April 18, 1933. S. OLSON 1,903,835

SELECTIVE UNLOADER MECHANISM FOR ELEVATORS

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Fig. 1.

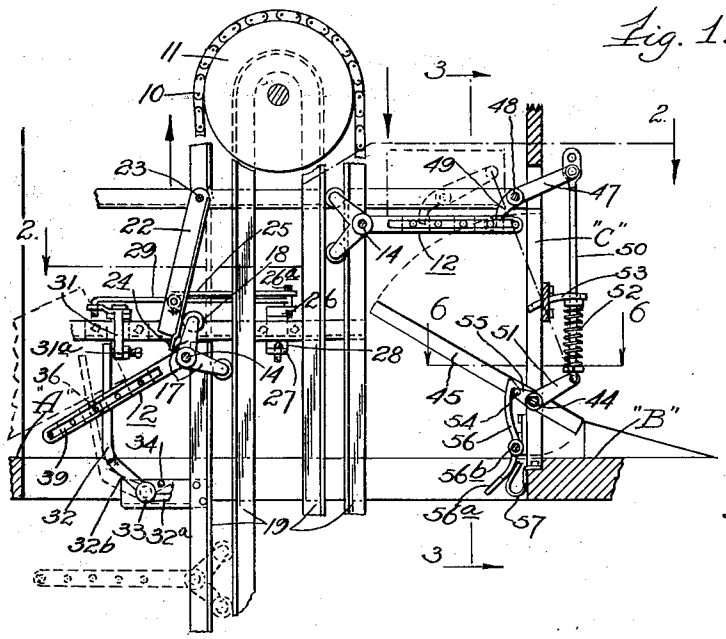


Fig. 4.

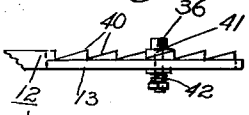


Fig. 5.

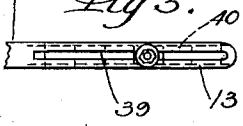


Fig. 2.

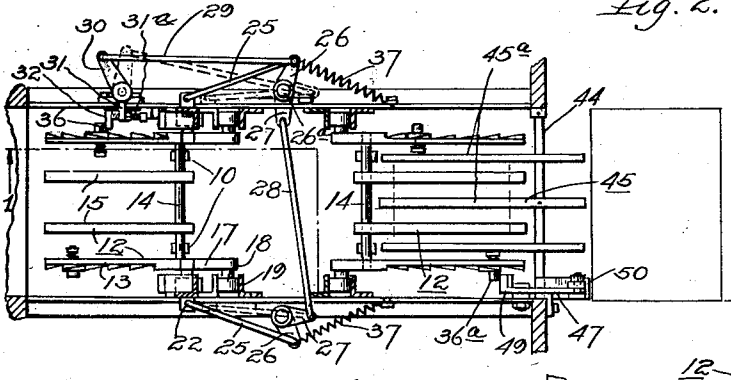


Fig. 3.

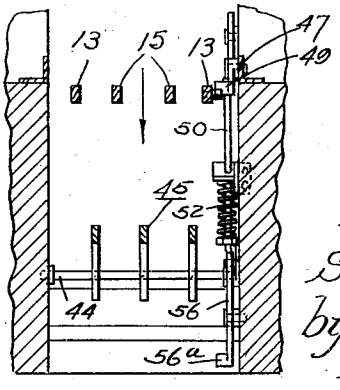
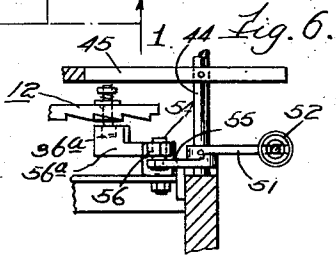


Fig. 6.



Witness
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SELECTIVE UNLOADER MECHANISM FOR ELEVATORS

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Fig. 8.

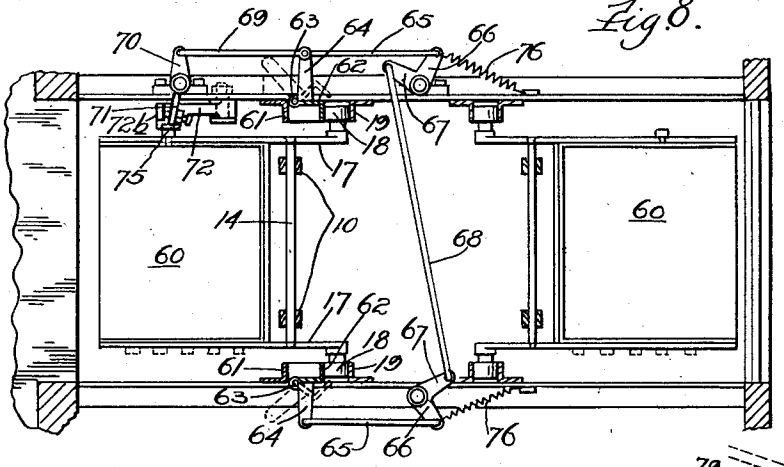


Fig. 9.

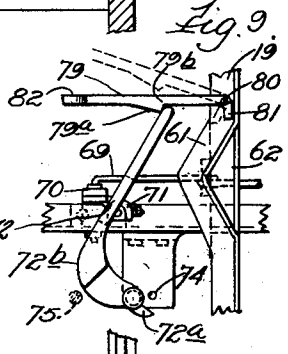


Fig. 10.

