

[54] **DEVICES FOR DISPENSING ARTICLES
FROM A STACK OF ARTICLES**

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[30] **Foreign Application Priority Data**

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[58] **Field of Search** 221/200, 202, 203, 251,
221/307, 310

[56] **References Cited**

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ABSTRACT

A device for dispensing articles comprises a vertical chute for a stack of articles. The chute is closed from below by a pivotal element which supports the stack. A spring pivotal with the element has a portion extending over the front of the element to engage and support the penultimate article in the stack when the element is pivoted to discharge the lowermost article of the stack. A second spring mounted in the chute at the rear of the element also serves to support the penultimate article.

4 Claims, 3 Drawing Figures

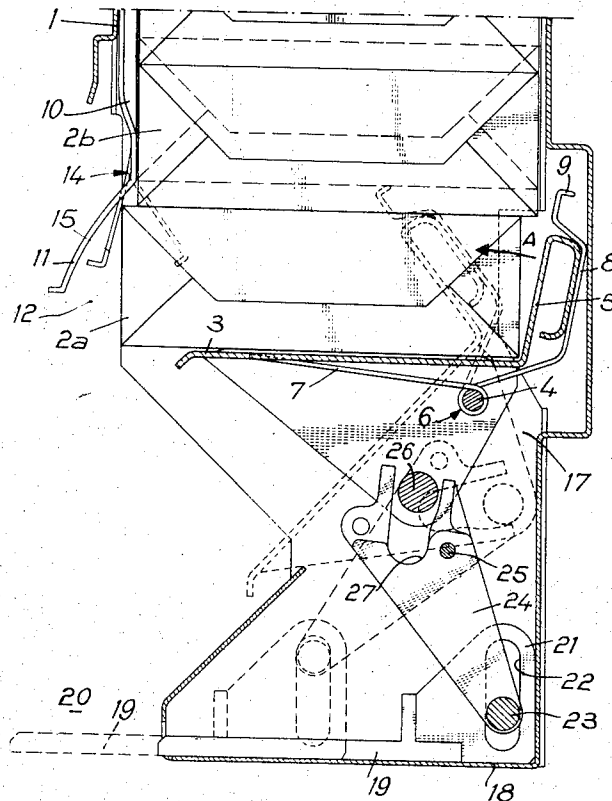
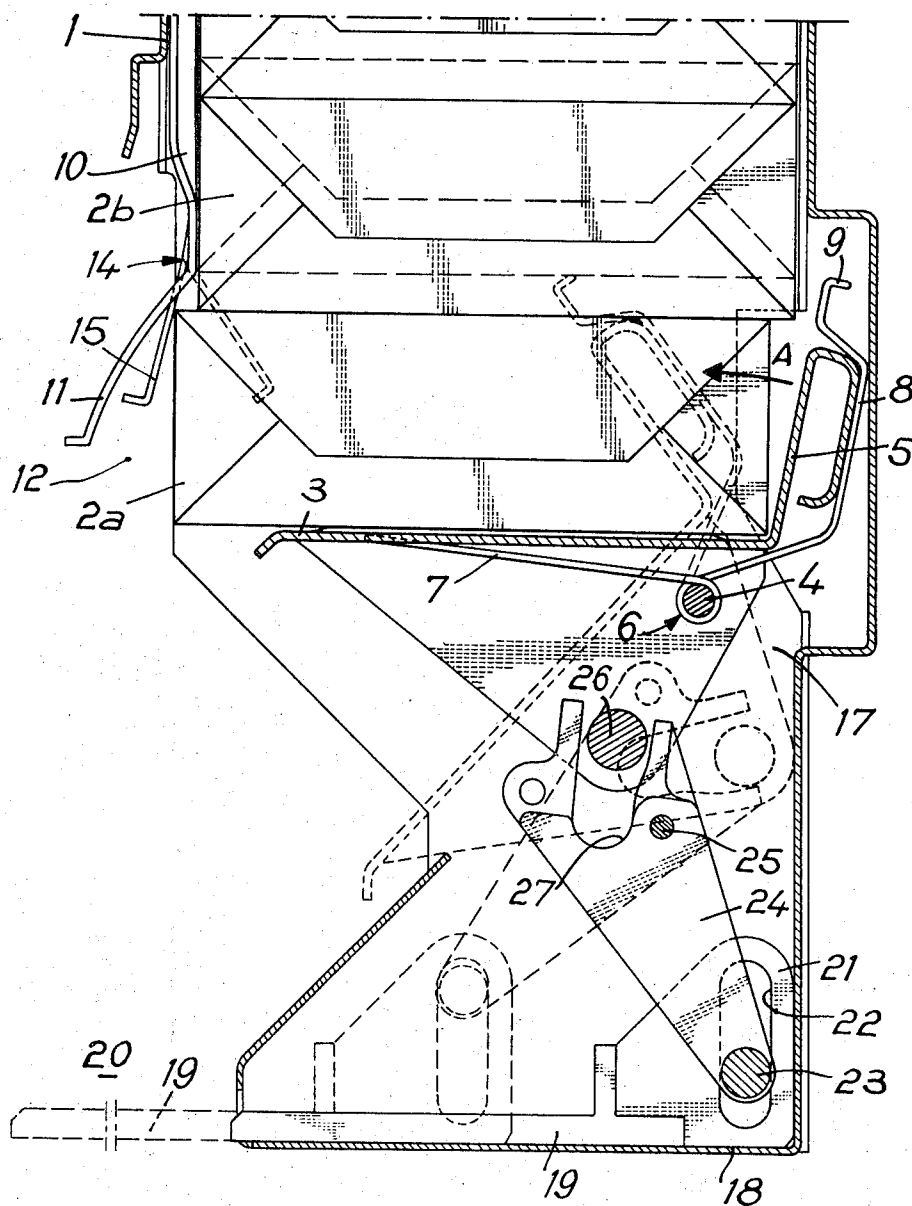


