Oct. 25, 1932. H. H. MORGAN 1,884,112

CONVEYER

Filed March 17, 1930 4 Sheets-Sheet 1

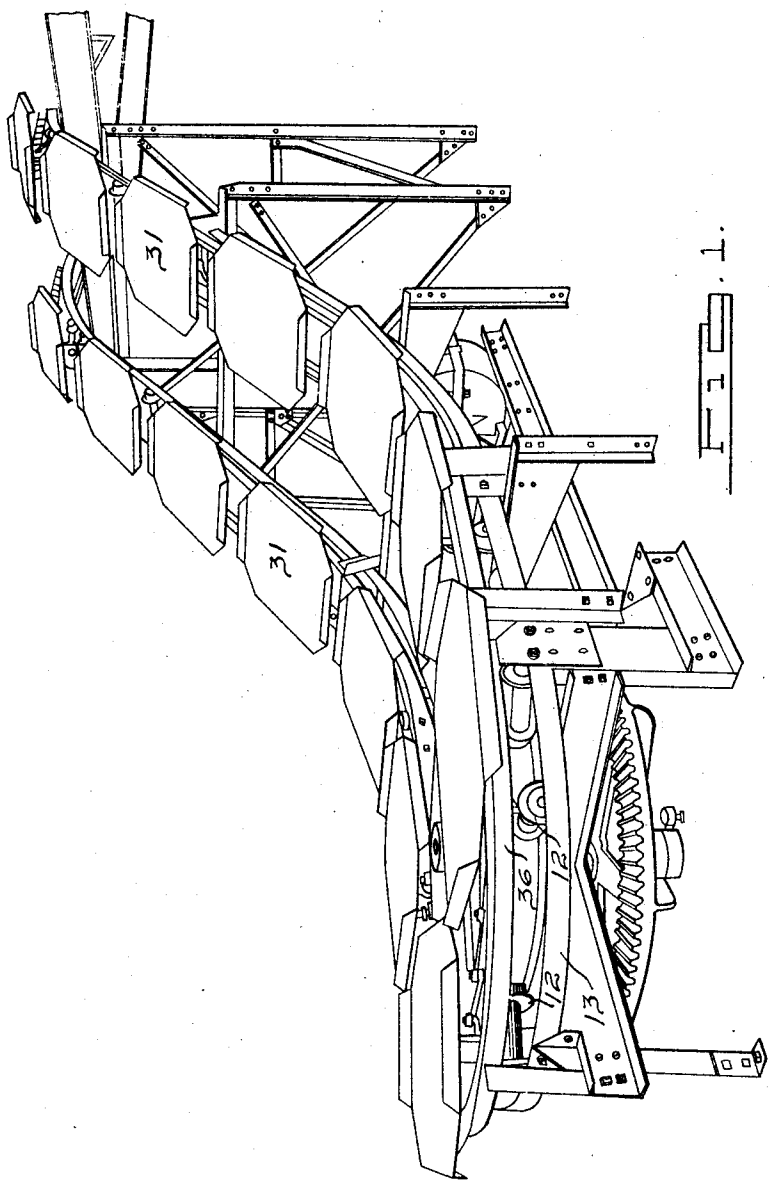


Fig. 1.

