

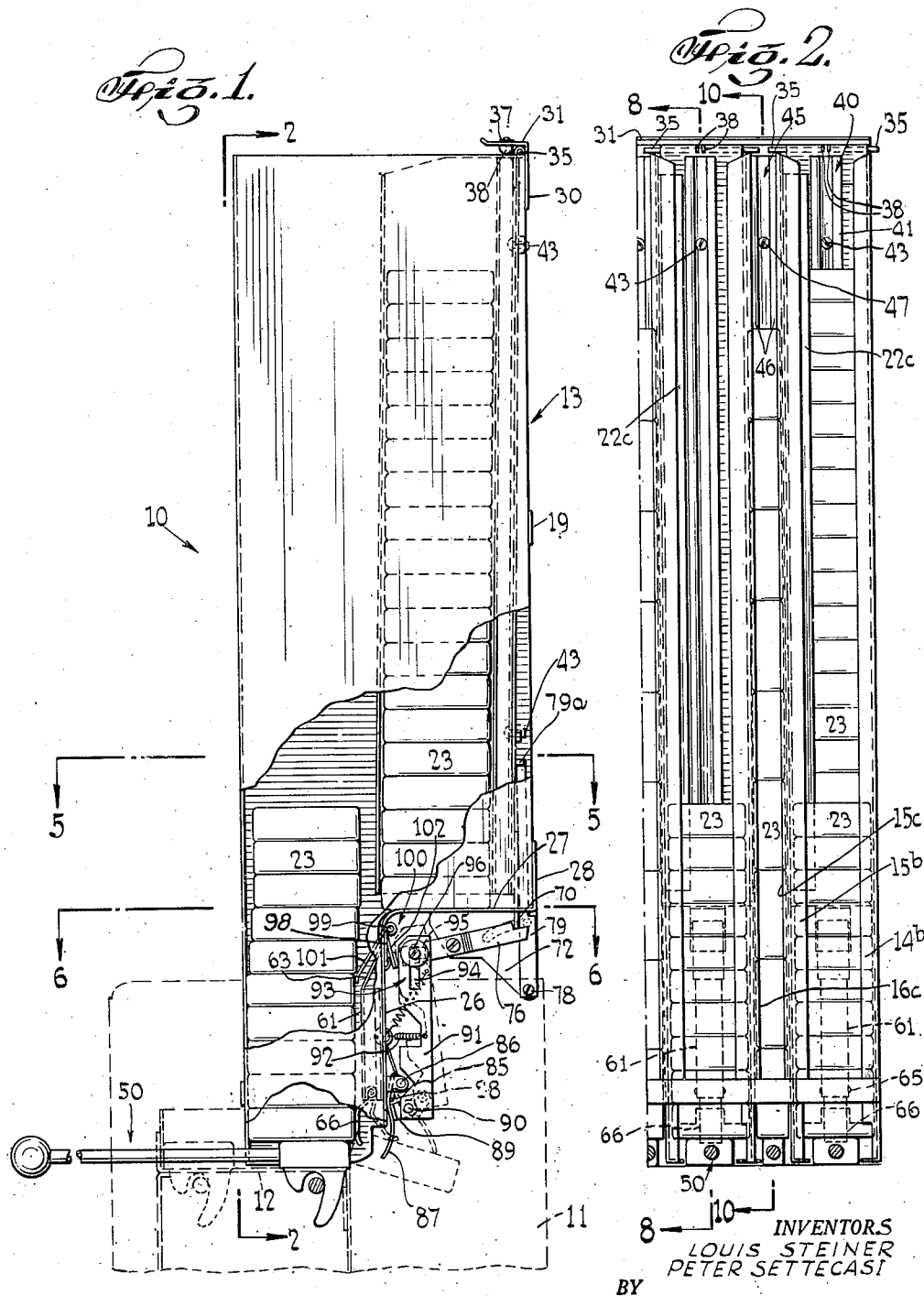
July 3, 1945.

