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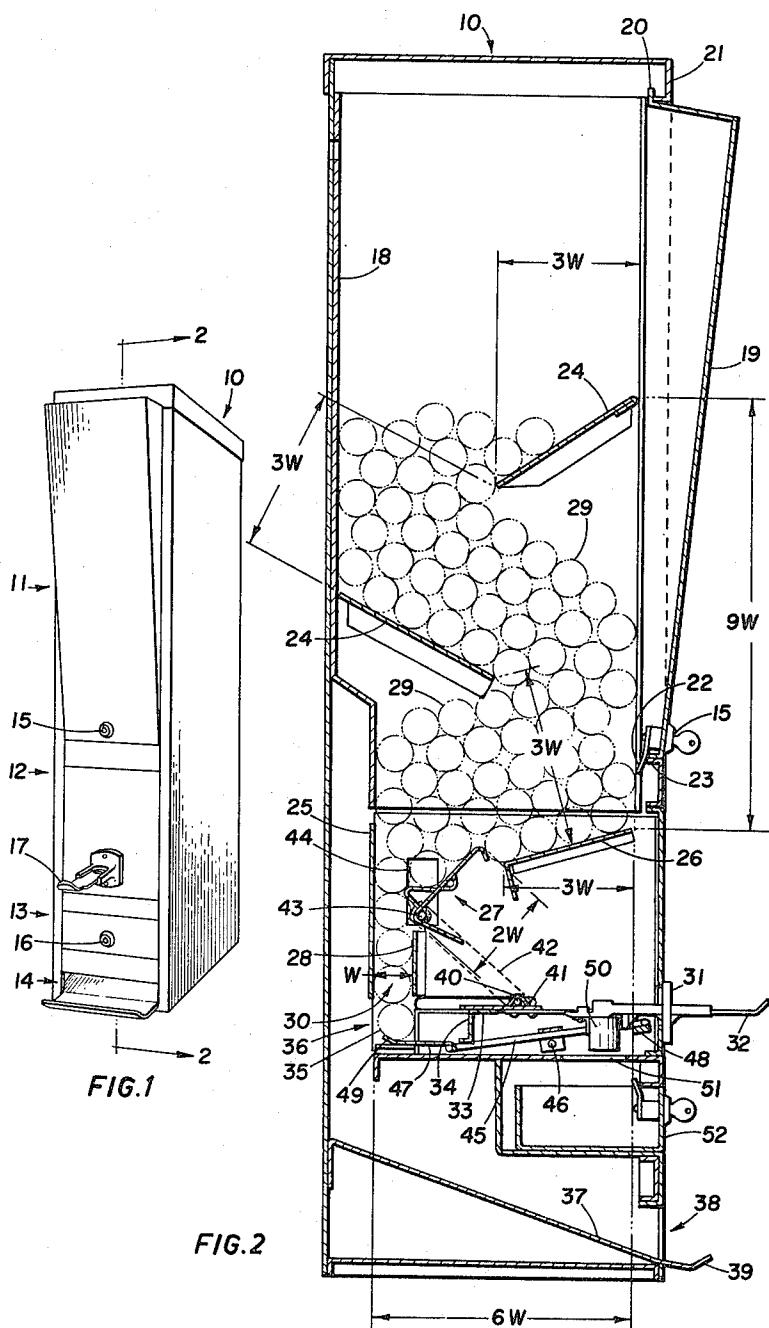
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DEVICE FOR VENDING CYLINDRICAL OBJECTS

