Aug. 9, 1960 R. WELLS 2,948,094

PACKAGING

Filed Jan. 11, 1956 5 Sheets-Sheet 1

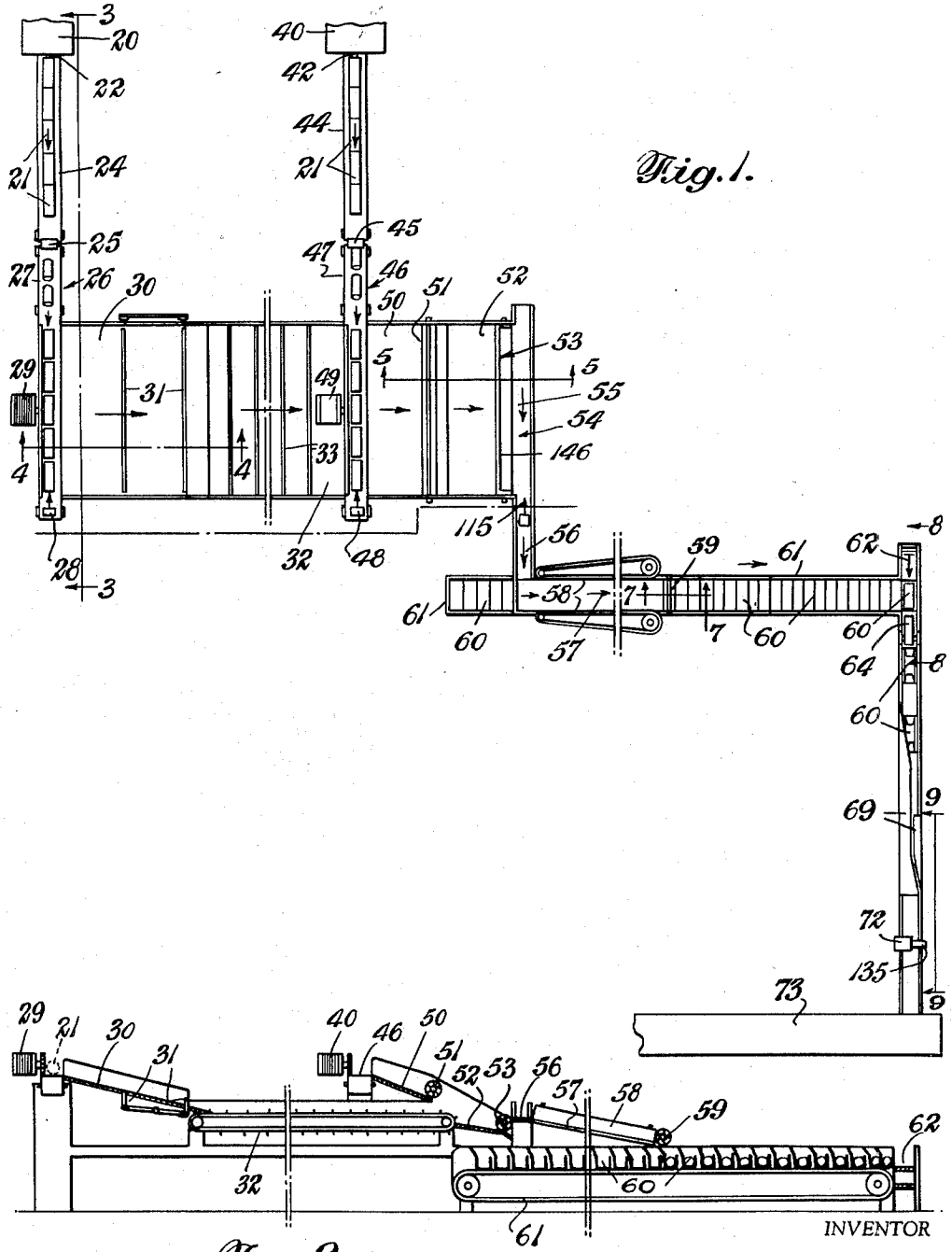


Fig. 1.

Fig. 2.

