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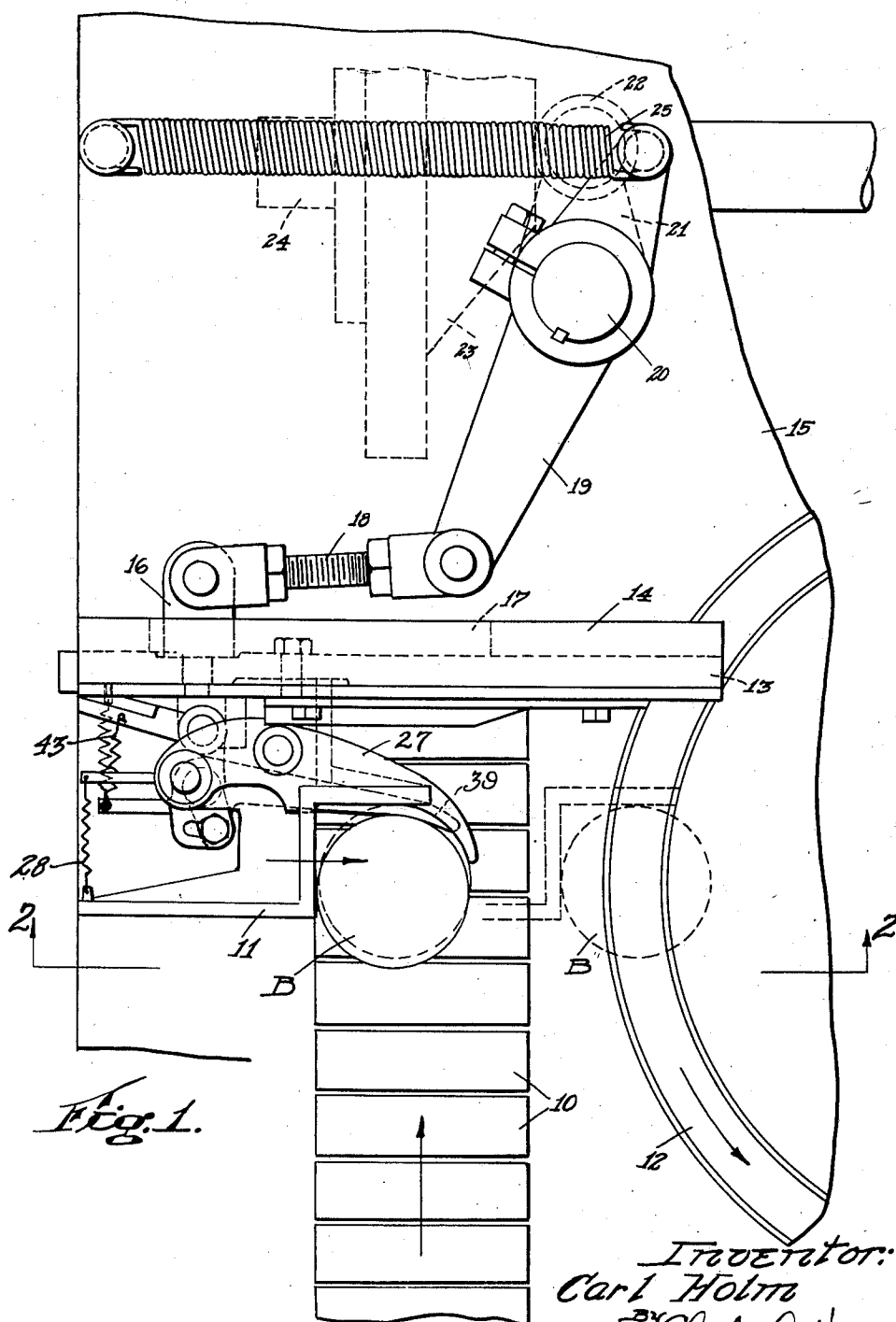
C. HOLM

