Feb. 22, 1944. J. V. CASTEEN 2,342,452

DISPENSING CABINET

Filed June 25, 1940 5 Sheets-Sheet 1

Fig. 1.

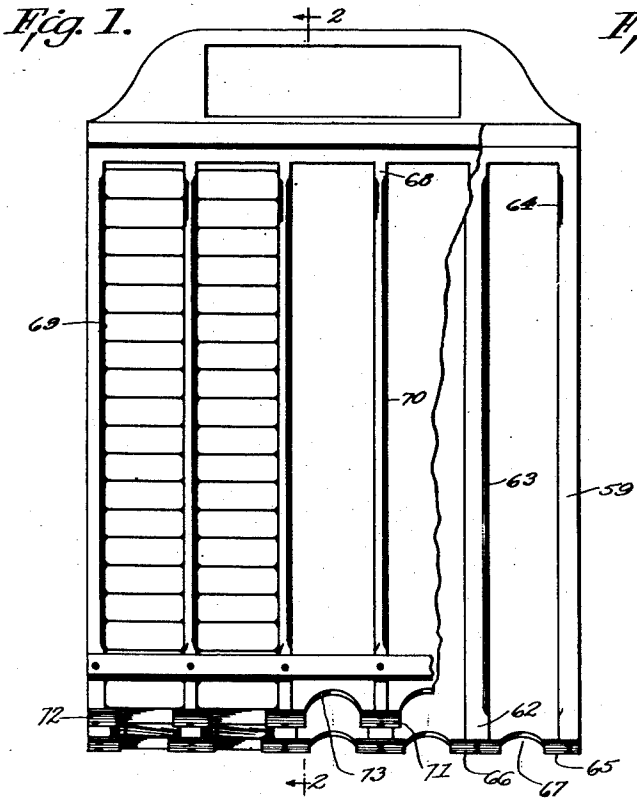


Fig. 2.

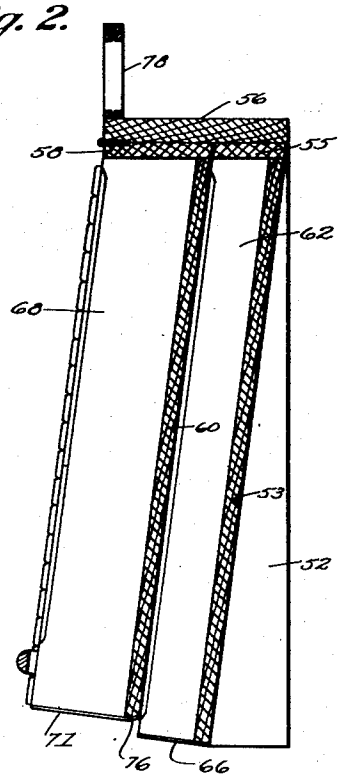
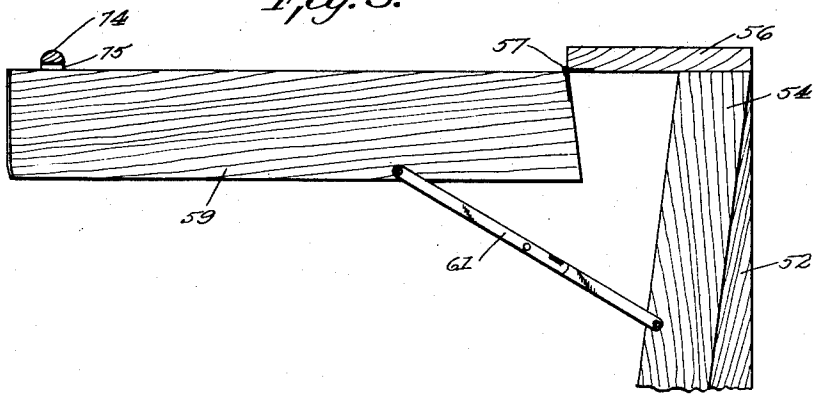


Fig. 3.



Inventor

JOHN V. CASTEEN

By William H. Drake

Attorney

Feb. 22, 1944. J. V. CASTEEN 2,342,452

DISPENSING CABINET

Filed June 25, 1940 5 Sheets-Sheet 2

Fig. 4.

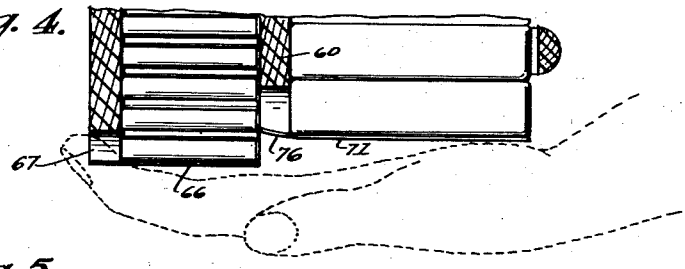


Fig. 5.

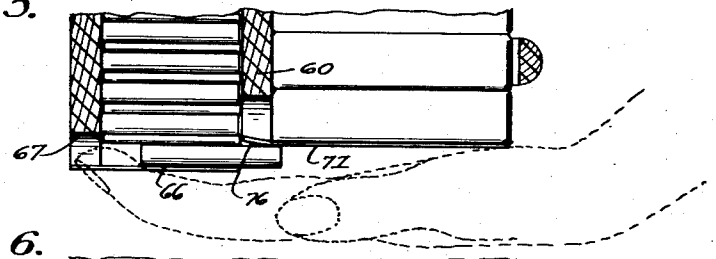


Fig. 6.

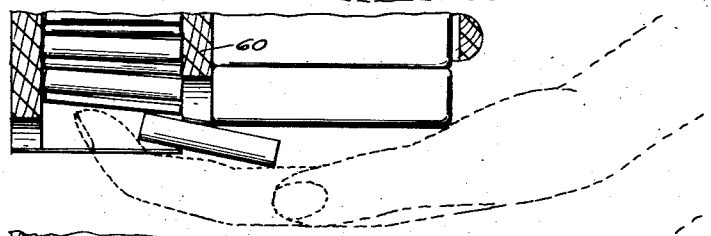


Fig. 7.