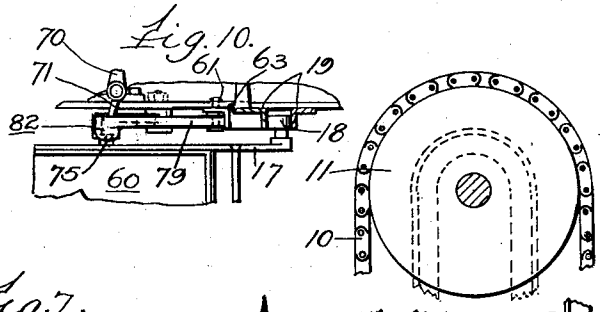
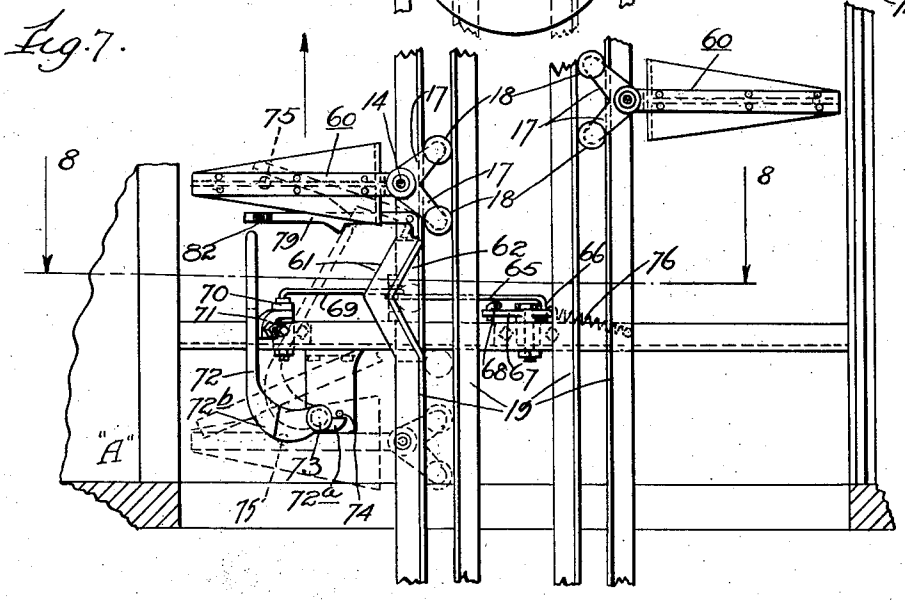


Fig. 7.



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SELECTIVE UNLOADER MECHANISM FOR ELEVATORS

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Fig. 12.

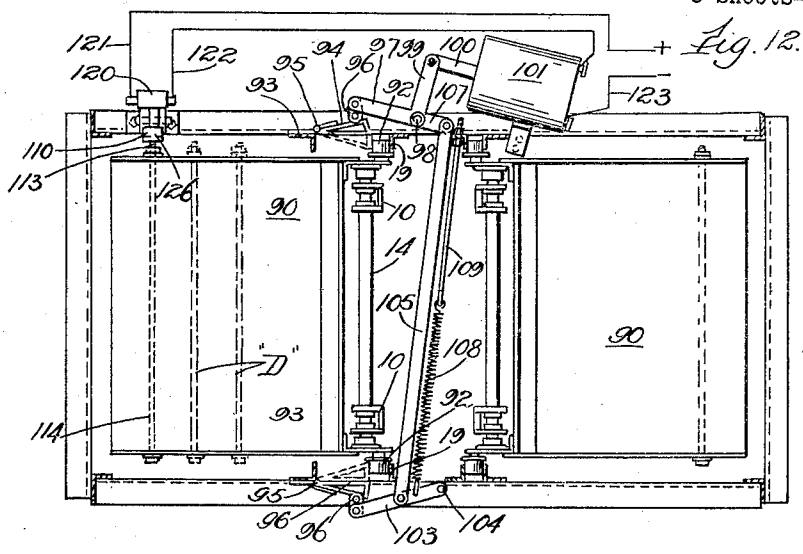


Fig. 11.

