

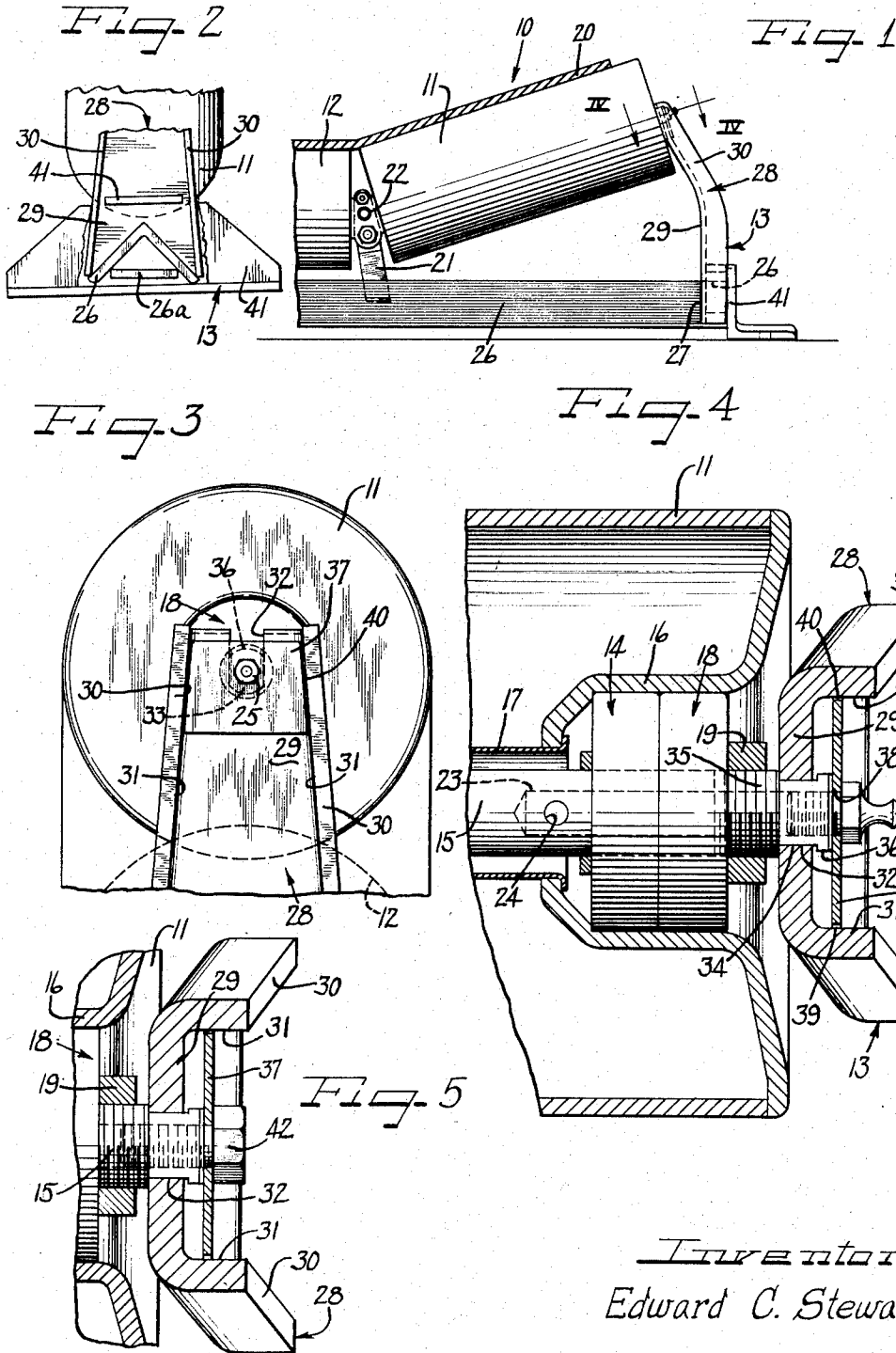
Jan. 20, 1959

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2,869,710

IDLER ROLLER ANCHORING DEVICE

Filed May 21, 1957



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IDLER ROLLER ANCHORING DEVICE

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Application May 21, 1957, Serial No. 660,654

7 Claims. (Cl. 198—192)

This invention relates generally to a new and improved device for anchoring an idler conveyor roller to an end stand.