INVENTOR

Roger Wells,

BY Karl W. Flocks

ATTORNEY

Aug. 9, 1960 R. WELLS 2,948,094

PACKAGING

Filed Jan. 11, 1956 5 Sheets-Sheet 2

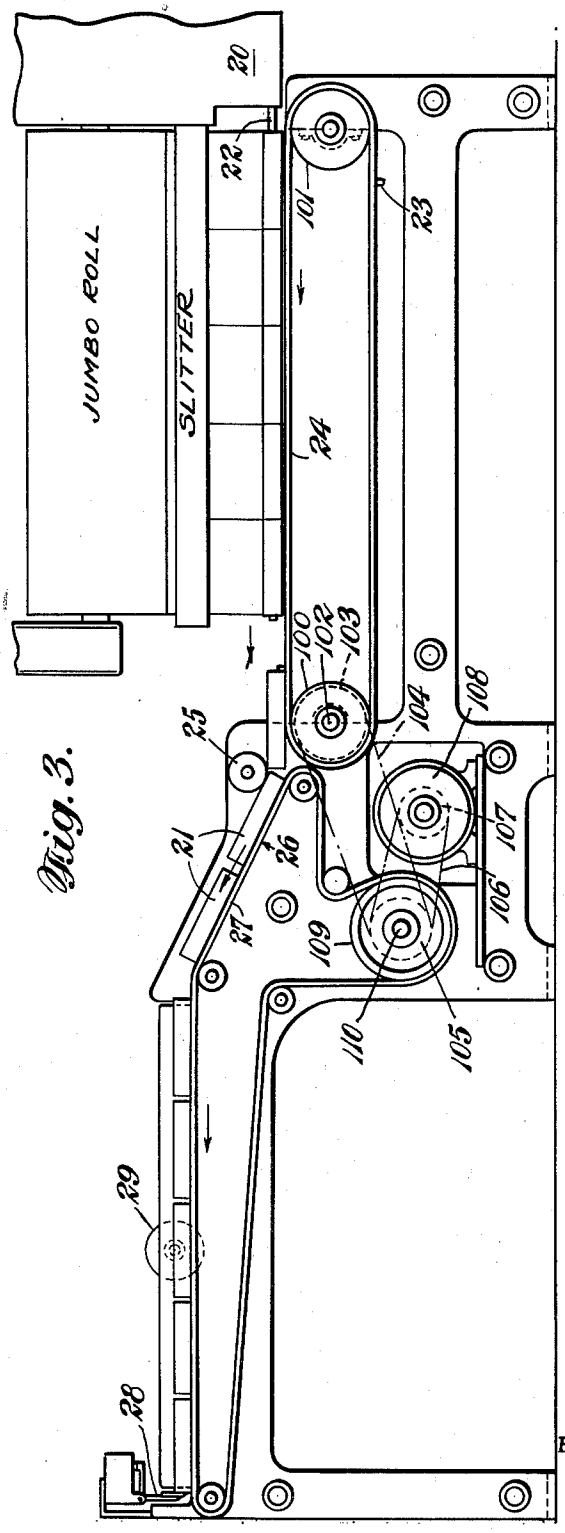


Fig. 3.

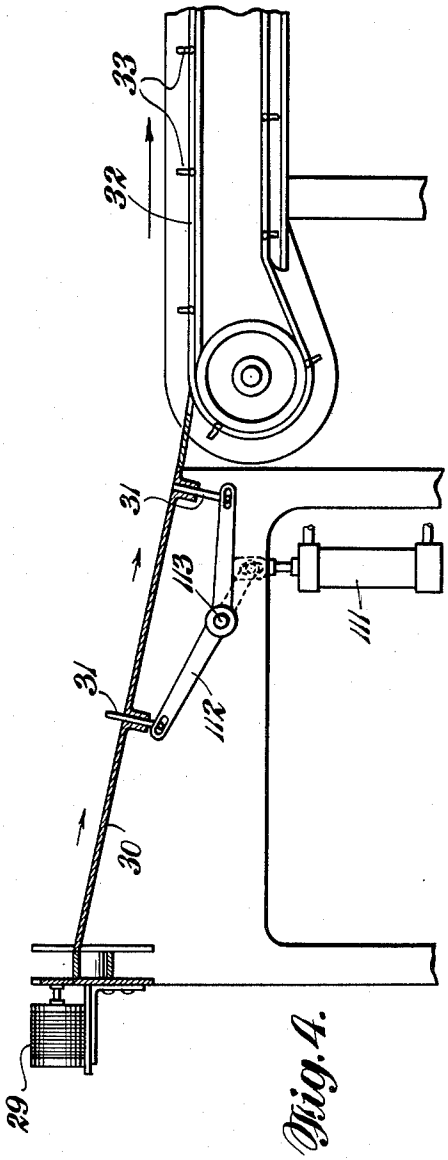


Fig. 4.

INVENTOR
Roger Wells,

BY Karl W. Flocks
ATTORNEY

Aug. 9, 1960 R. WELLS 2,948,094

PACKAGING

Filed Jan. 11, 1956 5 Sheets-Sheet 3

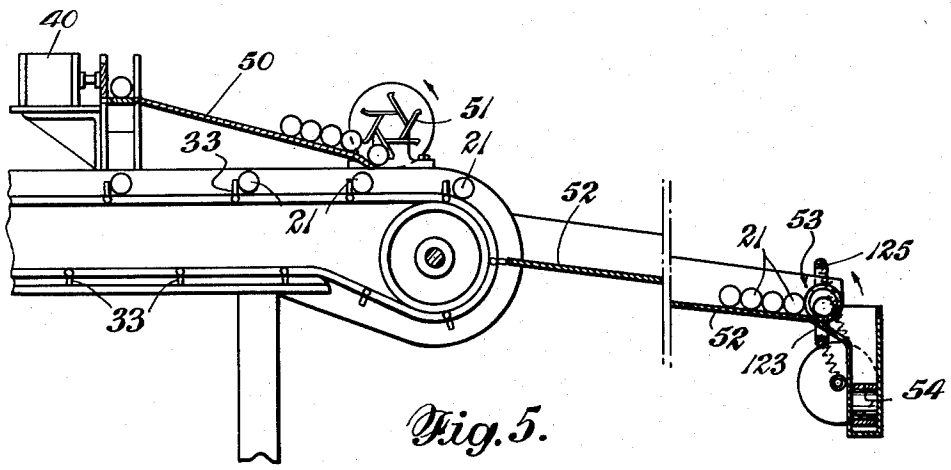


Fig. 5.

