

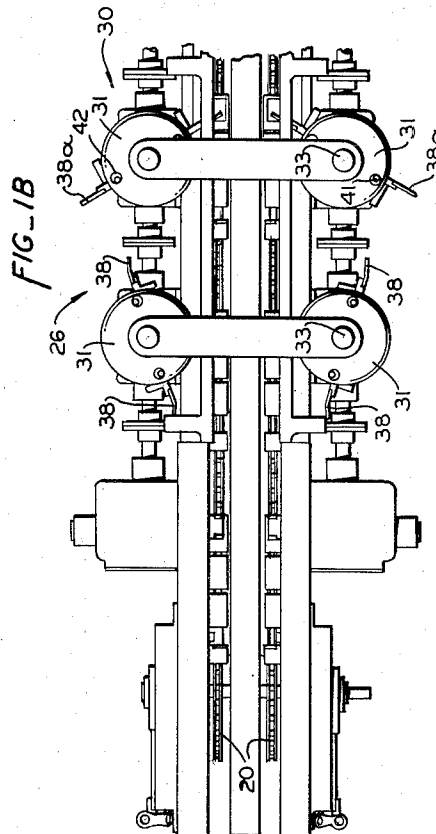
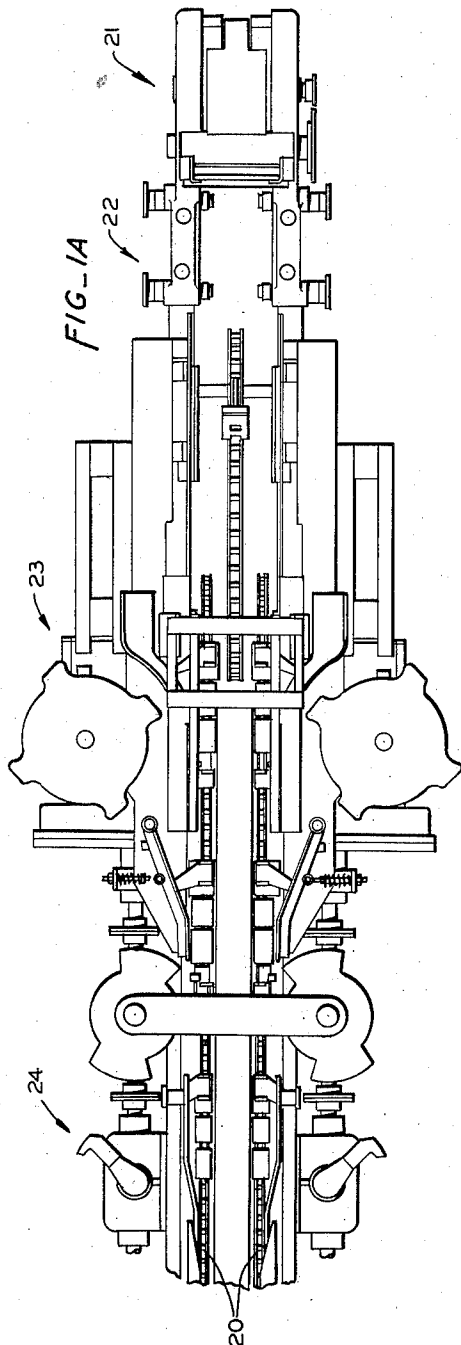
April 29, 1958

