

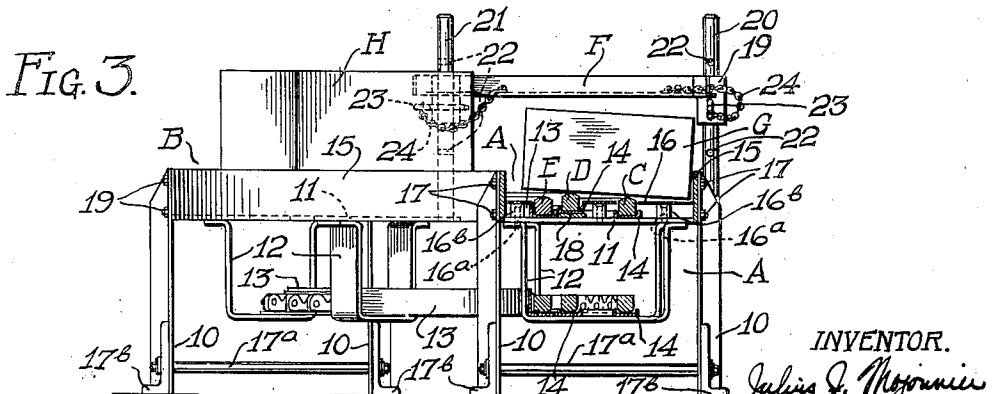
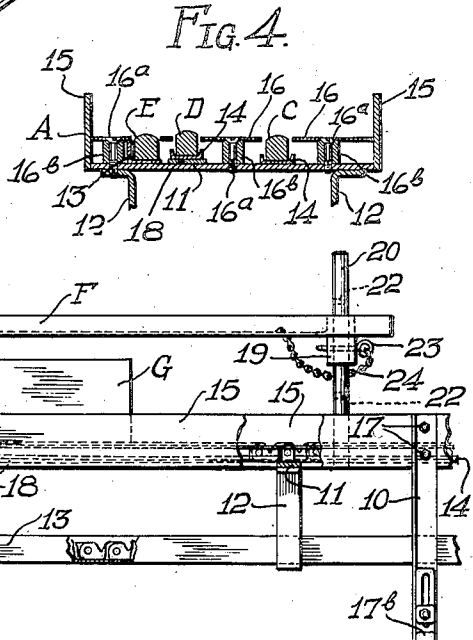
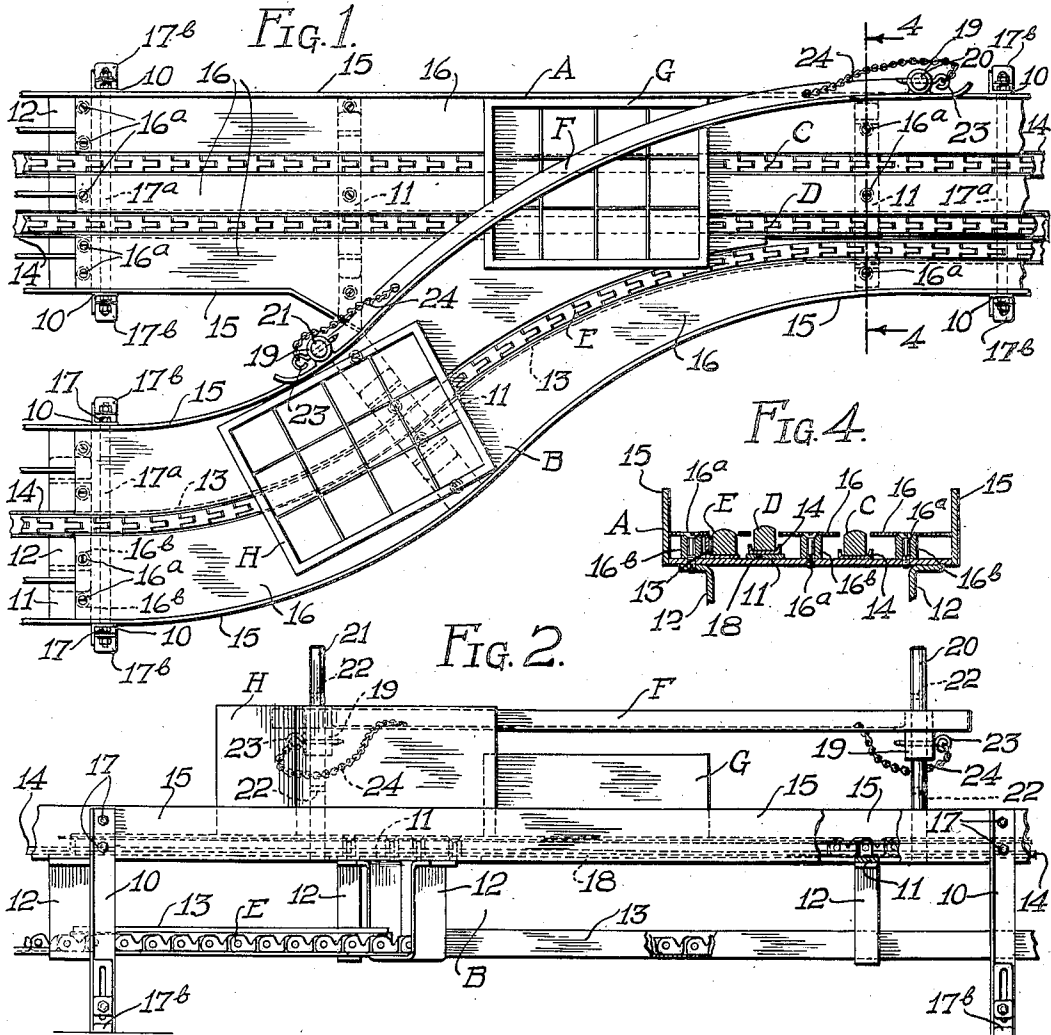
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SELECTING CONVEYER

