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SUPPORTING STRUCTURE FOR FLEXIBLE STRAND SIDEFRAME CONVEYOR

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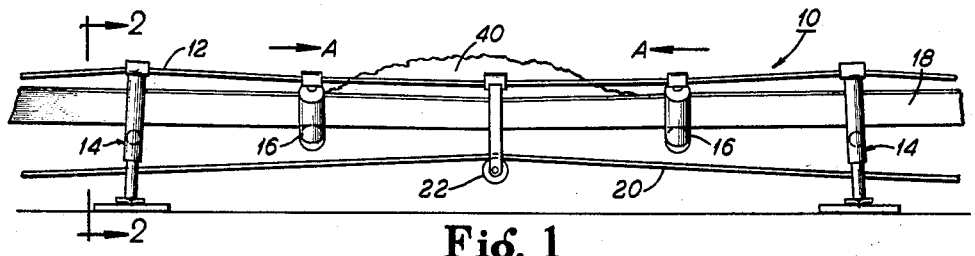


Fig. 1

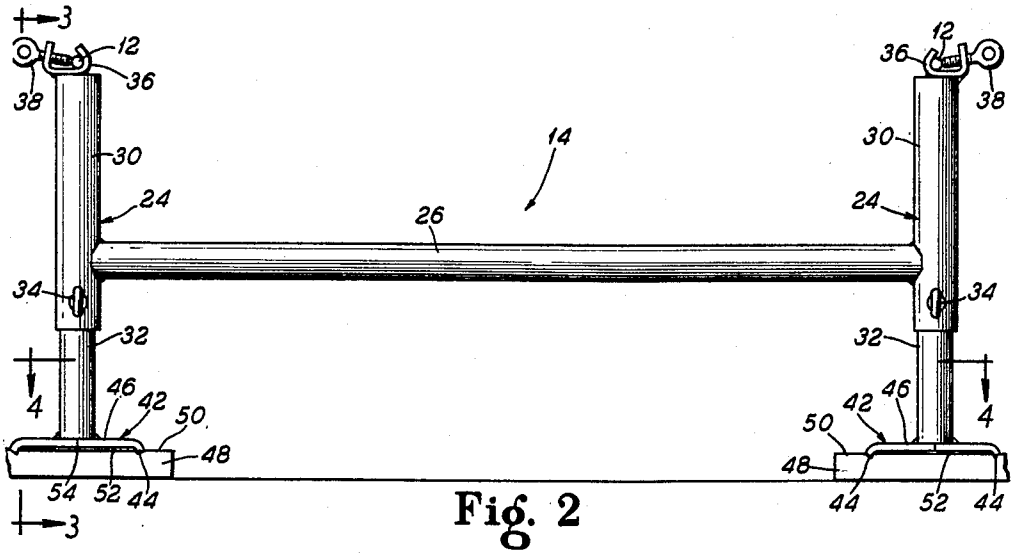


Fig. 2

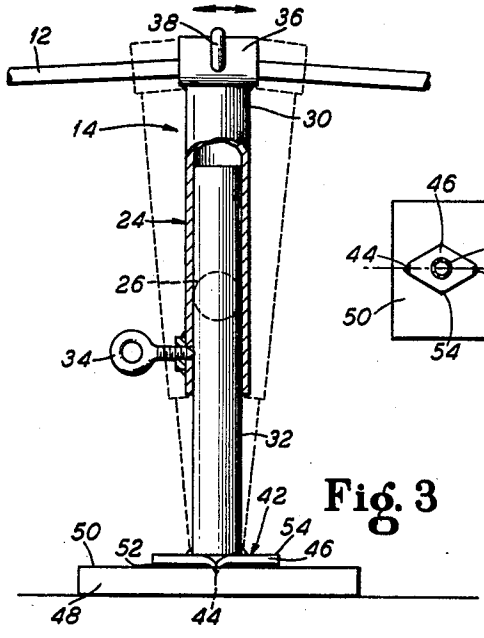


Fig. 3

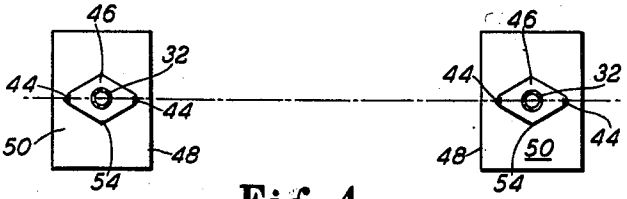


Fig. 4

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SUPPORTING STRUCTURE FOR FLEXIBLE STRAND SIDEFRAME CONVEYOR

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2 Claims. (Cl. 198—192)

This invention relates to flexible strand sideframe conveyors and more particularly to an improved supporting structure for supporting and training the flexible strand sideframes of such conveyors along a given course.

