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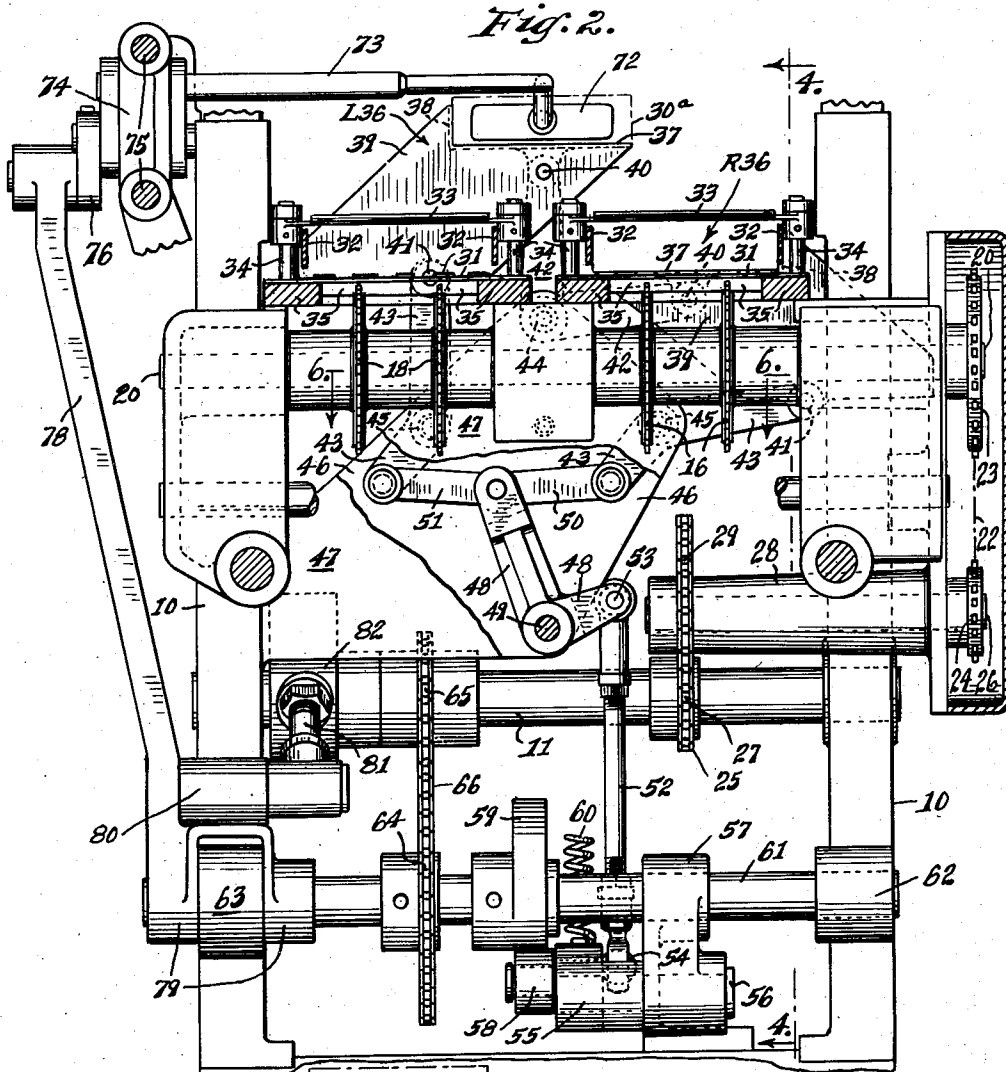
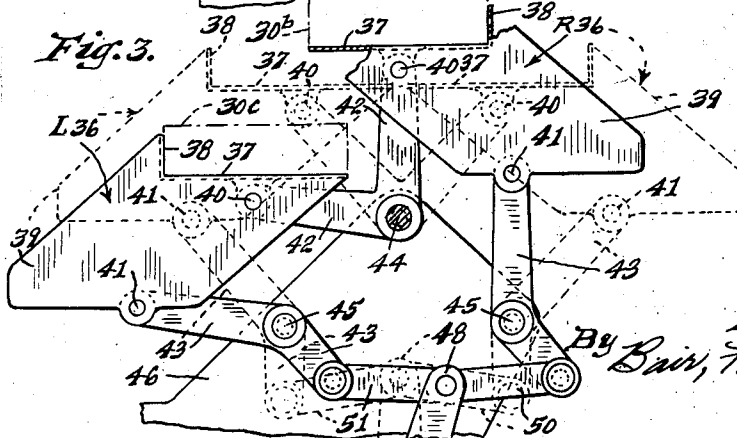
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2,649,952

