Oct. 10, 1950 G. MANIERRE 2,525,555

SECTIONAL SUPPORT FOR PORTABLE CONVEYERS

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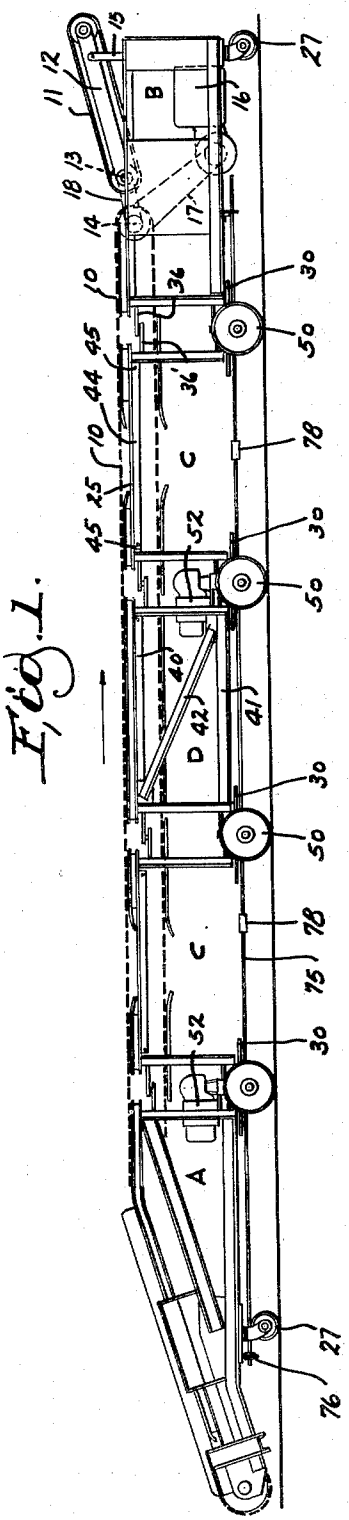


Fig. 1.

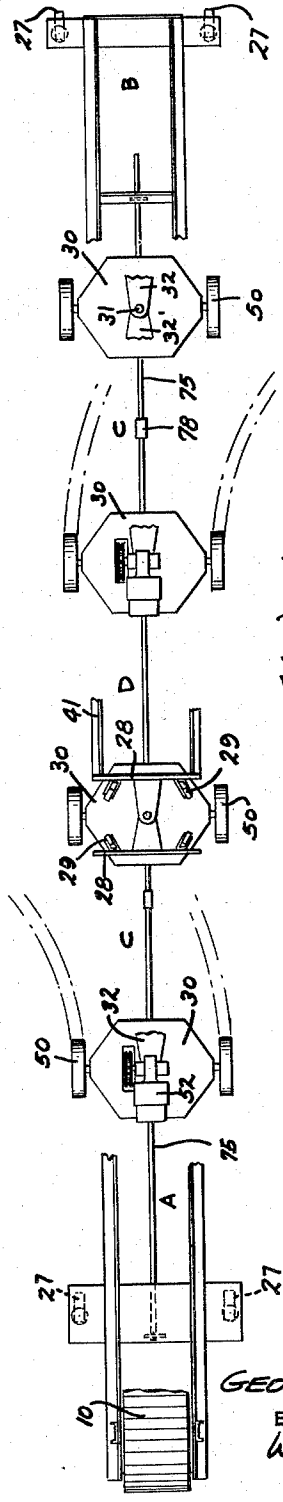


Fig. 2.

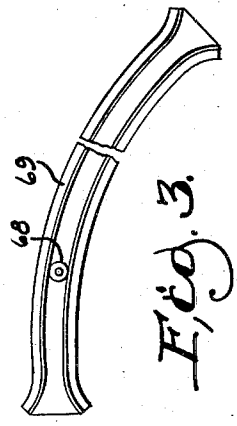


Fig. 3.

