Dec. 18, 1934. W. A. MARCY 1,984,685

CONVEYER MECHANISM

Filed May 26, 1932 2 Sheets-Sheet 1

Fig. 1.

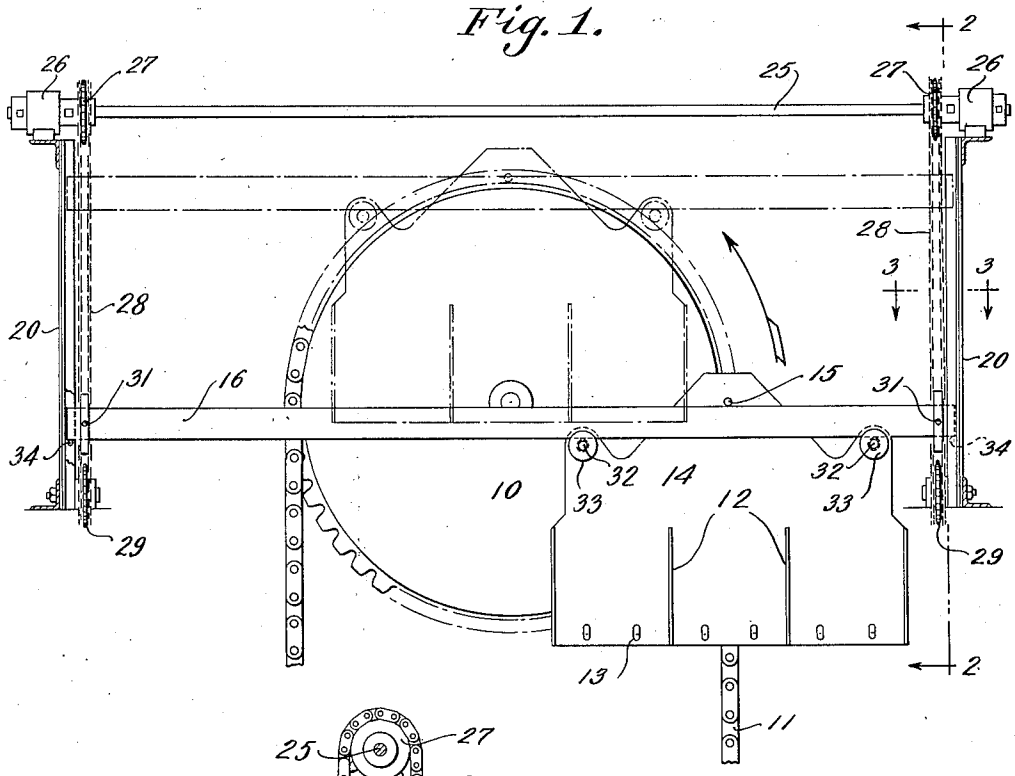


Fig. 2.

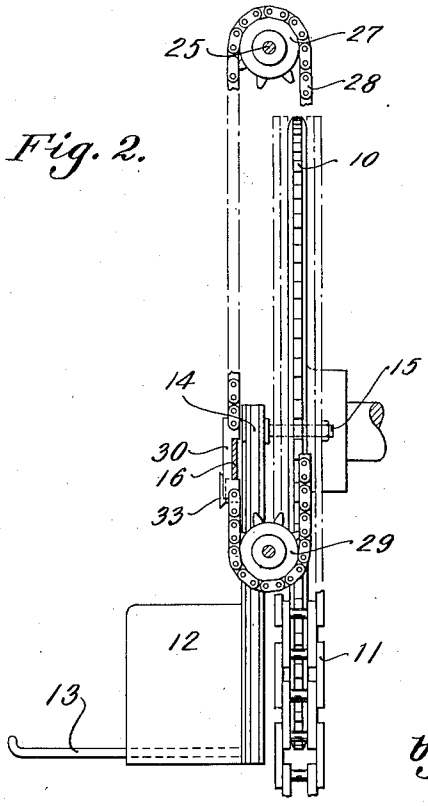
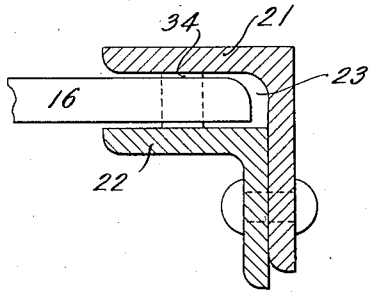


Fig. 3.



