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G. T. ERICKSON ETAL

3,144,740

CONTINUOUS ORIENTING AND PACKAGING MACHINE FOR CANS OR THE LIKE

Filed Oct. 20, 1961

3 Sheets-Sheet 1

FIG. 1.

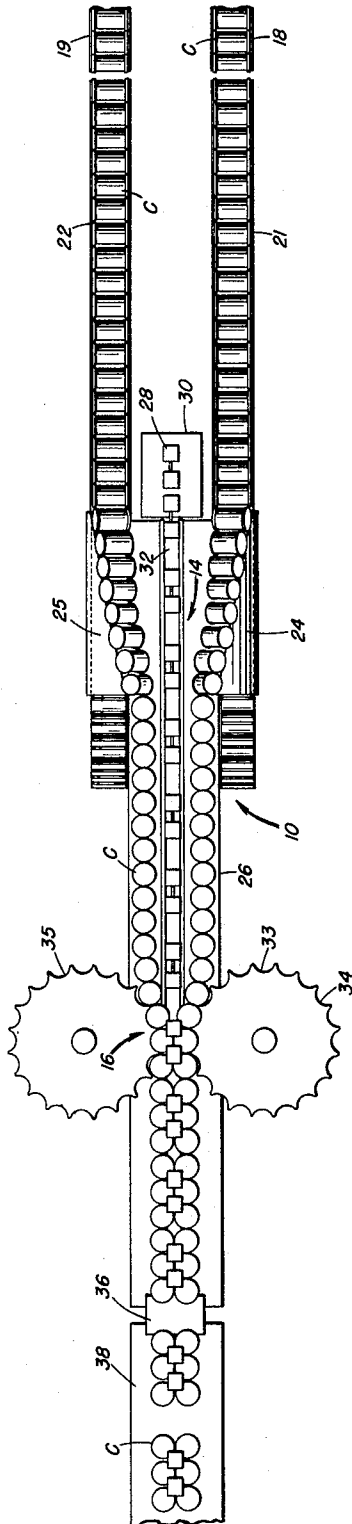
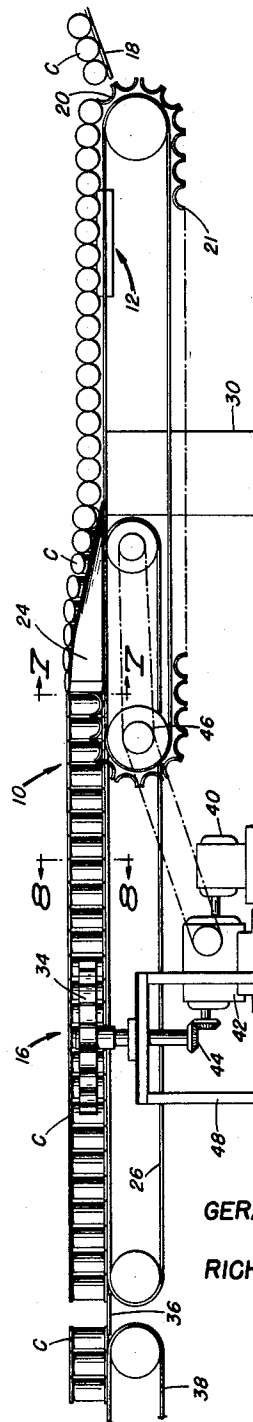


FIG. 2.



