

April 19, 1932.

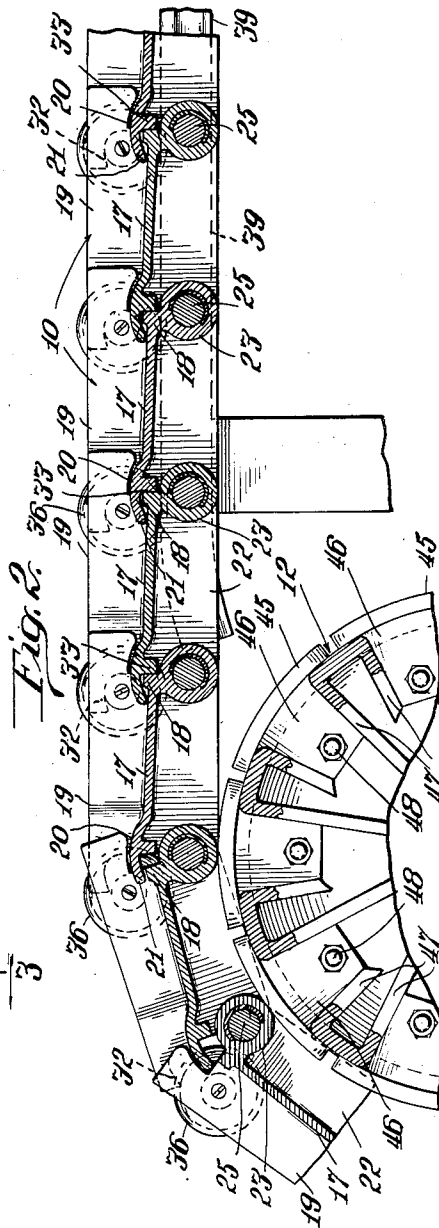
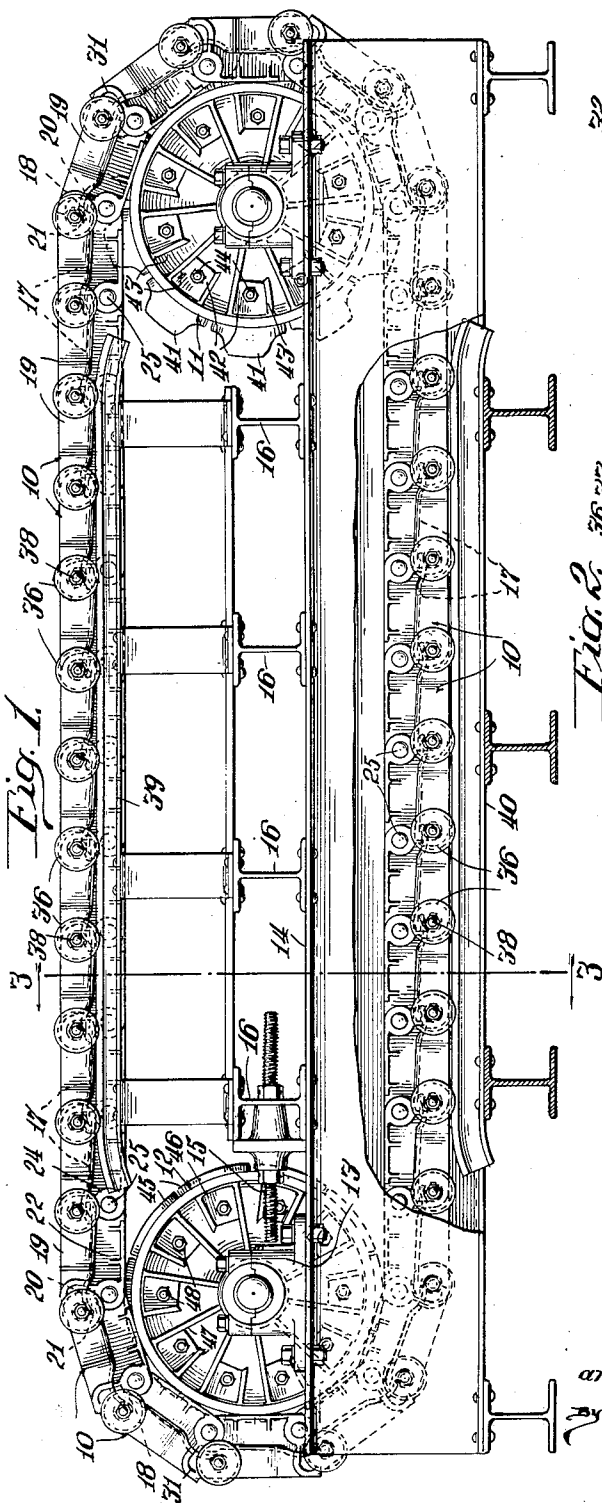
K. JENSEN ET AL