Inventor,
Willard A. Marcy,
by Roberts, Cushman & Woodbury
Attys.

Dec. 18, 1934. W. A. MARCY 1,984,685

CONVEYER MECHANISM

Filed May 26, 1932 2 Sheets-Sheet 2

Fig. 4.

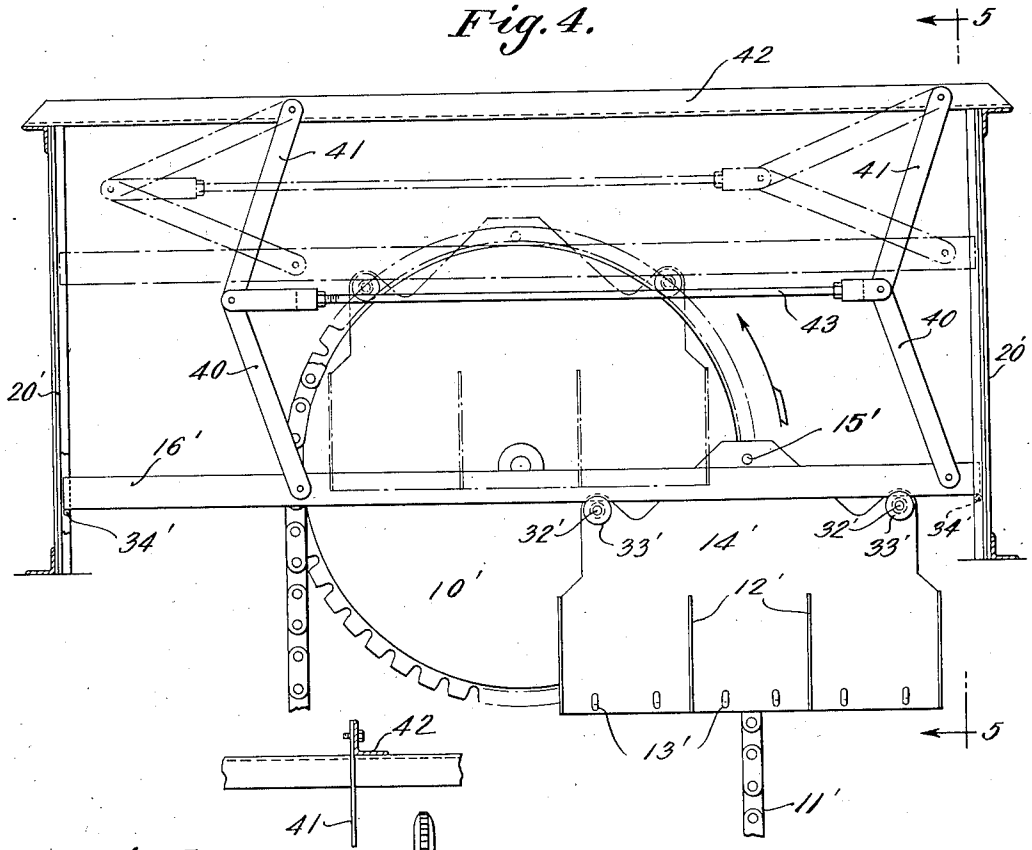
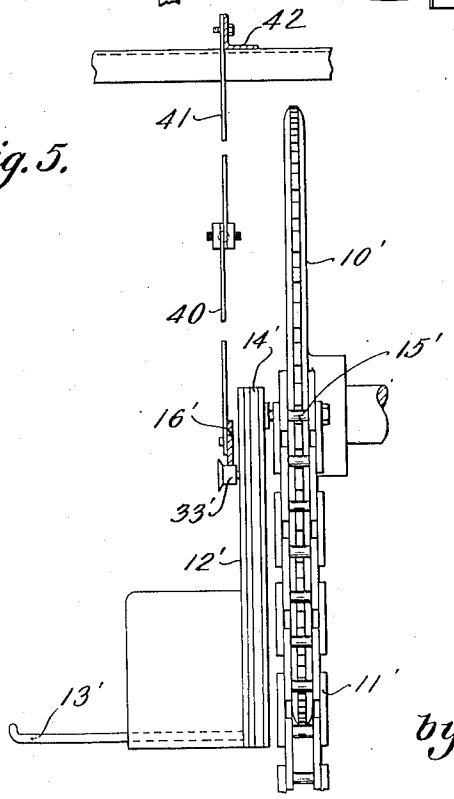


Fig. 5.



