

[54] **NEWSPAPER VENDOR**

[75] Inventors: **Warren W. Hannon**, P.O. Box 103, Olathe, Kans. 66061; **Charles N. Hannon**, Olathe, Kans.

[73] Assignee: **said Warren W. Hannon, by said Charles N. Hannon**, Olathe, Kans.

[*] Notice: The portion of the term of this patent subsequent to Dec. 15, 1981, has been disclaimed.

[22] Filed: **Apr. 16, 1971**

[21] Appl. No.: **134,675**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 751,011, Aug. 7, 1968, Pat. No. 3,608,891, which is a continuation-in-part of Ser. No. 665,540, Sept. 5, 1967, abandoned.

[52] U.S. Cl. **221/17, 221/39, 271/23**

[51] Int. Cl. **G07f 11/12**

[58] Field of Search **221/33, 36-43, 221/227, 231, 17; 271/21, 23; 194/58**

[56] **References Cited**

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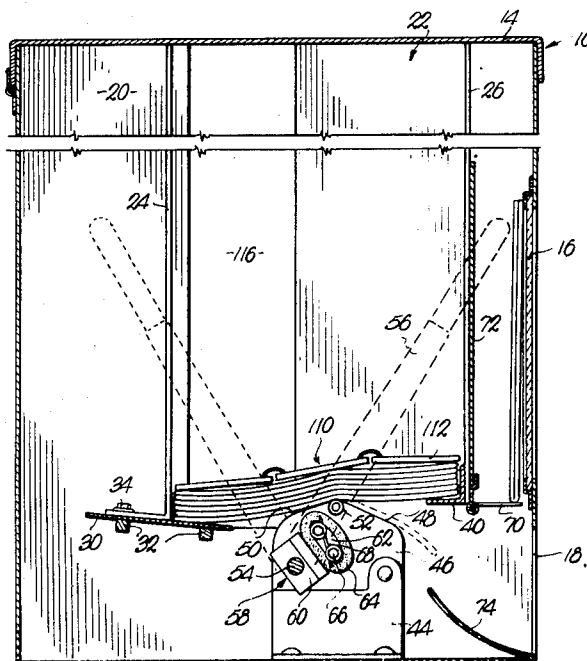
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Primary Examiner—Stanley H. Tollberg
 Assistant Examiner—Thomas E. Kocovsky
 Attorney—Schmidt, Johnson, Hovey & Williams

[57] **ABSTRACT**

A manually operated, coin-controlled vendor permits removal of only one newspaper from a stack thereof within the cabinet of the vendor per each deposit of a preselected combination of coins. Within the cabinet the lowermost newspaper in the stack is supported along its leading and trailing edges, respectively, by separate, spaced-apart structures and in its middle portion by a series of laterally spaced, upstanding plates. A number of oscillatory grippers interspersed between the plates and controlled by an external lever arm are swung toward the rear structure into engagement with the lowermost newspaper when the arm is released by the deposit of the coins and moved in one direction. This action buckles the rear portion of the lowermost newspaper as the leading edge thereof is pulled free, and when the arm is returned to its original position, the grippers are swung toward the front structure still gripping the newspapers to unbuckle the newspaper and displace the free leading edge thereof toward the outlet of the cabinet. By reaching into the outlet, the leading edge of the newspaper may then be gripped for subsequent manual removal of the newspaper from the cabinet by pulling the trailing edge thereof free from the stack. A weight placed on top of the stack assures dispensing of the last few papers thereof by holding the same flat as the grippers oscillate therebeneath and also actuates special apparatus when the stack is depleted which, in turn, allows a display newspaper to drop through the outlet to sell out the vendor.

