Dec. 9, 1941. L. H. CARGILL 2,265,719

CONTROL MECHANISM FOR CONVEYER SYSTEMS

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Fig. 2.

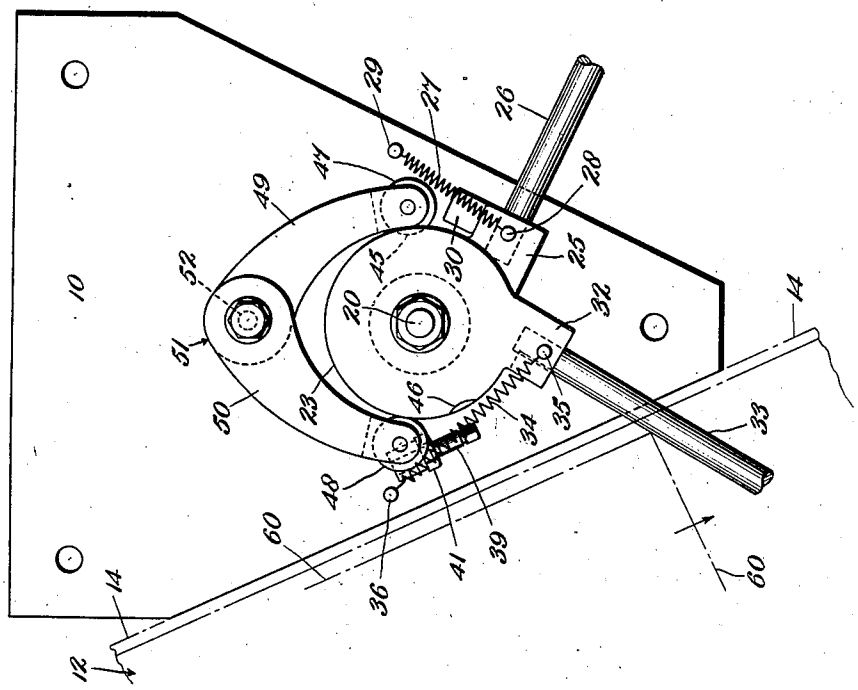
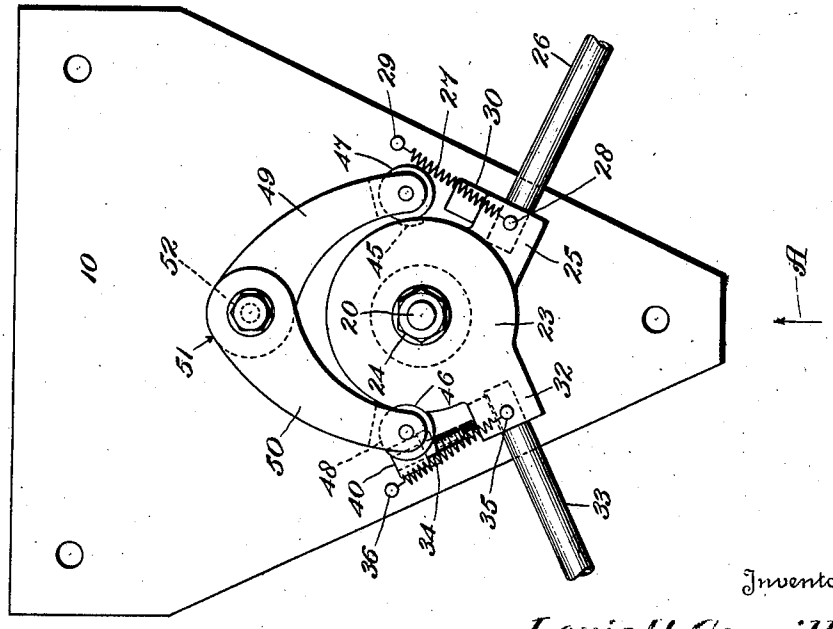


Fig. 1.