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SELECTING CONVEYER

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The present invention relates to selecting conveyers which automatically separate articles of different sizes and send them along individual paths.

5 The conveyer herein disclosed is one intended for use particularly in the milk handling field. In dairies and like places the bottles in which the milk is distributed to consumers are commonly of quart and pint size and the cases in which these bottles are carried are, for convenience, called quart and pint cases. These cases differ in height and the different heights are determining factors in the selecting and separating operations of the conveyer. Although the invention is thus disclosed, it will be obvious that it need not be limited to such a particular embodiment but may be realized in various embodiments for use in quite different lines of activity.

A novel feature of the invention resides in the use of a conveying chain to force articles being carried by it to one side of the conveyer channel while at the same time allowing the articles to be shifted by other means to the opposite side of the conveyer should such shifting be necessary in the selecting operation.

Specifically, this result is brought about by employing conveying chain of the drag type and elevating one of the individual chains so as to laterally tilt a case in one direction under one set of conditions and then in an opposite direction under another set of conditions. If the case being conveyed is a low one, it receives the initial tilting and that is all. If it is a high one, it receives the initial tilt and later on, by reason of the action of a guide bar, it is forced across the chain and tilted in the opposite direction. The guide bar is substantially horizontal and is set to pass pint cases under it but to obstruct quart cases and force the latter across the elevated chain into the branch channel.

45 When the latter action takes place, the elevated chain serves as sort of a fulcrum for the cases being conveyed, the pint cases always tilting one way and never engaging the guide bar but always passing beneath it, while the quart cases are tilted, at first, in the

same direction as the pint cases, but, later on, in the opposite direction, the latter being due to their engaging the guide bar and being forced by it laterally over the fulcrum chain.

In the building of the conveyer, it is preferable to use one or more chains capable of both vertical and lateral flexure and to extend the same along the main channel and then laterally along a shunt or branch channel. A chain particularly adapted for such vertical and lateral movements is that disclosed in my prior Patent No. 1,804,701, dated May 12, 1931. In those instances where the chain need not have lateral flexure, as may sometimes be the case in the main channel portion of the structure, the chain may then take the form of my prior Patent No. 1,755,450, dated April 22, 1930.

The various features and aspects of the invention will be best understood upon reference to the following detailed description taken in connection with the accompanying drawing while the scope of the invention will be particularly pointed out in the appended claims.

In said drawing, Fig. 1 is a plan view of a selecting conveyer constructed and arranged in accordance with the present invention; Fig. 2 is a side elevation of the same; Fig. 3 is an end elevation showing the ends of the main conveyer portion in section; and Fig. 4 is a transverse section taken on a plane indicated by the line 4—4 of Fig. 1. Throughout these views like characters refer to like parts.

The particular embodiment disclosed in the drawing comprises essentially a through main conveyer channel A, a branch or shunt conveyer channel B, main conveyer chains C, D, a branch conveyer chain E, and a guide bar F which allows low cases G to pass beneath it but diverts the high cases H and causes them to pass into the shunt channel B.

Viewed in one way, there is a straight main channel A, from which there diverges a shunt channel B. Viewed in another way, there is a common channel and two divergent channels. In the latter view, the common channel is the channel A to the right of the section indicating line 4—4, and the two divergent channels are, first, the remainder of the chan-

nel A at the left of the line 4—4, and second, the channel B.