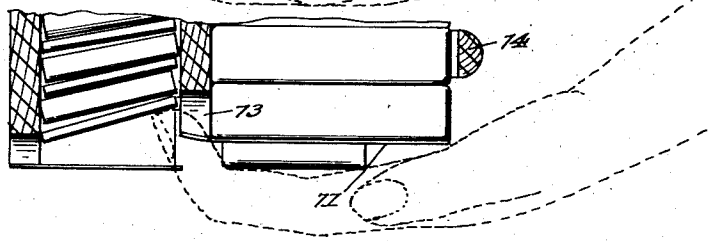
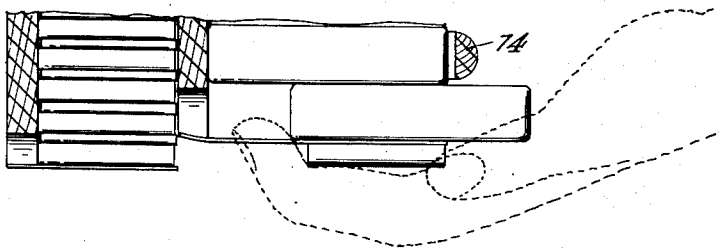


Fig. 8.



Inventor

JOHN V. CASTEEN

By William H. Drake

Attorney

Feb. 22, 1944. J. V. CASTEEN 2,342,452

DISPENSING CABINET

Filed June 25, 1940 5 Sheets-Sheet 3

Fig. 9.

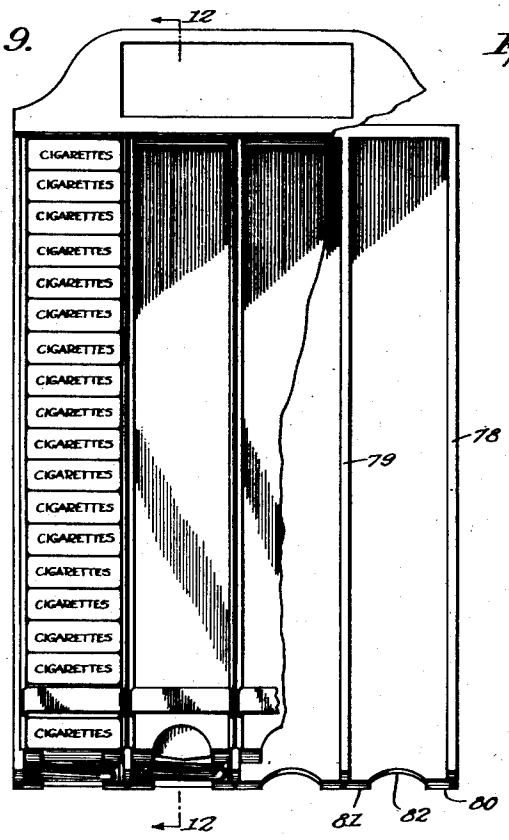


Fig. 10

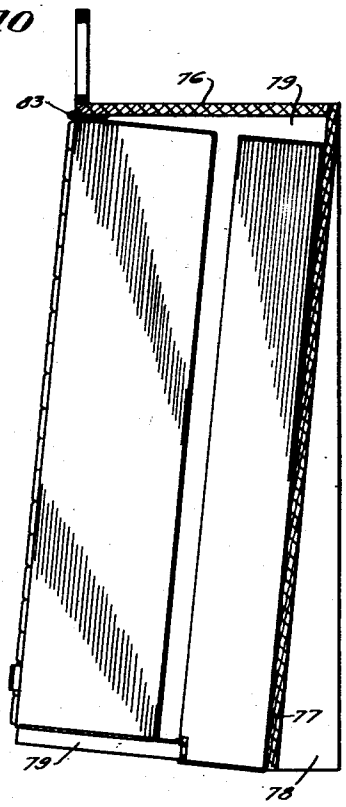
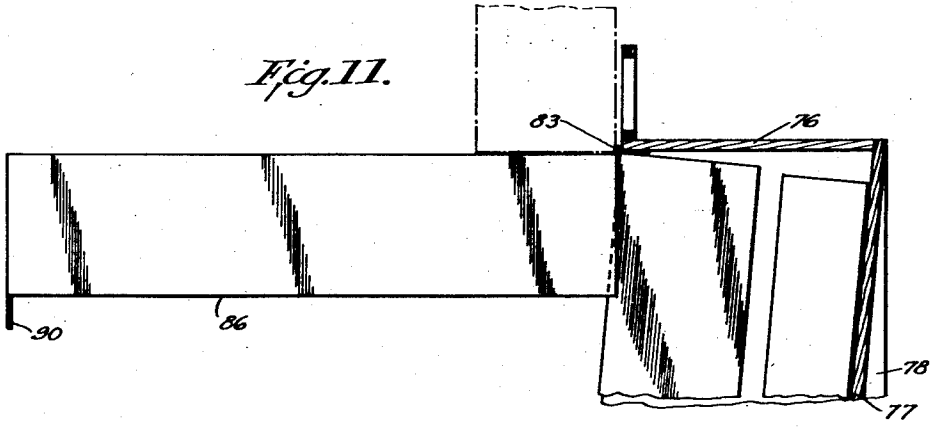


Fig. 11.



Inventor

JOHN V. CASTEEN

By William H. Drake

Attorney

Feb. 22, 1944. J. V. CASTEEN 2,342,452

DISPENSING CABINET

Filed June 25, 1940 5 Sheets-Sheet 4

Fig. 12

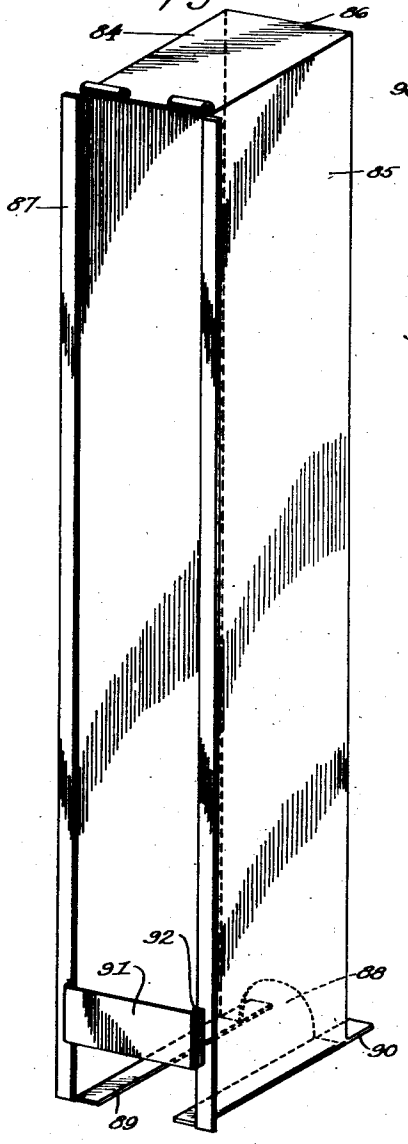


Fig. 13.