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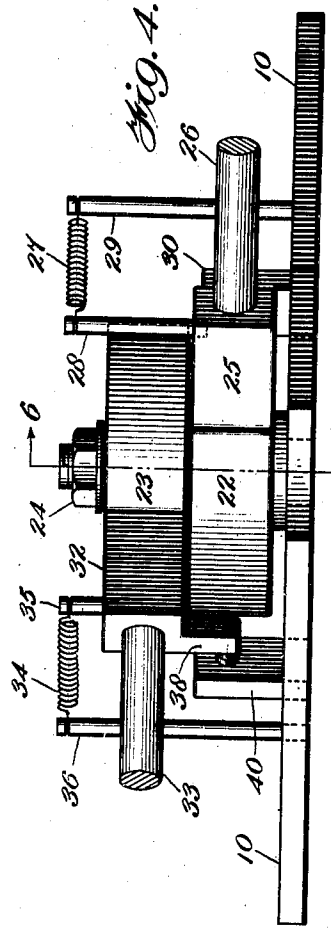
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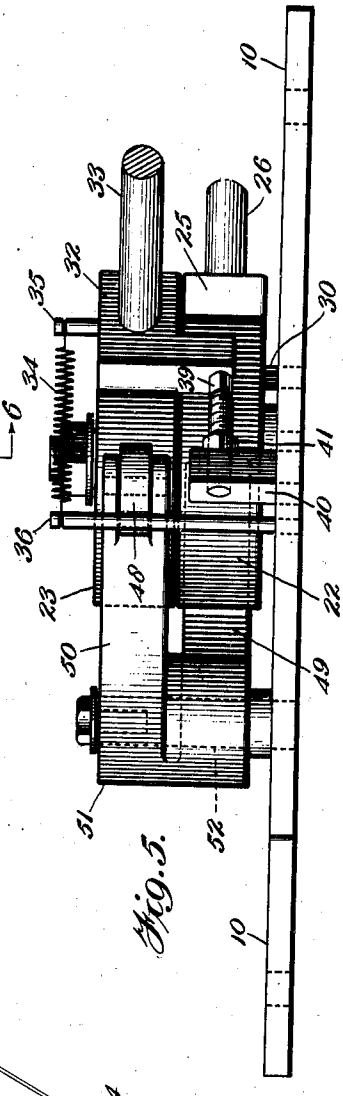
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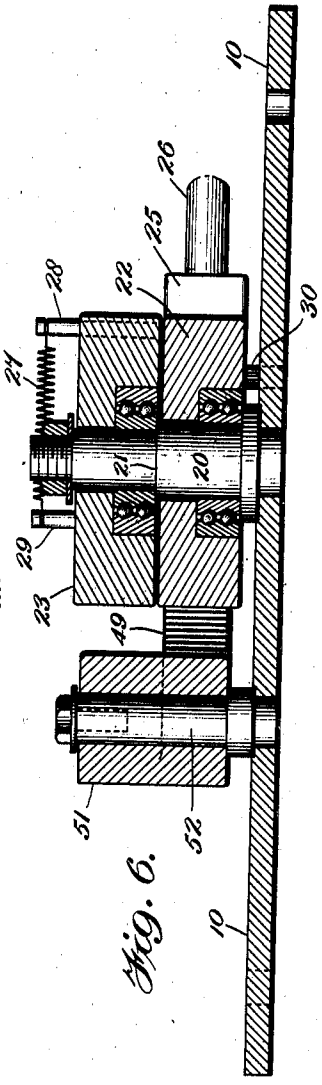
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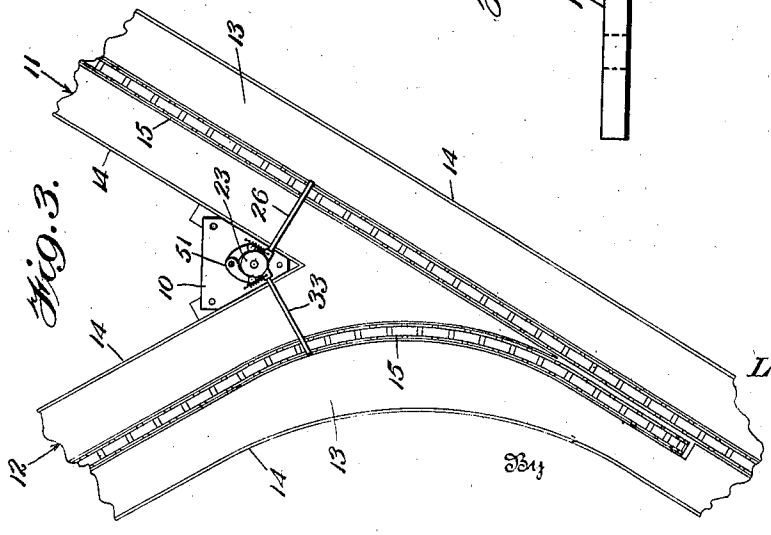
CONTROL MECHANISM FOR CONVEYER SYSTEMS