Fig. 1



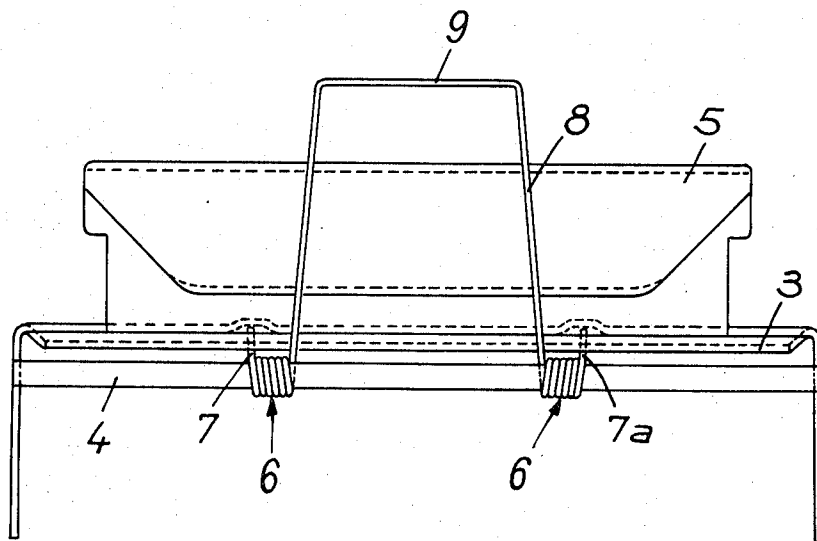
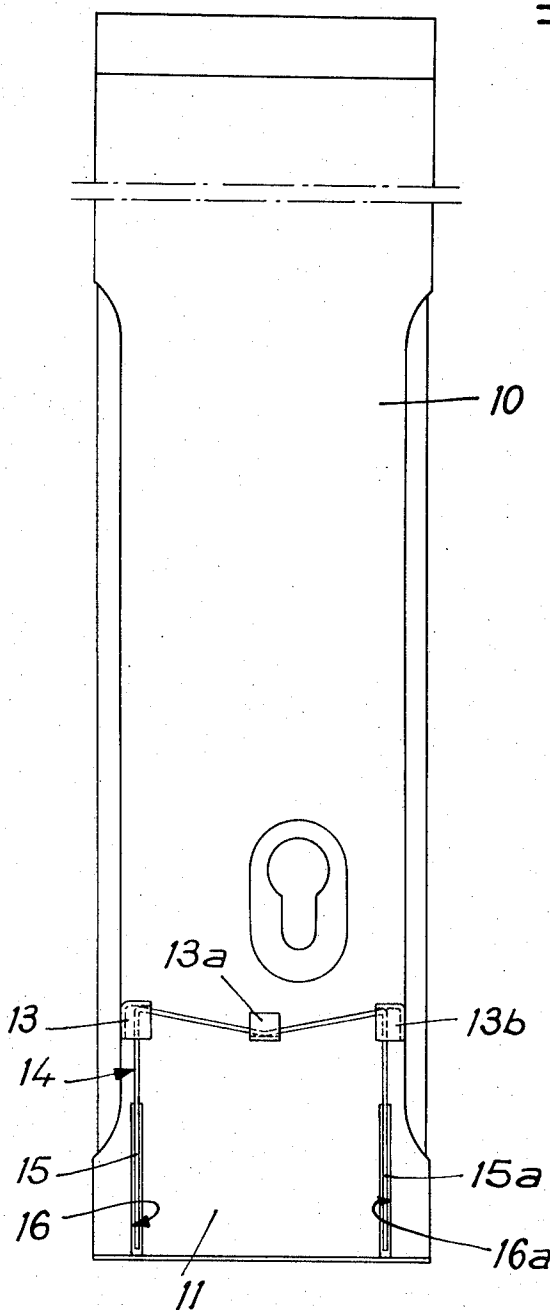


