said shaft; said swell directing the articles to be vended toward the last-named walls.
5. A vending machine having a receptacle the bottom wall of which is formed with an opening toward which said wall slopes from its edge; an ejector shaft; an ejector mounted thereon in close proximity to said opening and formed with a circumferential

groove, the walls of said ejector on both sides of said groove and outside the same sloping downwardly therefrom toward said shaft and being reversely-inclined with respect to said bottom wall.

6. A vending machine having a receptacle the bottom of which is formed with an opening for the escape of the articles to be vended; an ejector mounted in close proximity to said opening and formed with a circumferential groove, the walls of said ejector on both sides of said groove and outside the same sloping therefrom; and a plate mounted free to tilt above said opening and arranged to relieve the articles below the plate from the weight of the articles above the same.

7. A vending machine having a receptacle the bottom of which is formed with an opening for the escape of the articles to be vended and the side wall of which is formed with a swell above said bottom; an ejector mounted in close proximity to said opening; and a plate mounted above said opening free to tilt and arranged to relieve the articles below the plate from the weight of the articles

above the same; said swell directing toward said ejector the articles falling from said tiltable plate.

8. A vending machine having a receptacle provided with a side-wall and a bottom wall formed with an opening for the escape of the articles to be vended; an ejector mounted in close proximity to said opening; fastening devices which lie within said side-wall and fasten the same in place on said bottom wall; and a plate mounted on said devices and above said opening and free to tilt; said plate being arranged to relieve the articles below the plate from the weight of the articles above the same and by its tilting movement maintaining the free circulation of the articles to be vended and preventing bridging by the same.

In testimony whereof I hereunto set my hand at New York city in the presence of the two undersigned witnesses this first day of May, A. D. 1911.

WILLIAM MILLARD.

Witnesses:

E. I. MCCARTHY,
JAMES HAMILTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."