L. STEINER ET AL
ARTICLE DISPENSING DEVICE

2,379,501

Filed Dec. 11, 1941

5 Sheets-Sheet 1



INVENTORS
LOUIS STEINER
PETER SETTECASI
BY

J. B. Felsch
ATTORNEY

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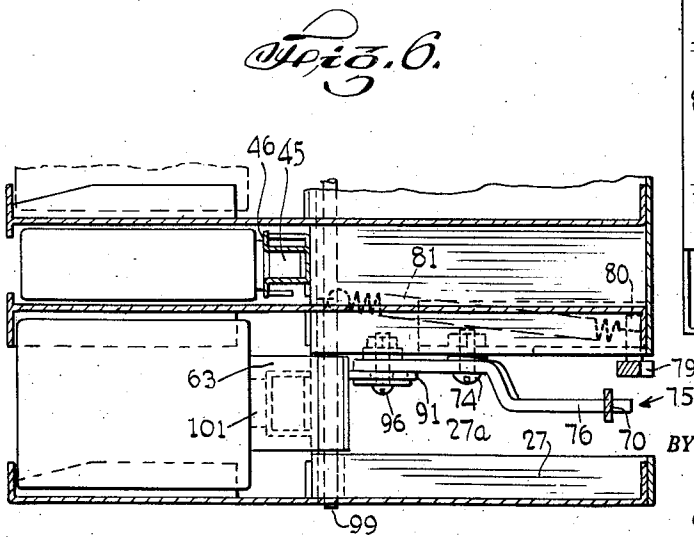
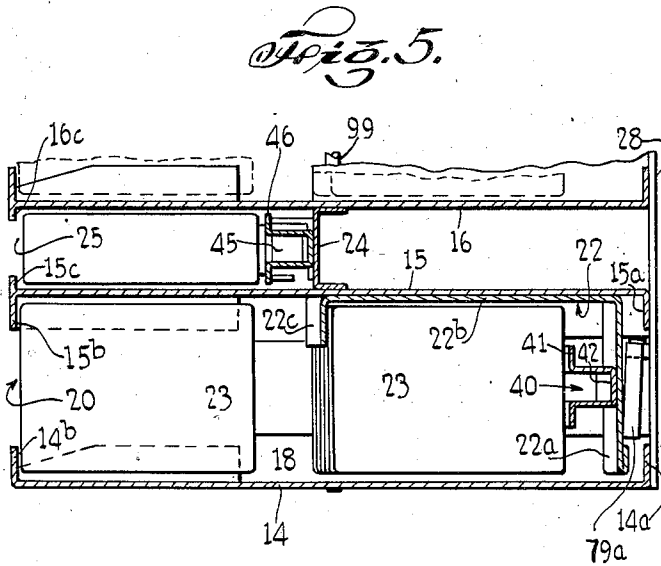
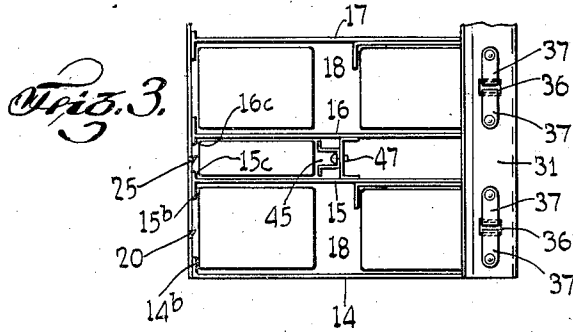
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ARTICLE DISPENSING DEVICE

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5 Sheets-Sheet 2



INVENTORS
LOUIS STEINER
PETER SETTECASI

BY

J. B. Felslin
ATTORNEY

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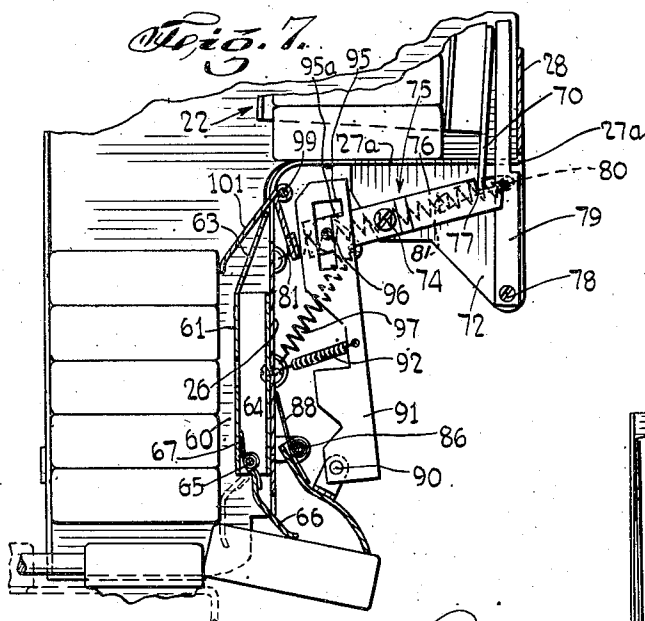


Fig. 12.

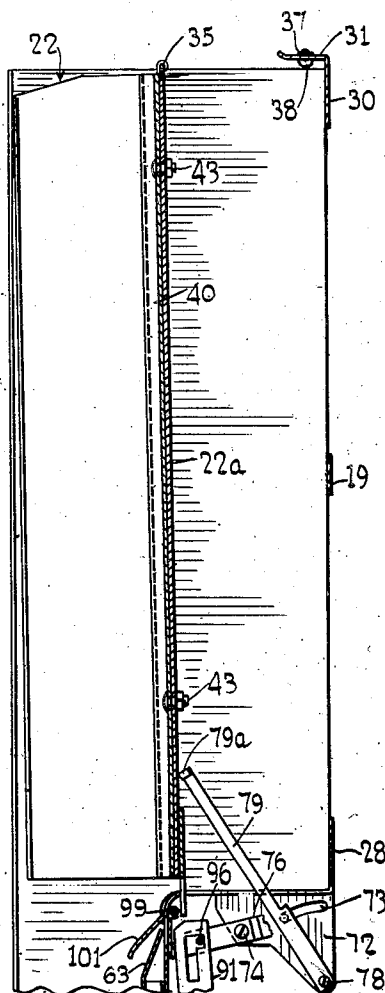
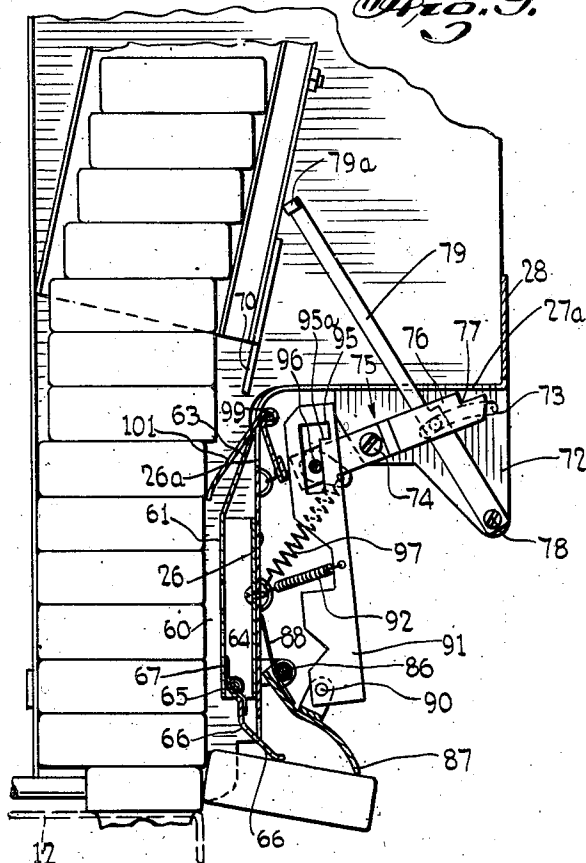


