Aug. 21, 1962 P. KOPF 3,050,214

SHOPPING BAG VENDING MACHINE

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FIG. 1.

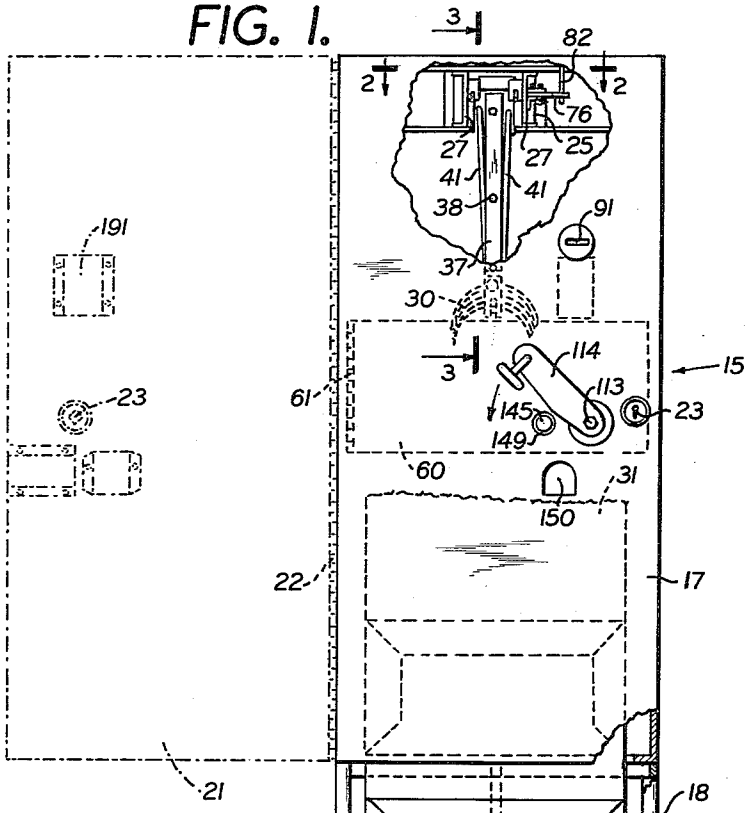
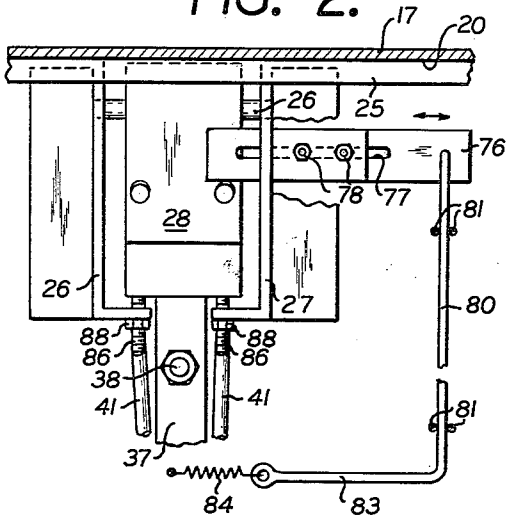


FIG. 2.



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SHOPPING BAG VENDING MACHINE