Inventor,
Willard A. Marcy,
by Roberts, Cushman & Woodberry,
Atty's.

Patented Dec. 18, 1934

1,984,685

UNITED STATES PATENT OFFICE

1,984,685

CONVEYER MECHANISM

Willard A. Marcy, Syracuse, N. Y., assignor to The Lamson Company, Syracuse, N. Y., a corporation of Massachusetts

Application May 26, 1932, Serial No. 613,627

11 Claims. (Cl. 198—137)

This relates to an improvement in conveyer mechanism and more particularly to means employed in a conveyer of the vertical type, which comprises an endless chain and cars pivotally secured to the chain, the cars traveling in parallel vertical paths and being transferred laterally between such paths, by which the article-carrying cars are held in a predetermined conveying position and prevented from swaying while being transferred.

Vertical conveyers of this general type comprise one or more chains, which are guided over head and foot pulleys and to which the article-transporting cars are pivotally secured. The securement of the cars to the chains is ordinarily at the top of the car midway between the sides, often by means of bolts which also act to connect two of the links of the chain. While this construction is satisfactory in many respects, it is objectionable due to the fact that the pivoted cars tend to swing laterally while being transferred from one vertical path to the other vertical path. Owing to the fact that the relation of the cars to the chain shifts during the transfer, it is obviously impossible to secure the cars by any additional means to the chain, since such a construction, while preventing swaying of the car, would obviously result in reversing the article-carrying platform so that no loads could be carried from one path to the other.

The primary object of the present invention is to provide means for preventing the swaying of the cars, such means being preferably movable with the car during its transfer, and being restored to normal position when the car is started on its downward travel. More particularly the means provided comprises a bar or beam normally in a plane parallel to that of the platform, which is engaged by two outwardly projecting pins on the car equally spaced from the pivotal connection of the car with the chain, such bar being raised by the movement of the car, and being held at all times in the desired plane.

Two embodiments of this invention will be described and are illustrated in the accompanying drawings, in which:

Fig. 1 is an elevation of the upper end of a conveyer well, illustrating in full lines the position of the car and the sway-preventing bar at the time that the car in its upward passage engages the bar, and in dotted lines the uppermost position taken by the car during its transfer;

Fig. 2 is a side elevation taken along the line 2—2 of Fig. 1 illustrating the relation of the car and sway-preventing means at the beginning of the transfer;

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1, illustrating the manner in which the ends of the bar are guided;

Fig. 4 is a view similar to Fig. 1 illustrating another embodiment of the invention which differs from that previously described in the manner in which the movement of the sway-preventing bar is guided; and

Fig. 5 is a view taken along the line 5—5 of Fig. 4.

The invention is shown applied to a conveyer in which the cars are loaded during their upward travel and unloaded during their downward travel. The conveyer includes a head sprocket 10 over which an endless chain 11 is caused to travel by suitable means (not shown). Secured to the chain 11 are cars 12, each having an article-supporting platform here illustrated as comprising a plurality of bars 13, which project forwardly from a back 14. Each car is secured to the chain by means of a bolt 15, shown in Fig. 2, which extends through and connects two links of the chain 11. Suitable guide means (not shown) may be provided for the cars during their travel through the vertical paths.

Mounted upon a frame at the head of the conveyer is a sway-preventing bar 16, which in the illustrated embodiment is, at all times, in a horizontal position, although free to move in a vertical plane, as will be described later. The frame comprises posts 20 formed, as indicated in Fig. 3, by two angle beams 21 and 22 so arranged as to provide opposed open channels 23, which receive the ends of the bar 16 and act as guides therefor. Secured to a shaft 25 supported in bearings 26 on the posts 20 are sprockets 27 over which travel chains 28, the lower ends of the chain passing around foot sprockets 29. The chains 28 are secured to the bar 16 near the opposite ends thereof in any suitable manner. Thus, as shown particularly in Fig. 2, each chain 28 may include a bracket 30 to which the bar 16 is secured by bolts 31, and which bracket may have in its rear face a notch to receive the bar. The ends of the bar 16 normally rest upon pins 34 provided adjacent the lower ends of the channels 23. Projecting forwardly from the wall 14 of each car are posts 32, on which are rotatably supported rollers 33. As shown in Fig. 1, the posts and rollers are equally spaced from the center line of the car on which the bolt 15 is located, are lower than the bolt and are in the same horizontal plane.