L. MCGIHON
CARTON CLOSING MACHINE

2,832,182

Filed Aug. 10, 1956

5 Sheets-Sheet 1



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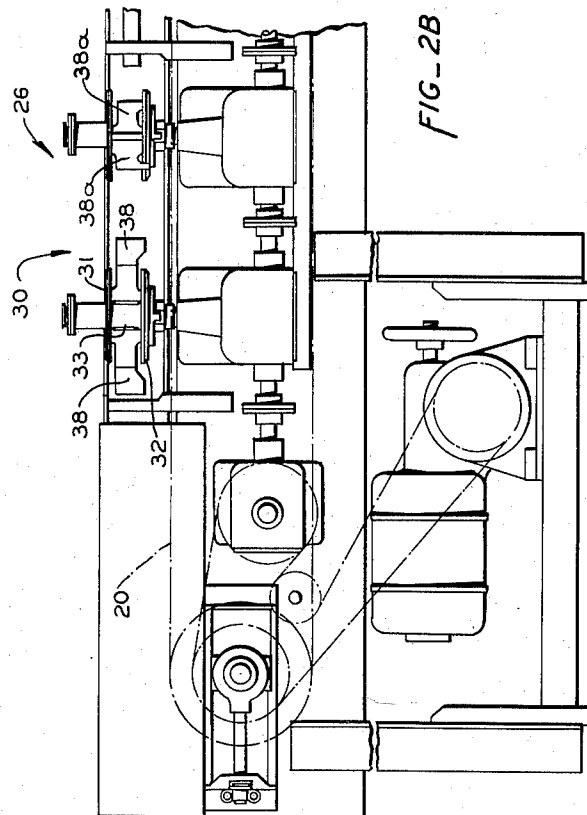
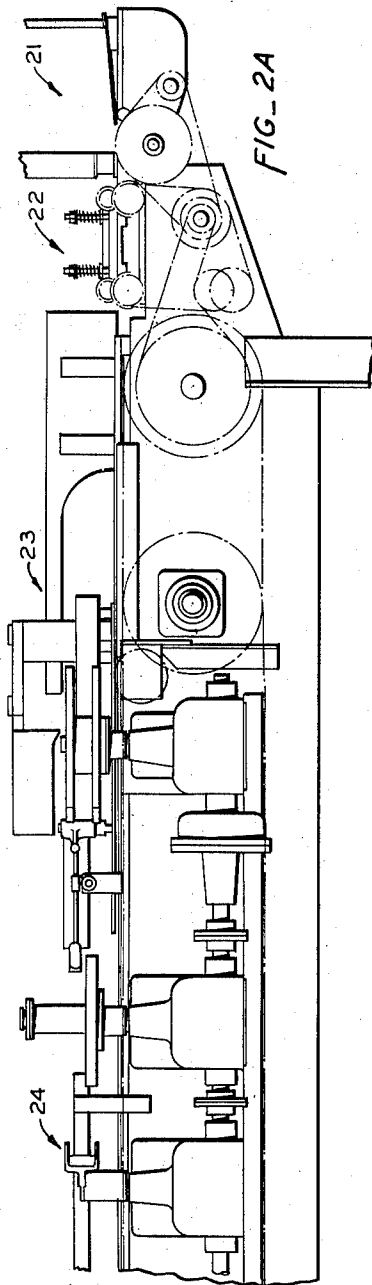
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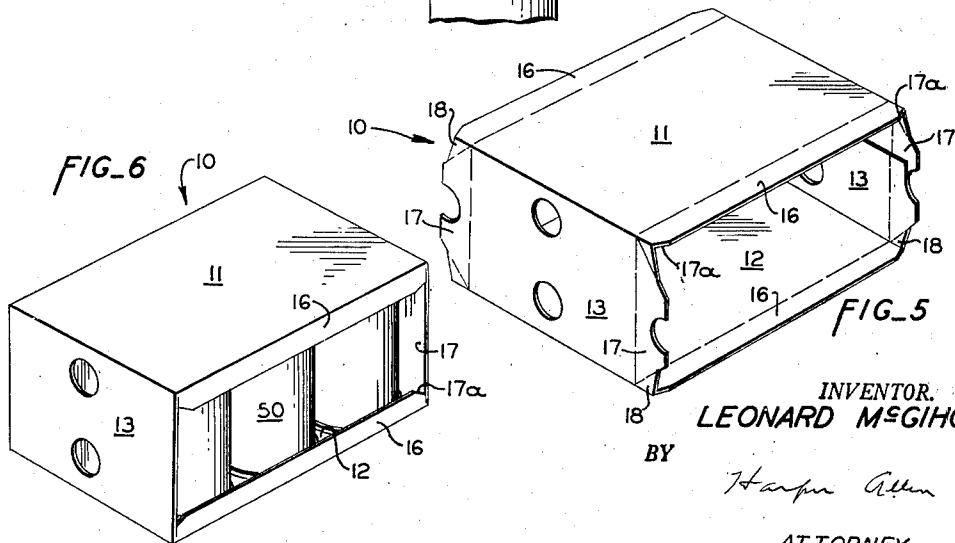
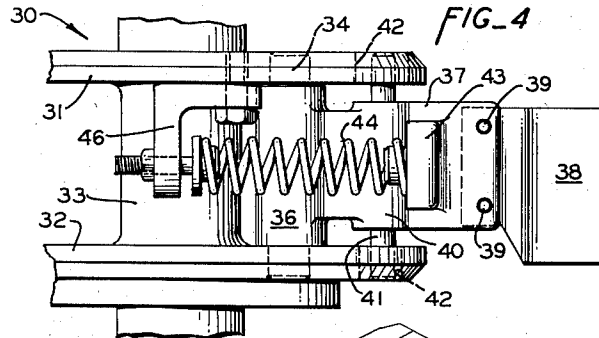
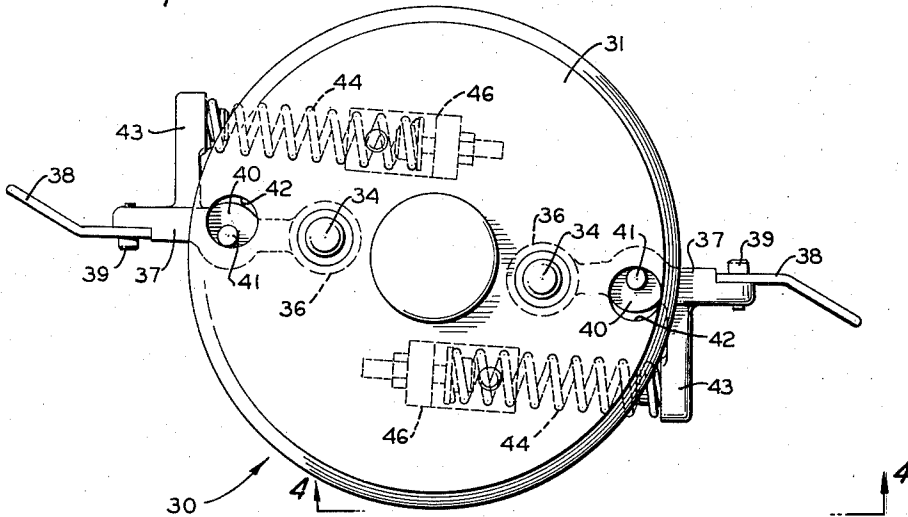
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FIG-3