PRODUCT TRANSFER MECHANISM

Filed Jan. 28, 1952

3 Sheets-Sheet 2



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Aug. 25, 1953

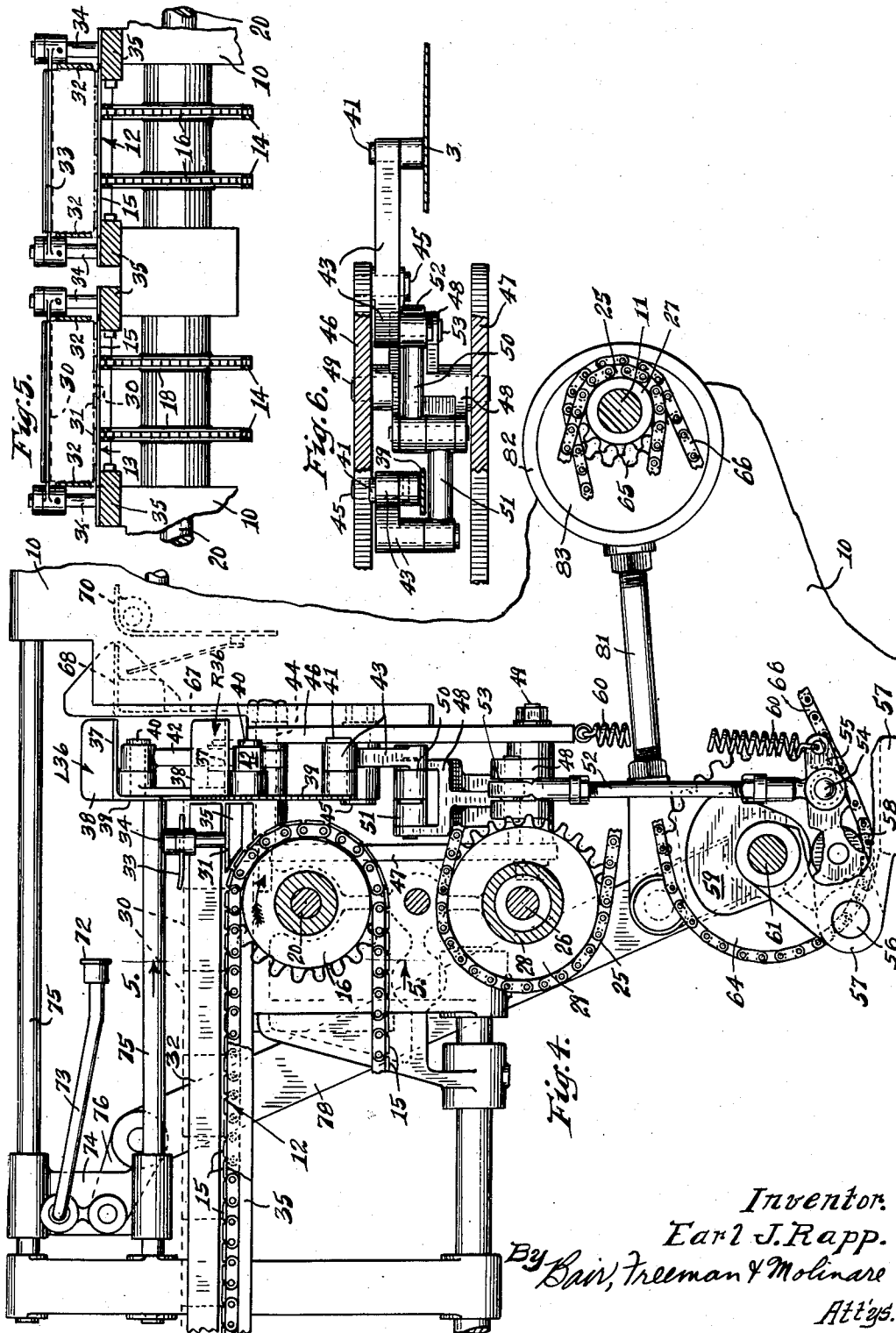
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3 Sheets-Sheet 3



## UNITED STATES PATENT OFFICE

2,649,952

## PRODUCT TRANSFER MECHANISM

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Application January 28, 1952, Serial No. 268,471

10 Claims. (Cl. 198—24)

1 This invention relates to a product transfer mechanism for feeding a product such as half-pound or pound prints of butter or oleomargarine from two side-by-side conveyors alternately feeding them to a common position for movement into a wrapping and cartoning mechanism.

