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R. F. LO PRESTI
TROUGHING ROLLER ASSEMBLIES FOR FLEXIBLE CABLE
SUPPORTED BELT CONVEYORS

2,885,066

Filed Dec. 27, 1956

2 Sheets-Sheet 1

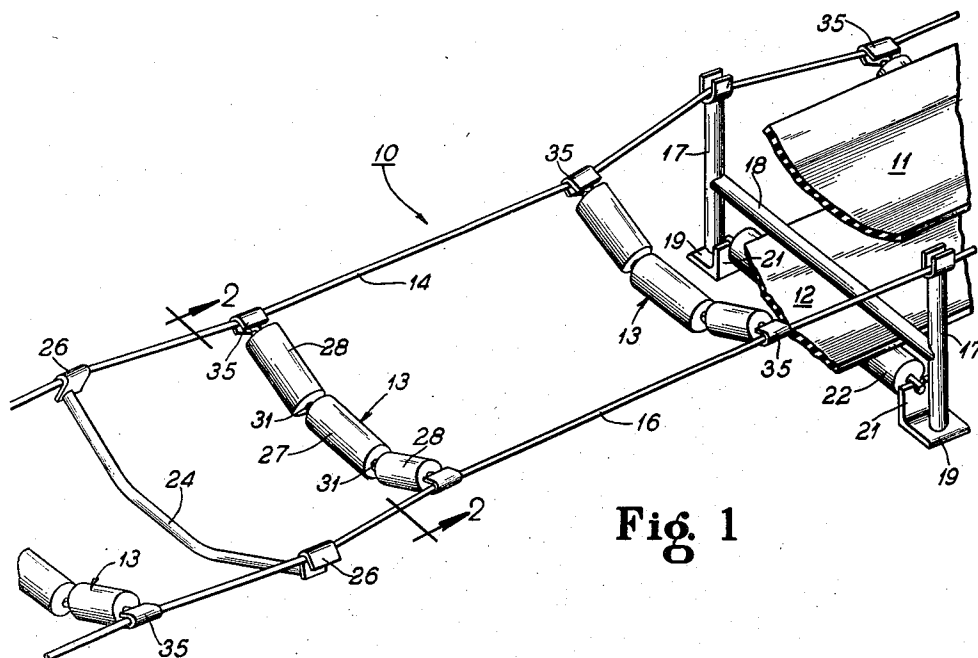


Fig. 1

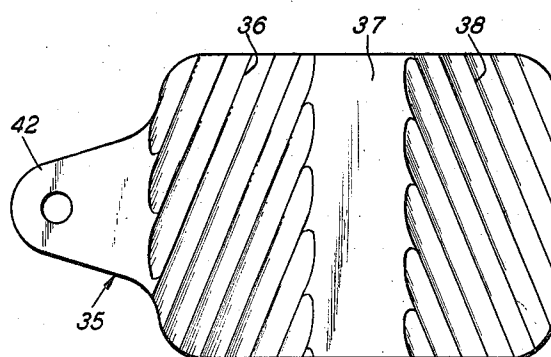


Fig. 3

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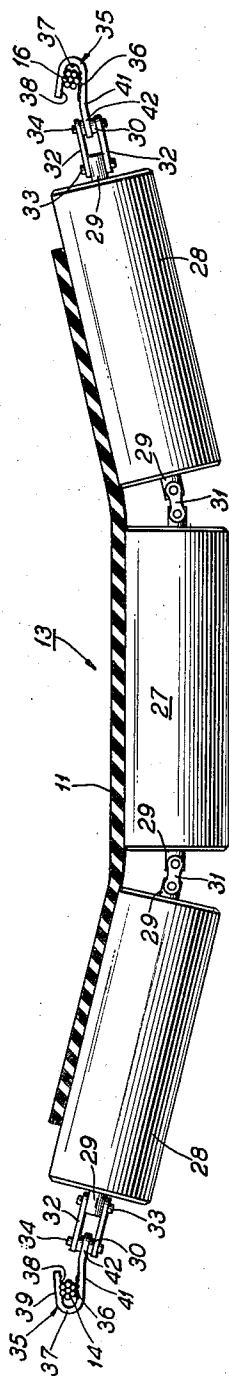


Fig. 2

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TROUGHING ROLLER ASSEMBLIES FOR FLEXIBLE CABLE SUPPORTED BELT CONVEYORS

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2 Claims. (Cl. 198—192)

This invention relates generally to flexible cable supported belt conveyors, and particularly to improvements in troughing roller assemblies therefor.

