July 25, 1939. C. N. BERGMANN 2,167,343

CONTAINER CONVEYER AND DISTRIBUTOR

Filed March 31, 1938

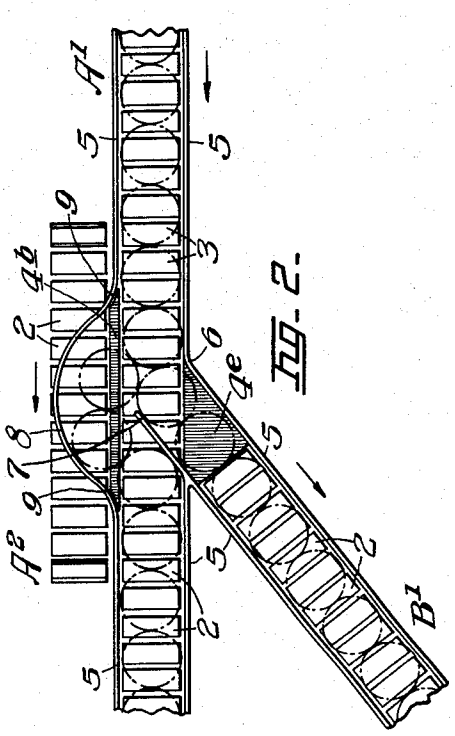


Fig. 2.

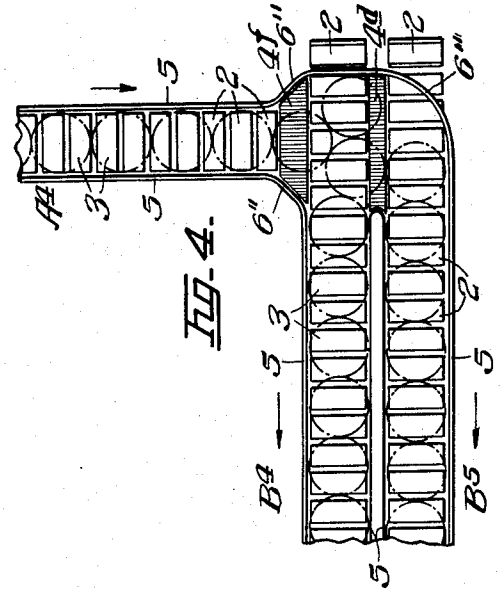


Fig. 4.

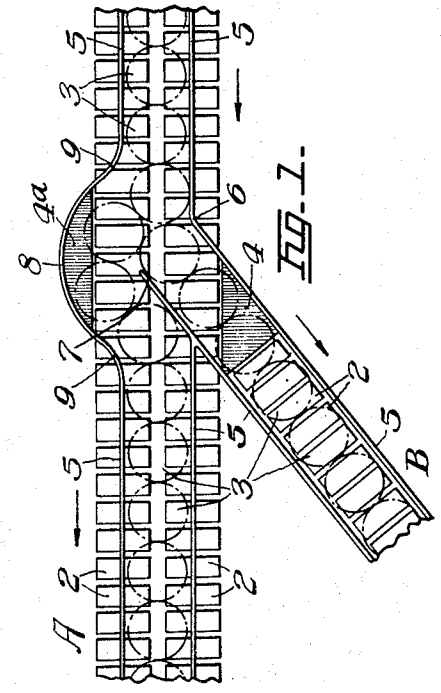


Fig. 1.

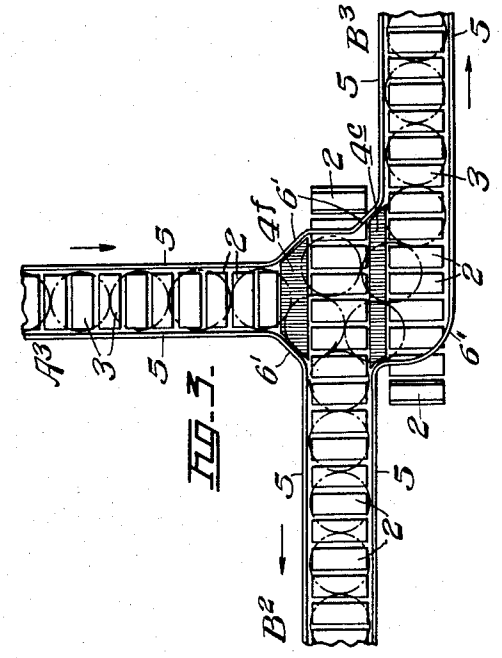


Fig. 3.

