

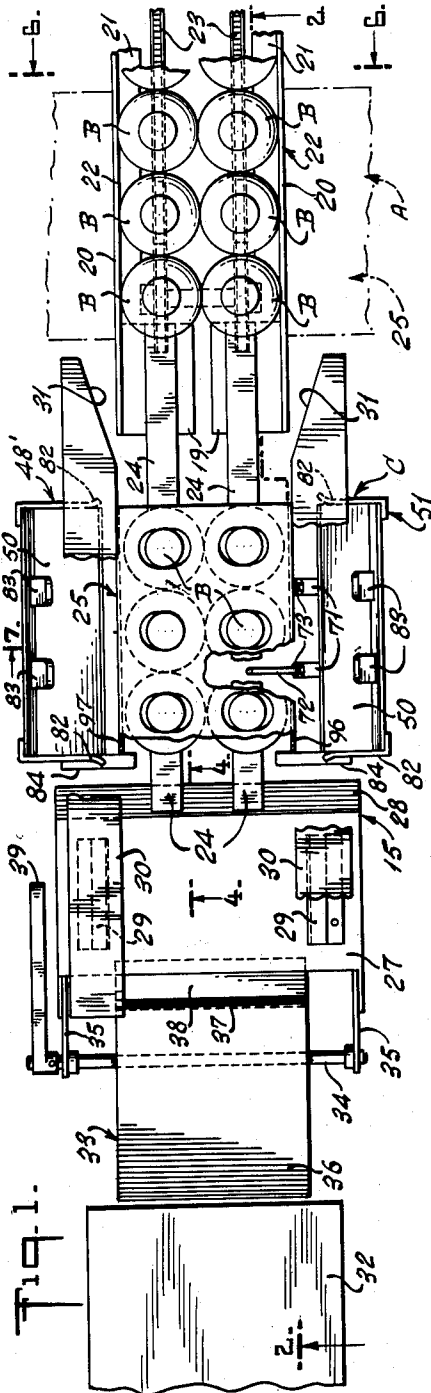
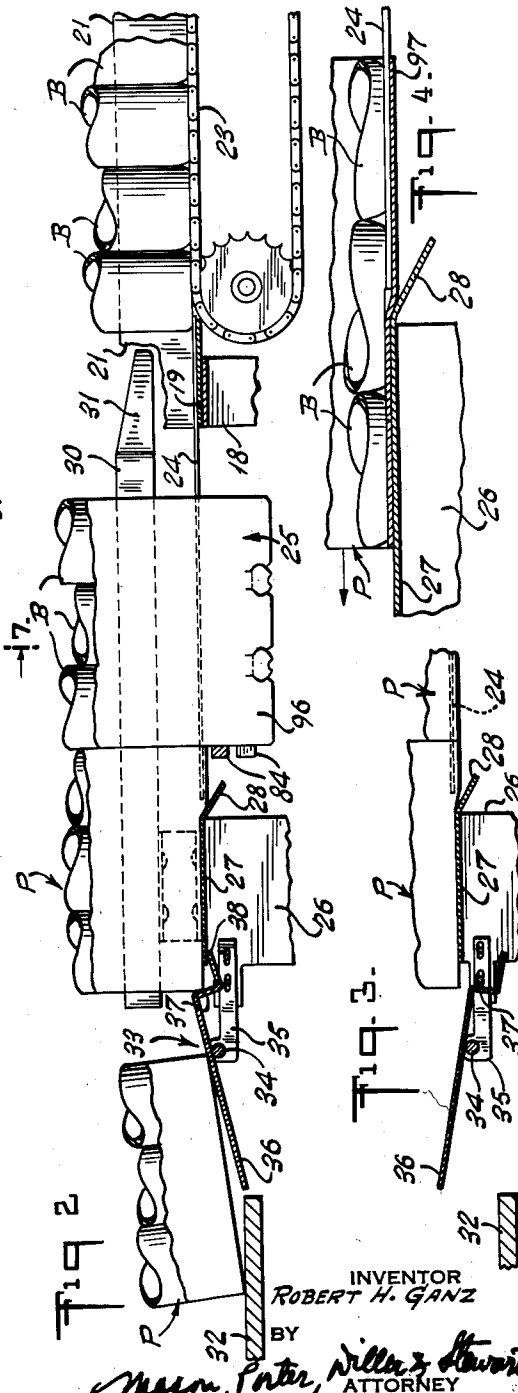
Aug. 3, 1965

R. H. GANZ
MANUALLY OPERATED PACKAGING MACHINE FOR USE
WITH WRAP-AROUND TYPE BOTTLE CARRIERS

3,197,937

Filed Dec. 12, 1961

7 Sheets-Sheet 1



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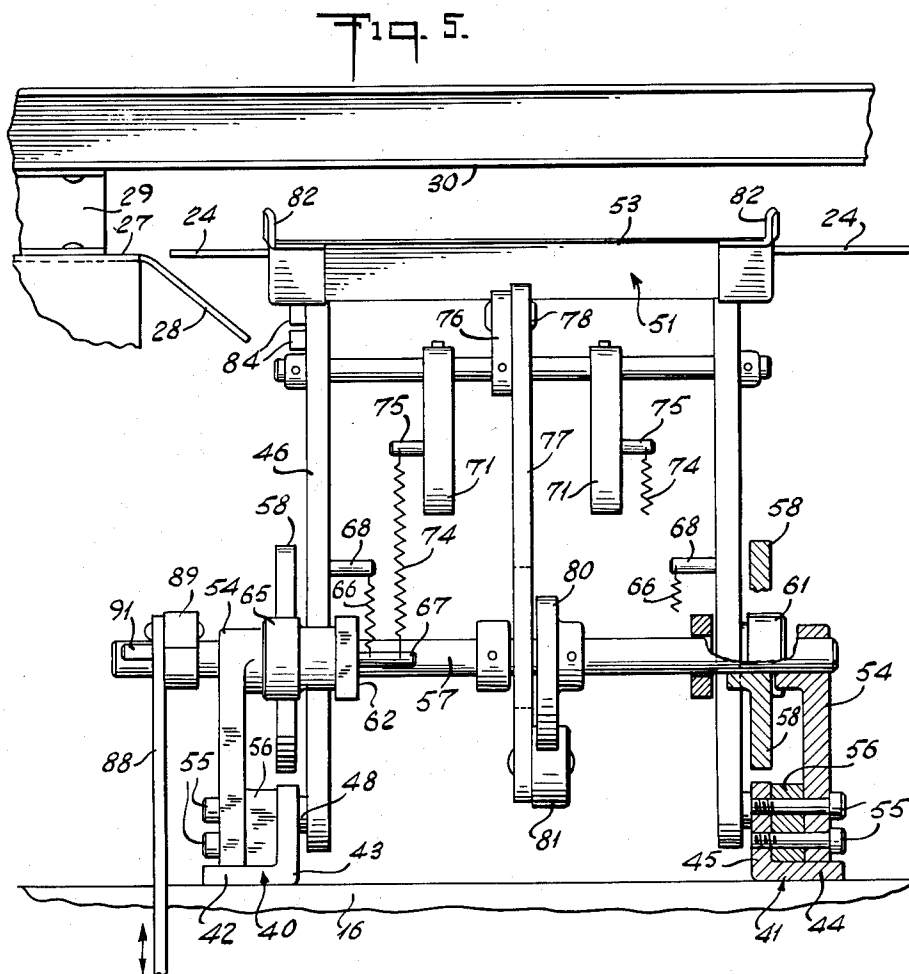
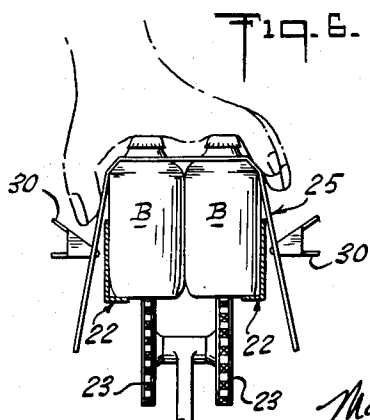
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7 Sheets-Sheet 2