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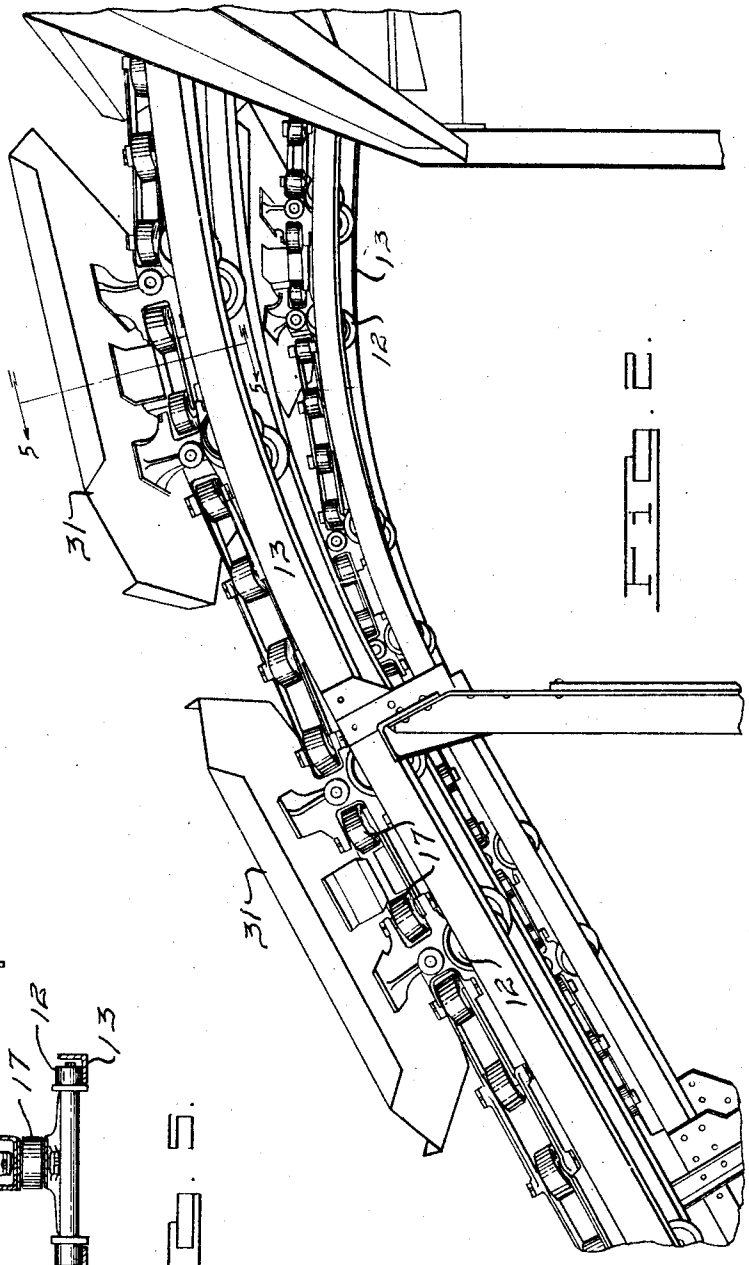


Fig. 2.

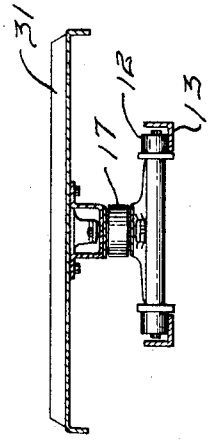


Fig. 5.

