

Oct. 23, 1934.

R. A. VOGEL

1,977,837

VENDING MACHINE

Filed Aug. 16, 1932

2 Sheets-Sheet 1

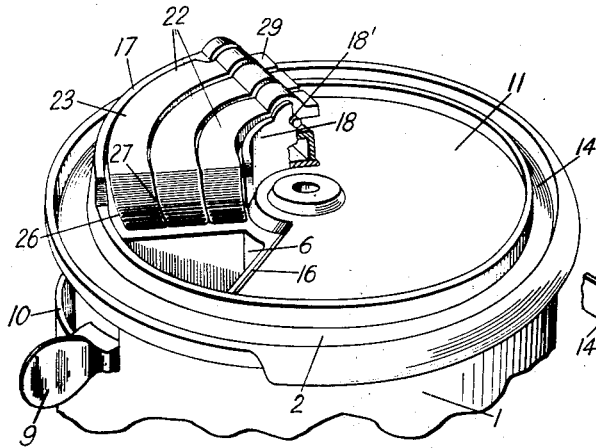


Fig. 1

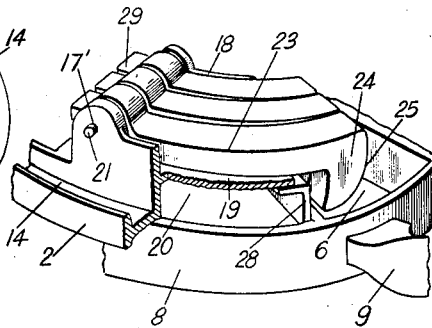


Fig. 2

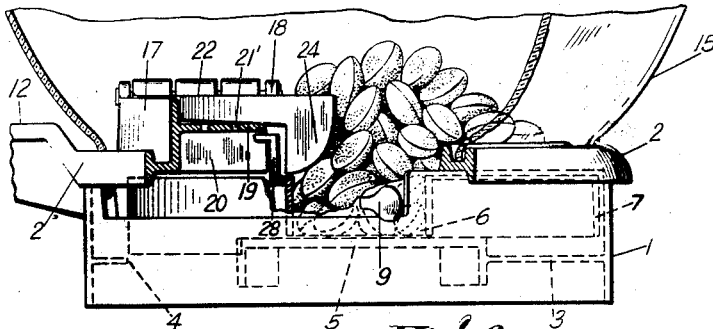


Fig. 3

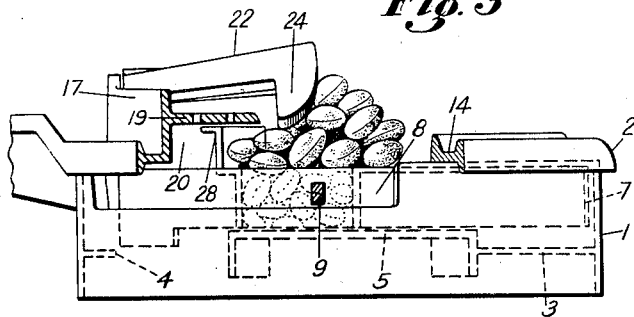


Fig. 4

INVENTOR.  
Ralph A. Vogel.  
BY Corbett & Mahoney  
ATTORNEYS.

Oct. 23, 1934.