14 Claims, 7 Drawing Figures



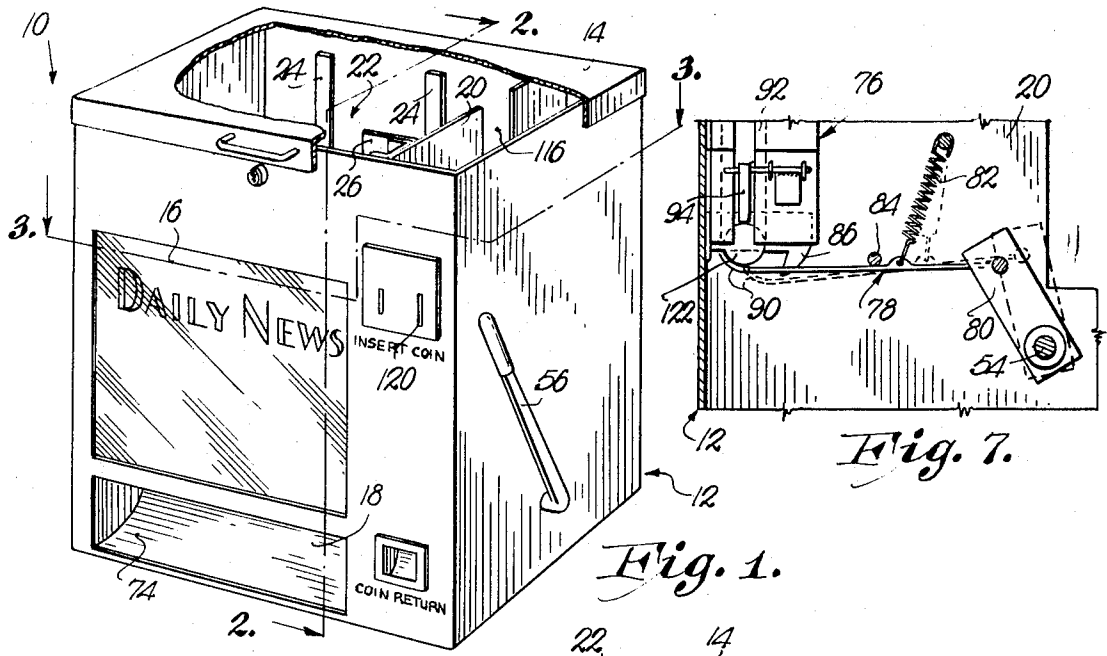


Fig. 1.

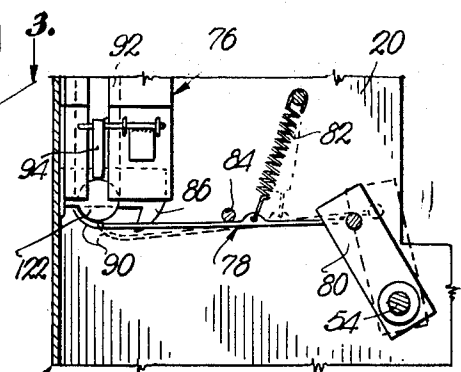


Fig. 7.

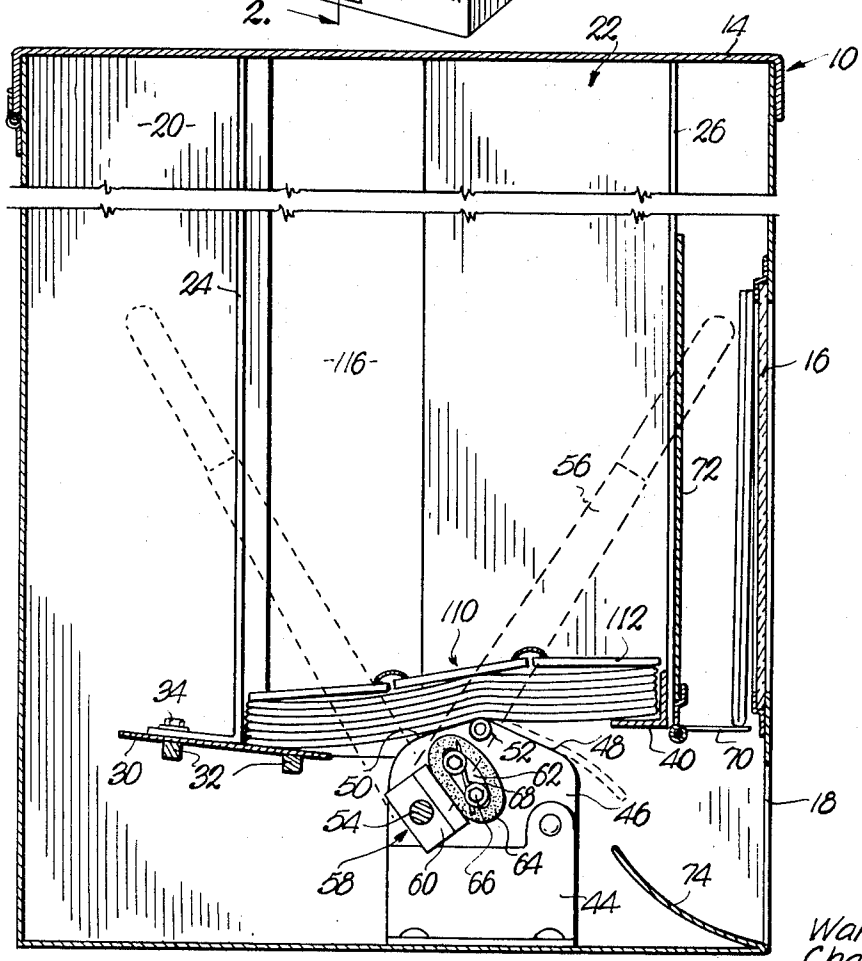


Fig. 2.