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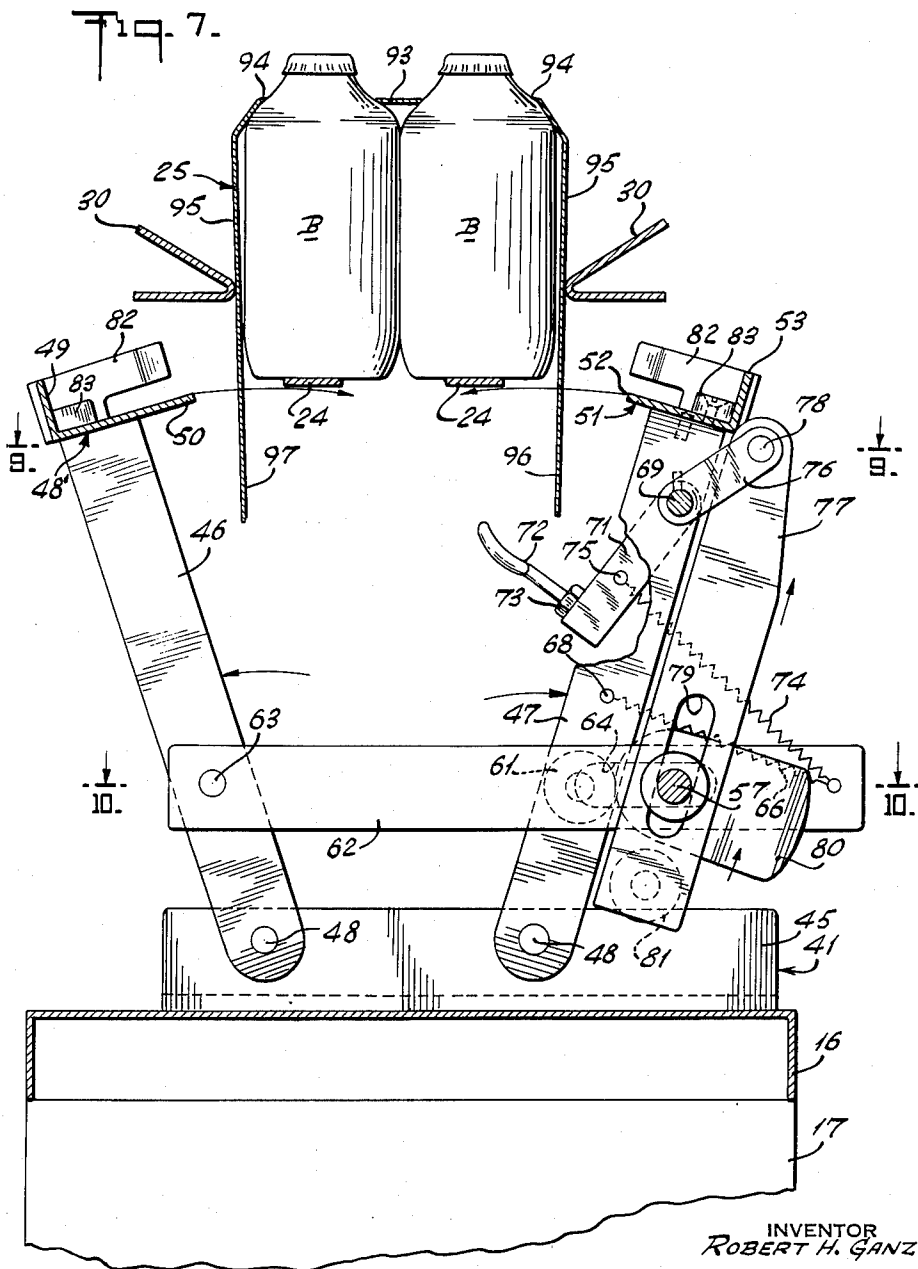
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7 Sheets-Sheet 3



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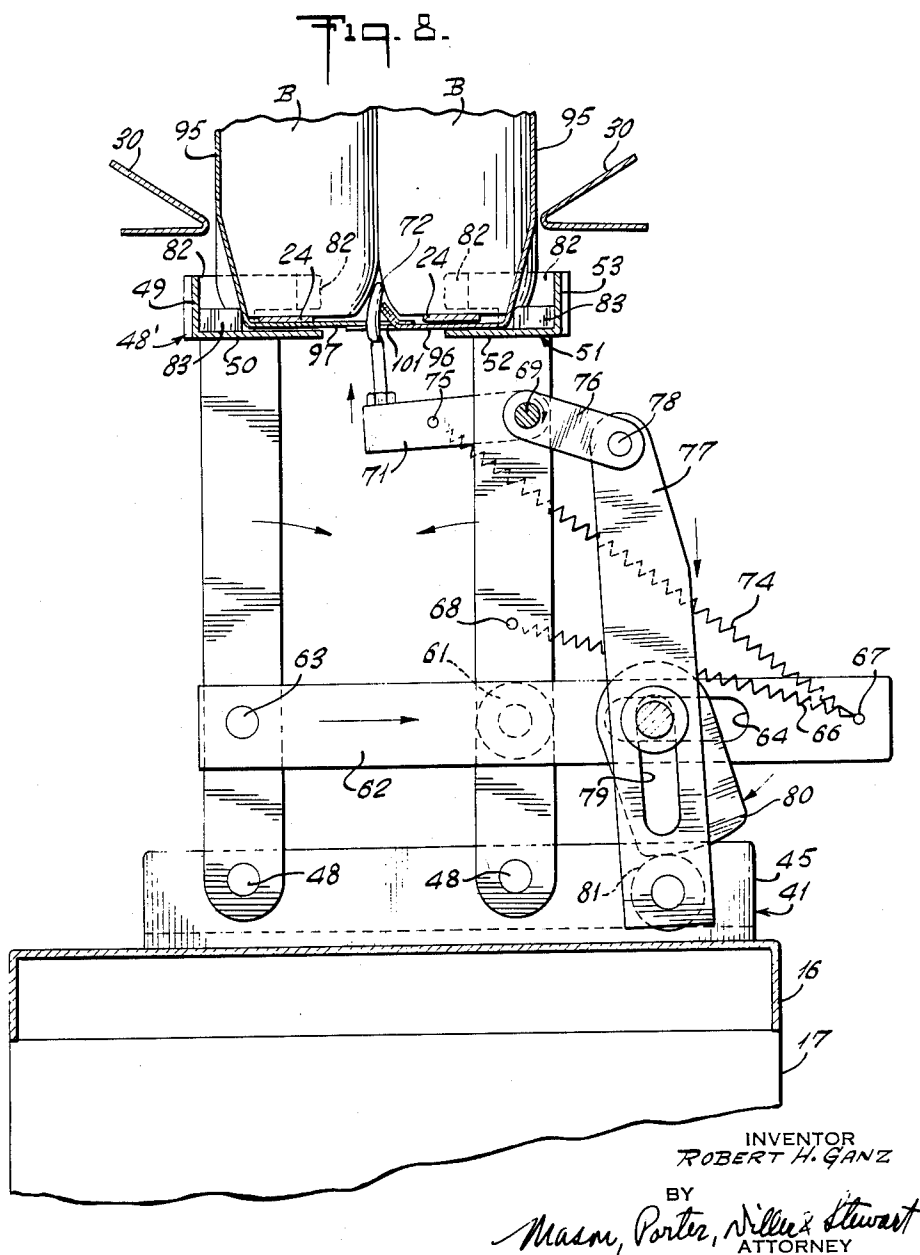
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MANUALLY OPERATED PACKAGING MACHINE FOR USE
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7 Sheets-Sheet 4