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UNITED STATES PATENT OFFICE

2,265,719

CONTROL MECHANISM FOR CONVEYER SYSTEMS

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Application April 22, 1940, Serial No. 331,033

6 Claims. (Cl. 198—21)

The invention relates to control devices for conveyer systems, and has for one of its objects the provision of an automatic mechanism arranged to be mounted at the junction of a plurality of intersecting conveyers, such for example, as a main and a tributary conveyer, for controlling the movements of the articles or packages carried by said conveyers to prevent interference and produce an orderly mingling of the two streams of packages or articles at the junction.

A further object of the invention is to provide a control device actuated by the articles or packages themselves and arranged to so control the movement of the streams of articles or packages at the junction that when an article or package in one stream engages and actuates an arm of the device the latter will prevent an article or package approaching the junction in another stream from entering the junction until the first article or package has cleared the device.

A further object of the invention is to provide a control device of the class described which is simple in construction, comparatively inexpensive to manufacture and install, and more efficient in use than those which have been heretofore proposed.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the novel details of construction and in the novel combinations and arrangements of parts more fully hereinafter disclosed and particularly pointed out in the appended claims.

Referring to the accompanying drawings forming a part of this specification, in which like reference characters designate like parts in all the views:

Figure 1 is a top plan view of one form of control device constructed in accordance with the invention, the parts being illustrated in their normal positions;

Fig. 2 is a similar view but showing the positions assumed as an article or package in one stream actuates the device as it moves toward the intersection, to thereby prevent an article or package in another stream from entering the intersection and interfering with the first package or article;

Fig. 3 is a diagrammatic plan view, showing the control device mounted at the intersection of two article or package conveyers of the chain type;

Fig. 4 is an elevational view of the control device shown in Fig. 1, looking in the direction indicated by the arrow A in said figure;

Fig. 5 is a side elevational view of the mechanism shown in Fig. 4, as seen from the left of said figure; and

Fig. 6 is a longitudinal sectional view, taken approximately on the plane indicated by the line 6—6 of Fig. 4, looking in the direction of the arrows.

Referring more particularly to the said drawings, the control device comprises a supporting member, here shown as in the form of a plate 10, which is arranged to be mounted at the junction of two intersecting conveyers such as 11 and 12 (see Fig. 3) which conveyers, for the purpose of the present disclosure, have been illustrated as of the power-driven chain type. Such conveyers are in quite common use for the conveying of packages, articles and the like, and usually comprise a runway having a bottom 13 and upstanding side walls 14 with the bottom being longitudinally slotted to accommodate the power-driven chains 15. Since these conveyers in themselves form no part of the present invention they need not be referred to more in detail, and as will be readily apparent from the following description the device is not necessarily limited to the particular form of conveyer shown, but may be employed with equal facility in connection with other forms of power driven conveyers, such for example as belt conveyers or even with gravity conveyers.

The plate 10 is provided with an upwardly extending stud 20 preferably shouldered as at 21 and having journalled upon it a pair of superposed disc-like control members 22 and 23 which may be retained in place by a nut 24 threaded upon the reduced upper end of the stud 20.

The control member 22 is provided with an outwardly extending lug or boss 25 into which is threaded or otherwise rigidly secured a rod or arm 26 which in the normal position of the parts illustrated in Figs. 1 and 3 extends transversely across the conveyer 11 preferably at least half the width of the conveyer chute or trough. The said arm 26 and its control member 22 are constantly urged towards this position by a spring 27 extending between a pin or post 28 carried by the lug or boss 25 and a post 29 rigidly carried by the base plate 10. The movement of the parts under the influence of the spring is limited by means of a stop member 30 rigidly fixed to the said base plate 10.

In like manner the upper control member 23 is provided with an outwardly extending lug or boss 32 in which is rigidly mounted a rod or arm 33 normally extending across the conveyer 12 im-

mediately preceding the junction thereof with the conveyer 11, as will be clear from Fig. 3, such arm being normally urged to this position by means of a spring 34 anchored at one end to a pin 35 carried by the lug 32 and at the other end to a post 36 carried by the base plate 10. The lug 32 is provided with a downward extension 38 which is adapted to engage an adjustable screw 39 threaded in a rigid upwardly extending stop post 40 which screw is adapted to be maintained in any adjusted position by means of a lock nut 41.