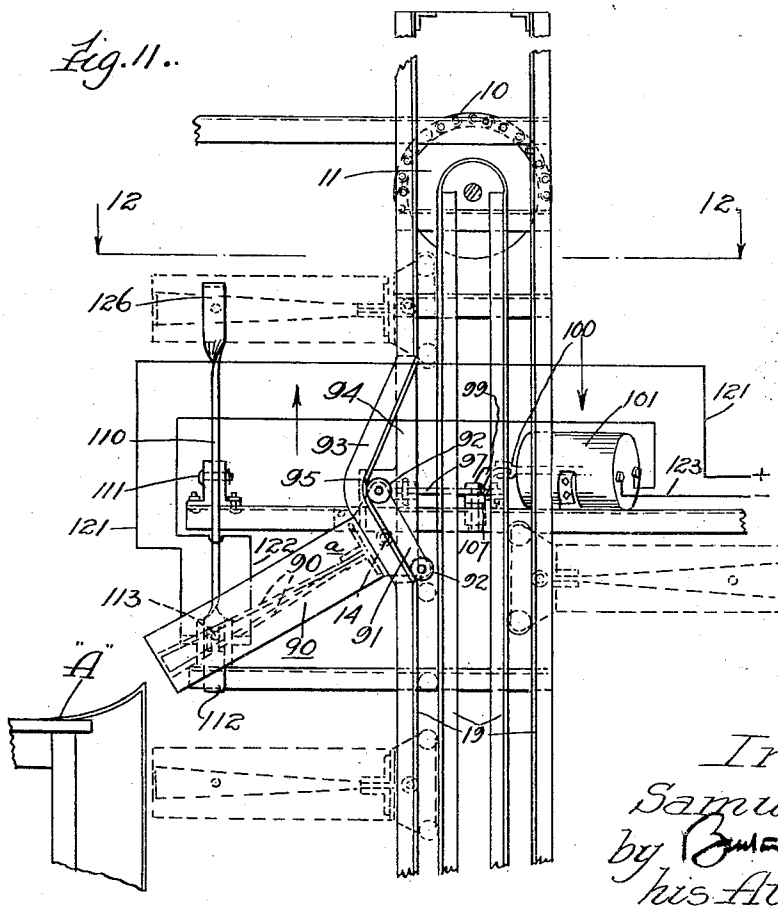
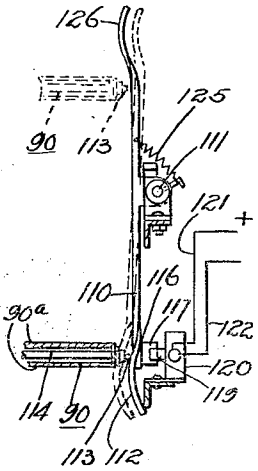


Fig. 13.



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UNITED STATES PATENT OFFICE

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SELECTIVE UNLOADER MECHANISM FOR ELEVATORS

Application filed April 11, 1930. Serial No. 443,305.

This invention relates to conveyers and more particularly to conveyers of the vertically traveling type employing a continuous belt and provided with suitably spaced load carriers normally extending in horizontal load carrying position. An object of the invention is to provide improved means for automatically discharging the loads of certain carriers at any one of a plurality of discharge stations arranged along the path of travel of the conveyer. Another object of the invention resides in the provision of means for selectively discharging loads at a predetermined station along the "down-run" of the conveyer while the conveyer is in motion. A further object is to provide in a conveyer of this general type, having its carriers pivoted about horizontal axes and arranged for tilting about said axes for discharging their loads by gravity, relatively simple and positive means for selectively discharging loads at discharge stations arranged along the "up-run" of the conveyer, while the conveyer is in motion. The invention consists in certain elements and features of construction in combination, as herein shown and described, and as indicated by the claims.

In the drawings:

Figure 1 is a sectional elevation of a vertical conveyer embodying the present invention.

Figure 2 is a transverse sectional view through the conveyer taken substantially as indicated at line 2—2 on Figure 1.

Figure 3 is a vertical section taken at line 3—3 on Figure 1.

Figures 4 and 5 are enlarged plan and elevational views of the improved form of carrier arm used in connection with the present invention.

Figure 6 is a fragmentary detail view taken substantially as indicated at line 6—6 on Figure 1.

Figure 7 is a sectional elevation of a vertical conveyer embodying a modified form of my invention.

Figure 8 is a transverse sectional view through the elevator taken as indicated at line 8—8 on Figure 7.

Figure 9 is a fragmentary view of the mechanism for tilting the carrier to discharge its load; showing latching means holding the operating mechanism in actuated position.

Figure 10 is a fragmentary plan view looking down upon the latching and operating mechanism.

Figure 11 is a sectional elevation of a vertical conveyer embodying a still further modified form of my present invention.

Figure 12 is a transverse sectional view taken substantially as indicated at line 12—12 on Figure 11.

Figure 13 is a detail view showing in elevation the switch operating arm for controlling the electrical circuit of the operating mechanism at one of the discharge stations.

The vertical conveyer embodying the present invention consists of one or more endless belts or chains indicated at 10, mounted for travel over head wheels, 11, and foot wheels not shown. Referring now in particular to the construction illustrated in Figures 1 to 6 of the drawings, these continuous belts are provided with load carriers indicated generally at 12, spaced at suitable intervals and guided in a manner hereinafter fully described. For purposes of illustration it will be observed upon inspection of the drawings, that the load carriers are composed of a pair of transversely spaced end members, 13, and intermediate members, 15, forming a finger tray, and these members are rigidly secured on a rock shaft, 14, journaled in the flexible belts, 10, so that they pivot as a unit about the horizontal axis of said shaft. The carrier, and more particularly the end members, 13, are provided with a pair of rearwardly extending legs, 17, diverging outwardly with respect to each other, and having journaled at their outer ends rollers, 18, which are guided and confined between the vertical legs of a pair of upwardly extending angle iron members, 19, forming the guideways. These leg members, 17, are rigid with the carriers and by reason of the confinement of their rollers between the guide angles, 19, the load supporting surface of the carriers will normally be disposed in sub-

stantially horizontal relation for supporting the load. The construction of this carrier is such that it is reversible so that when it is inverted by traveling around the head wheels, it presents a substantially similar load supporting surface on the "down-run" side as on the "up-run" side of the elevator, as may be observed in Figure 1.