2,227,346

BOTTLE FEED LATCH

Filed Jan. 8, 1940

3 Sheets-Sheet 1



Inventor:
Carl Holm
By Charles A. Warren
Attorney

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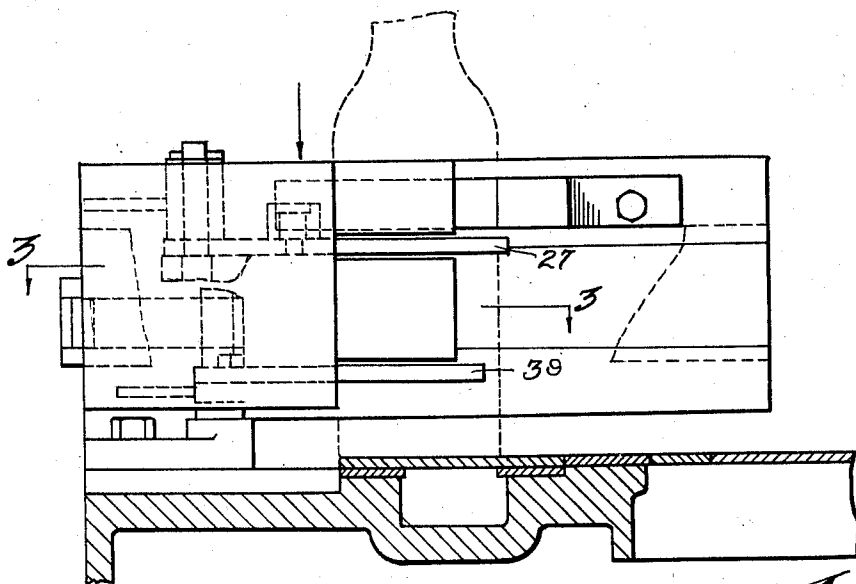


Fig. 2.

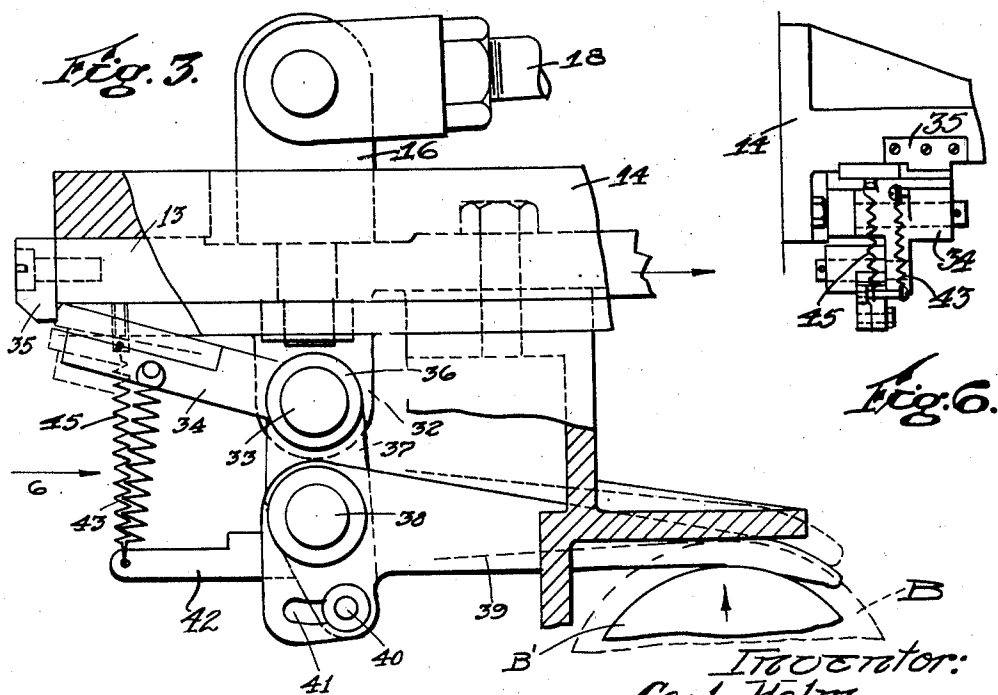


Fig. 6.