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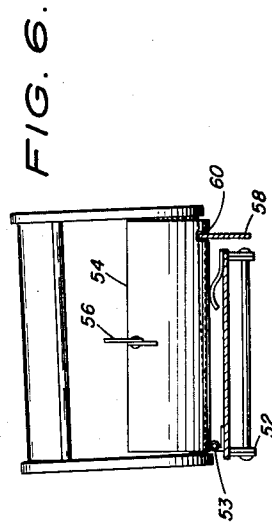
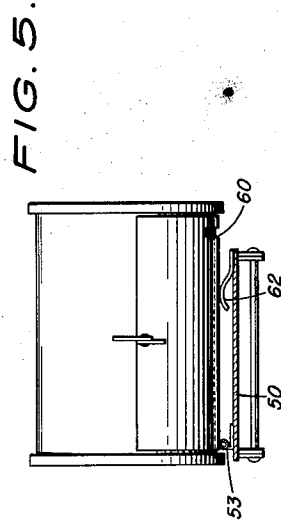
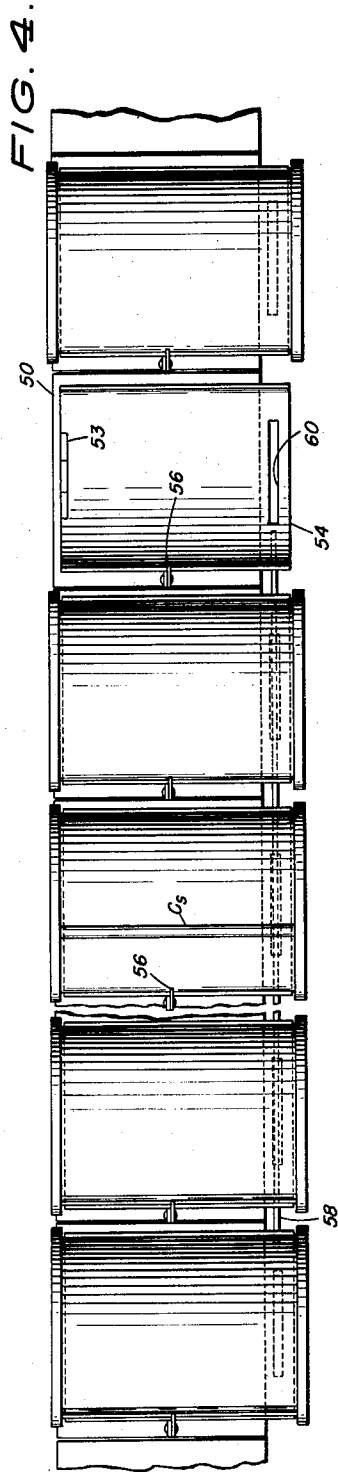
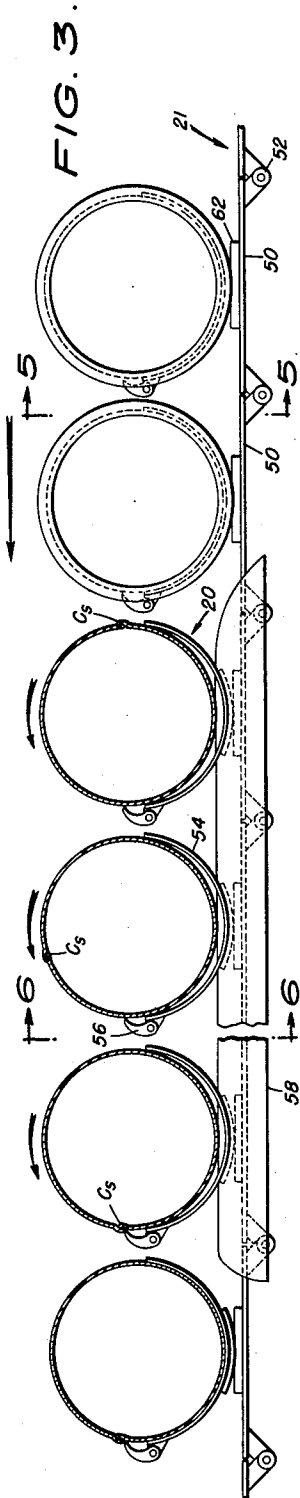
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3 Sheets-Sheet 2