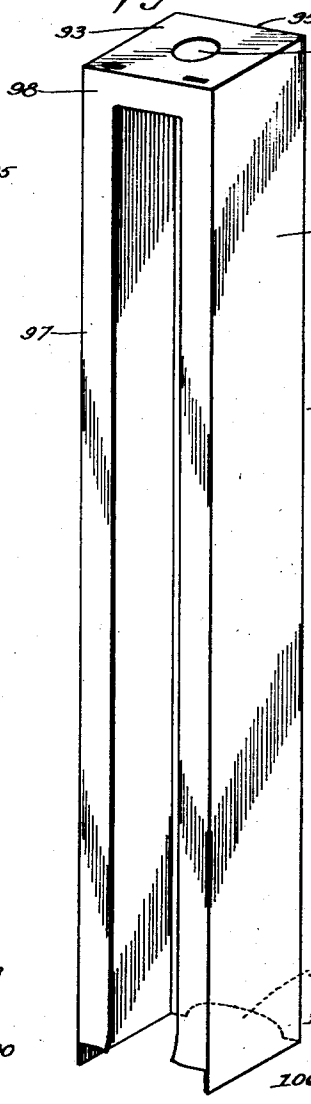
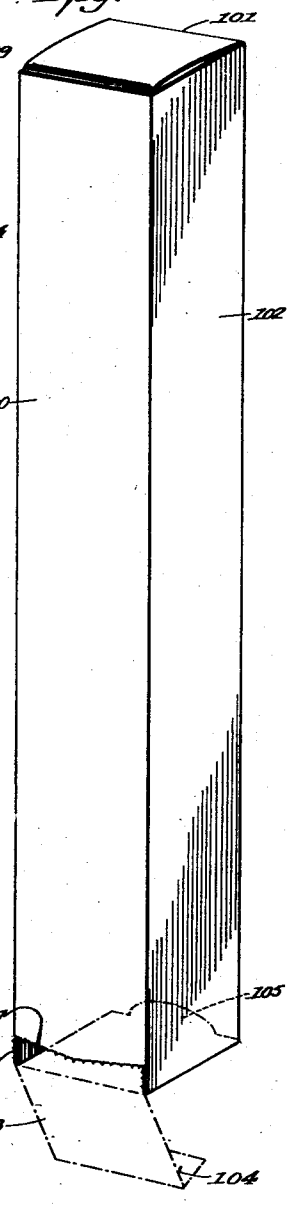


Fig. 14.



Inventor

JOHN V. CASTEEN

By William H. Drake

Attorney

Feb. 22, 1944. J. V. CASTEEN 2,342,452

DISPENSING CABINET

Filed June 25, 1940 5 Sheets-Sheet 5

Fig. 15.

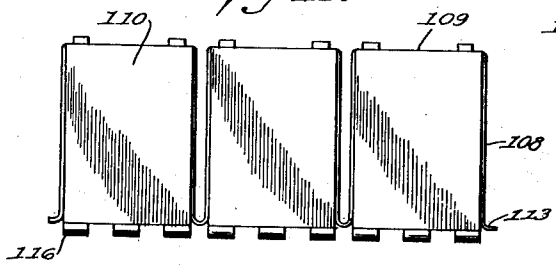


Fig. 16.

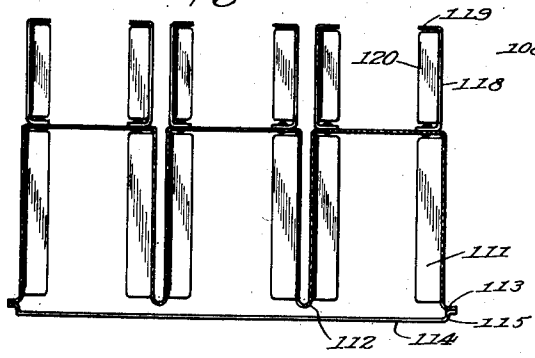


Fig. 17.

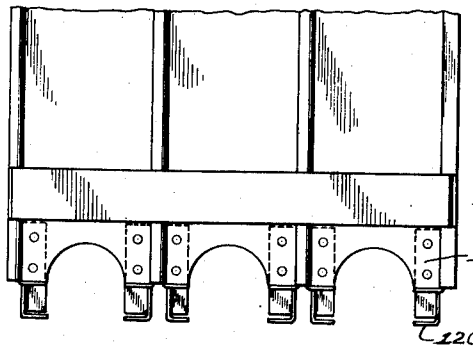
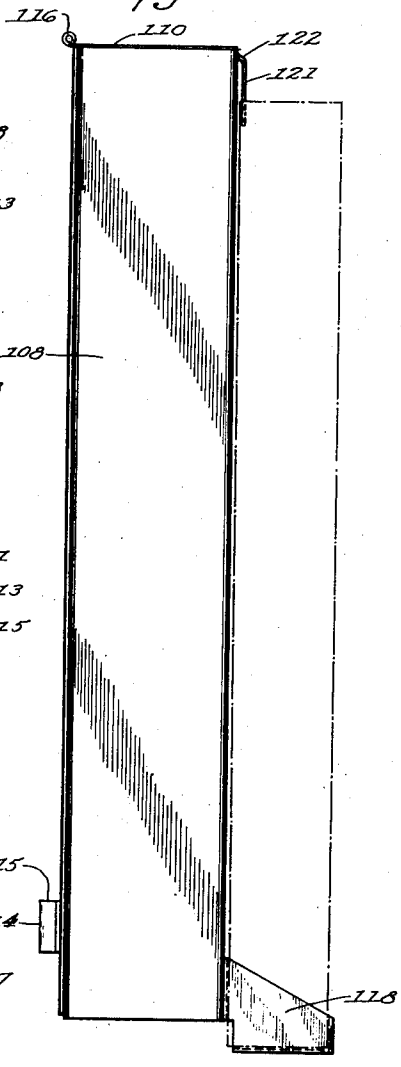


Fig. 18.



Inventor

JOHN V. CASTEEN

By William H. Drake

Attorney

Patented Feb. 22, 1944

2,342,452

UNITED STATES PATENT OFFICE

2,342,452

DISPENSING CABINET

John V. Casteen, Portsmouth, Va.