The channels A and B preferably have the general construction of the conveyer channels of my aforesaid prior Patent Nos. 1,804,701 and 1,755,450. This construction which is preferably composed of metal parts throughout includes posts 10, upper transverse bars 11, hangers 12, guideways in the form of angle bars 13 where the chain travels around a horizontal curve, and in the form of channel bars 14 where the chain travels rectilinearly. Then there are the side walls 15 to hold the articles within the channels, and, in the present construction, flat plates within the channel constitute the floors 16 which are suitably cut away to accommodate the other parts. These various frame parts may be secured together in different ways. Commonly the main members are welded together, although it will be noted that the posts 10 are secured at their upper ends to the side walls 15 by bolts and nuts 17. The legs or posts 10 are also held in permanent spaced relation by the spacers 17^a and have adjustable feet 17^b, all as clearly shown and described in my aforesaid prior Patent No. 1,755,450. The floor plates 16 are also commonly connected to the cross bars 11 by screws 16^a associated with tubular spacers 16^b.

The chains C, D, E are all of the drag type, capable of drawing along articles by frictional contact with them and then slipping freely under them without breakage in case they become stalled or jammed in the passage. The chain C may be of the type capable of only vertical flexure or it may be capable of both vertical and lateral flexure as desired. If, when it leaves the portion of the main channel shown, it be required to pass around horizontal curves, then it should be of the double flexure type, such as disclosed in my aforesaid Patent No. 1,804,701. The same may be said of the chain D. The chain E cannot be of the straight type but must be capable of both vertical and lateral flexure, such as the chain of my Patent No. 1,804,701.

The chain C travels along in one of the channels 14 and is thus guided. The channel upon which it travels rests directly upon the cross members 11. The chain D similarly travels along a channel 14 but the latter does not rest directly upon the cross members 11 but is supported upon an intervening strip 18 which rests directly upon the cross members 11. The chain E travels along its guideway, which is in the form of an angle bar 13 which rests directly upon the cross members 11.

With this construction, it follows that the upper article engaging surfaces of the chains C and E are in the same horizontal plane whereas the upper article engaging surface of the intervening chain D is at an elevation

above said plane. In the particular embodiment shown, the strip 18 constitutes means for elevating the chain D. Although this is the case in this particular instance, it is at once apparent that other ways of getting the requisite difference in elevation might be employed.

The elevating of the chain D should continue throughout a considerable portion of the main channel A, or, if desired, it may continue throughout its entire length; but, in any event, it should extend over that portion of the channel A which is encountered by the cases immediately before reaching the shunting point. In other words, the function of the elevation of chain D is primarily to force cases being conveyed against the right hand side wall 15 of the channel A. Consequently, the elevation must extend throughout that portion of the channel which is encountered before reaching the guide bar F, and, preferably, this same elevation of the chain D should continue to a point beyond the guide bar F, it being understood that the cases travel from right to left as the parts are viewed in Fig. 1.

With this construction, it will be seen that both low and high cases G, H will be forced against the right hand wall of the channel A as they approach the diverting bar F. With a low case G, there will be nothing to change this relation of the case to the channel wall 15, and it will stay crowded over against that wall throughout its passage, for, as has been stated, it will pass beneath the guide bar F without touching it. It will, however, be quite different with the high case H. The latter will remain crowded against the right hand wall 15 of the channel A until it encounters the guide bar F. Then it will be gradually shifted toward the left into the branch channel B. As the case H is thus shifted laterally by the bar F it will ride freely over the surfaces of the chains C, D and E. As the case H moves from the right toward the left it will change its tilt from a tilt downward at the right, as shown in Fig. 3, to a tilt downward at the left. The latter tilting will not occur, of course, until the center of the case H has been moved beyond the chain D which acts as a fulcrum upon which the case H is tilted in its travel out of the main channel into the branch channel. Obviously, as soon as the case H passes out of contact with the chain D, there will be no tilting of the same by reason of the presence of the chain D but the case will travel along channel B through the propelling action of the chain E of that channel.

The bar F may take different forms but it is preferably an angle bar provided near its ends with bosses 19 which are provided with vertical openings so that the bar may be slipped over the posts 20, 21. The post 20 is secured to the frame structure at the right

hand side of the channel A at a point near the beginning of the curvature of the shunt channel wall, a point close to the section indicating line 4-4. The post 21 is similarly secured to the frame structure at the right hand side of the shunt channel B and to the left of the main channel A, as clearly shown in Fig. 1.

The posts 20, 21 are preferably provided with a series of transverse openings 22 to provide for the vertical adjustment of the bar. Pins 23, secured to the bar F by chains 24 are provided to secure the bar in proper adjusted position upon the posts. The bosses 19 of the bar F are, of course, provided with openings which are arranged to be placed in alignment with the openings 22 whenever the pins 23 are to be used.

Obviously, in carrying out my invention, various modifications and changes may be made in the structure disclosed without departing from the spirit and scope of the invention. Accordingly, I do not wish to be limited to the exact details disclosed but aim to cover by the terms of the appended claims all those alterations and modifications which rightly come within the purview of the invention.

