June 26, 1956 H. G. GENTRY 2,752,027

SEPARATING MEANS

Filed Feb. 15, 1955 2 Sheets-Sheet 1

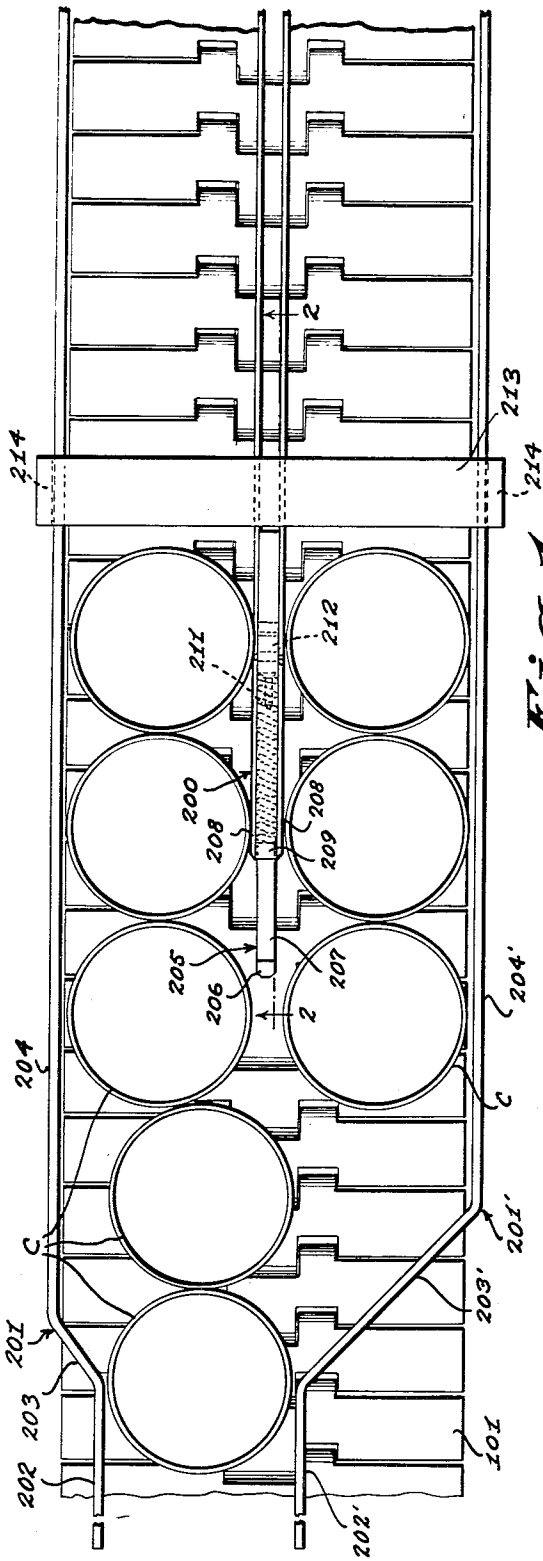

Fig. 1

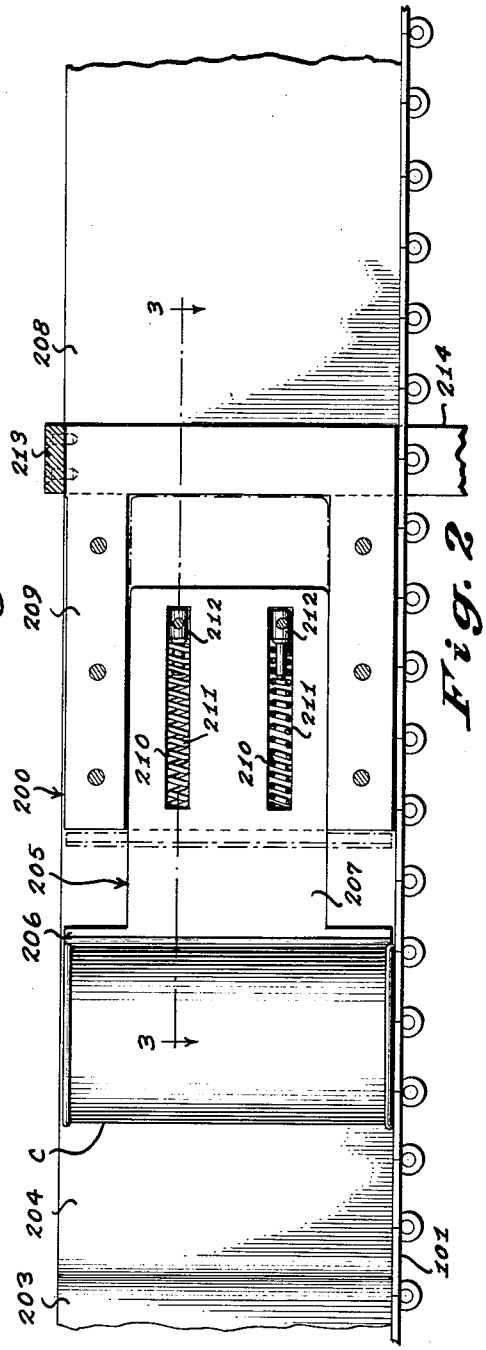

Fig. 2

INVENTOR.
HERMOND G. GENTRY
BY
Parrott & Richards
ATTORNEYS

June 26, 1956 H. G. GENTRY 2,752,027

SEPARATING MEANS

Filed Feb. 15, 1955 2 Sheets-Sheet 2

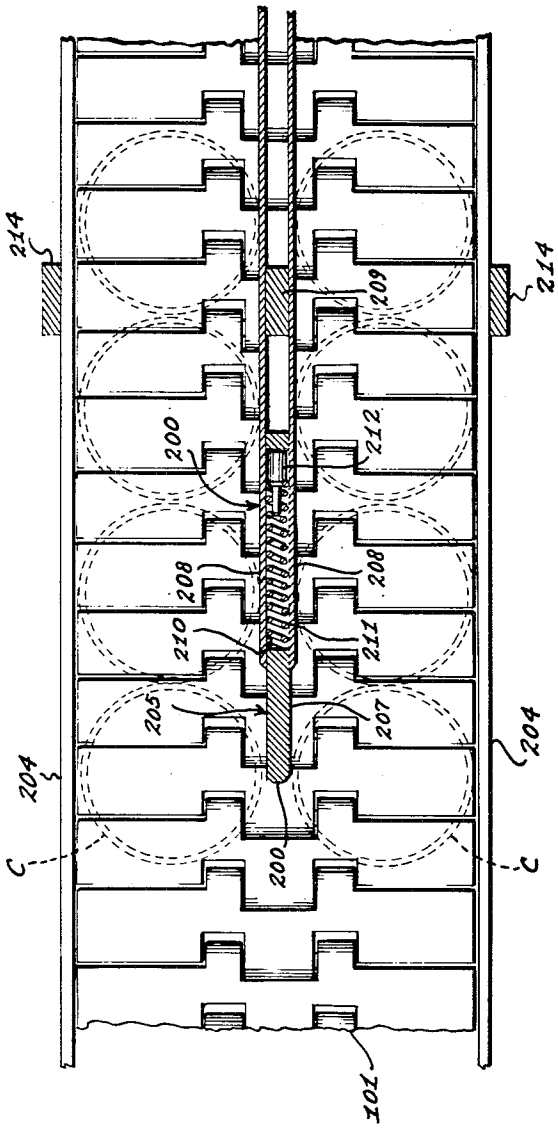

Fig. 3

INVENTOR.
HERMOND G. GENTRY
BY
Parrott & Richards
ATTORNEYS

United States Patent Office

2,752,027

Patented June 26, 1956

2,752,027

SEPARATING MEANS

Hermond G. Gentry, Atlanta, Ga., assignor to Atlanta Paper Company, a corporation of Georgia

Application February 15, 1955, Serial No. 488,291

4 Claims. (Cl. 198—31)

This invention relates to separating means, and more particularly to an improved means of this sort for separating or dividing a traveling row of articles, such as cans or bottles and the like, into a plurality of rows while maintaining the articles traveling.

The separating means of the present invention is adapted in particular for use in a packaging apparatus of the type disclosed and claimed in copending application Serial No. 476,650, filed December 21, 1954, and is described in detail below in relation to an embodiment arranged especially for that purpose, but it should be noted that the invention is not limited to this use and may be employed to good advantage in any instance where article separation must be effected in the above noted manner.