Application June 25, 1940, Serial No. 342,343

7 Claims. (Cl. 312—42)

My invention relates to dispensing cabinets and more particularly to cabinets for manually dispensing articles from the bottom of the stack.

In the past in any mechanism for facilitating withdrawal of two or more types of articles simultaneously, it has been thought necessary to provide complicated expelling mechanisms. This has resulted in expensive machines of the vending machine type which require considerable manual force for their operation. The several articles fall into a hopper and must be picked up through the use of several hand motions.

One of the objects of my invention is to eliminate the above difficulties.

Another object of my invention is to provide a dispensing cabinet that enables the operator to grasp the article as it is released.

Another object of my invention is to provide a hand operated dispensing cabinet in which the operator may utilize a single continuous motion of the hand for withdrawing an article from one stack, or one article each from a tier of stacks, at his momentary option, and to provide a method for so utilizing the structure.

Another object of my invention is to provide an easily loaded dispensing cabinet which will exhibit the articles effectively while they are retained in the magazines.

Still another object of my invention is to provide magazine loading for the chutes that retain the stacked articles, especially magazine loading making use of specially convertible cartons.

With these and other objects of my invention which may be apparent from the following discussion and the accompanying drawings I have shown and described for the purposes of illustration several embodiments of my inventive concept.

Briefly, my invention consists of bottom withdrawal cabinet construction having a means to prevent withdrawal of the next to bottom package, and having support flanges disposed to support the front to rear edges of the bottom package, and having a cut-away finger space at the rear lower edge of the bottom package and a finger passageway all along on the bottom surface of the bottom package between the support flanges.

In several embodiments of my invention, the chutes for holding the stacks of articles are tilted away from the operator at the top of the chutes and the fronts of the front chutes are open so that a full display of attractively packaged articles may be had. A bar or guard extends across the open front of the front magazine at a height adapted to prevent withdrawal of the next to bottom package and all but the lowermost package from withdrawal.

In several embodiments of my invention, there are chutes disposed one behind another so that the finger passageway for the rear chute and for the front chute are aligned with respect to a common vertical plane. The rear chute is placed at a level such that its support flanges terminate sufficiently below the level of the back of the front support flanges for the front chute to permit the lowermost unit of the articles stacked in the rear chute to be slid forward readily underneath the front chute.

In order to promote clarity of discussion, certain definitions should be included:

"Forward" is used to mean a direction in which the articles are dispensed from the bottom of the chute and might be termed to be in the direction of the operator.

"Rearward" is used, of course, conversely to "forward."

"Dispensable" is used to designate that article which is ready to be dispensed by the next complete sequence of dispensing operations in case no dispensing operations have yet begun, or in case dispensing operations have begun "dispensable" means that article which is in process of being dispensed.

Where more than one term for the members of the stacks is used in the same claim, this is done for clarity to distinguish, in that particular claim, from which stack the article came. For instance, articles from the rear stack may be called units and those from the front stack be called items, for purposes of that particular claim.

In the accompanying drawings:

Figure 1 is a front view, partially broken away, of a dispensing cabinet having a fixed rear battery of chutes and a hingeable front battery of chutes.

Figure 2 is a vertical section along the line 2—2 of Figure 1.

Figure 3 is a fragmentary side view of the cabinet shown in Figure 1.

Figures 4 through 8 are schematic side views representing successive stages in the process of manually withdrawing one article from each of two stacks by using a single forward motion of the hand which is represented by dot-dash lines.

Figure 9 is a front view, partially broken away, of a dispensing cabinet having individually swingable front chutes and replaceable rear magazines.

Figure 10 is a vertical section taken along the line 12—12 of Figure 9.

Figure 11 is a fragmentary side section of the cabinet shown in Figure 9 with one front chute upraised.

Figure 12 is a detailed oblique view of one of the chutes of the cabinet shown in Figure 9.

Figure 13 is an oblique view of a metal magazine suitable for use in a dispensing cabinet.

Figure 14 is an oblique view of a cardboard carton converted to a replaceable magazine with dot-dash lines to indicate the part torn off.

Figure 15 is a top view of a metal gang chute having magazine clips at the rear.

Figure 16 is a horizontal section of the chute shown in Figure 15, additionally showing magazine sockets at the rear.

Figure 17 is a front view of the bottom fragment of the chute shown in Figure 15.

Figure 18 is a side elevation of the chute shown in Figure 15, with dot-dash lines to indicate the magazine.

In the accompanying drawings certain dispensing devices are shown but it is to be understood that this disclosure is only given to illustrate preferred embodiments and serve as examples of various dispensing devices which may operate in accord with the principles of my invention to satisfy the same objects and provide the same advantages.

One modification of my invention consists of two or more tiers of chutes for receiving the stacks of articles.

It is illustrated as having two tiers, made up of a fixed battery of rear chutes in front of which fits a hingeably removable battery of front chutes.

As shown in Figures 1, 2 and 3, this modification is carried upon triangular base strips 52, which are preferably attached to the wall of the room as by screws and screw plates not shown. Suction cups may be used for support at the lower ends of the base strips 52. Extending between the outer ends of the base strips is back bed 53, which is inclined with its top toward the wall and with its lower part extending away from the wall. Sidewalls 54 flank the back bed 53 and together with it are surmounted by top 55, which is arranged to be normally horizontal.

A headpiece 56 is firmly united in horizontal position above the top 55, and extends forwardly beyond the top for a distance appropriate to accommodate the hingeable battery. Hinges 57 have their axes at the lower front edge of the headpiece 56 and join cap 58 to the headpiece 56.

Cap 58 surmounts flanks 59 which are united at their rear borders to the interposed front bed 60. Cap 58 bears the same angular relationship to front bed 60 that top 55 bears to the front edges of sidewalls 54. Thus, when the hingeable battery is in closed position, front bed 60 can rest snugly against the front edges of sidewalls 54.

In the open position of the hingeable battery as shown in Figure 3, suitable folding brackets 61 are preferably utilized to hold up the hingeable battery. Brackets 61 are suitably joined to flanks 59 and sidewalls 54.

As shown in Figures 1 and 2, rear separator strips 62 are positioned in parallelism with the sidewalls 54 which lie on both sides of them. Separator strips 62 divide up the cabinet space into chutes of a width adapted to accommodate a stack of articles of specific size. These separator strips are suitably united to the back bed 53 and to the top 55. The front edges of the separator strips have beveled edges 63, throughout their length except for that portion which will flank the lowermost article in the stack. In this way greater ease may be had in inserting the articles into the chute, which provides stability for the lowermost article, which is the article that is removed. In order to correspond with the beveled edges 63 on the separator strips 62, the sidewalls 54 have similar bevels 64 at their inner front edges.