Filed Feb. 26, 1963

2 Sheets-Sheet 1



Inventor

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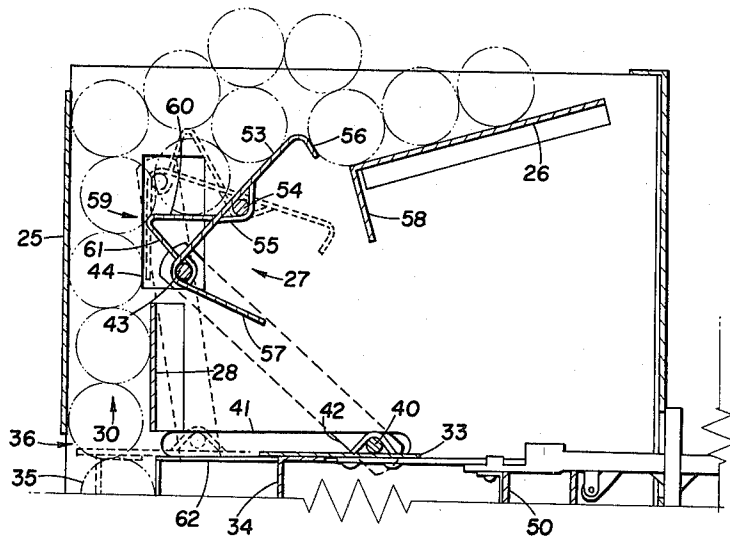
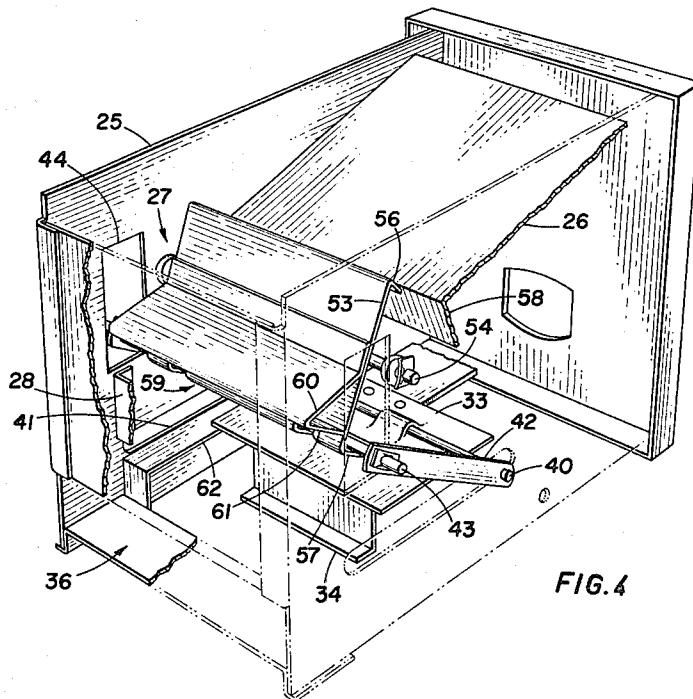
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DEVICE FOR VENDING CYLINDRICAL OBJECTS

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12 Claims. (Cl. 194—2)

This invention relates to package vending devices for dispensing cylindrical objects having a uniform size and is a continuation-in-part of United States application Serial No. 112,896, filed May 26, 1961, now Patent Number 3,095,997.

In the dispensing of cylindrical objects from vending machines, the problem of providing a smooth feed without jamming is not solved by the use of a simple gravity feed alone. Space requirements for the vending machine require the use of a substantially vertical hopper within which the objects due to confined storage tend to jam across a narrow portion of the hopper and form natural bridges therein due to the relative dimensions of the articles and the confining hopper, and the weight of the articles therein.

It is the main object of this invention to provide a vending device which is adapted to store a quantity of cylindrical objects and to selectively dispense the objects upon the manual operation of a control lever.

It is a further object of this invention to provide a vending device having an article storage hopper which by compartmentation will prevent the articles contained therein from becoming jammed in any portion of the storage or dispensing system.

It is a further object of this invention to provide a vending device having the foregoing advantages in which baffles are provided to support and distribute the weight of articles therein and to provide spaces within the hopper to permit movement of at least some of the articles to break up natural bridges forming therein.

It is a further object of this invention to provide a vending machine which being operable by the insertion of a coin therein will automatically refuse the coin upon the storage hopper being empty.

It is a further object of this invention to provide a vending machine which incorporates an automatically operated sifting mechanism in the dispensing throat of the device in order to prevent jamming of the vended articles therein.

More particularly it is an object of the invention to provide a vending machine having the foregoing advantages in which the sifting mechanism is balanced to permit relatively free operation thereof even when the machine is full of articles.

These and other objects and features of this invention will become apparent when taken in conjunction with the following specification and accompanying drawings.

In the drawings:

FIGURE 1 is a perspective view of the vending device showing the exterior features thereof;

FIGURE 2 is a mid-vertical section through the vending device taken along the line 2—2 of FIGURE 1;

FIGURE 3 is an enlarged sectional view of a portion of the mechanism shown in FIGURE 2 showing two operating positions thereof; and,

FIGURE 4 is a cutaway perspective view of part of the mechanism of FIGURE 3.