In the past, there have been many methods developed to anchor conveyor idler rolls to end stands. Most commonly, the shaft carrying the idler roll is maintained stationary and is supported at the outer end by some device to permit handling of the idler assembly without danger of dropping the idler unit roller from the supporting end stand where only a slot is used. In the past, a hole in the end stand has been utilized to support the shaft. This construction requires the end bracket of the stand to be a bolted assembly which is expensive.

According to the present invention, the concept has been developed of assembling a tapered plate between the end of the shaft and the Alemite fitting or cap which is used for greasing. This tapered plate fits with practical tolerances between vertically converging edge surfaces on offset flanges provided on the stand. Due to the wedging action between the tapered edges on the tapered plate and the vertically converging edges on the stand, the idler unit roll is prevented from lifting out of the web slot in the welded end bracket. The newly developed construction has been found to be exceedingly effective and economical one for accomplishing the end objective of providing a low cost anchoring device capable of preventing the idler unit roll from lifting out of the slot in the welded end bracket.

Accordingly, an object of this invention is to provide a new and improved device for anchoring roller structure to a supporting stand.

Still another object of this invention is to provide a low cost device for anchoring a stationary roller shaft to an end stand.

According to the general features of the present invention, there is provided in an idler roller structure including roller carrying shaft structure having at least one end fixedly mounted on a supporting frame structure, the improvements of the supporting frame structure having at least one vertically upstanding U-shaped support with the support having spaced legs joined by a web at the bottom of the U and with the legs including vertically upwardly converging edges and said web including a vertically upwardly facing edge surface upon which the fixed roller carrying shaft is supported. The wedge plate is provided with complementary edge faces disposed between and in edgewise engagement with the converging edges and the plate is provided with another vertically downwardly facing edge surface which bears against an end portion of the roller carrying shaft structure to further assist in holding the end portion bottomed against the vertically upwardly facing edge surface. Detachable cap means is connected to the roller carrying shaft structure for maintaining the complementary edges in opposed relation to the vertically converging edges.

Other objects and features of the present invention will more fully become apparent in view of the following detailed description taken in conjunction with the

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accompanying single sheet of drawings illustrating therein several embodiments and in which:

Figure 1 is a fragmentary side elevation with portions in cross section illustrating a trough type idler roller structure;

Figure 2 is a fragmentary end elevation of the bottom portion of the end stand;

Figure 3 is an enlarged end elevation of the end stand and roller supported upon the end stand;

Figure 4 is an enlarged fragmentary cross-sectional view taken substantially on the line IV—IV of Figure 1 looking in the direction indicated by the arrows;

Figure 5 is an enlarged fragmentary cross-sectional view similar to Figure 4 only illustrating a modified form of my invention.

As shown on the drawings: The reference numeral 10 indicates a trough type carrier of the type having inclined end rolls 11 with a horizontal intermediate roll 12 disposed therebetween. Since the left hand side of the carrier is substantially identical to the right hand side of the carrier, the left hand side of the carrier 10 has been omitted. According to the present invention, the rolls 11 and 12 are held in place by means of a new stand construction indicated generally at 13.

The rollers 11 and 12 may be of any suitable construction and in the illustrated form of the invention, the rollers are of a type whereby a suitable bearing assembly 14 is interposed between the roller and a fixedly mounted roller shaft 15. To this end, the roller 11 has a dished end 16 in which the bearing assembly 14 is housed. Connected to the dished roller end 16 is an internal sleeve 17 running substantially the length of the roller with the sleeve secured at the opposite end of the roller 11 in a similar manner. Disposed axially outwardly of the roller assembly 14 is a suitable oil seal unit 18 which may be a labyrinth type of oil seal.

The roller assembly 14 may be suitably fixed to the roller shaft 15 and a bushing 19 is threaded on one end of the roller shaft 15 to clamp the seal assembly 18 in assembly with the bearing assembly 14.

The present heavy duty trough carrier 10 may utilize five inch and six inch rolls and carry thereon a 42 inch endless belt 20. Suitable greasing arrangements may be provided. To this end, it will be noted, a vertical bracket 21 is provided for supporting the fixedly mounted roller shaft 15 in any suitable manner. As illustrated, the bracket 21 is provided with an Alemite fitting 22 so grease may be pumped into the roller assembly (not shown) on the left hand side of the roller 11.

