United States Patent [19]

Berney

[11] **3,808,770**

[45] **May 7, 1974**

[54] **CASING MACHINE AND METHOD**

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[52] **U.S. Cl.** **53/47**, 53/284, 53/374

[51] **Int. Cl.** **B65b 7/20**

[58] **Field of Search** 53/284, 374, 47

[56] **References Cited**

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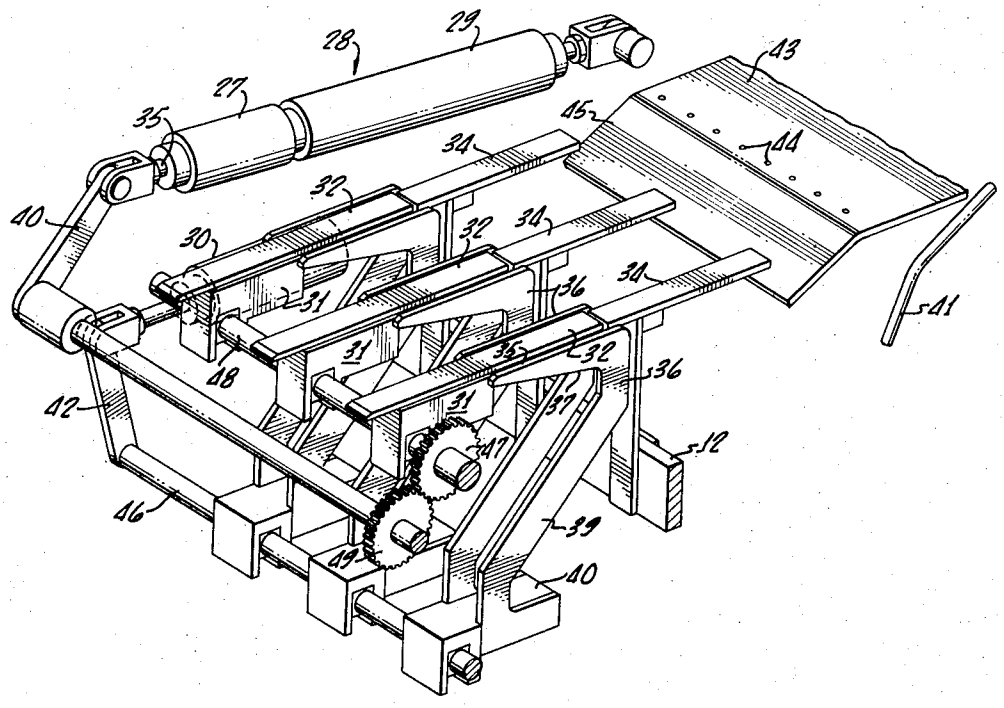
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Primary Examiner—Travis S. McGehee

[57] **ABSTRACT**

A device for folding the front and rear bottom flaps of a conventional carton after the open-ended carton has been placed around the contents. The direct support for the contents of the carton is transferred from the main platform to the front and rear bottom flaps without disturbing or dropping the orderly arrangement of the contents.

22 Claims, 9 Drawing Figures



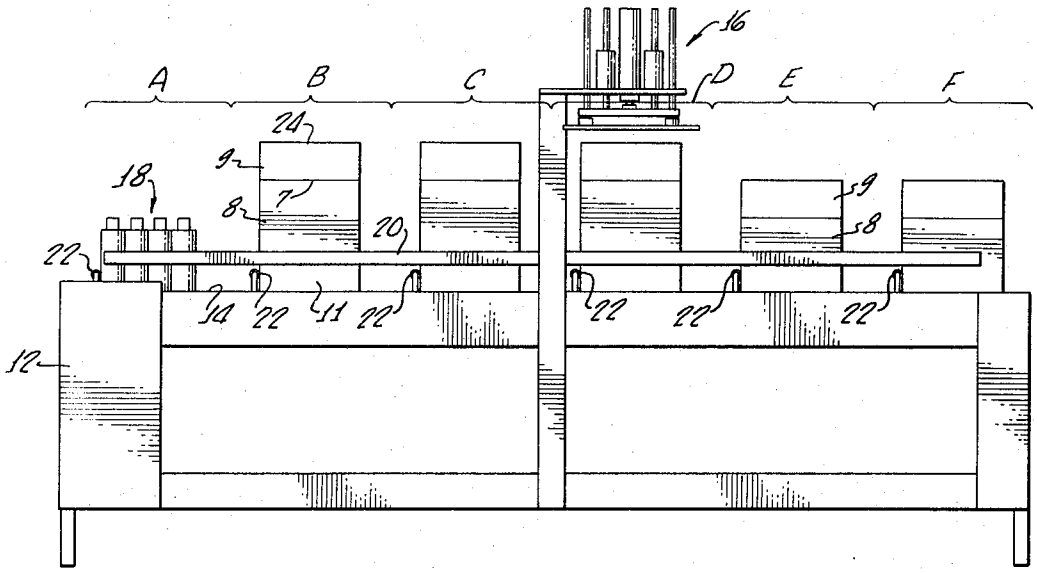

A
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D
E
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14
11
12

FIG. 1.