When the car is raised by the movement of the

chain 11 in the direction indicated by the arrow on Fig. 1, the rollers 33 on the car, if its load-supporting platform is horizontal, engage substantially simultaneously the bar 16, and as the car continues in its travel the bar 16 is raised. Since the head sprockets 27 of the chains 28 are both secured to the same shaft 25, it is obvious that both ends of the bar will move upwardly at the same speed, and hence that the bar will remain horizontal. As the car is raised over the top, it imparts to the bar 16 a rising movement, and as the car descends the bar will remain in contact with the rollers 33 and fall by gravity until it again rests on the pins 34, at which time the car is now travelling directly downward and any danger of swaying is eliminated.

It has been noted, particularly when the car is of the compartment type, as here shown, that the load may not be evenly placed and consequently the platform is not horizontal when the car starts its transfer movement. The invention here set forth corrects this condition and insures that the platform is horizontal during that movement. When one roller 33 strikes a bar 16 the travel of the car will cause it to swing on its pivotal mounting until both rollers are in contact with the bar and will then raise the bar, which acts on both rollers, to hold the platform horizontal.

The embodiment shown in Figs. 4 and 5 differs from that previously shown and described solely in the manner in which the movement of the bar is controlled. The elements common to both embodiments will be designated on these figures by numerals which are primes of the numerals previously used, and will not be here described in detail. In place of the chains 28 and their associated elements, it is proposed to support the bar 16′ upon pairs of links 40 and 41. The links 40 are pivoted at one end to the bar 16′ and the links 41 are pivoted at one end to a crossbar 42 fixed upon and supported by the posts 20′. The free ends of the links 40 and 41 are pivotally connected and the points of connection joined by a bar 43, which may be adjusted as desired, so that when the ends of the bar 16′ rest upon the pins 34′, the links 40 and 41 are only slightly out of alignment. It will be noted that applicant has by the construction thus described provided parallelograms of forces, and as is well understood, the result will be that the bar 16′ during its upward and downward movement, as imparted by the traveling car 12′, will remain at all times horizontal and parallel to the fixed crossbar 42.

The weight of the bar in either of these embodiments acts to steady the car and when, as above set forth, the bar is horizontal, the result is that the load-supporting platform of the car also remains horizontal as the car travels over from one vertical path to the other. Conditions may, however, arise when it is desired that the platforms of the cars be in other than horizontal planes and under those circumstances the mounting of the bar can obviously be shifted into a plane parallel to such plane, while the rollers 33′ remain in a horizontal plane or the plane of the rollers can be changed, or both bar and rollers can be shifted.

While two embodiments only of this invention have been shown and described, it is not limited thereto, since changes in the illustrated embodiments or other embodiments may be made without departing from the spirit and scope of the invention as set forth in the following claims.

I claim:

1. In a vertical conveyer of the type which comprises an endless chain to which cars having load-supporting platforms are pivotally secured so that the cars travel in parallel vertical paths and are transferred laterally between such paths, means engaging the cars during the transfer movement to maintain the load-supporting platform in planes parallel to a selected normal plane, said means comprising a bar in a plane parallel to such normal plane and in the path of the transfer movement of the car, rollers projecting from said car which engage the bar and permit the movement of the car vertically with the bar and laterally relative thereto, and means which permit the travel of the bar in a vertical plane while maintaining it in planes parallel to such normal plane.

2. In a vertical conveyer of the type which comprises an endless chain to which cars having load-supporting platforms are pivotally secured so that the cars travel in parallel vertical paths and are transferred laterally between such paths, means engaging the cars during the transfer movement to maintain the load-supporting platform horizontal, said means comprising a horizontal bar, members on said car which engage such bar, the members being so located that the engagement thereof with the bar insures that the load-supporting platform is horizontal, and means which permit the travel of the bar in a vertical plane while maintaining it horizontal, the bar being raised by the car and lowered by action of the force of gravity.