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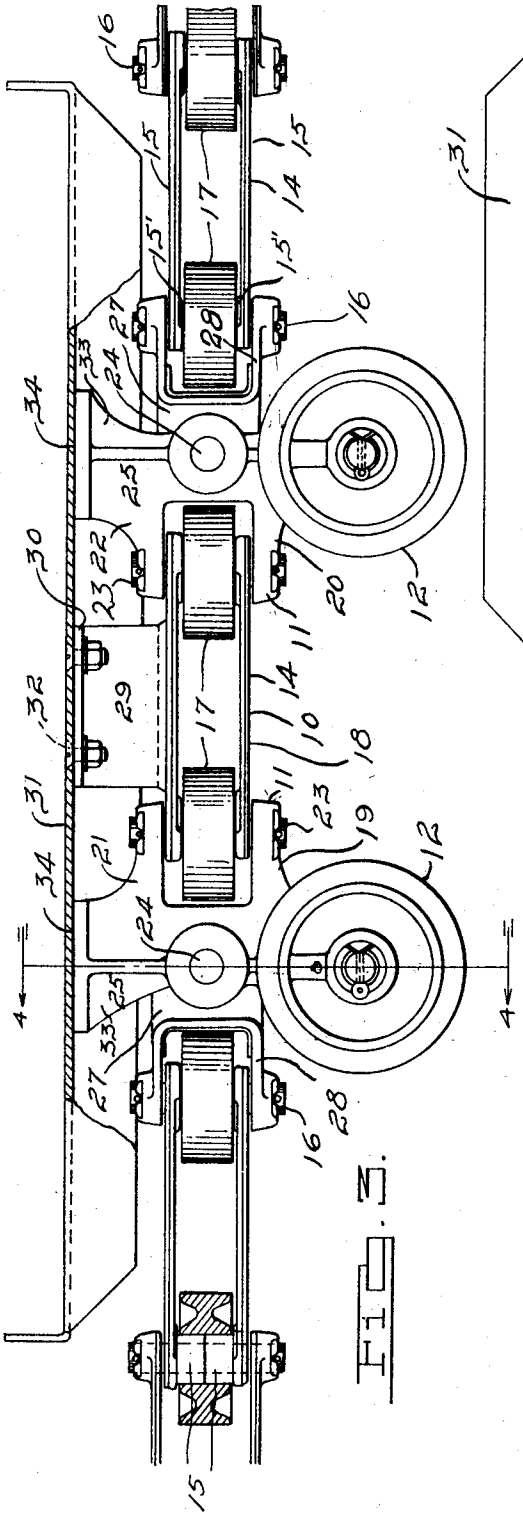


Fig. 3.

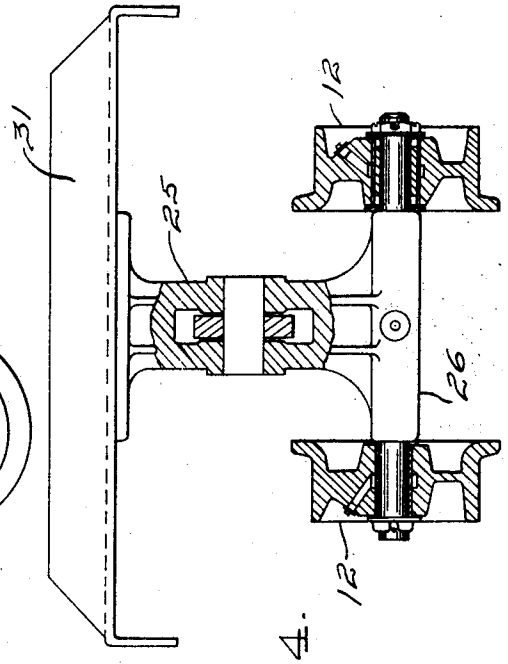


Fig. 4.