In Craggs et al. Patent No. 2,773,257, issued December 4, 1956, there is shown a belt conveyor where the loaded reach is supported upon troughing roller assemblies which span the distance between flexible cable side frames. The troughing roller assemblies shown have brackets mounting them to the flexible cables, and each bracket has the limbs thereof provided with openings to receive a locking or drift pin which firmly clamps the bracket to the flexible cable.

In such conveyors the presence of a large lump of coal spilling against the locking assembly described may sometimes loosen same and dislodge the troughing assembly from its position perpendicular to the axis of the conveying reach. If the deviation from the proper position is large enough, the belt may be trained improperly. It is to an improvement in structures for mounting the troughing roller assembly to the flexible cable that this invention is particularly directed.

According to the present invention the limbs of the mounting brackets are grooved by either a coining or milling process in directions corresponding to the lays of opposite hand of the flexible cables, which may not be of the same hand. The lands between the grooves lock firmly with the grooves between the cable strands and thereby prevent the bracket from being moved endwise of the strands. With such a construction the mounting brackets need not be staked in position on the cables. In order to accommodate cables of opposite lay, each limb of the bracket is grooved opposite to the other and at all times the proper grooves will engage the flexible cables. The lands between the grooves not corresponding to the lay of the cable on one limb of the hanger thereby permit removal of the hanger from the cable.

With the foregoing considerations in mind it is a principal object of the invention to provide an improved troughing roller assembly for a flexible strand conveyor.

Another object is to provide an improved mounting bracket for the troughing roller assembly of a flexible cable supported endless belt conveyor, such bracket being characterized by firm engagement with the support cable, and being capable of being used with cables of different lay.

Other objects and important features of the invention will be apparent from a study of the specification following taken with the drawing which together describe and illustrate a preferred embodiment of the invention and what is now considered to be the best mode of practicing the principles thereof. Other embodiments 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 and spirit of the subjoined claims.

In the drawing:

Fig. 1 is a perspective view of an endless belt conveyor of the type supported upon spaced flexible cables,

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said conveyor having the improvements according to the present invention embodied therein;

Fig. 2 is an elevational view taken in the direction of the arrows 2—2 of Fig. 1, and showing the improvements according to the present invention embodied in a troughing roller assembly of the conveyor seen in Fig. 1; and

Fig. 3 is a plan view of a mounting bracket adapted for use with the troughing roller assembly seen in Fig. 2.

Referring now to Fig. 1 of the drawing, the invention is embodied in an endless belt conveyor indicated by the reference numeral 10 and having a load conveyor reach 11 and an idle or return reach 12. The load on the conveying reach 11 is supported by a troughing roller assembly indicated generally by the reference numeral 13, the load being transmitted thereby into laterally spaced flexible cables 14 and 16.

The two cables 14 and 16 are supported at intervals throughout their length upon standards 17 which are maintained their proper distance apart by a laterally extending strut 18 lying between the load carrying reach 11 and the return reach 12. Each standard 17 has a foot 19 in the shape of an angle as shown, and the upstanding leg 21 of such angle supports an idler roller 22 for the return reach 12.

In order to maintain the load carrying strands 14 and 16 a desired distance apart intermediate the supports 17, the two strands 14 and 16 are spanned by a spreader member 24 having a bracket 26 at each end thereof secured in any convenient fashion to the strands 14 and 16 as may be disclosed in an application of Lo Presti et al. Serial No. 521,772, filed June 13, 1955, for Rope Frame Conveyor with Controlled Belt Troughing, or by means as will be described for preventing translative movement along the flexible support strands and as might occur by the impact of a large fragment of coal or other material striking the bracket 26.

Referring now to Fig. 2 of the drawing each troughing roller assembly 13 consists of a center or load supporting roller 27 and inclined wing or troughing rollers 28 which flank the roller 26, and which are connected together for movement relative to each other in a vertical plane by means of an articulating connection indicated generally by the reference numeral 31.