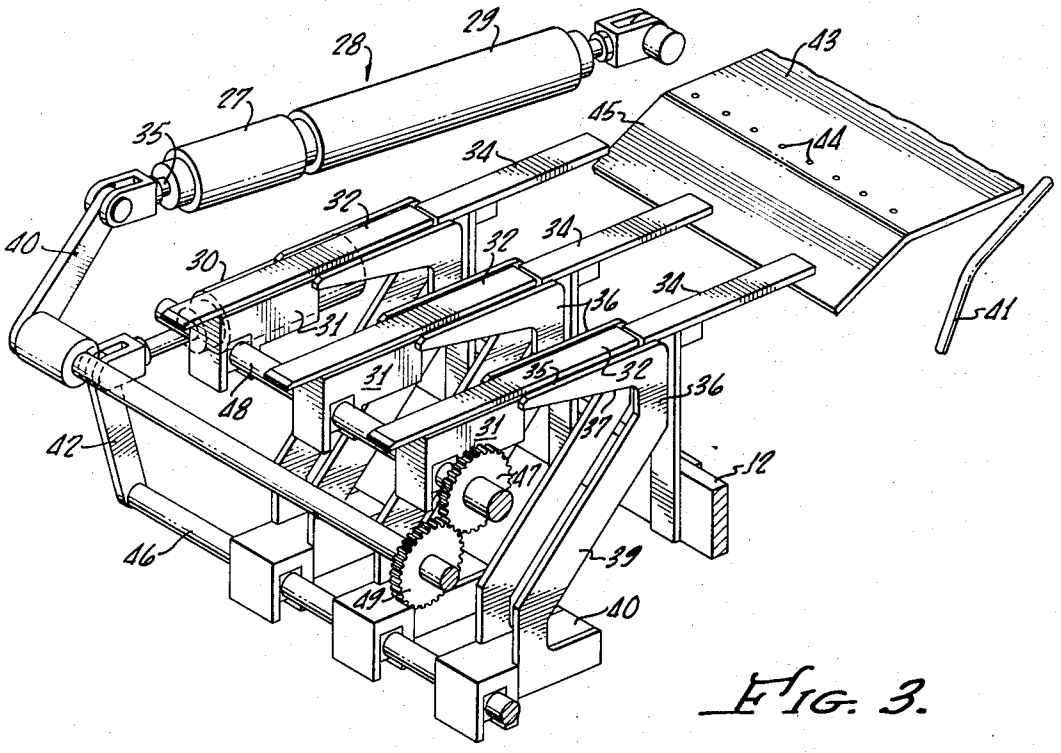

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FIG. 3.

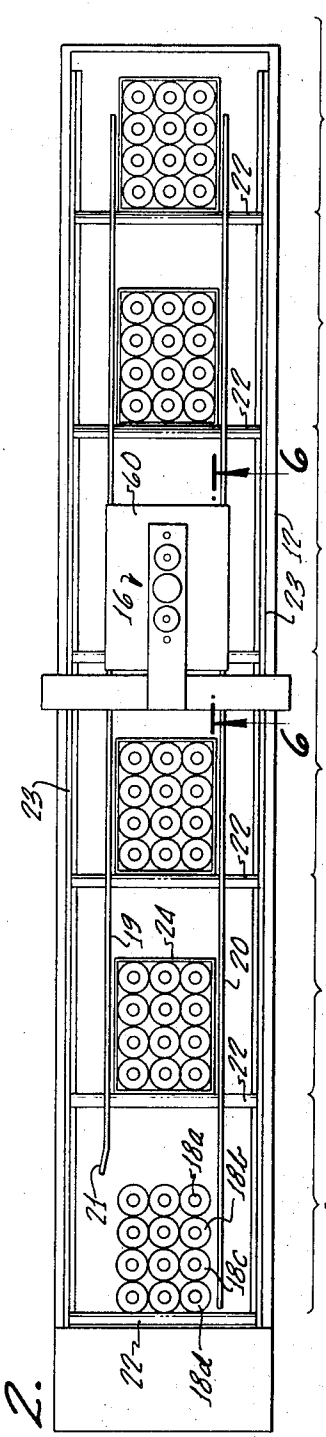

F
E
D
C
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6
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18a
18b
18c
18d
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20
21
22
23
24
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FIG. 2.