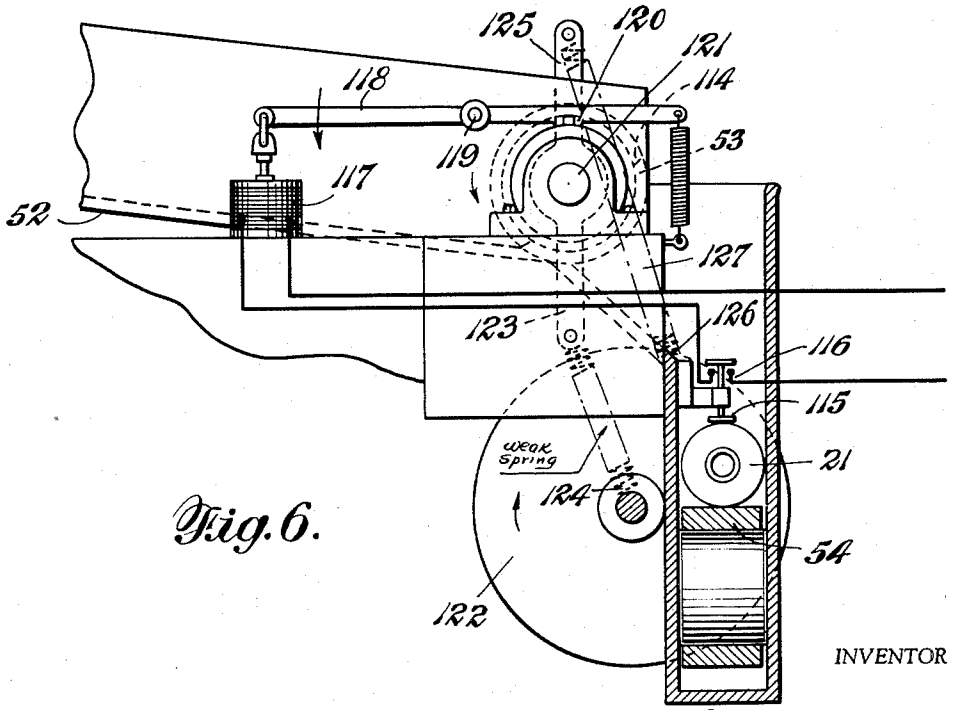


Fig. 6.

INVENTOR

Roger Wells,

BY KARL W. FLOCKS

ATTORNEY

Aug. 9, 1960 R. WELLS 2,948,094

PACKAGING

Filed Jan. 11, 1956 5 Sheets-Sheet 4

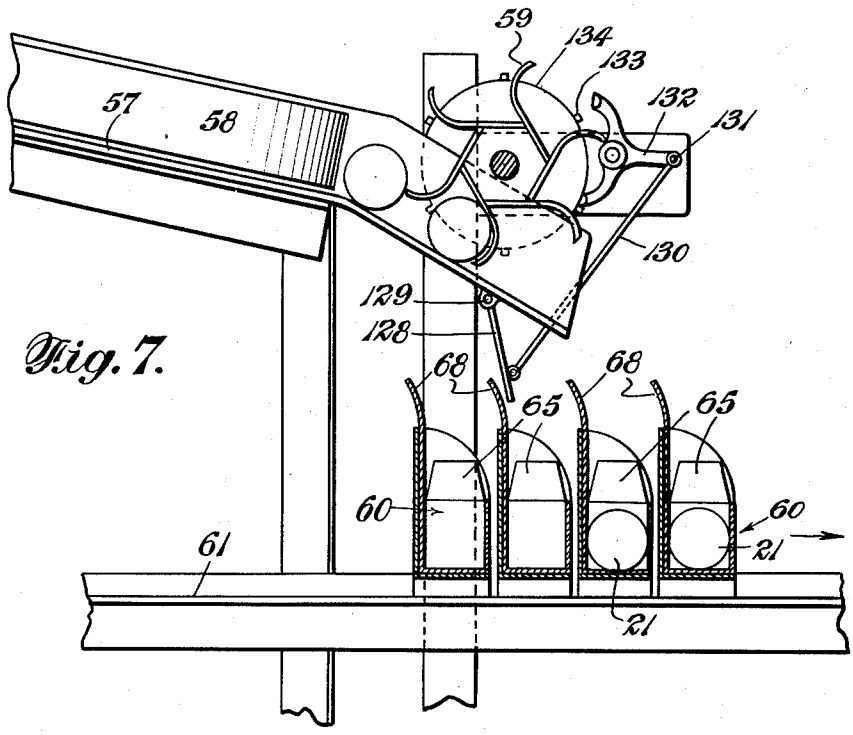
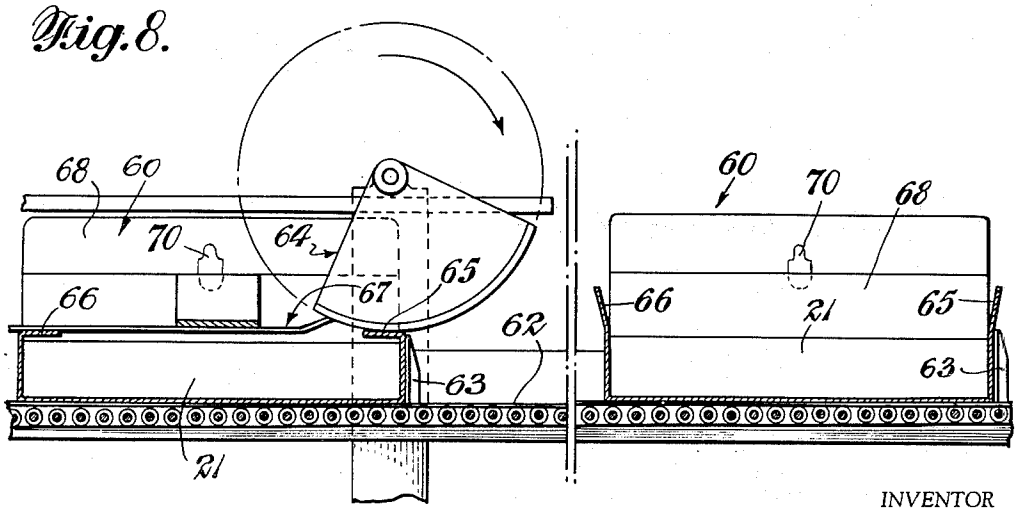


Fig. 7.

Fig. 8.



INVENTOR

Roger Wells,

BY KARL W. FLOCKS

ATTORNEY

Aug. 9, 1960 R. WELLS 2,948,094

PACKAGING

Filed Jan. 11, 1956 5 Sheets-Sheet 5

Fig. 9.