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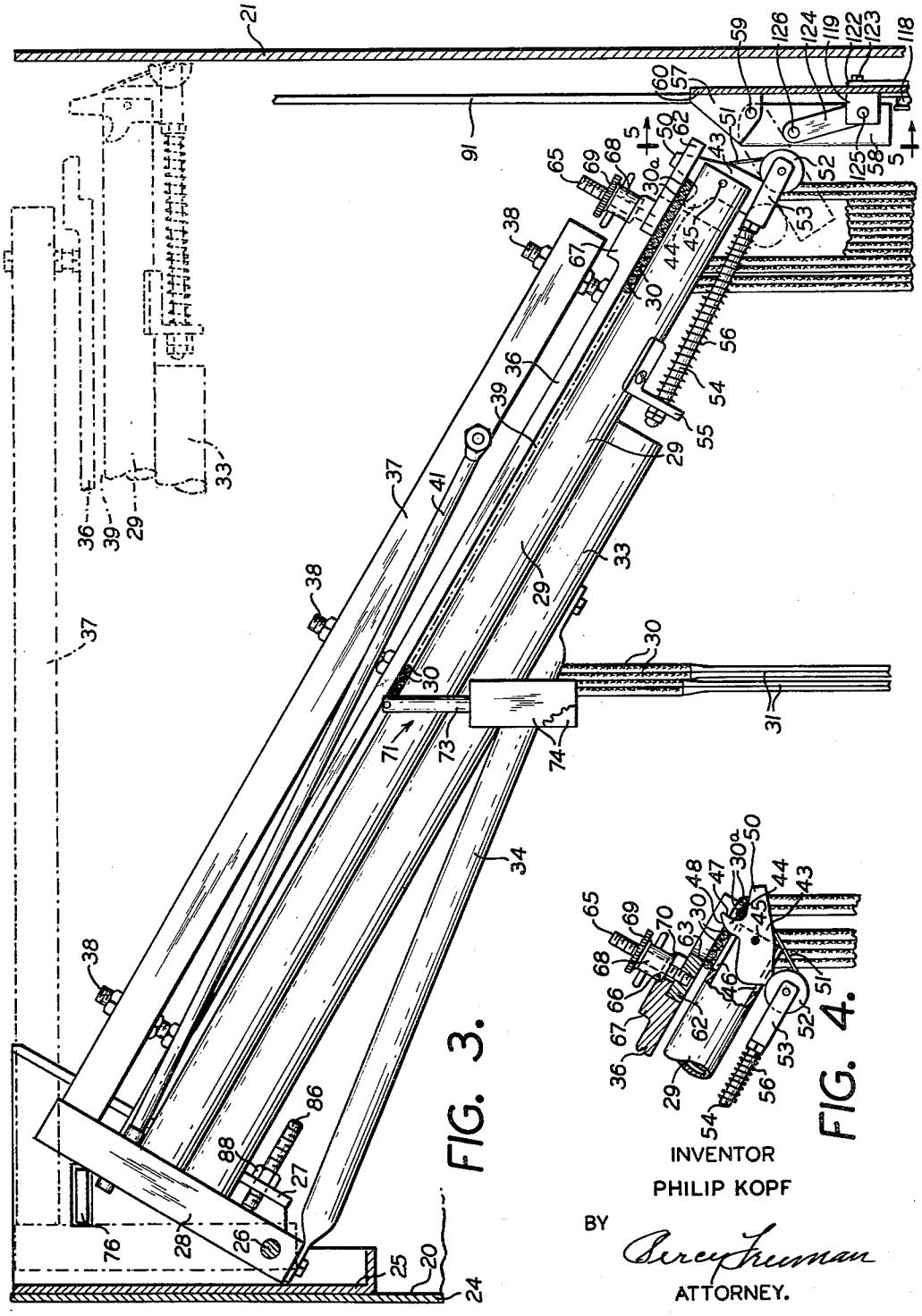


FIG. 3.

FIG. 4.

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SHOPPING BAG VENDING MACHINE

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FIG. 5.

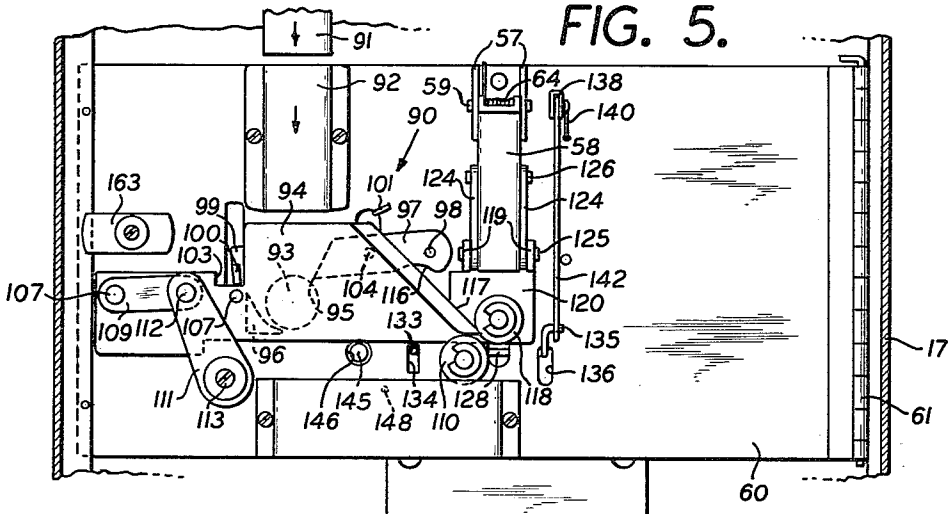


FIG. 6.