INVENTORS.
Warren W. Hannon
Charles N. Hannon

BY
Schmidt, Johnson, Hoxey & Williams
ATTORNEYS.

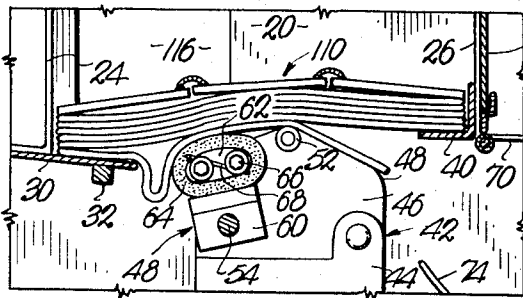


Fig. 5.

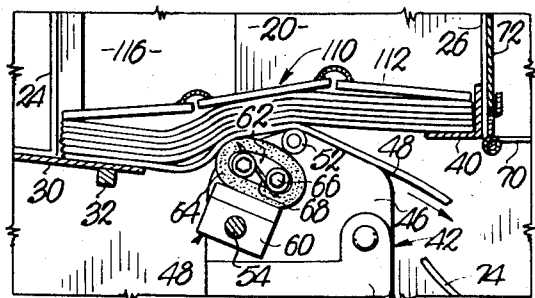


Fig. 6.

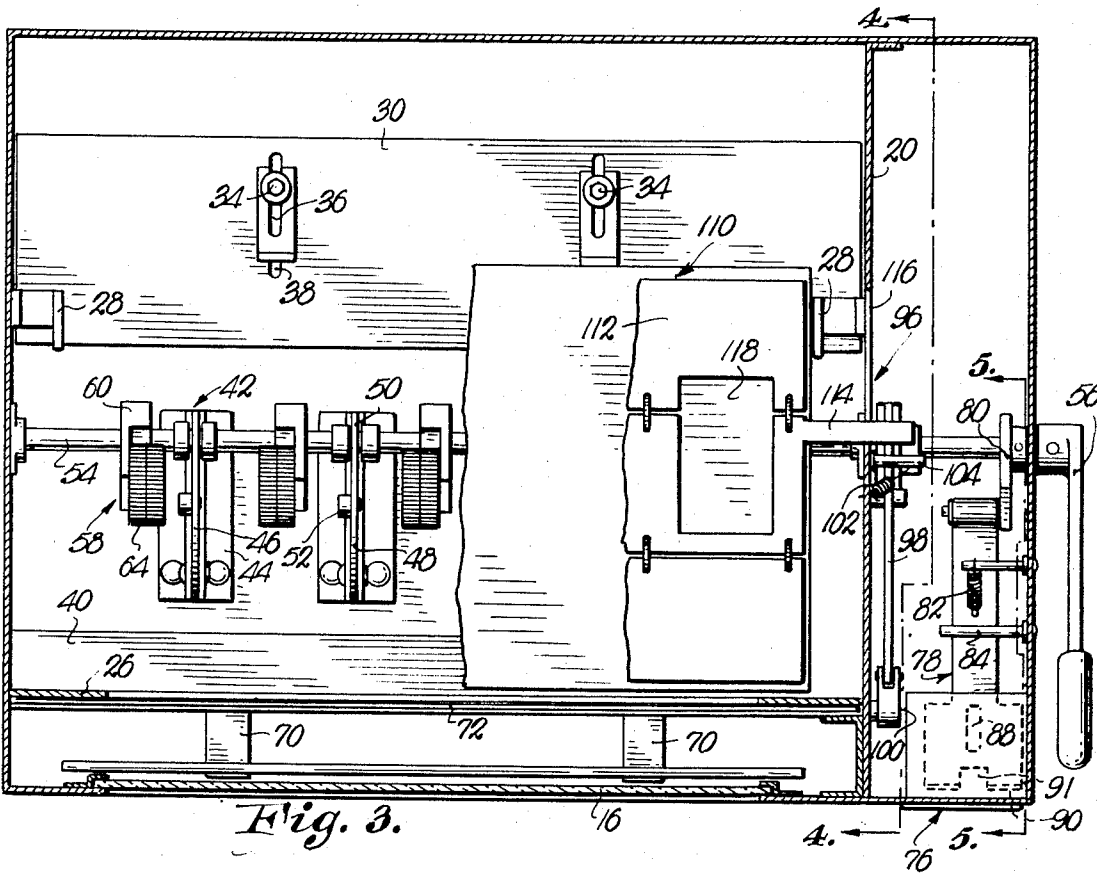


Fig. 3.