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Fig. 4.

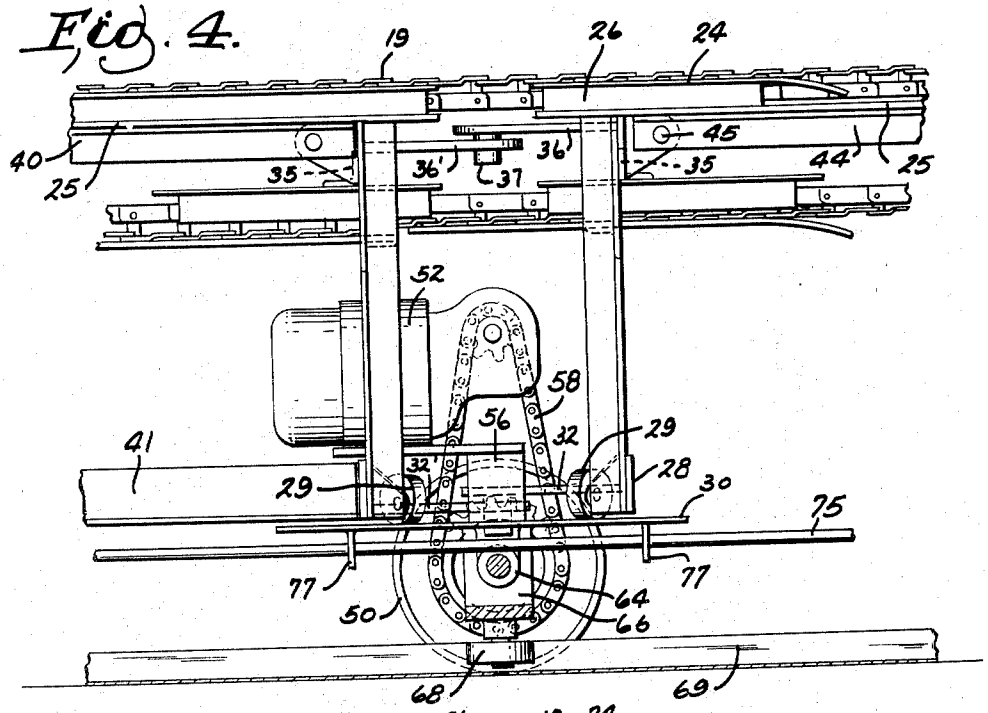
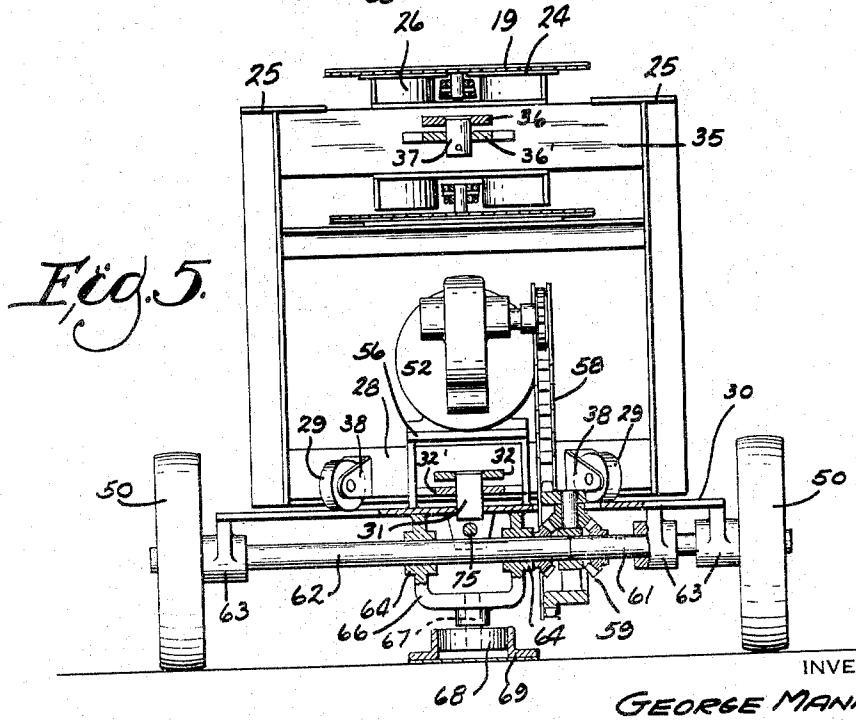


Fig. 5.



