

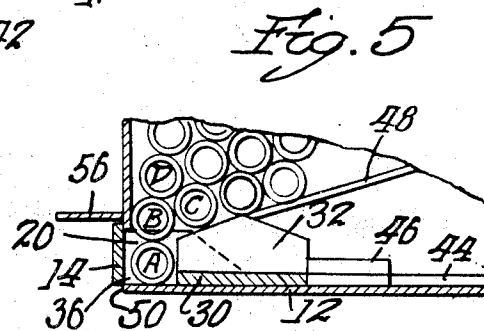
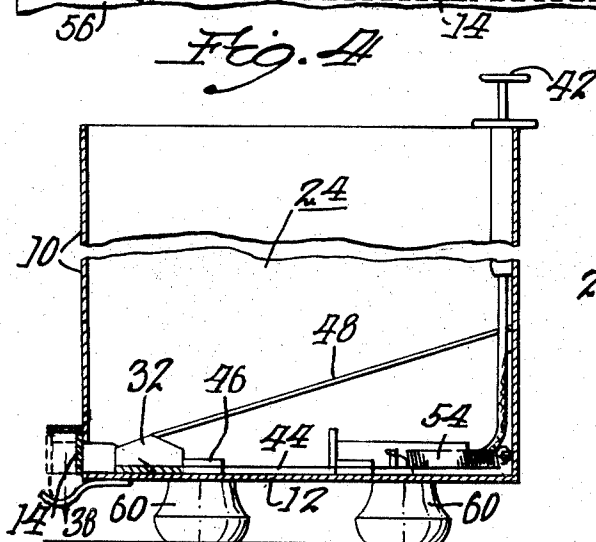
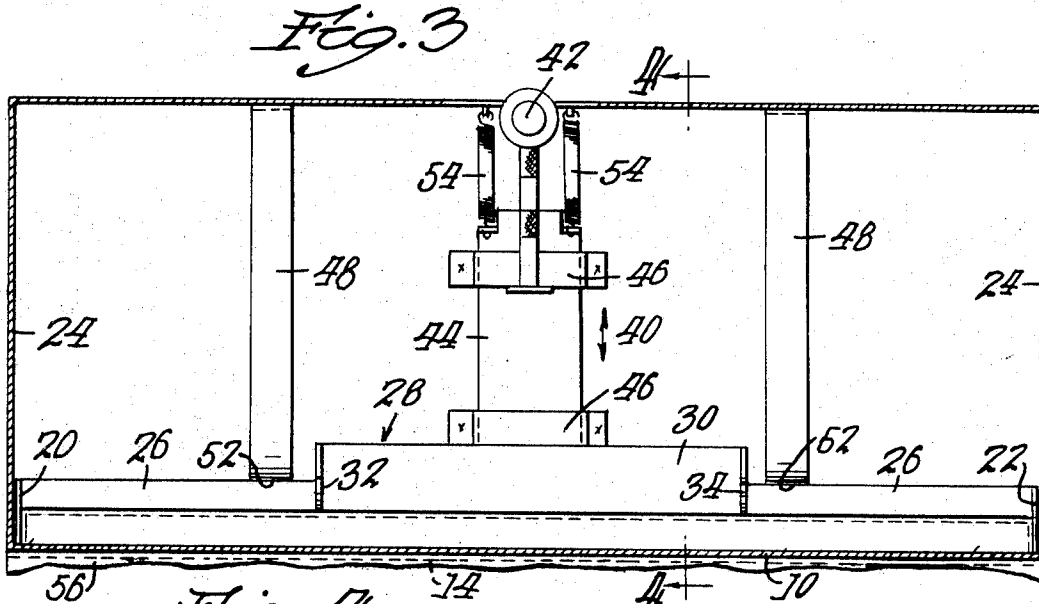
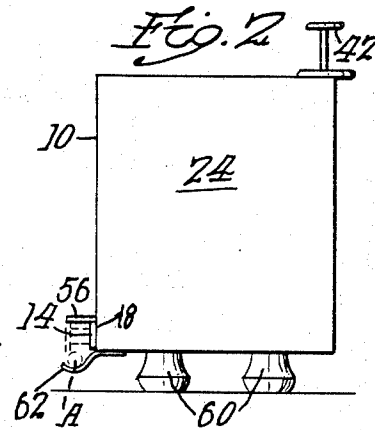
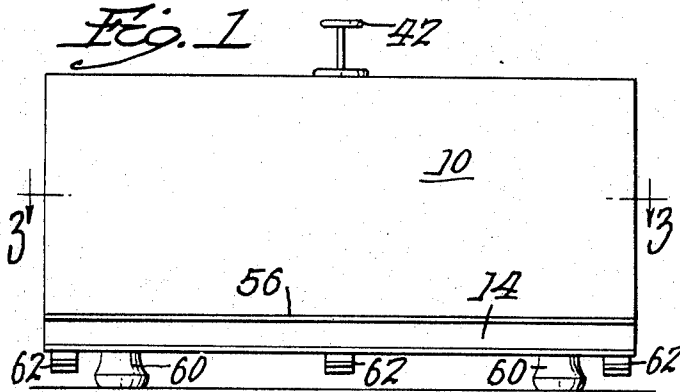
Oct. 14, 1969