Arranged along the path of travel of the "up-run" of the vertical conveyer are a plurality of suitably spaced discharge stations, as indicated generally at A. On the "up-run" side of the vertical conveyer, adjacent each of the discharge stations, the outermost angle member, 19, forming the guideway for the carrier rollers is provided with a movable section, 22, hinged at its upper end at 23, for swinging about a horizontal axis. Each hinged section is formed with an offset lip, 24, at its lower end for encountering the fixed part of the guideway, 19, so as to limit its swinging movement in the direction toward the center of the conveyer. Adjacent each of the discharge stations, I provide selectively operable mechanisms for controlling the movement of the guideway sections, 22, and as illustrated in the drawings, said mechanisms each include link members, 25, connected to said movable hinged sections at one end and at their other ends to a crank arm, 26, journaled on pins, 26^a, for rotation about vertical axes on opposite sides of the elevator. Fixedly mounted for rotation with the crank arms, 26, are laterally extending arms, 27, which are connected together by the tie rod, 28, so as to insure simultaneous, uniform motion of the sections. Connected to the outer end of one of the arms, 26, is a link, 29, whose other end is connected to a crank arm, 30, which has a rigid depending lug, 31, adapted to be engaged by the upper end of a vertically disposed control arm, 32, for actuating the linkage and shifting the pair of guideway sections laterally about their hinge axes, in offset relation to the guideway proper, as may be seen in Figure 1.

The control arms, 32, are pivotally mounted at 33, adjacent the path of travel of the carriers, and are normally held in a slightly inclined position, as indicated by dotted lines in Figure 1, by means of the pin, 34, acting as a stop against the tail, 32^a, of said control arms.

The carriers are each provided with a lateral projection, 36, located so as to engage a control arm at a certain predetermined discharge station to effect discharge of the load on the carrier at said station. For selectivity in discharging a load at a predetermined station, it may be understood that the control arms at the respective stations are spaced at different distances with respect to the center of the conveyer or the guideways, and the cooperating projections 36, on the carriers are accordingly positioned so as to engage only a particular arm for actuating the operating mechanism at the predetermined discharge station. The operating linkage is yieldingly held at one limit of its movement by the coil springs, 37, connected to the crank arms, 26, and to the fixed part of the conveyer frame, thereby holding the movable guideway sections, 22, in inoperative position, so as to normally form a continuous or straight guideway.

It will be apparent that as the carrier approaches the predetermined discharge station at which it is to discharge its load, the cooperating projection, 36, will first engage the inclined portion, 32^b, of the control arm and act camwise thereon, swinging the control arm about its pivot in an inward direction so that its upper end encounters the projection, 31, and thereby transmits motion through the linkage for swinging the guideway sections, 22, laterally outward, against the reaction of the springs, 37. By virtue of the shape and dimensions of the control arm, it will be manifest that these guideway sections together with the operating linkage will be held in such position for a limited period while the carrier continues in its upward travel by the cam engagement of the projection, 36, with the upper portion of the control arm. Obviously as the upper guide roller of the carrier approaches the break in the continuous guideway caused by the lateral offset of the sections, 22, the roller and carrier will pivot in a downward direction, substantially about the axis of the lower roller, and the tilting of the carrier by this action will be sufficient to cause the load thereon to be discharged by gravity.

To insure minute adjustment of the linkage and proper actuation by the control arm, an adjustable screw, 31^a, is provided in the lug, 31, as the means to be encountered by the upper end of the control arm for transmitting the motion to the linkage proper. Substantially intantaneously after the discharge of the load, the springs, 37, acting through the linkage, tend to yieldingly urge the movable guideway sections to normal position, by which movement the carrier is forced to rock upwardly to its horizontal load carrying position. Furthermore, the direction of pull on the carrier by its connection to the continuous belts, also tends to assist in restoring the carrier to its normal load carrying position.

To obtain proper selectivity for operating the mechanism at the desired station, I have devised an improved arrangement which facilitates the location of the actuating projection on the carrier and prevents its being inadvertently displaced. For this purpose one of the carrier end members, 13, adjacent the side at which the control arms are located, is provided with a longitudinal slot, 39, and the outer surface surrounding the slot

in the arm is formed with a series of offsets or inclined projections, 40, which serve as seats for a cooperatively formed wedge-like washer, 41, which carries the projection, 36. The projection has a stem portion which extends through the slot and is encompassed by a coil spring, 42, which serves to yieldingly hold the wedge member, 41, positioned against the tapered seat portions, 40. Thus by merely compressing the spring so that the wedge-like portion, 41, may be raised above the inclined seats, 40, the washer member, 41, together with the projection may be readily shifted toward or away from the axis of the carrier to any other desired position of adjustment which will correspond to a position for actuating a certain control arm at a predetermined discharge station.

The "down-run" side of the vertical conveyer is also provided with a plurality of discharge stations arranged along its path of travel, as indicated at B, which include vertical openings, C, in the walls adjacent the conveyer. Preferably it is desirable to protect the openings so as to prevent possible injury to attendants, and for this purpose, there is mounted in each opening for swinging about a hinge axis, 44, a grill, 45, which when in vertical position, substantially occupies the space of the opening, and is adapted to be swung inwardly to the position shown in Figure 1, forming an incline for receiving loads from the carriers. As may be seen in the drawings, the grill is composed of a plurality of transversely spaced fingers, 45^a, spaced at intervals so as to intermember with the members, 13 and 15, of the carrier, as illustrated in Figure 2, to permit the load on the carrier to be "skidded" off the carrier as the latter continues its downward travel. To selectively discharge a load at a predetermined station along the "down-run" of the vertical conveyer, I provide mechanism which is also adapted to be actuated by a projection on the carrier; it being understood that the projection on the carrier may be so located as to operate the mechanism at a certain predetermined discharge station. These mechanisms each include an arm, 47, hinged at 48, with its camming or tail portion, 49, projecting adjacent the path of travel of the carriers for engagement by a projection, 36^a, on the carrier.