Fig. 9.



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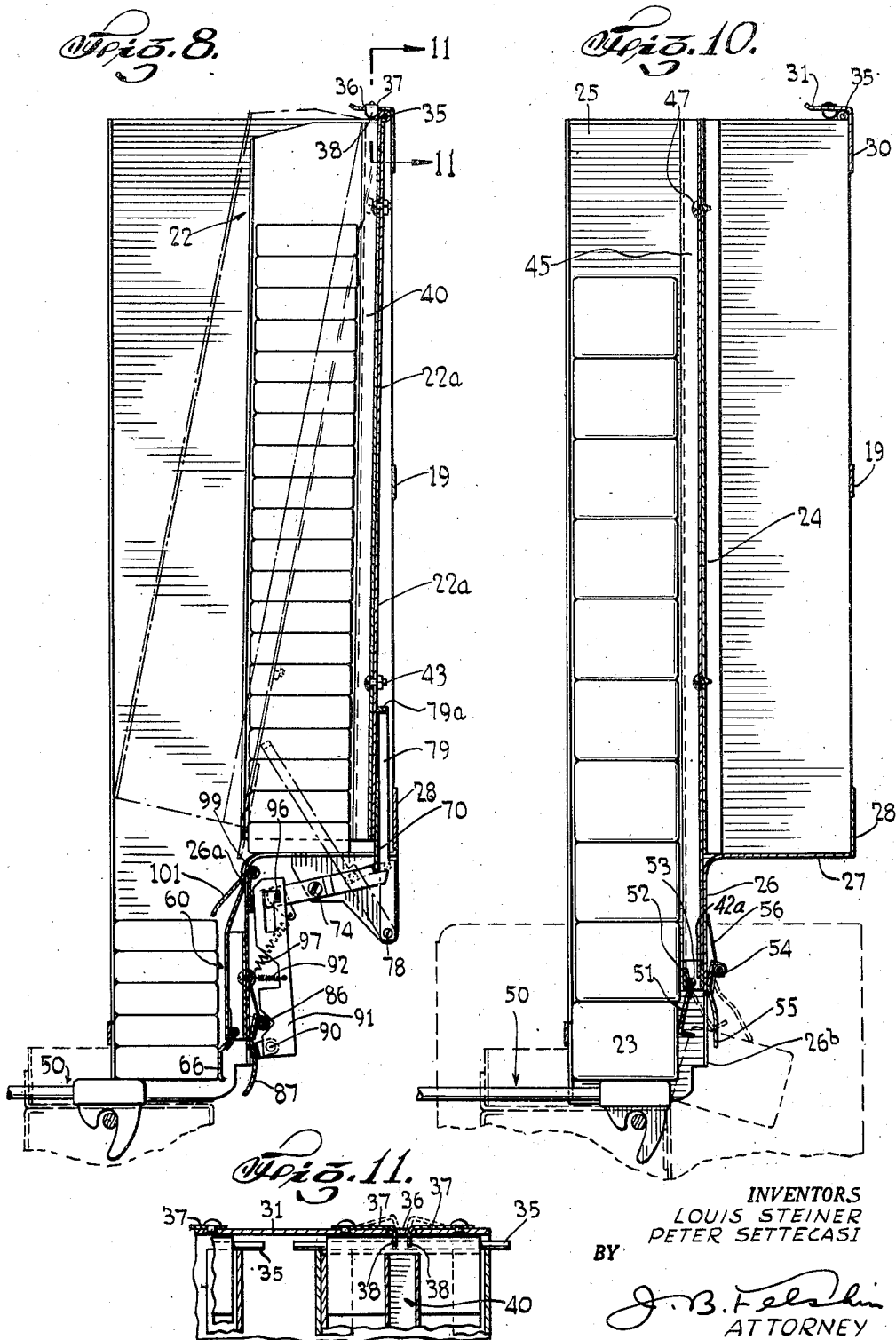
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Filed Dec. 11, 1941

5 Sheets-Sheet 4



July 3, 1945.