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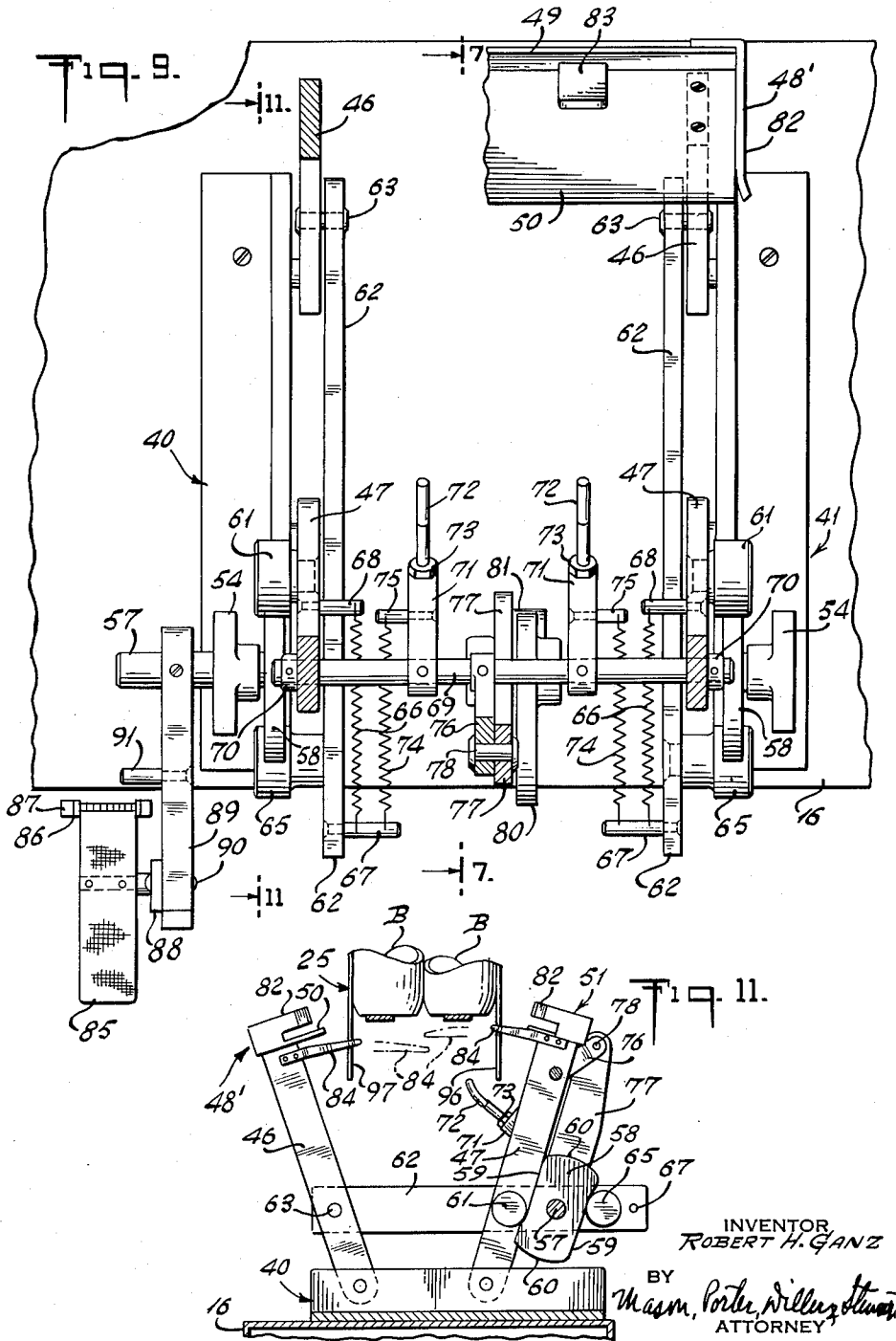
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MANUALLY OPERATED PACKAGING MACHINE FOR USE
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Fig. 10.

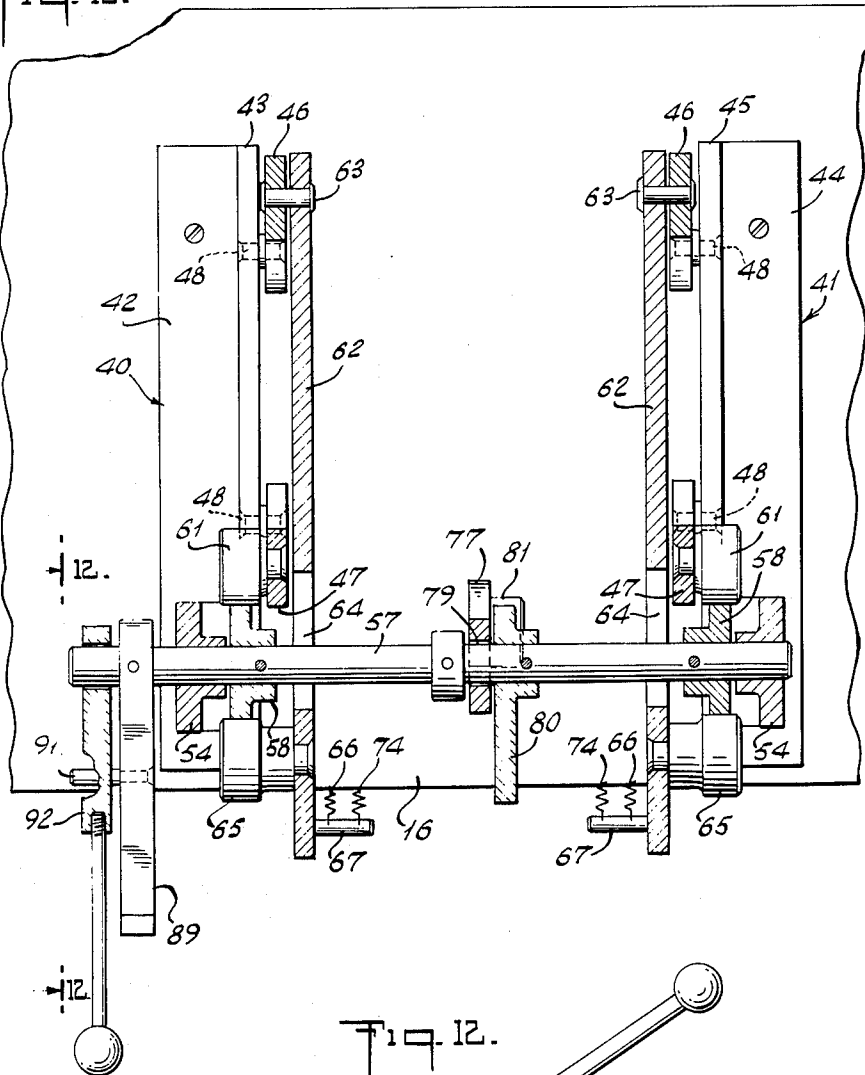
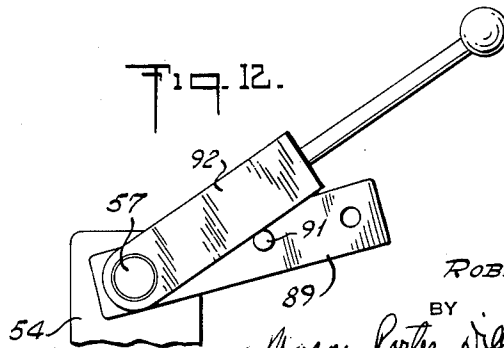


Fig. 12.