A. H. BALLER
DISPENSER HAVING AN EJECTOR FOR DISPENSING
ARTICLES ONE BY ONE

3,472,421

Filed Oct. 18, 1967

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

Fig. 6

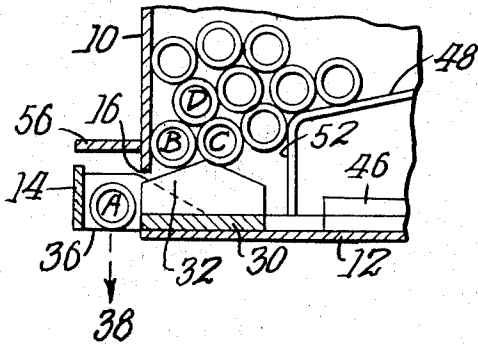


Fig. 7

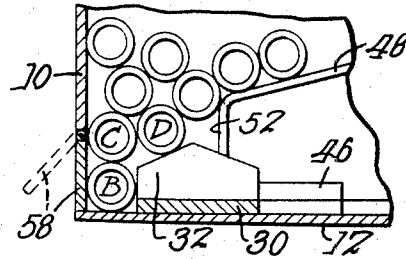


Fig. 8

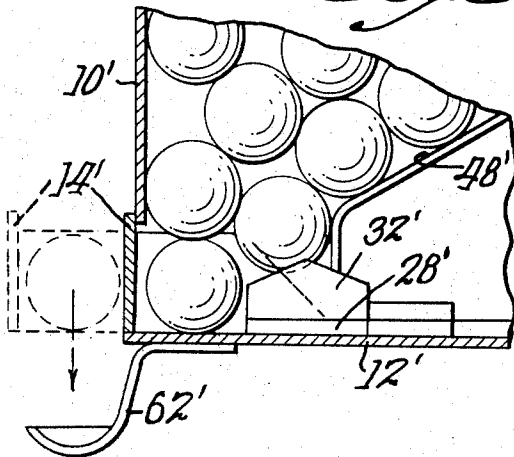


Fig. 11