Inventor:
Carl Holm
By Charles A. Warren
Attorney

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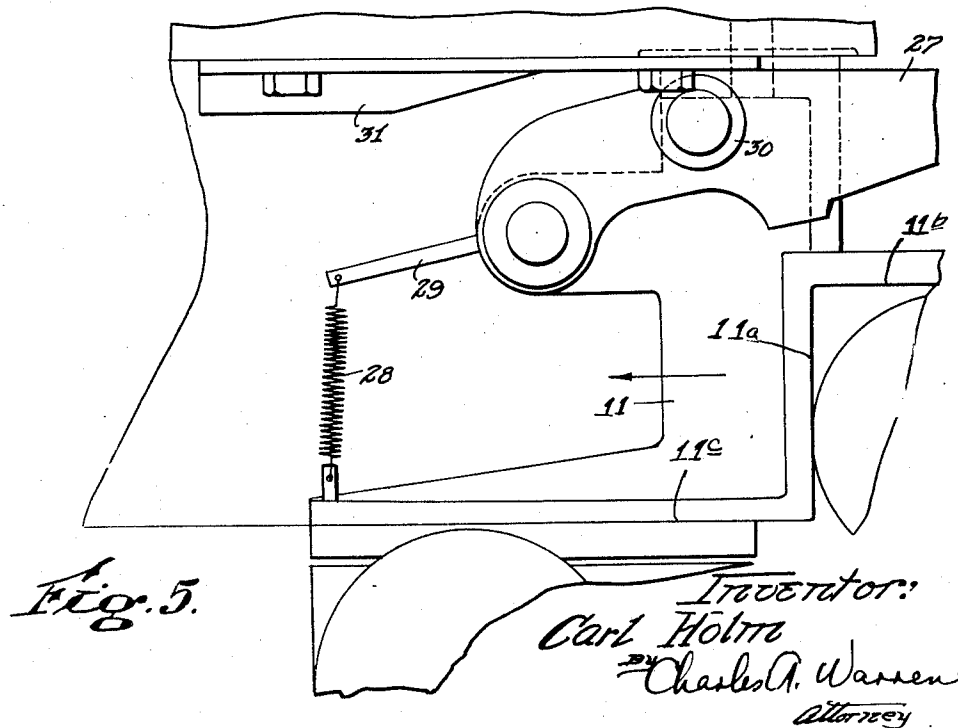
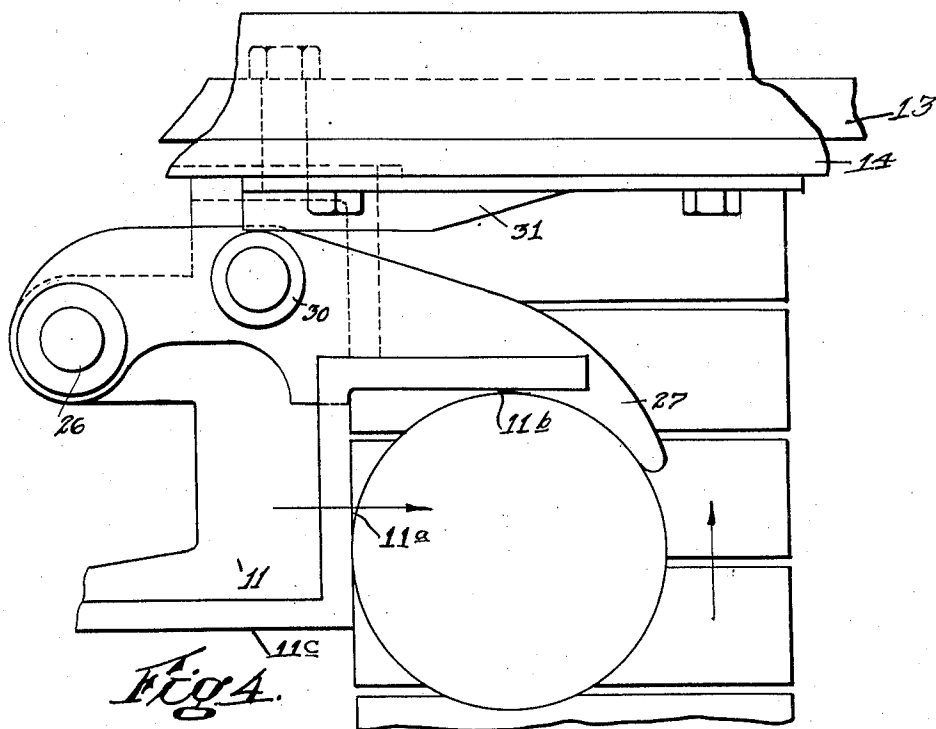
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3 Sheets-Sheet 3