1,854,334

CONVEYER

Filed Dec. 10, 1930

2 Sheets-Sheet 1



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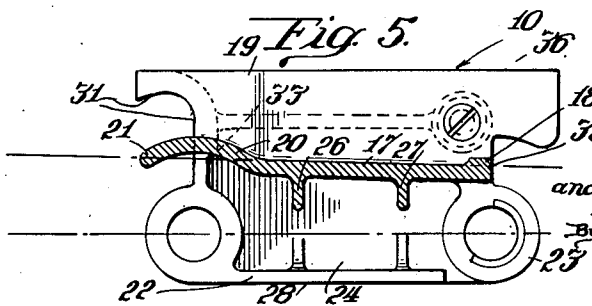
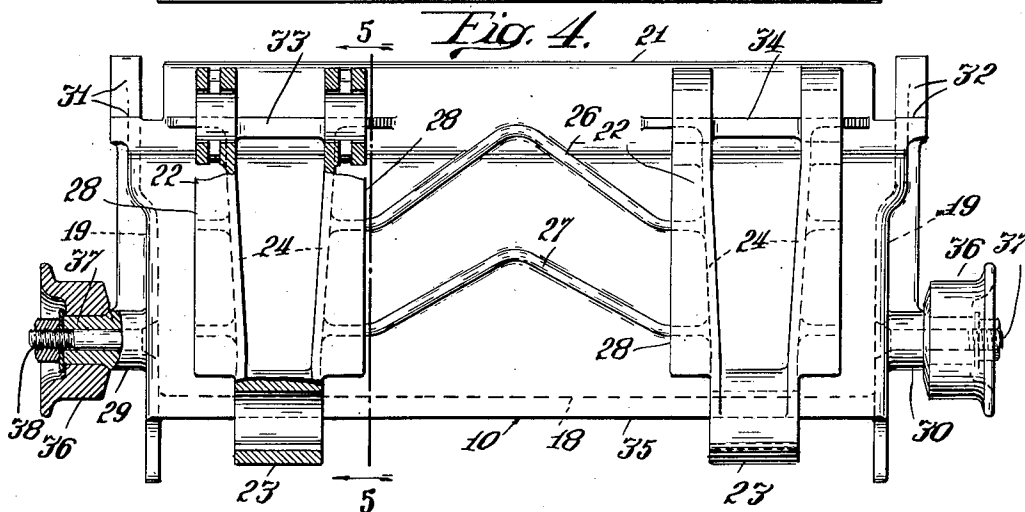
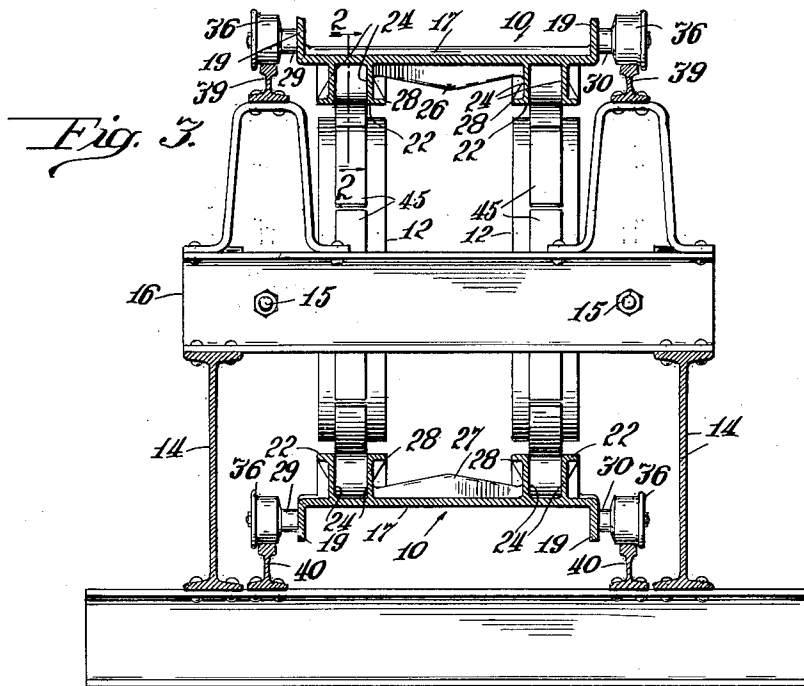
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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CONVEYER