Referring to FIGURE 1, the vending device comprises exterior case 10 having a substantially rectangular configuration adapted to encompass a hopper shown generally at 11 in the upper portion, a dispensing mechanism shown generally at 12 below hopper 11, a coin collector box shown generally at 13 positioned below dispensing mechanism 12, and an article dispensing chute shown

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generally at 14 located below collector box 13 in the lowest portion of exterior case 10. Hopper 11 and collector box 13 are provided with tumbler locks 15 and 16 respectively whereby a tamper-proof access is provided to hopper 11 in order to replenish the supply of vended articles and to remove collected coins stored within collector box 13.

A conventional push-pull coin slide 17 is provided mounted on the exterior face of dispensing mechanism 12 for the purpose of receiving coins and operating the internal mechanism.

Referring to FIGURE 2, the internal detail comprises a hopper case 18 having a substantially rectangular cross-section being rigidly secured within exterior case 10. The hopper door 19 providing the exterior portion of hopper 11 is shown in the normally closed position being held by an upper lip 20 of the door 19 impinging on frame 21 of exterior case 10, and being held at the lower end by arm 22, connected to the lock 15, impinging upon lower frame 23 of exterior case 10. Baffles 24 rigidly secured to the sides of hopper case 18 and extend from the front and from the back of hopper case 18 sloping downwardly and inwardly substantially toward the centre of hopper case 18 in an alternate manner.

It will be noted that both upper and lower baffles 24 are set at an angle between 30 and 45 degrees to the front and back walls of the hopper casing 18 in order that the area immediately beneath each baffle is left free for movement of articles therein, the downward angling of baffles 24 being sufficient to ensure that articles cannot completely fill such spacing as a result of their own weight. Furthermore, baffles 24 are of such length that they extend to about the mid-point of hopper casing 18 thus leaving a space for passage of articles therearound corresponding to approximately four diameters thereof and in any event in excess of three diameters and providing an article feed path of at least that width throughout hopper casing 18.

The lower baffle 24 being attached to the back wall 4 of hopper casing 18 defines a space therebeneath which is further defined by the inwardly offset portion of said back wall of hopper casing 18 whereby a substantial cavity is created in which articles cannot lie under their own weight.

The dispensing mechanism 12 located immediately adjacent to hopper case 18 comprises the mechanism case 25 having a substantially open configuration being rigidly secured within exterior case 10 and adapted to support the operating elements of dispensing mechanism 12. A downwardly converging chute is formed within mechanism case 25 by baffle plate 26, agitating rocker assembly shown generally at 27, and guide plate 28 whereby articles 29 stored within hopper case 18 and the upper portion of mechanism case 25 are reduced to a single vertical stack in channel 30 substantially towards the rear of mechanism case 25.

Coin slide 17 secured to the lower front portion of mechanism case 25 comprises an immovable body portion 31 and a movable slide 32. The inner end of slide 32 terminates in rigid attachment with projector plate 33 having a downwardly formed lip 34. Upon the manual movement of slide 32 inwardly lip 34 dislodges the lowermost article 35 in channel 30 and out an opening shown generally at 36 in mechanism case 25 whereupon article 35 drops into the space provided between mechanism case 25 and exterior case 10 to fall upon a downwardly and forwardly sloping tray 37 from whence it is deposited through an opening 38 in the lower portion of exterior case 10 into dispensing tray 39.

A horizontally disposed pin 40 rigidly secured to projector plate 33 projects through the horizontal slot 41 in the side wall of mechanism case 25 to terminate in ro-

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tatable attachment with a link 42. Rocker assembly 27 pivotally mounted to mechanism case 25 about a mid-point has a lower extremity thereof rigidly secured to a pin 43 which projects through a slot 44 formed in the side wall of mechanism case 25. Pin 43 is rotatably secured to the upper end of link 42 whereby manual movement of slide 32 will through link 42 cause a rocking motion of rocker assembly 27 thus agitating articles 29 within the lower portion of hopper 11 thereby preventing a jamming of articles 29 in the converging portion of mechanism case 25.

The upper face of rocker assembly 27 being concave imparts a rolling motion to articles 29 resting thereon whereby horizontal as well as vertical movement is imparted to articles 29 thus eliminating any tendency to jam due to gravity feed alone.