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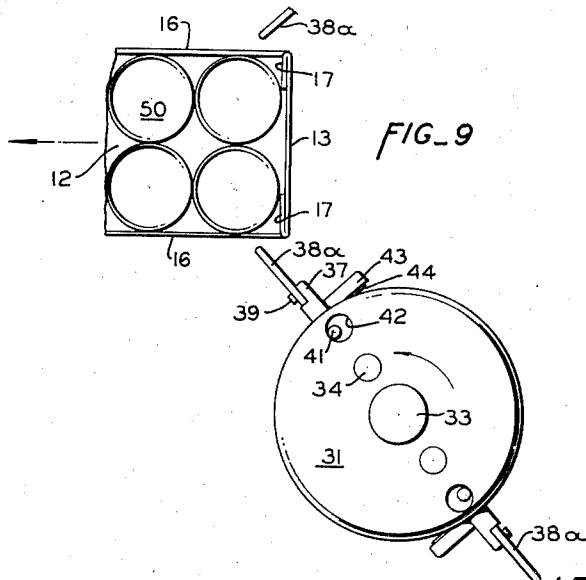
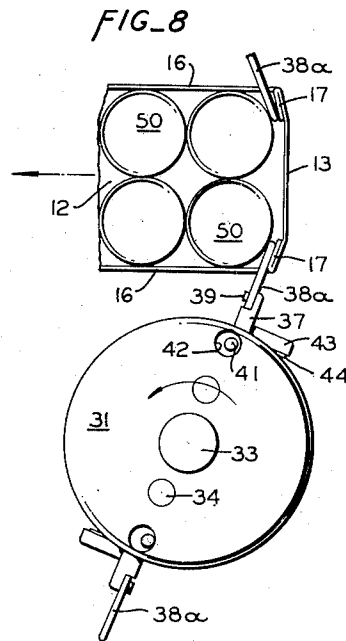
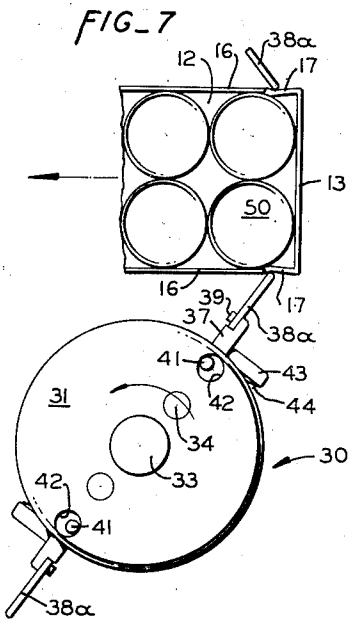
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5 Sheets-Sheet 4