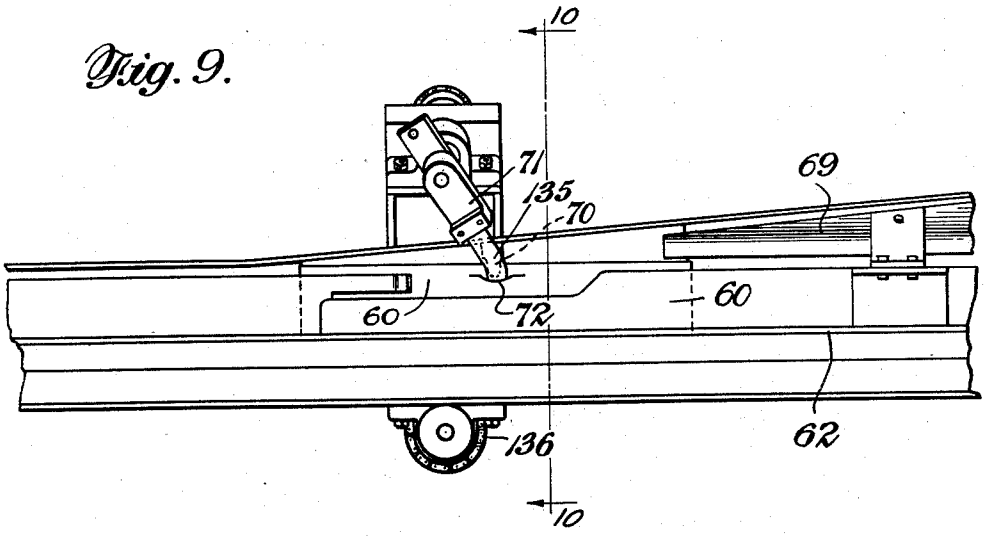


Fig. 10.

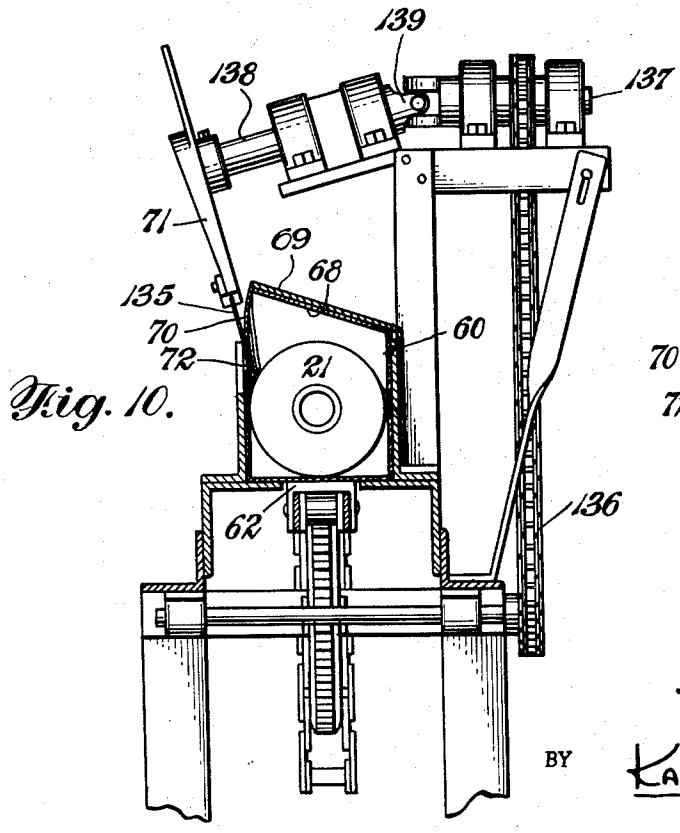
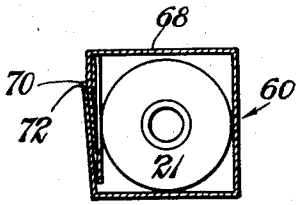


Fig. 11.



INVENTOR

Roger Wells,

BY Karl W. Flocks

ATTORNEY

United States Patent Office 2,948,094 Patented Aug. 9, 1960

2,948,094

PACKAGING

Roger Wells, Plattsburgh, N.Y., assignor to Diamond National Corporation, a corporation of Delaware

Filed Jan. 11, 1956, Ser. No. 558,523

32 Claims. (Cl. 53—37)

This invention relates to packaging and the continuous handling of rolls of web material produced axially in plural numbers at each of more than one station and more particularly it involves a novel method and structural arrangement for handling rolls of waxed paper produced in multiple at each of more than one station and continuously and successively loading the rolls individually into a series of individual open cartons each provided with a tray having side wings and a cover locking slit and a cover including a lock top, and continuously and in succession closing said loaded cartons with said wings folded inwardly and said lock tabs inserted in said locking slit.

Prior to the instant invention individual machines have been devised for winding and slitting rolls of web material and individual machines have been devised for manufacturing cartons, but the problem of continuously loading the individual slitted rolls has remained relatively inefficient and time and labor consuming.

It is an object of the instant invention to teach a novel method of handling and packaging rolls of web material.

It is a further object to provide an efficient apparatus for handling and packaging rolls of web material.

It is still another object to teach a novel method of moving rolls of web from a plurality of manufacturing stations to a single packaging station.

It is a still further object of the instant invention to provide a novel apparatus for moving rolls of web material from a plurality of manufacturing stations to a single packaging station.

Another object is to provide a novel packaging apparatus for waxed paper rolls.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a schematic plan view of apparatus in accordance with the invention.

Fig. 2 is a schematic view in side elevation of the apparatus shown in Fig. 1.

