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CONVEYER DRIVING MECHANISM

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This invention relates to conveyer driving mechanism and it has particular relation to mechanism for driving and supporting conveyers and belts fabricated from a plurality of interconnected laterally extending wire helices.

Hereinafter, great inconvenience has been encountered by the inherent tendency for a conveyer or belt of the type mentioned to creep transversely on the driving drum or supporting roller with which the conveyer frictionally engages. This tendency is caused by the turn or twist of the individual helices as they successively frictionally engage the tractive surface of the drum at the line of tangency between the plane of the article bearing strand of the conveyer and the circumference of the driving drum or roller, and then change their direction of travel from a rectilinear direction to a curvilinear direction. When any given helix of a conveyer of this type engages a driving drum having a tractive surface, the friction therebetween is sufficient to prevent any longitudinal or axial movement of the helix, and consequently as it changes its direction of movement in conforming to the curvature of the drum, each of its convolutions exerts a camming or corkscrew action upon the interconnecting convolutions of the following helix, with the result that the following helix is forced in a longitudinal direction relative to the leading helix and is led onto the drum laterally offset with respect thereto. This following helix then becomes the leading helix and in turn becomes fixed on the drum as against longitudinal movement and exerts the camming or corkscrew action upon the next following helix, and this action is repeated as each helix engages the drum. If the drum continues to rotate, the conveyer will eventually creep laterally on the drum to such an extent that either the edge of the conveyer becomes deformed through frictional engagement with other mechanism at the side of the device or creeps entirely off of the drum if free to do so. In short, the problem presents a question of action and reaction in which the helix of the conveyer which is in engagement with the drum, being immovable in a longitudinal direction, transmits axial movement to the next following helix as it is being led onto the drum. The amount of the longitudinal movement of each helix as it is led onto the drum or roller is determined entirely by the pitch distance of the convolutions of the helices of which the conveyer is fabricated and the diameter of the drum or roller and the direction of creepage depends upon whether the helices are right or left hand wound.

For example, if two interconnected helices only are considered, and one is held against longitudinal movement and at the same time is rotated 360°, it will force the other helix longitudinally a distance equal to one pitch in the same manner as two members having screw-threaded engagement with one another. If a section of a conveyer having a length equal to the circumference of a drum is wrapped about the drum, it will be noted that the abutting ends of the section will be offset laterally relative to one another a distance equal to the pitch of the helices of which such section is fabricated. In this case, the 360° of rotation necessary for this amount of lateral displacement is divided equally between each of the several helices of which the section is fabricated and each of these helices is displaced relative to each other an amount proportional to the relative angular displacement therebetween. However, a conveyer is seldom in contact with a driving drum for more than three-fourths of its circumferential area and consequently for each rotation of the drum the conveyer will creep laterally on the drum a distance equal to three-fourths of one pitch. In such an instance, if the pitch of the convolutions of the helices of the conveyer is three-eighths of an inch, for example, the conveyer will creep laterally on its support, and on the drum nine-thirty seconds of an inch for each complete rotation of the drum, and if the drum is two feet in diameter, for example, the conveyer will creep laterally this distance for each fifty-four inches of linear travel of the conveyer.

Various expedients have been resorted to in order to avoid or counteract this inherent tendency for a conveyer of this type to creep laterally but past efforts in this direction have been expensive and not entirely successful. Such expedients are exemplified in the Swinscoe Patent No. 712,212, in which one form of a woven wire conveyer is constructed of a plurality of sections, the helices of adjacent sections being wound in opposite directions so that after the conveyer has crepted laterally in one direction a predetermined distance it is caused to creep in an opposite direction an equal distance. In constructing a conveyer of this type, great inconvenience, expense and manual labor is involved as it is first necessary to fabricate two conveyers, one of right hand wound helices and another of left hand wound helices. The helices of each of these conveyers are clinched at their outer ends to prevent them from becoming unwound or otherwise displaced in use. These conveyers are then each separated into sections, each having...
an equal number of helices, and in doing so it is necessary to manually unclinch the ends of certain helices and unscrew such helix to separate the sections. The right and left hand sections
are then arranged alternately and are secured together manually in various ways. Obviously, a conveyor constructed in this manner presents many undesirable features.