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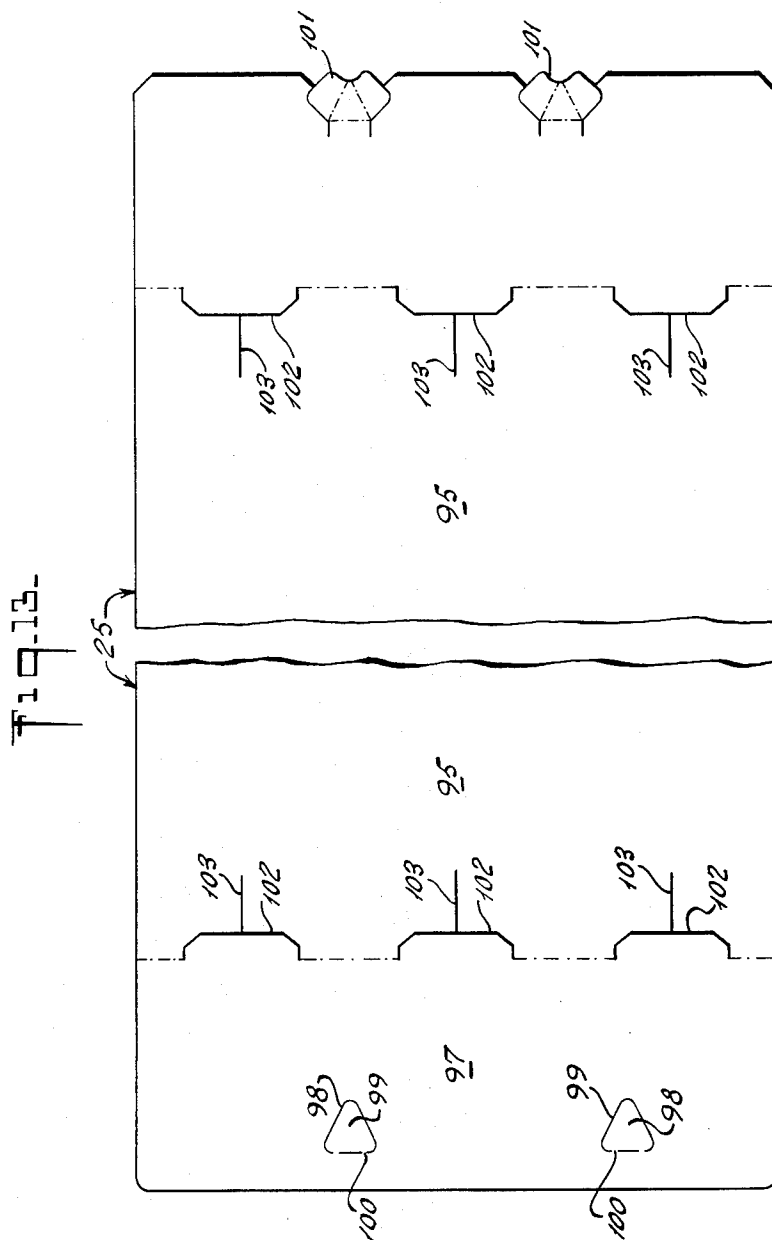
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7 Sheets-Sheet 7



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3,197,937 MANUALLY OPERATED PACKAGING MACHINE FOR USE WITH WRAP-AROUND TYPE BOTTLE CARRIERS

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Filed Dec. 12, 1961, Ser. No. 158,695
21 Claims. (Cl. 53—48)

This invention relates in general to new and useful improvements in packaging machines, and more particularly to a novel manually operated packaging machine for use in placing and securing wrap-around type bottle carriers with respect to a plurality of bottles to form a tight package.

In the formation of a package of a plurality of bottles, usually six bottles, utilizing a wrap-around type bottle carrier, the bottle carrier blank, which is provided with suitable openings in a top wall thereof receiving the necks of bottles, is placed over the bottles with the bottles passing through the openings in the top wall, and the side walls of the bottle carrier extending down alongside the bottles which are disposed in rows. At this time, the bottom flaps of the carrier blank are disposed in alignment with the side walls. In order to form the carrier and complete the package including the bottles in the carrier, it is necessary that the bottom flaps be folded beneath the bottles and interlocked with the bottles being tightly clamped within the carrier.

In accordance with this invention, it is proposed to provide a manually operated packaging machine which will allow an individual to readily and quickly apply a bottle carrier blank to a plurality of bottles and after the blank has been so applied, form and lock the carrier through the operation of a suitable lever.

Another object of this invention is to provide a novel mechanism for folding bottom flaps of a bottle carrier beneath a plurality of bottles to be encased within the carrier, the mechanism including two support strips for two rows of bottles and flap folding members movable immediately below the support strips to swing the bottom flaps of the carrier into position beneath the bottles with edge portions of the bottom flaps being in overlapping relation, the flap folding members being carried by two generally upright supports which are pivotally mounted at their lower ends and which have associated therewith a rotatable cam, the single cam being engaged with cam followers associated with the two supports so that as the cam is rotated, the two supports are moved towards each other to swing the flap folding members towards each other and to effect the folding of the flaps as is required in the closing of the carrier.

Another object of this invention is to provide a novel drive for flap folding members in a bottle carrier forming machine, the drive including a shaft which may be readily manually oscillated and which shaft carries a cam, the flap folding means including a pair of opposed flap folding members carried by supports, the cam being disposed outwardly of and adjacent one of the supports and in engagement with a cam follower directly carried thereby, and the other of the supports having a link which extends across the first-mentioned support and is provided with a cam follower which engages the cam in opposition to the first-mentioned cam follower whereby when the shaft is rotated to rotate the cam, the one support is moved away from the cam and the other support is pulled towards the cam to effect the necessary movement of the flap folding members.

Another object of this invention is to provide a novel manually operated packaging machine for use with wrap-

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around type bottle carriers wherein a bottle carrier blank is positioned over the tops of a plurality of bottles disposed in two rows, after which the bottles and the bottle carrier blank are moved to a station wherein the bottle carrier blank is formed into the desired bottle carrier and locked together with the bottles to form a convenient package, the bottles at this time being supported by a pair of support strips about which the bottle carrier is wrapped, and a platform for receiving the package, the platform having a ramp up which the bottom of the bottle carrier rides as the bottles move off of the support strips.

A further object of this invention is to provide a novel control ramp for use in conjunction with a packaging machine, the control ramp being pivotally mounted and having a stop at the entrance end thereof, the stop being disposed in the path of a package when a completed package is disposed thereon, and the ramp being provided with counterbalance means for swinging the ramp to a position where the stop is depressed to permit a next package to be passed onto the ramp.

Still another object of this invention is to provide in a packaging machine for use with a wrap-around type bottle carrier means for folding bottom flaps of the carrier into overlapped relation and assuring the folding of one of the bottom flaps in advance of the other, the flap folding means including two flap folding members which are of similar construction but one of which has a portion disposed further inwardly than the corresponding portion of the other so that when the two flap folding members are simultaneously actuated, one of the flaps will be folded in advance of the other flap.