L. STEINER ET AL

2,379,501

ARTICLE DISPENSING DEVICE

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5 Sheets-Sheet 5

Fig. 13.

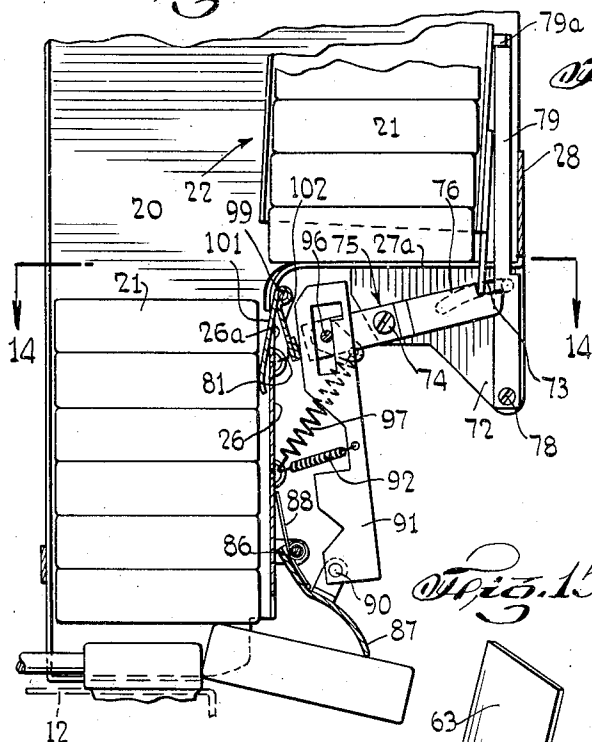


Fig. 16.

Fig. 17.

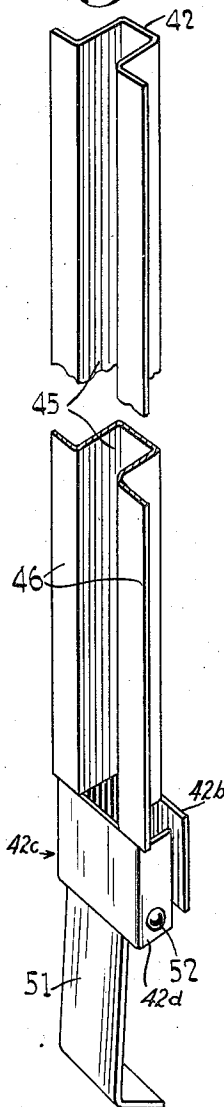
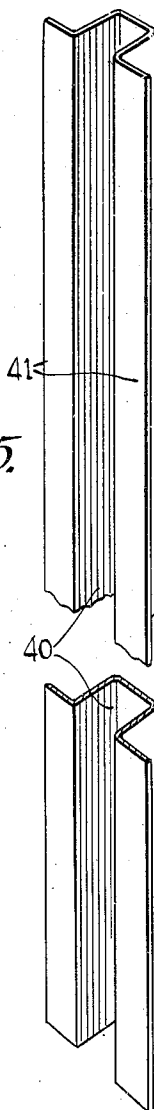
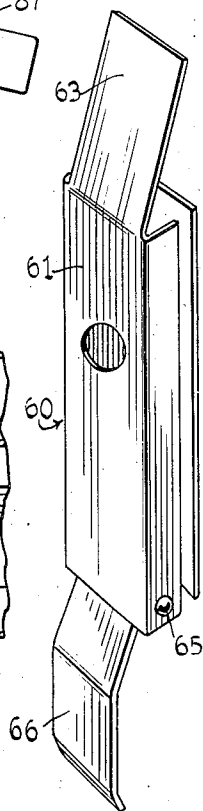


Fig. 15.



UNITED STATES PATENT OFFICE

2,379,501

ARTICLE DISPENSING DEVICE

Louis Steiner, New York, and Peter Settecasi,
Brooklyn, N. Y., assignors, by mesne assignments,
to Assets Realization Co.

Application December 11, 1941, Serial No. 422,538

7 Claims. (Cl. 312—67)

This invention relates to article dispensing devices. It is particularly directed to a device for dispensing or vending packages of cigarettes and the like articles.

An object of this invention is to provide in a device of the character described, a main chute adapted to hold a column of articles, and an auxiliary chute adapted to hold a reserve stack of articles, and highly improved means, controlled by ejection of articles from the lower end of the main chute, to swing the auxiliary chute into the main chute, when the column in the main chute has been depleted down to a predetermined level.

A further object of this invention is to provide a machine of the character described, adapted to dispense cigarette packages of either the king size or regular size. In such devices, the chutes are of a depth sufficient to accommodate the king size package of cigarettes, removable means being provided to reduce the depth to accommodate cigarette packages of normal or regular length.

It is a further object of this invention to provide a machine of the character described, having means to prevent the lowermost package from being jogged or vibrated or loosened out of the chute when the machine is loaded with regular sized cigarette packages, which are of a length less than the depth of the chute.