Fig. 3 is an enlarged vertical section taken along line 3—3 of Fig. 1 and looking in the direction of the arrows.

Fig. 4 is an enlarged vertical section taken along line 4—4 of Fig. 1 and looking in the direction of the arrows.

Fig. 5 is an enlarged fragmentary vertical section taken along line 5—5 of Fig. 1 and looking in the direction of the arrows.

Fig. 6 is an enlarged vertical section similar to Fig. 5 of a portion thereof.

Fig. 7 is an enlarged fragmentary vertical section taken along line 7—7 of Fig. 1 and looking in the direction of the arrows.

Fig. 8 is an enlarged vertical section taken along line 8—8 of Fig. 1 and looking in the direction of the arrows.

Fig. 9 is an enlarged fragmentary vertical elevation taken along line 9—9 of Fig. 1 and looking in the direction of the arrows.

Fig. 10 is a vertical section taken along line 10—10 of Fig. 9 and looking in the direction of the arrows.

Fig. 11 is a sectional view taken transversely of the axis of the wax paper roll through the loaded and sealed wax paper roll carton.

Referring to Figs. 1 and 2, the constant winder and slitting machine 20 manufactures a group of five individual rolls 21 of wax paper on the spindle 22. These wax paper rolls are of the usual size used by the housewife in the kitchen for covering foods and wrapping sandwiches and the like.

Though as manufactured, the individual roll size is obtained from a large jumbo roll by unwinding the required length and slitting to axial size while maintaining the axial group formation, the ends of the rolls in the group do have a tendency to stick together. After the group is manufactured, a lug 23, see Fig. 3, removes the group of five wax paper rolls from the spindle 22 and thereafter the group of rolls travels on the conveyor 24 to a position beneath the breaker roll 25 whereupon the individual rolls are guided onto the conveyor 26 which travels about ten percent faster than the conveyor 24.

The conveyor 26 has a portion 27 which runs up a slope of about 20° so that the portion 27 of the conveyor 26 makes an angle with the conveyor 24 of approximately 160°. The coordinated action of the conveyor 24 with breaker roll 25 and the conveyor 26 includes a separating of the individual rolls, during their continuous travel, so that as the rolls continue in their axial travel they are separated by a distance of approximately three quarters of an inch.

The group of five rolls continues to travel on conveyor 26 until the first roll of the group contacts the limit switch 28 which in turn actuates the solenoid operated pusher 29 and effects the pushing of the axially aligned separated five rolls down the inclined table 30, see Fig. 4.

Passing through the inclined table are the two stop bars 31 which serve to keep the group of rolls rolling down the inclined table 30 axially aligned. These stop bars are arranged transversely of the table 30 and are about eighteen inches apart. The stop bars 31 alternately appear above the table 30 and disappear in order to effectively align the rolls axially in their travel to the conveyor 32 which is provided with pusher bars 33. These pusher bars 33 are spaced from each other on the conveyor 32 for a distance which is a multiple of the diameter of the individual rolls.

A second constant winder 40 which is arranged parallel to the constant winder 20 serves to simultaneously manufacture a second group of wax paper rolls which are slit into individual rolls 21. This second group of individually slit rolls is formed on spindle 42 and is removed therefrom by a conveyor 44 which may be identical with conveyor 24 and is similarly provided with a removing lug similar to lug 23. The breaker roll 45 is identical with the breaker roll 25, previously described, and the conveyor 46 is similar to the conveyor 26 and its inclined portion 47 is similar to the inclined portion 27 of the conveyor 26. The breaker roll 45 in combination with the conveyor 44 and the portion 47 serves to separate the individual rolls 21 by about three quarters of an inch as the group of rolls travels toward the limit switch 48. The limit switch 48, like the limit switch 28, serves to actuate the solenoid operated pushing mechanism 49 to push the second group of axially aligned separated rolls on to the inclined table 50 which is located above a portion of the conveyor 32.

The second group of rolls on the inclined table 50 rolls into the star wheel type of rotating gate 51 which serves to maintain the second group of rolls axially aligned and to dispense them on to the conveyor 32 between the lugs

33 thereby combining the second group of rolls with the first group of rolls, see Fig. 5.

The conveyor 32 may be driven by a variable speed motor so that the speed can be increased and the accumulating table 52 more or less completely filled as required.

The conveyor 32, which is now carrying both first and second groups of rolls, feeds the inclined accumulating table 52 which in turn feeds the rocking or oscillating dispending gate 53. This oscillating gate or metering member dispenses or meters one group of rolls at a time on to the conveyor 54 (see Figs. 5 and 6) which has a horizontal or a level portion 55 and an upwardly inclined portion 56. The upwardly inclined conveyor portion 56 feeds the downwardly inclined chute 57 which is wide enough to accommodate one roll so that the rolls from the group on conveyor 54 are separated into individual rolls with their axes parallel to each other and with the rolls one behind the other.

In order to keep the axes of the rolls transverse of the chute 57 as they roll down, there is provided on the side margins of the chute a pair of moving belts 58 which travel at a speed somewhat in excess of the speed with which the rolls roll down the chute 57. Accordingly, if one of the rolls tends to become askew it will roll toward one of the belts and as the trailing end of the roll contacts the more rapidly moving belts the roll which was askew will straighten itself so as to have its axis transverse of the chute 57.

The chute 57 feeds the escape mechanism controlled star wheel 59 which in turn dispenses individual rolls into open empty set-up cartons 60 which travel on conveyor 61 below the escape mechanism controlled star wheel 59, see Fig. 7.