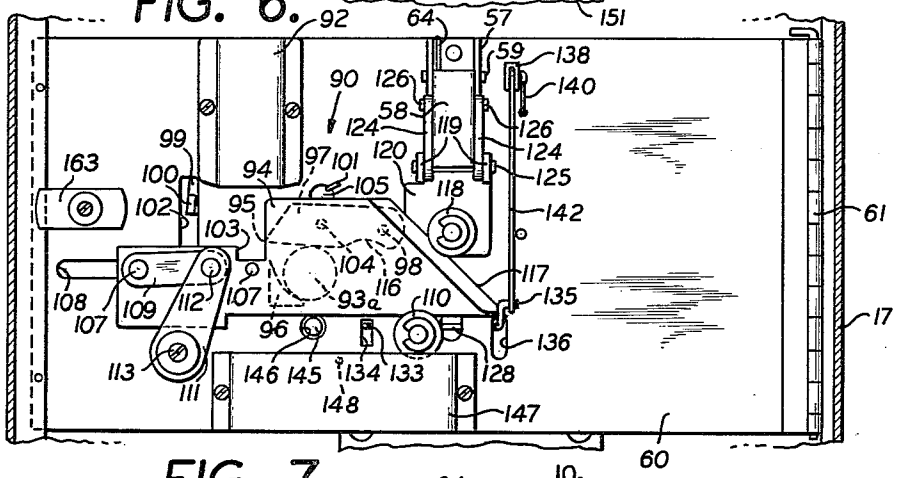
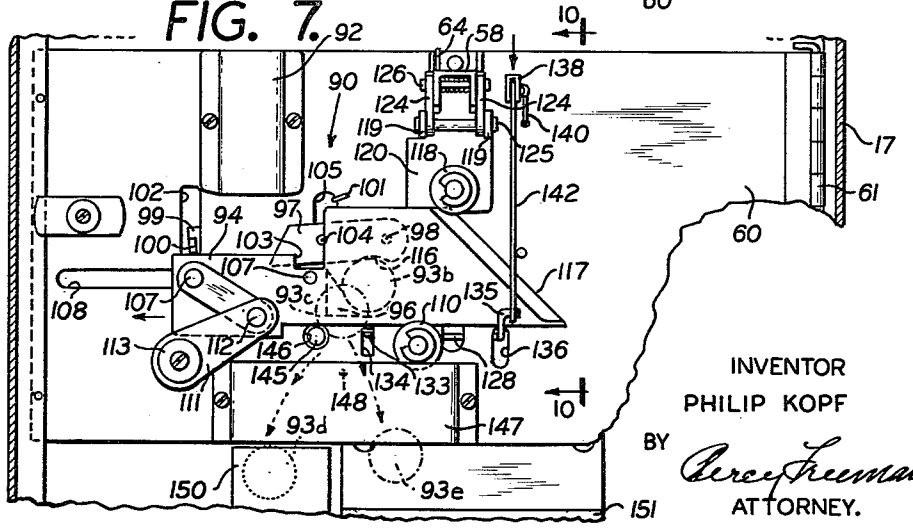


FIG. 7.



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FIG. 8.

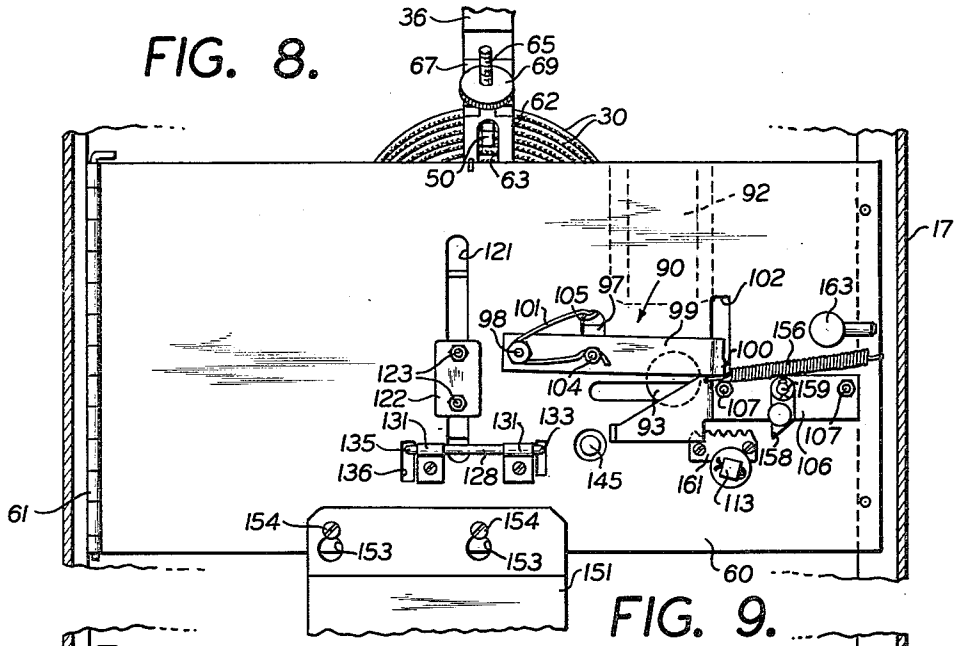


FIG. 9.