Due to the need for saving in material, the auxiliary chute comprises only a back wall and one side wall, the usual opposite side wall being eliminated, and resilient means being provided to swing the auxiliary chute forwardly when the cigarettes in the main chute are exhausted to a predetermined extent, said resilient means being so arranged as to retain the auxiliary chute against twisting, and in its plane of movement.

Yet a further object of this invention is to provide in a machine of the character described, a removable auxiliary chute, and an improved releasable latch to retain the auxiliary chute in operative position.

Yet a further object of this invention is to provide a strong and durable device of the character described, which shall be relatively inexpensive to manufacture, smooth and positive in operation, and practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a side elevational view of the device

embodying the invention, with parts broken away and in cross-section;

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a top plan view of the structure shown in Fig. 2;

Fig. 4 is a partial rear elevational view of the structure shown in Fig. 1;

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 1;

Fig. 6 is a cross-sectional view taken on line 6—6 of Fig. 1;

Fig. 7 is a side elevational view of the lower end of a device shown in Fig. 1, and showing the position of the parts when a package in the main chute is being ejected, and while there are not sufficient packages in the main chute to prevent release of the auxiliary chute;

Fig. 8 is a cross-sectional view taken on line 8—8 of Fig. 2, and showing the position of the parts when the packages in the main chute are exhausted to such an extent that upon ejecting one of the remaining packages of cigarettes, the auxiliary chute will be swung forwardly, and also showing the auxiliary chute in forwardly swung position in dot, dash lines;

Fig. 9 is a view similar to Fig. 7, but showing the position of the parts when the auxiliary chute is swung forwardly, so that the packages therein may pass to the lower end of the main chute;

Fig. 10 is a cross-sectional view taken on line 10—10 of Fig. 2;

Fig. 11 is a cross-sectional view taken on line 11—11 of Fig. 8;

Fig. 12 is a view similar to Fig. 8, but showing the position of the chute when the chute is empty and the auxiliary chute has been moved forwardly into the main chute for refilling;

Fig. 13 is a view similar to Fig. 7, and showing the machine when loaded for king size packages of cigarettes;

Fig. 14 is a cross-sectional view taken on line 14—14 of Fig. 13;

Fig. 15 is a perspective of the false back used at the lower end of the main chute, to reduce the depth thereof, when regular size packages of cigarettes are used;

Fig. 16 is a perspective view of the false back used in the auxiliary chute, to reduce the depth thereof to accommodate packages of regular size; and

Fig. 17 is a perspective view of the false back used in the narrow chute wherein the packages are loaded edgewise.

Referring now in detail to the drawings, 10 designates an article dispensing or vending device embodying the invention, here shown for the purpose of illustration, as part of a cigarette package vending machine. The same comprises a base or support 11 of usual construction shown

in dotted lines in the drawings, and including a horizontal wall 12 on which is mounted a cabinet or a chute unit or structure 13. The chute structure 13 may comprise any suitable number of chutes, a portion only thereof being shown in the drawings by the way of illustration.

The chute structure comprises parallel, vertical aligned walls 14, 15, 16 and 17. The walls 14 and 15 are spaced apart a distance equal to the distance between the walls 16 and 17, forming therebetween similar chambers 18. The distance between the walls 14 and 15 and between the walls 16 and 17, is somewhat greater than the width of a usual package of cigarettes. The distance between the walls 15 and 16 however is less than the distance between the walls 14 and 15, such distance being somewhat greater than the thickness of the usual package of cigarettes.

Walls 14 and 15 have inwardly extending vertical flanges 14a and 15a at the rear thereof. Walls 16 and 17 have similar inwardly extending flanges at the rear thereof. Walls 14 and 15 have inwardly extending flanges 14b and 15b at the front thereof, and the walls 16 and 17 have similar, inwardly extending flanges at the front thereof. Walls 15 and 16 have inwardly extending flanges, 15c and 16c at the front thereof. The rear flanges of walls 14, 15, 16 and 17 are interconnected by a transverse bar 19, which serves to interconnect said walls. The width of the walls 14, 15, 16 and 17 is preferably somewhat greater than twice the length of a king size cigarette package, from a point above the lower ends of said walls to the upper ends of said walls. Said walls are of substantially half width at their lower ends. Thus, the front portions of chambers 18 extend down further than the rear portions thereof. The front portions of chamber 18 form the main article chutes designated by numeral 20. In the main chutes, there may be king size packages of cigarettes 21 stacked on their flat sides, one above the other, as shown in Fig. 13 of the drawings. In the rear portions of the chambers 18, are movable chutes 22 for reserve stacks of articles, likewise adapted to contain king size packages of cigarettes 21. Both the front and rear chutes 20 and 22 may be converted for reception of regular size package of cigarettes 23, as will appear hereinafter.

Between the walls 15 and 16 is a vertical channel shaped, spacer member 24 fixed to said walls, and disposed substantially mid-way between the front and rear ends of said walls.

In front of the spacer member 24, and between walls 15 and 16, is a chamber 25 for king size packages of cigarettes 21, and convertible in a manner hereinafter appearing for reception of regular size packages of cigarettes.