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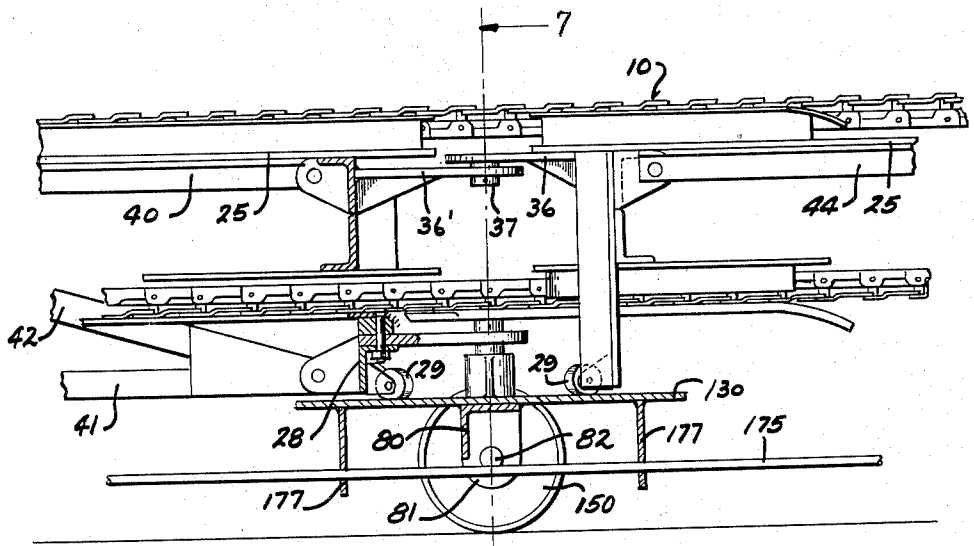


Fig. 6.