Also, an attempt has been made to overcome the problem by fabricating two conveyors each constructed of right and left hand wound wire helices as before, then separating the conveyors longitudinally, and then securing one-half of one conveyor to one-half of the other conveyor. This particular type of construction is also disclosed in the patent to Swincoe previously referred to and is designed to offset the tendency for one longitudinal half of the conveyor to creep laterally in one direction by a tendency for the other half of the conveyor to creep laterally in an opposite direction. However, in such construction, if the left hand half of the conveyor, looking in the direction of movement of the conveyor, is constructed of right hand wound helices and the right hand half of the conveyor is constructed of left hand wound helices, each longitudinal half of the conveyor will creep toward the center with the result that the conveyor will buckle in the middle. On the other hand, if the positions of the longitudinal sections are reversed, there is a strong tendency to stretch the helices along the line of union between the two sections and eventually separate the conveyor longitudinally. Various means have been attempted to prevent or counteract this tendency, such as by tying the helices together by rods or the like but obviously if this tendency is effectively prevented, the surface of the driving drum will become worn due to longitudinal slippage and eventually become useless.

According to the present invention, I propose to overcome completely the problems presented by this inherent tendency for a conveyor to creep laterally, and at the same time to ensure that individual helices of which the conveyor is fabricated and also the surface of the driving drum of all longitudinal strain, by utilizing the principle of action and reaction in attempting to oppose or to avoid such principle.

The principal object of my invention is to prevent lateral creepage of the article bearing strand of a conveyor fabricated from a plurality of transversely extending interconnected wire helices, by the provision of a support such as a driving mechanism embodying a drum or roller having a conveyor engaging surface which may move progressively in a direction transverse to the direction of travel of the conveyor throughout at least a portion of each rotation of the drum, in order to carry that portion of the conveyor which is in engagement with the drum in a lateral direction a distance sufficient to prevent the helices of the conveyor as they successively move onto the drum and twist as they change their direction of movement in conforming to the curvature of the drum, from exerting a lateral thrust on the helices of the article bearing strand of the conveyor that are not yet in engagement with the drum, thus rendering it possible to avoid the expedients hereinafore discussed and to employ a conveyor fabricated entirely of helices wound in the same direction.

Another object of my invention is the provision of a conveyor driving mechanism, of the character described, embodying means for moving the conveyor engaging surface of the drum in a direction transverse to the direction of movement thereof, thus relieving the convolutions of the several helices of which the conveyor is fabricated of all lateral strain.

A further object of my invention is the provision of a conveyor driving mechanism, of the character described, embodying means actuated by the lateral movement of the article bearing strand of the conveyor for automatically controlling the distance that the conveyor engaging surface of the driving drum is moved laterally in accommodating the relative axial movement of the helices of the conveyor.

With such objects in view, as well as other advantages which may be incident to the use of the improvements, the invention consists of the parts and combinations thereof hereinafter set forth and claimed with the understanding that the several necessary elements constituting the same may be varied in proportion and arrangement without departing from the nature and scope of the invention as defined in the appended claims.

In order to make the invention50(60,210),(972,970) more clearly understood there are shown in the accompanying drawings, means for carrying the invention into practical effect, without limiting the improvements in their useful application to the particular construction, which for purpose of explanation have been made the subject of illustration.

In the accompanying drawings:

Figure 1 is a plan view of a conveyor driving mechanism constructed in accordance with my invention.

Figure 2 is a vertical longitudinal sectional view taken on line 2—2 of Figure 1, illustrating the construction of the pinch roller.

Figure 3 is a side elevational view of the mechanism shown in Figure 1.

Figure 4 is a vertical transverse sectional view taken on line 4—4 of Figure 1.