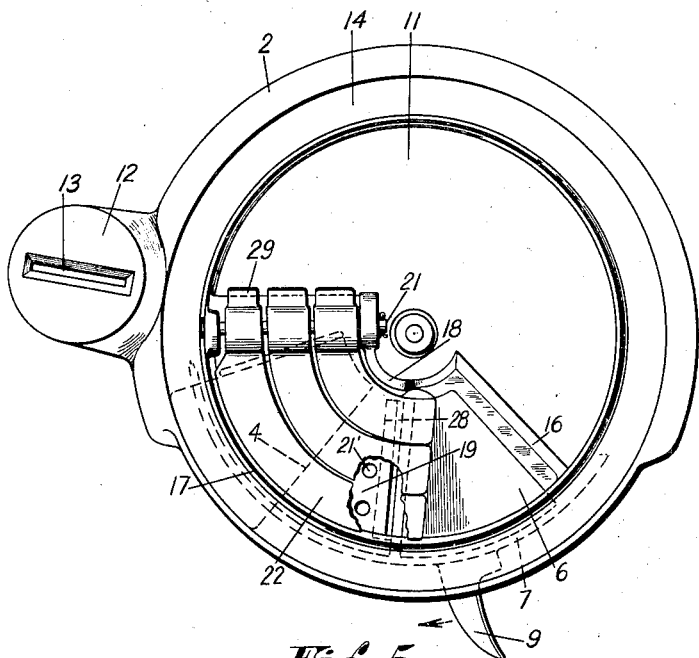
R. A. VOGEL

1,977,837

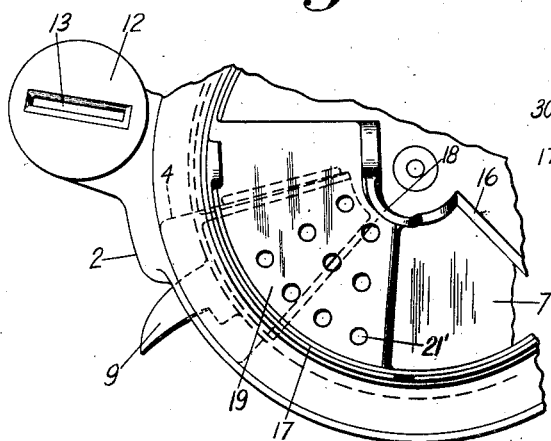
VENDING MACHINE

Filed Aug. 16, 1932

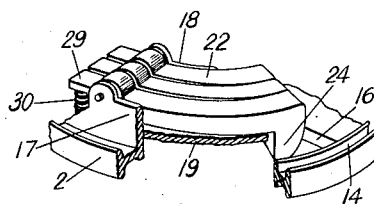
2 Sheets-Sheet 2



*Fig. 5*



*Fig. 6*



*Fig. 7*

INVENTOR.  
*Ralph A. Vogel.*  
BY *Corbett & Mahoney*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE

1,977,837

## VENDING MACHINE

Ralph A. Vogel, Columbus, Ohio, assignor to The  
Columbus Vending Company, Columbus, Ohio,  
a corporation of Ohio

Application August 16, 1932, Serial No. 629,027

22 Claims. (Cl. 221—108)

My invention relates to vending machines. It has to do, more particularly, with a coin-controlled vending machine which is particularly applicable for vending articles of irregular shape, although it is not necessarily limited thereto.

In the past, numerous efforts have been made to provide a vending machine which is suitable for vending articles of irregular shape. In the vending of articles of this type, such articles usually cause clogging of the machine. For instance, one of the articles might become caught between the top plate of the vending machine and the vender lever plate, thereby rendering the machine inoperative. In order to operate the machine when this occurs, it would be necessary to pull on the vender lever with sufficient force to break the article, or if the article is extremely hard, it would be necessary to take the machine apart and to remove such article from the position where it causes clogging of the machine. There have been several types of machines devised for overcoming these undesirabilities but none of these prior art machines are entirely satisfactory. These prior art machines are complicated in structure and are expensive to manufacture. Then, too, prior art machines of this type are usually of such a structure that they readily become out of order and require considerable maintenance. Furthermore, they are not entirely effective to accomplish the purpose for which they were intended.

One of the objects of my invention is to provide a vending machine of the type indicated which is extremely simple and inexpensive to manufacture.

Another object of my invention is to provide a vending machine which is capable of vending articles of irregular shape without danger of such articles becoming clogged in the operating mechanism of such machine.

Another object of my invention is to provide a vending machine of the type indicated which is effective to vend articles of irregular shape without clogging of the machine, and which will vend articles of irregular shape and which are easily broken, without breaking such articles.

Another object of my invention is to provide a vending machine of the type indicated which is extremely rugged in structure and which will not readily become out of order, thereby requiring little or no maintenance.

This invention contemplates the provision of a vending machine wherein the top plate is provided with a plurality of fingers which are pivotally mounted on the upper surface thereof. These

fingers have their outer ends disposed above the opening in the top plate, which normally lies above the measuring pocket of the vender lever plate, and are provided with portions which normally project into said opening and terminate substantially at the lower surface of the top plate. The fingers are of such a shape and are so disposed that when the vender lever plate is actuated to move the measuring pocket, which will be filled with the articles, over the discharge chute and underneath the top plate proper, the outer ends thereof will move upwardly, if any of the articles project above the upper end of the pocket, and will therefore prevent clogging of such projecting articles between the vender lever plate and the top plate. The fingers are so shaped that they will not tend to bind with each other. Means is also provided for limiting the upward movement of the fingers. Furthermore, means is provided so that even though the fingers are moved upwardly, when the parts of the machine are in inoperative position, the articles cannot be discharged through the discharge chute.