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CONTAINER CONVEYER AND DISTRIBUTOR

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Application March 31, 1938, Serial No. 199,139

13 Claims. (Cl. 198—81)

My invention is an improvement in distributing conveyers for containers such as bottles, cans, or the like.

It is particularly adapted to the art of conveying cylindrical units, as milk bottles, from a single supply source to a plurality, as two, delivery destinations or stations, by distributing a single row or stream of such units by plural receiving and supply conveyers.

The invention has in view to accomplish such distribution automatically by means of a single, or substantially single, main conveyer and one or more laterally disposed branch conveyers communicating therewith, whereby the main conveyer and lateral conveyer are both operative to carry to two final delivery or receiving stations portions only of the primary or initial supply row or stream.

The invention provides for distribution by and from a main conveyer to a plurality, as two, of delivery conveyers leading to corresponding receiving stations.

I accomplish these objects by so combining with the main conveyer one or a plurality of branch conveyers having junction relation with the main conveyer, with transfer assisting and guiding means effecting appropriate and desired selectivity of the units from the main row for movement along the delivery paths.

In the construction of my invention I utilize main and supplemental conveyers of the general type of those disclosed in my prior Patents No. 2,103,107 and 2,108,522, but dispensing with the star wheels of the latter.

In the drawing illustrating different embodiments of the invention, in somewhat diagrammatic form:

Fig. 1 is a plan view showing the junction of a pair of longitudinal side by side conveyers and a laterally arranged branch conveyer;

Fig. 2 is a similar view showing an obvious modification thereof, utilizing a single flight longitudinal conveyer;

Fig. 3 is a similar view showing a main conveyer leading to a pair of oppositely moving distributing conveyers;

Fig. 4 is a similar view showing a main conveyer leading to a pair of laterally arranged carry-off conveyers disposed in the same general direction.

Fig. 1 illustrates one construction which may be utilized for solution of the problem of distributing the normal output of a single element, as a washing machine, to a plurality of subsequent stations and operations, as in filling the bottles or containers.

The main trackway A, of conventional form, consists of a double line of flat top conveyer flights 2 having the usual flexibly connected supporting links, carried and driven by standard sprockets and power imparting means, not necessarily herein described.

As shown, the pair of plural unit supporting flights 2 are closely adjacent or side by side, running at any selected uniform speed, and adapted to support the bottles or other cylindrical units 3 midway by the inner portions of the flights, as shown.

Such double line of flights thus constitute in effect a main one way conveyer supporting the units in transfer on a substantially middle line.

The supplemental or lateral trackway B embodies a single line of similar flights 2 having its receiving end terminating as closely adjacent to the near side of the main conveyer as practicable, with an intervening bridge plate 4 of suitable construction, on a common level with both.

The trackway of the main conveyer A is defined between flanking guide rails 5 at each side, extending sufficiently above the flights for maintaining the units in line of progress, with suitable clearance for free movement, and allowance for necessary slippage arising from incidental retardation. Likewise the trackway B has similar guide rails 5 in outer embracing and guiding relation to the units and at each side of the flights 2 thereof, as shown.

Such lateral guide rails are connected with and form extensions of the adjacent guide rails 5 of the main trackway, with rounded connection as at 6 at the receiving side, as indicated by the direction arrows.

At the other side of the entrance opening of trackway B opposite connection 6 the guide rail 5 of the lateral trackway is extended across the main trackway A by a prong or fender 7 sufficiently far to engage and deflect inwardly certain ones of the oncoming units to cause them to enter the receiving throat of the lateral conveyer B.

Such prong extension, as shown, is in the same general direction of trackway B and substantially parallel with the outer guide rail, to form a unit directing guide extension for units to be directed into trackway B.

For the purpose of providing clearance around the fender 7 and guiding control of other alternating units, not thus selected for entrance onto the lateral conveyer, the opposite guide rail 5 of

the main trackway is bowed outwardly as at 8 with rounded junction as at 9, thus forming a confining and switching pathway, back to the main line of travel, as indicated. A similar bridge plate 4a, beyond the outer flights 2, provides a supporting surface for the units in their arcuate path.

Fig. 2 illustrates the same construction and operation as above described, except that both the main conveyer A^1 and lateral conveyer B^1 comprise a single row of flights 2.

It also utilizes a supplemental conveyer A^2 of the same general kind, which may be comparatively short as to its active length, with an intervening bridge plate 4b. Conveyer A^2 is located beyond and sufficiently close to the main conveyer A^1 for imparting movement to the units in their passage outwardly around prong 7 and back to the main conveyer, beyond the junction with the lateral conveyer.