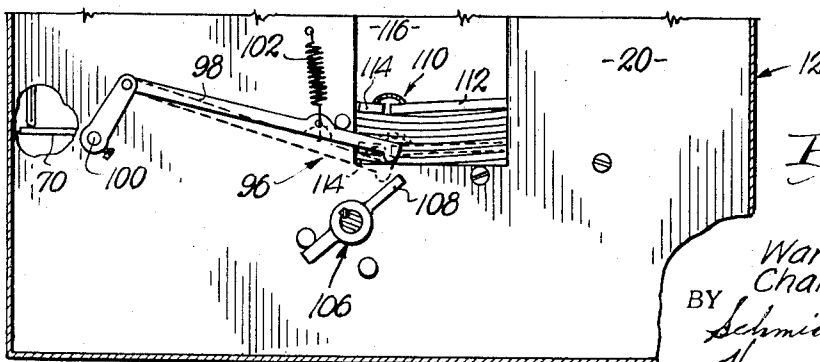


Fig. 4.

INVENTORS.
 Warren W. Hannon
 Charles N. Hannon
 BY
 Schmidt, Johnson,
 Hovey & Williams
 ATTORNEYS.

NEWSPAPER VENDOR

CROSS REFERENCES

This is a continuation-in-part of our application Ser. No. 751,011, filed Aug. 7, 1968, and entitled "MECHANISM FOR SUCCESSIVELY DELIVERING SHEET ARTICLES FROM A STACK THEREOF TO A FOLDING MACHINE" now U. S. Letters Pat. No. 3,608,891 issued Sept. 28, 1971, said patent itself being a continuation-in-part of abandoned U. S. application Ser. No. 665,540 filed Sept. 5, 1967.

Newspapers are commonly sold today on street corners, in motel and hotel lobbies, in restaurants, and in hospitals and the like by means of coin-operated "honor" racks wherein the customer, after inserting the proper combination of coins, is permitted to lift a gate or open a door to remove a newspaper from the compartment which contains a stack of the newspapers. Manifestly, once the gate or door has been unlocked by depositing the coins, the paying customer is free to take as many of the newspapers as he desires, since conventional "honor" racks have no guard or safety mechanism which precludes the removal of more than one newspaper per each preselected combination of coins. The illegally removed newspapers may then be resold by the customer for profit without encountering the expenditures experienced by the newspaper company, or he may simply distribute the extra newspapers in any other manner he desires. In either case, the company not only loses the profits which could be derived from the supply absconded with, but also may be economically forced to completely remove the rack from the particular location, thereby possibly giving up what would otherwise be a choice location for the distribution of its newspapers.

It is, therefore, the goal of the present invention to solve the above problems inherent in conventional "honor" racks by providing a coin-operated newspaper vendor which permits the vending of only one newspaper per each deposit of a preselected combination of coins, yet is highly sturdy and reliable, is capable of mechanically trouble-free operation, and is easily placed in operation and loaded with newspapers for sale.

In furtherance of the above goal, an important object of the present invention is the provision of bottom feeding apparatus within the cabinet of the vendor wherein the lowermost newspaper in the stack is supported along its leading and trailing edges and in the middle portion thereof by separate supporting structures, while the grippers which effect the feeding of the lowermost newspaper are manually operated by an external arm and are swung first into engagement with the lowermost newspaper from beneath the stack to buckle the newspaper and remove the front edge thereof from its support, and thereafter toward the front support to unbuckle the newspapers and dispose the free leading edge thereof adjacent the outlet of the vendor.

Another important object of the invention is to provide a latch associated with the operating lever of the vendor which is adapted to be operatively coupled with either of the coin-operated control mechanisms disclosed in U. S. Letters Pat. Nos. 3,174,608 and 3,265,177, in a manner such that the lever is released for operation only upon the addition of the proper coin combination to the control mechanism and only for one operating cycle of the grippers.

A further important object of the instant invention is to provide an arrangement within the vendor whereby the newspaper supported at the display window of the vendor is dispensed to sell out the vendor when the stack of newspapers has been completely depleted.

In the drawings:

FIG. 1 is a front perspective view of the vendor of the present invention with the access door thereof partially broken away to reveal the interior of the vendor;

FIG. 2 is an enlarged, fragmentary, cross-sectional view of the vendor taken along line 2—2 of FIG. 1 illustrating in particular the feeding apparatus within the vendor;

FIG. 3 is an enlarged, fragmentary, horizontal cross-sectional view of the vendor taken along line 3—3 of FIG. 1, parts of the vendor being broken away and shown in phantom for clarity;

FIG. 4 is a fragmentary, vertical cross-sectional view through the vendor taken along line 4—4 of FIG. 3 and illustrating in particular the apparatus for dispensing the display newspaper when the stack has become depleted;

FIG. 5 is a fragmentary, vertical cross-sectional view taken along line 5—5 of FIG. 3 and illustrating the oscillatory grippers at the rear limit of their backstrokes at which time the lowermost newspaper is buckled and the leading edge thereof is free;

FIG. 6 is a view similar to FIG. 5 showing the grippers during their return stroke toward the front of the vendor as the lowermost newspaper is unbuckled; and

FIG. 7 is an enlarged, fragmentary, vertical cross-sectional view through the vendor illustrating details of the coin control means.