The loaded or filled but open cartons travel along conveyor 61 with the rolls in the cartons having their axes parallel to each other and one behind the other until they reach conveyor 62 whereupon the direction of the cartons is changed to an axial direction. Lugs 63 on conveyor 62 carry individual cartons in a direction parallel to the axis of the roll within the carton and beneath the rotating forcing member 64, see Fig. 8, which serves to fold in the rear wing 65 of each individual carton 60. As the individual cartons pass along on the conveyor 62 the forward wing 66 of the cartons 60 is automatically folded in by the bar 67. As the cartons 60 pass further along the conveyor 62 after both wings 65 and 66 are folded in, the cover 68 is folded in by the action of the fixed cam 69.

The locking tab 70 is maintained outwardly of the cover until it passes beneath the second rotating forcing member 71 which serves to insert the locking tab 70 into the locking slit 72 in the front wall of the carton, see Figs. 9, 10 and 11.

At the end of the travel of the individual cartons on the conveyor 62, the individual cartons are loaded, folded and sealed and they are passed to the conveyor 73 where again the axes of the rolls within the cartons are parallel to each other and one behind the other. The conveyor 73 may serve to load a master or multiple carton machine or the individual packaged rolls may be taken from conveyor 73 and loaded into large or master shipping cartons by hand.

Referring specifically to Fig. 3, the conveyor 24, which is a moving belt, is located below the constant winder 20. The moving belt 24 passes around the pulleys 100 and 101. The pulley 100 is mounted on the shaft 102 on which is also mounted the sprocket wheel 103 having thirty-two teeth thereon. Through the medium of the chain 104 and the sprocket wheel 105 having thirty teeth, which is driven through chain 106 by sprocket wheel 107 on motor 108, sprocket 103 is driven at a somewhat lower peripheral speed than the pulley 109 which is mounted on shaft 110 on which sprocket wheel 105 is also mounted. Accordingly, it will be understood that the conveyor 26 which may be a belt travels at a lineal speed approximately ten percent greater than the lineal speed of belt 24 and the rolls 21 will separate approximately three quarters of an inch as shown on the inclined portion 27 of the belt 26 under the influence of the combined action of the breaker roll 25, the belt 24 and the portion 27 of the belt 26. The bottom of the breaker roll 25 is spaced from the belts 24 and 26 about two and one-quarter inches when the diameter of the rolls 21 is about two inches.

Referring specifically to Fig. 4, the air cylinder 111 operates a piston therein which in turn causes oscillation of the lever 112 about the fixed pivoting shaft 113 which in turn causes reciprocating motion of the two stop bars 31 so that when the higher stop bar 31 is in exposed position as shown in Fig. 4, the lower stop bar 31 will disappear below the top of the inclined table 30. When the higher stop bar 31 is in the position below the top of the table 30, then the lower stop bar 31 will be exposed. Accordingly, it will be understood that as the groups of rolls roll down the inclined table 30 they are stopped for a relatively short period of time for the purpose of aligning the individual groups of rolls and then they are permitted to roll on in axial alignment until they are again stopped and again axially aligned should any partial disalignment occur, until they are conveyed on to the conveyor 32 where they may be pushed along by the pusher bars 33.

Referring specifically to Figs. 5 and 6, after the groups of rolls have been combined by the action of the star wheel type of rotating gate 51 so that the groups of rolls passing down the inclined table 50 are combined with the rolls between the pusher bars 33 on the conveyor 32, the groups of rolls are accumulated on the inclined table 52 and are momentarily stopped in their travel by the oscillating gate 53 which is a portion of a long tube 114 journalled for oscillation at its opposite ends with a portion cut away for a length somewhat larger than the axial dimension of a group of rolls. The tube 114, of which the oscillating member 53 is a part, is fabricated from a pipe about two and one-half inches in diameter and about six feet long. Only the center portion is cut out which leaves about three lineal inches of solid pipe at each end. In this solid portion at each end a small stub shaft is inserted so that tube 114 may be mounted for oscillation. The dimension of oscillation of the member 53 is from full baffling position, as shown in Fig. 5, through an arc of approximately 150° in a counterclockwise direction and during this period of oscillation a stack of groups will be baffled on inclined table 52 while one group is transferred to conveyor belt 54. When an entire group of rolls has been transferred by the conveyor belt 54, the switch member 115 will fall and close the circuit 116 to solenoid 117 which will pull the lever 118 in a counterclockwise direction about the pivot 119 so as to release the lock 120 and permit the member 53 to oscillate.

The shaft 121 fixed to the ends of the tube 114 of which the oscillating member 53 is a part, receives its oscillatory motion from the rotating driving wheel 122. The lever arm 123 fixed to the shaft 121 is connected by means of a weak spring to a fixed point 124. The lever arm 125 which is also fixed to the shaft 121 is connected to the periphery 126 of the wheel 122 by the strong spring 127. Accordingly, as the wheel 122 constantly rotates, the member 53 will oscillate through an arc of approximately 150° when the lock 120 is in open position so as to successively dispense a group of rolls from the table 52 to the conveyor 24. The switch 115 is so located as not to interfere with this roll dispensing or transferring action, as shown in Fig. 1.

Referring specifically to Fig. 7, cartons 60 which have already been set up manually or automatically on conveyor 61 pass below the escape mechanism controlled

star wheel **59** to receive individual rolls. As will be observed from Fig. 7, the cover **68** contacts the lever **128** which has a fixed pivot at **129** causing it to rotate counterclockwise and push connecting lever **130** which is pivotally connected at **131** to the escape member **132** which cooperates with the lugs **133** on the escape wheel **134** which is constantly urged to rotate in a counterclockwise direction. After a roll **21** has been dispensed into a carton **60** the lever **128** falls of its own weight and is again ready to be actuated by the next succeeding carton **60** during its continuous travel on conveyor **61**.

When there are no more set-up cartons to be loaded the wheel **59** will no longer be actuated. A system of switches assures that there are always enough filled cartons on conveyor **61** to exert a positive pressure sufficient to rapidly push another carton into the carton closure as soon as one is carried away.