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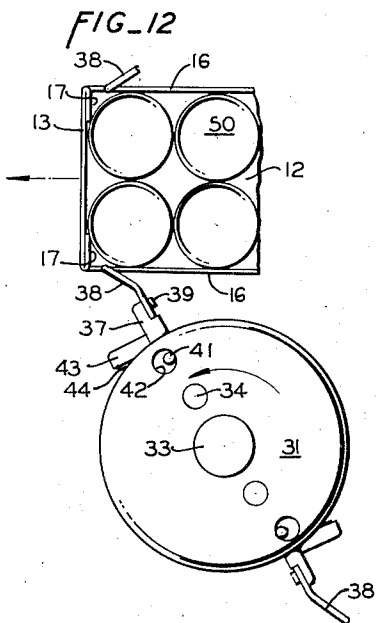
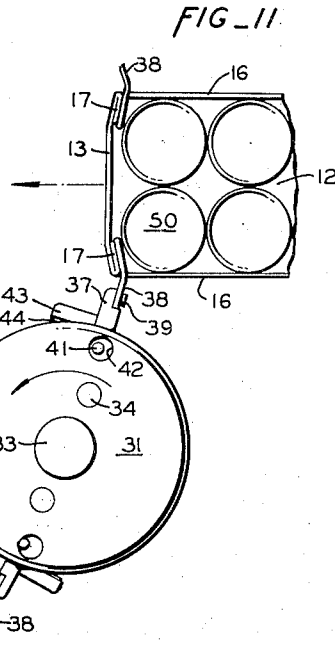
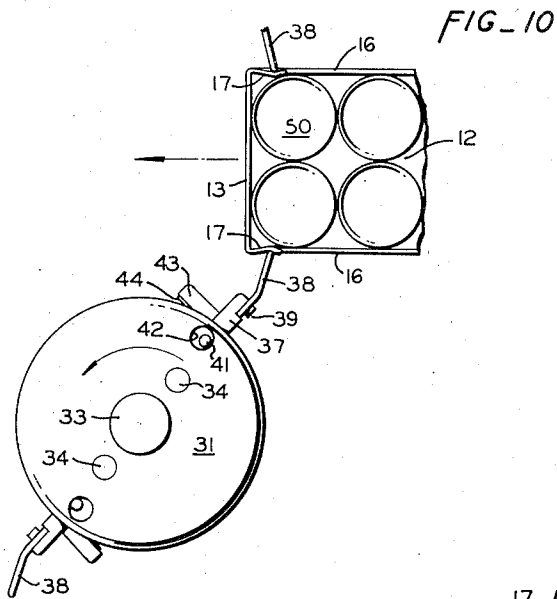
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5 Sheets-Sheet 5



