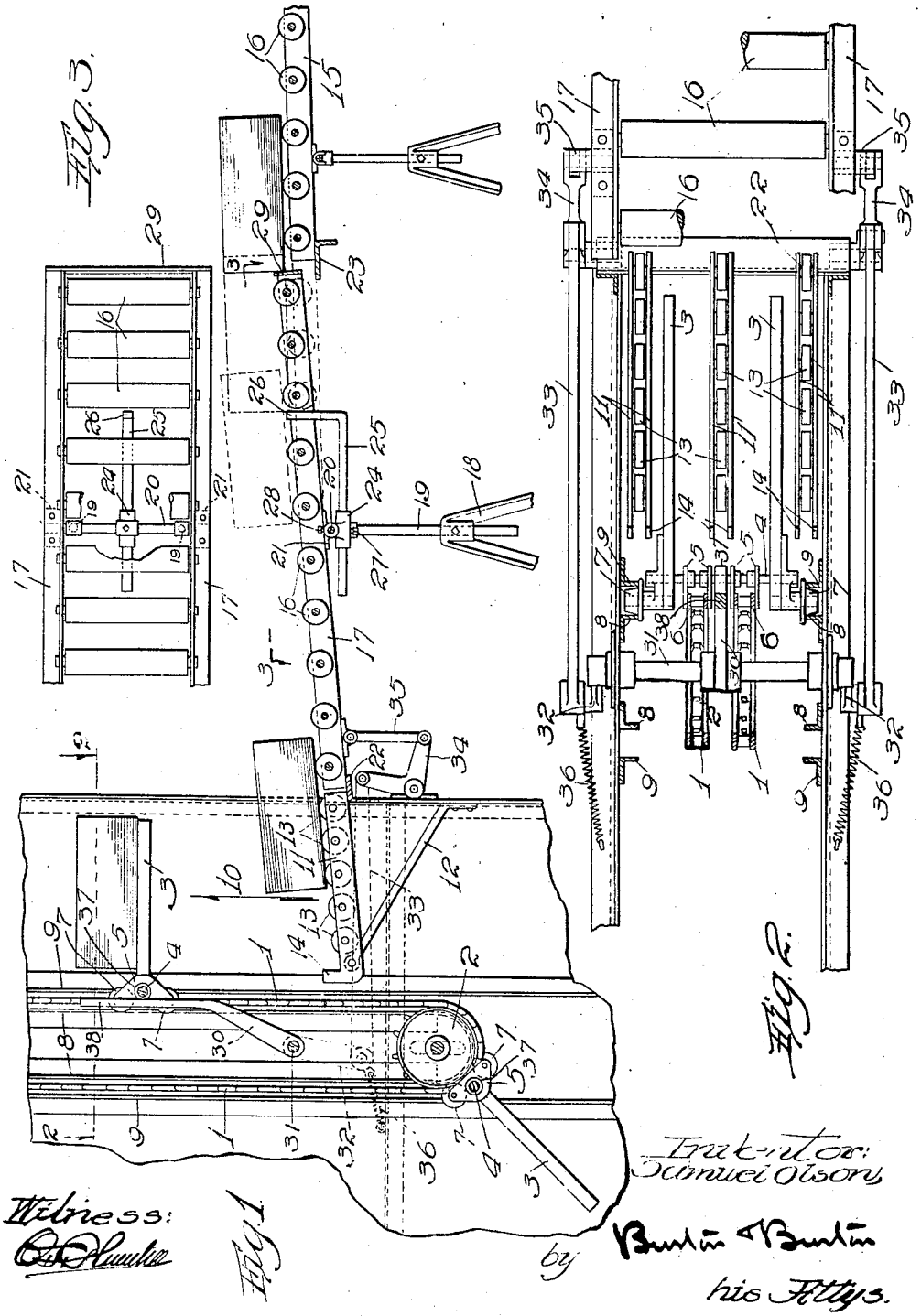
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AUTOMATIC GRAVITY LOADER FOR CONVEYERS.

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1,325,167.

Patented Dec. 16, 1919.



Witness:

Inventor:
Samuel Olson,
by Burton & Burton
his Attys.

UNITED STATES PATENT OFFICE.

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AUTOMATIC GRAVITY-LOADER FOR CONVEYERS.

1,325,167. Specification of Letters Patent. Patented Dec. 16, 1919.

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To all whom it may concern:

Be it known that I, SAMUEL OLSON, a citizen of the United States, residing at Chicago, in the county of Cook and the State of Illinois, have invented certain new and useful Improvements in Automatic Gravity-Loaders for Conveyers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to means for automatically controlling the loading of articles from a feeding device such as an inclined run-way onto the carriers, or trays of a traveling conveyer. It consists in the features and elements of construction and their combination, hereinafter described and shown in the drawings, as indicated by the claims.