The right hand end of the roller shaft 15 has an internal bore at 23 and an outlet 24 is provided which discharges into the internal confined area between the left hand and right hand seal assemblies 18. An Alemite fitting 25 is threaded into the axially outwardly opening recess 23 on the roller shaft 15 and grease may be introduced into the fitting 25 so that the grease will discharge through the port 24 into the internal roller-roller shaft area to be greased.

The supporting stand 13 is of the type having substantially identical end stand portions joined together by a longitudinally extending inverted V-shaped bar or angle 26 which is reinforced by transverse plate 26a. The bar and plate are adapted to be welded at opposite ends as shown at one end at 27 to an axially inwardly curved vertically extending arm 28 (Figure 1). The arm 28 is notched (Figure 1) with the angle 26 extending through the notched arm 28.

The arm 28 is generally U-shaped having an intermediate web portion and with the vertical peripheral edges of the web portion turned axially outwardly providing off-set extensions 30—30. The off-set extensions 30—30 are constructed to converge since they are inclined from

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one end of the arm to the other end of the arm. The offset extensions 30—30 also have converging vertically extending edges 31—31.

The web 29 at its upper end is provided with a recessed area 32 including a vertically upwardly facing curved edge 33. The roller shaft 15 is provided with a reduced neck portion 34 which is adapted to engage against the spaced vertical slot edges of the area 32 to prevent the shaft 15 from turning. Also, the curved bottom perimeter of the shaft 15 is bottomed against the bottom curved surface 33 of the recessed area 32 (Figure 3). Abutments 35 and 36 are provided on axially opposite sides of the reduced neck portion 34 so that when the reduced neck portion 34 is engaged against the edge surface 33 the abutments 35 and 36 will be disposed on opposite sides of the web 29 to minimize axial movement of the roller assembly.

According to features of the present invention a wedge plate 37 having a central opening 38 is mounted on the roller shaft 15 and held in place by the Alemite fitting 25. The wedge plate 37 is provided with vertically upwardly converging peripheral edges 39 and 40 which edges are adapted to abut against or to lie in close adjacency to the converging edges 31—31 so that when the fitting 25 is bolted in place the edges 39 and 40 will be adapted to bear against the edges 31—31 to prevent vertically upward displacement of the roller assembly. By this construction the roller shaft is held fixedly in position between the stand edges 31—31 and the web edge 33 and is precluded from dropping off the stand or being removed therefrom without first removing the wedge plate 37.

To assemble the roller assembly 11 upon the stand 13, the roller shaft 15 is guided into the slotted or recessed area 32 so that the abutments 35 and 36 engage on opposite sides of the web 29 and so the shaft 15 is bottomed on the slot edge 33. The wedge plate 37 is then moved axially so that the end of the roller shaft 15 extends through the opening 38. Thereafter the fitting 25 is connected to the roller shaft 15 to clamp the wedge plate 37 against the abutment 36 with the plate edges 39 and 40 opposing the arm edges 31—31. Suitable mounting brackets 41 are welded to the webs 29 of the arms 28.

In Figure 5 the structure is similar to Figure 4 except a cap screw 42 has been substituted in place of the Alemite fitting in the first form of the invention since the particular greasing arrangements shown in the first form of my invention may be omitted.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

1. In a trough-type roller assembly and hanger structure including horizontal and inclined rollers each supported on fixedly mounted shafts, the improvement of said hanger structure including vertically upwardly extending generally U-shaped arms opening generally axially of the axes of the shafts including upwardly converging flange extensions, the bottom of the U-shaped arm having a vertically upwardly facing edge surface supporting one end of one of said fixedly mounted shafts, wedge plate means disposed between said converging flange extensions cooperable therewith, said wedge plate means and said flange extensions including confronting converging surface areas in abutting engagement preventing one end of the trough-type roller assembly from lifting off of the U-shaped arms, and detachable means for maintaining the wedge-plate means in assembly with said one end of one of said fixedly mounted shafts.

2. In a trough-type roller assembly and hanger structure including horizontal and inclined rollers each supported on fixedly mounted shafts, the improvement of said hanger structure including vertically upwardly extending generally U-shaped arms opening generally axially of the axes of the shafts including upwardly converging flange extensions, the bottom of the U-shaped arms hav-

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ing a vertically upwardly facing edge surface supporting one end of one of said fixedly mounted shafts, wedge plate means disposed between said converging flange extension cooperable therewith, said wedge plate means and said flange extensions including confronting converging surface areas in abutting engagement preventing one end of the trough-type roller assembly from lifting off of the U-shaped arms, and detachable means for maintaining the wedge plate means in assembly with said one end of one of said fixedly mounted shafts, said wedge plate means having a circular edge surface in engagement about said one end of said shaft to maintain the shaft in a fixed position.