At the rear of the lower, narrow ends of walls 14, 15, 16 and 17 is a vertical back wall 26; and at the bottom of the rear portion of chamber 18, is a horizontal bottom wall 27, which extends from wall 26. Extending upwardly from the rear end of wall 27 is a wall 28 fixed to the rear flanges of walls 14, 15, 16 and 17. The upper ends of walls 14, 15, 16 and 17 are interconnected by a transverse member 30, from which there extends forwardly a flange 31 overlying and spaced above chambers 17. Wall 27 is formed with longitudinal slots 27a disposed beneath the rear portions of chambers 18, and hence in the bottom of the chutes 22. Wall 26 is formed with slots 26a adjacent its upper end, communicating with the slots 27a, for the purpose hereinafter appearing.

The lower edge of wall 26 is above wall 12, providing a space through which the lowermost packages in the chutes 20 may be ejected rearwardly. Wall 26 is furthermore formed with a slot 26b (Fig. 10) aligned with chute or chamber 25 to permit the lowermost package in chute 25 to be pushed rearwardly out of said chute.

The reserve chutes 22 each comprises a back wall 22a a side wall 22b contacting a wall of chamber 18, and a front flange 22c extending from said side wall. The upper ends of back walls 22a are bent around transverse pins projecting to opposite sides of said back wall and engaging the upper edges of the side walls of chambers 18, whereby to suspend the chutes 22 within the rear portions of chambers 18. It will be noted that the lower ends of chutes 22 terminate somewhat above the horizontal wall 27.

Releasable means is provided to pivotally retain the reserve chutes 22 in the rear portions of chambers 18, permitting said chutes to swing in a clockwise direction, as illustrated in Fig. 8, into the main chutes 20. To this end, flange 31 is formed with parallel slots 36, and fixed to said flange are angular springs 37 having downwardly extending fingers 38 projecting through slots 36 and engaging the upper ends of the back walls of the chutes 22, as shown in Fig. 8. When it is desired to refill the chutes 22, the springs 37 are lifted and the chutes 22 may then be bodily moved forwardly toward the front portions of chambers 18.

Means is provided to adapt the chutes 22 for regular size package of cigarettes. To this end, there is fixed to the back wall 22a, a longitudinally channel shaped spacer member or false back 40, having outwardly extending aligned front flanges 41 parallel to the back wall 22a. The bottom or back wall 42 of the spaced member is formed with openings to receive fastening members such as bolts 43 passing through openings in the back wall 22a for fastening the spacing member 40 to said back wall. When thus attached to said back wall 22a, the chute 22 can receive only the regular size package of cigarettes 23.

Means is provided to adapt chamber 25 for reception of regular size package of cigarettes. To this end, there is fixed to the front of partition 24, a longitudinal vertical spacing member or false back 45 of channel shape, and having outwardly extending wings or flanges 46 at the front thereof. It will be noted (Fig. 10) that the partition 24 terminates at substantially the level of wall 27 and that spacer member 45 extends downwardly to a point somewhat above slot 26b. Member 45 may be fixed to the partition 24 by means of bolts, screws or any other suitable fastening means 47.

Slidably mounted on wall 12 of the support are a plurality of retractable spring pressed plungers or ejector members 50. The ejectors are aligned with chutes 20 and 25. When the ejector members are pulled forwardly, the lowermost package in the chutes drops. When the ejectors are released, springs (not shown) push the ejectors rearwardly to push the lowermost packages in the chutes rearwardly out of the chutes to fall into position where the same may be removed by the purchaser.

It will be noted that when chamber 25 is loaded with regular size packages of cigarettes, there is a sizable space between the lowermost package in said chamber (Fig. 10) and wall 26. Because of the space between the lowermost package 23

and wall 26, jogging or slight reciprocation back and forth of the ejector is liable to work the lowermost package 23, sufficiently loose to drop out of the chute.

Means is therefore provided to prevent ejection of a package of cigarettes, unless the proper coins are inserted, and the ejector is retracted fully to permit the lowermost package to drop. To this end, there is welded to the lower end of wall 42 of member 45, a plate 42a projecting below said member 45. The lower end of the plate 42a is welded to the back wall 42b of a rectangular shaped tubular member 42c made of a single piece of sheet metal. Supported by the side walls 42d of said member 42c is a pivot pin 50 on which is pivoted a plate 51 projecting downwardly therefrom, overlapping slot 26b in wall 26 and contacting the rear edge of the lowermost package of cigarettes 23. On the pivot pin 52 about which plate or member 51 is pivoted, is a torsion spring 53, which normally urges plate 51 forwardly into contact with the packages of cigarettes. Plate 51 is somewhat narrower than slot 26b. Thus, even if the ejector 50 can be jogged, vibrated or reciprocated back and forth slightly, nevertheless the package 23 will always be pushed forwardly by plate 51, so that it cannot be released from the chute, unless the ejector is fully retracted to permit the package to drop.

When king size packages are loaded in chute 25 (spacer 45 being removed) the lowermost package cannot be jogged out because there is not sufficient clearance for the package to tilt.

Means is provided to guide the lowermost package in chamber 25 downwardly when it is ejected. To this end, wall 26 is formed with a pair of spaced ears on opposite sides of slot 26b, supporting a transverse pivot 54 above said slot, to which is pivoted a plate 55 projecting downwardly and likewise overlapping said slot. Spring 56 pushes the packages downwardly where they are ejected from the chute to the delivery chamber in base 11 (not shown).