The preferred embodiment of my invention is shown in the accompanying drawings wherein similar characters of reference designate corresponding parts and wherein:

Figure 1 is a perspective view of a portion of a vending machine showing the top plate thereof having a plurality of pivoted fingers mounted thereon in accordance with my invention.

Figure 2 is a perspective view of a portion of the structure shown in Figure 1, parts being broken away, to more clearly illustrate my invention.

Figure 3 is a side elevation, partly broken away, of the structure shown in Figure 1 and illustrating the positions which the various parts of my machine occupy when the machine is in inoperative position.

Figure 4 is a view similar to Figure 3 and showing the various parts of my machine in the positions which they occupy when the machine is in operative vending position.

Figure 5 is a plan view of the structure shown in Figure 1.

Figure 6 is a plan view, partly broken away, of a portion of the top plate having the pivoted fingers removed therefrom.

Figure 7 is a modified form of my invention.

In the accompanying drawings, I have shown portions of a vending machine to which my invention is applied. I have shown merely those parts of the machine which are necessary for a clear understanding of my invention.

With reference to the drawings, I have shown a portion of a vending machine which comprises a bowl casting 1 which is mounted on a suitable base (not shown) in any suitable manner. This bowl casting 1 is mainly cylindrical in form and is preferably provided with a radially projecting hood 2 designed to contain the upper end of a coin channel (not shown). The bowl casting 1 has a plate 3 which forms the bottom thereof and this plate 3 is provided with a delivery opening 4 which is disposed directly above a discharge chute (not shown). When the parts of the vending machine are moved to vending position the articles are adapted to pass through the opening 4 and then to be discharged through the discharge chute as will be hereinafter understood.

The plate 3 is also provided with a raised flat portion 5. This portion 5 of the plate is adapted to normally constitute the bottom of a measuring pocket 6 which is formed in a vender lever plate 7. The vender lever plate 7 is mounted within the bowl casting 1. This vender lever plate preferably comprises the main body portion 8 having the measuring pocket 6 of segmental form, formed therein. The capacity of this pocket may be adjusted by suitable means, (not shown), if desired. This vender lever plate also comprises a handle 9 which projects through and operates in a slot 10 formed in the wall of the casting 1. The vender lever plate is rotatably mounted in the bowl casting 1 and rotation of such plate is controlled by suitable coin-controlled mechanism (not shown).

A top plate 11 is suitably mounted on the upper end of the bowl casting 1. This top plate is circular in form and is provided with a radial extension 12 having a slot 13 formed therein, (Figure 5), which is adapted to communicate with the upper end of the coin channel. The top plate 11 is also provided with a circular groove 14 which is adapted to receive the lower end of a glass bowl 15 which is adapted to contain the articles to be vended from the machine. An aperture 16 of segmental form is also formed in the top plate 11 and this aperture normally overlies the measuring pocket 6 which is formed in the vender lever plate 7.

A flange 17 is formed on the upper surface of the top plate 11 adjacent the outer periphery thereof. This flange 17 extends from a point adjacent one edge of the aperture 16 a substantial distance around the top plate 11. A second flange 18 is also formed on the top plate 11 adjacent the center thereof and this flange also extends from a point adjacent one edge of the aperture 16 to a point opposite the point where the flange 17 terminates. The flanges 17 and 18 are curved in the same arc. About midway between the height of these two flanges, a plate 19 is disposed. This plate as well as the flanges 17 and 18 may be cast integrally with the base plate 11.

The flanges 17 and 18 and the plate 19 are so disposed that a chamber 20 is formed beneath the plate 19. The plate 19 is provided with a series of apertures 21' (Figure 6) and any salt or other waste material from the articles that falls on such plate will pass through these apertures.

The rear end of the flange 18 is provided with an opening 18' and the rear end of the flange 17 is provided with an opening 17'. These openings are adapted to receive the ends of a pin 21 which also passes through openings formed in the rear ends of a plurality of fingers 22. These fingers are mounted between the flanges 17 and 18 above

the plate 19. Any number of these fingers may be provided although I have shown only three in the drawings.