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CONVEYER

Filed March 17, 1930 4 Sheets-Sheet 4

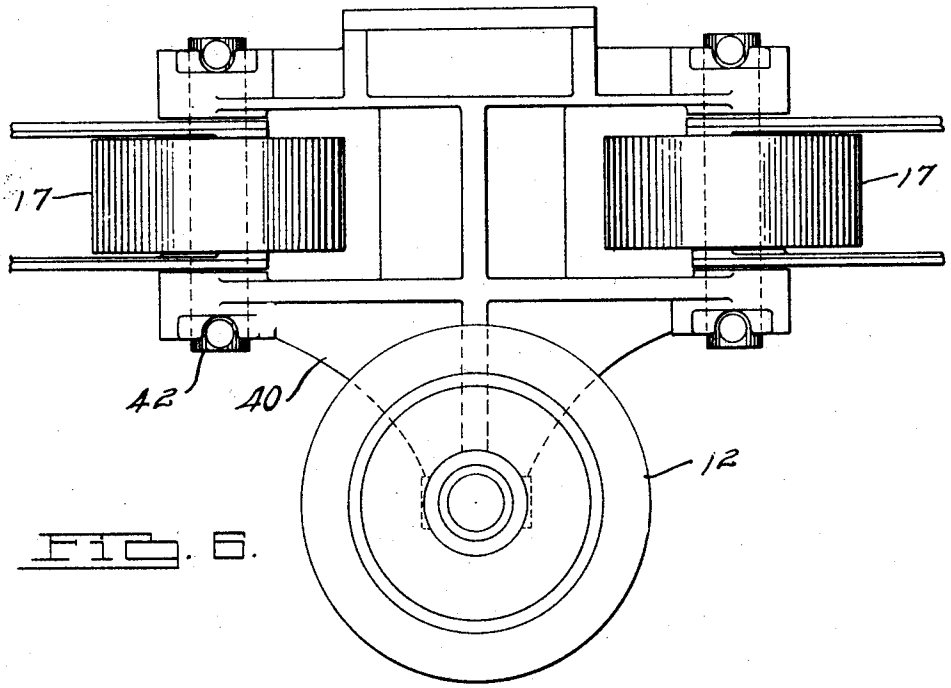


Fig. 6.

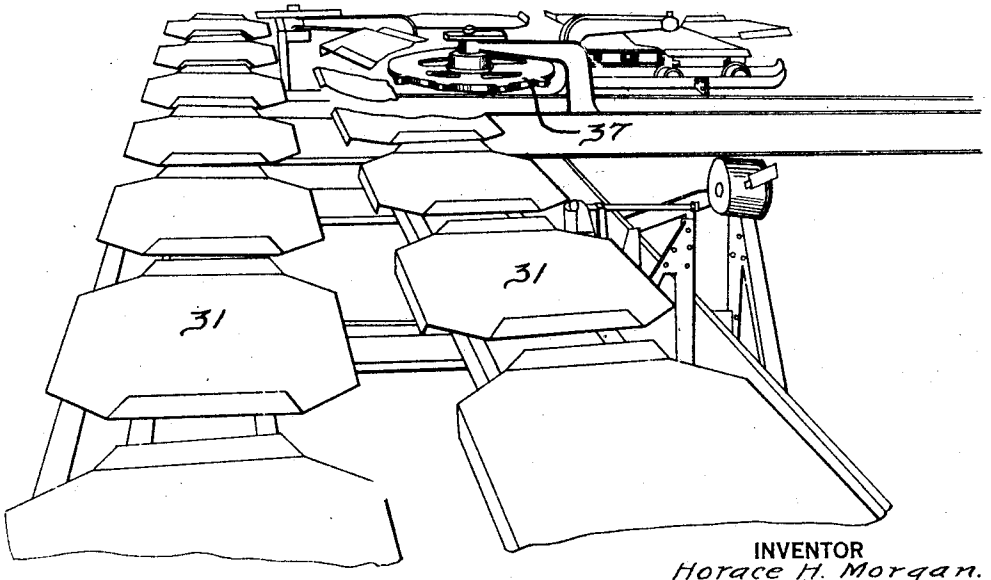


Fig. 7.

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Patented Oct. 25, 1932 1,884,112

UNITED STATES PATENT OFFICE

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CONVEYER

Application filed March 17, 1930. Serial No. 436,615.

This invention relates to conveyers and more particularly to so-called carryall conveyers and has as one of its primary objects to simplify, render more efficient and improve generally conveyer systems.

Other objects of the present invention are attributed to the novel construction of the conveyer and the connection of the load carrying means therewith which renders it possible to curve the conveyer in transverse planes and thereby greatly increase the field of use of the conveyer.

The construction of the conveyer and associated parts thereof as well as the objects derived from its use will be more readily apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a fragmentary perspective view of a conveyer system constructed in accordance with this invention.

Figure 2 is a view similar to Figure 1 showing more particularly the manner in which the flexible driving member of the conveyer is supported from the track and also the manner in which the load carrying means is connected to the driving member.

Figure 3 is a fragmentary enlarged side elevational view of the conveyer.

Figure 4 is a sectional view taken on the line 4—4 of Figure 2.

Figure 5 is a sectional view taken on the line 5—5 of Figure 2.

Figure 6 is a view similar to Figure 3 showing a slightly modified form of construction.

Figure 7 is a fragmentary diagrammatical view showing still another modification of the invention.