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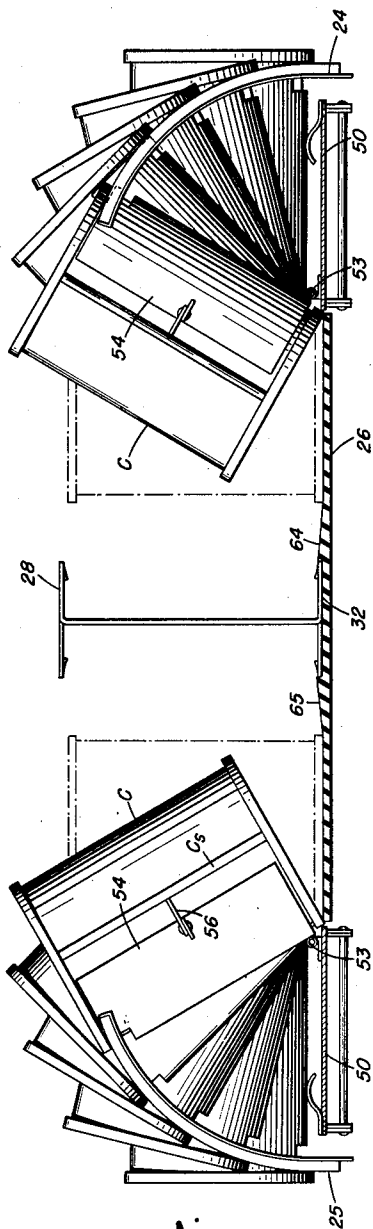


FIG. 7.

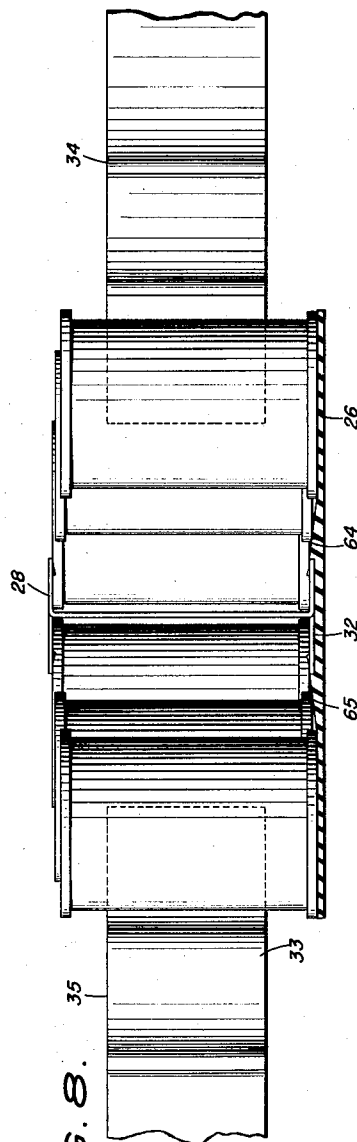


FIG. 8.

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CONTINUOUS ORIENTING AND PACKAGING MACHINE FOR CANS OR THE LIKE

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Filed Oct. 20, 1961, Ser. No. 146,641
3 Claims. (Cl. 53-48)

This invention relates to a machine for continuously transporting, orienting and packaging symmetrical, cylindrical articles such as cans by inserting the oriented cans into a clip-type can carrier.

In a prior application, Serial Number 63,580, filed October 19, 1960, by Gerald Erickson, and assigned to the assignee of this application, there is disclosed a unique clip-type can holder and carrier. Briefly, this clip-type can holder and carrier consists of a single piece of thin sheet material such as metal or plastic which is formed to provide a pair of feet having opposed projections and adapted to overlie the ends of cans with the projection engaging the chimes or ends of the cans for holding them together in a unitary package. This clip-type can carrier does not in any way obscure any of the labeling on the cans and allows a unique and compact package to be formed and provides integral handle means for carrying the package.