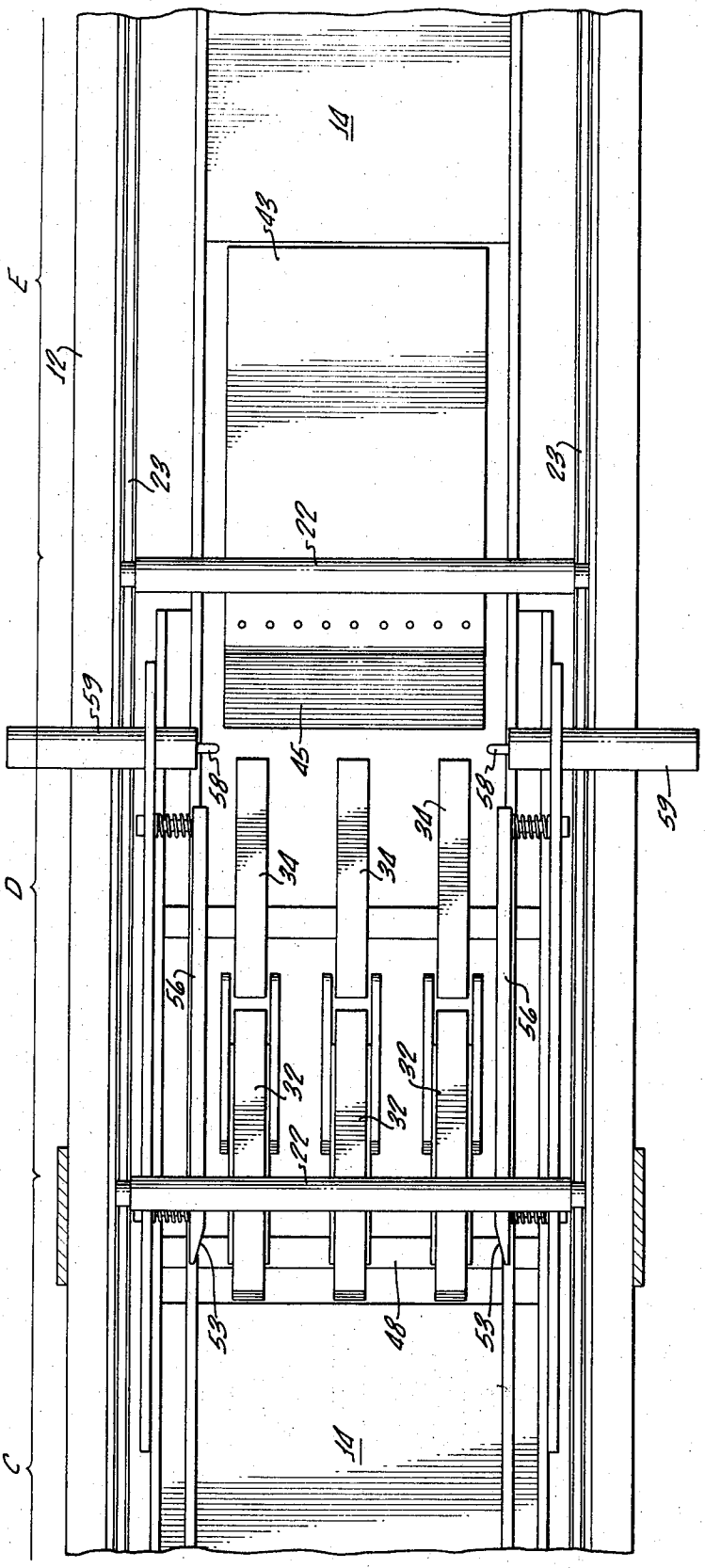
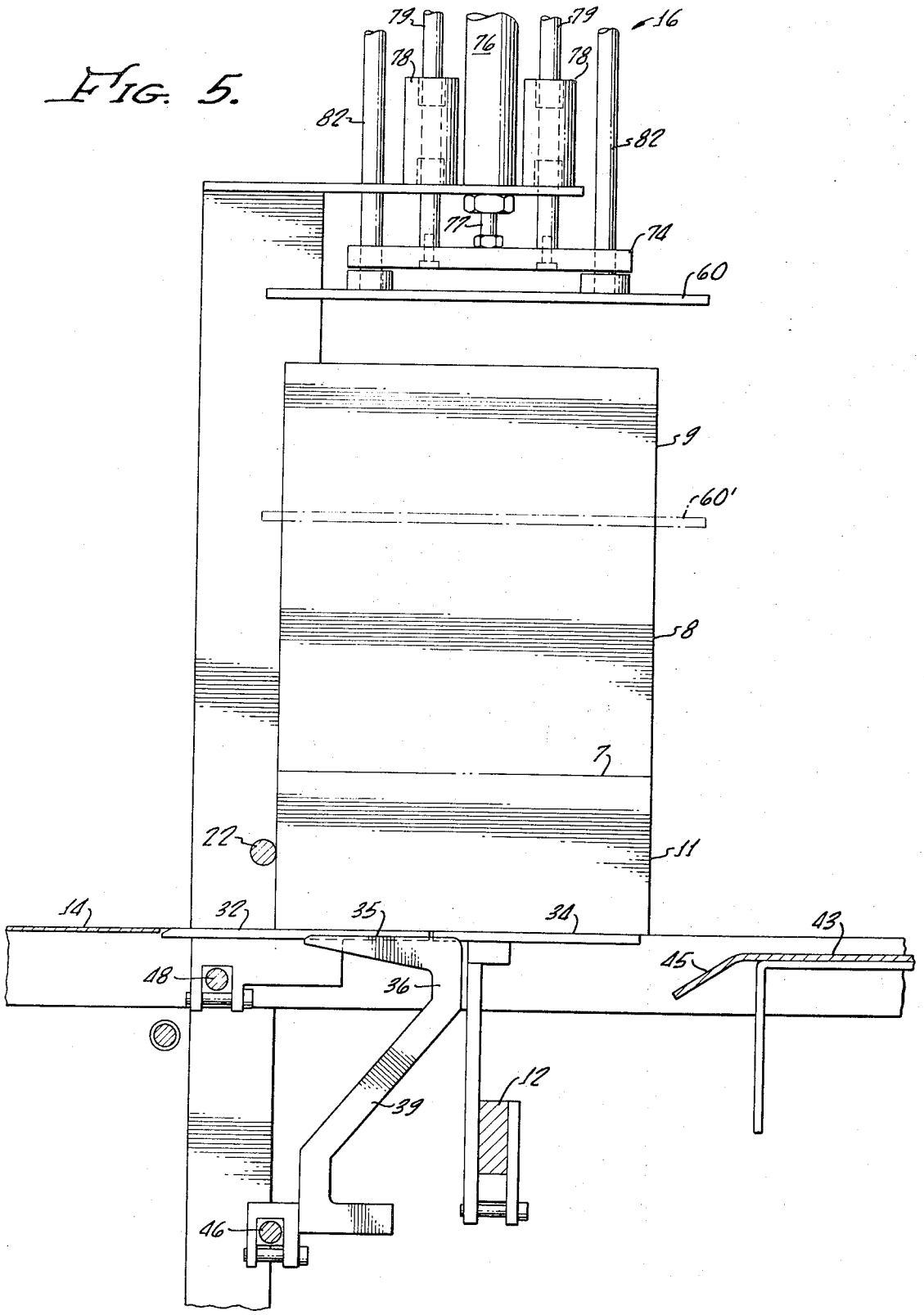

E
D
C
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11
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31
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34
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48
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56
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59

FIG. 4.

FIG. 5.



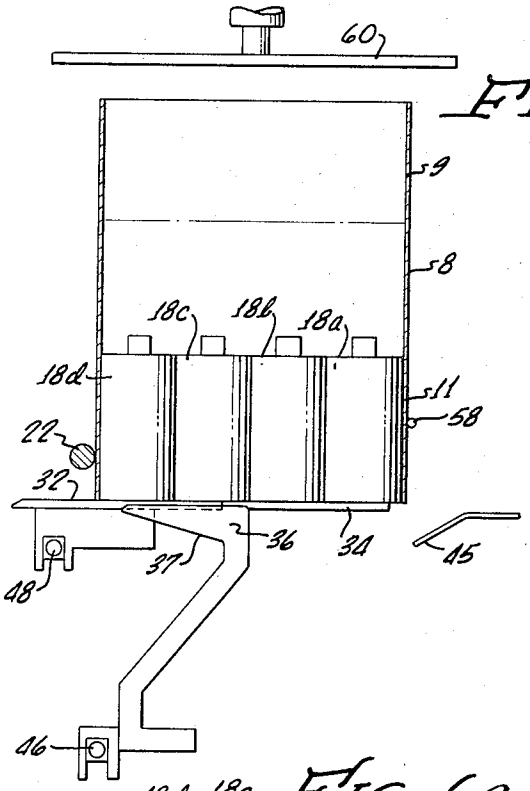


FIG. 6a.

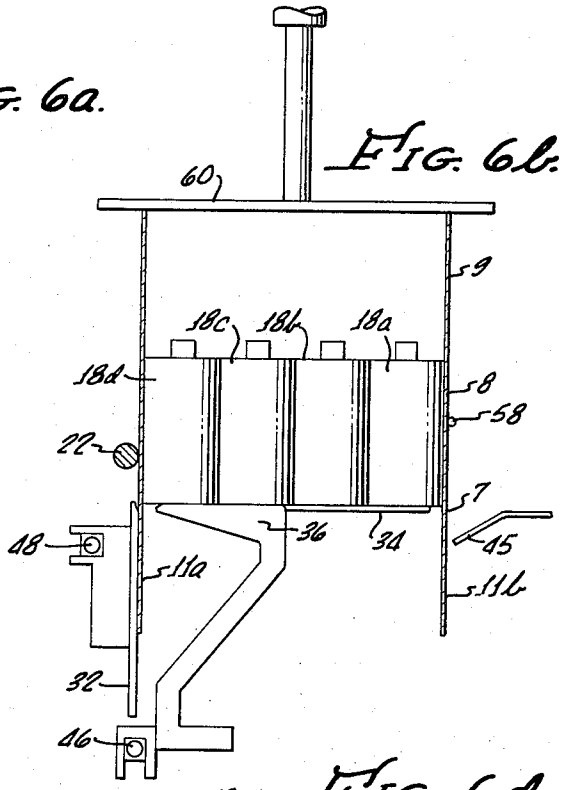


FIG. 6b.