What is claimed is:—

1. A conveyer of the class described comprising a main channel, a shunt channel communicating with said main channel, said channels having floor members and side members for receiving and guiding articles being conveyed, a plurality of main conveyer chains extending lengthwise of said main channel, one of said chains on the shunt side of the center line of said main channel having its upper surface higher than all other chain upper surfaces, such higher surface tending to crowd conveyed articles away from said shunt side against the opposite side members of said main channel, and a shunt conveyer chain extending along the shunt side of said main channel from a feed point to the shunt point and thence along said shunt channel, said shunt conveyer chain being capable of lateral as well as vertical flexure.

2. A conveyer of the class described comprising a main channel, a shunt channel communicating with said main channel, said channels having floor members and side members for receiving and guiding articles being conveyed, a plurality of main conveyer chains extending lengthwise of said main channel, one of said chains on the shunt side of the center line of said main channel having its upper surface higher than all other chain upper surfaces, such higher surface tending to crowd conveyed articles away from said shunt side against the opposite side members of said main channel, a shunt conveyer chain extending along the shunt side of said main channel from a feed point to the shunt point and thence along said shunt channel, said shunt conveyer chain being capable of lat-

eral as well as vertical flexure, a supporting post on the non-shunt side of said main channel opposite said shunt point, a second supporting post on the main channel side of said shunt channel, and a curved guide bar secured to said posts to guide high articles into said shunt channel while allowing low articles to pass below it along said main channel past said shunt channel.

3. A conveyer of the class described comprising a main channel, a shunt channel communicating with said main channel, said channels having floor members and side members for receiving and guiding articles being conveyed, a plurality of main conveyer chains extending lengthwise of said main channel, one of said chains on the shunt side of the center line of said main channel having its upper surface higher than all other chain upper surfaces, such higher surface tending to crowd conveyed articles away from said shunt side against the opposite side members of said main channel, a shunt conveyer chain extending along the shunt side of said main channel from a feed point to the shunt point and thence along said shunt channel, said shunt conveyer chain being capable of lateral as well as vertical flexure, and a guide bar extending diagonally across said main channel as a continuation of that wall of said shunt channel which is nearest to said main channel, said bar being substantially horizontal and at an elevation to engage high articles being conveyed to divert them into said shunt channel and to pass low articles to allow them to continue their travel along said main channel past said shunt channel.

4. A conveyer of the class described comprising a main channel, a divergent channel communicating with said main channel, said channels having floor members and side members for receiving and guiding articles being conveyed, a plurality of conveyer chains extending along said main channel to its junction with said divergent channel and there one curving away from said main channel and extending along said divergent channel, the latter of said chains being laterally flexible as well as vertically flexible, a guide tending to shove articles laterally in one direction, and means for elevating one of said chains above its fellows to crowd said articles in the opposite direction.

5. A conveyer of the class described comprising a main channel, a divergent channel communicating with said main channel, said channels having floor members and side members for receiving and guiding articles being conveyed, a plurality of conveyer chains extending along said main channel to its junction with said divergent channel and there one curving away from said main channel and extending along said divergent channel, the latter of said chains being lat-

erally flexible as well as vertically flexible, a guide tending to shove articles laterally in one direction, said guide crossing the path of the main channel, and means for elevating one of the chains of said latter channel which is on the divergent channel side of the center line of the main channel as it approaches said guide and passes beneath it, whereby an article is crowded against the main channel wall on the side away from said divergent channel side before it encounters said guide and then after it has traveled along the latter for some distance the article is crowded in the opposite direction.

6. A conveyer of the class described comprising common and divergent channels each having floor and side members for receiving and guiding articles being conveyed, a plurality of conveying chains extending along said common channel and separating to extend along said divergent channels, a guide for passing low articles and diverting high articles, and means for elevating a portion of one of said chains in the neighborhood of said guide to cause said chain to crowd an article to one side as it approaches said guide and to the other side after it has passed along a portion of said guide.

7. A conveyer of the class described comprising common and divergent channel branches each having floor and side members for receiving and guiding articles being conveyed, a guide bar crossing one of said branches and forming a continuation of one wall of another branch, said bar being of such an elevation as to pass certain low articles and to engage other high articles, conveyer chains in said common and divergent branches, and means for elevating one of said chains to crowd all low articles laterally in one direction and high articles laterally at first in the same direction and then as they travel further along said bar in the opposite direction.

8. A conveyer of the class described comprising common and divergent channel branches each having floor and side members for receiving and guiding articles being conveyed, conveyer chains extending along said common and divergent branches, one of said chains having an upper surface above any of the upper faces of its fellows, said chain being off center on one side at one point in its travel and off center on the other side in another point in its travel relative to the path of travel established by said guide.

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