Referring now to the drawings, it will be noted that there is illustrated in Figures 1 to 3, inclusive, a so-called carryall conveyer system comprising a chain 10 and members in the form of trucks 11 carried by the chain at longitudinally spaced points throughout the length thereof and carrying anti-friction rollers 12 engageable with a suitable track 13 for accurately guiding the chain in a predetermined path. The chain 10 is preferably of the roller type and is formed of a series of links 14 comprising spaced side bars 15 having the adjacent end portions thereof pivotally connected together to form the chain by means of suitable pins 16 extending through the bosses 15′ projecting inwardly from the ends of the bars 15. As shown particularly in Figure 3, the bosses 15′ function as spacers for the bars and form bearings for the rollers 17. The rollers 17 are arranged in a plane substantially parallel to the plane of advancement of the chain and serve to guide the chain when the latter is curved in a substantially horizontal plane as will be more fully hereinafter set forth.

In order to permit the chain or conveyer to be curved in both horizontal and vertical planes without disturbing the load on the conveyer, I provide the following mechanism. As pointed out above, the chain is supported from the track 13 by means of the trucks 11 secured to the chain at longitudinally spaced points. These trucks are preferably arranged in pairs, as illustrated in Figure 3 of the drawings, and the corresponding trucks of each pair are spaced from each other a predetermined distance. The distance between corresponding trucks may vary in accordance with the design of the conveyer but, as shown herein, is substantially equal to the length of one of the chain units or links. In other words, the corresponding trucks are connected together by one of the links of the chain designated in Figure 3 by the reference character 18. As shown in this latter figure, the corresponding truck members 19 and 20 are interposed between the opposite ends of the chain unit or link 18 and the adjacent ends of the remaining portions of the chain and serve to establish a connection between the latter portions of the chain and the ends of the link 18 as will be presently set forth. Each of the truck members 19 and 20 are formed with laterally extending spaced ears 21 and 22 projecting toward each other and spaced apart a sufficient distance to receive the end portions of the link 18. The ears 21 and 22 are provided with aligned openings having the axes thereof arranged substantially parallel to the axes of the pins 16 and are adapted to receive the pins 23 which serve to

pivotally connect the link 18 to the trucks and form supports for the rollers 17. It will be understood from the foregoing that the axes of the pins 23 also extend transversely to the axes of the rolls 12 with the result that these pins perform the additional function of pivotally connecting the ears to the opposite ends of the link 18 in such a manner as to permit a swinging movement of the trucks 19 and 20 relative to each other in a plane parallel to the plane of advancement of the chain, or as shown herein in a substantial horizontal plane.

The truck members 19 and 20 are pivoted to the remaining portions of the chain by means of suitable pins 24 extending through the bifurcated body portions 25 of the truck members and having the axes thereof arranged transversely to the axes of the pins 23 and 16 and substantially parallel to and in the same vertical plane as the axes of the axles 26 for the track engaging wheels 12 of the truck members. The connection between the pins 24 and chain comprises suitable attaching elements 27 having portions extending between the furcations of the body portion 25 and journaled upon the pins 24 and having spaced ears 28 extending upon opposite sides of the portions of the chain beyond the truck members and pivotally connected to the said portions of the chain by means of the pins 16. Thus from the foregoing it will be observed that the truck members 19 and 20 are not only capable of relative movement about the axes of the pins 23 but are also capable of relative movement about the axes of the pins 24 which are arranged transversely to the axes of the pins 23. In other words, the construction is such as to permit movement of the conveyer in planes transverse to each other as shown in Figures 1 and 2 of the drawings.