Because the can labels are visible and provide the advertising and display for the assembled package of cans held together by the clip-type carrier, it is extremely desirable to correctly orient the cans with the labels, trademarks and the like facing outwardly prior to their insertion into the clip-type can holder.

Also, for large scale merchandising and production, it is highly desirable to provide and automatic means for inserting cans into the clip-type can carrier for making a completed package of cans held together by the can carrier.

It is an object of this invention to provide such a machine for continuously and automatically, correctly orienting a plurality of randomly oriented cans and continuously feeding the correctly oriented cans for insertion and then inserting the cans into the clip-type can carrier.

Furthermore, it is an object of this invention to provide for feeding the clip-type can carriers automatically to the can inserting position from a stock of such can carriers so that the entire machine may be automatic and continuous from an input of randomly oriented cans and a stock of can carrier clips to an output of assembled oriented cans inserted automatically into the clip-type can carrier.

Further objects of this invention will be pointed out in the following detailed description and claims and illustrated in the accompanying drawings which disclose, by way of example, the principle of this invention and the best mode which has been contemplated of applying that principle.

In the drawings:

FIG. 1 is a top plan view of the machine of this invention and its preferred embodiment;

FIG. 2 is a side elevation of the automatic can packaging machine illustrated in FIG. 1;

FIG. 3 is an enlarged detail, side elevation of the can orienting means;

FIG. 4 is a top plan view of the can orienting means illustrated in FIG. 3;

FIG. 5 is a sectional view taken along line 5-5 of FIG. 3;

FIG. 6 is a sectional elevation view taken along line 6-6 of FIG. 3;

FIG. 7 is an enlarged sectional elevation view taken generally along line 7-7 of FIG. 2 and illustrating the can righting means; and

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FIG. 8 is a sectional view taken generally along 8-8 of FIG. 2 and illustrating the can insertion means and the ramps for the cans.

In general, this invention contemplates automatically and continuously orienting, transporting and inserting or packing cans into a clip-type can holder and carrier. Referring to the drawings, a plurality of unoriented cans C are transported generally by conveyor means 10 past orienting means 12 for orienting all the cans in a similar manner so that the labels or other indicia on the can will be in a desired position. The cans are fed by the can conveyor means 10 and suitable can carrier clip moving means 14 simultaneously feeds can carrier clips toward an insertion station 16 where the oriented cans are automatically inserted into the can carrier clip providing completed packages of oriented cans held together by the can carrier clip.

More specifically, and as shown in FIGS. 1 and 2, the unoriented cans C may be fed to the machine from any suitable supply, for example down chutes 18 and 19, where they pass onto cradles 20 of a pair of endless conveyors 21 and 22.

The cans are transported with their axes in a generally horizontal position past the can orienting means 12 where they are all oriented with respect to the indicia or labeling thereon and are then righted by can righting guides 24 and 25. The righted cans are deposited on an endless belt conveyor 26 which carries them to and through the can insertion station 16.

A plurality of can carrier clips 28 are fed from a suitable source of can carrier clip supply 30 to a center groove or holder 32 on the endless belt 26 where they are also fed to the insertion station 16 in timed relation with the movement of the cans C on the belt 26.

The can insertion station 16 includes a pair of pocketed can insertion wheels 34 and 35 including suitable pockets 33 around their periphery. The cans are inserted at the can insertion station by pressing the cans toward one another and clipping them into the can carrier clip. The completed packages of cans clipped together by the can carrier clip pass on through the can insertion station being carried by endless belt 26 across a bridge 36 to a suitable removal conveyor 38.

The entire machine is synchronized and suitably driven from a motor 40 and power transmission 42. The insertion wheels 34 and 35 are driven by bevel gear means 44 while the conveyors 21, 22 and 26 are driven by chain and sprocket gearing 46 all at the same or synchronized speeds. A stand or support 48 is provided for the insertion wheels 34 and 35 and of course suitable supports are provided for the conveyors.