Figure 5 is a vertical transverse sectional view taken on line 5—5 of Figure 1.

Figure 6 is a vertical transverse sectional view taken on line 6—6 of Figure 1.

Figure 7 is a horizontal sectional view taken on line 7—7 of Figure 3.

Figure 8 is a plan view of a portion of a conveyor fabricated from a plurality of interconnected wire helices.

Figure 9 is a diagrammatic development view of the conveyor driving drum and conveyor.

Figure 10 is a plan view of the conveyor controlled adjusting mechanism.

Figure 11 is a fragmentary vertical sectional view taken on line 11—11 of Figure 10.

Referring to the drawings, the invention is shown as being embodied in a conveyor driving mechanism that is particularly adapted for use in connection with glass annealing lehrs, and for the purpose of illustration the amount of transverse or axial movement of the helices of the conveyor and the converting movement of the surface of the driving drum has been greatly exaggerated. This mechanism is shown as comprising a frame structure A; a sectional driving drum B; a conveyor C, composed entirely of interconnected wire helices wound in the same direction; a sectional pinch roll D; and a driving mechanism E.

The frame structure A comprises a pair of spaced side frame members 10 and 10′, which are mounted upon a metallic base plate 11 supported by transversely extending channel bars 12 which
are adapted to be embedded in a concrete base or to be secured to the floor. The frame members 10 and 10a are braced laterally by a vertical extending metallic plate 13 which is secured to the forward ends thereof, and which cooperates with the side frame members 5 and 5a forming a housing for the "friction mechanism hereinafter to be described. The frame members 10 and 10a are also braced laterally by transversely extending upper and lower channel bars 14 and 15 respectively, which are secured to the forward ends adjacent to the peripheral edges of the channel bars 16 and 17 respectively which are secured to the rear ends of the frame members 10 and 10a.

The driving drum B comprises hexagonal cast metal end members 18 (Figures 4, 5 and 7) having peripheral flanges 19 and formed with a plurality of bosses 20. Metallic plates 21 are secured to the flanges 19 of the end members 18 in any preferred manner, and are welded together along their adjacent edges to form a hollow hexagonal structure having a internal surface. By reason of the fact that the support is of polygonal cross-section, each of the plates 21 is reinforced throughout its length by the contiguous edges of the adjacent plates 21 and provides a very rigid yet comparatively light construction.

Gear wheels 22 and 22a provided with hubs 23 and 23a are secured to the end members 18 by bolts 24 engaging the bosses 20 thereof, and these gear wheels are mounted on a main supporting shaft 25 which extends entirely through the support and through axially disposed openings 26 formed in the end members 18, and is journaled at its ends in bearings 27 and 27a formed in the side frame members 10 and 10a respectively.

Thrust bearings 28 and 28a are arranged intermediate the hubs 23 and 23a and the bearings 27 and 27a for a purpose that will hereinafter be apparent.

Secured to each of the plates 21 of the support and adjacent to the edges thereof, is a pair of longitudinally extending guides 29 provided with undercut recesses 30 (Figures 4 and 5) which are adapted to be slidably engaged by cooperating longitudinally extending slides 31 secured to the several sections of the support. The slides 31 cooperate to form a sliding connection between the several sections and the plates 21 of the hexagonal support, which permits the several sections to slide independently of one another on the hexagonal support in a direction transverse to the direction of rotation thereof, but at the same time preventing their displacement in radial or circumferential directions.

The several sections of the drum are thus, in effect, keyed to the support; so as to transmit motion to the conveyor.

The several sections 32 of the drum are provided with anti-slipping or tractive conveyor engaging surfaces each preferably consisting of a molded covering 33 of yieldable material such as rubber reinforced by fabric, and formed with inwardly extending flanges 34 and 35 (Figures 4 and 5) adapted to embrace the outer edges of the section 32 and to be clamped to the inner surfaces thereof by removable clamping bars 35. Each of the coverings 33 is preferably provided with a plurality of bosses 36 for interlocking engagement with corresponding recesses formed in the outer curved surface of the associated section 32, so as to reduce creepage and stretching of the covering, and to relieve the edges of the covering of strain caused by its frictional driving engagement with the conveyor.