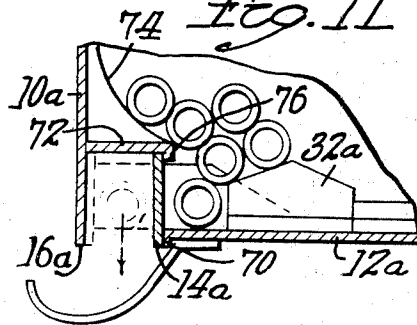
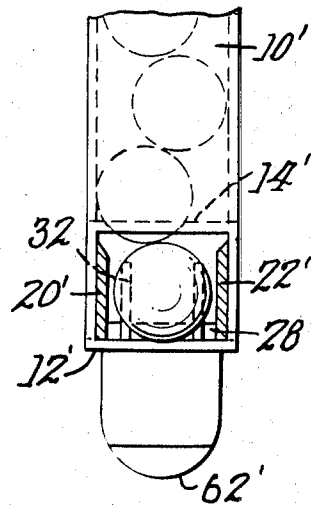
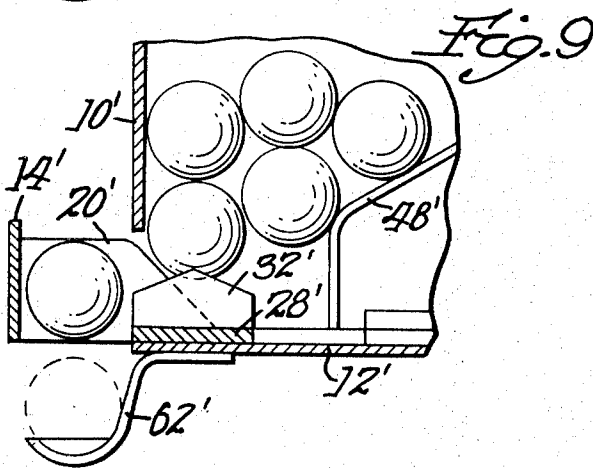


Fig. 10



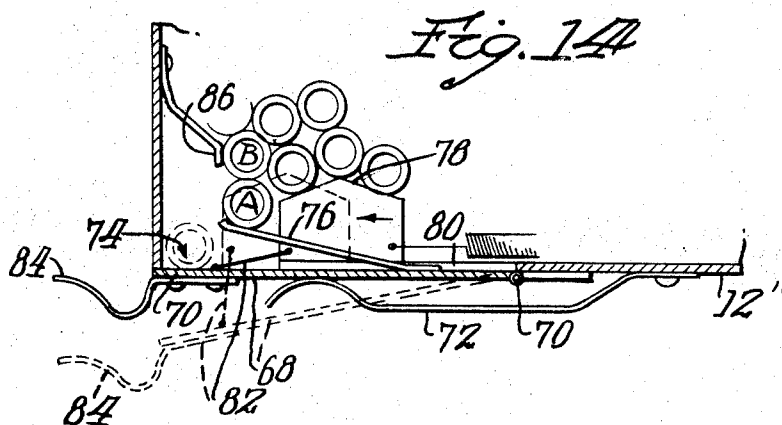
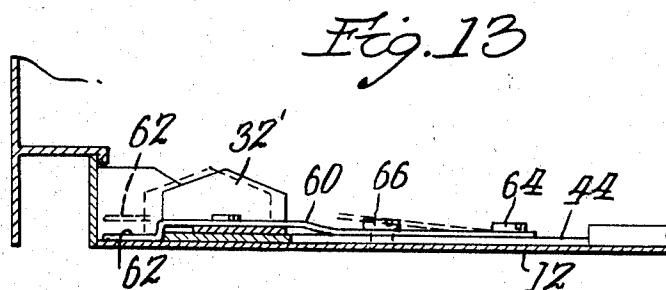
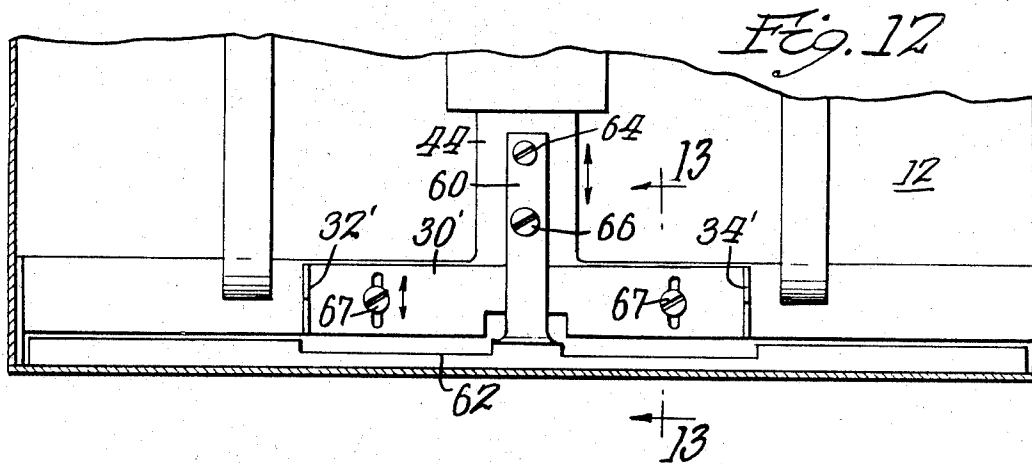
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Filed Oct. 18, 1967