The vendor 10 includes a box-like cabinet 12 open at the top thereof with a lockable hinged lid 14 provided to prevent unauthorized access to the interior of cabinet 12. A display window 16 is provided in the front wall of the cabinet 12 to permit viewing of headlines on the front page of a newspaper disposed behind the window 16, and a relatively widemouthed newspaper outlet 18 is also disposed within the front wall of cabinet 12 immediately below the display window 16 which communicates with the interior of the cabinet 12.

The interior of the cabinet 12 is divided into a pair of side-by-side compartments by means of an upright wall 20, the larger of the compartments housing components broadly described as feeding apparatus for the newspapers, and the smaller of the compartments housing the remaining working components of the vendor 10. Referring initially to the larger compartment, a hopper 22 for receiving a stack of folded newspapers is defined by a pair of upright, generally L-shaped rear guides 24, a single front guide 26 in the nature of a partition extending between one of the outer walls of the cabinet 12 and the interior wall 20, and a pair of spaced-apart side guides 28. The bottom of the hopper 22 is defined by an inclined, shelf-like table 30 supported by a pair of cross members 32. Both the rear guides 24 and the inclined table 30 are adjustable toward and away from the front guide 26 by means of common adjusting bolts 34 which extend through aligned slots 36 and 38 in the guides 24 and table 30, respectively, and into the cross member 32 therebelow.

As shown in FIGS. 2, 5 and 6, the table 30 provides only a portion of support for a stack of newspapers received by hopper 22 inasmuch as an L-shaped shelf 40 is provided for the leading portion of the stack and four

central support units 42 are provided for the central portion of the stack. Each unit 42 includes a base 44 on the floor of cabinet 12 which supports an upstanding, irregularly shaped plate 46 projecting upwardly into the opening of the hopper 22 defined by the spaced-apart front shelf 40 and rear table 30. Each plate 46 has a pair of upwardly facing, inclined margins 48 and 50 which converge to an apex wherein is provided a roller bearing 52 engageable with the lowermost newspaper in the stack. The rear margin 50 of each plate 46 slopes downwardly toward the table 30 which, as already noted, is also inclined, and a space is defined between the margins 50 and the leading edge of table 30 for receiving the buckled portion of the lowermost newspaper as will hereinafter be described in more detail. The front margin of each plate 46 slopes downwardly toward a disposition below the front shelf 40 and does not normally engage the front portion of the lowermost newspaper prior to operation of the vender. Because the table 30 is disposed slightly lower than the shelf 40, the newspapers within the stack are inclined downwardly toward the table 30 with the rear margin 50 of each plate 46 engaging a portion of the lowermost newspaper.

A rocker shaft 54 disposed rearwardly of the roller 52 extends through the two compartments and projects outwardly from one sidewall of the cabinet 12 to support an operating arm 56 which is affixed thereto. Within the larger compartment the shaft 54 carries five grippers 58 (only three being shown in FIG. 3) for oscillation about the axis of shaft 54 through a displacement substantially less than 180°. A gripper 58 is disposed between each pair of adjacent support units 42, and each comprises an arm 60 affixed at one end thereof to the shaft 54 and having a projecting head 62 at the opposite end thereof about which is looped a pair of continuous, serrated or treaded bands 64 constructed of an appropriate material such as rubber or the like. A pair of cap screws 66 in the head 62 adjustably clamp a spike 68 against the outer face of head 62.

A pair of rests 70 are hingedly connected to the front side of wall guide 26 and extend toward the display window 16 to releasably support, in an upstanding manner, the display newspaper, while a "sold-out" sign 72 is disposed behind the display paper above rests 70 on the guide wall 26 in alignment with the display window 16 to be viewed by the public when the display newspaper is removed. The guide wall 26 terminates at its lowermost extremity adjacent the front shelf 40 providing a clear area below the latter and above an arcuate paper guide 74 which leads to the outlet 18.