In the drawings:

Figure 1 is a vertical section showing a portion of a vertical conveyer and a loading device embodying this invention associated therewith.

Fig. 2 is a transverse section, taken as indicated at line, 2—2, on Fig. 1, and showing the parts on a somewhat larger scale.

Fig. 3 is a detail plan view with parts broken away showing the construction of a stop device associated with the loader.

The conveyer chosen for purposes of illustrating this invention, and shown in some detail in Figs. 1 and 2, comprises a pair of vertically-traveling endless chains, 1, turning about the foot-wheels, 2, at their lower limit of travel, and provided with carriers for boxes, packages or other articles, which carriers consist of arms, 3, extending horizontally from the chains as they travel in vertical direction. Each set of arms, 3, is carried upon a rod, 4, which may be journaled in plates, 5, secured to links, 6, of the chains, 1, and thereby rendered substantially integral parts of the chain. Each of the arms, 3, extends back of the rod, 4, far enough to support guide rollers, 7, arranged to travel between guide rails, 8 and 9, which form a channel substantially in the plane of travel of the chains, 1. With this arrangement it will be seen that the weight of the arms, 3, or of any load carried upon them which would tend to swing said arms about the axis of the rod, 4, will be supported by the reaction of the outer guide rail, 9, against the upper roller, 7, and a corresponding reaction of the inner guide rail, 8, against the lower roller, 7. In the structure shown in the drawings it is assumed that the trays or arms, 3, are traveling upward, as indicated by direction arrow, 10, at the side of the conveyer against the loading apparatus, illustrated in Fig. 1.

For delivering boxes or packages to the arms, 3, for upward travel thereon, a station is provided consisting of bars, 11, mounted in pairs alternating with the positions of the arms, 3, so as not to interfere with the passage of said arms, and said bars, 11, are supported by braces, 12, and fitted with anti-friction rollers, 13, to facilitate the passage of boxes or other articles onto them. As seen in Fig. 1, said bars, 11, are slightly inclined with turned-up ends forming stops at 14, for arresting the travel of supported material toward the conveyer chains, 1. It will be evident that any box or other article resting upon the rollers, 13, of bars, 11, will be picked up and removed therefrom by the pair of such carrier arms, 3, next arriving and passing between the bars, 11, after the deposit of such article or package.

For effecting and controlling the deposit of material at the loading station just described, there is shown a gravity conveyer consisting of slightly inclined frame members, 15, between which are journaled load-supporting rolls, 16, the run-way thus formed terminating in a special section, 17, carried upon a standard, 18, having posts, 19, adjustably mounted in the standard for arranging the section, 17, at the correct height, and tiltably supporting the section, 17, upon a cross rod, 20, pivotally connected to the side rails of the section, 17, through suitable fittings, 21, thereon.

The range of tilting of the terminal section, 17, of the loading run-way is governed by stops, 22 and 23, associated respectively with the station composed of bars, 11, and the end of the fixed portion of the run-way, composed of side frames, 15, and rollers, 16, these stops being in the form of angles secured to the under sides of the bars, 11, and frames, 15, respectively, to abut the under edges of the frame members of the section, 17. Since the cross-rod, 20, is mounted with its axis slightly above a line which might be drawn between the stops, 22 and 23, the frame, 17, can touch only one of said stops at a time, and is thus tiltable between these limits.

In a bracket, 24, carried on the cross rod, 20, there is adjustably mounted a stop arm, 25, having a stop portion, 26, projecting upward between two adjacent rollers, 16, of the tiltable run-way section, 17. The arm, 25, is adjustable longitudinally in the run-way through the bracket, 24, and may be secured at any position in its range of adjustment by tightening a set-screw, 27, while the upward protrusion of its stop portion, 26, may be regulated by swinging the bracket, 24, about the axis of cross rod, 20, and securing it by tightening of a set screw, 28, bearing against said rod, 20. As seen in Fig. 1, the upper end of the tiltable section, 17, will swing above the plane of rollers, 16, in frames, 15, when the lower end of said section rests upon the stop, 22; thus, this upper end of the tilting section will serve to arrest an approaching package or box on the inclined run-way which has not yet arrived on the tilting section itself. And preferably this upper end of section, 17, is therefore shod with a bang plate, 29.