The previously described angle of the back bed 53 induces alignment of the stacks of articles in the rear chutes by the force of gravity against it. This angle should provide a horizontal offset of 1½ in. for every 10 in. of height.

As shown in Figures 1 and 2, one-sided rear support flanges 65 are suitably united as by screws to the lower edges of the sidewalls 54, and double rear support flanges 66 are similarly united to the lower edges of the separator strips 62. These support flanges provide support for the lower outer edges of the bottom-most package in each stack. It can be seen that for reasons of simplicity the support flanges 66 extend on both sides of a given separator 62. However, support flanges 65 which fit onto the sidewalls 54 extend only in the direction of the inner sides of the sidewalls. Also, it will be understood that some variation in the lateral extent of the support flanges may be desired, depending upon the size of the articles in the stack.

At the lower edge of the back bed 53 and in the middle of each chute is a cut-away space 67 adapted to permit a finger or fingers of the operator to move against the lower rear edge of the bottom article in the stack. It can be seen that this cut-away space 67 is roughly aligned with the finger-way space between the support flanges.

Similar bottom construction is provided for the front chutes which compare in this respect with the rear chutes. Separators 68 are united to the front bed 60 and to the cap 58 in horizontally spaced relationship from each other and from the flanks 59 to form suitable front chutes. Flanks 59 carry beveled edges 69 for their inner front edges and separators 68 have beveled edges 70 on both front edges.

To the lower edges of separators 68 and flanks 59 are united respectively double front support flanges 71 and one-sided front support flanges 72. Finger room notches 73 are cut out from the lower edges of the front bed 60 at the middle of each chute, and the forward spacing of the front bed 60 should preferably provide a half inch of front to back finger room.

It will be noted that the front ends of the various support flanges 65, 66, 71 and 72 are unobstructed so that the lowermost article from the respective banks of chutes can be removed by simple forward sliding motion and without elevating the stack of articles in each chute. In other words, these front ends are adapted to lie wholly beneath the bottom surface of the lowermost article and preferably parallel thereto.

It will be noticed that the angularly disposed back bed 53 and the angularly disposed front bed 60 permit the chutes to hold their stacks of articles without the necessity of any front wall or front flanges, because the stacks are leaning against these beds.

So far as the hingeable front battery of chutes is concerned provision is made to eliminate any necessity of a front wall or front flanges even

during the process of withdrawing the bottom-most article from a stack. This feature is desirable in order to display attractive packages to the best advantage. Actually, I have constructed my device in such a way that the front edges of the cigarette packs extend slightly beyond the cabinet. In order to prevent knocking out the entire stack when withdrawing the bottom-most article, I have provided guard bar 74 which extends along the entire width of the hingeable battery so as to prevent withdrawal of the next to bottom package when the bottom-most article is withdrawn. In order to permit each article in the stacks to extend slightly beyond the separators 68 and the flanks 58, the separators and flanks are preferably made slightly narrower than the front to back dimension of the articles, and foundation blocks 75 are provided to carry the guard rail 74 the necessary distance outward, or toward the operator, from the separators and the flanks.

As shown in Figures 1 and 2, the rear battery of chutes carries its support flanges a distance below the line of the front support flanges so that the difference in height permits a single article from the rear stack to be slid forward immediately under the front support flanges. I have found that slightly upwardly turned portions 76 at their back ends of the respective front support flanges 71 and 72 will permit closer adjustment of this differential in height between the front and rear support flanges. Similarly, I find it desirable under some conditions to provide the rear support flanges with a downward turn at their front ends, in order to permit close fitting of the aperture that is formed between the back of the front flanges and the rear flanges.

It will be seen that there is a necessary alignment between the finger-ways of the hingeable battery and the finger-ways in the fixed battery of chutes. In the present illustration which is adapted to dispense the relatively narrow package of matches and the wider packs of cigarettes, I have used separator strips 62 for the rear battery which are wider than the separators 68 used for the front battery. This difference in the width of the separators takes up enough difference in space so that the centers of the corresponding front and rear chutes are aligned.

It should be understood that while I have shown a front chute adapted to accommodate the taller and wider pack of cigarettes and a rear chute adapted to accommodate the smaller and narrower packets of matches, I may without departing from the spirit of my invention arrange the construction such that a larger or wider article is carried by a rear chute. Also, it is entirely feasible should demand for it arise for a construction of three or more tiers to be made which will permit the operator to withdraw more than two articles from different stacks in the same motion.

Since the headpiece 56 remains in fixed position, a suitable display frame 78 is easily affixed to the front upper edge of the headpiece 56 and arranged to receive advertising display.

As shown in Figures 4 through 8, the operation of my first modification may be analyzed into several steps. As in Figure 4, the hand of the operator, palm upward, is moved back under the cut-away portion of one of the rear chutes so that at least one finger such as the middle finger is adapted to curve upward slightly into the cut-away space 67. Then as the hand is withdrawn with slight upward pressure the lowermost packet of matches is slid forward so that its front upper edge slides beneath the curved portions 76 toward the front of the support flange 71. It should be noted that the height of the cut-away space 67 should be made to exceed slightly the height of the lowermost packet of matches.

As shown in Figure 5 the deepest indentation of the cut-away space 67, which is in the center of the chute, prevents the middle finger of the operator from moving the lowermost packet upwardly in a way which would prevent its forward movement by catching on the front support flange 71. Any tendency of the operator's finger to move too far upward is stopped by contact with the top of the cut-away space 67 as shown in Figures 4 and 5. Any upward movement of the lowermost packet will merely consist in a tilting action which will leave the front edge of the match packet undisturbed, so that it will be free to slide forwardly.

As the middle finger of the operator is moved forwardly with a slight upward pressure, the forward force is exerted almost exclusively on the lower rear edge of the ready match packet which is now the lowest in the stack. Any slight friction between the finger and the next to lowest match packet will not cause that packet to slide forward. This is because the next to lowermost packet is blocked by a front wall of the rear chute or by some member acting as the front wall such as the adjacent front bed 60 which is the back of the front chute.