A still further object of this invention is to provide a novel apparatus for folding bottom flaps of a wrap-around type bottle carrier and for interlocking the overlapped portions of the bottom flaps by the engagement of locking tabs through openings, the apparatus including a pair of generally upright supports pivotally mounted at the lower ends thereof, each of the supports carrying a flap folding member, a manually rotatable shaft carrying a first cam engaged with cam followers connected to the supports for effecting the simultaneous movement of the flap folding members, and one of the flap folding members carrying a pivot shaft to which there is rigidly secured a desired number of arms with each arm carrying a tab positioning finger, and there being further connected to the pivot shaft for rotating the same means operated by a second cam carried by the shaft wherein when the shaft is rotated, the folding of the bottom flaps of the carrier is first effected, after which further rotation of the shaft results in the operation of the tab positioning fingers to effect the interlocking of the overlapped portions of the bottom flaps.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawing:

In the drawing:

FIGURE 1 is a plan view of the packaging machine and shows generally the various components thereof.

FIGURE 2 is a fragmentary vertical sectional view taken along the line 2—2 of FIGURE 1, and shows further the specific details of the packaging machine.

FIGURE 3 is a fragmentary vertical sectional view taken through the discharge end portion of the machine and shows the manner in which a finished package is removed from the bottle support strips, the ramp for discharging finished packages being shown in a package receiving position.

FIGURE 4 is a fragmentary enlarged vertical sectional view taken along the line 4—4 of FIGURE 1 showing the

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details of the removal of the finished package from the bottle supporting strips.

FIGURE 5 is a side elevational view of the carrier folding and locking mechanism with parts broken away and shown in section to illustrate the details of specific components thereof, the view being on a large scale.

FIGURE 6 is a schematic transverse vertical sectional view taken generally along the line 6—6 of FIGURE 1, and shows the manner in which a carrier blank is initially applied to a plurality of bottles.

FIGURE 7 is an enlarged fragmentary vertical sectional view taken through the packaging machine at the bottle carrier forming and locking station and shows the specific details of the bottle carrier forming and locking means, the view being taken along the line 7—7 of FIGURE 1.

FIGURE 8 is an enlarged transverse vertical sectional view similar to FIGURE 7, and shows the bottle carrier forming and locking means in position wherein the bottom flaps of the bottle carrier are overlapped and interlocked.

FIGURE 9 is a fragmentary horizontal sectional view on an enlarged scale taken along the line 9—9 of FIGURE 7, and shows the specific details of the operating means for the bottle carrier forming and locking means.

FIGURE 10 is an enlarged fragmentary horizontal sectional view taken along the line 10—10 of FIGURE 7, and shows more specifically the details of the operating means, the operating means being illustrated with a hand lever in lieu of the foot treadle elsewhere illustrated.

FIGURE 11 is a fragmentary transverse vertical sectional view taken along the line 11—11 of FIGURE 9 and shows the specific details of the cam for effecting the swinging of the bottom flap folding members in unison.

FIGURE 12 is a fragmentary elevation view taken along the line 12—12 of FIGURE 10, and shows the details of the hand lever for rotating the actuating shaft of the machine.

FIGURE 13 is a plan view of the carrier blank with the intermediate portion of the carrier blank being omitted and only the details of the bottom flaps being shown.

Referring now to the drawings in detail, it will be seen that there is illustrated the packaging machine which is the subject of this invention, the packaging machine being generally referred to by the numeral 15. The packaging machine 15, as is best shown in FIGURE 7, includes a suitable frame 16 carried by uprights 17 of the desired height. The frame 16 has extending upwardly therefrom adjacent the right hand end thereof, as viewed in FIGURES 1 and 2, a suitable support 18 which has secured thereto a generally horizontal plate 19. The plate 19, which may be continuous transversely of the machine 15, or which may be interrupted, as is shown in FIGURE 1, is provided along the outer edges thereof with upstanding flanges 20. Each flange 20 projects to the right of the plate or plates 19 and is provided with a horizontal flange 21 which in effect forms a continuation of the plate 19. It is to be understood that each pair of flanges 20 and 21 combine to define a guide rail, generally referred to by the numeral 22.

A pair of endless chain conveyors 23 extend between the guide rails 22 and have the upper runs thereof terminate short of the plate 19. The endless chain conveyors 23 are suitably supported in a manner not shown and receive and deliver two rows of bottles B. It is to be understood that the relative elevations of the upper surfaces of the flanges 21 and the upper runs of the endless chain conveyor 23 will be such that as the bottles B ride onto the flanges 21 of the guide rails 22, they will be slightly elevated with respect to the endless chain conveyor 23 so that there will only be very slight frictional engagement between the endless chains 23 and the bottles B and the bottles B can remain stationary on the guide rails 22 while the endless chain conveyors 23 move therebeneath.

A pair of support strips 24 extend from the plate

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19 in cantilever relation as generally continuations of the endless chain conveyors 23. The support strips 24 extend across a central portion of the packaging machine 15 and serve as the sole supports for a plurality of bottles B and associated carrier blanks 25.

The frame 16 is provided with an upstanding support 26 adjacent the left ends of the support strips 24, as is best shown in FIGURES 1 and 2. The upstanding support 26 carries a horizontally disposed platform 27 which is provided at the right end thereof with an upwardly and to the left inclined ramp 28. The ends of the support strips 24 will normally be supported by the ramp 28.

The platform 27 is relatively wide as compared to the path of movement of packages thereover and outer portions of the platform 27 are provided with channel cross-sectional spacers 29. The spacers 29 support generally triangular cross-sectional folding blades 30 which are provided with tapered folding surfaces 31 at the right ends thereof.

The packaging machine 15 also includes take-away means 32 at the left end thereof. The take-away means 32 may be in the form of a conveyor, a table, a ramp, etc., and for purposes of illustration has been shown as a table. The take-away means 32 is disposed below the level of the platform 27 and is spaced therefrom a distance generally equal to the length of a package formed of a plurality of bottles and the carrier wrapped around the bottles.

The packaging machine 15 includes a combined ramp and stop, generally referred to by the numeral 33, which extends between the platform 27 and the package take-away means 32. The combined ramp and stop includes a pivot shaft 34 which has the opposite ends thereof supported by suitable brackets 35 which, in turn, are supported by the support 26. The combined ramp and stop 33 includes a ramp portion 36 which has the pivot shaft 34 secured to the underside thereof. The stop is in the form of a depending flange 37 on the right end of the ramp 36. A further flange 38 projects to the right from the lower end of the flange 37. The tapering or pivoting of the ramp 36 downwardly from right to left is limited by engagement of the flange 38 beneath the platform 27, as is shown in FIGURE 2. When the combined ramp and stop 33 is in the position of FIGURE 2, the flange 37 projects up into the path of packages and prevents the removal of a completed package from the platform 27. The ramp 36 is held in its position of FIGURE 2 by a package, such as the package P disposed thereon.

The combined ramp and stop 33 is provided with suitable counterbalance means 39, as is shown in FIGURE 1, to effect the automatic pivoting of the ramp 36 when the package P is removed therefrom to the position shown in FIGURE 3. At this time, the stop forming flange 37 is pivoted to a position below the surface of the platform 27 and another package P may be slid from the platform 27 onto the package take-away means 32 down the ramp 36. The function of the stop formed by the flange 37 is more important, as will be described in detail hereinafter, than merely preventing a package from sliding down the ramp 36.

Reference is again made to FIGURE 1 in detail, wherein it will be seen that the packaging machine 15 includes a carrier blank applying station A which generally overlies the discharge end of the endless chain conveyors 23. The packaging machine 15 also includes a carrier bottom flange folding and locking station C which overlies the support strips 24.

As is best shown in FIGURES 5 and 6, the frame 16 is provided with a pair of transversely extending angle members 40 and 41. The angle member 40 includes a base flange 42 and an upstanding flange 43. On the other hand, the angle member 41 includes a base flange 44 and an upstanding flange 45.