An important feature of the separating means provided according to the present invention is that it requires no positively operated elements, but is characterized by a simple, self-adjusting member that accomplishes the separation of the traveling articles through abutment therewith while adjusting automatically so that jamming of the articles cannot occur during separation. This arrangement of the separating means also provides the substantial advantage of eliminating any need for synchronizing its operation in the apparatus with which it is used.

These and other features of the present invention are described in further detail below in connection with the accompanying drawings, in which:

Fig. 1 is a plan view of a separating means embodying the present invention;

Fig. 2 is a vertical section taken substantially at the line 2—2 in Fig. 1; and

Fig. 3 is a sectional detail taken substantially on the line 3—3 in Fig. 2.

Referring in detail to the drawings, the illustrated embodiment of the separating means of the present invention is indicated generally by the reference numeral **200** arranged in relation to spaced guides **201** and **201'** having inlet sections **202** and **202'**, outwardly flared intermediate sections **203** and **203'** that are preferably unbalanced as shown, and outlet sections **204** and **204'** for guiding cans C or the like while traveling on a conveyor **101** as illustrated and described in the above noted copending application Serial No. 476,650. The spacing of the guides **201** and **201'** at the inlet sections **202** and **202'** is just wide enough to allow a single row of cans C to travel therethrough on the conveyor **101**, while the guides **201** and **201'** flare outwardly at their intermediate sections **203** and **203'** to a spacing sufficient to allow lateral spreading of the cans C into separate rows at each side of the separating means **200**, which is disposed centrally and longitudinally between the outlet guide sections **204** and **204'** that extend beyond the intermediate guide sections **203** and **203'** at the fully flared spacing thereof.

The separating means **200**, in addition to serving as a partition between the separated rows of cans C at the outlet guide sections **204** and **204'**, also incorporates a yieldable abutment member **205** at the leading edge thereof (i. e., the end edge adjacent the intermediate guide sections **203**) by which the cans C are caused to shift or spread laterally into separate rows at each side thereof as they enter the outlet guide sections **204**. This abutment member **205** suitably comprises a plunger element or plate having an abutment edge portion **206** coextensive with the adjacent end edge of the separating means **200**, and a shank portion **207** at which it is mounted for sliding movement longitudinally of the separating means **200**. In order to support this plunger element **205**, the separating means **200** is conveniently formed with spaced partition members **208** between which a slide yoke **209** is secured to receive the plunger element shank portion **207**. The plunger shank portion **207** is slotted as at **210** to have compression springs **211** arranged therein for biasing the plunger element **205** at an extended position by reaction at bearing pins **212**, which are fixed to one of the partition members **208** so as to ride within the plunger shank slots **210** and thereby allow retraction of the plunger element **205** from its normally extended position. A cross brace **213** is attached to the upper edge of the slide yoke **209** and is secured at each end on vertical supporting legs **214** arranged outside the spaced guides **201** and **201'** for supporting the separating means **200** above the conveyor **101** by suitable attachment to the conveyor frame structure (not shown).

In arranging the separating means of the present invention for use in any particular apparatus, the inlet guide sections **202** and **202'** may be extended to the left as seen in Figs. 1 and 2 as far as desired and arranged as necessary or convenient for directing a supply of the cans C serially in a row to the apparatus. Likewise, the outlet guide sections **204** and **204'**, and the partition members **208** of the separating means **200**, may be extended as far as desired to the right as seen in Figs. 1 and 2 for directing the separated rows of cans C to a succeeding operating station in the apparatus.

As described in the above noted copending application Serial No. 476,650, the conveyor **101** is preferably of the chain type and is arranged to present a flat, smooth surface at its upper reach on which the cans C will slide when caused to, but will otherwise follow the conveyor movement. Also, the conveyor **101** should be driven at a faster rate (e. g., about 20% faster) than the rate at which the cans C are to travel through the subsequent operating stations of the apparatus so as to maintain a continuous supply of cans C feeding thereon to the subsequent operating stations.