As shown in Figure 6, when the finger has passed forwardly so that there is no longer contact between the finger tip and the top of the cut-away space 67, the finger may move upwardly only to a limited extent. The match packets being light, the entire stack is usually raised until that portion of the finger below the ready packet is in upward contact with the ready packet. Because it is being pressed upwardly against the bottoms of the support flanges 76, the ready packet is not only steadied and held on the finger but also it serves to prevent excessive upward movement of the finger.

As the finger tip moves forwardly almost into the position shown in Figure 7, that is, moved forwardly almost out from under the next to ready packet, that packet has a tendency to tilt slightly in a way to lessen friction between finger and packet. This tendency is more pronounced when the match stack is low.

As shown in Figure 7, when the finger has moved forwardly completely out from under the next to ready match packet, that packet drops down squarely on the support flanges as the lowermost member of the rear stack. The ready packet has been carried forward under the ready pack of cigarettes and is resting squarely upward against the bottoms of the front support flanges 71.

From the time the finger tip has left the cutaway space 67, or from the time the finger tip has left contact with the next to ready packet, the finger has curled upwardly to fit into the finger room notches 73. How soon the finger tip begins to rise up to the height of the notch 73 depends upon the weight of the rear stack and the upward force applied by the operator. However, in any event, the operator may dispense a match packet with a cigarette pack without concern as to the degree of upward pressure. The upward blocking by the ready packet and in

some cases contact of the finger tip upward against the top of notch 73 will counteract the effect of excessive upward pressure. Because the upward movement of the finger is limited, as by the notch 73, the ready pack of cigarettes is not raised sufficiently to be blocked by guard bar 74.

It should be noted here that the stack of cigarettes must be spaced forwardly from the rear stack of match packets so as to provide finger room such as provided by notch 73. Otherwise in some cases the finger tip would not have room to move upwardly into position for engaging the cigarette pack. In this particular modification such finger room has been provided by making the front bed of relatively thick material. However, such finger room may be provided although the front bed is of thin material, such as pressed metal, by suitably spacing the front bed away from the front of the match pile and extending the front flange support to come into close proximity with the chute for the stack of match packets.

By curling upwardly in the notch 73, the finger engages the lower rear edge of the ready cigarette pack and slides it forward into the position shown in Figure 8. In this drawing it is shown how the cigarette pack and match packet are carried forwardly together ready to be received by the palm of the hand when completely withdrawn from the cabinet.

It should be kept in mind that in order to facilitate the ease of withdrawal of articles, the planes of the support flanges have been inclined upward toward the operator. Such inclination of the support chutes is not necessary to secure or to illustrate the action of single motion withdrawal of articles from the bottoms of two stacks.

A second modification of my invention is so related as to function in the manner of my first modification in dispensing articles manually and simultaneously from a plurality of stacks, but has a different construction utilizing independently hinged front chutes which are independently hinged to the fixed headpiece carried by the dispensing cabinet. In this model I preferably form the front chutes of stamped material especially of metal.

As shown in Figures 9, 10 and 11, the headpiece 76 surmounts the back bed 77 and the sidewalls 78 to form the principal part of the dispensing cabinet. Back bed 77 is disposed at a suitable inclination from the vertical so that the articles in the rear stack will be against it. Separators 79 are united to the back bed 77 and to the headpiece 76 and are suitably disposed between the sidewalls 78 to hold the front and rear chutes in place between neighboring separators and between a separator and a sidewall. It should be noted that in this modification the sidewalls 78 and the interposed separators extend all the way forwardly to flank the front chutes as well as the rear chutes.

Rear one-sided support flanges 80 and rear double support flanges 81 fit respectively on the sidewalls 78 and the separators 79 and function as do those mentioned in describing the first modification: namely, to support the rear stack while permitting finger passage is a forward direction in contact with the lowermost article. Cutaway space 82 at the lower surface of the back bed 77 and centered between the separators allows finger access to the rear lower endge of the lowermost or ready article in the rear stack.

The front chutes are swingably joined by hinges 83 to the headpiece 76, preferably in such a way that the hinge axis is along the lower front edge of the headpiece. As best known in Figure 12, the front chute preferably consists of a trough of metal having a top part 84 which is joined to and surmounts, the flanks 85 and the front bed 86. The flanks 85 preferably have turned out edges 87 to insure nesting of the front chute against the separators 79 and sidewalls 78 which demark the troughs for receiving the front chutes together with the rear chutes.

Cutaway space 88 is provided in the bottom edge of the front bed 86 to permit the finger tip to rise upward behind the ready article in the front stack. Joined to the lower edges of the flanks and preferably integrally formed with them are front support flanges 89 which turn inwardly away from the adjoining separators or separator and sidewall, as the case may be. Rear extensions 90 of the support flanges extend rearwardly from the base of the front bed to extend the support flanges surface a short distance toward the rear chutes. This is done to provide the proper finger room between front and rear stacks. In this way proper spacing between the bottoms of the stacks is obtained without requiring the use of a thick backwall for the front chute.

Secured across the front of the front chute is a retaining strap 91 which has offset portions 92 at its sides to carry the strap 91 forwardly of the front edges of the chute. This permits the packages to extend slightly forward from the chute for better display. That is by having the inner surface of the retaining strap 91 lie on a plane spaced outward from the front of the front chute, it is possible by using proper dimensions to have the articles in the stack project outward slightly from the front chute.

Reference to Figures 9 and 10 will show that separators 79 and sidewalls 78 have been made longer than the flanks 85 of the chutes. Thus the lower ends of the separators and the sidewalls, being lower than the front support flanges 89, act as guides for the rear articles as they are withdrawn under the front articles. In this way, any tendency for the rear articles to turn and pivot laterally out of the operator's fingers is resisted.

Also, in my second modification I have illustrated how a replaceable magazine may be used as a rear chute for purposes of loading it as a unit. The same principle may be applied, with modifications, to the front stack. I prefer a more open stack.

In Figures 13 and 14, there are illustrated two forms of replaceable magazines which act as chutes for the dispensing of rear articles.

The replaceable magazine illustrated in Figure 13 is adapted to fit snugly behind the front chute in the trough formed by the separators 79 or formed between the separators 79 and the sidewalls 78. It is adapted to rest against the back wall 77 and receive certical support from the rear support flanges 81 and 80 which are permanently united to the bottoms of the separators and to the sidewalls at their rear portions. Figure 13 illustrates a refillable replaceable magazine, preferably of rigid material such as stamped metal and is made up of top portion 93 which surmounts and is joined to sidewalls 94 and rear wall 95.