A coin refusal mechanism located below coin slide 17 comprises a balance arm 45 pivotally secured to the side walls of mechanism case 25 by pin 46 substantially at the mid-point thereof. A pressure plate 47 located immediately below channel 30 is rigidly secured to one end of balance arm 45 whereby pressure of articles 29 upon pressure plate 47 will hold the coin refusal mechanism in an inoperative position. Upon hopper 11 and dispensing mechanism 12 being empty of articles 29 a counter-balance weight 43 rigidly secured to the distal end of balance arm 45 will by gravimetric pull cause pressure plate 47 to move upwardly to impinge upon lip 34 of projector plate 33 to prevent the inward movement of slide 32 thus refusing an offered coin.

Lip 49 formed upwardly along the rear edge of pressure plate 47 retains lowermost article 35 from being accidentally dislodged and thus dispensed, the pressure of lip 34 on projector plate 33 however being sufficient to overcome the slight resistance offered by lip 49 upon normal dispensing being desired.

A vertically positioned tube 50 arrests the horizontal movement of coins passing through coin slide 17 thereby allowing coins to drop through a hole 51 in the bottom of mechanism case 25 into collector box 13. A removable tray 52 in collector box 15 is locked in the normally closed position by means of lock 16.

Referring more particularly to FIGURES 3 and 4 it will be noted that rocker assembly 27 comprises plate portion 53 extending across the full width of hopper 11 and provides a movable extension of baffle plate 26 which is rotatable about pin 54 extending across the mid-point thereof, through struck out portions 55 and mounted in mechanism case 25. Such rotatable movement extends through an arc which is more or less bisected by baffle plate 26 whereby plate portion 53 can be moved from an orientation at a steeper angle than baffle plate 26 to an orientation at or through the horizontal to achieve effective agitation of articles which have already rolled off baffle plate 26 and are lying in contact with, or above, plate portion 53. Mask members 56 and 57 are provided at respective upper and lower edges of plate portion 53 in order to block passage of articles therearound which would obstruct operation of the machine. Mask 56 is oriented to extend partially towards the lower edge of baffle plate 26 when plate portion 53 is oriented at its steepest angle (as shown in solid lines in FIGURE 3) and being directed away therefrom when in the other position (as shown in phantom therein) baffle plate 26 being itself provided with mask 56 for similar purposes. Mask member 56 is directed towards the upper edge of plate 28 when plate portion 53 is in the phantom position, corresponding to the inward position of coin slide 17, and forms an endwise extension thereof and constitutes an upper portion of channel 30, in combination with mechanism case 25. When plate portion 53 is in the position shown in solid lines, corresponding to the outward position of coin slide 17, mask member 57 is located beneath plate portion 53 and forms no part of channel 30.

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On the upper surface of plate portion 53, the wedge-shaped bias member 59 is mounted to provide the concave face of rocker assembly 27 referred to above. Bias member 59 is constituted by angled portion 60 rooted to plate portion 53 to one side of the centre line thereof defined by pin 54 and extending upwardly therefrom at an angle of about 45 degrees towards the lower edge of plate portion 53. Vertical portion 61 of bias member 59 extends from the free end of angled portion 60 down to the aforesaid lower edge of plate portion 53, substantially along the line of pin 43, and making an angle of approximately 90 degrees therewith.

Angled portion 60 operates to bias articles lying on plate portion 53 rearwardly and hence move articles lying on baffle plate 26 thus spreading the sifting action thereof throughout the entire lower portion of hopper 11. Vertical portion 61 serves to prevent escape of articles in channel 30 and applies a downwardly directed component biasing articles in channel 30 downwardly for delivery on the next inward stroke of coin slide 17.

The rotary movement of agitator assembly 27 is procured by links 42 as stated above, located on the exterior of mechanism case 25 and communicating with the interior thereof by pins 43 and 40 extending through respective openings 44 and slots 41 whereby contact of articles in channel 30 with links 42 is avoided thus reducing jamming thereof and damage to such articles. Links 42 are themselves moved by projector plate 33 which is supported for linear movement on slide members 62 attached on either side of mechanism case 25 thus preventing downward flexing of plate 33 and undue wear on the lower edges of slots 41.