Referring now more particularly to the means for supporting the load upon the conveyer, it will be observed from Figure 3 that the upper bar of the link 18 is provided with upwardly extending projections 29 terminating in oppositely extending foot flanges 30 adapted to be secured to a load carrying tray 31 by means of the securing elements 32. The projections 29 may be either secured to the link 18 in any suitable manner such as by welding or by suitable fastening elements. While it has been stated that the load supporting trays are secured to the links 18, it will be noted in Figure 3 that the load carried by the trays is distributed and supported mainly by the truck members 19 and 20. In order to accomplish this result, the aforesaid truck members are provided with extensions 33 having substantially flat upper surfaces 34 for engaging the underside of the trays. The medium line of the surfaces 34 is preferably in alignment with the axes of the axles 26 so that the major portion of the load on the trays is carried by the track engaging rollers 12 mounted on the axles 26. It should be understood that the load supporting surfaces 34 on the truck members are not secured to the tray but are capable of a sliding movement relative thereto so that the truck members 19 and 20 may be swung about the pins 23 without disturbing the load carrying tray.

For curving the conveyer in a substantially horizontal plane, a second track 36 may be provided. This track, as shown in Figure 1, is curved to a predetermined degree and is supported opposite the rollers 17 so as to engage the latter and compel the same to follow the path determined by the track. The track 13 for the rollers 12 is likewise curved so as to insure proper turning of the conveyer. It should be understood, however, that numerous methods may be employed for deflecting the conveyer out of its path of travel as diagrammatically shown in Figure 7 wherein a sprocket wheel 37 is rotatably mounted upon the frame of the conveyer in a position to engage the rollers 17 and thereby compel the chain to curve as illustrated. In this connection it is to be noted that the rollers 12 are arranged below the chain or driving member 10 thereby permitting a driving or idler sprocket to engage the chain from the side without interfering with the trucks or load.

Referring now to Figure 6 of the drawings, it will be noted that I have illustrated a modified form of truck member. This truck member is especially designed for use in connection with conveyers where movement of the latter in a vertical plane is not required and differs from the truck members 19 and 20 in that the pins 24 described in connection with the latter truck members is dispensed with, and the ends of the chain beyond the truck members, one of which is illustrated in Figure 6 at 40, are pivoted directly to the truck members by means of pins 42 extending transversely to the path of travel of the chain. Thus it will be seen that the truck members 40 are restricted to turning movement about the pins 42.

While several modifications of the invention have been set forth above, it should be understood that reservation is made to make such changes in the construction as may come within the purview of the accompanying claims.

What I claim as my invention is:

1. A conveyer having in combination, a driving member, supporting means for the driving member secured thereto at spaced points, and load carrying means having a driving connection with the portion of the driving member intermediate the supporting means and having portions slidably supported upon said last mentioned means.

2. A conveyer having in combination, a flexible driving member, a track for guiding the driving member in a predetermined path, means for supporting the driving member from the track including a supporting element carrying a roller engageable with the track, and means for pivotally connecting the supporting element to the driving member including a pin having its axis arranged substantially parallel to the axis of the roll and in substantial vertical alignment with the latter axis.

3. A conveyer having in combination, a traveling chain, a track for guiding said chain in a predetermined path, means for supporting the chain in spaced relation to the track including a member interposed between adjacent links of the chain and carrying a roll engaging the track for supporting the member from the latter, means for pivotally connecting the member to the end portion of one of said links including a pin having its axis arranged substantially parallel to the axis of said roll and in substantially the same vertical plane as the latter axis, and means pivotally connecting said member to the end portion of the other of said links including a second pin having its axis arranged transverse to the axis of the pin aforesaid.

4. A conveyer having in combination, a flexible driving member, a track for guiding the driving member in a predetermined path, means for supporting the driving member in spaced relation to the track including a supporting element carrying a roller engaging the track for supporting the element from the track, means for pivotally connecting the supporting element to the driving member including a pin having its axis arranged substantially parallel with the axis of the roll and in substantially the same vertical plane as the latter axis, and means upon said element in substantial vertical alignment with both of the aforesaid axes for supporting the load.

5. A conveyer having a flexible driving member, a track for guiding the driving member, means for supporting the member from the track including a truck having anti-friction means engageable with the track, means pivotally connecting the truck to said driving member permitting a swinging movement of the truck relative to portions of the driving member, and a load carrying member secured to the driving member and slidably supported on said truck whereby the latter carries the major portion of said load.