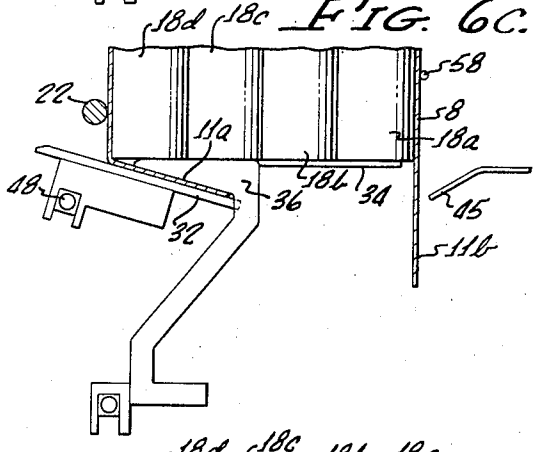


FIG. 6c.

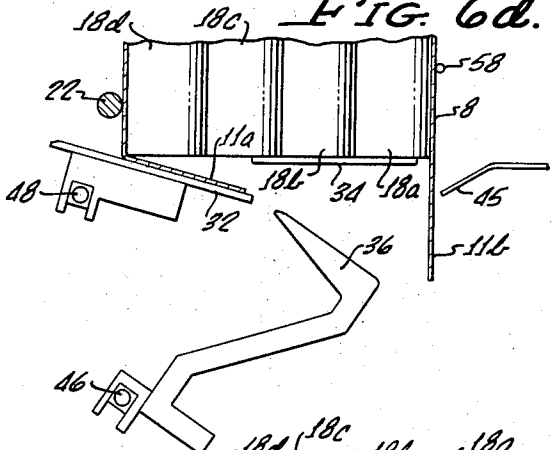


FIG. 6d.

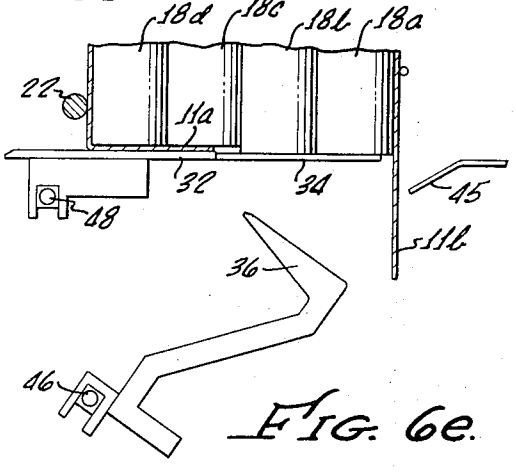


FIG. 6e.

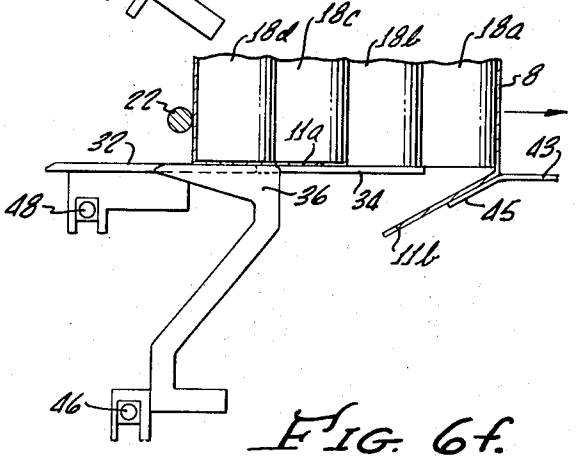


FIG. 6f.

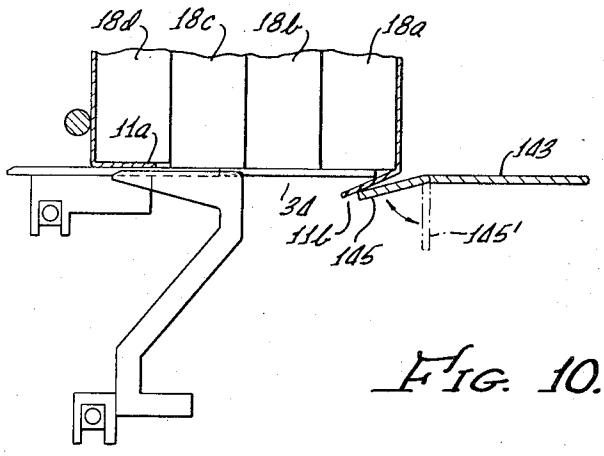


FIG. 10.

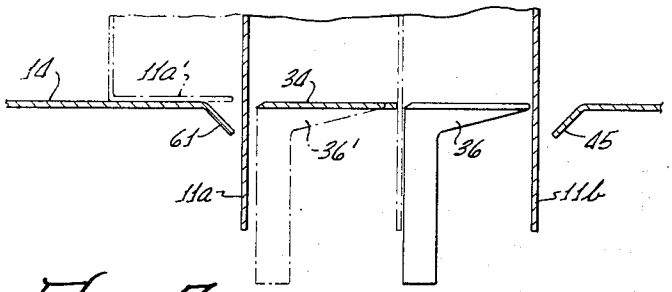


FIG. 7.

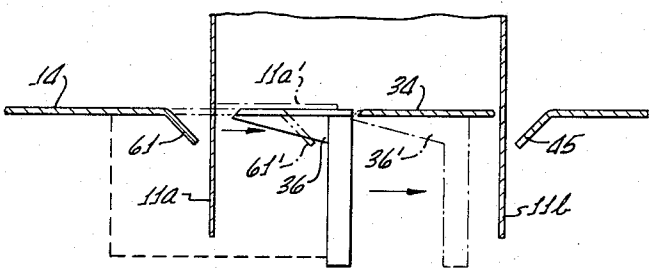


FIG. 8.