The lower control member 22 is provided on its periphery with a notch or recess 45, and in like manner the upper control member 23 is provided with a notch or recess 46, which recesses are alternatively engageable by rollers 47 and 48 respectively carried by the legs 49 and 50 of a substantially inverted U-shaped member 51 which is freely journalled at the junction of the said legs on a stud 52 rigidly carried by the base plate 10. The parts are so proportioned and arranged that when either of the rollers 47 or 48 is seated in its corresponding recess 45 or 46 the other roller will be removed from its recess an amount sufficient that the periphery of the said roller may clear the periphery of the control member 22 or 23 with which it is associated. On the other hand the clearance between such roller and the periphery of its associated control member is sufficiently small that it is not possible for the other roller to be moved out of its recess, and therefore such seated roller acts as a latch or detent to restrain arcuate movement of its associated control member whenever the companion control member is moved from its normal position so that its associated roller can not be seated in its recess.

This will perhaps be more clearly understood by reference to Figs. 1 and 2. In the former the parts are illustrated in their normal positions with the roller 48 seated in its recess 46 and the roller 47 moved out of its recess 45. If now a package or article 60 (see Fig. 2) approach the intersection by means of the conveyer 12 such article will engage the transversely extending arm 33 and tend to move it, together with its associated control member 23, in a counter-clockwise direction as viewed in Figs. 1 and 2. Such movement will be permissible under the conditions illustrated since with the control member 22 in its normal position its recess 45 is in position to receive the roller 47 and therefore as the control member 23 starts to move in said counter-clockwise direction it will tend to unseat the roller 48 swinging the arms 50 and 49 toward the left as viewed in said figures and causing the roller 47 to seat in the recess 45 of the control member 22. This seating of the roller 47 will, as above explained, act as a detent against rotation of the lower control member 22 and it will in effect be locked in the position shown in Figs. 1 and 2 with its arm 26 extending transversely across the conveyer 11 as shown in Fig. 3. Therefore, should an article or package approach the intersection by means of the conveyer 11 it will engage the said arm 26 which, being rigidly held by the detent action just described, will prevent such article or package from entering the said conveyer intersection until after the package or article 60 has cleared the arm 33 of the upper control member 23. As soon as this occurs the spring 34 will return the control member 23 and arm 33 to the positions shown in Fig. 1, whereupon the recess 46 in the control member 23 will be brought into position to receive the roller 48 and upon the article or package on the conveyer 11 starting to move the lower control member 22 the arms 49 and 50 will be shifted back toward the right to the positions shown in Fig. 1, whereupon the article on the conveyer 11 may continue its travel and enter the intersection. Of course in so doing it will lock the upper control member 23 in the same manner that the article 60 previously locked the lower control member 22 and thereby prevent another article traveling on the conveyer 12 from entering the intersection until after the article on the conveyer 11 has cleared the arm 26.

While one form of the invention has been illustrated and described it is obvious that those skilled in the art may vary the details of construction as well as the precise arrangement of parts without departing from the spirit of the invention and therefore it is not wished to be limited to the above disclosure except as may be required by the claims.

What is claimed is:

1. Mechanism for controlling the movement of conveyer-carried articles at the junction of two intersecting conveyers, comprising a support mountable at said junction; a pair of disk-like control members journaled on said support, each having a recess in its periphery and an arm normally extending into the path of articles carried by one of the conveyers, whereby movement of said articles may induce arcuate movement of the control member in one direction; means pivoted on said support having a pair of legs alternatively engageable with the recesses of said control members, said means being actuatable through article-induced arcuate movement of either of said control members to restrain similar movement of the other member whereby movement of articles by the other conveyer may be restrained precedent the junction; and spring means for moving the control members in the opposite direction to restore them to their normal position when the movement-inducing article has passed their arm, to thereby remove the restraint imposed upon the other control member.