Cooperating with the driving drum B is the pinch roll D which is adapted to force the conveyor into positive driving engagement with the resilient surface of the drum so as to minimize slippage therebetween. This pinch roll D is shown as comprising two half cylindrical sections 37 and 37a, which are mounted on a shaft 38 having a square intermediate portion 39 and cylindrical end portions 40 (Figs. 2 and 7), which are journaled in bearing blocks 41 slidably mounted in ways 42 formed in the side frame members 10 and 10a. The bearing blocks 41 are maintained against lateral displacement by plates 43 secured thereto for engagement with the sides of the ways 42, and the position of the bearing blocks 41 in the ways 42 may be adjusted by jack screws 44 so as to maintain the pinch roll D in gripping engagement with the conveyor. The sections 37 and 37a of the pinch roll are each formed with a longitudinally extending groove 45 through which the squared portion 39 of the shaft 38 extends, and the two sections are maintained against radial displacement by means of rings 46 which extend around the ends of the sections 37 and 37a and which are engaged to one of the sections for relative axial sliding engagement with the associated section. Suitable anti-friction devices, herein shown as comprising roller bearings 47, are disposed between the walls of the grooves 45 and the sides of the squared portion 39 of the shaft 38 and are maintained in proper spaced relation with respect to one another by spacing blocks 48 (Fig. 2) secured to the walls of the recesses 45. By means of this construction the pinch roll D is, in effect, keyed to the shaft 38, but the sections 37 and 37a thereof are free to slide in an axial direction a predetermined distance. The sections 37 and 37a of the pinch roll D are also each provided with an anti-slipping or tractive conveyor engaging surface preferably comprising a molded covering 49 (Fig. 4) of yieldable material such as rubber and inforced by fabric, which is formed with inwardly extending flanges 50 adapted to embrace the edges of the associated section and to be clamped to the inner surfaces thereof by removable clamping bars 51. The coverings 49 are also formed with bosses 52 for engagement with corresponding recesses provided in the outer curved surface of the associated section and tend to prevent localized strain on the covering when engaged by the conveyor.

The sections 37 and 37a of the pinch roll D are urged to the right, as viewed in Figure 2 of the drawings, by compression springs 53 which are disposed within recesses 54 formed in the sections 37 and 37a (Figures 2 and 4), and which are interposed between slide blocks 55 which engage the right hand ends of the recesses and blocks 56 which are fixed to the squared portion 39 of the shaft 38. Axial movement of the sections 37 and 37a under the influence of the spring 53 is, however, limited by a stop in the form of a sleeve 57 carried by the right hand end of the section 37 and by segmental end plates 58 secured to the adjacent ends of the sections 37 and 37a.
As previously stated, the conveyer C comprises a plurality of interconnected wire helices 59 (Figures 4 and 10) and, as shown in Figure 4, the article bearing string 51 is supported upon a table 60 which is herein shown as embodying a metal plate 61 mounted upon the upper channel bar 16 of the frame structure A and reinforced by longitudinally extending bars 61. After leaving the table 60, the conveyer passes around the driving drum B, and between the driving drum and the pinch roll, and thence over the pinch roll, from which point the idle strand of the conveyer passes rearwardly to the point (not shown) where it again doubles back to perform its conveyer function.

The driving drum B is rotated to draw the article bearing strand of the conveyer along its support, by means of the driving mechanism E which comprises two pinions 62 and 63 which are keyed to each end of a jack shaft 64 for intermeshing engagement with the gear wheels 22 and 22a. The jack shaft 63 is journaled in bearings 64 provided on the side frame members 10 and 10a, and has a worm gear 65 fixed to one end thereof for intermeshing engagement to a worm 66. The worm gear 65 extends through an opening 67 provided in the forward bracing plate 13 which is covered by a removable housing 68. The worm 66 is fixed to a transversely extending drive shaft 36 which is mounted in the bearings 70 carried by the base plate 11 and which extends through the plate 13 to a point where it may be connected with any suitable source of power.