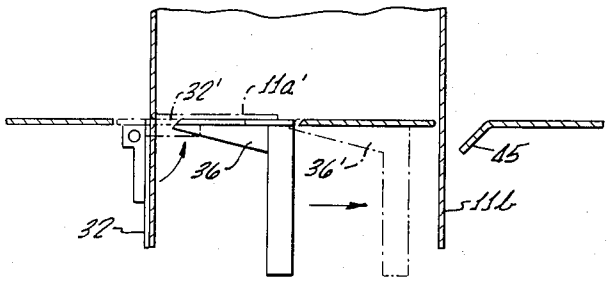


FIG. 9.

CASING MACHINE AND METHOD

INTRODUCTION

This invention relates to automatic casing devices and specifically to an apparatus which folds the front and rear bottom flaps of a carton under a prearranged set of contents.

Manufacturers often place their manufactured items in a carton, made for example of corrugated board or cardboard, prior to shipping and, generally, it is economically advantageous to automate as much of this casing process as possible. These cartons or cases have been folded into a conventional rectangular configuration having flaps on the top and bottom. When these flaps are closed and glued, or stapled, the case is complete.

In the usual bottling or canning facility, assembly lines of the finished product are presented to a handler and then placed, either manually or mechanically by drop packing, in a carton which already has its bottom closed, after which the top is closed thus completing the process. Manual packing obviously is slow and expensive. Mechanical drop packing has the risk of breakage or damage of the containers, and cannot handle certain types and shapes of containers.

Additional shortcomings are that the repetitive handling of the goods in placing them in their carton increases the probability of damaging them by either crushing or dropping. Each additional handling represents an added cost to the manufacturer and hence an ultimate increase in cost to the consumer.

The present invention eliminates these shortcomings by a casing procedure which in the preferred embodiment involves several steps. First, a carton with both ends open, is placed over and around the prearranged contents which are on the casing platform with the bottom flaps open and the carton sides only partially down on the contents; second, the carton and contents are moved along the casing platform to the casing station and the carton is then lowered to its proper position around the contents with the open flaps extending down; third, the rear bottom flap of the box is partially folded; fourth, the support for the rearmost contents is transferred from the casing platform to the rear bottom flap of the carton; fifth, the rear bottom flap is completely folded; and sixth, the carton and its contents are moved out of the casing station, at the same time folding the front bottom flap.

The key to the invention is the ability to transfer the direct support means for the contents from the platform to the bottom flaps of the carton without handling the contents, dropping them, or disrupting their orderly pre-arrangement. Therefore, the present invention will enable a user to place a carton having both its top and bottom flaps in the open position, over a preassemble set of contents and then have the apparatus fold the front and rear bottom flaps without lifting the carton or handling the contents. The detailed means for accomplishing this are described below.

DRAWINGS

The preferred and alternate embodiments may be more clearly understood by referring to the accompanying drawings in which:

FIG. 1 is a side elevation of the casing device, including the platen located at the casing station;

FIG. 2 is a plan view of the casing device shown in FIG. 1 with assembled carton and contents in place;

FIG. 3 is an enlarged perspective view of the bottom flap folders which are located at the casing station in FIG. 1;

FIG. 4 is a plan view of the bottom flap folders of FIG. 3;

FIG. 5 is a side elevation view of the bottom flap folding mechanism of FIG. 3, together with the platen of FIG. 1 in the high (solid lines) and the low (broken lines) positions;

FIG. 6 is series of side elevation views 6A–6F in schematic form, of the six steps in the flap folding procedure, taken along line 6—6 of FIG. 4;

FIG. 7 is a partial view comparable to that of FIG. 6 showing a first alternative embodiment in the bottom flap folder in two stages of its operation (solid and broken lines);

FIG. 8 is a partial view comparable to that of FIG. 6 showing a second alternative embodiment of the bottom flap folder in two stages of its operation (solid and broken lines); and

FIG. 9 is a partial view comparable to that of FIG. 6 showing a third alternative embodiment of the bottom flap folder in two stages of its operation (solid and broken lines).

As is shown in FIGS. 1 and 2, the casing device includes in-line stations A–F along its length. The main frame 12 supports a horizontal platform 14 which extends along the entire length of the device but is interrupted at the casing station D. A pair of parallel side guide rails 19, 20 supported from the frame above the platform 14 are spaced apart by the width of the cases 24. One guide rail 19 extends through the entire six stations, while the other guide rail 20 terminates in an outward flare 21 between stations A and B.

As an exemplary moving means, a series of pusher bars 22 extend across the device immediately above the platform and are spaced apart by a distance equal to the length of each of the stations. The bars 22 are connected to endless members 23 on opposite sides of the platform 14. The endless members 23 are connected to a known mechanism such as a pneumatic cylinder (not shown) for intermittently moving the pusher bars from adjacent one station to adjacent the next. A caser platen assembly 16 is supported from the frame 12 above the platform 14 at the casing station D.

In the explanation of the preferred embodiment, the contents to be placed in cartons 24 will be assumed to be 12 cylindrical cans 18 located on the caser platform 14 and pre-arranged in four rows 18*a*, *b*, *c*, *d* of three containers each as shown in FIG. 2. The carton is a conventional rectangular carton having a body section 8 with four sides in rectangular configuration, and four top flaps 9 and four bottom flaps 11 extending from the respective sides along hinge lines 7. In FIG. 1 the flap 9 and 11 are shown in the open, vertical position parallel to their respective sides at stations B,C, and D, whereas the bottom flaps 11 are shown closed in FIG. 1 at stations E and F.