Referring now to FIGS. 3, 4, 5, and 6, the can orienting means 12 and the conveyor 21 are shown in detail. As illustrated in FIG. 3, the conveyor 21 is comprised of a plurality of identical links 50 hingedly connected together by pivotal connections 52. Attached to each link 50 is a hinge 53 which hinges a semi-cylindrical can support 54 to the base 50. The semi-cylindrical can support 54 forms the central part of the cradle 20 of the conveyor 21. On one side of the semi-cylindrical can support 54 is at least one spring biased pivoted dog 56 which functions as a one-way stop for a rotating can by engaging the can seam C_s. The pivoted dog 56 engages the can seam C_s and thereby functions as an arresting means for rotating cans. More than one pivoted dog may be provided so that the dog will not ride over a smooth soldered portion of the can seam.

For causing the cans to rotate, a friction rail 58 is provided and is positioned stationarily with respect to the moving conveyor 21. The upper portion of rail 58 extends through a slot 60 in the semi-cylindrical can support 54 to contact the side of the can. Due to the move-

ment of the conveyor 21 in the direction of the arrow shown in FIG. 3, when the cans contact the rail 58 extending through slot 60, as shown in FIG. 6, the rail will retard the portion of the can it contacts while the conveyor tends to move the entire can causing the can to rotate in its support 54. Although only a single rail 58 is shown, it is obvious that there must be enough braking force applied to the cans through the rail to overcome the friction of its support 54. Obviously, more than one friction rail may be utilized, and it is possible to have a rail at each end of support 54.

During the rotation of the cans the biased pivoted dog 56 bears against the side of the can and the can continues to rotate until the can seam C_s abuts against the dog 56 thus arresting the can. Hence, the movement of the conveyor 21 and the rail 58 contacting the can furnishes the means for rotating the cans while the dog 56 furnishes the means for arresting the cans. Since the can seam C_s will be in the same position with regard to the indicia on the cans, the cans will be correctly oriented when all of the can seams are stopped at the position of the dogs 56 on each cradle 20.

Referring to FIG. 7, the can holders 54 are pivotally connected to the links 50 by hinges 53 so that each can C may be righted from its oriented horizontal position and deposited in a vertical position on conveyor 26. This is accomplished by the can righting guides 24 and 25 shown in detail in FIG. 7. These righting guides contact the back portion of the can holders 54 and move the can holders 54 about their hinges 53 from a horizontal to a vertical position at a predetermined point to deposit the cans in upright position on the belts 26.

At approximately the same time, the can carrier clips 28 are serially deposited in the groove 32 in conveyor 26 in predetermined spaced apart position. The movement of the conveyor belt 26 thus carries the oriented cans and the can carrier clips 28 toward the insertion station 16.

FIG. 8 shows a detail of the can carrier insertion station wherein the insertion wheels 34 and 35 with their scalloped pockets 33 oppose one another and move the cans inwardly into the clip 28. At this time, the clip 28 with its downwardly extending projections engages the chimes of the cans as described in my aforesaid application. For moving the cans into the can carrier clip, ramps 64 and 65 are provided on each side of the groove 32 so that the lower edge of the cans will clear the lower edge of the can carrier 28 as shown in detail in FIG. 8.

It is believed that the operation will be evident from the foregoing. In summary, however, unoriented cans are fed from a suitable can supply down chute 18 and 19 where they are deposited in cradles 20 on conveyors 21 and 22 in a generally horizontal position. The conveyors carry the cans past a can rotating means including rail 58 where the cans are rotated until they reach an oriented position wherein they are arrested by arresting means including pivoted dog 56. The oriented cans are then carried on by the conveyors 21 and 22 while in their cradles 20 and are righted while still oriented from the horizontal position to the vertical position and deposited on belt 26. The can carrier clips 28 are also deposited on belt 26 in a spaced apart relation in groove 32 so that they will be automatically positioned corresponding to the cans they will hold together. The oriented cans in can carrier clips move in synchronism toward an insertion position where the can inserting wheels 34 and 35 with their scalloped pockets 33 oppose one another and move the cans toward each other and into the can carrier clip over ramps 64 and 65. The cans snap into the can carrier clips which clip them together by holding onto their chimes for example and the assembled package of oriented cans in the clip pass on through the insertion station 16 to a suitable removal conveyor 38.