In operation hopper casing 18 is filled with cylindrical articles (shown in FIGURE 2 as partially filled) the weight of such articles being supported by one or other of the baffles 24, 26 and agitator assembly 27. The lowermost such articles will roll into channel 30 filling the same and depressing pressure plate 47 as shown. When an article is purchased a coin is placed in coin slide 17 and movable slide 32 is pushed firmly inward to the full extent of its stroke. Such inward movement carries with it projection plate 33 sliding along slides 61 and lip 34 which engages the article lying on plate 47 and pushes it through opening 36 allowing it to drop onto tray 37 and roll under its own weight until arrested at dispensing tray 39. Delivery of further articles from channel 30 is blocked by projector plate 33 at this point.

Simultaneously with the dispensing and delivery of an article as described, pin 40 attached to plate 33 will force the lower ends of links 42 to move forwardly thus causing the upper ends of links 42, attached to pin 43 to move upwardly. Such upward movement of pin 43 will force agitator assembly 27 to swing around pin 43 from the position shown in solid lines in FIGURE 3 to that shown in phantom. Such rocking or see-saw movement will cause articles resting on the upper side of plate portion 53 to drop downwardly and will simultaneously cause articles resting on angled portion 60 of bias member 59 to rise and move rearwardly towards baffle plate 26 thus in turn sifting articles lying thereon. Such simultaneous upward and downward shuffling of articles, at least in the lower portion of hopper casing 18 is effective to prevent jamming therein, and, due to the balancing of the weight of articles lying on plate portion 53 and angled portion 60, on either side of pin 40, requires only a modest effort on the part of the operator of the machine.

Any tendency for articles to become damaged or crushed due to such shuffling motion is prevented by the provision of the cavity space beneath the lower baffle 24 described above which permits articles to be momentarily lifted and dropped again with a minimum of resistance. Furthermore such spacing ensures that at no time does the agitator assembly 27 carry a vertical stack in excess of about four or five articles in height thus avoiding the need for excessive force to be applied.

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In this way the natural bridging of articles in which one article may act as a "keystone" for two or more others and lock them in position is broken up by the upward and downward movement of articles, both on agitator assembly 27, where bridging may occur along the pivoting axis thereof, and also on baffle 26, the vertical and horizontal spacing of adjacent baffles 24 being sufficient to prevent the formation of bridging as stated.

Puncturing or rupture of articles due to crushing between agitator assembly 27 and the front wall of hopper casing 18 is also avoided by the provision of the concave surface thereon imparting a rolling and lifting action to such articles and such motion also acts to continuously re-align articles in hopper casing 18 with one another and avoid jamming due to twisting of articles therein.

During such rocking motion of agitator member 27 mask members 56 and 58 and 57 co-operate to prevent escape of articles, beneath plate portion 53, and from channel 30 respectively.

Movable slide 32 will then be withdrawn to the full extent of its stroke causing reverse rocking movement of agitator assembly 27, and releasing articles in channel 30 which will then drop under their own weight, with the lowermost resting upon plate 47. Any tendency to jam in channel 30 at this point will be overcome by vertical portion 61 of bias member 59 applying a downward component of force thereto.

When hopper casing 18 is empty counterbalance weight 48 will cause plate 47 to swing upwardly and block inward movement of lip 34 and hence of moveable slide 32 thus indicating that the machine is empty.

In the foregoing description of this preferred embodiment various dimensions have been related to the diameter of an article. However, in FIGURE 2 the relative minimum dimensions thereof are shown in terms of the width W of channel 30 which is itself somewhat larger than the diameter of an article to provide the necessary clearance, a factor of about 10 percent having been found to be suitable in this case.

The foregoing is a description of a preferred embodiment of the invention by way of example only and the invention is not limited to the specific features shown but contemplates all such variations as come within the spirit of the invention as defined by the following claims.

What I claim is:

1. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length of said articles and a width sufficient to accommodate at least four diameters of said articles; means defining an article feed path within said hopper of a width not less than three diameters of said articles; a mechanism case located below and in registration with said hopper having side walls spaced apart a distance substantially equal to the length of said articles; an article delivery channel located at the lower end of said mechanism case of a width about 10% greater than the diameter of a said article for forming said articles into a vertical stack; agitator means swingably mounted adjacent the upper end of said channel between said side walls of said mechanism case operable to move at least some said articles in said hopper upwardly and articles in said channel downwardly and dislodging articles jamming therein; article delivery means slidably supported in said mechanism case adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost article therefrom; a coin slide mounted in said mechanism case and connected to said article delivery means and to said agitator means and operable to move same as aforesaid; and, a dispensing chute at the lower end of said mechanism case oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

2. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length of said articles and a width greater than at least two diameters of said articles; means defining an article feed path

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within said hopper of a width not less than three diameters of said articles; a mechanism case located below and in registration with said hopper having side walls spaced apart a distance substantially equal to the length of said articles; an article delivery channel located at the lower end of said mechanism case of a width about 10% greater than the diameter of a said article for forming said articles into a vertical stack; agitator means swingably mounted adjacent the upper end of said channel between said side walls of said mechanism case operable to move at least some articles in said hopper upwardly and articles in said channel downwardly and dislodging articles jamming therein; means defining an article movement cavity within said hopper located substantially vertically above said agitator means and spaced therefrom by about four article diameters to permit articles moved by said agitator to rise therein without crushing or damage thereto; article delivery means slidably supported in said mechanism case adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost article therefrom; a coin slide mounted in said mechanism case and connected to said article delivery means and to said agitator means and operable to move same as aforesaid, and, a dispensing chute at the lower end of said mechanism case oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

3. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length of said articles and a width greater than at least two diameters of said articles; at least two baffles in said hopper extending from opposite walls thereof towards the middle of said hopper, said baffles being spaced apart from one another and from the other of said walls to define an article feed path in said hopper of not less than about three article diameters; a mechanism case located below and in registration with said hopper having side walls spaced apart a distance substantially equal to the length of said articles; an article delivery channel located at the lower end of said mechanism case of a width greater than the diameter of a said article for forming said articles into a vertical stack; agitator means swingably mounted adjacent the upper end of said channel between said side walls operable to move at least some of said articles in said hopper upwardly and articles in said channel downwardly and dislodging articles jamming therein; slide means mounted on said side walls; article delivery means slidably supported on said slide means adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost article therefrom; a coin slide mounted in said mechanism case connected to said article delivery means and to said agitator means and operate to move same as aforesaid; a gravity operated coin slide lock held inoperative by the weight of a said article in said stack; and a dispensing chute oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

4. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length of said articles and a width greater than about six diameters of said articles; means defining an article feed path within said hopper of a width not less than three diameters of said articles; a mechanism case located below and in registration with said hopper having side walls spaced apart a distance substantially equal to the length of said articles; an article delivery channel located at the lower end of said mechanism case of a width about 10% greater than the diameter of said article for forming said articles into a vertical stack; an agitator plate portion extending across said mechanism case and of a width equal to at least two article diameters pivotally mounted in said mechanism case for rocking about a central axis thereof adjacent the upper end of said channel to move at least some said articles in said hopper upwardly and some said articles downwardly; at least one article movement cavity

provided in said hopper to permit vertical movement of said articles therein without crushing or damage thereto; slide means mounted on said side walls; article delivery means slidably supported on said side walls adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost article therefrom; a coin slide connected to said article delivery means and to said agitator means and operable to move same as aforesaid; and, a dispensing chute oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

5. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length of said articles and a width greater than at least two diameters of said articles; means defining an article feed path within said hopper of a width not less than three diameters of said articles; mechanism casing means located below said hopper an article delivery channel located at the lower end of said casing means of a width about 10% greater than the diameter of said article for forming said articles into a vertical stack; an agitator plate portion extending across said casing means and of a width equal to at least two article diameters pivotally mounted for rocking about a central axis thereof adjacent the upper end of said channel to move some said articles in said hopper; a bias member directed at an angle of about forty-five degrees to said agitator plate portion fastened to one side of the pivoting axis thereof oriented to move some said articles both sideways and upwards; article delivery means slidably supported in said casing means adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost articles therefrom; a coin slide mounted in said casing means connected to said article delivery means and to said agitator means and operable to move same as aforesaid; and, a dispensing chute at the lower end of said casing means oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

6. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length of said articles and a width greater than about six diameters of said articles; means defining an article feed path within said hopper of a width not less than three diameters of said articles; mechanism casing means located below said hopper; an article delivery channel located at the lower end of said casing means of a width about 10% greater than the diameter of a said article for forming said articles into a vertical stack; an agitator plate portion extending across the interior of said casing means and of a width equal to at least two article diameters pivotally mounted for rocking about a central axis thereof adjacent the upper end of said channel to move some said articles in said hopper; a bias member on one side of said agitator plate portion located to one side of the pivoting axis thereof oriented to move some said articles upwardly and some said articles sideways; mask members extending from said agitator plate portion on the other side thereof oriented to prevent movement of said articles therearound; linkage means swingably connected to said agitator plate portion exteriorly of said casing means; means defining an article movement cavity within said hopper located substantially vertically above said agitator means and spaced therefrom by about four article diameters to permit articles moved by said agitator to rise therein without crushing or damage thereto; article delivery means slidably supported adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost article therefrom and connected to said linkage means; a coin slide connected to said article delivery means and to said agitator means and operable to move same as aforesaid; and, a dispensing chute oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

7. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length

of said articles and a width greater than about six diameters of said articles; upper and lower baffle means extending from a front wall of said hopper towards a back wall thereof at an angle of between thirty and forty-five degrees and terminating at about the mid-point of said hopper to define a spacing from said back wall equal to at least three article diameters; intermediate baffle means extending from said back wall towards said front wall at any angle of between thirty and forty-five degrees and terminating at about the mid-point of said hopper to define a spacing from said front wall and said upper and lower baffle means equal to at least three article diameters; mechanism casing means located below said hopper; an article delivery channel located at the lower end of said casing means of a width greater than the diameter of a said article for forming said articles into a vertical stack; agitator means swingably mounted adjacent the upper end of said channel in said casing means operable to move some said articles in said hopper upwardly and some said articles downwardly and feed them towards said channel while dislodging articles jamming therein and simultaneously move said articles therein downwardly; article delivery means movably supported adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost article therefrom; opposed slide members mounted in said casing means for supporting said delivery means; coin responsive means mounted in said casing means connected to said article delivery means and to said agitator means and operable to move same as aforesaid; and, a dispensing chute at the lower end of said casing means oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

8. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length of said articles and a width greater than at least two diameters of said articles; upper and lower baffle means extending from a front wall of said hopper towards a back wall thereof at an angle of between thirty and forty-five degrees and terminating at about the mid-point of said hopper to define a spacing from said back wall equal to at least three article diameters; intermediate baffle means extending from said back wall towards said front wall at an angle of between thirty and forty-five degrees and terminating at about the mid-point of said hopper to define a spacing from said front wall and said upper and lower baffle means equal to at least three article diameters; mechanism casing means located below said hopper; an article delivery channel located at the lower end of said casing means of a width greater than the diameter of a said article for forming said articles into a vertical stack; an agitator plate portion extending across said casing means and of a width equal to at least two article diameters pivotally mounted for rocking about a central axis thereof adjacent the upper end of said channel to move at least some said articles in said hopper; upwardly and said articles in said channel downwardly; a bias member on one side of said agitator plate portion directed at an angle of about forty-five degrees thereto and located to one side of the pivoting axis thereof; mask members extending from said agitator plate portion on the other side thereof oriented to prevent movement of said articles therearound; article delivery means movably supported adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost article therefrom; opposed slide members mounted in said casing means and supporting said delivery means; coin responsive means connected to said article delivery means and to said agitator means and operable to move same as aforesaid; and, a dispensing chute oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

9. A device for vending cylindrical articles comprising: a hopper having a length substantially equal to the length

of said articles and a width greater than about six diameters of said articles; upper and lower baffle means extending from a front wall of said hopper towards a back wall thereof at an angle of between thirty and forty five degrees and terminating at about the mid-point of said hopper to define a spacing from said back wall equal to at least three article diameters; intermediate baffle means extending from said back wall towards said front wall at an angle of between thirty and forty-five degrees and terminating at about the mid-point of said hopper to define a spacing from said front wall and said upper and lower baffle means equal to at least three article diameters; an offset wall portion forming part of said back wall located beneath said intermediate baffle means and co-operating therewith to define an article movement cavity; mechanism casing means located below said hopper; an article delivery channel located at the lower end of said casing means of a width greater than the diameter of a said article for forming said articles into a vertical stack; agitator means swingably mounted adjacent the upper end of said channel in said casing means operable to move at least some said articles in said hopper upwardly and said articles in said channel downwardly and dislodging articles jamming therein; slide means mounted in said casing means; article delivery means slidably supported on said slide means adjacent the lower end of said channel for reciprocation relative thereto and oriented to engage and move the lowermost article therefrom; a coin slide mounted in said mechanism casing means and connected to said article delivery means and to said agitator means and operable to move same as aforesaid; and, a dispensing chute located at the lower end of said casing means oriented to receive articles moved by said delivery means and guide same to the exterior of said device.