Referring specifically to Fig. 8, the rotating forcing member **64** is shown forcing the rear wing **65** into folded position after the front wing **66** has already been folded by the action of the bar **67**. On conveyor **62** and immediately behind the rotating forcing member **64** is a similar carton **60** which is fully open and ready to be acted upon by the forcing member **64**. The speed of rotation of the element **64** is such that it makes one revolution per carton and, accordingly, it is coordinated with the speed of the conveyor **62**.

Referring specifically to Figs. 9, 10 and 11, the conveyor **62** has served to carry the cartons **60** beneath the cover folding and inserting plate **69** to the position beneath the rotating forcing member **71** which comprises a forcing finger **135** which in turn serves to engage, insert and force inwardly the locking tab **70** on the cover **68** of the carton **60**. Plate **69** is of generally inverted L-shape cross-section, and the two legs thereof are positioned relatively to the way in which the cartons **60** pass so that the tuck flaps on the covers of the cartons **60** are folded and then the leading edges of these tuck flaps are inserted behind the carton front wall, the cover is forced downwardly as the cartons advance, and due to the natural resiliency of the carton material, the locking tab is somewhat outstanding relatively to the tuck flap.

The rotating forcing member **71** may be driven by the sprocket chain **136** which drives the shaft **137** which in turn drives the shaft **138** through a universal joint **139** so that the shaft **138** may be at an angle to the shaft **137** and in order that the locking tab **70** may be engaged by the finger **135** in such a manner that the locking tab **70** will be forced downwardly and inwardly through the locking slit **72** formed in the front wall of the tray portion of the carton **60**.

The speed of rotation of the forcing element **71** is such that it makes one revolution per carton and it is, accordingly, coordinated with the speed of the conveyor **62**.

The carton closing apparatus described runs at a speed of about seventy-five cartons per minute.

Thus it will be understood that in accordance with the invention, cartons may be loaded with wax paper rolls and sealed at a high rate of speed in coordination with the manufacture of groups of rolls of wax paper on an intermittent basis and at a relatively lower rate of speed, with the manufacture of said rolls taking place at more than one station. The coordination of the continuous manufacture of wax paper rolls and the continuous loading and sealing of cartons effects a saving of labor and corresponding decrease in cost. In coordinating the manufactured product with the packaging of the product the continuous conveyance of the rolls both as to direction, change of direction as well as change of level, the advantages described are achieved. This coordination is present in the instant invention irrespective of the specific apparatus recited as the procedure as well as the apparatus is of significance in achieving the desired results.

It will be obvious to those skilled in the art that various other changes may be made without departing from the spirit of the invention and, therefore, the invention is not limited to what is shown in the drawings and described in the specification, but only as indicated in the appended claims.

What is claimed is:

1. In a waxed paper roll handling and packaging apparatus, first means for successively manufacturing groups of a plurality of axially aligned waxed paper rolls, first means for axially separating individual rolls in each group of said axially aligned rolls made by said first manufacturing means, first means for successively and transversely moving each said groups, first means for axially aligning said successively moving groups in their transverse travel, second means for successively manufacturing groups of a plurality of axially aligned waxed paper rolls, second means for axially separating individual rolls in each group of said axially aligned rolls made by said second manufacturing means, second means for successively and transversely moving each of said groups made by said second manufacturing means, second means for axially aligning and successively moving groups made by said second manufacturing means into the line of travel of groups made by said first manufacturing means, means for accumulating groups made by said first and second manufacturing means.

2. In a roll handling and packaging apparatus, first means for successively manufacturing groups of a plurality of axially aligned rolls, first means for axially separating individual rolls in each group of said axially aligned rolls made by said first manufacturing means, first means for successively and transversely moving each said groups, first means for axially aligning said successively moving groups in their transverse travel, second means for successively manufacturing groups of a plurality of axially aligned rolls, second means for axially separating individual rolls in each group of said axially aligned rolls made by said second manufacturing means, second means for successively and transversely moving each of said groups made by said second manufacturing means, second means for axially aligning and successively moving groups made by said second manufacturing means into the line of travel of groups made by said first manufacturing means, means for accumulating groups made by said first and second manufacturing means.

3. The structure recited in claim 2, said first and second manufacturing means being laterally spaced from each other, at least a part of said second means for moving said groups made by said second manufacturing means being at a higher level than at least a part of said first means for successively moving said groups made by said first manufacturing means, whereby said groups made by said second manufacturing means will join the line of travel of said groups made by said first manufacturing means by travelling from a higher to a lower level.

4. The structure recited in claim 2, means for moving said accumulated groups successively in an axial direction, means for successively moving at a generally high rate of speed individual rolls from said accumulated groups in a transverse direction with the axes of individual rolls parallel to each other and one behind the other and at right angles to their line of travel, means for moving open and empty cartons at a generally high rate of speed, means for successively loading one roll into each carton.

5. The structure recited in claim 4, at least a portion of said generally high speed roll moving means being located at a higher level than said generally high speed carton moving means, whereby each of said cartons is loaded from above.

6. The structure recited in claim 4, generally high speed means for successively moving said open loaded

cartons in axial direction in end-to-end formation, means for successively closing said cartons.

7. The structure recited in claim 6, means for successively moving said individually loaded closed cartons in a transverse direction in a single row with the rolls within the cartons having their axes parallel to each other and one behind the other as opposed to end-to-end formation.

8. The structure recited in claim 6, said cartons each comprising a tray having two inwardly foldable side wings located at opposite ends thereof, a foldable cover comprising a locking tab and a front wall provided with a locking slit, means for folding in the rear wing of each carton, means for bringing down the front cover of each carton, and means for inserting the locking tab within the locking slit.