3. In an idler roller structure including roller carrying shaft structure having at least one generally axially outer end fixedly mounted on a supporting frame structure, the improvements of the supporting frame structure having at least one vertically upstanding U-shaped support opening generally axially of the axially outer end of the shaft structure with said support having spaced legs joined by a web at the bottom of the U-shaped support and with the legs including vertically upwardly converging generally radially facing edges and said web including a vertically upwardly facing edge surface upon which the fixed roller carrying shaft structure is supported, a wedge plate having complementary generally radially facing edge faces disposed between and in edgewise engagement with said generally radially facing converging edges and said plate having another vertically downwardly facing edge surface bearing against an end portion of the roller carrying shaft structure to further assist in holding the end portion bottomed against the vertically upwardly facing edge surface, and detachable cap means connected to the roller carrying shaft structure and bearing against the wedge plate for maintaining the complementary edges in opposed relation to the vertically converging edges.

4. In an idler roller structure including roller carrying structure having at least one axially outer end fixedly mounted on an end stand of a supporting frame structure, the improvements of the end stand on the supporting frame structure having at least one vertically upstanding support with said support having spaced vertically upwardly converging edges and said end stand on said supporting frame structure including rest structure upon which the fixed roller carrying structure is supported, wedge structure disposed between and in edgewise engagement with said converging edges and having another edge surface bearing against an end portion of the roller carrying structure to further assist in holding the end portion bottomed against the rest structure on said end stand, and detachable means limiting axial movement of the wedge structure and maintaining the wedge structure in assembly with the roller carrying structure.

5. In an idler roller structure having roller carrying structure including a shaft having at least one end mounted on a supporting frame structure, the improvements of the supporting frame structure having at least one vertically upstanding support with said support having spaced vertically upwardly converging generally radially facing edges and said supporting frame structure including rest structure upon which the shaft is supported, means between the supporting frame structure and the shaft locking the shaft against rotation, a wedge plate carried on the outer end of said shaft having generally radially facing converging surfaces for edgewise abutting engagement with said generally radially facing converging edges to prohibit the roller carrying structure from lifting off of the supporting frame structure.

6. In combination, roller assembly structure and a supporting structure with the roller assembly structure carried thereon and wedge plate structure having generally radially facing edge surfaces bearing against said roller assembly structure and cooperable with said supporting structure to prevent said roller assembly structure from lifting off said supporting structure, said roller assembly structure

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including stationary shaft structure having at least one roller supporting shaft, roller structure carried on said shaft structure, and bearing means between said shaft structure and roller structure, said supporting structure including vertically upstanding spaced supports supporting spaced opposite ends of said stationary shaft structure, each of said supports having spaced vertically upwardly converging generally radially facing surface areas and said supporting structure including support means upon which opposite ends of the shaft structure are supported, said radially facing edge surfaces on said wedge plate structure cooperable with said radially facing converging surface areas on each of said supports, said wedge plate structure being disposed between said radially facing converging surface areas and said wedge plate means being positioned for wedging engagement with said radially facing upwardly converging surface areas to prevent the roller assembly from being lifted off said supporting structure.

7. In combination, roller assembly structure and a supporting structure with the roller assembly structure carried thereon and wedge plate structure having generally radially facing edge surfaces bearing against said roller assembly structure and cooperable with said supporting structure to prevent said roller assembly structure from lifting off said supporting structure, said roller assembly structure including stationary shaft structure having at

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least one roller supporting shaft, roller structure carried on said shaft structure, and bearing means between said shaft structure and roller structure, said supporting structure including vertically upstanding spaced supports supporting spaced opposite ends of said stationary shaft structure, each of said supports having spaced vertically upwardly converging generally radially facing surface areas and said supporting structure including support means upon which opposite ends of the shaft structure are supported, said radially facing edge surfaces on said wedge plate structure cooperable with said radially facing converging surface areas on each of said supports, said wedge plate structure being disposed between said radially facing converging surface areas and said wedge plate means being positioned for wedging engagement with said radially facing upwardly converging surface areas to prevent the roller assembly from being lifted off said supporting structure, and detachable means limiting axial movement of the wedge plate structure and maintaining the wedge plate structure in assembly with the supporting structure.

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