Each of the rollers is mounted upon a dead shaft 29 and the outer end of each wing roller 28 is pivotally connected to a mounting bracket 35 in such a fashion that the assembly 13 can pivot in an horizontal plane. A pair of links 32, 32 are accordingly connected by a pin 33 to the outer end of the shaft 29 of the wing roller 28, and the opposite ends of the links 32 are pivotally connected at 34 to the bracket 35, washers 36 being interposed between the links 32 and the bracket 35 to maintain the proper spacing of the links 32.

According to the present invention the brackets 35 are grooved by a coining or other process to correspond to the lay of the cables 14 and 16. Referring now particularly to Fig. 3 of the drawing, the brackets are formed from a blank 35 and are then grooved in directions to correspond to the lay of the cables. The bracket is thus grooved with an end portion 36 having a left hand lay, an ungrooved central portion 37, and an opposite end portion having a right hand lay 38.

After being so grooved the blank is further formed as seen in Fig. 2 to have an upper limb 39 and a lower limb 41 which terminates in tongue 42 to which the links 32 are connected.

As seen in Fig. 2, when the brackets 35 are placed in position on the cables 14 and 16 the grooves between the strands of the cables are engaged by the lands between the grooves 37 if the cables are of right hand lay. It will be seen that the cables 14 and 16 are tightly wedged

into the bight formed between the upper limb 39 and the lower limb 41.

In moving to such wedged position the cables 14 and 16 are enabled to move over the lands between the grooves 38 which are of opposite lay. Such lands of portion are not capable, therefore, of matching the grooves between the strands of cables 14 and 16.

If the cables 14 and 16 are of left hand lay, then the grooved portions 36 are engaged with the cables, while the cables 14 and 16 readily slide over the portions 38 of opposite hand.

It is also believed evident that the brackets will lock to the cables even though they be of different hands, each bracket having a grooved portion fitting a particular lay.

Structure according to the present invention makes it unnecessary to employ a drift pin or spike passing through the limbs of the bracket to hold same securely on the support cable. In the embodiment described the cable bracket 35 can easily slide into position on the cable until the lands at the grooved portions come into engagement with the grooves between the strands of the support cables. At such time the load upon the troughing roller assembly 13 prevents rotative movement of the bracket 35 in a manner similar to a nut, and the locking engagement of the lands of the bracket and the grooves between the strands of the cables prevents the translative movement of the bracket along the support strand.

The spreader member 24 seen in Fig. 1 may likewise have its end brackets 26 constructed like the brackets 35 to prevent translative movement if desired.

There are instances heretofore where a large fragment of material moving on the loaded reach can effectively dislodge the securing spike or drift pin for the bracket, and the combination of the pull against the bracket laterally of the support cable, and the heretofore described grooving of the bracket can prevent such dislodging or translation of the mounting bracket.

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

I claim as my invention:

1. An improved troughing roller assembly for an endless belt conveyor of the type wherein the load on the conveying reach is transmitted by said troughing roller assembly into laterally spaced flexible support cables com-

prising a plurality of flexibly interconnected load supporting rollers, a bracket connected to the outer ends of the so interconnected rollers, said bracket having a pair of spaced limbs embracing one of said flexible support strands, a bight connecting said spaced limbs, grooves of one hand formed in one of said limbs, grooves of an opposite hand formed in the other of said limbs, one of said set of grooves corresponding to a cable of a particular lay, whereby the lands between said last named set of grooves will interdigitate with the strands of said last named cable to prevent translative movement of said bracket along said cable, the other hands of said bracket intersecting the strands of said cable whereby said bracket can be removed from engagement with said cable by movement of said bracket in directions perpendicular to the axis of said cable.

2. An improved troughing roller assembly for an endless belt conveyor of the type wherein the load on the conveying reach is transmitted by said troughing roller assembly into laterally spaced flexible support cables comprising a plurality of flexibly interconnected load supporting rollers, a bracket connected to the outer ends of the so interconnected rollers, said bracket having a pair of spaced limbs embracing one of said flexible support strands, grooves of one hand formed in one of said limbs, grooves of an opposite hand formed in the other of said limbs, one of said set of grooves corresponding to a cable of a particular lay, whereby the lands between said last named set of grooves will interdigitate with the strands of said last named cable to prevent translative movement of said bracket along said cable, and whereby the other hands of said bracket intersect the strands of said cable whereby said bracket can be removed from said cable by movement of said bracket in directions perpendicular to the axis of said cable.

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