9. The structure recited in claim 8, means for successively moving said individually loaded sealed cartons in a transverse direction in a single row with the rolls within the cartons having their axes parallel to each other and one behind the other as opposed to end-to-end formation.

10. The structure recited in claim 8, said means for folding in said rear wing comprising a rotating forcing member.

11. The structure recited in claim 8, said means for inserting the locking tab within said locking slit comprising a rotating forcing member.

12. The structure recited in claim 10, said rotating forcing member being in timed relation with said high speed means for moving said open loaded cartons in end-to-end formation so that said rotating forcing means makes one revolution as said high speed means for moving said open loaded cartons in end-to-end formation moves a distance equal to the length of one carton.

13. The structure recited in claim 11, said rotating forcing member being in timed relation with said high speed means for moving said open loaded cartons in end-to-end formation so that said rotating forcing means makes one revolution as said high speed means for moving said open loaded cartons in end-to-end formation moves a distance equal to the length of one carton.

14. The structure recited in claim 11, the axis of rotation of said forcing member being at an angle of less than 90° with the line of travel of said cartons in end-to-end formation.

15. In a closing device for successively closing a series of cartons each comprising a tray having two side wings located at opposite ends thereof, a foldable cover comprising a flap having a locking tab and a front wall provided with a locking slit, means for successively moving open cartons in end-to-end formation, means for successively folding in the rear wing of each carton, means for successively bringing down the cover of each carton and inserting the flap thereof behind said front wall, and means for inserting the locking tab through the locking slit comprising a shaft, a finger fixed to and extending generally radially of said shaft, said shaft supporting said finger for rotation in a plane that is parallel to the line of movement of said cartons and that is inclined relatively to the carton side walls with the finger being directed from outside said carton downwardly towards the bottom thereof while engaging said locking tab.

16. The structure recited in claim 15, said means for folding in said rear wing comprising a rotating forcing member.

17. The structure recited in claim 16, said rotating forcing member being in timed relation with said means for moving said open loaded cartons in end-to-end formation so that said rotating forcing means makes one revolution as said high speed means for moving said open loaded cartons in end-to-end formation moves a distance equal to the length of one carton.

18. The structure recited in claim 15, said finger being in timed relation with said means for moving said open loaded cartons in end-to-end formation so that said finger makes one revolution as said high speed means for moving said open loaded cartons in end-to-end formation moves a distance equal to the length of one carton.

19. The structure recited in claim 2, said first means for axially separating individual rolls in each group comprising a first moving belt and a second moving belt, a breaker roll for forcing the transfer of individual rolls from said first belt to said second belt, means for causing said second belt to move faster than said first belt.

20. The structure recited in claim 19, said second belt being at an angle of approximately 160° to said first belt.

21. The structure recited in claim 2, said first means for axially aligning said groups in their transverse travel comprising an intermittently operated stop bar arranged parallel to the axes of said groups.

22. The structure recited in claim 2, said second means for axially aligning and successively moving groups made by said second manufacturing means comprising a wheel of star-like section having a length corresponding to the length of a group.

23. The structure recited in claim 4, and means to successively release one group of said accumulated groups comprising an oscillating member formed of a tube having its central portion cut away in part so as to form a combination metering pocket and stop, means for rotating said oscillating member about its axis through an arc of approximately 150°, means for timing the period of oscillation of said oscillating member.

24. The structure recited in claim 4, said means for successively moving individual rolls from said accumulated groups in a transverse direction with the axes of individual rolls parallel to each other and one behind the other comprising an inclined plane for causing the rolls to roll down said plane, a pair of moving belts forming the side margins of said plane, means for moving said belts at a velocity greater than that of the rolls rolling down said inclined plane.

25. The structure recited in claim 4, said means for successively loading one roll into each carton comprising a star wheel metering element, means for controlling the rotation of said metering element in response to the motion of said empty cartons.

26. The method of handling and packaging rolls of web material comprising moving first groups of a plurality of axially aligned rolls in an axial direction, separating individual rolls in said first groups, moving said separated groups in a transverse direction while maintaining their alignment, moving second groups of a plurality of axially aligned rolls in an axial direction, separating individual rolls in said second groups, moving said separated second groups in a transverse direction and maintaining their alignment, accumulating said first groups with said second groups.

27. The method recited in claim 26, accumulating said first groups with said second groups by moving said second groups downwardly into the line of travel of said first groups.

28. The method recited in claim 26, successively moving individual rolls from said accumulated groups with their axes parallel and one behind the other while simultaneously successively moving individual open cartons in the same general direction, moving individual rolls into individual cartons.

29. The method recited in claim 28, wherein said last step involves moving individual rolls downwardly into said individual cartons.

30. The method recited in claim 28, successively moving said loaded cartons in end-to-end formation and simultaneously sealing said cartons.

31. The method recited in claim 29, successively moving said loaded and sealed cartons in transverse

formation with their axes parallel and one behind the other.

32. The structure recited in claim 4, said means for successively loading one roll into each carton comprising a star wheel metering element, means for controlling the rotation of said metering element in response to the position of a moving open carton.

References Cited in the file of this patent

UNITED STATES PATENTS

1,639,282	Bergstein	Aug. 16, 1927
1,827,029	Marcalus	Oct. 13, 1931
2,236,011	Shock	Mar. 25, 1941
2,404,882	Monaco	July 30, 1946
2,537,464	Holmberg	Jan. 9, 1951
2,598,135	Schmied	May 27, 1952
2,625,778	Wood	Jan. 20, 1953
2,660,012	Boyce	Nov. 24, 1953
2,665,532	Wood	Jan. 12, 1954
2,713,939	Lear	July 26, 1955
2,747,348	Rose	May 29, 1956
2,765,603	Rose	Oct. 9, 1956