2. Mechanism for controlling the movement of conveyer-carried articles at the junction of two intersecting conveyers, comprising a support mountable at said junction; a pair of superposed disk-like control members journaled on said support, each having a recess in its periphery and an arm normally extending transversely of one of the conveyers, whereby movement of articles by said conveyer may induce arcuate movement of the control member in one direction; a member pivoted on said support adjacent said control members, having a pair of legs provided with rollers alternatively engageable in the recesses of the control members through article-induced arcuate movements of either thereof to thereby restrain similar movement of the other control member; and means for automatically restoring the control members to their normal positions when the movement inducing article has passed their arm, whereby the restraint imposed upon the companion control member may be released.

3. Mechanism for controlling the movement of conveyer-carried articles at the junction of two intersecting conveyers, comprising a support mountable at said junction; a pair of disk-like control members journaled on said support for

arcuate movements independent of each other, each of said members having a peripheral recess and an arm disposed precedent the intersection and normally extending into the path of articles carried by one of the conveyers whereby movement of said articles may induce movement of its control member in one direction; a detent comprising a member pivotally mounted on said support adjacent the control members, having portions alternatively receivable in their recesses and also engageable with their peripheral surfaces, whereby arcuate movement of either control member from its normal position will, through said engagement, cause movement of a portion of said detent member into the recess of the other control member thereby restraining arcuate movement thereof; and means for automatically returning the displaced control member to its normal position when the movement-inducing article has passed, to thereby release the restraint upon the other control member.

4. Mechanism for controlling the movement of conveyer-carried articles at the junction of two intersecting conveyers, comprising a support mountable at said junction; a pair of disk-like control members journaled on said support for arcuate movements independent of each other, each of said members having a peripheral recess and an arm disposed precedent the intersection and normally extending into the path of articles carried by one of the conveyers whereby movement of said articles may induce movement of its control member in one direction, said recesses in the normal positions of the control members being approximately diametrically opposed; a detent comprising a substantially U-shaped member pivotally mounted intermediate its ends on said support adjacent said control members with its legs embracing the latter, the free ends of said legs being positioned adjacent the respective recesses and alternatively receivable therein and also engageable with the peripheral surfaces of said control members, whereby arcuate movement of either of said control members from its normal position, through coaction of its peripheral surface with one leg of said detent member, will cause the end portion of the other leg to engage the recess in the other control member, and thereby restrain arcuate movement thereof; and means for returning the displaced control member to its normal position when the movement-inducing article has passed, to thereby remove the restraint upon the other control member.

5. Mechanism for controlling the movement of conveyer-carried articles at the junction of two intersecting conveyers, comprising a support mountable at said junction; a pair of disk-like control members journaled on said support in closely adjacent superposed relation for independent movement about a common axis, each of said members having a peripheral recess and an arm disposed precedent the intersection and normally extending into the path of articles carried by one of the conveyers whereby movement of said articles may induce arcuate movement of the control member in one direction, said recesses in the normal positions of said control members being approximately diametrically opposed; a detent comprising a bifurcated member medially pivoted on said support adjacent said control members, the free end portion of each leg of said detent member being positioned adjacent the normal position of the recess of one of said control members for reception therein and being also engageable by the peripheral surface of such control member, whereby arcuate movement of either control member, through engagement of its peripheral surface with the associated leg of the detent member, will pivot the latter to cause engagement of the other leg in the recess of the other control member to thereby restrain movement thereof; and means for returning the displaced control member to its normal position when the movement-inducing article has passed, to thereby relieve the restraint upon the other control member.

6. Mechanism for controlling the movement of conveyer-carried articles at the junction of two intersecting conveyers, comprising a support mountable at said junction; a vertical stud carried by said support; a pair of disk-like control members journaled on said stud in superposed relation for independent oscillatory movements, each of said members having a peripheral recess and an arm normally extending precedent the intersection into the path of articles carried by one of said conveyers, said recesses being circumferentially spaced one from the other; a detent comprising a member pivoted upon said support adjacent the control members, having two legs one end portion of each of which is positioned adjacent the normal position of the recess of one of said control members for reception therein, and being also engageable by the peripheral surface of said control member extending from such recess, whereby arcuate movement of either of said control members, through coaction of its peripheral surface with the associated leg of the detent member, will cause the other leg of the latter to engage the recess of the other control member to thereby restrain movement thereof; and means for returning the displaced control member to its normal position when the movement-inducing article has cleared its arm, to thereby relieve the restraint upon the other control member.

LOUIS H. CARGILL.