The fingers 22 are preferably of the shape shown in the drawings. The body portion 23 of each finger 22 is curved in the same arc that the flanges 17 and 18 are curved. The rear ends of the body portions of the fingers 22 have their lower surfaces spaced above the plate 19 so that they may be swung upwardly about the pin 21 as a pivot. The rear ends of the body portions of the fingers 22 are also preferably spaced apart so that there will be no tendency for the fingers to bind at this point. The forward ends of the body portions 23 of the fingers are normally adapted to rest upon the upper surface of the plate 19. (Figure 2).

The body portion of each of the fingers is provided at its forward end with a downwardly projecting portion 24. These portions 24 extend downwardly past the outer end of plate 19 and terminate at a point substantially in alignment with the lower surface of top plate 11. It will be apparent from the drawings that these portions 24 project through the aperture 16 in the top plate 11. The extreme outer edges of the portions 24 are preferably curved, as at 25, to form a cam-like surface thereon so that the fingers will readily ride up over the articles.

It will be obvious that when the outer ends of the fingers 22 are swung upwardly they will swing in a vertical arc. This is due to the fact that the body portions of the fingers 22 are arcuate in shape and the fingers swing about a fixed pivot point, namely, the pin 21. Therefore, it is desirable to provide means for preventing binding of the outer ends of the fingers 22 when they are swung upwardly. Each side of the forward portion of the fingers 22 is therefore curved as at 26 and 27. The arc of curvature of each side of each finger is the same as the vertical arc through which the outer ends of the fingers swing, when they are moved upwardly.

When the fingers are in their normal position, (Figure 1), the outer portions thereof are comparatively close together. When the outer ends of the fingers are swung upwardly, since both sides of each finger are curved, there will be no danger of binding. If one finger swings upwardly relative to the adjacent finger, this will also not cause binding thereof. For instance, if the finger 22 which is adjacent the flange 17 remains in position and the finger 22 adjacent thereto swings upwardly, the outer end thereof will swing in an arc, but since the surface 27 of the other finger is curved in the same arc through which the outer end of the adjacent finger swings, there will be no danger of these two fingers binding with each other.

The fingers 22 are provided with flat extension members 29 which project from the rear ends thereof. These extension members are of such a length and are so disposed that they act as stops for limiting the upward movement of the outer ends of the fingers. When the fingers have moved upwardly to such an extent that the lower ends of the downwardly projecting portions 24 are in alignment with the plate 19, the flat extension members 29 contact with the rear edge of plate 19 and prevent further upward movement of the fingers. Thus, movement of articles back between the outer ends of the fingers and the upper surface of plate 19 is precluded. This prevents lodging of the articles between the fingers and the upper surface of

plate 19, which would preclude the return of the fingers to their normal position. Furthermore, this eliminates any possibility of the fingers being swung completely around the pivot point 21 to a position on the other side of such pivot where they would rest upside down on the plate 11 and would be inoperative.

The vender lever plate 7 is also provided with a guard member 28 projecting upwardly therefrom. This guard member 28 normally occupies a position adjacent the downwardly extending portions 24 of the fingers 22. The guard 28 projects up into the chamber 20 between the flanges 17 and 18. The upper end of the guard terminates at a point slightly below the under surface of plate 19. As will be understood hereinafter, when the vender lever plate 7 is moved back and forth the member 28 moves back and forth in the chamber 20. This member 28 is provided for a purpose which will be hereinafter explained. The chamber 20 extends past the rearwardmost side of discharge opening 4 so that the measuring pocket 6 in the vender lever plate can be moved into alignment therewith, (Figure 6).

In the operation of my device, the various parts of the machine will occupy the position shown in Figure 3. The measuring pocket 6 of the vender lever plate will be filled with the articles to be vended and some of them will project above the upper end of said pocket into the aperture 16 formed in the top plate 11. When a suitable coin is inserted into the machine, the vender lever plate may be rotated in the direction indicated by the arrow in Figure 5. Rotation of the plate 7 causes the articles projecting above the measuring pocket 6, and which are wedged therein, to contact with the lower ends of the downwardly projecting portions 24 of the fingers 22. This causes the fingers to be moved upwardly to allow such projecting articles to be moved underneath these fingers. The downwardly projecting portions 24 of the fingers will force any loose articles, which are not completely in the pocket 6, off of the top of this pocket so that a measured quantity only, is vended at all times. Thus, only those articles contained completely within the measuring pocket 6 and the articles projecting above such measuring pocket and which are wedged tightly therein, are vended from the machine.