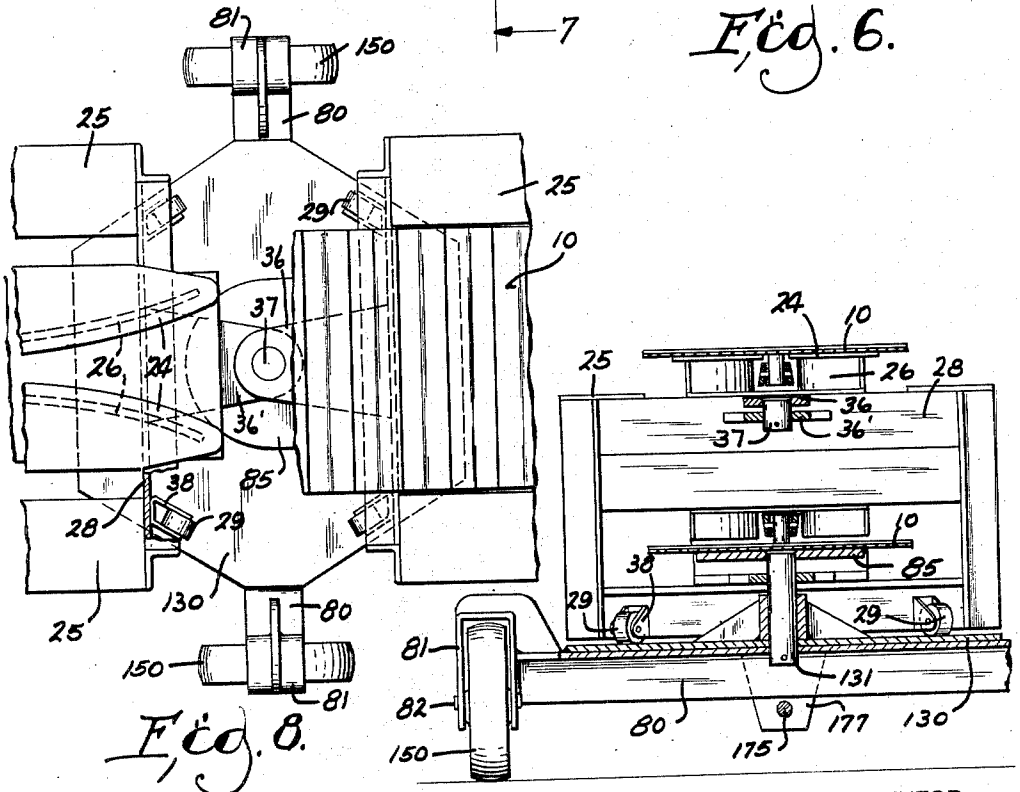


Fig. 8.

Fig. 7.

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UNITED STATES PATENT OFFICE

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SECTIONAL SUPPORT FOR PORTABLE CONVEYERS

George Manierre, Milwaukee, Wis.

Application November 7, 1945, Serial No. 627,164

3 Claims. (Cl. 198—109)

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My invention relates to improvements in sectional supports for portable conveyors, with particular reference to conveyors of the general type described in my former Patent No. 2,250,933, dated July 29, 1941.

The object of this invention is to provide a train of wheel supported frame sections having increased flexibility at the frame section joints, combined with greater stability and ease of manipulation than has heretofore been possible to obtain.

A further object is to provide a simplified and inexpensive conveyor supporting structure peculiarly adapted for unloading operations.

More specifically stated, my object is to provide a train of pivotally connected conveyor supporting frame members or sections with wheel supported platforms at the joints, upon each of which platforms the ends of two frame sections may have anti-friction bearing along a circular path concentric with the pivot axis, and to provide improved means for controlling the pivotal movements of the respective sections with reference to each other, whereby a flexible conveyor may be supported for travel along either a straight or a serpentine path leading from a loading to an unloading station.

In the drawings:

Figure 1 is a side elevation of an unloading conveyor embodying my invention.

Figure 2 is a plan view of a set of resiliently connected two-wheeled trucks, having platforms mounted thereon for transporting and positioning the flexibly connected conveyor supporting frame sections shown in Figure 1, and showing driving motors mounted on two of the platforms.

Figure 3 is a detail view of one of the guideways and a truck guiding roller.

Figure 4 is an enlarged side elevation of fragments of two of the connected intermediate sections shown in Figure 1.

Figure 5 is an end elevation of one of the motor supporting sections, partly broken away to show the differential gearing to which the motor is connected.

Figure 6 is a side elevation of fragments of two pivotally connected conveyor supporting sections, showing a modification.

Figure 7 is a section taken on line 7—7 of Figure 6.

Figure 8 is a plan view of the modified structure shown in Figures 6 and 7.

Like parts are identified by the same reference characters throughout the several views.

In the embodiment of my invention shown in

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Figures 1 to 5, inclusive, the conveyor 10 may be assumed to be a universally flexible endless conveyor, such, for example as that shown in my former Patent 2,250,933. It is mounted on a portable support composed of spaced, flexibly connected sections, some substantially rigid and pivotally connected with other sections for relative swinging movement in a horizontal plane, and others similarly connected but having their end frames linked for swinging movement in a vertical plane, whereby the support as a whole may be propelled along a serpentine path which may be wholly or partially horizontal or inclined, or pitched at various angles in different portions thereof.