Referring now to FIGS. 3 and 4, the platform 14 is interrupted in the area of the casing station D wherein a bottom flap folder mechanism is mounted on the frame. Actually the interruption extends partially into stations C and E in order to accomodate the entire bottom flap folder mechanism. The bottom flap folder 26 includes spaced parallel folding strips 32, three in the

exemplary embodiment, fixed on a shaft **48** by brackets **31.** The shaft **48** is suitably mounted for rotation in the frame **12** and includes a gear **47** near its one end which engages a gear **49** fixed on a shaft **46.** Shaft **46** also is rotatably mounted in the frame **12** and has a link **40** at its one end connected to the piston rod **35** of a cylinder assembly **28** mounted on the frame. The cylinder assembly **28** is a two-step cylinder including a short cylinder portion **27** in-line with a long cylinder portion **29.** In FIG. **3,** the folding strips **32** are shown in the up position, wherein their upper surfaces lie in the same horizontal plane as the upper surface of the platform **14.** When both cylinder portions **27** and **29** are activated to fully extend the piston rod **35,** the folding strip **32** rotate clockwise as viewed in FIG. **3** to a substantially vertical position as shown in FIG. **6B.** With the smaller cylinder portion **27** extended and the larger cylinder portion **29** retracted, the folding strips **32** are positioned at an intermediate position, such as is shown in FIGS. **6-C** and **6-D.** Stationery supporting strips **34** extend in-line with the folding strips **32** and are rigidly supported on the frame **12** so that their top surface also is co-planer with the platform **14.**

A tapered movable support finger **36** is located on each side of each folding strip **32** so as to interleaf the folding strips **32** between pairs of fingers **36.** Each support finger includes an upper surface **35** co-planer with the platform **14** in the position shown in FIG. **3,** and an inclined lower surface **37** tapered downward and away from the hinge **7** of rear flap **11***a*. Each finger is connected through an arm **39** and a bracket **40** to a shaft **46** which is connected by a link **42** to a hydraulic or pneumatic cylinder **30** mounted on the frame **12.** The cylinder assembly **30** is shown in the extended position in FIG. **3.** When the cylinder is retracted, the supporting fingers pivot clockwise as viewed in FIG. **3** about 30° to the position shown in FIGS. **6-D** and **6-E.**

Down stream of the supporting strip **34** is a stationary front flap folding plate **43** which includes an upper surface co-planer with the platform **14** and an inclined ramp surface **45** adjacent the supporting strips **34.** Also shown on the plate **43** in FIG. **3** are apertures **44** for addition of optional glue applicators and side flap plows **41.**

As shown in FIG. **4,** two spring-loaded guide rails **56** are located at the casing station D and are positioned above the level of platform **14.** The spring-loaded guide rails **56** are mounted on the frame using a sliding pin and spring assembly **57** which urges the rails **56** to the position shown in FIG. **4** but permits them to be spread further apart against the bias of the spring. In their position shown in FIG. **4** the rails **56** are spaced apart by a distance slightly less than the guide rails **19, 20** and also slightly less than the width of the carton **24.** Camming surfaces **53** at the leading edge of the spring loaded rails permit a carton moving into station D to spread the spring loaded rails slightly against their spring bias so that the carton thus is held firmly between the two spring loaded rails at Station D.

In the illustrated embodiment, two case stops each including a pneumatic or hydraulic cylinder **59** which actuates an index pin **58** are mounted on the frame on opposite sides above the plane of platform **14** to serve as positive stops to position the carton at the casing station D when the pins **58** are extended, but to permit passage of the carton from station D to station E when the pins **58** are retracted.

As shown in FIG. **5,** the casing platen assembly **16** is mounted on a member **80** of the frame **12.** It includes a cylinder assembly **76** mounted on the member **80** and operatively connected to a horizontal platen **60.** The rod **77** of the cylinder assembly is connected to a cross member **74** which then reciprocates up and down as the cylinder **76** is actuated. Guide sleeves **78** fixedly mounted on member **80** receive guide rods **79** to guide the reciprocation of the cross member **74.** The platen **60** is connected to the cross member **74** by adjusting rods **82** which permit adjustment of the height of the platen **60** relative to the cylinder assembly in a known manner to accommodate cartons of differing heights.

As can be seen in FIG. **5,** in this example, the body section **8** of the carton is approximately twice as high as either flap section **9** or **11.** It can be seen from FIG. **5** that the height of the platen **60** above the platform **14** in the upper position (solid lines) is greater than the height of the carton with its flaps open, while in the lower position (dash lines) the height of the platen above the platform is equal to the height of the top flap section **9** plus the body section **8.**

The operation of the preferred embodiment of the caser will be described first with reference to FIGS. **1** and **2.** The contents to be encased are first presented in their desired configuration at station A resting on the platform **14.** This can be accomplished manually, or preferably automatically by other feeding equipment not forming a part of this invention. The traveling pusher bars **22** are activated for an incremental step so that the bar located immediately behind the prearranged contents **18** advances the contents to station B between the guide rails **20.** At station A or B, a carton **24** preformed in its rectangular configuration, but with its top and bottom flaps **9, 11** open and extending parallel to the sides, is placed over the prearranged contents, manually or by automatic equipment not specifically disclosed herein, so that the lower edges of the open bottom flaps rest on the platform **14** and the case body section **8** and top flaps extend above the top of the contents **18.**

At the next intermittent step of the pusher bar assembly **22,** the carton and contents are advanced to station C, which is a non-operational station primarily to permit the operator to remain a safe distance from the operating station D and as an auxiliary station to permit insertion of additional articles in the carton.

The next intermittent step of the pusher bar assembly **22** moves the carton and its contents to the casing station D. In the illustrated embodiment, the forward side of the carton abutts the extended index pins **58** to positively position the carton and its contents at station D and ensure that the inertia of the carton does not move it beyond the desired position.

Referring now to FIG. **6-A,** when the case and contents **18** arrive at station D, the folding strips **32** and support fingers **36** are both in their up position as shown in FIG. **6-A.** The folding strips at this point in time have functioned as a bridge from the caser platform **14** to the supporting fingers **36** so that as the contents **18** pass from the caser platform **14** to the caser station D they will not be disarranged. As the three columns of cans enter the caser station, they pass over the folding strip **32** and thus do not fall into the gap between the end of the caser platform **14** and the beginning of the supporting fingers **36.** It will be noted from FIGS. **6-A** and **6-D,** that the location of the stopping

pins **58** relative to the supporting strips **34** and folding strips **32** is such that supporting strips **34** are disposed below, and support, the front two rows of containers **18***a*, *b* and also support the third row of containers **18***c* by their forward edge. The support fingers are disposed below, and support the rows **18***c* and **18***d* closest to the rear flap **11***a*, but terminate at the rear well under row **18***d*.