Inventor:
Carl Holm
by Charles A. Warren
Attorney

UNITED STATES PATENT OFFICE

2,227,346

BOTTLE FEED LATCH

Carl Holm, Worcester, Mass., assignor to Economic Machinery Company, Worcester, Mass., a corporation of Massachusetts

Application January 8, 1940, Serial No. 312,817

8 Claims. (Cl. 198—24)

The present invention relates to handling mechanism for bottles or other articles approximately cylindrical in cross-section, and is especially directed to a mechanism for holding the article in position during a movement of the bottle from one point to another. The invention is in certain respects an improvement over the structure in the Holm Patent No. 2,161,469, dated June 6, 1939. This application is a continuation-in-part of the copending application Serial No. 240,084, filed November 12, 1938.

In machines for labeling, capping, or otherwise operating upon a bottle or other article, it is frequently necessary to transfer the article from one conveyor to another, or from one position on a machine to another position thereon. In many instances this transfer movement is effected by a pusher which engages the bottle directly and transfers it by the pusher movement to the desired position. Such a mechanism is shown in the Holm patent above referred to. In order that the bottle or other article may be held securely against the pusher it is a feature of the present invention to provide a structure which will hold the article in predetermined relation to the pusher during the operation of the latter, the article being released at the end of the pusher movement.

When the bottles or other articles are fed by a conveyor mechanism into a position for engagement by the pusher it is essential that the article be properly located with respect to the pusher. A further feature of the present invention resides in so controlling the pusher movement that the pusher is operable only when the article to be transferred is in the proper position with respect to the pusher.

Other and further objects and advantages of the invention will more fully appear from the following detailed description taken in connection with the accompanying drawings in which—

Fig. 1 is a plan view of a mechanism embodying the invention shown in association with two separate conveyor structures.

Fig. 2 is a sectional view along the line 2—2 of Fig. 1.

Fig. 3 is a sectional view along the line 3—3 of Fig. 2.

Fig. 4 is a fragmentary plan view on a larger scale than that of Fig. 1.

Fig. 5 is a plan view similar to Fig. 4, with the pusher in another position.

Fig. 6 is a fragmentary side elevation looking in the direction of the arrow 6 of Fig. 3.

With reference to the drawings, the machine

is shown in connection with a conveyor 10 of the endless chain type which acts to feed the bottles or other articles B into a position to be engaged by a pusher 11. The latter transfers the articles, one at a time, from the endless conveyor 10 to a second conveyor 12, the latter in the arrangement shown being a circular conveyor of familiar type. It will be understood that these two conveyors are shown merely by way of example and that basically the purpose of the machine of the present invention is to transfer, as above stated, the articles B from one conveyor of any suitable type to a second mechanism, also preferably of the conveyor type.

The pusher 11 is mounted on a slide 13 reciprocable in a frame 14 forming a part of the base 15 of the machine. The slide has a projecting lug 16 extending through a slot 17 in the frame 14 and this lug is connected by a link 18 to an arm 19, the latter being fixed to a stud 20 pivoted in the base 15. On the same stud 20 is an arm 21 having mounted on the end thereof a roller 22 in a position to engage with a cam 23 on the main shaft 24 of the machine. A coil spring 25 holds the roller against the cam and the latter, by its shape, provides for a reciprocation of the pusher 11 from the full line position of Fig. 1 to the dotted line position thereof and back again. Just prior to the movement of the pusher from the full line position, the latter is moved slightly to the left for a purpose which will hereinafter appear.

Referring now to Figs. 4 and 5, the pusher 11 has an upwardly projecting pin 26 thereon on which is pivoted a latch 27, the latter being normally urged counterclockwise by a spring 28, the ends of which are connected respectively to a part of the pusher and to a projecting pin 29 on the latch. The latch carries a roller 30 in a position to engage with a cam 31 mounted in fixed relation to the frame 14. This cam 31 normally holds the latch 27 in a position to hold the bottle against the face of the pusher, as shown in Fig. 4, and the right hand end of the cam is beveled, as shown, to release the latch 27 as the pusher reaches the right hand end of its movement so that the latch will release the bottle when the latter is positioned over the second conveyor 12.