As shown in detail in FIGS. 3 and 7, the smaller compartment contains a coin-operated control mechanism 76 which is only schematically shown and which may take the form of either of the control mechanisms disclosed in U. S. Letters Pat. Nos. 3,265,177 and 3,174,608. Preferably, the mechanism of U.S. Pat. No. 3,265,177 will be utilized and is accordingly incorporated herein by reference for a full and complete understanding of its nature and operation. The mechanism of the above-mentioned Patent is utilized as mechanism 76 inasmuch as the mechanism of this particular Patent is especially well-suited for cooperating with a latch 78 to releasably hold the operating arm 58 against actuation. The latch 78 is operatively coupled with the rocker shaft 54 by means of a crank 80, and a coil spring 82 yieldably biases the latch 78 upwardly

against a stop 84, in which position a hooked catch 86 forming a part of the mechanism 76 projects into an enlarged slot 88 in the latch 78 to retain the latter.

The front end of latch 78 has a pair of upturned, laterally spaced bends 90 which serve as cam followers during operation of the vender 10 and are normally disposed in alignment with coin chutes 92 within mechanism 76. As shown in FIG. 7, structure 94 within the mechanism 76 operates to maintain coins deposited within the chutes 92 in a disposition wherein a portion of the outer peripheries thereof are disposed in engagement with the bends 90 to operate as cam surfaces in a manner which will hereinafter be described in more detail. A notch-like opening 91 between the bends 90 is disposed in alignment with the catch 86 such that the bends 90 clear the catch 86 during movement of the latch 78.

Also contained within the smaller compartment and to the left of latch 78, as shown in FIGS. 3 and 4, is part of the apparatus, broadly denoted by the numeral 96, for maintaining and releasing the display newspaper from its position behind the display windows 16. The apparatus 96 includes actuating linkage 98 which is operatively connected with the rests 70 at one end thereof and is pivotally affixed to the wall 20 at 100 such that movement of the linkage 98 fore and aft of the cabinet 12 about pivot 100 swings the rests 70 into and out of the supporting disposition thereof shown in the Figures. The linkage 98 is normally disposed in its solid line position illustrated in FIG. 4 wherein a coil spring 102 yieldably biases one segment of the linkage 98 against an upper stop 104.

Also disposed within the smaller cabinet and forming a part of the apparatus 96 is a pusher component 106 which is keyed to the rocker shaft 54 for oscillation therewith, and has a pair of laterally extending wings 108 which normally clear the linkage 98 during oscillation of shaft 54, yet are adapted to engage the linkage 98 when the latter is in its dotted-line position of FIG. 4.

The apparatus 96 also includes a flat weight 110 within the larger compartment which overlies the stack of newspapers to provide continuous downward pressure thereon during operation of the vender 10, which is particularly important in maintaining the last few papers flat during oscillation of the grippers thereunder to assure positive successive dispensing of such papers. The weight 110 is constructed from three plate-like weight sections 112 which are hingedly interconnected as shown in order to properly distribute the force of weight 110 over the uneven upper surface of the top newspaper in the stack, and the middle section 112 is provided with a laterally extending finger 114 which projects through an opening 116 in the wall 20 into spaced, overlying alignment with the free end of linkage 98. The dimensions of the weight 110 are such that the latter is free to move progressively deeper within the hopper 22 as the stack of newspapers is progressively depleted, thereby bringing the finger 114 gradually closer to the linkage 98 as the stack is depleted. A rectangular aperture 118 is defined within the weight 110 by adjacent openings in a pair of the sections 112 such that when the weight 110 reaches the bottom of hopper 22 the corresponding gripper 58 therebeneath will not be interfered with.

OPERATION

In use, the vendor 10 may be placed at any desired location such as, for example, in a hotel or motel lobby, at a street corner, or in a restaurant or other commercial establishments wherein regular deliveries of folded, bound newspapers are not likely to be made. Periodic loading of the vendor 10 may be accomplished by simply unlocking the lid 14, removing the weight 110, and placing the newspapers in stacked relationship within the hopper 22. Adjustment of the inclined table 30 and rear guides 24 may be made at this time, and upon replacement of the weight 110 and relocking of the lid 14, the vendor 10 is in condition for use by the public.

Once the newspapers have been loaded, with a display newspaper disposed upon the rests 70 behind the window 16, the working components of the vendor 10 assume the solid-line positions illustrated in FIGS. 1-4 and 7. When a customer inserts a preselected combination of coins into the control mechanism 76 via the coin slots 120 in the front wall of cabinet 20, the coins gravitate through one or more of the corresponding chutes 92 until the latch 78 is reached. At this juncture, for purposes of clarity, the subsequent operation of the latch 78 and coin control mechanism 76, will be described as if only one coin 122 (FIG. 7) were needed to release the latch 78 for operation. In this respect, it will be appreciated that the control mechanism 76 may be preset for any desired combination of coins.