One object of the invention is to provide a comparatively simple and novel mechanism to handle units of product issuing from a pair of intake conveyors in a side-by-side arrangement so that the units from both conveyors can be fed to a single wrapping and cartoning mechanism.

Another object is to provide carrier elements for the units of product issuing from the discharge ends of intake conveyors, such carrier elements carrying the units to substantially the same position where a unit from one conveyor is wrapped and cartoned, and then a unit from the other conveyor is wrapped and cartoned, the process continuing alternately in this manner.

Still another object is to provide carrier elements which are laterally movable from spaced apart positions alternately to a certain position, whereupon the units of product from the alternate carriers may be moved away from that position by a pusher element, the carriers being mounted for lateral movement and also for vertical movement, and being carried by swingable parallelogram arms to impart to them the required lateral and vertical movements, whereby articles from two side-by-side intake conveyors may be brought into alignment at an elevated position for feeding into the cartoning and wrapping mechanism.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my product transfer mechanism, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Figure 1 is a plan view of a product transfer mechanism embodying my invention and showing adjacent parts of a butter wrapping and cartoning mechanism associated therewith.

Figure 2 is a vertical rear end view with the intake conveyors removed, and is taken substantially on the section line 2—2 of Figure 1.

Figure 3 is a rear elevation similar to a portion of Figure 2 showing the essential elements of the product transfer mechanism in an opposite position with respect to that shown in Figure 2, the midway position between the two being illustrated by dotted lines.

2 Figure 4 is a vertical sectional view substantially on the line 4—4 of Figure 2.

Figure 5 is a vertical sectional view on the line 5—5 of Figure 4; and

5 Figure 6 is a horizontal sectional view substantially on the line 6—6 of Figure 2.

On the accompanying drawings I have used the reference numeral 10 to indicate a main frame of a wrapping and cartoning machine and 11 a drive shaft journaled therein. The shaft 11 is driven in any suitable manner, usually from an electric motor (not shown) and at a suitable speed for the wrapping and cartoning mechanism with which the present invention is not concerned.

A similar wrapping and cartoning mechanism was shown in my Patent No. 2,564,079, wherein a product such as prints of butter was stacked when delivered from side-by-side conveyors. In the present invention, instead of stacking the prints, they are delivered alternately from side-by-side conveyors wherein lies the difference between my prior patent and the present disclosure, the prior mechanism being redesigned to secure the desired result of alternate transfer of the product from the side-by-side conveyors to a common position for discharge into the wrapping and cartoning mechanism.

I provide two intake conveyors 12 and 13, each of which comprises chains 14 to which bars 15 of wood or the like are secured. There are two of the chains 14 for each conveyor 12 and 13.

The chains 14 for the conveyor 12 are trained around sprockets 16 and for the conveyor 13 around sprockets 18. The shaft for these sprockets is indicated at 20, which shaft constitutes a direct drive for both intake conveyors 12 and 13. The shaft 20 is driven by a chain 22 meshing with a sprocket 23 on the shaft 20 and with a sprocket 24 on a counter-shaft 26.

The counter-shaft 26 is journaled in a bearing 28 of the frame 10 and carries a sprocket 29 around which a chain 25 extends. This chain also extends around the sprocket 27 which is mounted on the main drive shaft 11. Thus the shaft 20 and the conveyor chains 14 for the conveyors 12 and 13 are driven.

The drive shaft 11 rotates once per cycle of operation of the wrapping and cartoning machine; whereas the chains 14 travel at such speed as to present a "print" of product 30 to the product transfer mechanism once every-other-cycle of operation of the machine so that presentation of prints thereto is made each cycle of op-

eration of the machine alternately from the two conveyors 12 and 13.