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Our invention relates to conveyers of the link belt type in which a plurality of pivotally connected belt sections are so supported as to provide a conveyer having upper and lower runs.

One object of the invention is to provide a link belt conveyer made up of a plurality of pivotally connected units which are so formed and supported in overlapped relation that the overlapped edges form double seals to prevent the material being handled from leaking through the spaces between the connected units.

Another object is to provide each unit of the conveyer belt with a plurality of abutments adapted to move into abutting engagement with cooperating abutments of an adjacent unit to prevent any substantial sagging of the connected units. In this connection the invention contemplates abutments which are so formed and located as to move into engagement one with another at a substantial distance from the pivotal axis of the connected units, thereby providing ample strength to support the load on the conveyer without imparting undue strain or wear on the abutting members. Specifically, the invention includes abutments disposed beneath the bottom of one unit adapted to move into engagement with the edge of an adjacent unit and also abutments extending outwardly from the sides of one unit adapted to engage the side walls of an adjacent unit; the said abutments being constructed and arranged to avoid crushing or compressing of material between them when the units move into horizontal alignment.

Another object is to provide a link belt conveyer in which the several sections of the belt are constructed in the form of pans having side walls of substantial height which overlap the side walls of adjacent pans and in which chain links for engagement with driving sprockets are formed integrally with the pan bottom.

Further and more specific objects of the invention will appear from the detailed description of the constructions and operations of the embodiment of our invention shown in the accompanying drawings.

In the drawings:

Fig. 1 is a link-belt conveyer constructed in accordance with our invention.

Fig. 2 is a fragmentary longitudinal section taken through the conveyer belt and a traction wheel, said sectional view being taken on line 2—2 of Fig. 3 looking in the direction indicated by the arrows.

Fig. 3 is a cross sectional view taken through the conveyer on line 3—3 of Fig. 1 looking in the direction indicated by the arrows.

Fig. 4 is an inner plan view of one of the link belt units shown in Figs. 1 and 2, and

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4, but illustrating the unit in its normal upright position.

The embodiment of our invention shown in the accompanying drawings comprises a link belt made up of a plurality of pivotally connected units 10 supported in overlapped relation and constructed, as hereinafter described, to limit the flexing of the belt in one direction. The belt is supported at one end on a pair of driving sprockets 11 and at the other end on a pair of traction wheels 12. The journal bearings 13 of the traction wheels are preferably movably supported on the frame 14 and may be adjusted longitudinally of the frame by means of adjusting screws 15 interposed between the journal bearings 13 and the cross members 16 of the frame. Each unit of our conveyer belt herein shown is made in the form of a pan having a sloping bottom 17 formed at its rear edge with a flange or wall 18 and at the side with side walls 19—19; the upper edges of the latter being preferably formed to move into a horizontal plane alignment with the upper edges of the side walls of adjacent pans of the belt when the connected pans assume a horizontal position. The forward edge of each pan bottom is formed with an upwardly curved portion 20 which extends entirely across the pan and provides a curved tongue 21 which extends over the end wall 18 of an adjacent pan and bears against the inclined bottom surface of said adjacent pan. The bearing of the tongue against the bottom of said pan together with the position of the upwardly

projecting flange 18 provide a double seal to prevent the material being handled from leaking out between the adjacent pans. Any material which may pass beneath the tongue 21 will be retained in the space between the tongue and the flange 18 until the unit moves over the traction wheels 12. This movement of adjacent sections of the belt out of horizontal alignment causes the tongue 21 to move out of engagement with the bottom surface of the adjacent pan (see Fig. 2) and thereby permits the entrapped material to discharge from the pan along with the other material.