In Figure 1, I have illustrated five of these sections, including a receiving section A at the left, three intermediate sections and a delivery section B at the right. Two intermediate sections C are flexible in vertical planes and one substantially rigid intermediate section D is located between the sections C. But the number of intermediate sections may be varied indefinitely in correspondence with the length of the conveyor 10 as used for any given installation.

The delivery section B carries an unloading conveyor 11, preferably of an ordinary endless belt type. The receiving end of its frame 12 is pivoted to a cross shaft 13 adjacent the cross shaft 14 at the delivery end of the conveyor 10. The other end of the frame 12 is carried by vertically adjustable supports 15 whereby this end of the unloading conveyor may be manually raised or lowered according to the height of the pile of articles.

A conveyor driving motor 16 is mounted on this section B and drives the conveyor 10 through a chain 17. The conveyor 11 is driven from cross shaft 14 through a chain 18 and cross shaft 13. The flights 19 of the conveyor 10 are supported at intervals by plates 24 carried by the intermediate frame sections, which also carry top plates 25 flanking the conveyor 10. Chain guides 26, similar to those disclosed in said former patent are also employed. All of these parts may be of known construction, and as they are not claimed herein, they require no further description.

The receiving and delivery sections A and B may be provided with casters or caster-like rollers 27, but the lower cross bars 28 of their opposing end frames have anti-friction bearings resting on wheel supported platforms 30.

The platforms 30 are each provided with a central pivot post or king bolt 31, and the cross bars 28 of each section are provided with spacing arms

32, 32', (Figure 4), pivotally connected with their associated pivot posts 31. The upper cross bars 35 of each section have similar spacing arms 36, 36' pivotally connected with each other at 37 in the axial lines of the respective pivot posts 31. Therefore each section may swing horizontally with reference to the sections to which it is connected. In the construction illustrated, their anti-friction bearings 29 comprise rollers journaled in ear-shaped brackets 38 carried by the bars 28 and obliquely positioned for travel of the rollers 29 along a circular path concentric with their associated pivot posts at a radius determined by the arms 32 and 36, 32' and 36'.

The end frames of the sections D are connected at top and bottom by side bars 40 and 41 and oblique braces 42. Therefore these sections are substantially rigid. The end frames of the intermediate sections C have only their upper portions connected by link bars 44 pivoted at 45 to the respective end frames, and these link bars are capped by flexible plates 25 which project loosely over the end frames to allow the sections to swing upon each other in vertical planes.

Each platform 30 may be supported by a pair of widely spaced wheels 50, and some of the platforms may be provided with motors 52 (Figure 5), mounted on open-ended housings 56 which cover the pivot posts 31. These motors may each be connected to drive their associated wheels 50 through a motor driven sprocket chain 58, a differential gear set 59, and live axles 61 and 62 journaled in bearings 63 and 64 depending from the respective platforms.

The bearings 64 have a depending bracket 66 provided with a stud shaft 67 provided with an idle roller 68 adapted to travel in a suitable guideway 69. Curved guideways 69 (Figure 3), may be employed at all bends in the line of conveyor travel, and the rollers 68, supported from the two spaced bearings 64 will cause the axles to assume positions at right angles to the line of travel when traversing curves. Platforms not provided with motors may be supported by any suitable axles from their associated idle wheels 50, as indicated, for example, in the modified construction shown in Figures 6, 7, and 8, and hereinafter described.

In order that the train of sections may be propelled in either direction along either a straight or sinuous path without forming abrupt corners or angles, which would interfere with conveyor movement, all of the sections are yieldingly connected by a resilient rod 75, one end of which is secured to one of the end sections as indicated at 76 in Figure 1.

The rod 75 passes loosely through apertures in hangers 77 depending from the various platforms 30, each platform having at least two hangers 77, (Figure 4), near its front and rear margins. The rod is preferably formed of steel sections connected end to end at 78, and it has sufficient resistance to bending stress to require the train of sections to follow a broad arcuate curve in passing around corners. Location of this rod below the platforms and between wheels 50, which are set wide apart, gives added stability to the structure.