The prints 30 (half-pound size illustrated although the mechanism can also handle pound prints) are supported on the conveyor bars 15 of both intake conveyors 12 and 13 and these conveyors feed the product toward the wrapping and cartoning machine. The prints 30 are first fed onto plates 31 at the forward ends of the conveyors as shown in Figures 4 and 5. The prints are guided at the sides by side plates 32, and a hold-down plate 33 is mounted above each plate 31 as shown in these two figures. The plates 33 are supported by posts 34 extending upwardly from conveyor supporting frame members 35.

Just ahead of the plates 31 are carrier elements indicated generally at R36 and L36, R indicating "right" and L indicating "left." Each carrier comprises a plate-like platform 37 approximately the size of a half-pound print 30 and an upstanding flange 38 at the outer end of each which is the right end for R36 and the left end for L36 in Figure 3.

One of the carriers R36 or L36 will now be described as to details and the description applies also to the other. At the rear end of the platform 37, an apron 39 depends and carries a pair of pivots, an upper one 40 and a lower one 41. A single bell crank 42 has the outer ends of its arms pivoted to the pivots 40 of both the carrier elements R36 and L36. Two other bell cranks 43 are provided, one for each of the carrier elements and pivoted thereto at the outer end of the long arm at 41.

The bell crank 42 is pivoted at 44 intermediate its ends and the bell cranks 43 are pivoted intermediate their ends at 45 between a pair of plates 46 and 47, which are part of the framework of the machine.

For oscillating the bell cranks 42 and 43, I provide a bell crank 48 pivoted at 49 between the plates 46 and 47, and connected by links 50 and 51 with the short arms of the bell cranks 43. A link 52 is pivoted by means of ball joints 53 and 54 to the short arm of the bell crank 48 and to a lever 55. The lever 55 (see Figure 4) is pivoted at 56 to a stationary bracket 57 and carries a roller 58 held against a cam 59 by a spring 60. The cam 59 is mounted on a counter shaft 61 journaled in the bracket 57 and in bearings 62 and 63 of the side frames 10 as shown in Figure 2.

Secured on the shaft 61 is a sprocket 64 and meshing therewith is a chain 66 extending around a drive sprocket 65 on the drive shaft 11, whereby the shaft 61 is rotated at one-half the speed of the shaft 11 for oscillating the bell cranks 42 and 43 in one direction during one cycle of operation of the machine and in the opposite direction during the next cycle thereof.

Ahead of the carriers R36 and L36 is a stationary apron 67 terminating at its upper end in a forwardly extending supporting platform 68 as shown in Figure 4. The platform 68 receives the prints 30 as will hereinafter appear and an additional platform 70 is shown, all of which are parts of the wrapping and cartoning machine.

Rotation of the drive shaft 11, it will be seen from the foregoing, effects oscillation of the bell cranks 42 and 43 for alternately elevating the prints 30 from the conveyors 12 and 13 and moving them toward the center of the machine to an elevated position shown for the print 30a in Figure 2 by the left-hand carrier element L36

and then the print 30b as shown in Figure 3 for the right-hand carrier element R36. In Figure 3 a third print 30c is illustrated and it will be the next one elevated to the position of 30a in Figure 2 and 30b in Figure 3.

The prints from both conveyors are thus transferred to a common elevated position and may be pushed off the carriers and on to platform plates 68 and 70 by means of a pusher for this purpose which is indicated at 72. The pusher 72 is carried by a rod 73 supported by a slide 74 which is slidable on stationary rods 75. The slide 74 is connected by a link 76 with the upper end of a lever 78 which lever at its lower end is forked as at 79 as shown in Figure 2 to straddle one of the frame members 10 and rock on the countershaft 61. The lever 78 carries a boss 80 adjacent the forked end 79 with which one end of a link 81 is pivotally connected. The other end of the link 81, as shown in Figure 4, terminates in an eccentric strap 82 surrounding an eccentric 83 on the main drive shaft 11.

#### Practical operation

In the operation of my product transfer mechanism, the prints 30 are delivered to the plates 31 under the plates 33 and are pushed across the plates 31 on to the platforms 37 of the carriers R36 and L36. The front print on the lower platform 37 engages the apron 67 which limits the movement of the print.