Continued movement of the plate 7 causes the measuring pocket 6 to be moved over the discharge opening 4 in the plate 3 which forms the bottom of the bowl casting 1. The articles will be discharged through this opening and will pass through the discharge chute to a point where they may be recovered by the operator of the machine. The weight of the fingers is sufficient to cause them to return to their normal position after the projecting articles have passed therebeneath, to prevent discharge of any additional articles.

It will be understood that if the vending machine were shaken vigorously up and down when the parts are in inoperative position, the fingers might be moved upwardly so that articles in the machine could pass therebeneath. To prevent the passage of such articles over into the discharge opening 4, the guard member 28 is provided.

In Figure 7, I have shown a modified form of my invention. This modified structure is practically identical with the structure shown in Figures 1 to 6 inclusive. However, in this instance,

the guard member 28 is eliminated. Coil springs 30 are mounted in a suitable manner between the flat extensions 29 and the surface of the base plate 11. These springs are adapted to return the fingers to their normal position after they have been swung upwardly. Furthermore, the springs will guard against upward movement of the outer ends of the fingers caused by shaking the machine vigorously up and down.

It will be understood from the above description that I have provided a machine which is extremely simple in structure and which is effective to vend articles of irregular shape. This machine is of such a structure that clogging of the articles between the top plate and the vender lever plate will be effectively prevented. Furthermore, the machine is capable of vending articles which are easily broken without breaking up such articles. Then too, movement of the pivoted fingers up and down agitates the articles in the machine.

Having thus described my invention, what I claim is:

1. In a vending machine, a stationary plate, a movable plate, said movable plate having an opening formed therein which normally aligns with an opening in said stationary plate when the said plates are in their original positions relative to each other, and a plurality of yieldable members mounted on one of said plates adjacent said openings in such a manner as to permit any projecting articles in said pocket which are wedged therein to pass beneath said stationary plate when said movable plate is moved, said members normally lying in contact with said stationary plate and having portions which project over said openings when said plates are in their initial positions relative to each other.

2. In a vending machine a stationary plate and a movable plate mounted adjacent each other, said movable plate having a measuring pocket therein, a chamber formed beneath said stationary plate, a plurality of yieldably mounted members so disposed as to normally prevent entrance of articles into said chamber, and a guard member formed on said movable plate and projecting into said chamber.

3. In a vending machine a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, and means mounted on one of said plates adjacent said openings and being yieldable to prevent jamming of articles between said stationary plate and said movable plate said means having a portion which normally projects into said openings.

4. In a vending machine, a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, means for preventing jamming of articles between said plates, said means comprising a plurality of fingers yieldably mounted adjacent said openings, said fingers having portions which project into the opening in said stationary plate.

5. In a vending machine, a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, means for preventing jamming of articles between said plates when said movable plate is moved, said means comprising a plurality of pivoted fingers mounted adjacent said openings, the body portions of said fingers being arcuate in shape.