It will be seen that if the tilting section, 17, stands initially alined with the sections composed of frames 15, (that is, resting upon the stop, 23) a box or package traveling down the run-way will stop only when arrested by contact with the stop arm, 26, which protrudes above the level of the rollers, 16, on section, 17, when the latter is tilted down against the stop 23. Then if said section be tilted away from stop, 23, and down onto stop, 22, its inclination being increased, the box or package thereon will be given an impulse and started downward toward the station, composed of bars, 11, and associated parts, and this will be permitted by reason of the fact that the section, 17, is swung high enough at its outer or rear end to bring the plane of its rollers, 16, above the end of stop, 26, thus releasing the box or package therefrom. At the same time the rear end of the section, 17, with bang plates, 29, being elevated above the plane of rollers, 16, in frames, 15, this end will serve to prevent the next box or package from moving down onto the tilting section, 17, during delivery of the first box or package therefrom to the station. This tilting movement of the section, 17, is arranged to be controlled by means of a lever, 30, carried on a rock shaft, 31, having rocker arms, 32, connected by links, 33, with bell cranks, 34, and finally through links, 35, attached to said bell cranks and to the lower end of the section, 17. Springs, 36, attached to links, 33, tend to hold the parts yieldingly in the position at which the tilting section, 17, engages the stop, 23, for receiving a box or package from the run-way. But the rod, 4, which is associated with each set of carrier arms, 3, and by which the latter are connected to the chains, 1, is fitted with an anti-friction roller, 37, adapted to engage the upwardly-extending part, 38, of the lever, 30, and to swing the lever until said portion, 38, becomes alined with the direction of travel of the chains, 1, and associated parts, thus effecting a movement sufficient to swing the end of the tilting section, 17, out of contact with the stop, 23, and into contact with the stop, 22, as shown in Fig. 1. Said movement starts delivery of the box or package thereon to the station which is provided in the path of the carrier arms, 3, and the length of the arm, 38, is sufficient to maintain this relation of parts long enough to insure such delivery of the box or package from the tilting section, 17, to said station. As the station is a separate section from the tilting portion, 17, the presence of the box or package thereon does not interfere with subsequent movements of said section, and the tilting section can be reversed and brought into contact with the stop, 23, for admitting the next box or package to its upper end, while the stop, 26, will arrest said box in its advance along the tilting section, 17. By virtue of the adjustability of the stop arm, 25, in the bracket, 24, the stop, 26, can be set to correspond with the size of box or package which is to be handled by the device and this size may thus be varied within reasonable limits. It will be noted that the actual control of the tilting section, 17, is effected by the roller, 37, on a cross rod, 4, corresponding to those carrier arms, 3, which are already loaded and have passed beyond the loading station at the bars, 11. This fact, however, does not impose any special limitations upon the device,—it does not even require that the different sets of carrier arms, 3, be equally spaced along the chains, 1, so long as they are separated by a sufficient distance to permit the shifting of the load consisting of a box or other package from the tilting section, 17, onto the loading platform, composed of bars, 11, and their associated features. This shifting of the load from the tilting section to the loading platform is thus accomplished as promptly as possible after the passage of a loaded carrier, thus keeping the loading station always ready for the arrival of the next carrier, however soon or however much delayed it may be. Ordinarily, of course, the carrier arms, 3, will be spaced at equal distances along the chains, 1, and the action will be perfectly regular so long as material is supplied over the run-way, 15.

I claim:—

1. A runway and means for controlling the travel of packages thereon comprising a tiltable section fulcrumed between its ends with its rear end normally registered with

the adjoining portion of the runway, a fixed stop extending above the load-supporting surface of said tiltable section between the fulcrum and the rear end thereof, and actuating means connected to the forward end of said section adapted to depress it for raising the load-supporting surface of the rear end above that of the adjoining section and also above the fixed stop.

2. In combination with a runway and package-controlling means as recited in claim 1, a traveling conveyer adjoining the forward end of said tiltable section for receiving the packages therefrom, said actuating means for the tilting section being connected to the conveyer mechanism for operation thereby.

3. A runway and means for controlling the travel of packages thereon comprising a tiltable section having its rear end normally registered with the adjoining portion of the runway, a fixed stop extending above the load-supporting surface of said tiltable section between the fulcrum and the rear end thereof, and actuating means adapted to raise the load-supporting surface of the rear end of said section above that of the adjoining part of the runway and also above the fixed stop, said stop being adjustable toward and from the rear end of the tiltable section for adapting the device to packages of different lengths.

4. In the combination set out in claim 3, the stop being also adjustable up and down for varying its protrusion above the load-supporting surface of the tiltable section in accordance with the range of tilting movement thereof at the longitudinally-adjusted position of the stop.

5. A runway and means for controlling the travel of packages thereon comprising a vertically movable section having its rear end normally registered with the adjoining portion of the runway, a fixed stop extending above the load-supporting surface of said movable section, and actuating means adapted to raise the load-supporting surface of the rear end of said section above that of the adjoining part of the runway and also above said fixed stop, the stop being adjustable toward and from said rear end of the section for adapting the device to packages of different lengths.

6. In the combination set out in claim 3, the fixed stop comprising a bent arm having an approximately horizontal portion and a vertical portion extending from one end thereof, a support in which said horizontal portion is slidably adjustable, said support being mounted for rotative adjustment about a horizontal axis transverse to the direction of such sliding movement for effecting a vertical adjustment of the up-bent end of said stop arm.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 6th day of March, 1918.

SAMUEL OLSON.