4 Sheets-Sheet 3



Oct. 14, 1969

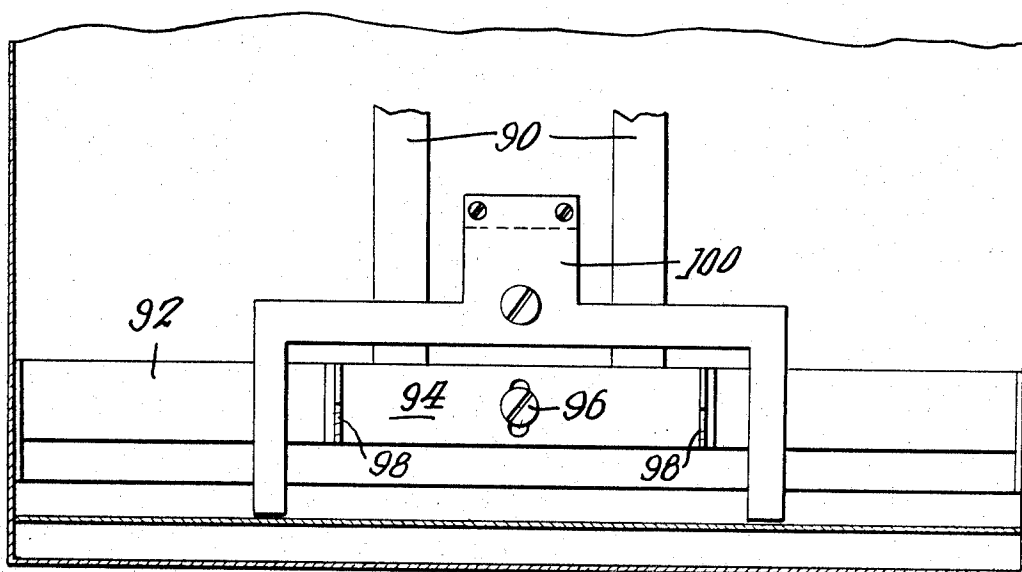
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3,472,421

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4 Sheets-Sheet 4

Fig. 15



1

2

3,472,421

DISPENSER HAVING AN EJECTOR FOR DISPENSING ARTICLES ONE BY ONE

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12 Claims

ABSTRACT OF THE DISCLOSURE

A dispenser for articles comprising a housing which has an opening therein adjacent the bottom thereof for the one-by-one ejection of the articles, there being an article ejector in the housing mounted on the floor and having means for moving it from a normal position spaced from the opening sufficient for the accommodation of a single article therein to a position adjacent the opening where said article is moved outwardly, the ejector being provided with a pair of transverse upstanding ear-like devices which extend from a minimum adjacent the leading edge of the ejector rearwardly away from the opening to a maximum and then down again, said ear-like members providing a dividing means for a pile of similar articles in the housing and insuring that all but the single article to be ejected are raised and moved in a direction to divide them from said article being ejected.

This invention relates to a dispenser for elongated generally cylindrical and similar articles. While particularly adapted for soda straws, other articles may be dispensed by the apparatus described herein.

In the present invention, there is provided a housing having an opening adjacent the bottom along a side for the exit of the articles one by one, and in the box mounted on the floor there is an article dispensing pusher element which has the function of dividing a single article from a pile of articles in the housing, and expelling the same through the opening, said device being movable under the manual control of an operator, or actuated by power means such as a solenoid or the like.

The essential characteristic of the present invention resides in the fact that the movable article dispensing element within the container is provided with means for simultaneously dividing the remainder of the pile of objects from the one being ejected so that only one is ejected at a time.