The rear wall 95 has a cutaway space 96 adapted to provide room for the operator's finger to engage the lower rear edge of the lowermost item in the rear stack. Inturned at right angles from the front edges of the sidewalls 94 are front flanges 97 surmounted by top border

98, which is downturned from the top portion 93. The lower ends of the front flanges 97 are omitted from the construction to a height slightly greater than the width of one of the articles in the stack so that only the lowermost article in the stack may be withdrawn. This selective action is apparent from the fact that the lower edges of the magazine, that is to say, the lower edges of side walls 94, rest upon the support flanges.

A slight forward curve has been given to the bottom ends of the front flanges 97 to facilitate withdrawal of the rear articles. A suitable aperture 99 is provided at the top of the metal magazine and is adapted to permit dislodgement of any article which has become wedged in the chute. As shown in Figure 14, I may make use of a specially designed paper carton for transporting articles, especially packet matches, for use in the rear chute. The carton is constructed primarily as a rectangular channel having four long sides with folding in tabs or covers for the two ends. The construction just described is of course readily understood by anyone familiar with the art of carton making. However, the novelty of my carton consists in its special size and shape for insertion into my cabinet at the rear of the hingeable front chute and in special preparations at one end of the carton which allow it to have a portion torn off to become a replaceable magazine.

The construction of Figure 14 may be said to consist of front wall 100 and rear wall 101 united to each other by sidewalls 102. Front wall 100 at its lower end carries the cover tab 103 with its foldable tongue 104, the construction being adapted to permit the lower end of the carton to be sealed in a manner well known in the art.

At the lower end of the rear wall 101 there is a cutaway space 105, shown by dotted lines, to permit finger room when the carton is used as a chute. Or space 105 may be latent in the construction by outlining it with perforations in the bottom of rear wall 101. Vertical perforations 106 extend upwardly along the angle formed between the sidewalls 102 and the front wall 100 upon which the cover tab is hinged. These vertical perforations merge into cross perforations 107 which extend from one end of one sidewall inwardly across to the other sidewall. The distance of the cross perforations 107 from the bottom of the carton in the case of a match carton is greater than the height of the stack occupied by a match packet.

Due to the wedge-shape of the match packet the cross perforations 107 can dip in the center as it extends between the upper ends of perforations 106. This pointed shape of cross perforations 107 provides greater parallelism between the perforations and the upper edge of the match packet about to be withdrawn. It will be appreciated that the mid-point of the line of cross perforations 107 is a distance upward from the carton bottom corresponding to a distance slightly greater than that occupied by the mid-point of a match packet.

Either or both ends of the special carton magazine may be perforated and cut away on the side beyond the perforations as has just been described. In order to use the carton as a magazine, it is only necessary to tear away the cover tab 103, together with its tongue 104. Then the magazine is ready to use.

A third modification of my invention, shown in Figures 15 through 18, comprises a gang of metal front chutes suitably hinged to a frame for holding them in dispensing position. The front chutes have their flanks 108, rear walls 109, tops 110, and their inturned support flanges 111 preferably formed from a single piece of material. U-shaped bends 112 formed between adjacent flanks 108 bridge the space between those flanks to permit any desired separation of front stacks.

There are outturned border strips 113 formed on the front ends of the outermost flanks. These outturned border strips 113 have attached to them the single guard bar 114, which has suitable bends 115 at its ends for offsetting it from the flanks 108. The bar 114 is positioned at a height on the gang of front chutes adapted to restrain forward movement of the next to bottom article in the front chutes.

Integrally formed with the tops 110 are the hinge loops 116 which are adapted to cooperate with similar hinge loops 83 formed in or attached to a frame such as headpiece 76.

Suitably attached to the outer edges of the back walls as by bolting, are the bottom sockets adapted to hold replaceable magazines of rear stack articles. Each socket consists of two attachment bands 117, and extension flanks 118 extending rearward from them at right angles and carrying at the rearward end of the extension flanks the back pieces 119 inturned at right angles from the extension flanks. Inturned from the bottom edges of the extension flanks 118 are rear support flanges 120. Extension flanks 118 extend downwardly at a slight angle from the attachment bands 117 to insure that the rear support flanges 120 extend along a lower plane than the plane of the front support flanges 111. This permits a replaceable magazine to rest with its lower end at a suitable distance below the front support flanges 111.

A clasp is preferably struck from the upper rear wall 109 of each front chute and comprises a downwardly extending tongue 121 carried by outturned base portion 122. Tongue 121 extends for a distance such that the distance between the tongue 121 and back piece 119 is less than the height of the carton. The clasps and the bottom sockets cooperate in holding a replaceable magazine in position as a rear chute as shown by the dot-dash lines of Figure 18.

Tongue 121 is adapted to fit just inside the front wall of a replaceable magazine such as has been shown in Figures 13 and 14, already described. Suitable slits for engaging the tongues 121 are provided in the top 93 of the metal magazine shown in Figure 13. In the paper carton magazine of Figure 14 the tongues 121 fit between the upper cover tab and the front wall.

In order to load the replaceable carton magazine into position behind the front chute, it is only necessary to raise the front chute into substantially horizontal position and then to hook what is to be the upper end of the magazine on the tongues 121. Then the magazine may be slid toward the top of the front chute sufficiently far to enable what is to be the lower end of the magazine to move upward over the back pieces 119 and into position in the socket. Then the magazine is slid lengthwise against the rear support flanges 120 and the gang of front chutes is ready to pivot back into position for operation.

It will thus be seen that I have provided a bottom-dispensing, top-loading chute which will greatly reduce noise and manual effort associ-

ated with its operation and which will reduce the chances for unequal shelf age, even for the display can.

Also, I have provided a dispensing chute that is open at the front for a better display of articles, yet which is not disturbed by withdrawal of the ready article because of a guard bar across the next to lowest article. As a matter of fact the jostling action on the entire stack induced by the sudden fall of the remaining packages when the bottommost package is removed produces an alignment of the stack against the rear wall of the chute.

Also, I have provided a bottom-dispensing cabinet that will permit the operator to withdraw articles from one or both of two stacks with a single forward motion of his hand.

Also, I have provided replaceable magazines for the articles, some of which are convertible from the cartons used to transport the articles.

Also, I have provided several efficient, inexpensive constructions for the dispensing cabinets while allowing ease and speed of individual or magazine refill.

It should be understood that the present disclosure is illustrative and that my invention includes all modifications that fall within the spirit of my invention and the scope of the accompanying claims.