6. A conveyer having a flexible driving member, a track for guiding the driving member, means for supporting the member from the track including a pair of trucks carried by the driving member at longitudinally spaced points and having anti-friction means engageable with the track, means pivotally connecting said trucks to the driving member permitting relative swinging movement of the tracks in the normal plane of travel of the driving member, and load carrying means secured to the portion of the driving member intermediate the trucks and slidably supported upon the latter whereby substantially all of the load is carried by the trucks.

7. A conveyer system including a pair of spaced trucks having anti-friction elements engageable with a track, a traveling chain having spaced end portions pivotally connected to each of said trucks, a link establishing a connection between the trucks permitting relative movement of the latter about the pivotal connections aforesaid, and load carrying means secured to said link and slidably supported on said trucks whereby the latter carry substantially the entire load.

8. A conveyer system including a pair of spaced trucks having rollers engageable with a track, a traveling chain having spaced end portions connected to each of said trucks, a link establishing a connection between the trucks, and load carrying means secured to said link and supported on said trucks whereby the latter carry substantially the entire load.

9. A conveyer having in combination, a track, a driving member spaced from the track and extending in the direction of the latter, means for supporting the driving member spaced from the track and also for guiding the said member from the track, said means including a pair of elements secured to the driving member in spaced relation longitudinally thereof, a load supporting platform having portions adjacent the ends thereof supported by and movable bodily relative to the upper ends of said elements, and means connecting the load supporting platform intermediate the supporting elements to the driving means for driving the former from the latter.

10. A conveyer having in combination, a track, a driving member extending in the direction of the track, means for supporting the driving member from the track and also for guiding said member from the track, said means including a pair of supporting elements pivotally connected to the driving member at spaced points, a load supporting platform having portions supported upon the upper ends of the supporting elements whereby substantially the entire load on the platform is transmitted to the tracks through the said elements, and means establishing a connection between the driving member and platform intermediate the supporting elements for effecting a driving connection between the load supporting platform and driving member.

11. A conveyer system having in combina-

tion, a track, a pair of spaced trucks engaging said track, means connecting the trucks together forming a carriage, a driving member for moving the trucks along the track having spaced ends pivotally connected to the trucks by means of pivots arranged substantially parallel to each other, a load carrying platform supported upon said trucks for movement relative thereto, and means connecting the load carrying platform to the means aforesaid to effect a driving connection between the platform and carriage.

12. A conveyer system having in combination, a track, a pair of spaced trucks engaging the track, means for connecting the trucks together to form a carriage comprising a member having the opposite ends pivotally connected to the trucks by means of pivots having parallel axes, and a driving member for the trucks having the adjacent ends pivoted to the latter by means of pivots having their axes arranged substantially parallel to each other and extending in a direction transverse to the direction of the first-mentioned pivots.

13. A conveyer having in combination a track, a driving member spaced above the track, a plurality of supporting elements connected to the driving member in spaced relation longitudinally thereof, anti-friction members for carrying the supporting elements upon the track, the anti-friction members being below the median plane of the driving member, a load supporting member supported upon the upper ends of the supporting elements and located above the median plane of the driving member, and means establishing a connection between the driving member and platform intermediate adjacent supporting elements for effecting a driving connection between the load supporting member and the driving member.

14. A conveyer having spaced trucks adapted to be supported upon a track, a driving member having spaced end portions connected to the trucks and link means establishing a connection between the trucks, and load carrying means secured to the link means and supported on the trucks.

15. A conveyer having in combination, a driving member, a track for guiding the driving member in a predetermined path, means for supporting the driving member from the track including a supporting element carrying a roller engaging the track and having its axis of rotation extending at right angles to the driving member, and means pivotally connecting the supporting element to the driving member including a pin having its axis arranged substantially parallel to the axis of the roll and in substantially the same vertical plane as the latter axis.

In testimony whereof I affix my signature.

HORACE H. MORGAN.