In flexible sideframe conveyors having a pair of spaced flexible strand sideframes supported at longitudinally spaced locations thereon and flexible troughing assemblies which support a conveyor belt and span the space between the strand sideframes at positions thereon which are longitudinally spaced from the support locations, there is a definite tendency for the strand sideframes to longitudinally shift at the support locations relative to the conveyor course in response to varying load conditions on the conveyor belt.

It is an object of this invention to provide an improved supporting structure for supporting the flexible strand sideframes of a flexible sideframe conveyor with the supporting structure being securely attached to the flexible strand sideframes and longitudinally shiftable therewith relative to the conveyor course without the supporting structure materially moving from the original location thereof.

It is a further object of this invention to provide a supporting structure which supports and trains the flexible strand sideframes of a flexible sideframe conveyor along a given course with a pivotal-supporting means which enables the supporting structure to be securely attached to the flexible strand sideframes and longitudinally shiftable therewith relative to the conveyor course.

Other objects and important features of the invention will be apparent from a study of the specification following, taken with the drawing which illustrates and describes a preferred embodiment of the invention and what is now considered to be the best mode of practicing the principles thereof. Other embodiments of the invention may be suggested to those having the benefit of the teachings herein, and such other embodiments are intended to be reserved especially as they fall within the scope of the subjoined claims.

In the drawing:

Fig. 1 is a longitudinal side elevational view of a portion of a flexible sideframe conveyor having the improvements according to the present invention embodied therein;

Fig. 2 is a cross-sectional view taken along the line 2—2 of Fig. 1 looking in the direction of the arrows:

Fig. 3 is an elevational view taken along the line 3—3 of Fig. 2 looking in the direction of the arrows with portions of the structure illustrated therein broken away, and

Fig. 4 is a plan view taken along the line 4—4 of Fig. 2 looking in the direction of the arrows.

Attention is now directed to Fig. 1 wherein there is illustrated a flexible sideframe conveyor 10 having flexible strand sideframes 12—12 which are supported at longitudinally spaced locations therealong by supporting structures 14—14 which train the spaced strand sideframes 12—12 in generally parallel relationship to each other along the conveyor course and maintain such spacing at a predetermined gage at the supported locations. Flexible troughing assemblies 16—16 span the space between the flexible strand sideframes 12—12 at positions thereon which are longitudinally spaced from the supported locations with the sideframes being flexible at the positions where the troughing assemblies 16—16 are carried. The flexible troughing assemblies 16—16 support the conveying reach 18 of an endless conveyor belt for orbital movement thereacross with the return reach 20 of the conveyor belt being independent and separately supported by an idler structure 22 which is carried by the flexible strand sideframes 12—12 at portions thereof which are longitudinally spaced from both the supported locations and the positions at which the troughing assemblies are carried thereby.

Each of the supporting structures 14 comprise a pair of generally vertical extending substantially upstanding relatively rigid supports 24—24 which are disposed in generally transversely spaced relationship relative to the conveyor course and are retained in such positions by a generally horizontally disposed elongated relatively rigid spacer means 26 having the end portions thereof secured, as by welding, to each of the supports 24—24 with the spacer means 26 extending generally transversely to the conveyor course and being effective to restrain movement of the supports 24—24 and strand sideframes 12—12 generally transverse relative to the conveyor course at the supported locations. Each of the supports 24—24 includes an upper section or member 30 and a lower section or member 32 telescopically received for longitudinal extension and retraction thereof in order to compensate for any irregularity in the underlying surface over which the conveyor 10 is trained. A releasable locking means 34, in the form of a threaded eye bolt, is provided for securely retaining the upper and lower members of each support in a desired adjusted position. A connecting means 36, in the form of a generally U-shaped bight which opens substantially upwardly, is secured, as by welding, adjacent the upper end portion of each upper member 30 for receiving the respective strand sideframe 12 therein and a releasable securing means 38, in the form of a threaded eye bolt, is provided for securely clamping the respective strand sideframe 12 within the connecting means 34.

It is to be understood that in response to a varying load condition 40 on the conveying reach 18 that the flexible strand sideframes 12—12 will longitudinally shift relative to the conveyor course, in the direction of the arrows A in Fig. 1, and that the supporting structure 14 will tilt back and forth along the conveyor course at the supported location, as illustrated by dotted lines in Fig. 3.