6. In a vending machine, a stationary plate

- and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, means for preventing jamming of articles between said plates, said means comprising a plurality of pivoted fingers mounted adjacent said openings, the body portions of said fingers being arcuate in shape, and the forward side edges of said fingers being arcuately curved.
7. In a vending machine a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, means for preventing jamming of articles between said plates, said means comprising a plurality of fingers pivotally mounted adjacent said openings, the body portions of said fingers being arcuate in shape, the side edges of the forward portions of said fingers being arcuately curved and normally lying in close contact, and the rear portions of said fingers being spaced apart.
8. In a vending machine a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, means for preventing jamming of articles between said plates, said means comprising a plurality of fingers pivotally mounted adjacent said openings, the body portions of said fingers being arcuate in shape, and the side edges of the forward portions of said fingers being arcuately curved, said side edges being curved in the same arc through which the outer ends of the fingers swing when they are moved upwardly.
9. In a vending machine a stationary plate and a movable plate mounted adjacent each other, said movable plate having a measuring pocket therein, a raised portion on said stationary plate and adapted to form a chamber therebeneath, a plurality of pivoted fingers mounted above said raised portion, said fingers having downwardly projecting portions which normally overlie one end of said chamber.
10. In a vending machine a stationary plate and a movable plate mounted adjacent each other, said plates having openings which normally align with each other, a raised portion on said stationary plate adjacent said opening and adapted to form a chamber therebeneath, a plurality of pivoted fingers mounted on said raised portion, said fingers having downwardly projecting portions which normally overlie one end of said chamber to prevent entrance of articles therein, and a guard member formed on said movable plate and projecting up into said chamber.
11. In a vending machine a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, means for preventing jamming of articles between said plates, said means comprising a plurality of pivoted fingers mounted adjacent said openings having portions which extend into said openings when said plates are in their initial position relative to each other, said portions having cam-like structures formed thereon.
12. In a vending machine, a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, means for preventing jamming of articles between said plates, said means comprising a structure extending substantially the entire width of said openings and being yieldably mounted adjacent said openings, said structure having a portion which normally projects into the opening in said stationary plate.
13. In a vending machine, a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, means for preventing jamming of articles between said plates, said means comprising a structure extending substantially the entire width of said openings and being yieldably mounted adjacent said openings, said structure having a portion which normally projects into the opening in said stationary plate, the outer surface of said portion being of cam-like formation.
14. In a vending machine, a stationary plate and a movable plate mounted adjacent each other, said movable plate having a measuring pocket therein, a raised portion on said stationary plate and adapted to form a chamber therebeneath, a plurality of pivoted fingers mounted on said raised portion, said fingers having projecting portions which normally overlie one end of said chamber, and means for limiting movement of said fingers about their pivots in order to prevent entrance of articles between said fingers and said raised portion.
15. In a vending machine, a stationary plate and a movable plate mounted adjacent each other, said movable plate having a measuring pocket therein, a raised portion on said stationary plate and adapted to form a chamber therebeneath, a structure yieldably mounted on said raised portion and having a projecting portion which normally overlies one end of said chamber, and means for limiting movement of said yieldable structure.
16. In a vending machine, a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, a plurality of pivoted fingers mounted adjacent the opening in said stationary plate and adapted to yield to prevent jamming of articles between said plates, said fingers having portions which normally project into the opening in said stationary plate, and means for positively returning said yieldable fingers to their normal position.
17. In a vending machine, a stationary plate and a movable plate, one of said plates having an opening which normally overlies an opening in the other of said plates, a plurality of pivoted fingers mounted adjacent said openings and adapted to yield to prevent jamming of articles between said plates, said fingers having extensions on their rear ends for limiting the pivotal movement of said fingers.
18. In a vending machine having an article receiving hopper, a stationary plate forming the bottom of said hopper and having a discharge opening therein, a vending member having a pocket therein adapted to be brought into registration with the discharge openings in said plate, and means for preventing jamming of articles between said plate and said vending member, said means comprising a plurality of fingers mounted above said plate having portions projecting over the discharge opening therein and serving to permit passage of articles contained within said pocket and extending above the upper edge thereof, beneath said stationary plate.
19. In a vending machine having an article receiving hopper, a stationary plate forming the bottom of said hopper and having a discharge opening therein, a vending member having a pocket therein adapted to be brought into registration with the discharge opening in said plate,

and means for preventing jamming of articles between said plate and said vending member, said means comprising a member flexibly mounted above said plate having a portion projecting over the discharge opening therein and movable to permit passage of articles contained within said pocket and extending above the upper edge thereof, beneath said stationary plate, movement of said member being also adapted to agitate the articles in said hopper.

20. In a vending machine having an article-receiving hopper, a stationary plate forming the bottom of said hopper and having a discharge opening therein, a vending member having a pocket therein adapted to be brought into registration with the discharge opening in said plate, means for preventing jamming of articles between said plate and said vending member, said means comprising a yieldable structure mounted on said plate adjacent the discharge opening and adapted to yield upwardly, said structure having a cam-like outer surface.

21. In a vending machine a stationary member and a movable member, said movable member having an opening adapted to be brought into alignment with an opening in said stationary member, and a structure mounted on one of said members adjacent said openings and being yieldable upwardly to prevent jamming of articles between said members, said structure having a cam-like outer surface.

22. In a vending machine having an article-receiving hopper, a stationary plate forming the bottom of said hopper and having a discharge opening therein, a vending member having a pocket therein adapted to be brought into registration with the discharge opening in said plate, a raised portion on said stationary plate adjacent said discharge opening and adapted to form a chamber beneath said plate and adjacent said discharge opening, and a yieldable structure for closing one end of said chamber said structure having a cam-like outer surface.

RALPH A. VOGEL.

25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150