Such supplemental conveyer A^2 and its flights 2 are similarly supported and driven at substantially the same speed as the main conveyer, and imparts such forward movement to the units as they pass around within the outwardly bowed guide 8. Said guide has rounded connections 9, 9, with the outer guide rail 5, the construction and operation otherwise being substantially the same as in the case of the double flight series of Fig. 1.

In either of such constructions the units 3 pass along, as by either the double or single flight main conveyer, toward the junction with the lateral conveyer B or B^1. On making contact by one unit with the prong 7, such unit and following units will be deflected into trackway B until, due to retardation of operation, the last unit arrested by the prong will be temporarily stopped or slowed down. The next oncoming unit in contact with such last unit will be forced outwardly, assuming the rounded by-pass path as controlled by the guide 8. The next oncoming unit tends to force both units onwardly, one toward the receiving throat of the lateral conveyer and the following unit outwardly towards guide 8. Or if such retardation continues the stream may be deflected around the by-pass until the retardation in trackway B is dissipated. Such conditions may exist at times as to either trackway.

Such operation continues in the same way, whereby the units of the main stream will alternately be delivered to the lateral conveyer and around through the by-pass arcuate route, and eventually back onto the main conveyer, normally dividing the main stream into substantially equal separated portions, or such fractional portions as correspond to the receiving capacity of each delivery station. As propelled by the main double line conveyer of Fig. 1, or assisted by the supplemental conveyer A^2 of Fig. 2, and in connection with the comparatively short bridge plates 4, 4a, and 4b, the units will pass onwardly to both destinations for delivery to suitable receiving stations as stated.

In the construction of Fig. 3 is shown a combination with main conveyer A^3 of the same general type, delivering to a laterally arranged conveyer B^2 across first bridge plate 4 and to an additional branch conveyer B^3 across the flights of conveyer B^2 and a similar bridge plate 4c. Such lateral conveyers of the same general construction are arranged to transport units in opposite directions, laterally to the main conveyer as directed by similar guides 5 and rounded or suitably formed corner connections 6', for distribution to both lateral conveyers for oppositely moving distribution. In such case the units moving along the main stream pass over first bridge plate 4 onto the receiving end of conveyer B^2 with further movement of alternating or overflow units clear across said conveyer and over the second bridge plate 4c, onto the strands of oppositely running conveyer B^3. The action of the units, together with their alternating movement is similarly indicated, and the direction of movement is also clearly shown by the several arrows.

In the arrangement shown in Fig. 4 the construction is generally similar, except that the stream of units of the primary or main conveyer A^4 passes across the first bridge plate 4 onto the receiving end of a first lateral conveyer B^4 by which certain of the units are carried thereby. Alternating or overflow units pass across a second bridge plate 4d onto the receiving end of a similar lateral conveyer B^5, running in the same direction, as indicated by the arrows. As in all of the constructions, the units are guided and directed by guide rails 5 and rounded or suitably formed connecting guide rails 6'' for easy fending and guiding movement of the units, in the same general manner previously described as to the other arrangements.

The distribution of bottles ordinarily involves the necessity of dividing a main stream for travel in various directions and to varying distance terminals, as is generally understood in the art of dairy or other similar practices.

In any of the several constructions and arrangements above described, it will be observed that the movement of the units in connection with the several conveyer members and the associated guiding and directing means is entirely automatic and dispenses with the usual necessary attention of operatives at the junctions.

It will also be understood that the speed of the several conveyer members for the different trackways is subject to adjustment as to acceleration or retardation, dependent on the main or fractional load being carried, and various conditions of utilization and application. Also, that all such various requirements of practice are subject to control by the designer or builder, and must be adapted to suit the particular use conditions of any installation utilizing either of the several constructions or arrangements shown.

What I claim is:

1. In combination, a main conveyer for unit transfer support, a lateral conveyer having an entrance throat communicating therewith on the same horizontal plane, and interconnecting flanking guides for directing and maintaining units in transfer along and upon the main and lateral conveyers respectively, one of the guides of the main conveyer being rounded outwardly beyond it opposite the entrance throat of the lateral conveyer, and a fixed deflecting prong extending across the normal middle transfer path of the main conveyer towards the rounded guide.

2. In combination, a main conveyer comprising a double flight pair for midway unit transfer support, a lateral conveyer having an entrance throat communicating therewith on the same plane, and interconnecting flanking guides for directing and maintaining units in transfer along and upon the double flight main conveyer and the lateral conveyer respectively, one of the guides of the main conveyer being rounded outwardly beyond one of its pair opposite the entrance

throat of the lateral conveyer, and a deflecting prong extending across the normal middle transfer path of the main conveyer towards the rounded guide.