To prevent the slide 13 from being reciprocated when there is no bottle in proper position in front of the pusher, the frame 14 has a projecting lug 32 having a projecting stud 33 on which is pivotally mounted a latch 34. The end of the latch is in a position to engage with a projecting lug

35 on the end of the slide 13 and thus normally holds the slide against movement.

On the same stud 33 is a pivoted arm 37 which has a stud 38 projecting upwardly therefrom. On this stud, as shown in Fig. 3, is an arm 39, the free end of which extends into alignment with the bottle or other article in a position to be moved thereby as the bottle reaches a position for engagement with the pusher, this position being represented by the dotted line in Fig. 3. Relative adjustment between the arm 39 and the arm 37 is possible by a bolt 40 positioned in the end of the arm 37 and extending through a slot 41 in the arm 39. The arm 39 has a projecting pin 42 which is connected by a coil spring 43 to the latch 34 and thus when the arm 39 is moved into the dotted line position of Fig. 3, the spring 43 is placed under tension in readiness to move the latch 34 into its dotted position when the slide 13 is moved slightly to the left to release the latch. The same projecting pin 42 is connected by a coil spring 45 to the frame 14, thereby returning the latch 34 to operative position when the arm 39 has been released from engagement with the bottle.

Although the pusher 11 may be of any suitable shape, it is preferable to so arrange the pusher that it has a pushing surface 11a at right angles to the direction of movement of the bottle by the pusher, this surface being engaged by the bottle, as best shown in Fig. 4. The pusher also has a surface 11b at right angles to the surface 11a and projecting over the conveyor 10, this surface acting to limit the advance of the bottle on the conveyor. The function of the latch 27 is to hold the bottle in engagement with the two surfaces 11a and 11b during the transfer of the bottle from the conveyor 10 to the second conveyor 12. In addition, the pusher 11 has a surface 11c at right angles to the direction of movement of the conveyor 10, and this surface acts to limit the advance of the bottles by the conveyor 10 during the movement of the pusher, as best shown in Fig. 5.

In the operation of the machine, with the parts in the position of Fig. 1, and the bottle B in the full line position of this figure, the continued advance of the conveyor 10 in the direction shown moves this bottle into its dotted position, represented by the line B'. As the bottle reaches this dotted position it moves the arm 39 slightly counterclockwise, carrying with it the projecting pin 42 and placing the spring 43 under tension. At the same time as the bottle reaches this dotted position, the latch 27 engages around the bottle to such an extent that it is securely held against the surfaces 11a and 11b of the pusher. The cam 23 then reaches the point at which a slight movement of the slide 13 to the left is effected and this slight movement disengages the latch 34 from the lug 35 and allows the latch to be moved into the inoperative or dotted line position of Fig. 3 under the influence of the spring 43. The cam then moves the slide and pusher to the right, thereby moving the bottle into the position B'', Fig. 1, this position being also shown in Fig. 5.

As the pusher moves to the right the arm 27 is released from the holding action of the cam 31 so that the latch reaches the inoperative position of Fig. 5 when the bottle has reached a position on the second conveyor 12. The succeeding bottle on the conveyor 10 is held against further advancing by the pusher surface 11b, as shown in Fig. 5. The pusher is then restored to original

position so that the succeeding bottle may advance to the dotted position B'. As the pusher reaches its original position the spring 45 restores the arm 39 to the full line position of Fig. 3 and also by the same action restores the latch 34 to its operative position.

I claim:

1. The combination with a conveyor, a laterally operating pusher, and means for moving the pusher across the conveyor, of a latch pivotally mounted in the pusher and projecting to a point to clasp an article, carried by the conveyor, against the active surface of the pusher throughout the time during which the pusher is moving in one direction, a pivoted arm bodily movable into the path of an article on the conveyor and adapted to be moved back by said article, a second latch for holding the pusher against movement, and means, operated by the motion of said pivoted arm, for disengaging the last named latch to allow the pusher to be moved from its latched position.