As soon as a print is completely delivered to the platform 37 of the carrier L36, that platform is raised by either the drop of the cam 59 operating through the roller 58, the arm 55, the link 52, the bell crank 48, the links 50 and 51, and the bell cranks 42 and 43 to elevate the print to the 30a position shown in Figure 2. This transfer is from the 30c position of Figure 3 to the 30a position just referred to. As the carrier element L36 is being elevated, its apron 39 holds back the rest of the prints 30 on the intake conveyor 13, the next print being held down against undesirable upward movement by the plate 33. The intake conveyors 12 and 13 operate continuously and slip under the prints to keep them tight against the apron 67.

After the print is in the 30a position illustrated in Figure 2, the pusher 72 engages it and pushes it off the platform 37 and across the platforms 68 and 70 where part of the wrapping operation takes place, and further into the machine for completing the wrapping and cartoning operations upon the next stroke of the pusher 72.

While the carrier L36 is in the elevated position, a print is delivered from the conveyor 12 onto the carrier R36, the front print on its platform 37 engaging the apron 67 to limit the movement of the print. The carrier R36 is then raised by the rise of the cam 59 operating through the linkage as before (but in the reverse direction) to transfer the print from the conveyor 12 to the same 30b position shown in Figure 3. Likewise the apron 39 of the carrier element R36 holds back the rest of the prints 30 on the intake conveyor 12 and the next print is held down against undesirable upward movement by the plate 33 of this conveyor.

The next stroke of the pusher 72 thereby delivers another print to the wrapping and cartoning mechanism and the cycle is thereafter repeated, the pusher first pushing a print from one of the carriers 36 and then from the other due to the oscillating movement thereof as shown in Figures 2 and 3 elevating prints alternately from

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the two conveyors 12 and 13 to the 30a position in Figure 2.

In Figure 3 I illustrate a midway position of the carriers L36 and R36 by means of dotted lines and it will be noted that the bell cranks 42 and 43 are so connected to these carriers as to form parallelogram link arrangements, which calls for a constant distance between the pivots at the lower ends of the bell cranks 43. The bell crank 48, however, at its upper end swings in an arc of a circle and therefore requires the two links 50 and 51 but the angular change of these two out of a straight line is so small as not to cause any binding of the parts.

It will be obvious from the foregoing specification that I have provided a product transferring mechanism in which desired lateral movement of carriers is accomplished by mounting them on swinging arms and at the same time vertical movement is had in conjunction with a pair of side-by-side intake conveyors spaced from each other, yet the product may be alternately delivered from these conveyors to a single position where a pusher is adaptable to push the product into the wrapping and cartoning machine. The necessary motion for the carriers is had with a simple arrangement of bell cranks which at all times keep them in a level position with a minimum of friction and mechanical parts.

Some changes may be made in the construction and arrangement of the parts of my product transfer mechanism without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In a product transferring mechanism of the character disclosed, a pair of intake conveyors having discharge ends coincident with each other, said conveyors being arranged side-by-side, a carrier element at the forward end of each of said conveyors and adapted to receive units of product from the conveyors, said carrier elements being provided with aprons to hold back additional units, hold-down plates above the first of such additional units, connections for moving said carrier elements simultaneously with one at a common position aligned with a discharge platform when the other is aligned with its respective conveyor and vice-versa whereby the units from both conveyors may be alternately discharged at the same level, and a pusher for effecting such discharge.

2. In a product transferring mechanism for a wrapping and cartoning machine, a pair of intake conveyors arranged side-by-side, a carrier element at the forward end of each of said conveyors and each adapted to receive units of product from its respective conveyor, said carrier elements being provided with aprons to hold back additional units, and mechanical linkage connections between said carrier elements whereby they may be moved simultaneously with one at a common position aligned with a discharge platform when the other is aligned with its respective conveyor and said one aligned with its respective conveyor when said other one is at said common position whereby the units from both conveyors may be alternately discharged at the same position to said wrapping and cartoning machine.

3. In a product transferring mechanism for a pair of intake conveyors arranged side-by-side, a carrier element at the forward end of each of

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said conveyors and adapted to receive units of product therefrom, said carrier elements being mounted on swinging arms whereby they are both vertically and laterally movable for delivering the product on each alternately at substantially the same position for discharge, a pusher for effecting such discharge, and means for oscillating said arms.