Connected to the opposite end of the arm, 47, is a vertically disposed link, 50, whose lower end is connected to a crank arm, 51, which is rigidly connected to the grill or skid member, 45. A spring, 52, encompassing the lower end of the link, 50, and reacting against the fixed stop, 53, is arranged for normally holding the arm, 47, in operative position, with the grill, 45, disposed in vertical relation closing the opening, C. To insure a comprehensive understanding of the construction, it may be here pointed out that the arms, 47, of the operating mechanisms provided at the successive lower discharge stations, are designed with the camming or tail portions, 49, extending successively farther inwardly than the cam located at the station above so as to insure that the projection located in a definite position on the carrier will cause actuation of an arm at only one discharge station.

When the projection, 36^a, engages the cam portion of the arm, 47, and rocks it about its hinge axis against the reaction of the spring, 52, swinging the grill to the inclined position in the path of travel of the carrier, a laterally extending pin, 54, which is carried by an arm, 55, rigid with the arm, 51, is engaged by a latch 56; and the parts are yieldingly held in such position by the spring, 57, engaging the lower end of said latch member, 56, as may be seen in Figure 1.

It will be apparent that the mechanism is disposed to be actuated by the carrier just prior to its registration with the selected station, and after the mechanism is actuated and the grill disposed in inclined position, the continued downward travel of the carrier will skid the load off the carrier and discharge it at the respective station, and after the carrier passes beyond the skid, 45, the projection, 36^a, engages the lug or tail piece, 56^a, of the latch member, 56, and rocks said latch member about its hinge connection, 56^b, so as to release the pin, 54, and permit the grill and operating linkage to be returned to the original position by the spring, 52. As may be seen in the drawings, the mechanisms for operating on the "down-run" side of the vertical conveyer are arranged for cooperation with the side of the carrier opposite to that which controls the discharge of the loads on the "up-run" of the vertical conveyer. In the majority of installations of this nature, the conveyer is used exclusively either for transferring loads in an upward direction or in a downward direction, but should it be desired to transfer loads both up and down on the respective sides of the conveyer, it would perhaps be more simple and desirable to use one side of the carrier for operation of the mechanisms along the "up-run" and the other side of the carrier for operating mechanisms along the "down-run". It will be understood that the lug projection, 56^a, of the latch member, 56, will be located at different positions at the respective stations, so as to be engaged only by a properly located projection on a carrier which serves to actuate the arm, 47, at a corresponding station.

In the construction illustrated in Figures 7 to 10, the carrier, 60, is shown as of the pan type; otherwise being substantially similar to that illustrated in the preceding figures. In this construction the outermost an-

gle members, 19, of the guideway for the carrier rollers, 18, is formed with a laterally offset portion, 61, adjacent each of the discharge stations. The offset is preferably formed with suitable inclination so that the rollers will conveniently track into and out of the offset portion. Normally bridging the offset portion, 61, is a guideway section, 62, hinged about a vertical axis, 63, and adapted for being swung laterally out of the path of travel of the rollers of the carrier. These hinged bridge sections of the guideway have rigid laterally extending arms, 64, which are connected by horizontal link members, 65, to the arms, 66, of bell cranks which are pivoted on vertical axes, 66^a, and whose other arms, 67, are interconnected by a transversely extending link, 68. This linkage is so arranged as to insure simultaneous uniform movement of the hinged bridge sections, 62, of the respective guideways. Connected to one of the arms, 64, is a link, 69, pivoted at its offset end to a crank arm, 70, which arm is provided with a depending lug, 71, adapted to be encountered by a controlling arm, 72, which is pivoted at 73, and normally held in vertical upright position, as seen in Figure 7, by a stop pin, 74, engaging the tail, 72^a, of said control arm. It will be understood that these control arms and their cooperating depending lugs, 71, are positioned in laterally offset relation to each other at the respective stations.

It may be understood that the carrier has its lateral projections, 75, located relative to the belts, 10, so as to engage the controlling arm at a predetermined discharge station. These projections may be either fixed with respect to the carrier or they may be made so as to be adjustable thereon, depending upon the use to which the conveyer is to be adapted. It will be apparent that as the carrier approaches the selected discharge station, its projection, 75, will engage the laterally offset camming surface, 72^b, of the control arm, and the continued upward movement of the carrier will cause the arm to be swung inwardly about its pivot, 73, as seen in Figure 9, thereby forcing the depending lug, 71, laterally and actuating the linkage against the reaction of the spring, 76 (which normally hold the linkage in inoperative position), and the linkage thus causes the hinged bridge sections, 62, of the guideway to swing laterally out of the path of travel of the guide rollers of the carrier so that said rollers will be permitted to track laterally outward into the depressed or laterally offset portions, 61, of the guideway, thereby rocking the carrier in a downward direction and causing the load to be discharged by gravity at the corresponding, predetermined discharge station. To prevent these bridge or hinged guideway sections from being swung inwardly by action of the springs, 76, on the linkage, so that they engage or strike against the rollers of the carrier while traversing the laterally offset portion, 61, it is preferable to lock the hinge sections in open position until the carrier has substantially traversed these laterally offset portions, and for this purpose I provide latching means which consist of a latch member, 79, hinged at a horizontal axis, 80, to the outermost guideway member, 19, a slight distance above the offset portion, 61. This latch member normally extends in a substantially horizontal direction, as seen in Figure 9, by reason of the lug portion, 81, impinging against a leg of the angle guideway member, 19.