Other objects an advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which:

FIG. 1 is a view in front elevation illustrating the device;

FIG. 2 is a view in side elevation thereof;

FIG. 3 is a section on line 3—3 of FIG. 1;

FIG. 4 is a section on line 4—4 of FIG. 1;

FIGS. 5 and 6 are diagrams illustrating the action of the dispenser;

FIG. 7 shows a modification;

FIGS. 8, 9 and 10 are views on an enlarged scale illustrating a modification to dispense circular or oval articles;

FIG. 11 is a view showing a modification of the drawer construction;

FIG. 12 is a plan view illustrating a modified form of the invention showing an adjustment;

FIG. 13 is a section on line 13—13 of FIG. 12;

FIG. 14 is a view in transverse section illustrating a further modification of the invention, and

FIG. 15 is a plan view of a modified ejector.

In carrying out the present invention, there is provided an enclosure. This enclosure can be of any nature described but it has a front wall 10, a bottom wall 12, and such other walls as are necessary to provide for a complete enclosure. It may have any kind of cover desired or it may be of a throw-away type made of plastic or cardboard.

The box is provided with a front opening closed by a door or the like 14. This opening is best shown in FIG. 6 where the front wall 10 terminates at its lower end in a free-ended edge 16. The door 14 may just close its opening 16 or may overlap the same as is indicated at 18 in FIG. 2.

The door 14 forms a front forward element of a drawer type of device including end walls 20, 22 which may be provided to slide against the interior walls 24, 24, see FIG. 3. There are struts or supports 26, 26 which are integral with the end walls 20 and 22 and extend inwardly from the ends as shown in FIG. 3, being connected to the ejector device indicated at 28.

This ejector device comprises a flat plate 30 having at its end portions a pair of upstanding ears 32, 34, these ears being exactly alike rising from the plate 30 in a kind of peaked roof construction. These are separated from the door 14 a sufficient distance for the reception of an article A, see FIGS. 5 and 6, so that when a pile of the articles is in the enclosure, an article A will necessarily assume the position of the article A in FIG. 5. That is, between the front edges of the ears 32, 34, and the door 14.

Between the door 14 and the front edges of the ears 32 and 34, there is a bottom opening 36 through which the articles will drop in the direction of the arrow 38 in FIG. 6, see also the dotted line positioning of articles A in FIG. 2.

The plate 30 is provided with some means for moving it in the direction of the arrows 40 in FIG. 3 as for instance by a thumb button or the like 42 which may be connected with respect to the plate 30 by any interconnecting means, such as the plate seen at 44 in FIG. 3 guided by straps or the like 46 secured to the bottom 12 of the container. There may also be a couple of inclined supporting arms 48, 48 for the articles to tend to move them down into the left as shown in FIG. 4 for instance.

When the button 42 or similar means is pushed downwardly, it will cause through a flexible connection plate 44 and 30 to move to the left, compare FIGS. 5 and 6. The plate 30 is integral with the front wall or door 14 and the end pieces 20 and 22 and therefore this acts as a kind of a drawer which is extended outwardly sufficiently in front of front wall 10 to cause the openings at 36 to clear the front edge of the floor 12 which is indicated at 50 in FIGS. 5 and 6. Thus article A is caused to be pushed forwardly by the ears 32, 34 and when the edge 50 of the floor member 12 is cleared, the article A will drop.

This being the case as shown in FIG. 6, but a single article A can drop out through the opening 36 of the construction recited. Article B is moved upwardly and article C (and other articles) are moved to the rear. However when the drawer 14 returns to the closed position thereof, article B will of course immediately drop into the position of article A, the previous position of article A, and article C moves to the former position of article B.

The retractor stroke can be accomplished in any way desired as for instance by retraction springs 54, etc., and a canopy 56 may be utilized to protect the drawer construction so that nothing can fall into it or be placed into it when it is in the open position as shown in FIG. 6. Of course when the button 42 is pushed down, and released, the article A is released and the drawer construction and ear construction will immediately return to original position under influence of the retraction springs 54.