Means is provided to adapt the lower ends of each of chutes 20 for reception of regular size package of cigarettes 23. To this end, there is removably fixed to wall 26, and located on the inside of said chute, a vertical, longitudinal member 60. The lower end of member 60 is somewhat above the lower edge of wall 26. Member 60 may be tubular in shape, and of generally rectangular cross-section. Extending from the front wall 61 thereof, is an upwardly and rearwardly inclined lip 63, the upper end of which partially overlaps slot 26a. The lower ends of side walls 64 of member 60 carry a transverse horizontal pivot pin 65 on which is hinged a plate 66 extending down below the lower edge of wall 26. Plate 66 is urged forwardly by a torsion spring 67 on pivot 65. Said plate is adapted to contact the lowermost package in chute 20 to prevent surreptitious ejection of said package. If the ejector is vibrated or moved back and forth somewhat in an attempt to gradually work the package thereon rearwardly, the spring pressed plate 66 always returns the package to its original position.

Means is provided to retain the auxiliary chutes 22 in vertical position, in the rear of chambers 18, while there are packages in the main chutes 20 above a predetermined height, and to swing said auxiliary chutes forwardly so that the packages therein may be guided to the main chutes automatically upon depleting or exhausting the packages in said main chutes, to below said pre-

determined height. To this end, there is fixed to the lower end of each back wall 22a, a lug 70 projecting downwardly through the slot 27a. Fixed to the underside of wall 27, and extending downwardly therefrom, in alignment with walls 15 and 17, are brackets 72 formed with arcuate slots 73.

As the control means for each auxiliary chute 22 is similar only one thereof will be described:

Pivoted to the lower end of bracket 72 about a horizontal pivot pin 74 is a lever 75 having a rearwardly projecting arm 76 formed with a shoulder 77 adjacent its rear end normally engaging the lug 70 to hold the chute 22 in vertical position.

Pivoted to the lower end of bracket 72, as on pivot 78 located at the center of curvature of slot 73, is an arm 79 extending upwardly through slot 27a, and having an offset horizontal arm 79a engaging the back wall 22a of chute 22. On arm 79 is a pin 80 projecting through arcuate slot 73. Pin 80 is interconnected to wall 26 by a coil tension spring 81. Spring 81 thus presses arm 79 against the chute 22 tending to swing the chute forwardly, the chute being held back in its vertical position, however, by lever 75 as hereinabove explained.

Means is provided responsive to ejection of packages by the ejector 50, to trip the lever 75 when the packages in chute 20 are exhausted to below a predetermined height, such means being inoperative to trip the lever as long as there are packages in said chute above said height. To this end, wall 26 is formed with a pair of rearwardly extending ears 85, supporting a transverse shaft 86 on which is pivoted a downwardly extending plate 87, projecting below wall 26. On shaft 85 is a coil tension spring 88 tending to swing plate 87 forwardly. As each package of cigarettes is ejected, plate 87 is swung back, the package being guided downwardly thereby to the delivery chamber.

On plate 87 are a pair of rearwardly extending ears 89 carrying a pivot pin parallel to and spaced from pivot pin or shaft 86. Pivoted on pin 90 is an arm 91 interconnected to wall 26 by a light coil tension spring 92. Arm 91 is formed adjacent the upper end thereof with a slot 93 having a vertical or longitudinal portion 94, and a horizontal or offset portion 95 extending rearwardly from the upper end of portion 94. On the rear end of lever 75 is a pin 96 projecting through slot 93. When the plate 87 is in normal position, pin 96 is at the upper end of portion 94 of slot 93. The rear end of lever 75 is furthermore connected to wall 26 by a downwardly inclined coil tension spring 97, tending to swing said lever in a counterclockwise direction, as shown in the drawings.

On the rear of the upper end of wall 26 are a pair of similar, spaced brackets 98 supporting a transverse rod 99 located just below wall 27. Pivoted on rod 99 is a bell crank having one arm 101 projecting through slot 26a into chute 20 and inclined downwardly and forwardly; and a second arm 102 inclined downwardly and rearwardly, and contacting the rear edge of arm 91.

When there are packages in chute 20 above the level of arm 101, said arm will contact the rear of one of said packages, causing arm 102 to press arm 91, and swing it about its pivot in a clockwise direction to retain the pin 96 within the vertical portion 94 of slot 93. As cigarettes are ejected, and plate 87 is oscillated, arm 91 can only move up and down while pin 96 slides in the vertical portion 94 of slot 93. Thus, while there are cig-

arette packages in chute 20 above the height of arm 101, the lever 75 will not be tripped as the packages are ejected. However, when the packages in chute 20 fall below arm 101, member 100 will be swung by arm 91 under the tension of spring 92 in a counterclockwise direction bringing pin 96 into offset portion 95 of slot 93 and above the shoulder 95a. The next time a package of cigarettes is ejected from said chutes, arm 87 being swung upwardly, will raise arm 91, and due to the engagement of pin 96 with shoulder 95a, lever 75 will be tripped to disengage lug 70 and permit arm 79 to swing the chute forwardly, so that the packages therein may empty into chute 20.

The packages descending into chute 20 will again swing member 100 in a counterclockwise direction, swinging arm 91 in a clockwise direction about its pivot point and moving pin 96 off shoulder 95a, and permitting spring 97 to swing lever 75 in a counterclockwise direction, when all the packages are out of chute 22, said chute, as well as chute 20 may be refilled, and chute 22 may be swung back, so that the lug 70 will again engage stop shoulder 77 of the lever, and the device is then back to normal position.