When the coin 122 reaches the bottom of chute 92, the structure 94 maintains the lowermost outer periphery of the coin 122 in engagement with one of the bends 90. Then, inasmuch as slot 88 is longer than the transverse dimensions of catch 86, the latch is free to move a short longitudinal distance when the operating arm 56 is swung toward the rear of the cabinet 12. Thus, as the arm 56 begins its movement, the latch 78 is cammed downwardly into its dotted-line position illustrated in FIG. 7 by the action of the coin 122 bearing against bend 90. Consequently, continued swinging of the arm 56 toward the rear of cabinet 12 clears the slot 88 in catch 86 thereby permitting the arm 56 to be swung completely into its rearmost dotted-line position shown in FIG. 2. Once the bends 90 of latch 78 have cleared the coin 122 the latter is free to gravitate into a suitable receptacle (not shown).

During the rearward swinging of the arm 56, the rocker shaft 54 rotates in a counterclockwise direction viewing FIGS. 2, 5 and 6 such that each of the grippers 58 is swung in an arcuate path toward the table 30 up into the hopper 22 into pressure contact with the rear portion of the lowermost newspaper in the stack. As each gripper 58 continues to swing rearwardly toward the table 30, the bands 64 firmly grip the lowermost newspaper to pull the leading edge thereof from between the shelf 40 and the next newspaper thereabove, thereby causing the rear portion of the lowermost newspaper to buckle downwardly into the space between the support units 42 and table 30, as shown in FIG. 5. Once the leading edge of the lowermost newspaper has been pulled from the stack, it falls onto the front margins 48 of the plates 46 and is supported thereby.

Swinging of the arm 56 back toward its original forward position causes each of the grippers 58 to swing toward the front shelf 40 while still in pressure contact with the rear portion of the lowermost newspaper

thereby unbuckling the latter as shown in FIG. 6, and displacing the free leading edge generally downwardly and forwardly toward the outlet 18. When the arm 56 has been completely returned to its original position, the grippers 58 are also returned to their original positions, releasing the lowermost newspaper. Then, it is but necessary for the customer to reach into the outlet 18 to grasp the leading edge of the lowermost newspaper and remove the latter from the cabinet 12 by pulling the trailing edge of the newspaper from between the table 30 and the next paper thereabove. It will be appreciated in this regard that suitable antijackpot structure, such as a swingable, one-way door or the like, may be provided within the area immediately above the paper guide 74 if desired, although none has been shown in the present application.

The above cycle may be repeated until such time as the supply of newspapers within the hopper 22 has been completely depleted. At this time, the finger 114 of weight 110 will be bearing against the free end of linkage 98 to place the latter in the dotted-line position of FIG. 4. Thus, when the next customer deposits his money and operates the arm 56, the component 106 engages the linkage 98 and pushes the latter about pivot 100 thereby releasing the display newspaper so that it may drop into the paper guide 74 and out the outlet 18. This completely sells out the vendor 10 and this condition is displayed to all subsequent would-be customers by the sign 72 behind window 16.

It may now be appreciated that the vendor 10 eliminates many of the problems inherent in the conventional "honor" newspaper dispensing racks, yet is relatively simple in design to minimize the cost thereof and guarantee trouble-free operation. No longer is it necessary to rely upon the good faith of the customer and, instead, the newspaper supplier can now rest assured that only one newspaper may be dispensed per each deposit of the preselected number of coins. Therefore, by using the vendor of our invention, the newspaper supplier can take full advantage of choice locations for distributing his papers without fear of having them stolen and redistributed for profit. Moreover, legitimate customers may benefit in that vendors may now be placed in locations which are especially convenient to such customers but may have been avoided in the past because of high incidents of theft while using the "honor" racks.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a feeder for articles such as newspapers or the like:

- a hopper for receiving a stack of the articles;
- spaced-apart, front and rear support structures for the stack disposed to underlie opposed leading and trailing edge portions, respectively, of the lowermost article of the stack as disposed in the hopper, said support structures presenting an opening therebetween;
- a central support unit located beneath the opening between said structures in spaced relationship from the latter and disposed to engage and support the central portion of said lowermost article that overlies the opening; and
- an article gripper associated with said support unit and shiftable between said front and rear structures in a manner to at least partially withdraw the lowermost article from the stack,

said gripper being swingable about an axis disposed to preclude engagement of the gripper with the lowermost article ahead of said support unit, said gripper being operable in response to swinging thereof toward the rear structure to engage the lowermost article at its central portion or rearwardly thereof and to buckle the article downwardly behind the support unit, hence pulling the leading edge thereof from between the article thereabove and the front structure, and being operable in response to subsequent swinging thereof toward the front structure to substantially unbuckle the lowermost article and displace the free leading edge thereof in a forward direction.

2. The feeder as claimed in claim 1, wherein said support unit includes a plurality of support elements in said opening spaced along said axis and disposed to underlie and engage the central portion of the lowermost article, there being a plurality of said grippers spaced along said axis between adjacent elements, respectively.