In order to enable the supporting structure 14 to be securely clamped or connected to the respective strand sideframe 12 through the securing means 38 at the supported locations there is provided a pivotal tilting means 42 which enables each of the supporting structures 14—14 to tilt, as a unit, along the conveyor course.

The pivotal tilting means 42 includes a plurality of downwardly projecting pointed portions 44 which are substantially transversely aligned and transversely spaced relative to the conveyor course. In the embodiment of the improved supporting structure 14, as illustrated, the pivotal tilting means 42 comprises a plate member 46 in the form of an elongated diamond secured to the lower end portion of each of the lower members 32 of the supporting structure 14 with the plate members 46 being normally disposed in a substantially horizontal position with the major axes of the diamond extending generally transversely of the conveyor course and the minor axes thereof extending substantially parallel thereto. Each of the plate members 46 are provided with a plurality of downturned pointed portions 44 which are transversely spaced relative to the conveyor course with all of the

downturned pointed portions **44** being substantially transversely aligned relative to the conveyor course, as illustrated in Fig. 4.

A ground supported block means **48** is positioned beneath each of the plate members **46** with the respective pointed portions **44** abuttably engaging the top **50** of the respective block means **48** with the remaining part of each plate member **46** being in vertically upwardly spaced relationship, as indicated by **52**, to the respective block means **48** to enable the supporting structure **14** to tilt back and forth along the conveyor course in response to the shifting movement of the respective strand sideframe **12**. Further, the side portions **54** of each plate member **46** extend generally longitudinally along the conveyor course and define stop means for controlling the tilting of the respective support structure **14** by engaging the respective block means **48**.

While the invention has been described in terms of a preferred embodiment thereof its scope is intended to be limited only by the claims here appended.

I claim as my invention:

1. In a flexible sideframe conveyor having a pair of flexible strand sideframes, supporting structure for supporting and training the flexible strand sideframes in spaced generally parallel relationship to each other along a given course, said supporting structure including a pair of generally vertically disposed substantially upstanding relatively rigid supports transversely spaced from each other relative to the course, each of said supports comprising elongated upper and lower members telescopically disposed one within the other for longitudinal relative movement to a plurality of desired positions, locking means for locking said members in a desired selected position, generally horizontally disposed relatively rigid elongated spacer means extending substantially transversely of the course and having each opposite end portion thereof secured to one of the supports to retain the supports in the transversely spaced relationship by restraining movement thereof generally transversely relative to the course, connecting means carried by the upper end portion of each of the upper members for securely connecting the supports to the corresponding flexible strand sideframes to enable the supporting structure to move with the flexible strand sideframes along the course, and a generally horizontally disposed elongated substantially diamond shaped plate carried by the lower end portion of each of the lower members with the major axis of each of the plates being disposed generally transversely relative to the course and the minor axis thereof being substantially parallel thereto, each of said plates having a plurality of downturned portions which are transversely spaced from each other relative to the course for engaging supporting block means with that part of each plate

intermediate the downturned portions being upwardly spaced from such supporting block means whereby said supporting structure may pivot about said downturned portions generally back and forth along the course in response to longitudinal shifting movement of the flexible strand sideframes.

2. In a flexible sideframe conveyor having a pair of flexible strand sideframes, supporting structure for supporting and training the flexible strand sideframes in spaced generally parallel relationship to each other along a given course, said supporting structure including a pair of generally vertically disposed substantially upstanding elongated relatively rigid supports laterally spaced from each other relative to the course, elongated relatively rigid spacer means extending substantially transversely of the course and having each end portion thereof secured to one of the supports to retain the supports in the laterally spaced relationship by restraining movement thereof generally laterally relative to the course, connecting means carried by the upper end portion of each of the elongated supports for securely connecting the supports to the corresponding flexible strand sideframes to enable the upper end portions of the supports to move with the flexible strand sideframes along the course, and means for enabling the supporting structure to tilt as a unit along the course, said means including an elongated plate member carried by the lower end portion of each support with the major axes of the plate members extending generally transversely relative to the course and a plurality of portions projecting generally downwardly from the plate members, said downwardly projecting portions being transversely aligned and transversely spaced from each other relative to the conveyor course for engaging ground supported block means, each of said plate members having other certain portions normally disposed in generally upwardly spaced relationship to such block means whereby said supporting structure may tilt by pivoting about the downwardly projecting portions generally back and forth along the course in response to longitudinal shifting movement of the flexible strand sideframes, said other certain portions of the plate members being longitudinally spaced from the downwardly projecting portions relative to the course to define stop means for engaging such block means to limit the tilting of the supporting structure.

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