FIG. 2

FIG 3



DEVICES FOR DISPENSING ARTICLES FROM A STACK OF ARTICLES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to devices for dispensing articles.

2. Description of the Prior Art

A device for delivering pre-packed articles from a vertical stack within a vertical chute has been proposed in which the chute is adjustable at least in width relative to the width of the articles, and the articles are fed downwardly towards an outlet closable by means of a bottom element capable of pivoting downwardly about an axis extending in the direction of a lateral edge of the articles. The bottom element is upwardly inclined so that when the element is in its closed position, the lowermost article in the stack is offset slightly relative to the penultimate article. When the element is pivoted, the upwardly inclined portion of the latter, supports the penultimate article of the stack, whilst an arrester element engages the stack sliding in the chute and prevents the remainder of the articles of the stack from tumbling above the bearing surface constituted by the portion of the bottom element.

The dispensing device, driven by purely mechanical or electronic means or by an electric motor, is preferably activated by an operating lever.

This dispensing device, however, fails to provide sufficient support for the articles located above the article to be dispensed and that, under certain conditions, several articles may be delivered during the course of movement of the bottom element.

SUMMARY OF THE INVENTION

According to the present invention, there is provided in a device for dispensing articles, a vertical chute for a stack of articles, a pivotal bottom closure element for the chute, the element having an upwardly directed portion, said upwardly directed portion supporting the penultimate article of the stack during discharge of the lowermost article in the stack, first spring means at the front of the element, said spring means having a portion engaging the upwardly directed portion of the element and defining an article-discharge passage to the rear of the element, and second spring means, said second spring means extending into the passage and engaging the stack.

Preferably, a slide member of comb-like form is located at the outlet of the device, which member is operated by an operating lever of the element to block the outlet whereby the articles are delivered singly.

BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying diagrammatic drawings, in which:

FIG. 1 is a longitudinal section of the lower portion of a dispensing device in accordance with the invention;

FIG. 2 is a front elevation of a pivotal bottom element of a chute of the device; and

FIG. 3 is an elevation of the rear face of the chute.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIG. 1 the dispensing device comprises a chute 1 of rectangular section in which articles 2a and 2b, for example in the form of packages, are stacked. The article 2a which lies at the bottom of the stack rests on a bottom wall or element 3 of the chute, the wall 3 being mounted pivotably on a shaft 4 extending in the direction of a lateral edge of said articles.

The edge portion of the wall 3 adjacent to the shaft 4 is inclined upwardly to form a double-front wall 5.

On the shaft 4 there is mounted a coil spring 6; the opposite end portions 7, 7a of the spring 6 bear against the wall 3 and a central portion of the spring 6 is in the form of a loop 8 shaped to engage the front wall 5. The upper edge 9 of the loop 8 forms a support element for the penultimate article 2b in the stack, when the wall 3 is tilted by means of an operating lever 26 in the direction of the arrow A to effect withdrawal of article 2a.

In the interior of the chute 1, there is provided, in the region of the rear wall of the chute, a guide plate 10, an upper, folded-back end portion of which is attached to the wall of the chute and the lower end portion of which is movable by adjusting means (not shown), in accordance with the depth of the articles handled.