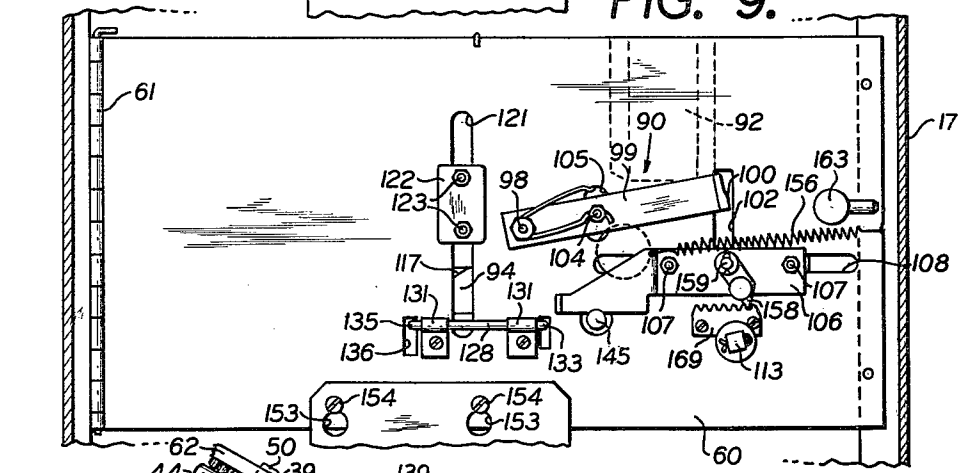
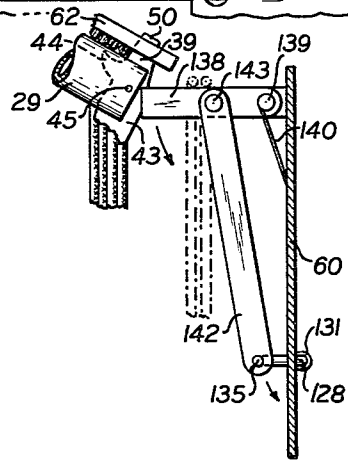


FIG. 10.



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3,050,214

SHOPPING BAG VENDING MACHINE

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Filed Sept. 28, 1959, Ser. No. 842,720
4 Claims. (Cl. 221—240)

This invention relates to dispensing apparatus and, more particularly, to apparatus for dispensing irregularly shaped articles.

A substantial amount of difficulty has been experienced in attempting to provide a suitable apparatus for dispensing large bulky items and other articles of irregular shape, such as shopping bags, and the like, which will operate in a foolproof and carefree manner. Many such articles, such as shopping bags with bail-type handles, have become entangled with conventional dispensing apparatus, or have become interlocked with each other in such a way as to preclude the possibility of providing maintenance-free and foolproof operation over extended periods of time. It is, therefore, an object of the present invention to provide dispensing apparatus for handling irregularly shaped articles such as shopping bags with handles, which is extremely simple in construction, efficient in operation, and which will overcome the aforementioned difficulties.

Another object of the present invention is to provide dispensing apparatus for accommodating irregularly shaped articles of the type described, in which such articles are supported within a closed container for gravity feed movement toward a discharge position over an outlet, so that upon actuation of a coin-operated control assembly, self-contained selector means will carefully disengage a single article from the rest and allow such article to drop through the outlet without interference with the working parts of the apparatus.

A further object of the present invention is to provide dispensing apparatus of the above type which is further provided with sensing apparatus for detecting the presence or absence of articles within the container, so as to enable the coin to be returned to the purchaser in the event that the supply of such articles is exhausted.

A more specific object of the present invention is to provide a dispensing machine for dispensing shopping bags with flexible handles which may be easily refilled after the initial quantity thereof is exhausted, and which is assisted by gravity in delivering individual shopping bags to the purchaser upon the deposit of a coin and manual operation of an operating handle on the exterior of the receptacle.

Another specific object of the present invention is to provide dispensing apparatus of the type described which can be manufactured at a reasonable cost, requires a minimum amount of maintenance, and which can be easily and readily serviced by mechanics having a minimum amount of training and skill.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

FIG. 1 is a front elevational view, with parts broken away, of a dispensing machine made in accordance with the present invention.

FIG. 2 is an enlarged fragmentary transverse cross-sectional view taken along line 2—2 of FIG. 1, showing certain parts of the article support structure.

FIG. 3 is an enlarged fragmentary longitudinal cross-sectional view taken along line 3—3 of FIG. 1, showing the article support and selector mechanism of the present invention in a normal full line position and a dotted line loading position.

FIG. 4 is an enlarged fragmentary cross-sectional view

of certain parts of the selector mechanism shown in FIG. 3 in an adjusted position, with certain parts broken away to show details of construction.