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2,832,182

CARTON CLOSING MACHINE

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Application August 10, 1956, Serial No. 603,419

3 Claims. (Cl. 53—376)

The present invention relates to a flap tucking mechanism for open-sided cartons filled with containers, and is concerned more particularly with an improved tucking arrangement whereby a certain amount of float of the tucking blade is permitted as it enters the carton between the can and the fold of the carton to tuck the extended flap in place.

It is a general object of the invention to provide an improved flap tucking arrangement for a carton.

It is another object to provide a tucking blade mounting which provides for floating or yielding of the blade as it enters the carton to promote an efficient flap tucking operation.

The above and other objects of the invention are attained as described in connection with a preferred embodiment of the invention as illustrated in the accompanying drawings, in which:

Figures 1 and 1a represent a composite plan view of the complete machine for erecting the cartons, filling the cartons with cans and closing the cartons.

Figures 2 and 2a represent a composite side elevational view of the machine.

Figure 3 is a detailed plan view of one of the tucking heads.

Figure 4 is a fragmentary side elevational view of the tucking head as shown in Figure 3.

Figure 5 is a perspective view of the carton for use with the instant invention, with the carton shown in open position ready to receive cans.

Figure 6 is a perspective view of a carton which has been filled and closed.

Figures 7, 8 and 9 are operational views in sequence illustrating the tucking of one set of flaps of the carton.

Figures 10, 11 and 12 are operational views in sequence illustrating the tucking of the other set of flaps.

To enable a better understanding of the invention, a brief description of the carton preferably employed with the machine will be described, this carton being of the type shown in my co-pending application Serial No. 402,872, filed January 8, 1954, for "Carton."

In general the carton 10 (Figures 5 and 6) which is symmetrical from side to side, includes a top panel 11, a bottom panel 12, and respective end panels 13, one of the end panels comprising overlapped and glued portions. These four panels are connected by respective bend lines so that they form a continuous series. Respective top panel 11 has side flaps or panel portions 16 at either side, and the bottom panel 12 has similar side flaps or panel portions 16, and end panels 13 and 14 have respective side tuck-in flaps 17 of similar construction, the respective flaps 16 and 17 being connected at each corner by a gusset type corner or fold joint 18. As seen more particularly in Figure 7, the side flaps 17 are cut away as at 17a and are wider than the flap 16 for tuck-in purposes.

In general the machine comprises a carton feed station 21 (Figures 1, 1a, 2 and 2a) which is adapted to receive a stack of folded cartons, and inject these cartons

2

one by one to a carton erecting mechanism 22 which is the next mechanism in the line of operation. From the carton erecting mechanism 22, the erected cartons are fed past a can feed station 23 by means of which a group of three cans are introduced from each side into the carton, and then the carton with the cans therein is carried past a carton flap closing station 24, which performs a preliminary folding of the side flaps to prepare them for the subsequent tucking operation, and then the cartons are fed to a flap tucking station 26 where the tucking of the flaps completes the carton-closing operation.

The tucking mechanism of the instant invention is of the general type shown in my co-pending application Serial No. 392,158, filed November 16, 1953, and the complete machine illustrated in Figures 1 and 2 is of the type shown and described in my co-pending application Serial No. 485,943, filed February 3, 1955. Because the various tucking mechanisms indicated generally at 30 are essentially identical in construction, only one will be described in detail.