3. The feeder as claimed in claim 1, wherein said support unit is provided with an article engageable apex, said axis of swinging movement of the gripper being disposed rearwardly of said apex.

4. The feeder as claimed in claim 1, wherein said support unit has an inclined, upwardly facing, article-engaging margin inclined in a direction toward the rear structure to cause the section of the lowermost article between the support unit and said rear structure to assume a slightly draped configuration to facilitate buckling thereof by the gripper.

5. The feeder as claimed in claim 4, wherein said support unit has a second inclined, upwardly facing margin inclined in a direction toward the front structure to guide the free leading edge of the lowermost article when said leading edge is removed from said front structure.

6. A vendor for articles such as newspapers or the like comprising:

a cabinet having a hopper for receiving a stack of the articles, lockable access means permitting loading of the hopper, and an article delivery outlet communicating with the hopper;

spaced-apart, front and rear support structures for the stack presenting an opening therebetween and disposed to underlie opposed leading and trailing edge portions, respectively, of the lowermost article of the stack in the hopper;

a central support unit between said structures projecting upwardly into said opening to engage and support the central portion of the lowermost article;

an article gripper associated with said unit and shiftably mounted for reciprocation generally toward and away from the front and rear structures;

manually actuatable operating means disposed exteriorly of the cabinet and operably coupled with the gripper to effect said shifting thereof;

a latch within the cabinet for releasably retaining said operating means against actuation; and

coin-operated control means associated with said latch for releasing the latter for one operating cycle of the gripper in response to the introduction of a preselected coin combination to the control means, said gripper swingable about an axis disposed to preclude engagement of the gripper with the lowermost article ahead of said support unit,

said gripper being so disposed with respect to said unit that, upon actuation of the operation means, the gripper first engages the lowermost article at its central portion or rearwardly thereof and displaces the engaged portion rearwardly of said unit to buckle the article downwardly behind the unit and thereby pull the leading edge of the lowermost article from between the article thereabove and the front structure, and thence displaces the engaged portion forwardly toward said front structure to unbuckle the lowermost article and displace the free leading edge thereof forwardly into a disposition adjacent said outlet for subsequent manual removal of the article from the cabinet by withdrawing the trailing edge of the article from the stack.

7. The vendor as claimed in claim 6, wherein said support unit includes a pair of laterally spaced support elements in said opening disposed to engage the central portion of the lowermost article, said gripper being located between said elements.

8. The vendor as claimed in claim 6, wherein said control means includes a catch engageable with said latch and means for positioning a coin introduced to said control means in a disposition to present the outer periphery thereof as a cam surface, said latch being operably connected at one end thereof with said operating means and having a cam follower at the opposite end thereof engageable with said cam surface of the coin such that, upon introduction of a coin, movement of the latch by the operating means causes the latch to cam out of engagement with the catch to permit actuation of the operating means, said cam follower on the latch being disposed in alignment with said catch of the control means during actuation of the operating means, said follower having an opening therein to clear the catch.

9. The vendor as claimed in claim 6, wherein said support unit is provided with an article-engageable apex, said axis of oscillation of the gripper being disposed rearwardly of said apex.

10. The vendor as claimed in claim 6, wherein is provided a display window in said cabinet, a shiftable rest within the cabinet for supporting an article at the window, and apparatus for shifting said rest out of its article-supporting disposition when the stack of articles has been depleted to release the display article for delivery thereof to said outlet, said apparatus including a component associated with said operating means for movement therewith and disposed interiorly of the cabinet, actuating means connected to said rest and yieldably held in a normal disposition wherein the actuating means clears said component during actuation of the operating means, and a weight overlying the uppermost article in the stack and disposed to engage said actuating means to shift the same into the path of said component when the stack is depleted, whereby actuation of the operating means shifts the rest to release the display article.

11. The vendor as claimed in claim 10, wherein said weight has an aperture therein for cleaning the gripper when the stack has been depleted.

12. The vendor as claimed in claim 6, wherein said support unit has an inclined elongated upwardly facing, article-engaging rear margin inclined in a direction toward the rear structure to cause the section of the lowermost article between the support unit and said

rear structure to assume a slightly draped configuration to facilitate buckling thereof by the gripper.

13. The vendor as claimed in claim 12, wherein said support unit has a second inclined, elongated, upwardly facing front margin inclined in a direction toward the front structure to guide the free leading edge of the lowermost article when said leading edge is removed

from said front structure.

14. The vendor as claimed in claim 12, wherein said rear structure includes a shelf member inclined downwardly toward said rear margin of the unit to cooperate with said rear margin in draping the lowermost article.

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