3. In a vertical conveyer of the type which comprises an endless chain to which cars are pivotally secured so that the cars travel in parallel vertical paths and are transferred laterally between such paths, each car including a back and a load-supporting platform projecting therefrom, means engaging the cars during the transfer movement to maintain the load-supporting platform horizontal, said means comprising a horizontal bar, at least two rollers carried by the back of each car in a plane parallel to that of the platform, which rollers engage said bar, and means which permit the travel of the bar in a vertical plane while maintaining it horizontal, said bar being raised by said car and lowered by the force of gravity.

4. In a vertical conveyer of the type which comprises an endless chain to which cars are pivotally secured so that the cars travel in parallel vertical paths and are transferred laterally between such paths, each car including a back and a load supporting platform projecting therefrom, means engaging the cars during the transfer movement to maintain the load-supporting platform horizontal, said means comprising a horizontal bar, at least two rollers carried by the back of each car in a plane parallel to that of the platform, which rollers engage said bar, and means which permit the upward and downward travel of the bar while maintaining it horizontal, said bar being moved in one direction by the car.

5. In a vertical conveyer of the type which comprises an endless chain to which cars are pivotally secured so that the cars travel in parallel vertical paths and are transferred laterally between such paths, each car including a back and a load-supporting platform projecting therefrom, means engaging the cars during the transfer movement to maintain the load-supporting platform horizontal, said means comprising a horizontal bar, at least two rollers carried by the back of each car in a plane parallel to that of the platform, which rollers engage said bar,

and permit lateral movement of the car relative to the bar, and means which permit the upward and downward travel of the bar while maintaining it horizontal.

6. In a vertical conveyer of the type which comprises an endless chain to which cars are pivotally secured so that the cars travel in parallel vertical paths and are transferred laterally between such paths, each car including a back and a load-supporting platform projecting therefrom, means engaging the cars during the transfer movement to maintain the load-supporting platform horizontal, said means comprising a horizontal bar, at least two rollers carried by the back of each car in a plane parallel to that of the platform, which rollers engage said bar, and permit lateral movement of the car relative to the bar, and means which permit the upward and downward travel of the bar while maintaining it horizontal, said bar being moved upwardly by said car.

7. In a vertical conveyer of the type which comprises an endless chain to which cars having load supporting platforms are pivotally secured so that the cars travel in parallel vertical paths and are transferred laterally between such paths, means engaging the cars during the transfer movement to maintain the load-supporting platform in planes parallel to a selected normal plane, said means comprising a vertically movable element and members on the car which engage and move such element vertically while maintaining the element at all times in planes parallel to that which it occupied when engaged by the members.

8. In a vertical conveyer of the type which comprises an endless chain to which cars having load supporting platforms are pivotally secured so that the cars travel in parallel vertical paths and are transferred laterally between such paths, means engaging the cars during the transfer movement to maintain the load-supporting platform horizontal, said means comprising a vertically movable element and members on the car which engage and move such element vertically while maintaining the element at all times horizontal.

9. In a vertical conveyer of the type which comprises an endless chain to which cars are pivotally secured so that they travel in parallel vertical paths and are transferred laterally between such paths, each car including a back and a load-supporting platform, means for preventing swaying of the cars during such lateral transferring, comprising a vertically movable bar, means for controlling such movement of the bar and means carried by the back of the car which means, engaging and remaining in contact with the bar during the transfer, positively raise the bar and permit it to descend while maintaining it at all times in planes parallel to that which it occupied when initially engaged by the car carrying means.

10. In a vertical conveyer of the type which comprises an endless chain to which cars are pivotally secured so that they travel in parallel vertical paths and are transferred laterally between such paths, means for preventing swaying of the cars during such lateral transferring, comprising a vertically movable bar, means for controlling such movement of the bar and means carried by the car which means, engaging and remaining in contact with the bar during the transfer, positively raise the bar and permit it to descend while maintaining it at all times in planes parallel to that which it occupied when initially engaged by the car carrying means.

11. In a vertical conveyer of the type which comprises an endless chain to which cars are pivotally secured so that they travel in parallel vertical paths and are transferred laterally between such paths, means for preventing swaying of the cars during such lateral transferring comprising a normally horizontal and vetrically movable bar, means for controlling such vertical movement of the bar consisting of chains to which the bar is secured and members carried by the car which members, engaging and remaining in contact with the bar during the transfer, positively raise the bar and permit it to descend while maintaining it at all times horizontal.

WILLARD A. MARCY.