FIG. 5 is an enlarged fragmentary cross-sectional view taken along line 5—5 of FIG. 3, showing the coin controlled actuating mechanism of the present invention in an initial position.

FIG. 6 is a view similar to FIG. 5, showing the parts in an initially altered position.

FIG. 7 is a view similar to FIG. 6, showing the parts in a still further advanced position.

FIG. 8 is a view from the opposite side of the coin control mechanism supporting panel, showing the parts in the position illustrated in FIG. 5.

FIG. 9 is a view similar to FIG. 8, showing the complementary parts of the coin control mechanism in the position illustrated in FIG. 6.

FIG. 10 is an enlarged fragmentary cross-sectional view taken along line 10—10 of FIG. 7.

Referring now more in detail to the drawing, and more particularly to FIGS. 1 to 3 thereof, dispensing apparatus 15 made in accordance with the present invention is shown to include a receptacle 17 in the form of a cabinet that is supported upon a plurality of legs 18 and has an interior storage compartment 20. The cabinet 17 is also provided with a door 21 that is pivotally supported upon one side thereof by means of a hinge 22, and which may be conveniently locked in a normally closed position by means of a tumbler type lock 23.

The rear wall 24 of the receptacle, adjacent to the uppermost edge thereof, is provided with a mounting plate 25, upon which a pair of upwardly and forwardly inclined angle bars 27 are secured. A head plate 28 of an article supporting rack is pivotally mounted adjacent to its lower end to the lower ends of the angle bars 27 by means of a pivot pin 26, so as to be selectively movable between the normally inclined position shown in full lines in FIG. 3 and an adjusted loading position shown in broken lines in FIG. 3.

A rigid article supporting shaft 29, integral at one end with a central portion of the head plate 28, slidably supports a plurality of articles to be dispensed, such as the substantially inverted U-shaped flexible handles 30 of shopping bags 31. A stiffener bar 33 extending along the lowermost side of the mounting shaft 29 increases the rigidity of the shaft and provides means for anchoring a brace 34 thereto and to the lower end of the head plate 28. A guide plate 36 carried by a suspension bar 37 and adjustable relative thereto by means of bolts 38, is rigidly supported from the head plate 28 by means of a pair of angularly related tie rods 41. The guide plate 36 is uniformly spaced from the support shaft 29 a distance only slightly more than the thickness of the handles 30 of the articles carried thereby, whereby such handles are prevented from overlapping each other or becoming interlocked upon the shaft 29, thus assuring proper sliding movement of each pair of handles 30 downwardly toward the free end of the shaft 29. While the space 39 between the plate 36 and shaft 29 may be ad adjusted to accommodate articles of different sizes, it is necessary that such space be accurately controlled in order to assure the proper dispensing of the articles.

In an operative position, the supporting rack assembly of the present invention is maintained in the downwardly and forwardly inclined position illustrated in FIG. 3, whereby the articles slidably carried upon the shaft 29 are urged downwardly and forwardly by gravity toward the free end of said shaft. The free end of the shaft 29 is bifurcated to provide a vertical slot 46, within which a control plate 43 is pivotally supported by a transversely extending pivot pin 45. This control plate 43 is provided with a finger 44 which is normally retracted in

the position shown in FIG. 3, within the outline of the shaft 29, but which is rotatable into the adjusted position shown in FIG. 4 during the dispensing of a single article, as will be hereinafter more fully described. This finger is provided with a leading concave surface 47 and a trailing convex surface 48, for purposes hereinafter also more fully described. The control plate 43 is further provided with an extension 50 which is normally in blocking engagement with the lowermost articles 30 carried by the shaft 29, the normal position of the control plate 43 being yieldably maintained by a leaf spring 51.

The leaf spring 51 acts between the control plate 43 and a roller 52 that is rotatably supported upon a U-shaped frame 53 by a transversely extending rod 54. This frame 53 is secured to one end of a rigid rod 54 that is carried at its opposite end upon a bracket 55 secured to the lower surface of the support shaft 29. A compression coil spring 56 encircles the rod 54 and acts between the bracket 55 and the frame 53 to yieldably maintain the roller 52 in the forwardly extended position illustrated in FIG. 3, which also maintains the control plate 43 in the position shown. However, in response to the pivotal movement of an operating lever 58 upon a pivot pin 59 carried by an inner door panel 60, between the normally lowered full line position shown in FIG. 3, and the angularly inclined broken line position also shown in FIG. 3, the roller 52 is movable rearwardly against the action of the spring 56 to effect pivotal movement of the control plate 43 to the rotated position shown in FIG. 4.