The platforms 30 not only provide supports and circular runways for the rollers 29 carried by the end frames of the respective sections, but they also make it possible to support the motors 52 therefrom by means of open-ended housings 56 which cover the pivot posts 31, and to use hangers 77 to support the resilient rod 78 immediately above the live axle 62, (Figure 4), or even below it

(Figure 6). By utilizing motors 52 to differentially drive the widely spaced traction wheels 50 through their live axles 61 and 62, it becomes possible to dispense with the centrally disposed single traction wheels disclosed in my former patent and substitute therefor the idle guide rollers 68 which travel in rolling point contact in the runways 69 to steer the apparatus along curved lines as above explained.

In the present structure, traction is applied on both sides of the line of guidance, and the guide rollers 68 have their vertical shafts 67 in the same plane with the live axles 61 and 62. This reorganization provides improved traction and greatly increased stability, due to the new relation of rod 78 to the traction wheels and the platforms.

The modification disclosed in Figures 6, 7 and 8 is designed for use in connection with small or lightly loaded conveyors which do not require motors and traction wheels to propel the apparatus from place to place. In this modified construction a platform 130, corresponding to the platform 30 in Figures 1 to 5, inclusive, is mounted directly upon the horizontal flange of an angle-shaped axle bar 80 which has forked end portions 81 in which are mounted the wheel axles 82 upon which the wheels 150 may be idly mounted, as shown in Figures 6, 7 and 8. If the articles to be carried by the conveyor 10 are of light weight the entire assembly may be of correspondingly light weight and the sections may be of less weight. This also allows a further reduction in weight, whereby the entire assembly may be manually propelled into and out of position for use.

As shown in Figures 6, 7 and 8, the rod 175 may be suspended by hangers 177 below the axles 80. The king bolt or post 131 may connect the axle bar 80, platform 130, and the plate 85 upon which the conveyor chain bears on the return side. In both forms of construction, the hangers 77 (or 177), are substantially rigid and are rigidly connected with the front and rear marginal portions of the respective platforms. The spacing arms 32, 32', 36 and 36' are of sufficient length to allow each section to swing horizontally to the extent permitted by the resilient rod 75 without bringing one side of its end frame into contact with the end frame of the next section.

I claim:

1. In combination with a universally flexible endless conveyor a plurality of conveyor supporting sections having spaced links pivotally connected with each other for swinging adjustment of the section in a horizontal plane, of wheel supported platforms each positioned underneath the ends of two pivotally connected sections, and rollers carried by each section for travel on its associated platform along a circular path concentric with the pivotal axis of the connection between the sections.

2. In combination with a universally flexible endless conveyor comprising a plurality of conveyor supporting sections severally having spacing links extending from the top and bottom at the ends thereof, the top and the bottom links of adjacent section ends being pivotally connected with each other for swinging adjustment of the sections in a horizontal plane, wheel-supported platforms positioned beneath the spacing links of each two pivotally connected sections, and rollers carried by each section for travel on the associated platforms in a circular path concentric with the axes of the pivotal connections between the spacing links of the sections.

3. In combination with a universally flexible endless conveyor comprising a plurality of conveyor supporting sections severally having spacing links extending from the top and bottom at the ends thereof, the top and the bottom links of some of the adjacent section ends being pivotally connected in vertically spaced relation with each other for swinging adjustment of the sections in both horizontal and vertical planes, the pivots being axially alined, wheel-supported platforms positioned beneath the spacing links of each two pivotally connected sections, and rollers mounted in supporting relationship upon each section for travel on the associated platforms in a circular path concentric with the axes of the pivotal connections between the sections.

GEORGE MANIERRE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,250,933	Manierre	July 29, 1941

FOREIGN PATENTS

Number	Country	Date
486,833	France	Feb. 19, 1918