This latch member is provided with a cam surface, 79^a, and a stop shoulder, 79^b, with which cooperates the upper rounded end of the control arm as it is swung about its pivot by the camming action of the projection on the carrier. It will be apparent that during the swinging of the control arm the upper end thereof will ride on the inclined camming surface, 79^a, raising the latch upwardly about its hinge connection, and as the arm is swung beyond the stop shoulder, 79^b, the latch will drop by gravity so that the shoulder, 79^b, will act as a stop and lock the control arm at such position, thereby maintaining the linkage together with the bridge or hinged guideway sections out of their normal operative position. To insure resetting of the operating mechanism at this station, so as to be ready to function properly by the time the next carrier approaches the station, (whether for a carrier to be discharged at the same station or any other station) the latch is provided at its outer end with a laterally extending lug, 82, which is so located as to be encountered by the projection, 75, on the carrier which actuates the mechanism at the same station, and the continued upward travel of the carrier will swing the latch upwardly about its hinge connection, as indicated in dotted lines in Figure 9, so as to raise the stop, 79^b, clear of the controlling arm and permit the latter to be returned to its normal upright position by the motion transmitted through the linkage by the springs, 76. It may be understood that the respective latch members, 79, at the different discharge stations will be differently dimensioned so that the stop shoulders, 79^b, and the lugs, 82, will be located to correspond to the limits of movement of the control arm and the location of the corresponding projections on the carriers that are to be discharged at these respective stations.

Referring now particularly to the modified construction shown in Figures 11 to 13, the load carrier, 90, is of the pan type construction having a pair of converging load supporting surfaces, 90^a, inclined in the direction of the chain. By reason of

this construction, the carrier may serve equally well for carrying loads in an upward direction or along the "down-run" side of the conveyer, and always tends to cause the load to shift in the direction toward the belt to insure against its accidental dislodgment from the carrier. This carrier is of similar construction to that disclosed in Figures 1 to 5, and 7 to 10, and includes a rigid rearwardly extending wing, 91, at each of its lateral sides to each of which are journaled a pair of vertically spaced guide rollers, 92, preferably one above and one below the pivot axis, 14, of the carrier, as seen in Figure 11. The structural angle guideways, 19, adjacent each of the discharge stations, A, are formed with laterally offset portions, 93, which, when they form parts of the path of travel of the carrier permit the guide rollers, 92, of the carrier to train laterally out of the normal path of travel of said rollers, causing tilting of the carrier in a downward direction for discharge of its load by gravity at the corresponding discharge station. These laterally offset portions of the guideway are normally closed so as to form a continuous straight guideway by bridge or guideway sections, 94, which are hinged about vertical axes, 95, at the outermost portions of the offsets, 93.

These bridge or guideway sections are actuated by electrically controlled mechanisms at each of the stations by the selective engagement of a cooperating part on the carrier in a similar manner as in the preceding constructions. These bridge sections, 94, for convenience, and to insure proper rigidity and strength are made triangular in cross-section, and are each connected to a laterally extending pivot link, 96, one of which is connected to the outer end of an arm, 97, of a bell crank lever, which is pivoted at 98, and whose other arm, 99, is pivotally connected to the outer end of an armature, 100, of the solenoid, 101, which is supported in a suitable manner on the framing structure of the elevator. To insure synchronized movement of the pair of bridge or guideway sections at the respective stations, the link, 96, at the opposite side of the elevator is pivotally connected to a lever arm, 103, which is pivoted to the frame structure at 104, and a transversely extending connecting link, 105, is pivoted to the link, 103, intermediate its ends, and at its opposite end to a rearwardly projecting arm, 107, of the bell crank. Thus any motion transmitted by the solenoid armature to the bell crank lever is simultaneously transmitted to both of the bridge sections. To insure maintaining the bridge sections in inoperative position, i. e., a position forming a continuous or straight guideway, it is preferable to provide some yielding connection to the linkage and for this purpose I provide the coil spring, 108, connected to the lever arm, 103, at one end and at its other end to the tie rod, 109, which is connected to the opposite side of the elevator frame structure.

Disposed adjacent each of the discharge stations and substantially centrally with the offset portions, 93, is a control arm, 110, pivoted at a horizontal axis, 111, and having its lower end curved to form a cam, 112, for engagement by a lateral projection, 113, on the carrier. It may be understood that the lateral projections on the carrier may be either of the adjustable type or fixed so that any one carrier may be adapted for discharging its load at the same predetermined station, but for the purpose of illustration it may be understood that in the present showing in the drawings the projection which herein is the end of a cross rod, 114, extending transversely of the carrier intermediate its load supporting surfaces, 90^a, is fixed in the carrier so that certain carriers on the elevator will always discharge their loads at a certain predetermined station. Accordingly, it will be understood that the other carriers will have their cross rods with projecting ends, 113, disposed at different vertical planes, such as indicated by dotted lines at D, in Figure 12, in order that these other carriers will be operated at certain other predetermined stations. And likewise the control arms at the respective stations are also located in offset relation for selective engagement by correspondingly aligned projections on the carriers.

The lower end of the control arm, 110, is provided with an insulating block, 116, on which is mounted a conductor member, 117, adapted to be engaged between the two switch terminals, 119, of the switch, 120, for completing an electrical circuit including the solenoid, 101. As illustrated in the drawings, the solenoid circuit includes a conductor, 121, connecting one terminal of the switch to the main source of power and a second conductor, 122, connecting the other terminal of the switch to one of the terminals of the solenoid, while the third conductor, 123, connects the second terminal of the solenoid to the source of electrical energy, thus completing the electrical circuit.