A pair of generally upstanding supports 46 and 47 are

pivotaly connected at their lower ends to the upstanding flanges 43 and 45 of the angle members 40 and 41, respectively. A pivot pin 48 is provided for pivotaly mounting each of the supports 46 and 47.

There are two supports 46 and a bottom flap folding member 48' extends between the two supports 46. The bottom flap folding member 48' includes a generally upright flange 49 and a base flange 50. There are also two of the supports 47, and the upper ends of the supports 47 are connected together by a bottom flap folding member 51 which includes a horizontal flange 52 and an upright flange 53. At this time, it is pointed out that the free edge of the flange 50 is disposed closer to the center line of the machine 15 than is the free edge of the flange 52 for a reason to be described in detail hereinafter.

The angle members 40 and 41 carry upstanding bearing units 54 which are secured to the upstanding flanges of the angle members 40 and 41 by means of bolts 55. The bearing units 54 are properly spaced by means of spacers 56. Actuating shaft 57 is rotatably journaled in the bearing units 54 and extends parallel of the machine 15 adjacent the supports 47. It is to be understood that during the use of the machine 15, the shaft 57 is oscillated back and forth.

A cam 58 is carried by the shaft 57 for rotation therewith adjacent each of the supports 47. The shape of the cams 58 is best shown in FIGURE 11. Each cam 58 is generally rectangular in outline and includes two flat sides 59 connected by a pair of rounded ends 60.

The supports 47 are provided with cam followers 61 which are engaged with the inwardly facing portions of the cams 58. On the other hand, the supports 46 have pivotaly connected thereto horizontally disposed links 62 which are connected to the supports 46 by means of pivot pins 63. Each link 62 has a horizontally elongated slot 64 therethrough (see FIGURE 7) through which the shaft 57 passes. The end of each link 62 remote from its associated support 46 is provided with a cam follower 65 which engages its respective cam 58 on the outer surface thereof in opposition to the associated cam follower 61.

It is to be noted that the cam followers 61 and 65 normally engage the flat sides 59 of the cams 58. However, when the cams 58 are rotated through the rotation of the shaft 57, the cam followers 61 and 65 are urged apart. As a result, the supports 47 are swung to the left and the supports 46 are pulled to the right, as viewed in FIGURE 7. The supports 46 and 47 move in unison. The movement of the supports 46 and 47 continues until such time as the cam followers 61 and 65 ride up onto the rounded end portion 60 of the cam 58, at which time, further movement of the supports 46 and 47 is eliminated.

It is to be noted that the supports 46 and 47 are normally urged apart by means of springs 66. Each spring 66 extends from a pin 67 on a respective link 62 to a pin 68 on a respective support 47.

The supports 47 have a pivot shaft 69 extending through the upper portions thereof. The pivot shaft 69 is rotatable and is maintained in place with respect to the supports 47 by means of collars 70 mounted on opposite ends thereof.

A pair of arms 71 are rigidly secured to intermediate portions of the pivot shaft 69. Each arm 71 adjustably carries a finger 72 which has a lower end threaded into its respective arm 71 and which is locked in an adjusted position by means of a lock nut 73. The purpose of the finger 72 will be described in detail hereinafter. The arms 71 are normally held in retracted positions by means of springs 74 which extend between the pins 67 and pins 75 on the arms 71.

A lever 76 is rigidly secured to an intermediate portion of the pivot shaft 69. The lever 76 is, in turn, connected to the upper end of a link 77 by means of a pivot pin 78. A lower portion of the link 77 is provided with an elongated slot 79 which extends longitudinally of the link 77

and receives the shaft 57, the shaft 57 serving to guide the link 77 in its movement.

A cam 80 is carried by the shaft 57 adjacent the link 77. The lower end of the link 77 is provided with a cam follower 81 which engages beneath the cam 80 so that when the shaft 57 rotates, the cam 80 acts on the cam follower 81 to move the link 77 downwardly and urge the arms 71 and the fingers 72 upwardly from their positions shown in FIGURE 7 to the positions shown in FIGURE 8. The shape of the cam 80 is best shown in FIGURE 8, and it is to be noted that the cam 80 is so positioned relative to the cams 58 that for all practical purposes the fingers 72 do not move upwardly until after the bottom flap folding members 48' and 51 have folded the bottom flaps of the carrier beneath the bottles.

At this time, it is pointed out that each of the bottom flap folding members 48' and 51 is provided at the opposite ends thereof with suitable alignment fingers 82 to effect the alignment of the flap folding members 48' and 51 with the carrier blank B, the outline of the fingers 82 being best shown in FIGURE 1. In addition, each of the bottom flap folding members 48' and 51 is provided with a pair of projections 83 which are disposed in alignment with the intersections between adjacent bottles B in the rows of bottles. The function of the projections 83 will be described in further detail hereinafter.

Although it is intended that the completed package engaged with the stop 37 provide the means for aligning the next set of bottles and the carrier blank with the carrier folding and locking means, the supports 46 and 47 disposed remote from the endless conveyors 23 are provided with suitable stop members 84 for engaging the forward edges of an advancing carton blank B, as is shown in FIGURE 11, for the purpose of effecting the alignment of the carton blank with the bottom flap engaging members 48' and 51.

It is to be understood that the packaging machine 15 is to be manually operated. To this end, it may be either operated by hand or by foot. With reference to FIGURE 9, it will be seen that there is illustrated a foot treadle 85 which is hingedly mounted, as at 86, to a suitable support 87 which may be mounted on the floor of the area where the packaging machine 15 is mounted. The foot treadle 85 will carry an elongated upstanding link 88 which has the upper end thereof pivotaly connected to an arm 89 by a pivot pin 90. The arm 89 will, in turn, be secured to one end of the shaft 57 for effecting the oscillation thereof.

It is also to be noted that the arm 89 is provided with a pin 91 intermediate the ends thereof, the pin 91 projecting in the general direction of the adjacent end of the shaft 57. When a hand lever is to be used in lieu of the foot treadle 85, a hand lever 92 is pivotaly mounted on the end of the shaft 57 in partial overlying relation to the pin 91. Since the hand lever 92 rests upon the pin 91, downward movement of the hand lever 92 in a clockwise direction, as is shown in FIGURE 12, will result in the necessary pivoting of the shaft 57 to effect the operation of the means for forming and interlocking the carton blank in the formation of the final carton.

In order to fully understand the operation of the packaging machine 15, it is first desirable to understand the general details of the construction of the carton blank 25 although these details may vary slightly from carton blank to carton blank. The carton blank 25, as is shown in FIGURE 7, includes a top wall panel 93 having suitable openings 94 for receiving the necks of the bottles B. The carton blank 25 also includes side wall panels 95 depending from opposite sides of the top wall panel 93. The side wall panels 95 terminate at their lower ends in bottom flaps or panels 96, 97.

Reference is now made to FIGURE 13 where it is shown that the bottom flap 97 is provided with triangular openings 98 therein, the triangular openings 98 being closed by triangular members 99 hingedly connected to the bottom flap 97 along the line 100. On the other hand,

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the bottom flap 96 is provided with locking tabs 101 along the free edge thereof. The locking tabs 101 are configured to be pushed through the triangular openings 98 and to interlock with the bottom flap 97 so as to lock the bottom flaps 96 and 97 together. It is to be noted that the triangular openings 98 are disposed intermediate the bottles B within the finished carton, as is generally shown in FIGURE 8.