By this means but a single article A will be dispensed at each actuation of the apparatus. The device will accept many different sizes of articles and the dimensions of the parts is not critical. The article A can be smaller than shown in FIGS. 5 and 6 and also can be a little larger.

The drawer construction is not necessary but is preferred. The door could also be merely pivoted as shown in FIG. 7 and the ears 32, 32 could be separate therefrom. In this case the article A would be pushed to the left as in FIG. 7 when the device is actuated, causing the pivoted door 58 to open. In this case, door 58 and ears 32, 34 are completely separate.

Feet 60 may be attached to bottom wall 12 and members 62 may also be attached to bottom 12 to receive the articles A.

In order to accommodate spherical or oval articles it is merely necessary to shorten the device considerably and in this case it would be preferable to increase its height to some extent. This is illustrated in FIGS. 8, 9 and 10. The construction is generally the same but it will be seen that the container has been greatly narrowed, see FIG. 10. Also, the appropriate numerals have been retained using primes. For instance, the front wall of the container is indicated at 10' and the front portion of the drawer at 14', the same having side walls 20' and 22' and the ejector being indicated at 28' and having the ears 32' and 34' as shown.

The operation of this device is the same as previously described but a single article being received in front of the ejector and behind the wall 14', the same being dropped onto the receiver 62' when the drawer is pulled forwardly as indicated in dotted lines in FIG. 8 and solid lines in FIG. 9. By changing the sizes of the parts, two or more articles may be ejected at each operation.

Referring now to FIG. 11, a slightly different construction is provided with respect to the front wall and the drawer. In this case the front wall 10a extends down to the lowermost portion of the container which is indicated a 16a. The front wall of the drawer a 14a is always concealed. The closed position of the drawer is indicated in solid lines in FIG. 11, and in the open and dispensing position it is shown dotted. It will be seen therefore that the drawer portion 14a is always concealed and fully housed within the container. The bottom 12a has a forward lip at 70 and there is a shelf 72 within the container with a curved baffle or the like 74 keeping the articles out of this area, the shelf 72 having a downwardly turned lip 76 so that the drawer both at the top and the bottom thereof overlaps and seals off against the lips 70 and 76. The upstanding ears 32 and 34 are the same as before, as indicated at 32a and the action is the same, the article receiving member and drawer actuator being indicated at 62a.

In the illustration in FIGS. 12 and 13, most of the apparatus is the same as previously described but in this case a T-shaped plate having a leg 60 secured to the slide 44 is provided with a T cross head 62. It may be fastened as at 64 and it has an adjusting screw at 66. This member is of spring material and tends to move upwardly, being held down by the head of the fastener 66. Normally the fastener 66 will hold the member 60 down to such a degree that it does not interfere with the operation of the device as shown in FIGS. 5, 6 and 7, but if it should be desired to reduce the area in front of ears 32' and 34' so as to accept only small articles, the fastener is backed off so that the T-head 62 will rise as is indicated in FIG. 13.

Also the entire drawer assembly, plate 30' of which underlies leg 60, can be adjusted forwardly and rearwardly to some extent as is indicated in dotted lines in FIG. 13, by means of a slot and fastener in plate 30', as at 67, so it will be seen that the area for acceptance of a single article may be considerably changed. The adjustment of the drawer assembly would be done by adjusting the entire unit.

In FIG. 14 there is shown a modification in which the action is somewhat different. In this case there is a floor

part 68 hinged at 70 to the floor 12'. There is a spring 72 normally maintaining floor part 68 in the upward position thereof closing the ejection port which is in the area at 74. The floor part 68 has an inclined baffle or the like 76, there preferably being a pair of these in spaced relationship upon which the article A rests. Ears 78, somewhat like those at 32, are mounted on a horizontally movable platform or the like 80 on floor 12' and these ears are connected by a plate not shown but in the manner of ears 32 and 34 on plate 30 in FIG. 3. There is also a cord 82 connected to the floor part 68 and the ears 78 so that when floor part 68 is moved downwardly in a clockwise direction by means of fingerpiece and article catcher 84, as shown in dotted lines, cord 82 causes the entire assembly of the ears 78 and plate 80 to move forwardly in much the same action as is shown in FIGS. 6 and 7 in order to divide the pile of articles from the exit port at 74, aided by the barriers 86. A spring 88 may be used to return the plate 80 and ears 78 to normal retracted position.