Spaced chain link members 22—22 are located near the sides of each pan and are formed integrally with the bottom thereof. Each chain link member consists of a barrel end 23 and side bars 24—24, the latter of which embrace the barrel end of a chain link of an adjacent pan. Suitably pivot pins 25 extend through openings in the side members and barrel end of cooperating links to provide pivotal axes of the connected units. It will be observed that each chain link provides two axes and that a plane including both axes extends at an angle to the surface of the bottom engaged by the curved tongue 21 of an adjacent pan. Reinforcing webs 26—27, preferably of V-shape in plan extend across the space between the chain links of each unit so as to rigidify the chain links themselves and to also strengthen the bottom portion of the pan. The lower edges of the side bars 24—24 of the chain link members are formed with lateral flanges 28 which provide trackways for bearing on the perimeters of the sprocket wheels and traction wheels respectively.

In conveyers of the character herein shown, the material being handled is deposited on the upper run of the conveyer belt. It is therefore desirable that the units of the belt be maintained in rigid relation when they form the upper run of the conveyer. In order to provide the desired rigidity to prevent sagging of the belt, we provide each unit with a plurality of abutments which move into engagement with abutments of adjacent units at points remote from the pivotal axis. To this end we provide the pan side walls with outwardly projecting bosses 29—30 which form abutments for the edges 31—32 of the adjacent walls of a connected pan. These abutments serve to limit the flexing movement of the connected units by coming into engagement one with another when the pivotally connected pans move into horizontal position. The said abutting surfaces are sufficiently remote from the pivotal axis of the connected units that the ordinary wear of the pivot pin 25 or the elongation of the bearing openings of the chain link members will not result in any appreciable sagging of the upper run of the belt. The bosses 29—30 are preferably circular so as to avoid

the collection thereon of the material being handled. The edges 31—32 of the adjacent pan wall are preferably curved so as to permit the use of the circular bosses 29—30 and at the same time provide bearing surfaces of sufficient area to avoid excessive wear. In addition to the abutments above described, each unit is provided with depending flanges 33—34 located beneath the floor of the pan and beneath the curved portion 20 thereof and adapted to move into abutting engagement with the edge surface 35 of the bottom of the adjacent pan when said pans move into horizontal alignment. Preferably the flanges 33—34 extend across the side bars of the chain links, thereby serving both as abutments and also reinforcements for the bottom of the pan. The position of the abutting surfaces 33, 34 and 35 beneath the pan bottom prevent the collection of material thereon. All of the abutments above described, it will be observed, move into engagement one with another in a plane perpendicular to the movement of the conveyer and at locations above the pivotal axis of the connected units.

As a further means of supporting the upper run of the conveyer belt rollers 36—36 are journaled on reduced end portions 37 of the abutment members 29—30. The said rollers 36 are held in position by means of bolts 38. The reference numerals 39 designate trackways on which the rollers 36—36 run to support the upper portion of the conveyer belt. Similar trackways 40—40 are positioned beneath the lower run of the conveyer belt to support it in a substantially horizontal position and thereby relieve the driving sprockets and traction wheels from undue strain.

The teeth 41 of the driving sprocket wheels 11—11 are formed with tapered shank portions 42 which fit in sockets 43. Bolts 44 extend through the shank portion of each removable tooth and through the web portion of the sprocket wheel to hold the tooth firmly in its socket. The periphery of the traction wheels 12—12 are provided with removable pads 45, the pads being formed with shanks 46 adapted to fit in sockets 47 and to be secured therein by bolts 48 in substantially the same manner as described in connection with the sprocket wheel. The provision of removable pads 45 and sprocket teeth 41 makes it practicable to remove and replace these members quickly without disconnecting or dismantling the conveyer belt.