Attention is also directed to the fact that the side panels 95 are provided with suitable slits 102 and 103 adjacent the bottom flaps 96 and 97 so that when the carrier blank 25 is properly applied to the bottles B, as is shown in FIGURE 8, the outer lower portions of the bottles B will extend generally outwardly through the side panels 95.

Operation

In accordance with the invention, the bottles B to be packaged are continuously supplied by the endless conveyor chains 23. When six bottles have been accumulated at station A, a carrier blank 25 is positioned over the six bottles B in the manner generally shown in FIGURE 6. Then, the bottles and the associated carrier 25 are slid along the support strips 24 with the side panels 95 of the carrier blank 25 being engaged by the blank folding blades 30, as is shown in FIGURE 7. When the carrier blank 25 either engages the previously formed package P or the stops 84, the shaft 57 is rotated either by means of the foot treadle 85 or the hand lever 92. This rotation of the shaft 57 results in the bottom flap engaging or forming members 48' and 51 engaging the bottom flaps 97 and 96, respectively, and folding the same up underneath the bottles B disposed on the support strips 24. Since the flange 50 projects inwardly with respect to the flange 52, it will be apparent that the flap 97 will be folded upwardly ahead of the flap 96. As the bottom blank folding members 50 continue to move inwardly, the projections 83 will engage the lower portions of the side panels 95 and move the same inwardly in between the adjacent bottles in the rows, as is shown in FIGURE 8, to tightly wrap the carrier blank 25 around the bottles B. When the inward movement of the bottom flap engaging members 48' and 51 is discontinued, the locking tabs 101 are aligned with the openings 98. Further rotation of the shaft 57 results in the upward movement of the fingers 72 through the openings 98 forcing the tabs 101 through the openings 98 and urging the members 99 upwardly, as is shown in FIGURE 8. The bottom flaps 96 and 97 are now interlocked and the package P is completed. The newly formed package P is then moved to the left, as viewed in FIGURES 1 and 2, forcing the previously formed package down the ramp 36 and onto the take-away means 32. The operator is now ready to form another package.

From the foregoing, it will be seen that the machine 15 is of such a nature whereby one operator may quickly and securely apply a bottle carrier of the wrap-around type to a plurality of bottles, for example, the six bottles shown, as desired. The mechanical features of the packaging machine 15 are extremely simple and require no adjustment once set nor are they subject to wear in an undesired manner.

From the foregoing, it will be seen that novel and advantageous provision has been made for carrying out the desired end. However, attention is directed to the fact that variations may be made in the example apparatus disclosed herein without departing from the spirit and scope of the invention, as defined in the appended claims.

I claim:

1. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of bottom flaps having overlapping portions with interlocking tabs and openings, bottom flap folding and locking means comprising a pair of swingable flap folding members disposed in opposed relation, actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to face-to-face overlapped

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positions underlying bottles within the carrier, tab interlocking members for pushing locking tabs of one bottom flap through associated openings in the other bottom flap after the carrier bottom flaps are brought into face-to-face engagement to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members.

2. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of bottom flaps having overlapping portions with interlocking tabs and openings, bottom flap folding and locking means comprising a pair of swingable flap folding members disposed in opposed relation, each of said flap folding members having a horizontal flap engaging portion with one of said flap engaging portions being disposed closer to the longitudinal center of said machine than the other of said flap engaging portions whereby the bottom flap having openings may be folded in advance of the bottom flap having tabs, actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to positions underlying bottles within the carrier, tab interlocking members for pushing locking tabs of one bottom flap through associated openings in the other bottom flap to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members.

3. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of bottom flaps having overlapping portions with interlocking tabs and openings, bottom flap folding and locking means comprising a pair of swingable flap folding members disposed in opposed relation, actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to positions underlying bottles within the carrier, tab interlocking members for pushing locking tabs of one bottom flap through associated openings in the other bottom flap to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members, said flap folding members having means for inwardly squeezing lower portions of carrier side walls to obtain a maximum overlapping of the carrier bottom flaps prior to the interlocking of the bottom flaps to provide a tight package.

4. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of bottom flaps having overlapping portions with interlocking tabs and openings, bottom flap folding and locking means comprising a pair of swingable flap folding members disposed in opposed relation, actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to positions underlying bottles within the carrier, tab interlocking members for pushing locking tabs of one bottom flap through associated openings in the other bottom flap to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members, said flap folding members having carrier stop means for aligning a carrier with said both flap folding and locking means.

5. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of bottom flaps having overlapping portions with interlocking tabs and openings, bottom flap folding and locking means comprising a pair of swingable flap folding members disposed in opposed relation, actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to positions underlying bottles within the carrier, tab interlocking members for push-

ing locking tabs of one bottom flap through associated openings in the other bottom flap to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members, said actuating means including an oscillatable shaft having at least two cams thereon and linkage engaged with and movable by one of said cams connected to said flap folding members, and said connecting means being engaged with the other of said cams.

6. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of bottom flaps having overlapping portions with interlocking tabs and openings, bottom flap folding and locking means comprising a pair of swingable flap folding members disposed in opposed relation, actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to positions underlying bottles within the carrier, tab interlocking members for pushing locking tabs of one bottom flap through associated openings in the other bottom flap to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members, each of said flap folding members having a generally upstanding support having a point of pivotal mounting adjacent the lower end thereof, and said actuating means including an oscillatable shaft having a cam thereon, and cam followers connected to said supports and engaged with said cam for moving said supports towards one another.

7. The packaging machine of claim 6 wherein said shaft is provided with a second cam, and said connecting means includes linkage including a terminal link carrying another cam follower engaging said second cam.

8. The packaging machine of claim 6 wherein said shaft is provided with a second cam, and said connecting means includes linkage including a terminal link carrying another cam follower engaging said second cam, said terminal link having an elongated slot therethrough receiving said shaft whereby said another cam follower is retained in alignment with said second cam by the coaction of said terminal link and said shaft.

9. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of bottom flaps having overlapping portions with interlocking tabs and openings, bottom flap folding and locking means comprising a pair of swingable flap folding members disposed in opposed relation, actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to positions underlying bottles within the carrier, tab interlocking members for pushing locking tabs of one bottom flap through associated openings in the other bottom flap to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members, each of said flap folding members having a generally upstanding support having a point of pivotal mounting adjacent the lower end thereof, and said tab interlocking means being carried by one of said supports for pivotal movement.

10. The packaging machine of claim 6 wherein said means connecting said tab interlocking members to said actuating means includes a pivot shaft rotatably supported by one of said supports, arms carrying said tab interlocking members rigidly carried by said pivot shaft, a lever rigidly carried by said pivot shaft, a link pivotally connected to said lever, said oscillatable shaft carries a second cam, and another cam follower carried by said link engaging said second cam.

11. The packaging machine of claim 10 wherein said link has an elongated slot therethrough receiving said oscillatable shaft whereby said another cam follower is

retained in alignment with said second cam by the coaction of said link and said oscillatable shaft.

12. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of bottom flaps having overlapping portions with interlocking tabs and openings, bottom flap folding and locking means comprising a pair of swingable flap folding members disposed in opposed relation, actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to positions underlying bottles within the carrier, tab interlocking members for pushing locking tabs of one bottom flap through associated openings in the other bottom flap to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members, each of said flap folding members having a generally upstanding support having a point of pivotal mounting adjacent the lower end thereof, and said actuating means including an oscillatable shaft having a cam thereon, and cam followers connected to said supports and engaged with said cam for moving said supports towards one another, said shaft being disposed outwardly of said supports with one of said cam followers being directly mounted on the associated one of said supports and the other of said cam followers being carried by a link connected to the other of said supports and crossing said one support.