4. In a product transferring mechanism, a pair of intake conveyors having discharge ends aligned with respect to each other, said conveyors being in side-by-side relation to each other, carriers at the forward ends of said conveyors and each carrier comprising a platform to receive product from its respective conveyor, means for mounting said carriers comprising bell cranks pivoted at stationary points and arranged in pairs so as to form a parallelogram link supporting and moving arrangement for each of said carriers whereby the carriers are moved in arc-shaped paths alternately from the front end of the respective intake conveyors to a common position, and a pusher for effecting such discharge from said platforms at said common position.

5. A product handling machine comprising a pair of side-by-side intake conveyors having discharge ends aligned with each other, a carrier element at the forward end of each of said conveyors and adapted to receive units of product alternately from the conveyors, means comprising one bell crank common to both carriers and another bell crank for each of the carriers for mounting and supporting them for movement in arc-shaped paths with the carriers remaining level in all positions of movement thereof, the limits of movement being from each intake conveyor to a common position for transferring the product alternately from the conveyors to said common position so that the units of product may be discharged at the same level therefrom, means for oscillating said bell cranks in one direction during one cycle of operation of the machine and in the other direction during the next cycle of operation thereof, a pusher element for the product at said level, and means for moving said pusher element each cycle of operation of the machine.

6. In a product handling mechanism of the character disclosed, a pair of intake conveyors arranged side-by-side and having delivery ends in substantial alignment with each other, carrier elements adapted to receive units of product alternately from said conveyors, a bell crank system for supporting said carrier elements for movement in predetermined paths with one carrier element ahead of its delivery end of its intake conveyor and the other in a discharge position or with said other in front of its delivery end of its intake conveyor and said one in said discharge position, a pusher element for pushing the units at said discharge position from both carrier elements alternately into a wrapping and cartoning machine, said carrier elements being operated at half the cycling of the machine in order to deliver the product from said intake conveyors alternately to said discharge position.

7. In a transferring mechanism of the character disclosed for products such as prints of butter, a pair of side-by-side intake conveyors, a carrier element for each conveyor adapted to receive units of product therefrom, bell cranks pivotally connected with said carrier elements for swinging them through predetermined arc-shaped paths and keeping them in a level position with the path of each carrier element being

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from the discharge end of its respective intake conveyor to a common discharge position, means for oscillating said bell cranks each half cycle of operation of a wrapping and cartoning machine, and means for pushing the print of butter from each carrier element alternately each cycle of operation of the machine.

8. In a product transferring mechanism, a pair of intake conveyors arranged side-by-side and having aligned delivery ends, carrier elements adapted to receive units of product alternately from said ends, swinging arms carrying said carrier elements, cam means for oscillating said arms, said arms being arranged in parallelogram fashion to retain said carrier elements substantially level throughout all positions of movement thereof, the arc of movement of each carrier element being from adjacent the discharge end of its respective intake conveyor aligned therewith to a common position, and means for removing the product from said common position each cycle of operation of the machine and each cycle from said carrier elements alternately.

9. In a product transferring mechanism of the character shown, a pair of intake conveyors having discharge ends aligned in relation to each other, said conveyors being arranged side-by-side, a product carrier at the forward end of each of said conveyors and adapted to receive units of product therefrom, said carriers being provided with aprons to hold back additional units, means for alternately and laterally moving said

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carrier elements to a common position whereby the units from both may be discharged on the same level therefrom, said means also moving said carrier elements vertically and including parallelogram link arms on which they are pivotally mounted.

10. In a device of the character disclosed, a pair of intake conveyors having side-by-side discharge ends aligned with relation to each other, a carrier at the forward end of each of said conveyors and adapted to receive units of product issuing from the conveyors alternately, said carriers being provided with aprons to hold back additional units, a stationary hold-back apron at the front of both carriers, hold-down plates above the first of such additional units, means for vertically moving said carriers to positions aligned whereby the units from both may be discharged on the same level therefrom, a pusher for effecting such discharge, and said means moving said carrier elements vertically including bell cranks on which the carrier elements are mounted for the purpose of also moving them laterally to a common position as a result of swinging movement of the bell cranks.

EARL JOSEPH RAPP.

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