3. In combination, a main conveyer comprising a double flight pair for midway unit transfer support, a lateral conveyer having an entrance throat communicating therewith on the same plane, and interconnecting flanking guides for directing and maintaining units in transfer along and upon the double flight main conveyer and the lateral conveyer respectively, one of the guides of the main conveyer being rounded outwardly beyond one of its pair opposite the entrance throat of the lateral conveyer, a deflecting prong extending across the normal middle transfer path of the main conveyer towards the rounded guide, and a bridge plate for supporting units in their passage around the deflecting prong.

4. In combination, a double conveyer having side by side sections running in the same direction, a lateral conveyer communicating therewith on the same horizontal plane, and guiding means for temporarily diverting conveyed units towards the lateral conveyer and outwardly around and beyond its junction with one of the sections of said double conveyer onto the companion section.

5. In combination, a main longitudinal conveyer, a lateral conveyer communicating therewith on the same plane, a supplemental longitudinal conveyer beyond the main conveyer and running in the same direction therewith, and guiding means for diverting units carried by the main conveyer towards and onto the supplemental conveyer and the lateral conveyer respectively.

6. In combination, a main longitudinal conveyer, a lateral conveyer communicating therewith on the same plane, a supplemental longitudinal conveyer beyond the main conveyer and running in the same direction therewith, and guiding means for diverting units carried by the main conveyer towards and onto the supplemental conveyer and the lateral conveyer including an arresting prong at one side of the lateral conveyer extending into the transfer path of the main conveyer.

7. In combination, a main longitudinal conveyer, a lateral conveyer communicating therewith on the same plane, a supplemental longitudinal conveyer beyond and parallel with the main conveyer opposite its junction with the lateral conveyer, and guiding means for diverting units carried by the main conveyer towards and onto the supplemental conveyer with return to the main conveyer and cnto the lateral conveyer respectively.

8. In combination, a main conveyer, a lateral diverging conveyer communicating therewith on the same plane, a supplemental conveyer beyond the main conveyer parallel therewith and movable in the same direction, unit movement directing guides flanking the main and lateral conveyers including an outwardly bowed by-pass section extending beyond the main conveyer over the supplemental conveyer and back to the main conveyer, and a fixed unit arresting and fending prong extending at one side of the lateral conveyer into the transfer path of the main conveyer.

9. In combination, a main conveyer, a lateral diverging conveyer communicating therewith on the same plane, a supplemental conveyer beyond the main conveyer parallel therewith and movable in the same direction, unit movement directing guides flanking the main and lateral conveyers including an outwardly bowed by-pass section extending beyond the main conveyer over the supplemental conveyer and back to the main conveyer, a fixed unit arresting and fending prong extending at one side of the lateral conveyer into the transfer path of the main conveyer, and a unit supporting bridge plate between the lateral and main conveyers.

10. In combination, a continuous main conveyer for unit transfer support, a lateral conveyer having an entrance throat communicating therewith on the same horizontal plane, and interconnecting flanking guides for directing and maintaining units in transfer along and upon the main conveyer and the lateral conveyer respectively, one of the guides of the main conveyer being rounded outwardly beyond and opposite the entrance throat of the lateral conveyer, and a fixed deflecting prong extending across the normal middle transfer path of the main conveyer towards the rounded guide.

11. In combination, a main conveyer, a lateral diverging receiving conveyer communicating therewith on the same horizontal plane, interconnecting flanking guides therefor, and a fixed deflecting prong extending partway across the main conveyer for directing and maintaining units in transfer along and upon the main and lateral conveyers respectively and so designed as to provide a communicating receiving throat passage between the main and lateral conveyers.

12. In combination, a main conveyer, a lateral diverging receiving conveyer communicating therewith on the same horizontal plane, interconnecting flanking guides therefor, and a fixed deflecting prong extending partway across the main conveyer for directing and maintaining units in transfer along and upon the main and lateral coveyers respectively, one of said guides being rounded outwardly beyond and with reverse return to the main conveyer opposite the receiving portion of the lateral conveyer.

13. In combination, a main conveyer, a lateral diverging conveyer communicating therewith on the same horizontal plane, fixed guiding means for diverting some of the units carried by the main conveyer towards and onto the lateral conveyer and for diverting other units outwardly beyond and opposite to the junction with the lateral conveyer with return of such other units to the main conveyer.

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