The sections of the driving drum B which are in engagement with the conveyer are provided with helical and uniformly shifted transversely on the hexagonal support when the drum is rotated, by means of a ring cam 71 provided with a split 72. This cam is formed with an opening 72a to accommodate the pinion 62a and is mounted on an annular cam carrier 73 in concentric relation with the drum B. The cam carrier 73 is formed with a peripheral flange 74 and with lugs 75 which extend radially inwardly and are secured to the side frame member 10a by means of bolts 76. One end of the cam 71 is pivotally mounted on the carrier 73 by a pivot pin or bolt 77, and the adjacent end of the cam 71 is sprung laterally so as to impart a helical configuration to the cam of the desired angularity or pitch by means of an adjusting or jack screw 78 provided with a hand wheel 79. This screw is threaded into a bearing 80 provided on a bracket 81 which is bolted to the side frame member 10a. Each of the sections 32 of the driving drum B is provided with a roller 82 for engagement with the inner vertical face of the cam 71, so that when the drum is rotated by means of the driving mechanism E, hereinafore described, the rollers 82, as they follow the contour of the cam 71, will force the sections 32 transversely to the left, as viewed in Figures 1, 2 and 7. These sections 32 are urged to the right, as viewed in these figures, so as to maintain the rollers 82 in yieldable engagement with the cam 71, by means of tension springs 83 which are arranged in recesses 84 formed in the sections 32 (Figures 4 and 7). Each of these springs is secured at one end to the associated section 32 of the driving drum by means of a clip 85, and at the other end to the associated plate 21 of the hexagonal support, by means of a bracket 86. The sections 32 of the driving drum are thus caused to yieldably bear against the cam 71 at equally spaced points thereon and under uniform pressure, and consequently the cam 71 will not move on its support during the rotation of the drum, but will remain in fixed position notwithstanding its single point of attachment 77 thereto. However, if desired, a plurality of relatively snug backing screws 87 may be threaded into the cam 71 for abutting engagement with the flange 74 of the cam carrier 73, so as to insure that the cam will remain in proper position and will not rock on its bearing 86 when it is traversed by the rollers 82.

The angularity of the cam 71 is adjusted so that it will force the sections 32 of the driving drum B in a transverse direction during the rotation of the drum a distance equal to the accumulative axial displacement of the helices of the conveyer in actual contact with the drum at any given time. For example, if the pitch of the helices 59 of which the conveyer is fabricated is one half inch and, as shown in the drawings, if the conveyer is in engagement with the drum throughout three quarters of its circumference, then the accumulative axial displacement of the helices 59 in contact with the drum will equal three eighths of an inch, and consequently the cam 71 will be adjusted in order to shift the sections 32 of the drum B transversely, a corresponding amount. By thus moving the helices of the conveyer transversely instead of maintaining them fixed, as heretofore, no lateral motion is transmitted to that portion of the arch 70 of the arches 70 mounted on the base plate 11 of which the section 32 is not in engagement with the drum. Lateral creeping of the article bearing strand of the conveyer on the supporting table 60 is thus prevented. Anti-friction devices may be disposed between the several sections 32 and the hexagonal support as desired, but in view of the fact that the sections 32 only move transversely a distance equal to three-fourths of the pitch distance of the helices 59 during one rotation of the drum, the mechanical advantage of the cam is so great that the provision of such anti-friction devices may be unnecessary. For example, if the pitch distance of the helices 59 is three-eighths inch and the diameter of the cam 71 is twenty-four inches, the angularity of the cam 71 need only be approximately seventeen minutes fifty-four seconds in order to shift the sections 32 sufficiently to accommodate the relative axial displacement of the helices 59.