The lower end portion of the guide plate 10 (FIGS. 1 and 3) has a folded-back portion 11, which, together with the rear end edge portion of the wall 3, defines a passage 12 for the articles when the wall 3 is tilted.

Brackets 13, 13a, 13b are provided in the lower portion of the plate 10, for the attachment of the central portion of a U-shaped spring 14, the arms 15, 15a of which engage in slots 16, 16a respectively in the lower portion of the plate 10, the arms 15, 15a extending into the passage 12 and being normally engaged with the lowermost article 2a, as indicated by dotted lines in FIG. 1.

During the tilting of the wall 3 in the direction of arrow A to effect withdrawal of the article 2a, the arms 15, 15a of the spring 14 are freed from engagement with the article 2a, and move into a position underneath the penultimate article 2b, so as to support the latter in conjunction with the upper edge 9 of the loop 8 of the spring 6, whereby to prevent the article 2b from entering the passage 12. The spring 6 and 14 act, in effect, to prevent tilting of the article 2b into the passage 12 which is open during the delivery of the article 2a.

The lower side walls 17 of the chute carry a bottom wall 18, which supports a slide member 19, capable of closing, in the extended position indicated by broken lines, a passage outlet 20 for article 2a. The slide member 19 has two vertical lugs 21 with apertures 22 in which there is slidable a shaft 23 of a lever 24 pivotable about a shaft 25 on the side walls 17 of the chute 1.

On its upper portion, the lever 24 has an elongate recess 27, in which the operating lever 26 is slidable, the lever 26 being rigid with the wall 3. When the wall 3 is in its horizontal position, the slide member 19 is in its retracted position to permit the article to be discharged through the outlet.

When the wall 3 is tilted in the direction of the arrow A by means of the lever 26, the lever 24 is caused by lever 26 to pivot about the shaft 25 and moves the slide member 19 by means of the shaft 23. The member 19

thus blocks the opening of the passage 20 during discharge of the article 2a, and retains the article; when the wall 3 is returned to its horizontal position, the member 19 is retracted and the article 2a is released.

What is claimed is:

1. In a device for dispensing articles having walls forming a vertical chute for receiving a stack of articles to be dispensed from the bottom portion of said chute and having a discharge opening at the bottom of the chute, the combination therewith of

a bottom closure element pivotally mounted at the bottom portion of said chute, said closure element having a first portion extending into said chute for engaging and restraining the lowermost of said articles and having a second portion extending upwardly of said first portion and out of the path of movement of said articles in said chute, said element being pivotable about its pivot axis to move said first portion to a position which permits the discharge of the lowermost article from said chute through said discharge opening and to move said second portion toward said chute

first spring means engaging said second portion of said closure element and extending above the latter and out of the path of movement of said articles in said chute, said spring means being movable with said second portion and into a position within said chute in which said spring means engages a first portion of the penultimate article and restrains it during the discharge of said lowermost article, and

second spring means at the side of said chute opposite from said first spring means and extending into said opening for preventing tilting of the penultimate article during discharge of the lowermost article through said opening, said second spring means having two positions, said second spring means in

one of its positions being engageable with the lowermost article for holding said second spring means in said one position and being movable into the other of its positions upon discharge of said lowermost article, said second spring means, in said other position thereof, engaging a portion of the penultimate article different from said first portion thereof.

2. A device according to claim 1, wherein the first spring means has opposed end portions engaging the under side of the said closure element, and a further portion, said further portion being in the form of a loop engaging the upwardly directed portion of the element with an upper edge of said loop extending above said second portion of said element.

3. A device as claimed in claim 1, wherein the second spring means is U-shaped and comprises a pair of arms and a transverse portion connecting the arms, and one of the walls of said chute is a rear panel having bracket means and slots, the transverse portion of the second spring means being engaged in the bracket means, and the arms extending into the slots.

4. A device as set forth in claim 1, further comprising slide means mounted beneath said closure element and movable from a first position in which it prevents a discharge of articles from said discharge opening to a second position in which it permits the discharge of articles from said opening and linkage means interconnecting said slide means and said closure element for moving said slide means into said first position upon movement of said first portion of said closure member into said position thereof which permits the discharge of the lowermost article from said chute and for moving said slide means into its second position upon movement of said first portion of said closure member into said chute for restraining the lowermost article.

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