It will be evident to accommodate different size cans

utilizing different size can carrier clips, all that is necessary is to change the insertion wheels 34 and 35 to ones corresponding to the size of the cans to be inserted and vary the spacing of the clips being fed to the insertion station.

Although the device has been described for inserting cans having labels printed thereon in accordance with the can seams, it will be obvious to those skilled in the art that the machine may be utilized for inserting any device adapted to be packaged in the same or similar clip type article carriers. The use of the term "can" in the claims encompasses such similar articles. Also, other known and available orienting means could be utilized for other types of cans or articles which, for example, may not have can seams.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various omissions and substitutions and changes in the form and detail of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

I claim:

1. A machine for transporting unoriented cans, orienting the cans while being transported, and inserting the correctly oriented cans into a clip-type can carrier, all continuously and in a single flow path, the machine comprising; a continuously driven horizontal endless conveyor having a plurality of can receiving pockets thereon for receiving unoriented cans from a can supply, a stationary rail positioned adjacent the conveyor and abutting against the cans carried on said pockets for the purpose of causing said cans to rotate while being carried by said conveyor, and spring bias arresting dogs on each of said can pockets of said conveyor cooperating with the side of the can and arresting the rotation of the can when a seam abuts against the arresting dog, an upright rail for pivoting the oriented cans and accompanying pockets upright from the horizontal position on the horizontal conveyor, a further horizontal endless belt conveyor for receiving the upright oriented cans, means for feeding a supply of can carrier clips on said horizontal conveyor belt while positioned near the center thereof between two rows of upright oriented cans and moving in synchronism therewith at a predetermined position, a pair of rotatable pocketed insertion wheels opposing one another and positioned outside the two rows of cans at an insertion station, said rotatable wheels adapted to engage each can in the row of cans and move the oriented can into engagement with the carrier clip, a pair of ramps on each side of said carrier clips, so that said cans move smoothly by means of said insertion means into each carrier clip and the clipped cans are transported clear on through the machine.

2. A machine for transporting, orienting and packing correctly oriented cans in a clip-type can carrier, the machine comprising; a can inserting station, a conveyor for carrying two rows of cans while in a horizontal position toward the can inserting station, can orienting means including means for rotating said cans while being transported by said conveyors and in a horizontal position and arresting means for stopping the rotation of the cans when they reach an oriented position, can righting means to right the cans from said horizontal position to an upright position, means for feeding a plurality of clip-type can carriers between rows of cans to the can insertion station in synchronism with the movement of cans, a further conveyor for moving the correctly oriented upright cans through said insertion station, and opposed pocketed insertion wheels at the insertion station for inserting each of the correctly oriented cans into the continuously fed can carrier clips moving between the rows of cans.

3. A machine for transporting, orienting and packing correctly oriented cans into a clip-type can carrier, the machine comprising; a can inserting station, conveyor means for continuously transporting two rows of cans to and through said can insertion station, can orienting means including a stationary rail cooperating with said cans on said conveyor and causing said cans to rotate while being transported by said conveyor, and a one way arresting dog abutting against the side of each can while being transported to arrest the can when it comes in contact with a can seam and stopping the can in oriented position while being so rotated, means for feeding a plurality of clip-type can carriers between rows of cans to the

can insertion station in synchronism with the movement of the cans and while mounted on said conveyor, and opposed pocketed insertion wheels at the insertion station for inserting each of the correctly oriented cans into the continuously fed can carrier clips moving between the rows of cans.

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