When arranged in this manner, the cans C traveling on the conveyor **101** through the inlet guide sections **202** and **202'** enter the intermediate guide sections **203** and **203'** offset longitudinally toward the outlet guide section **204** in relation to the separating means **200**, but aligned so that upon continuing travel the cans C are carried toward the abutment edge portion **206** of the yieldably biased plunger element **205**. Upon abutment of a can C with the plunger element **205** at its abutment edge **206**, the first abutting can C will tend to slide laterally on the conveyor **101** to the side of the separating means **200** adjacent the outlet guide section **204**, because of the above noted offset alignment, and as this first abutting can C commences to slide laterally in that direction, the following can C will tend to slide laterally in the other direction. This lateral sliding of the cans C is forced by the feeding pressure of succeeding cans C on the conveyor **101**, and the general result is to cause lateral shifting or spreading of the cans C alternately to each side of the plunger element **205** for travel into the outlet guide sections **204** and **204'** at each side of the separating means **200**.

Because the cans C are free to shift laterally in any direction within the intermediate guide sections **203**, however, it is possible for two or more succeeding cans C

all to shift laterally in the same direction, or for the shifting to occur irregularly otherwise, so that the cans C tend to jam in the intermediate guide sections **203** as they try to pass to one side or the other of the plunger element **205**. When this happens, the plunger element **205** simply retracts automatically under the increased pressure caused by the jamming and immediately relieves the jam so that the jammed cans C are allowed to rearrange themselves and continue into the outlet guide sections **204** without difficulty, after which the plunger element **205** recovers to its normally extended position for continuing, self-adjusting action to separate the cans C as they are fed.

The present invention has been described in detail above for purposes of illustration only and is not intended to be limited by this description or otherwise except as defined in the appended claims.

I claim:

1. Separating means for dividing a traveling row of cans or the like into two rows while maintaining said cans traveling, said means comprising spaced guides having an inlet section confining said traveling cans in a single row and an outlet section permitting lateral shifting of said cans to form two rows, and means spaced centrally between said guides at said outlet section and incorporating a yieldable retractable abutment member by which said cans are caused to shift laterally at said outlet section and are relieved from jamming during lateral spreading thereof.

2. In combination with conveying means for supporting cans or the like standing endwise to travel thereon with spaced guides arranged for initially confining said cans in a single row and then allowing said cans to spread laterally into two rows, means forming a partition between said two rows of cans and incorporating a leading edge member through abutment with which said cans are caused to spread laterally, said leading edge member being shiftable longitudinally of said partition means and being yieldably biased at a normally extended position for abutment with said cans, whereby said member is automatically retractable for relieving any jamming of said cans during lateral spreading thereof.

3. Means for separating traveling articles standing endwise on a moving surface from a single row into two rows, said means comprising spaced guides having inlet, intermediate, and outlet sections, said inlet sections being spaced for confining said articles serially in a single row on said moving surface, said intermediate sections being flared outwardly from said inlet to said outlet sections for allowing said articles to spread laterally into two rows, and said outlet sections being spaced for confining said articles serially in two rows on said moving surface, and centrally disposed partition means extending longitudinally between the outlet sections of said spaced guides for separating and maintaining said articles in two rows, said partition means having a longitudinally shiftable leading edge member mounted at the end thereof adjacent said intermediate guide sections, and said leading edge member being yieldably biased at a normally extended position with respect to said partition means for abutment with said articles to force lateral spreading thereof between said intermediate guide sections and for automatic retraction longitudinally of said partition means to relieve any jamming of said articles during lateral spreading thereof.

4. Means for separating traveling articles, such as cans and the like, from a single row into two rows while said articles are supported endwise on a moving surface, said means comprising spaced guides disposed for directing the travel of said articles on said moving surface, said spaced guides having inlet sections at which they are spaced for confining said traveling articles serially in a single row on said moving surface, intermediate sections flaring outwardly for allowing said articles to spread laterally on said moving surface into two rows, and outlet sections at which said guides are spaced for confining said laterally spread articles serially in a row at each side of a central partition means disposed longitudinally between said outlet guide sections, said partition means having a slidable plunger member mounted longitudinally at the end thereof adjacent said intermediate guide sections, and said plunger member being yieldably biased at an extending position for causing lateral spreading of said traveling articles by abutment therewith while remaining retractable for automatically relieving any jamming of said articles during lateral spreading thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

2,671,568 Rundt ..... Mar. 9, 1954

FOREIGN PATENTS

682,520 Great Britain ..... Nov. 12, 1952
715,132 Great Britain ..... Sept. 8, 1954