13. The packaging machine of claim 12 wherein said link is pivotally connected to said other support and has an elongated slot therethrough receiving said shaft whereby said other cam follower is retained in alignment with said cam by the coaction of said link and said shaft.

14. In a packaging machine for use with a wrap-around type bottle carrier of the type including side walls and a pair of foldable bottom flaps, bottom flap folding means comprising transversely spaced generally upright supports having pivotal mountings adjacent the lower ends thereof, flap folding members carried by said supports, an oscillatable shaft extending longitudinally outwardly of said supports, a cam on said shaft, a cam follower on one of said supports engaging said cam, a link extending transversely from the other of said supports across said one support and having a cam follower supported thereby in engagement with said cam remote from said first mentioned cam follower.

15. The packaging machine of claim 14 wherein said link is pivotally connected to said other support and has an elongated transversely extending slot receiving said shaft whereby the cam follower carried by said link is retained in alignment with said cam by the coaction of said link and said shaft.

16. A manually operated packaging machine for use in the forming of a package including a plurality of containers and a wrap-around carrier of the type including a top wall, depending side walls and bottom flaps having overlapping portions; said machine comprising a frame, two parallel endless conveyors extending longitudinally of the frame for supplying containers in two parallel rows, parallel spaced container support strips carried by said frame in alignment with said conveyors for receiving containers therefrom, a carrier blank applying station along said conveyors immediately in advance of said support strips wherein a carrier blank is applied to a plurality of containers with the side walls and bottom flaps thereof in depending relation, folding blades disposed on the opposite sides of the path of containers supported by said support strips for holding carrier side walls in engagement with containers, a carrier forming and securing station spaced from said carrier blank applying station, means at said carrier forming and securing station for folding carrier bottom flaps beneath said support strips and connecting overlapping portions thereof, and a package receiving platform carried by said frame at the ends of said support strips, said platform having a carrier

bottom engaging ramp for guiding an interlocked carrier bottom up onto said platform as containers with the carrier pass off of said support strips.

17. A manually operated packaging machine for use in the forming of a package including a plurality of containers and a wrap-around carrier of the type including a top wall, depending side walls and bottom flaps having overlapping portions; said machine comprising a frame, two parallel endless conveyors extending longitudinally of the frame from supplying containers in two parallel rows, parallel spaced container support strips carried by said frame in alignment with said conveyors for receiving containers therefrom, a carrier blank applying station along said conveyors immediately in advance of said support strips wherein a carrier blank is applied to a plurality of containers with the side walls and bottom flaps thereof in depending relation, folding blades disposed on the opposite sides of the path of containers supported by said support strips for holding carrier side walls in engagement with containers, a carrier forming and securing station spaced from said carrier blank applying station, means at said carrier forming and securing station for folding carrier bottom flaps beneath said support strips and connecting overlapping portions thereof, and a package receiving platform carried by said frame at the ends of said support strips, said platform having a carrier bottom engaging ramp for guiding an interlocked carrier bottom up onto said platform as containers with the carrier pass off of said support strips, packages take-away means, and combined ramp and stop means controlling the movement of a package from said platform to said package take-away means.

18. A manually operated packaging machine for use in the forming of a package including a plurality of containers and a wrap-around carrier of the type including a top wall, depending side walls and bottom flaps having overlapping portions; said machine comprising a frame, two parallel endless conveyors extending longitudinally of the frame from supplying containers in two parallel rows, parallel spaced container support strips carried by said frame in alignment with said conveyors for receiving containers therefrom, a carrier blank applying station along said conveyors immediately in advance of said support strips wherein a carrier blank is applied to a plurality of containers with the side walls and bottom flaps thereof in depending relation, folding blades disposed on the opposite sides of the path of containers supported by said support strips for holding carrier side walls in engagement with containers, a carrier forming and securing station spaced from said carrier blanks applying station, means at said carrier forming and securing station for folding carrier bottom flaps beneath said support strips and connecting overlapping portions thereof, and a package receiving platform carried by said frame at the ends of said support strips, said platform having a carrier bottom engaging ramp for guiding an interlocked carrier bottom up onto said platform as containers with the carrier pass off of said support strips, package take-away means, and combined ramp and stop means controlling the movement of a package from said platform to said package take-away means, said combined ramp and stop means including a pivotally mounted ramp having a depending stop at the end thereof adjacent said platform, and counterbalance means for pivoting said ramp to lower said stop to an out-of-the-way position when no package is disposed on said ramp to admit a package to said ramp.

19. A manually operated packaging machine for use in the forming of a package including a plurality of containers and a wrap-around carrier of the type including a top wall, depending side walls and bottom flaps having overlapping portions, said machine comprising a frame, two parallel endless conveyors extending longitudinally of the frame from supplying containers in two parallel rows, parallel spaced container support strips carried by said frame in

alignment with said conveyors for receiving containers therefrom, a carrier blank applying station along said conveyors immediately in advance of said support strips wherein a carrier blank is applied to a plurality of containers with the side walls and bottom flaps thereof in depending relation, folding blades disposed on the opposite sides of the path of containers supported by said support strips for holding carrier side walls in engagement with containers, a carrier forming and securing station spaced from said carrier blank applying station, means at said carrier forming and securing station for folding carrier bottom flaps beneath said support strips and connecting overlapping portions thereof, and a package receiving platform carried by said frame at the ends of said support strips, said platform having a carrier bottom engaging ramp for guiding an interlocked carrier bottom up onto said platform as containers with the carrier pass off of said support strips, said means for folding the bottom flaps including transversely spaced generally upright supports having lower pivotal mountings, flap folding members carried by said supports, an oscillatable shaft extending longitudinally outwardly of said supports, a cam on said shaft, a cam follower on one of said supports engaging said cam, and a link extending transversely from the other of said supports across said one support and having a cam follower supported thereby in engagement with said cam remote from said first mentioned cam follower.

20. The machine of claim 15 wherein the machine is particularly adapted to interlock bottom flaps having overlapping portions with interlocking tabs and openings and the machine includes bottom flap interlocking means cooperating with said bottom flap folding means, said bottom flap folding and interlocking means comprising actuating means for swinging said flap folding members in unison for folding carrier bottom flaps to positions underlying bottles within the carrier and folded underneath said container support strips, tab interlocking members for pushing locking tabs of one bottom flap through associated openings in the other bottom flap to interlock the bottom flap to form a carrier bottom wall, and means connecting said tab interlocking members to said actuating means for movement thereby in timed sequence to the movement of said flap folding members.

21. A manually operated packaging machine for use in the forming of a package including a plurality of containers and a wrap-around carrier of the type including a top wall, depending side walls and bottom flaps having overlapping portions; said machine comprising a frame, two parallel endless conveyors extending longitudinally of the frame from supplying containers in two parallel rows, parallel spaced container support strips carried by said frame in alignment with said conveyors for receiving containers therefrom, a carrier blank applying station along said conveyors immediately in advance of said support strips wherein a carrier blank is applied to a plurality of containers with the side walls and bottom flaps thereof in depending relation, folding blades disposed on the opposite sides of the path of containers supported by said support strips for holding carrier side walls in engagement with containers, a carrier forming and securing station spaced from said carrier blank applying station, means at said carrier forming and securing station for folding carrier bottom flaps beneath said support strips and connecting overlapping portions thereof, and a package receiving platform carried by said frame at the ends of said support strips, said platform having a carrier bottom engaging ramp for guiding an interlocked carrier bottom up onto said platform as containers with the carrier pass off of said support strips, package take-away means, and combined ramp and stop means controlling the movement of a package from said platform to said package take-away means, said stop means being positioned a unit carrier length from said carrier forming and securing station and forming the means for positioning containers

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and an associated carrier blank at said carrier forming and securing station.

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