Since the length of the finger 44 is substantially equal to the width of a pair of handles 30, the lowermost pair of handles 30*a* is automatically selected by the finger 44 as the plate 43 is rotated, thus allowing such lowermost pair of handles 38 to slide downwardly along the adjacent edge of the extension 50, from which the hndles and supported bag 31 may be dispensed through an outlet opening in the bottom of the receptacle 17. In such rotated position, the finger 44 thus serves to block downward movement of the subsequent handles 30, and maintains them in an arrested position until the extension 50 returns to its initial position to assume this function. The concave edge 47 of the finger 44 facilitates the selection of only the lowermost pair of handles 30*a*, whereas the convex edge 48 on the trailing side of the finger 44 enables the plate 43 to return to its initial position without damage to the next adjacent handles 30.

The inner door panel 60, which is pivotally supported upon a hinge assembly 61 within the interior of the compartment 20, immediately adjacent to the outer door 21, supports the manually operated dispensing elements and the coin control mechanism, in a manner hereinafter more fully described. As there is no direct connection between the outer door 21, inner door panel 60, and the article supporting structure, both the outer door 21 and inner door panel may be selectively opened for the servicing and loading of the unit. With these door members in an open position, the apparatus may be refilled in a convenient manner. A bifurcated plate 62, having a longitudinal slot 63, has a stud 65 that is receivable within a corresponding slot 66 of an overhang plate 67 integral with the outermost end of the guide plate 36. This bifurcated plate 62 is detachably secured to the overhang plate 67 by means of a thumb nut 68 that is receivable within a circular seat 70 of the overhang plate 67, and a lock nut 69 that maintains the parts in secured relationship. Thus, in an assembled position, the bifurcated plate 62 is drawn tightly into secured engagement beneath the overhang plate 67 and adjacent to the guide plate 36 so as to form an extension thereof. As a result, the guiding action of the guide plate 36 is continued throughout the entire length of the support shaft 29, while the slot 63 thereof accommodates the pivotal movement of the finger 44 and extension 50 of the control plate 43. This bifurcated plate 62 is detachable from the supporting structure to enable a new supply of articles to be individually inserted into the space 39 between the guide plate 36 and the supporting shaft 29 during the refilling operation.

In order to further facilitate the refilling of the apparatus, a latch bar 76, as is more clearly shown in FIGS. 2 and 3 of the drawing, is slidably carried upon the mounting plate 25 and an adjacent one of the angle bars 27 for selective movement laterally with respect to the head plate 28 of the article supporting rack. When the rack is in the operative downwardly inclined position shown, the latch bar 76 engages behind the head plate 28 and prevents upward movement thereof. However, this latch plate 76 is provided with a longitudinal slot 77 which slidably receives a pair of guide bolts 78 therethrough to enable such latch plate 76 to be withdrawn laterally from blocking engagement with the head plate 28 to enable the article supporting rack structure to be elevated to the horizontal position shown in broken lines in FIG. 2, in which position, the return of the latch bar 76 to its locking position will engage in front of the head plate 28 thus securing the structure in the horizontal position while the articles are installed upon the supporting shaft 29. The latch plate 76 is controlled by a control rod 80 that is rotatably mounted upon a plurality of guides 81 adjacent to the top of the cabinet. The innermost end of the rod has an operating end 82 that is pivotally engaged with the adjacent end of the latch bar 76. The opposite end of the control rod 80 is provided with an angularly related handle portion 83 which is yieldably biased toward a normal position by a tension spring 84. However, by rotating the handle 83, in a downward direction, the latch bar 76 may be withdrawn from its locking position to enable the article supporting rack to be moved between the horizontal and inclined positions.

Since the proper positioning of the article supporting structure is of extreme importance, each of the angle bars 27 is provided with adjustment studs 86 that are threadedly carried upon and which may be rotated into abutting engagement with the head plate 28 and locked in any adjusted position by means of lock nuts 88. Thus, the height of the lowermost end of the supporting shaft 29 may be accurately controlled.

In order to provide sufficient downward force to the articles carried upon the supporting shaft 29, a weighted assembly 71 is provided that is in the form of a substantially inverted U-shaped bail 73 that is slidably carried upon the shaft 29 behind the uppermost one of the article handles 30. Each end of the U-shaped bail 73 is provided with a weight 74 of any desired magnitude to furnish a constant downward pressure against the articles to assure the proper operation of the apparatus.