It will be apparent that as the carrier, which is arranged to discharge its load at a certain station, approaches said station, its projection engages the cam surface, 112, of the control arm swinging the arm about its pivot, 111, so as to move the knife member, 117, in between the cooperative terminals, 119, of the switch for completing the electrical circuit and energizing the solenoid thereby retracting the armature and actuating the linkage in a manner to swing the bridge or hinged guideway sections, 94, laterally outward, as indicated in full lines in Figure 12. The subsequent or continuous upward travel

of the carrier will then cause the guide rollers to track laterally outward to the offset portions, 93, thereby causing the carrier to tilt downwardly and discharge its load by gravity at the corresponding station. It may be understood that the switch terminals, 119, are of the spring type construction which are adapted to grip the contact member, 117, with sufficient force so as to maintain contact against the reaction of a relatively light spring, 125, which tends to return the control arm to its normal position for engagement by the projection on the carrier.

It will be manifest that after the projection on the carrier closes the switch member, the projection is substantially out of contact with the arm during the effective tilting and discharging operation of the carrier. The upper end of the control arm is also formed with a cam surface, 126, which is adapted to be moved into the path of travel of the projection on the carrier after the control arm has been swung about its pivot in the direction for closing the switch so that after the carrier emerges from the laterally offset portion, 93, the projection, 113, engages the cam surface, 126, of the control arm swinging it about its hinge connection, thereby moving the lower end in a manner to separate the member, 117, from the switch terminals, 119, with the assistance of a spring, 125, thereby breaking the electrical circuit and de-energizing the solenoid; the spring, 108, then coming into play for returning the linkage to its normal position with the bridge or guideway section, 94, closing the gap or laterally offset portion, producing the normal straight guideway.

I claim:

1. In combination with a continuous vertically traveling belt and driving means therefor, a carrier pivotally engaged with the belt and normally extending horizontally and laterally to one side of the pivot axis, two guide rollers rigidly associated with the carrier and mounted in vertically spaced relation extending at the side of the belt in the direction opposite to that in which the carrier projects, a guideway for the rollers for controlling the position of the carrier, said guideway being provided adjacent each of a plurality of load-shifting stations arranged along the path of travel of the belt with a movable section adapted to be shifted for altering the guideway so as to include a laterally offset portion, whereby the leading guide roller may be caused to tilt out of its normal path and cause tilting of the carrier in a downward direction substantially about the axis of the following guide roller for discharging its load; independently operable mechanism disposed adjacent each of said discharge stations, each including linkage for controlling the movement of the guideway sections at the corresponding stations; means for selecting the stations at which the several carriers respectively discharge their loads, consisting of means on each carrier located thereon for rendering operative the mechanism at a predetermined station for causing discharge of the load at said station, said movable guideway sections being pivotally mounted at their upper ends about horizontal axes and arranged to permit swinging of their lower ends laterally outward in the direction of projection of the carrier, said movable guidway sections being arranged to constitute parts of the roll track at all positions within their range of movement.

2. In combination with a continuous vertically traveling belt and driving means therefor, a carrier pivotally engaged with the belt and normally extending horizontally and laterally to one side of the pivot axis, two guide rollers rigidly associated with the carrier and mounted in vertically spaced relation extending at the side of the belt in the direction opposite to that in which the carrier projects, a guideway for the rollers for controlling the position of the carrier, said guideway being provided adjacent each of a plurality of load-shifting stations arranged along the path of travel of the belt with a movable section adapted to be shifted for altering the guideway so as to include a laterally offset portion, whereby the leading guide roller may be caused to tilt out of its normal path and cause tilting of the carrier in a downward direction substantially about the axis of the following guide roller for discharging its load, independly operable mechanism disposed adjacent each of said discharge stations, each including linkage for controlling the movement of the guideway sections at the corresponding stations; means for selecting the stations at which the several carriers respectively discharge their loads, consisting of means on each carrier located thereon for rendering operative the mechanism at a predetermined station for causing discharge of the load at said station, said movable guideway sections being pivotally mounted at their upper ends about horizontal axes and arranged to permit swinging of their lower ends laterally outward in the direction of projection of the carrier and each of said mechanisms including linkage connected to the pivotal guideway sections for shifting the same into and out of operative position, and a control arm engageable by the selective means on the carrier for causing actuation of said mechanism, said movable guideway sections being arranged to constitute parts of the roll track at all positions within their range of movement.

3. In combination with a continuous vertically traveling belt and driving means therefor, a carrier pivotally engaged with

the belt and normally extending horizontally and laterally to one side of the pivot axis, the two guide rollers rigidly associated with the carrier and mounted in vertically spaced relation extending at the side of the belt in the direction opposite to that in which the carrier projects, a guideway for the rollers for controlling the position of the carrier, said guideway being provided adjacent each of a plurality of load-shifting stations arranged along the path of travel of the belt with a movable section adapted to be shifted for altering the guideway so as to include a laterally offset portion, whereby the leading guide roller may be caused to tilt out of its normal path and cause tilting of the carrier in a downward direction substantially about the axis of the following guide roller for discharging its load, independently operable mechanism disposed adjacent each of said discharge stations, each including linkage for controlling the movement of the guideway sections at the corresponding stations; means for selecting the stations at which the several carriers respectively discharge their loads, consisting of means on each carrier located thereon for rendering operative the mechanism at a predetermined station for causing discharge of the load at said station, said movable guideway sections being pivotally mounted at their upper ends about horizontal axes and arranged to permit swinging of their lower ends laterally outward in the direction of projection of the carrier and each of said mechanisms including linkage connected to the pivotal guideway sections for shifting the same into and out of operative position, and a control arm engageable by the selective means on the carrier for causing actuation of said mechanism, said pivotal guideway sections when in operative position with their lower ends offset laterally from the main guideway, being adapted to cause the leading guide roller to suddenly move laterally as the carrier registers therewith, thereby causing tilting of the carrier in a downward direction to discharge its load.