The cylinder assembly **29** is now activated to extend both cylinder portions **27** and **28** and lower the folding strips **32** to the vertical position shown in FIG. **6**-B. The cylinder assembly **76** is then operated to lower the platen **60** to its down position as shown in FIG. **6**-B, pushing the carton down around the contents by a distance equal to the height of the bottom flaps **11.** As the carton is lowered, the bottom flaps remain vertical and pass through the gaps forward of and alongside the supporting strips **34,** and rearward and alongside the supporting fingers **36.** It should be noted that the gap rearward of the supporting fingers **36** was unblocked by lowering of the folding strips **32.** As shown in FIG. **6**-B, the carton is then in position with its body section **8** surrounding the contents **18,** its upper flaps **9** extending upward from the contents and its bottom flaps **11** extending below the contents with the trailing bottom flap **11***a* alongside the folding strips **32.** If a carton with one end previously closed is used, it would have been placed on the contents oriented so the closed end is on top and the height of the platen **60** would be adjusted accordingly. The casing platen **60** then has completed its function but may be left in the down position to assure that the carton is not raised during the subsequent flap folding step.

Next the folding strips **32** are rotated to the position shown in FIG. **6**-C by extending the main cylinder portion **28** of cylinder assembly **29.** This raises the trailing flap **11**a of the carton to a position adjacent or abutting the lower inclined surface **37** of the supporting fingers **36** as shown in FIGS. **6**-C. The contents of the carton remain supported by the supporting fingers and the supporting strips **34,** but now the trailing flap **11***a* is touching, or very close to the rear edge of the rear row of containers **18***d*.

The cylinder **30** then is activated to rotate the supporting fingers **36** to the down position as shown in FIG. **6**-D. Support of the rear row of containers **18***a* is now transferred from the supporting fingers **36** to the trailing flap **11***a* of the carton which is supported on the folding strips **32.** the orderly arrangement of the contents is not disrupted since the drop of the rear row of containers **18**d from its position in FIG. **6**-C to its position in FIG. **6**-D, if any, is so small as to be inconsequential. The other three rows of containers **18***a*, *b*, *c* remain supported by the supporting fingers **34.** As shown in FIG. **6**-E the folding strips **32** then are raised back to their horizontal position by retraction of the smaller cylinder portion **27** so that the trailing flap of the case is closed. The platen **60** and support fingers **36** then can be returned to the raised position.

It should be noted that the closed trailing flap **11**a is long enough to support rows **18***c* and **18***d*, but terminates rearward of strips **34** so that the flap is positioned above the strips **34** and can be slid over those strips in the next step.

Next the index pins **58** are retracted and the pusher bar is activated to advance the carton and its contents from station D to station E. As shown in FIG. **6**-F, as the carton advances towards station **6**-E the leading bottom flap **11***b* is folded upwardly by the inclined surface **45** to close the leading flap. The front row of containers **18***a* does not drop out of the carton as it leaves supporting strips **34** because the ramp **45** is sufficiently close to strips **34** that the partially closed leading flap **11**b supports the front row **18***a* before it leaves the strips **34** as shown in FIG. **6**-F. By the time the second row **18***b* leaves the strips **34,** the leading flap **11***b* is entirely closed and supports that row. Thus, when the carton arrives at station E it is again resting on platform **14,** but now has its bottom end flaps closed. Meanwhile, the supporting fingers **36** have been returned to their initial position so as to be ready to receive the next carton. Of course in actual operation a continuous series of sets of containers are fed to station A so that all of the stations are occupied at all times after initial start-up.

As the closed bottom flaps pass over the apertures **44,** glue may be applied to their underside from glue applicators not shown. Continued movement of the carton through station E to station F will cause the plows **41** to close the side flap which then will adhere to the end flaps if glue has been applied.

The operation of the device as described above preferably is automated by a control system which activates each of the elements responsive to completion of the preceding step in a manner which is conventional and well known in the art.

Referring now to FIG. **7,** an alternative embodiment differs from the principal embodiment described above in that the folding strips **32** are absent, the stationary supporting strips **34** in the initial portion of the carton at station D support the rear two rows of containers rather than the front three rows of containers the supporting fingers **36** move rectilinearly from the position shown in solid lines supporting the front two rows of containers to the position **36'** shown in phantom lines wherein the supporting fingers are interleaved with the supporting strips **34,** and the platform **14** includes a downwardly inclined ramp **61** immediately rearward of the position of the carton at station D. In operation, the carton with its contents is advanced to station D and the platen **60** lowers the carton around the contents in the same manner as in the principal embodiment with the rear two rows of the contents supported on supporting strips **34** and the front two rows supported on supporting fingers **36.** The supporting fingers **36** are then moved to the position **36'** shown in phantom lines. This rearward movement of the supporting fingers moves the carton and its contents rearward to the phantom line position shown in FIG. **7.** As the carton moves rearward, its rear flap **11***a* is closed by contact with the ramp surface **61** so as to assume the closed position **11***a'*. The forward flap **11***b* is unaffected as it moves freely alongside the fingers **36.** The supporting fingers **36** are then returned to their solid line position carrying the carton and its contents back to the solid line position but now with the trailing flap **11***a* closed and supported on the supporting strip **34.** The pusher bars **22** which were permitted to freely move backward with the carton during the previous steps are now again advanced to move the carton and its contents to station E, closing the leading flap **11***b* in the same manner as in the principal embodiment.

A second alternative embodiment shown in FIG. **8** also eliminates the folding strips **34** and employs a

ramp **61.** In this embodiment, the stationary supporting strips **34** are forward as in the principal embodiment. The supporting fingers **36** in their initial position are rearward of the stationary supporting strips but are adapted to be moved to the phantom line position **36'** wherein they are interleaved with the stationary supporting strips **34.** The ramp portion **61** of the platform is interconnected with and moves with the supporting fingers **36** to the phantom position **61'**. In operation of this embodiment, the carton and its contents again are brought to the casing station D, and the platen **60** is lowered to lower the carton as in the principal embodiment. The ramp **61** and supporting fingers **36** are then moved forward to the positions **36'** and **61'**, but leaving the carton and its contents in their original position. As this occurs, the ramp **61** closes the trailing flap **11***a* so that the support of the rear two rows of containers is transferred from the supporting fingers **36** to the trailing flap **11a** without dropping the containers from the carton. The ramp **61** and supporting fingers **36** are then retracted to their original positions so that the supporting fingers underlie the trailing flap. The carton is then moved to station E in the same manner as in the principal embodiment closing the forward flap **11***b* by contact with the ramp **45.**

A third alternative embodiment shown in FIG. **9** includes the folding strips **32** of the principal embodiment, and differs from the principal embodiment only in that the supporting fingers move rectilinearly from the solid line position **36** to the phantom position **36'** where they are interleaved with the stationary supporting strips **34.** The operation is the same as in the principal embodiment except that retraction of the supporting fingers occurs rectilinearly rather than by rotation.