The movement of the operating lever 58 is controlled by a coin controlled mechanism 90 which is mounted upon the inner door panel 60 of the apparatus. The outer door 21 is provided with a coin slot 91 through which a coin of the proper denomination may be dropped into a chute 92 that opens into the space between the inside of the inner door panel 60 and the adjacent surface of a cam plate 94. An abutment 96 forms a seat for the coin 93, provided the coin is of the proper size. If the coin is not sufficiently large enough, such as when a penny is inserted in place of a nickel, the coin will pass directly between the abutment 96 and the adjacent end 95 of a lift bar 97 and is returned to the purchaser through a coin return chute 150, directly therebeneath. However, if the coin is of the proper size, such is secured in a suspended position between the abutment 96 and the end 95 of the lift bar 97 for the purpose of operating the lift bar 97 as the coin 93 is moved from its initial position toward an intermediate position 93*a* by the abutment 96 of the cam plate 94 which is actuated by a handle in a manner hereinafter more fully described. As the coin 93 moves from the initial position 93 as shown in FIG. 5 to the intermediate position 93*a* shown

in FIG. 6, it forces the lift bar **97** upwardly about its pivot pin **98** to which one end of an outside leg **99** is also connected. The free end of the outside leg **99** is provided with a detent **100** that is received through a slot **102** in the panel **60** and which initially is in abutment with a shoulder **103** on the cam plate **94**. However, as the coin raises the lift bar **97**, it also raises the outside leg **99** through the connecting pins **98**, **104**, the latter one of which extends through a vertical slot **105** in the panel **60**, against the action of the torsion spring **101**. This action allows the abutment **96** to move the coin **93***a* to its extreme position **93***b* at which it is also partially received within an indent **116** adjacent to the end of the lift bar **95** and thus temporarily held there.

An outer plate **106**, connected by means of guide pins **107** extending through a longitudinal slot **108** in the panel **60**, to the cam plate **94**, maintains the cam plate in assembled relationship with the panel **60**. A link **109** pivotally connected at one end to one of the guide pins **107** is pivotally connected at its opposite end by means of a pin **112** to a crank arm **111** that is secured to an operating shaft **113**. An operating handle **114** rotatably supported upon the outer door **21** has coupling means for drivingly engaging the operating shaft **113** of the crank arm **111** when the outer door **21** is rotated into closing engagement with the inner door panel **60** and the cabinet **17**. Thus, it is through the rotation of the handle **14** that the cam plate **94** and associated parts are guided laterally above the length of the guide slot **108** and bearing rollers **110** to move the coin to its adjusted position **93***b* illustrated in FIG. 7.

During the lateral movement of the cam plate **94**, an inclined cam surface **117** thereof engages with a follower **118** of a slide plate **120** which has bolts **123** connecting it to an outer retaining plate **122** for vertical sliding movement within a vertical slot **121** of the inner panel **60**. This slide plate **120** is also provided with a pair of ears **119** to which a pair of links **124** are pivotally connected by means of a pivot pin **125**. The opposite free end of each of the links **124** is pivotally connected by means of a pivot shaft **126** to each side of a central portion of the operating lever **58**. It will now be recognized that such rotation of the operating handle **114** with a coin acting between the cam plate **94** and the lift bar **97**, so as to raise the detent **100** out of blocking engagement with the shoulder **103** of the cam plate **94**, is further operative to cause the vertical movement of the slide plate **120** to thus actuate the operating lever **58** toward the broken line position shown in FIG. 3 to release the lowermost pair of handles **30***a* of the first shopping bag **31**, such operating lever **58** moving against the action of a torsion type return spring **64**.

As soon as the direction of rotation of the operating handle **114** is reversed, the coin **93***b* will be released from the abutment **96** and the indent **116**, whereupon it will tend to drop vertically toward a chute **147**. However, such downward movement is momentarily blocked by one end **133** of a coin control rod **130** that is pivotally supported upon a pair of spaced apart bearings **131** of the inner door panel **60**. This one end **133** of the control rod extends through a slot **134** in the panel **60** adjacent to a normally projecting coin return plunger **145**. The opposite end **135** of the coin control rod **130** extends through a spaced apart slot **136** and is connected to the lowermost end of a link **142** that is connected at its uppermost end to a central portion of a sensing lever **138** by means of a pivot pin **143**. The sensing lever **138** is yieldably urged toward a normal horizontal position by means of a torsion spring **140** adjacent to its pivot shaft **139** that mounts it upon the inner door panel **60**. The free end of the sensing lever **138** is immediately adjacent to the control plate **43** of the article supporting rack, so that the handles **30***a* of the bag that is dropped through the outlet of the cabinet will momentarily depress the sensing lever **138** to rock the coin control rod **130**. The rocking of the coin control rod **130** thus retracts the one end **133** thereof out of supporting engagement with the coin **93***c* to allow it to drop vertically into the chute **147**. It will be noted, in FIG. 7, that a pin **148** extends across the chute **147**, which, together with the adjacent coin return plunger **145**, directs the coin **93***c* into the coin collection box **151**.