4. In combination with a continuous vertically traveling belt and driving means therefor, a carrier pivotally engaged with the belt and normally extending horizontally and laterally to one side of the pivot axis, two guide rollers rigidly associated with the carrier and mounted in vertically spaced relation extending at the side of the belt in the direction opposite to that in which the carrier projects, a guideway for the rollers for controlling the position of the carrier, said guideway being provided adjacent each of a plurality of load-shifting stations arranged along the path of travel of the belt with a movable section adapted to be shifted for altering the guideway so as to include a laterally offset portion, whereby the leading guide roller may be caused to tilt out of its normal path and cause tilting of the carrier in a downward direction substantially about the axis of the following guide roller for discharging its load, independently operable mechanism disposed adjacent each of said discharge stations, each including linkage for controlling the movement of the guideway sections at the corresponding stations; means for selecting the stations at which the several carriers respectively discharge their loads, consisting of means on each carrier located thereon for rendering operative the mechanism at a predetermined station for causing discharge of the load at said station, said movable guideway sections being pivotally mounted at their upper ends about horizontal axes and arranged to permit swinging of their lower ends laterally outward in the direction of projection of the carrier and means for operating said sections for said movement comprising a control arm and the continued upward travel of the carrier being adapted for releasing the control arm and permitting the pivotal guideway section to be returned to its original position, thereby forcing the leading guide roller inwardly in the direction of its normal path of travel and thereby swinging the carrier in an upward direction to its normal load-carrying position.

5. In combination with a continuous vertically traveling belt and driving means therefor, a carrier pivoted to said belt on a horizontal axis, said carrier normally extending in horizontal direction to one side of the pivot and arranged for supporting a load, two guide rollers associated with the carrier and mounted in vertically spaced relation, a guideway for the rollers for controlling the position of the carrier, said guideway including a movable section disposed adjacent each of a plurality of discharge stations arranged along the path of travel of the belt, each of said guideway sections being adapted to be shifted to alter the guideway proper, so as to include a laterally offset portion for causing the leading guide roller of the carrier (as said carrier approaches the station) to track laterally out of its normal path of travel for tilting the carrier in a downward direction to discharge its load; said movable section being hingedly connected at one end to the fixed part of the roll track for swinging about its hinge pivot to and from a position of registration of its free end with the fixed part of the track, whereby at all positions within its range of movement it constitutes part of the roll track independently operable mechanism disposed adjacent each of said discharge stations, each including linkage for controlling the movement of the guideway sections at the corresponding stations and a pivotally mounted control are disposed adjacent the

path of travel of the carrier and arranged in laterally offset relation to each other, and a projection on the carrier positioned for engaging a certain control arm for actuating the mechanism at a predetermined station for causing discharge of the load at said station.

6. In combination with a continuous vertically travelling belt, and driving means therefor, a carrier pivotally engaged with the belt and normally extending horizontally and laterally to one side of the pivot axis, two guide rollers rigidly associated with the carrier and mounted in vertically spaced relation and extending at the side of the belt in the direction opposite to that in which the carrier projects, a guideway for the rollers for controlling the position of the carrier, said guideway being provided adjacent each of a plurality of discharge stations arranged along the path of travel of the belt with a movable section adapted to be shifted for altering the guideway so as to include a laterally offset portion, whereby the leading guide roller may be caused to track laterally out of its normal path and cause tilting of the carrier in a downwardly direction substantially about the axis of the following guide roller for discharging its load; said movable section being hingedly connected at one end to the fixed part of the roll track for swinging about its hinge pivot to and from a position of registration of its free end with the fixed part of the track, whereby at all positions within its range of movement it constitutes part of the roll track independently operable mechanism adjacent each of said stations and arranged for controlling the movement of the guideway sections at the corresponding stations and selectively adjustable means on the carrier adapted for rendering operative the mechanism at a predetermined station for causing discharge of the load at said station.

7. In combination with a continuous vertically travelling belt and driving means therefor, a load carrier mounted on said belt and normally extending laterally therefrom, mechanism disposed adjacent each of a plurality of discharge stations arranged along the path of travel of the belt, and selectively adjustable means on the carrier arranged for actuating any one of said mechanisms for discharging the load at a corresponding predetermined station, said mechanisms each including a control arm, and said carrier having a laterally extending member and a pin carried thereby and adjustable thereon for engaging any predetermined control arm for actuating the mechanism at the corresponding station, said carrier member being provided with a longitudinal slot for the pin, and formed with a plurality of seats spaced along the slot for engaging a flange on the pin and maintaining said pin in any selected position of adjustment.

8. In the combination defined in claim 7, spring means engaging said pin and arranged for yieldingly maintaining it seated in an adjusted position.

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