Another embodiment illustrated in FIG. **10** includes the same arrangement for closing the trailing end flap **11***a* as the principal embodiment, but provides for the situation where the end flaps are not long enough to support the center rows **18***b* and **18***c* of containers when closed. Accordingly the ramp portion **145** is pivoted to the plate **143** and actuated to pivot by conventional means, and the plate **143** begins closely adjacent to the end of strips **34.** The leading flap **11***b* is partially closed by pivoting of the ramp **145** from the position **145'** shown in phantom to the position **145** shown in solid lines.

Another embodiment utilizing this invention could have only a single station similar to station D, but without the platen. The operator then would place the open carton over the contents and push it down to the position of FIG. **66** prior to the bottom flap folding steps.

While this invention has been described with respect to pneumatic or hydraulic cylinders for operation, it should be evident that other mechanical or electrical means of operation can be substituted. Also, it should be evident that numerous adjustments can be made in the device to accommodate cartons of different sizes and shapes, the cartons illustrated being for purposes of example only. Further it is evident that cartons with their top flaps initially closed could be used.

What is claimed is:

1. Apparatus for folding a bottom flap of a carton enclosing a plurality of articles without disrupting the arrangement thereof comprising:

first means, disposed below some of the articles closest to said flap, supporting said closest articles;

second means, below the remaining articles, supporting said remaining articles;

means for closing said flap and removing said first means as support to transfer support of said closest articles from said first means to said flap.

2. Apparatus for folding a bottom flap of a carton as in claim **1** wherein:

said first means is at least one finger moveable from a first position supporting said articles to a second position not supporting said articles; and

prior to moving said finger to said second position, said closing means raises said flap to a position adjacent the undersurface of said finger wherein the flap is capable of supporting said articles.

3. Apparatus for folding a bottom flap of a carton as in claim **1** and further comprising:

means for moving said carton and articles onto said first and second means from an adjacent station;

platform means at said adjacent station for supporting said articles, and substantially coplanar with the supporting surfaces of said first and second means.

4. Apparatus for folding a bottom flap of a carton as in claim **3** wherein:

there is a gap between said platform means and said first supporting means; and

said closing means bridges said gap in its raised position and unblocks said gap in its lowered position.

5. Apparatus for folding a bottom flap of a carton as in claim **4** wherein:

said first means is a plurality of spaced apart fingers moveable from a first position supporting said articles to a second position not supporting said articles, and interleaved with said closing means when said fingers are in said first position and said closing means is raised.

6. Apparatus for folding a bottom flap of a carton as in claim **4** wherein:

said first means is a plurality of spaced apart moveable fingers; and

said second means is a plurality of strips which interleave with said fingers as said fingers move from a position supporting said articles to a position not supporting said articles.

7. Apparatus for folding a bottom flap of a carton as in claim **4** and further comprising:

means operable, while the articles are supported on said first and second means and said closing means is lowered, for lowering said carton to its final encasing height with said flap passing through said gap.

8. Apparatus for folding a bottom flap of a carton as in claim **1** wherein:

said articles are arranged in a plurality of horizontal rows; and

said second means support all but one row of said articles.

9. Apparatus for folding a bottom flap of a carton as in claim **1** wherein:

said first means and said closing means pivot about axes parallel to the flap hinge.

10. Apparatus for folding a bottom flap of a carton as in claim **1** and further comprising:

platen means above said carton operable to push the carton down to a position wherein the hinge line of the bottom flap is adjacent the lower edge of the containers.

11. A device for folding a bottom flap of a box which is disposed around the contents comprising:

supporting means for the contents of the box;

folding means for the flap of the box, which means is interleavable with a portion of the supporting means such that said folding means offers support for the contents while it is interleaved.

12. A casing device for encasing a plurality of articles in a carton having a body section and bottom flaps comprising:

at least two stations;

means for moving the articles from one station to the next;

platform means at the first station for supporting said articles;

support means for supporting said articles from below at the second station, a portion of said support means being moveable;

means at said second station moveable from a first position to a second position for closing a bottom flap from below; and

said support means and said flap closing means being arranged to transfer support for said articles from said support means to said bottom flap without disarranging said articles as said support means moves and said closing means moves from said first position to said second position.

13. Apparatus for folding a bottom flap of a carton as in claim **12** wherein:

said flap closing means in said second position is interleaved with a portion of said support means to support said articles as they are moved from the first to the second station, and in said first position leaves a gap between said support means and said platform for receiving the open bottom flap.

14. Apparatus for folding a bottom flap of a carton as in claim **13** and further comprising:

means at said second station for lowering the carton until the hinge of the bottom flap is adjacent the lower edge of the articles.

15. Apparatus for folding a bottom flap of a carton as in claim **12** and further comprising:

a third station, said means for moving the articles also being adapted to move the articles and carton to the third station; and

means for closing the leading flap of the carton as it moves from the second station to the third station.

16. Apparatus for folding a bottom flap of a carton as in claim **15** and further comprising:

means for closing the bottom side flaps of the carton and gluing them to the closed bottom end flaps.

17. Apparatus for folding a bottom flap of a carton as in claim **12** wherein:

said flap is the trailing bottom flap.

18. Apparatus for folding a bottom flap of a carton as in claim **12** and further comprising:

a platen disposed over said second station and moveable downward to lower a carton disposed around the articles to the deserved height.

19. Apparatus for folding a bottom flap of a carton as in claim **12** wherein:

said flap closing means partially closes said flap before said support means moves.

20. A method of encasing a plurality of articles in a carton having a body section and bottom flaps comprising:

placing a carton around a plurality of said articles arranged in a rectangular array and supported directly on a support, the carton having its bottom flaps open and positioning the carton so that its bottom flaps extend below said support;

partially closing a first bottom flap to a position below said support wherein the first flap is capable of supporting those articles close to said first flap;

removing that portion of said support above said partially closed first flap; and

completely closing said first flap.

21. Method for folding a bottom flap of a carton as in claim **20** and further comprising the steps of:

partially closing a second flap opposite said first flap to a position below said support wherein the second flap is capable of supporting those articles close to said second flap;

removing that portion of said support above said partially closed second flap; and

completely closing said second flap.

22. Method for folding a bottom flap of a carton as in claim **20** wherein said step of placing the carton includes the steps of:

placing the carton around the articles with its bottom flaps above said support;

moving the carton and articles to a position under a platen; and

lowering the platen to lower the carton so that its bottom flaps extend below the platform.

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