It will be noted that arm 79a of member 79 serves to press wall 22b of chute 22 against wall 15. The arm being inclined forwardly as shown in Fig. 5, the outer end of said arm contacts wall 22a adjacent the free edge thereof, hence preventing twisting of the chute about its longitudinal axis and insuring movement of the chute in a plane perpendicular to the axis of the pin 35.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. In combination, a chamber having side walls, and a chute movably mounted within said chamber, said chute having one side wall only and a back wall, a member pivoted to said chamber, and extending upwardly into the chamber through the lower end thereof, said member having an upper offset arm extending laterally outwardly and forwardly contacting the back wall of the chute and retaining the side wall of the chute against the side walls of said chamber, and resilient means to swing said member about its pivot.

2. In combination, an open top chamber, a member attached to the back of said chamber, and having a forwardly extending flange disposed over the open top of said chamber and formed with a slot, a spring mounted on said flange, and having a finger passing downwardly through said slot, and a chute within said chamber, said chute having pivotal means at the upper end thereof engaging the top of said chamber, whereby said chute may be swung forwardly within said chamber about said means, and said spring finger releasably engaging the upper end of said chute, said finger being adapted to release the upper end of the chute, to permit said chute to be moved bodily forwardly within said chamber.

3. In combination, a chamber, a chute within

said chamber, and pivoted means at the upper end of the chute to pivotally connect the chute to said chamber, whereby the lower end of the chute may be swung forwardly within said chamber, resilient means to swing said chute forwardly, releasable means to retain the chute against swinging movement, means adapted to be moved by an article ejected from the lower end of the chamber to release said retaining means, and means controlled by presence of articles in said chamber to render said releasing means inoperative.

4. In combination, a chamber having a front chute portion, a movable chute in the back portion of said chamber pivoted at its upper end to the upper end of said chamber, spring means to urge said movable chute to swing forwardly within said chamber, means to retain said chute against forward swinging movement, means to trip said retaining means, and including a member pivoted to said chamber and swingable in one direction by an article ejected from the lower end of the main chute, a second member pivoted to the first member and formed with a slot, having an offset portion, means on said retaining means engaging within said slot, resilient means to swing said second member in one direction about its pivot to bring the slot engaging means into the offset portion of the slot, and means controlled by articles within said main chute to swing said second member in an opposite direction to bring said slot engaging means into the longitudinal portion of said slot.

5. In combination, a chamber having a front chute portion, a movable chute in the back portion of said chamber pivoted at its upper end to the upper end of said chamber, spring means to urge said movable chute to swing forwardly within said chamber, means to retain said chute against forward swinging movement, means to trip said retaining means, and including a member pivoted to said chamber and swingable in one direction by an article ejected from the lower end of the main chute, a second member pivoted to the first member and formed with a slot, having an offset portion, means on said retaining means engaging within said slot, resilient means to swing said second member in one direction about its pivot to bring the slot engaging means into the offset portion of the slot, means controlled by articles within said main chute to swing said second member in an opposite direction to bring said slot engaging means into the longitudinal portion of said slot, and resilient means to swing said first member in a direction opposite to the direction in which it is swung by an ejected article.

6. In a dispensing device, a member forming a chamber, the front portion of which constitutes a main chute for articles to be dispensed, an auxiliary chute for similar articles within the rear portion of said chamber swingable on said member about its upper end, whereby the lower end of the auxiliary chute is movable into the main chute, a lever pivoted to said member, means on the auxiliary chute engageable by said lever to retain said auxiliary chute within the rear portion of said chamber, resilient means urging the auxiliary chute to swing into the main chute, means movable by an article ejected from the main chute to trip the lever for releasing the auxiliary chute to permit the same to be swung by said resilient means into the main chute, and means controlled by articles within the main chute to render said tripping means inoperative.

7. In a dispensing device, a member forming a chamber, the front portion of which constitutes a main chute for articles to be dispensed, an auxiliary chute for similar articles within the rear portion of said chamber swingable on said member about its upper end, whereby the lower end of the auxiliary chute is movable into the main chute, a lever pivoted to said member, means on the auxiliary chute engageable by said lever to retain said auxiliary chute within the rear portion of said chamber, resilient means urging the auxiliary chute to swing into the main chute, a member pivoted to said first member, and adapted to be swung by an article ejected from the lower end of the main chute, an arm pivoted to said last mentioned member and formed with a slot having a longitudinal portion, and an offset portion, a pin on said lever passing through

said slot, and means pivoted to said first member and having a portion engageable by articles within the main chute, and a second portion adapted to engage said arm, said pivoted means being adapted to retain said arm in such position that the pin on the lever will be in the longitudinal portion of said slot, as the second member is oscillated, and resilient means urging said pivoted arm to swing in a direction for bringing the pin on the lever into the offset portion of said slot, said resilient means being adapted to swing said arm into position for bringing the pin on the lever into said offset portion of said slot, when the articles in the main chute are dispensed to a point below the article contacting portion of said pivoted means.

LOUIS STEINER.
PETER SETTECASI.