While we have illustrated herein a preferred embodiment of our invention, it will be apparent that various modifications in structure might be made without departing from the spirit of our invention. It will be understood therefore that we contemplate as a part of our invention all such modifica-

tions coming within the scope of the appended claims.

We claim:

1. A link belt conveyer composed of a plurality of pivotally connected units, each unit comprising a floor portion formed along its rear edge with an upstanding flange and formed along its forward edge with a curved lip which normally projects over the said flange of an adjacent unit and bears against the bottom of said unit at a location spaced from said flange, whereby said lip and flange form a double seal between two connected units when said units are moved into horizontal alignment.
2. A link belt conveyer composed of a plurality of pivotally connected units, each unit comprising a floor portion formed on its bottom surface with spaced chain link members, formed along its rear edge with an upstanding flange and formed along its forward edge with a curved lip which normally projects over the said flange of an adjacent unit and bears against the bottom thereof at a location spaced from said flange, whereby said lip and flange form a double seal between two adjacent units when said units are moved into horizontal alignment.
3. A link belt pan conveyer composed of a plurality of pivotally connected units, each unit comprising a pan portion having a bottom and side walls and spaced link members formed integrally with the bottom, the bottom portion of each pan being formed at one end with a lip which overlaps and bears against the bottom of an adjacent pan to form a seal when the units are in horizontal alignment, and provided also with abutments on the pan bottom extending transversely of said link members and adapted to move into abutting engagement with an abutment formed along the edge of the overlapped portion of said adjacent pan.
4. A link belt conveyer composed of a plurality of pivotally connected units, each including a pan portion having a sloping bottom and vertically disposed side walls, spaced chain link members formed integrally with the bottom of each pan portion, reinforcing ribs extending across said bottom portion between said chain link members, and abutment members located beneath the pan bottom of one unit in a position to move into abutting engagement with the rear edge of said adjacent pan and in a plane substantially perpendicular to the movement of said conveyer.
5. In a conveyer made up of a plurality of pan units having bottom and upwardly projecting side walls and linked together in overlapped relation to provide an endless conveyer belt, outward projections formed on the side walls of said pan units adapted to move into abutting engagement with the side walls of an adjacent pan to prevent sag-

ging of the conveyer belt, a trackway positioned at opposite sides of the upper run of the conveyer, and rollers journaled on said outward projections and adapted to run on said trackway.

6. In a conveyer made up of a plurality of pan units having bottom and upwardly projecting side walls and linked together in overlapped relation to provide an endless conveyer belt, outward projections formed on the side walls of said pan units adapted to move into abutting engagement with the side walls of an adjacent pan to prevent sagging of the conveyer belt, a trackway positioned at opposite sides of the upper run of the conveyer, a trackway positioned at opposite sides of the lower run of the conveyer, and rollers journaled on said outward projections and adapted to run on said trackways.

7. A link belt conveyer composed of a plurality of pivotally connected units, each unit comprising a floor portion for receiving the material being conveyed and formed along its rear edge with an abutment surface and along its forward edge with a tongue the latter of which projects over the rear edge portion of an adjacent unit to form a seal, spaced chain link members arranged beneath the bottom of the floor portion, and abutment members depending from the bottom surface of said floor portion at locations adjacent said tongue portion and adapted to move into abutting engagement with the rear edge of said adjacent unit and in a plane substantially perpendicular to the path of movement of the conveyer.

8. A link belt conveyer composed of a plurality of pivotally connected units, each including a pan portion having a bottom and upwardly projecting side walls, and chain link members on the underside of the bottom of each pan portion and pivotally connected with link members of adjacent units, the bottom of each pan portion sloping from end to end with respect to the plane of the path of movement of a straight run of the conveyer, the higher end of one bottom being formed to overlap the lower end of the adjacent bottom, and an abutment member formed on the lower surface of the higher end portion of the first mentioned bottom adapted to engage the end edge of the lower end of the adjacent bottom to prevent sagging of the conveyer.

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