Inasmuch as the pinch roll D is in clamping engagement with the conveyer, it may be desirable to provide it with a bearing 88 provided on a bracket 81 which is bolted to the side frame member 10a. Each of the sections 32 of the conveyer C is provided with a roller 82 for engagement with the inner vertical face of the cam 71, so that when the drum is rotated by means of the driving mechanism E, hereinafore described, the rollers 82, as they follow the contour of the cam 71, will force the sections 32 transversely to the left, as viewed in Figures 1, 2 and 7. These sections 32 are urged to the right, as viewed in these figures, so as to maintain the rollers 82 in yieldable engagement with the cam 71, by means of tension springs 83 which are arranged in recesses 84 formed in the sections 32 (Figures 4 and 7). Each of these springs is secured at one end to the associated section 32 of the driving drum by means of a clip 85, and at the other end to the associated plate 21 of the hexagonal support, by means of a bracket 86. The sections 32 of the driving drum are thus caused to yieldably bear against the cam 71 at equally spaced points thereon and under uniform pressure, and consequently the cam 71 will not move on its support during the rotation of the drum, but will remain in fixed position notwithstanding its single point of attachment 77 thereto. However, if desired, a plurality of relatively snug backing screws 87 may be threaded into the cam 71 for abutting engagement with the flange 74 of the cam carrier 73, so as to insure that the cam will remain in proper position and will not rock on its bearing 86 when it is traversed by the rollers 82.

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flanges 88 which are bolted to the several sections 32 of the driving drum for abutting engagement with the end plates 58 of the pinch roll, so that as the sections 32 of the driving drum are moved to the left under the influence of the cam 71 their motion will be transmitted to the sections of the pinch roll and passes around a grooved section of the pinch roll move out of contact with the flanges 88 they will be moved to the right under the influence of the springs 53 until they are arrested in their initial position by the end plates 58 engaging the stop sleeve 57. The sleeve 57 is so located that such each section of the pinch roll 91 move out of contact with the flanges 88 they will be moved to the right under the influence of the springs 83.

When the conveyor is first placed around the driving drum 51 and the pinch roll 41 is tightened by means of the jack screws 44 so as to clamp the conveyor between the driving drum and the pinch roll, the ends of the cam 71 are offset an initial distance by means of the adjusting screw 78, a distance corresponding substantially to the pitch of the helices of which the conveyor is fabricated. The driving mechanism 135 is then set in operation so as to rotate the drum, and the action of the conveyor is observed in order to determine whether or not the article bearing strand thereof moves laterally on the supporting table 60. If it is found that the conveyor after such initial adjustment evidences a tendency to creep laterally on the table 60 to the right, as viewed in the drawings, the operation of the mechanism is stopped and the conveyor is removed from the table 60 and a new one is substituted, the conveyor being placed around the drum 51 and the pinch roll 91 with the conveyor in a position parallel to the table 60 and the conveyor, the rolls 82 ride off of the high portion of the cam 71 and the sections 32 are permitted to be returned to their initial or return position under the influence of the springs 83.

If it is found that the conveyor after such initial adjustment evidences a tendency to creep laterally on the table 60 to the right, as viewed in the drawings, the angularity of the cam 71 is increased, the amount of adjustment of the cam being determined by the rate of creepage of the conveyor. If on the other hand, the conveyor evidences a tendency to creep toward the left, it will indicate that the sections 32 of the drum are being moved transversely a distance in excess to that necessary to offset the natural angularity of the cam 71. From the foregoing it will be apparent that a very efficient driving mechanism for conveyers fabricated of interconnected wire helices is provided which will effectually prevent the creepage of the conveyor in either direction, and in which it is possible to employ a conveyor fabricated entirely of helices wound in the same direction. It will of course be obvious that if the conveyor is constructed of helices wound in a direction opposite to that disclosed in the drawings, the conveyor 71 will be secured to the left hand side frame member 10 and the positions of the associated parts reversed accordingly. What I claim is:

1. In combination with a conveyor fabricated from a plurality of interconnected wire helices and which changes its direction of travel vertically, of means for supporting said conveyor where it changes its direction of travel and means acting independently of said conveyor for positively moving said supporting means and that portion of said conveyor in engagement therewith progressively in a direction transverse to the direction of travel of said conveyor and in timed relation with the rate of said travel, an amount equal to the accumulative axial displacement of the

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helices of said conveyer in contact with said support caused by their screw action in changing their direction of travel.