FIG. 16 shows a form of device that can be electrically actuated as by a solenoid. Arms 90 of T-head plate 92 are to be connected to the solenoid not shown, and plate 94 is adjustably mounted on plate 92 by screw and slot 96. The ears 98, equivalent to those at 32, 34, are on plate 94 for the same purpose, and a branched spring member 100 is here utilized, this being the equivalent of the height adjustment member 60, FIGS. 12 and 13.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A dispenser for relatively elongated discrete articles comprising a housing in which the articles may be assembled in a generally parallel piled-up relation, a substantially fixed floor for the housing, a front wall, an elongated opening in the front wall adjacent the floor for the exit of the articles in the housing,

an article ejector arranged generally parallel to the opening and to the front wall of the housing, means to move said ejector toward the opening, resilient means normally maintaining said ejector in spaced relation with respect to said opening and said front wall to a degree sufficient for the reception of one of the elongated articles so that when the ejector is moved toward the opening it will cause the article located between the same and the front wall to move through the opening to be ejected,

a pair of upstanding members on said ejector, said members being arranged generally normal to the opening and to the articles, said members having generally parallel edges which rise from a minimum adjacent the forward edges thereof to an intermediate maximum, the remainder of the articles not ejected being moved upwardly and to the rear thereby as the ejector is moved toward the opening, disassociating other articles in the enclosure from the one located in front of the ejector, whereby the latter is ejected and the others are retained in the enclosure.

2. The dispenser recited in claim 1 wherein said upstanding members extend from the maximum intermediate ends thereof to a lesser degree in a direction away from said opening.

3. The dispenser recited in claim 1 including article retention means adjacent the members, preventing the articles from being positioned on the floor behind the members relative to the opening.

4. The dispenser recited in claim 1 wherein said upstanding members extend from the maximum intermediate ends thereof to a lesser degree in a direction away from said opening and including article retention means adjacent the portions of the upstanding members which are of lesser degree.

5. The dispenser recited in claim 1 including a door comprising a drawer attached to said ejector, the drawer having an opening in the bottom thereof for the dis-

5

charge of an article therethrough in a downward direction when said ejector together with said drawer are urged forwardly, to a position wherein said opening in the bottom of the drawer clears the opening in the front wall of the housing.

6. The dispenser recited in claim 1 including a door mounted to pivot on an axis above the opening.

7. The dispenser recited in claim 1 including a door for the opening and an outstanding canopy directly over the door to protect the door as it opens.

8. The dispenser recited in claim 1 wherein the means to move the ejector is manual and extends outwardly of said enclosure to be actuated from the exterior thereof.

9. The dispenser recited in claim 1 wherein the front wall of the housing is continuous to the bottom of the housing and the ejector is located behind the lowermost portion thereof, being concealed from the front of the housing, and including means on the ejector extending forwardly of the front wall for manual manipulation thereof in a reciprocatory manner.

10. The dispenser recited in claim 1 including means for varying the size of the area in front of the ejector and receiving the article to be ejected.

6

11. The dispenser recited in claim 1 including means for varying the size of the area in front of the ejector and receiving the article to be ejected, said means including a strip extending forwardly across a portion of the ejector into the area in front of the ejector.

12. The dispenser of claim 1 wherein said opening is normally closed by a pivoted floor part forming a door for said elongated opening, and means normally holding said door in closed position with respect to said opening, and interengaging means between said door and said ejector for moving the latter by the former.

References Cited

UNITED STATES PATENTS

703,138	6/1902	Knowlton	-----	221—196	X
1,262,055	4/1918	Johnson	-----	221—196	
1,843,233	2/1932	Kaiser	-----	221—202	
2,435,793	2/1948	Mielke	-----	221—202	

20 STANLEY H. TOLLBERG, Primary Examiner

U.S. Cl. X.R.

221—202