It will now also be recognized that should the cabinet **17** be empty of articles to be sold, the sensing lever **138** will not be depressed, thus preventing the dropping of the coin **93***c* to the collected position **93***e*. Instructions carried upon the door **21** of the cabinet will instruct the purchaser to withdraw the coin return plunger **145** in the event that an article is not delivered. This plunger **145** which is slidably supported within an opening **146** in the inner door panel **60** and which extends through an enlarged opening **149** in the outer door **21**, is preferably spring biased toward the normal inner position. Thus, when the plunger **145** is retracted, and the one end **133** of the coin control rod is still in its initial position, the coin **93***c* will be permitted to drop toward the chute **147**. As a result, the transversely extending guide pin **148** in conjunction with the one end **133** of the coin control rod will cause the coin **93***c* to drop toward its return position **93***d*, within a coin return chute **150** that is carried by the outer door **21**, which coin return chute is accessible to the purchaser.

The coin collection box **151** is provided with a flange or mounting plate having a plurality of bayonets **153** which removably receive mounting screws **154** carried upon the inner door panel **60** to facilitate the emptying thereof.

The cam plate **94** and connected outer plate **106** are urged toward the initial position by a return spring **156**. However, once the operating handle **114** is partly rotated, the operation of the parts cannot be reversed until the handle **114** is fully rotated in the operating direction. A pawl **158**, pivotally mounted upon the outer plate **106** by means of a pivot pin **159**, engages with the teeth of a rack bar **161** mounted upon the outer door panel **160**, during its initial movement, as shown in FIG. 9. As is clearly shown in the drawing, such engagement will allow the outer plate **106** and associated parts to move in the operating direction, but effectively blocks the reverse movement thereof until after the pawl **158** has cleared the ratchet bar **161**. At that point, the return movement of the parts is permitted. This arrangement assures the proper operation of and complete dispensing of a single article without malfunctioning and damage to the working parts.

The inner door panel **60** may be secured in a closed position by means of a latch mechanism **163**, which is operated independently of the tumbler lock **23**. Thus, a key is necessary to open the outer door **21**, so that the inner door panel **60** may be independently opened by releasing the latch mechanism **163**.

As is clearly shown in FIG. 1 of the drawing, the bottom of the container **17** is provided with an outlet in the form of a laterally extending slot, which allows the article **31** to drop by gravity toward the ground. However, a depending hook **165** carried by the bottom of the container may support the article in a partly released position so as to be more readily accessible to the purchaser.

While this invention has been described with particular reference to the construction shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claims appended hereto.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. Dispensing apparatus comprising, in combination, a receptacle having an articles storage compartment, said receptacle having an outlet for directing articles outwardly from the interior of said compartment, a rack pivotally supported at one end within said compartment for selective movement between a normally inclined position and

an adjusted horizontal loading position, the opposite end of said rack in said inclined position extending downwardly from said one end toward said outlet for directing articles carried upon said rack toward said outlet, selector means for separating a predetermined number of articles from said rack for movement through said outlet, and manually operated means for releasing each article separated by said selector means, said rack comprising a smoothed surface shaft member slidably supporting a pair of bail-type articles for movement by gravity along the length thereof from said one end to said opposite end, said selector means comprising a control plate pivotally supported upon said opposite end of said rack; said control plate having a finger of a length substantially equal to the width of one pair of the bail-type articles supported upon said shaft member, a guide plate supported in spaced apart parallel relationship upon said shaft member, the distance between said guide plate and said shaft being substantially equal to the thickness of each bail article to be slidably supported therebetween.

2. Dispensing apparatus as set forth in claim 1, wherein said opposite end of said shaft is bifurcated, said control plate being pivotally supported within the bifurcation of said shaft, said finger of said control plate in an initial position being disposed within the outline of said shaft, said control plate further comprising an extension angularly spaced from said finger projecting upwardly from said shaft in said initial position of said control plate and blocking downward movement of the articles carried upon said shaft, whereby said finger upon rotation of said control plate out of said initial position in response to actuation of said manually operated means is operative to move a single pair of bail type articles on to said control plate extension, said control plate extension in said rotated position of said control plate being downwardly inclined toward said outlet to release said pair of articles therefrom.

3. Dispensing apparatus as set forth in claim 2, wherein said guide plate comprises a detachable bifurcated extension overlying said opposite end of said shaft, the bifurcation of said guide plate extensions sequentially receiving said control plate extension and finger therethrough in response to rotation of said control plate between said initial and adjusted positions, and said guide plate extension further guiding articles along said shaft toward said discharge position.

4. Dispensing apparatus as set forth in claim 3, further comprising latch means releasably securing said shaft selectively in said normally inclined or said adjusted horizontal positions.

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