2. In combination with a conveyer fabricated from a plurality of interconnected wire helices and which changes its direction of travel vertically, of means for supporting said conveyer where it changes its direction of travel and means acting continuously and independently of the conveyer for positively moving said supporting means and that portion of said conveyer in engagement therewith progressively in a direction transverse to the direction of travel of said conveyer and in timed relation with the rate of said travel, an amount equal to the accumulative axial displacement of the helices of said conveyer in contact with said support caused by their screw action in changing their direction of travel.

3. In combination with a conveyer fabricated from a plurality of transversely extending interconnected wire helices, a driving mechanism therefor comprising a rotatable drum having a plurality of circumferentially arranged longitudinally extending conveyer supporting sections, and means operating independently of the conveyer for positively moving the conveyer and thereby changing the direction of travel of said conveyer from one direction into another direction, an amount equal to the accumulative axial displacement of the helices of said conveyer in contact with said support caused by their screw action in changing their direction of travel, and means controlled by the lateral movement of said conveyer for controlling the adjustment of said adjustable means.

4. In combination with a conveyer fabricated from a plurality of transversely extending interconnected wire helices, a driving mechanism therefor comprising a drum having a plurality of sections for supporting said conveyer drum, the drum substantially the entire width thereof, and a cam positively moving said sections parallel to the longitudinal axis of said drum to carry the conveyer in engagement therewith bodily in a lateral direction a distance substantially equal to the lateral movement of said conveyer on said sections in conforming to the curvature of said drum.

5. In combination with a conveyer fabricated from a plurality of transversely extending interconnected wire helices, a driving mechanism therefor comprising a drum having a plurality of conveyer engaging circumferential sections, and an annular cam mounted adjacent to one end of said drum and coaxially therewith for positively moving said sections parallel to the longitudinal axis of said drum to move the conveyer in engagement therewith laterally a distance substantially equal to the lateral movement of said conveyer in conforming to the curvature of said drum.

6. In combination with a conveyer fabricated from a plurality of transversely extending interconnected wire helices, a driving mechanism therefor comprising a drum having a plurality of circumferentially arranged conveyer supporting sections, an annular cam mounted adjacent to one end of said drum and coaxially therewith for positively moving said sections parallel to the longitudinal axis of said drum to carry the conveyer in engagement therewith bodily in a direction opposite to the direction of movement of said conveyer on said sections in conforming to the curvature of said drum; and means for adjusting the angularity of said cam to carry the conveyer on said sections in accordance with the pitch distance of the convolutions of the helices of said conveyer.

7. A driving mechanism for a conveyer fabricate from a plurality of transversely extending interconnected wire helices, comprising a drum having a plurality of circumferentially arranged conveyer supporting sections, an annular split cam mounted adjacent to one end of said drum and coaxially therewith for positively moving said sections parallel to the longitudinal axis of said drum, or for changing its direction of travel and means for flexing said split cam to adjust the angularity thereof to varying the degree of movement imparted thereby to said sections in accordance with the pitch distance of the convolutions of the helices of said conveyer.

8. In combination with a conveyer fabricated from a plurality of interconnected wire helices and which changes its direction of travel vertically, of means for supporting said conveyer where it changes its direction of travel, adjustable means for positively moving said supporting means and that portion of said conveyer in engagement therewith progressively in a direction transverse to the direction of travel of said conveyer and in timed relation with the rate of said travel, an amount equal to the accumulative axial displacement of the helices of said conveyer in contact with said support caused by their screw action in changing their direction of travel, and means controlled by the lateral movement of said conveyer for controlling the adjustment of said adjustable means.