2. In a device for removing an article from a conveyor, or the like, the combination with a conveyor, of a pusher adapted to move transversely of the conveyor to push an article off the conveyor, a pivoted arm adapted to be engaged by said article, means for moving the pusher, a pivoted latch arranged to extend over said article on the conveyor and hold it in position, said latch being movable with the pusher, a cam fixed in stationary position along which the latch will move with the pusher, and means for holding the latch against the cam, said cam being arranged to release the latch at a predetermined point in the movement of the pusher.

3. In a device for removing an article from a conveyor, or the like, the combination with a conveyor, of a pusher adapted to move transversely to push an article off the conveyor and having an L-shaped portion constituting one wall against which the article can be held and a second wall at right angles thereto for engagement with the article as it is moved by the conveyor, a pivoted arm adapted to be engaged by said article, moving means for operating the pusher, means for holding the pusher in retracted position, means connected with said arm for releasing the pusher when an article is in a position to be engaged and moved thereby a pivoted latch arranged to extend over said article on the conveyor and hold it in position against the first named wall of the pusher that is substantially parallel with the conveyor, said latch being movable with the pusher, a cam fixed in stationary position along which the latch will move with the pusher, said cam normally holding the latch in article engaging position and providing for release of the latch adjacent one end of the pusher's movement, and yielding holding means for holding the latch away from the article at that time.

4. In a device for removing an article from a conveyor, the combination with a conveyor, of a pusher adapted to move transversely of the conveyor to push the article off the conveyor, means for moving the pusher, a pivoted latch arranged to extend over said article on the conveyor and hold it in position, said latch being movable with the pusher, a cam fixed in stationary position along which the latch will move with the slide, said cam normally holding the latch in article engaging position and providing for release of the latch adjacent one end of the pusher's movement, and means for holding the latch

away from the article when released by the cam.

5 5. In a conveying system, the combination of a pusher, a latch pivoted to said pusher to move with it, a roller on the latch, a stationary cam for engaging said roller as the pusher moves, said cam having an inclined surface at the end thereof to release the roller and thus allow the latch to move into inoperative position, and yielding means for moving the latch into inoperative position when released by the cam.

10 6. In a conveying system, a conveyor, a pusher reciprocable transversely of the conveyor for the lateral removal of an article therefrom, an arm in a position to be engaged by an article as it advances along the conveyor into a position to be engaged by the pusher, a latch for normally holding the pusher against movement, connecting means between the arm and the latch for disengaging the latch when the arm is moved by an article on the conveyor, a second latch engageable with the article as it is advanced by the conveyor into a position to be engaged by the pusher, said second latch holding the article against the pusher, and means, including a cam, 20 for releasing said second latch at a predetermined point in the movement of the pusher.

25 7. The combination with a conveyor adapted for the advance of articles thereon, of a pusher reciprocable transversely of the conveyor for the lateral removal of an article therefrom, said pusher having a bottle engaging surface substantially at right angles to the direction of movement of the pusher, and a second surface substantially at right angles to the article engaging

surface, and in a position to prevent the advance of articles by the conveyor during the reciprocatory movement of said pusher, said second surface extending from said first surface in a direction opposite to the movement of the pusher 5 during the lateral shifting movement of the article, and means for releasably holding the article against said first surface during the lateral movement of the pusher by which the article is discharged from the conveyor. 10

8. In a conveying system, a conveyor, a pusher reciprocable transversely of the conveyor for the lateral removal of articles therefrom, an arm in a position to be engaged by an article as it is advanced by the conveyor into a position to be engaged by the pusher, a latch for normally holding the pusher against movement, connecting means between the arm and the latch for disengagement of the latch when the arm is moved by an article on the conveyor, a second 20 latch engageable with the article as it is advanced by the conveyor into a position to be engaged by the pusher, said second latch being mounted on the pusher for movement therewith to hold the article during the reciprocation of the pusher, 25 a stationary cam for releasing said second latch adjacent one end of the reciprocation of the pusher, and means for reciprocating said pusher to provide a slight movement thereof in a direction opposite to its movement for the removal 30 of an article from the conveyor, said slight movement of the pusher permitting disengagement of the first latch.

CARL HOLM.