10. In a device for dispensing cylindrical articles of equal diameter, said device having article dispensing means operable from the exterior of said device and comprising: a hopper having a length substantially equal to the length of said articles and a width greater than about six diameters of said articles; means defining an article feed path within said hopper of a width not less than three diameters of said articles; mechanism casing means located below said hopper; an article delivery channel located at the lower end of said casing means of a width about 10% greater than the diameter of a said article for forming said articles into a vertical stack; an agitator plate portion extending across said casing means and of a width equal to at least two article diameters pivotally mounted for rocking about a central axis thereof adjacent the upper end of said channel to move at least some said articles in said hopper upwardly and some said articles downwardly; a bias member on one side of said agitator plate portion located to one side of the pivoting axis thereof and having two biasing surfaces thereon, one said surface being oriented to move some said articles in said hopper in a sideways direction and the other said surface being oriented to move said articles in said channel downwardly; one said surface being directed at an angle of about forty-five degrees thereto and the other surface being substantially normal thereto; article delivery means movably supported adjacent the lower end of said channel operable to engage and move the lowermost article therefrom for dispensing as aforesaid; and, slide means in said casing supporting said delivery means.

11. In a device for dispensing cylindrical articles of equal diameter, said device having article dispensing means operable from the exterior of said device and comprising: a hopper having a length substantially equal to the length of said articles and a width greater than about six diameters of said articles; upper and lower baffle means extending from a front wall of said hopper towards a back wall thereof at an angle of between thirty and forty-five degrees and terminating at about the mid-

point of said hopper to define a spacing from said back wall equal to at least three article diameters; intermediate baffle means extending from said back wall towards said front wall at an angle of between thirty and forty-five degrees and terminating at about the mid-point of said hopper to define a spacing from said front wall and said upper and lower baffle means equal to at least three article diameters; mechanism casing means located below said hopper; an article delivery channel located at the lower end of said casing means of a width greater than the diameter of a said article for forming said articles into a vertical stack; an agitator plate portion extending across said casing means and of a width equal to at least two article diameters pivotally mounted for rocking about a central axis thereof adjacent the upper end of said channel to move at least some said articles in said hopper upwardly and some said articles downwardly; a bias member on one side of said agitator plate portion directed at an angle of about forty-five degrees thereto located to one side of the pivoting axis thereof oriented to move some said articles in a sideways direction and articles in said channel downwardly; article delivery means movably supported adjacent the lower end of said channel operable to engage and move the lowermost article therefrom for dispensing as aforesaid and, slide members in opposition to one another within said casing supporting said delivery means.

12. In a device for dispensing cylindrical articles of equal diameter, said device having article dispensing means operable from the exterior of said device and comprising: a hopper having a length substantially equal to the length of said articles and a width greater than about six diameters of said articles; upper and lower baffle means extending from a front wall of said hopper towards a back wall thereof at an angle of between thirty and forty-five degrees and terminating at about the mid-point of said hopper to define a spacing from said back wall equal to at least three article diameters; intermediate baffle means extending from said back wall towards said front wall at an angle of between thirty and forty-five degrees and terminating at about the mid-point of said hopper to define a spacing from said front wall and said upper and lower baffle means equal to at least three article diameters; an offset wall portion forming part of said back wall located beneath said intermediate baffle means and co-operating therewith to define an article movement cavity mechanism casing means located below said hopper; an article delivery channel located at the lower end of said casing means of a width greater than the diameter of a said article for forming said articles into a vertical stack; agitator means mounted in said casing means adjacent the upper end of said channel operable to move at least some said articles in said hopper upwardly and some said articles downwardly and feed them towards said channel while dislodging articles jamming therein and to move said articles in said channel downwardly; article delivery means movably supported adjacent the lower end of said channel operable to engage and move the lowermost article therefrom for dispensing as aforesaid; and, slide members mounted within said casing on opposite sides thereof supporting said delivery means.

References Cited by the Examiner

UNITED STATES PATENTS

947,755	1/10	Peters et al.	221—152 X
1,767,112	6/30	Antoine et al.	221—183
2,136,089	11/38	Stone	221—11
2,732,974	1/56	Hedges	221—202 X
3,095,997	7/63	Garvin	221—195 X

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ERNEST A. FALLER, JR., *Examiner.*