Referring to Figures 3 and 4, each tucking head 30 includes respective top and bottom discs or plates 31 and 32 which are joined by a central hub 33. The discs 31 and 32 carry two similar tucking means spaced 180 degrees apart, and for each tucking means have secured therein a pivot shaft 34 secured respectively in the discs 31 and 32. Each shaft 34 pivotally mounts a tucking member or blade assembly including a hub 36 pivoted on the shaft 34 and having an outwardly projecting body portion 37 which is offset at its end to receive a tucking blade 38 secured thereto by cap screws 39. Intermediate its ends the body portion is provided with a second boss 39 which carries a pin 41 extending into a stop-aperture 42 in each of the discs 31 and 32. To spring urge the tucking assembly to a normal position where the pin 41 is against one side wall of the respective apertures 42, each body 36 has a lateral projection 43 against which a compression spring 44 is seated at one end. The other end of the spring 44 seats against an L-shaped bracket 46 secured to the disc 31.

The tucking blades 38 of the bent or formed design shown in Figures 3 and 10 through 12 are used in the pair of opposite tucking assemblies 30 for tucking the leading flaps of a carton with reference to its direction of travel, and the corresponding tucking blades 38a shown in Figures 7 through 9 for the rearward flaps are straight. The bend in the tucking blades 38 provides the proper angle of entrance relation of these blades with reference to the cans as will be later described.

Referring in particular to Figures 7, 8 and 9, Figure 7 shows the initial point of contact and entry of the blades 38a as they begin to contact the end side flap 17, with the carton traveling as shown by the arrow in Figure 7. The speed of rotation of the tucking assembly 30 is so related (approximately equal) to the speed of travel of the carton to provide the sequence of operations as illustrated in Figures 8 and 9. Figure 8 shows the tucking blade 38a after it has folded the flap 17 into flat overlapping relation with the adjacent end panel 13, the actual operation being effected by a partial camming or sliding around the contour of the adjacent can 50, and being accompanied by a distortion of the end panel 13. It will be noted in Figure 9 that the pin 41 has moved out into the center of the holding opening 42, so that the mounting of the blades in effect provides a floating entering action and enables the blades to recede in response to the encountering of the can surface.

The sequence of operations shown in Figures 10 through 12 is similar to that described with respect to Figures 7 through 9, except that in this case the blades are urged clockwise with respect to the discs 31 by their springs 49 rather than counter-clockwise as in Figure 7. This is

3

provided inasmuch as the blade engages the opposite side of the can with reference to the direction of travel and must yield in a counter-clockwise direction as shown in Figure 11 in entering the carton.

The construction of the tucking assemblies 30 is such that the same assemblies can be used on the opposite side of the machine by simply turning them top-to-bottom.

While I have shown and described a preferred form of the invention, it will be apparent that the invention is capable of variation and modification from the form shown, so that its scope should be limited only by the scope of the claims appended hereto.

I claim:

1. In a carton closing machine having means for progressing a carton along a path, said carton having a flap folding inwardly to a closed position in parallel relation to an adjacent wall of the carton to be held there-against by a container in the carton, tucking means for

4

said flap disposed adjacent said path including rotary mounting means, a tucking blade pivotally mounted on said rotary means and projecting substantially radially therefrom, the direction of rotation being such that the blade when adjacent said path will travel in the same direction as said carton, and spring means urging said blade to a normal position, said rotary mounting means including a stop engageable by said blade.

2. In a carton closing machine as recited in claim 1, in which said rotary mounting means includes horizontally spaced apart discs, and in which said blade is mounted for pivotal movement by a pivot means extending between the discs.

3. In a carton closing machine as recited in claim 2, in which said stop includes an apertured portion of at least one disc.

No references cited.