9. In combination with a conveyer fabricated from a plurality of transversely extending interconnected wire helices, a driving mechanism therefor comprising a drum having a plurality of conveyer supporting circumferentially arranged sections, an annular cam mounted adjacent to one end of said drum and coaxially therewith for positively moving said sections parallel to the longitudinal axis of said drum to carry the conveyer in engagement therewith bodily in a lateral direction a distance substantially equal to the lateral movement of said conveyer on said sections in conforming to the curvature of said drum; and means for adjusting the angularity of said cam to vary the degree of movement of said conveyer on said sections in accordance with the pitch distance of the convolutions of the helices of said conveyer; and means controlled by the lateral movement of said conveyer for controlling said adjusting means.

10. In combination with a conveyer fabricated from a plurality of transversely extending interconnected wire helices, a driving mechanism therefor comprising a drum having a plurality of conveyer supporting circumferentially arranged sections, an annular cam mounted adjacent to one end of said drum and coaxially therewith for positively moving said sections parallel to the longitudinal axis of said drum to carry the conveyer in engagement therewith bodily in a direction opposite to the direction of movement of said conveyer on said sections in conforming to the curvature of said drum; and means for adjusting the angularity of said cam to vary the degree of movement of said conveyer on said sections in accordance with the pitch distance of the convolutions of the helices of said conveyer; and means controlled by the lateral movement of said conveyer for controlling said adjusting means.

11. In combination with a conveyer fabricated from a plurality of transversely extending interconnected wire helices, a driving mechanism for said conveyer comprising a sectional drum mounted for rotation about a horizontal axis and adapted to be frictionally engaged by said conveyer, an annular flexible cam for moving the sections of said drum in a direction transverse to the direction of rotation thereof, and means con-
trolled by the lateral movement of said conveyer for flexing said cam to control the amount of transverse movement of said sections.

12. In combination with a conveyer fabricated from a plurality of transversely extending inter-connected wire helices, a driving mechanism for said conveyer comprising a sectional drum mounted for rotation about a horizontal axis, a sectional pinch roll for maintaining said conveyer in frictional engagement with said drum, an annular split cam arranged in concentric relation with said drum adjacent to one end thereof for moving said sections in a direction transverse to the direction of rotation of said drum, said cam having a fixed end and a movable end, an adjusting screw disposed in operative engagement with the movable end of said cam for flexing said cam to vary the angularity thereof and the transverse movement imparted thereby to the sections of said drum, and means controlled by lateral movement of the article bearing strand of said conveyer that is not in engagement with said drum for operating said adjusting screw to automatically control the angularity of said cam and the amount of the resultant transverse movement of said sections, and means for returning the sections of said drum to their initial position when they rotate out of engagement with said conveyer.

13. In combination with a conveyer fabricated from a plurality of transversely extending inter-connected wire helices, a driving mechanism for said conveyer comprising a sectional drum mounted for rotation about a horizontal axis, a sectional pinch roll for maintaining said conveyer in frictional engagement with said drum, an annular split cam arranged in concentric relation with said drum adjacent to one end thereof for moving said sections in a direction transverse to the direction of rotation of said drum, said cam having a fixed end and a movable end, an adjusting screw disposed in operative engagement with the movable end of said cam for flexing said cam to vary the angularity thereof and the transverse movement imparted thereby to the sections of said drum, means controlled by lateral movement of said sections, and means for returning the sections of said drum to their initial position when they rotate out of engagement with said conveyer.

14. A conveyer supporting roller comprising a plurality of longitudinally movable sections, and a molded tractive conveyer engaging covering for each of the sections provided with longitudinal flanges adapted to be removably secured to the associated section.

15. A conveyer supporting roller comprising a plurality of longitudinally movable sections provided with recesses in the outer surfaces thereof, and a molded tractive surface removably secured to each of said sections and provided with integral extensions for engagement with said recesses.

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