I claim:

1. In a dispensing cabinet adapted to dispense items manually from a plurality of chutes aligned in front to rear relationship with each other, a rear chute having supporting elements adapted to support a stack of articles by the front-to-rear borders of the bottom surface of the lowermost article, said rear chute providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost article and urge it forward out of the chute, means to prevent forward movement of an article unless it is in the lowermost position in the stack, a front chute having support pieces adapted to support a stack of units by the front-to-rear borders of the bottom surface of the lowermost units, said front chute providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost unit and urge it forward out of the chute, means to prevent forward movement of the next to lowermost unit, said front chute being aligned in front to rear relationship with the rear chute, said front chute having the lower back edges of its support pieces positioned at a height above the upper front edges of the support elements of the rear chute.

2. A dispensing cabinet adapted to dispense articles manually from the bottom, comprising a chute having supporting elements adapted to support a stack of articles by the front-to-rear borders of the bottom surface of the lowermost article, said chute providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost article and urge it forwardly out of the chute, there being a finger channel between said supporting elements sufficient to accommodate said finger while moving from rear to front between said supporting elements, said chute providing an open front with a cross bar adapted to restrain forward movement of the next to lowermost article in the stack, whereby loading may be made through the front of the chute at any level above said cross bar and whereby the entire front surface of substantially all articles in the stack will be given an unhindered display, said cross bar having offset supporting means to cause its rear surface to be forward of the remainder of the chute, whereby articles may protrude forwardly from the remainder of the chute, and means adapted to support the chute in a tilted position with the top of the chute inclined rearwardly, whereby articles in the stack will tend to align themselves against the rear part of the chute.

3. In a dispensing cabinet adapted to dispense items manually from a plurality of chutes aligned in front to rear relationship with each other, a front chute having support pieces adapted to support a stack of units by the front-to-rear borders of the bottom surface of the lowermost units, said front chute providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost unit and urge it forward out of the chute, means to prevent forward movement of the next to lowermost unit, means at the lower rear portion of the front chute for supporting and holding in place the bottom of a replaceable magazine, means at the upper rear portion of the front chute for holding in place the same replaceable magazine, supporting elements carried at the lower rear portion of the front chute adapted to support a stack of articles in said replaceable magazine by the front to rear borders of the bottom surface of the lowermost article, whereby a rear chute is formed in front to rear alignment with the front chute, said supporting elements providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost article and urge it forward out of the chute, means to prevent forward movement of an article unless it is in the lowermost position in the stack, said front chute having the lower back edges of its support pieces positioned at a height above the upper front edges of the support elements of the rear chute.

4. A dispensing cabinet adapted to dispense items from more than one bank of chutes having a front bank of chutes, each of said chutes having support pieces adapted to support a stack of units by the front-to-rear borders of the bottom surface of the lowermost units, each of said chutes providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost unit and urge it forward out of the chute, means to prevent forward movement of the next to lowermost unit, said cabinet also having a rear bank of chutes, each of said rear chutes having supporting elements adapted to support a stack of articles by the front-to-rear borders of the bottom surface of the lowermost article, said rear chute providing a space adapted to allow the finger of the operator to contact the under surface of the lowermost article and urge it forward, said front chutes being aligned in front-to-rear relationship with said rear chutes, said rear bank of chutes being formed in permanent side-by-side assembly and providing a support means for releasably holding said front bank of chutes in dispensing position with corresponding front and rear chutes aligned in front-to-rear relationship, said front bank of chutes having its chutes formed in permanent side-by-side assembly.

5. A dispensing cabinet adapted to dispense items from more than one bank of chutes having a front bank of chutes, each of said chutes having support pieces adapted to support a stack of units by the front-to-rear borders of the bottom

surface of the lowermost units, each of said chutes providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost unit and urge it forward out of the chute, means to prevent forward movement of the next to lowermost unit, said cabinet also having a rear bank of chutes, each of said rear chutes having supporting elements adapted to support a stack of articles by the front-to-rear borders of the bottom surface of the lowermost article, said rear chute providing a space adapted to allow the finger of the operator to contact the under surface of the lowermost article and urge it forward, said front chutes being aligned in front-to-rear relationship with said rear chutes, said rear bank of chutes being formed in permanent side-by-side assembly and providing a support means for releasably holding said front bank of chutes in dispensing position with corresponding front and rear chutes aligned in front-to-rear relationship, said front bank of chutes having its chutes formed in permanent side-by-side assembly, said front bank of chutes being hingeably supported at its upper forward edge by said support means.

6. A dispensing cabinet adapted to dispense items from more than one bank of chutes having a front bank of chutes, each of said chutes having support pieces adapted to support a stack of units by the front-to-rear borders of the bottom surface of the lowermost units, each of said chutes providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost unit and urge it forward out of the chute, means to prevent forward movement of the next lowermost unit, said cabinet also having a rear bank of chutes, each of said rear chutes having supporting elements adapted to support a stack of articles by the front-to-rear borders of the bottom surface of the lowermost article, said rear chute providing a space adapted to allow the finger of the operator to contact the under surface of the lowermost article and urge it forward, said front chutes being aligned in front-to-rear relationship with said rear chutes, said rear bank of chutes being formed in permanent side-by-side assembly and providing a support means for releasably holding said front bank of chutes in dispensing position with corresponding front and rear chutes aligned in front-to-rear relationship, each of said front chutes being movable as a unit away from the rear chute behind it.

7. A dispensing cabinet adapted to dispense items from more than one bank of chutes having a front bank of chutes, each of said chutes having support pieces adapted to support a stack of units by the front-to-rear borders of the bottom surface of the lowermost units, each of said chutes providing a space adapted to allow the finger of the operator to contact the bottom rear edge of the lowermost unit and urge it forward out of the chute, means to prevent forward movement of the next to lowermost unit, said cabinet also having a rear bank of chutes, each of said rear chutes having supporting elements adapted to support a stack of articles by thet front-to-rear borders of the bottom surface of the lowermost article, said rear chute providing a space adapted to allow the finger of the operator to contact the under surface of the lowermost article and urge it forward, said front chutes being aligned in front-to-rear relationship with said rear chutes, said rear bank of chutes being formed in permanent side-by-side assembly and providing a support means for releasably holding said front bank of chutes in dispensing position with corresponding front and rear chutes aligned in front-to-rear relationship, each of said front chutes being movable as a unit away from the rear chute behind it, each of said front chutes being hingeably supported at its upper forward edge by said support means.

JOHN V. CASTEEN.