

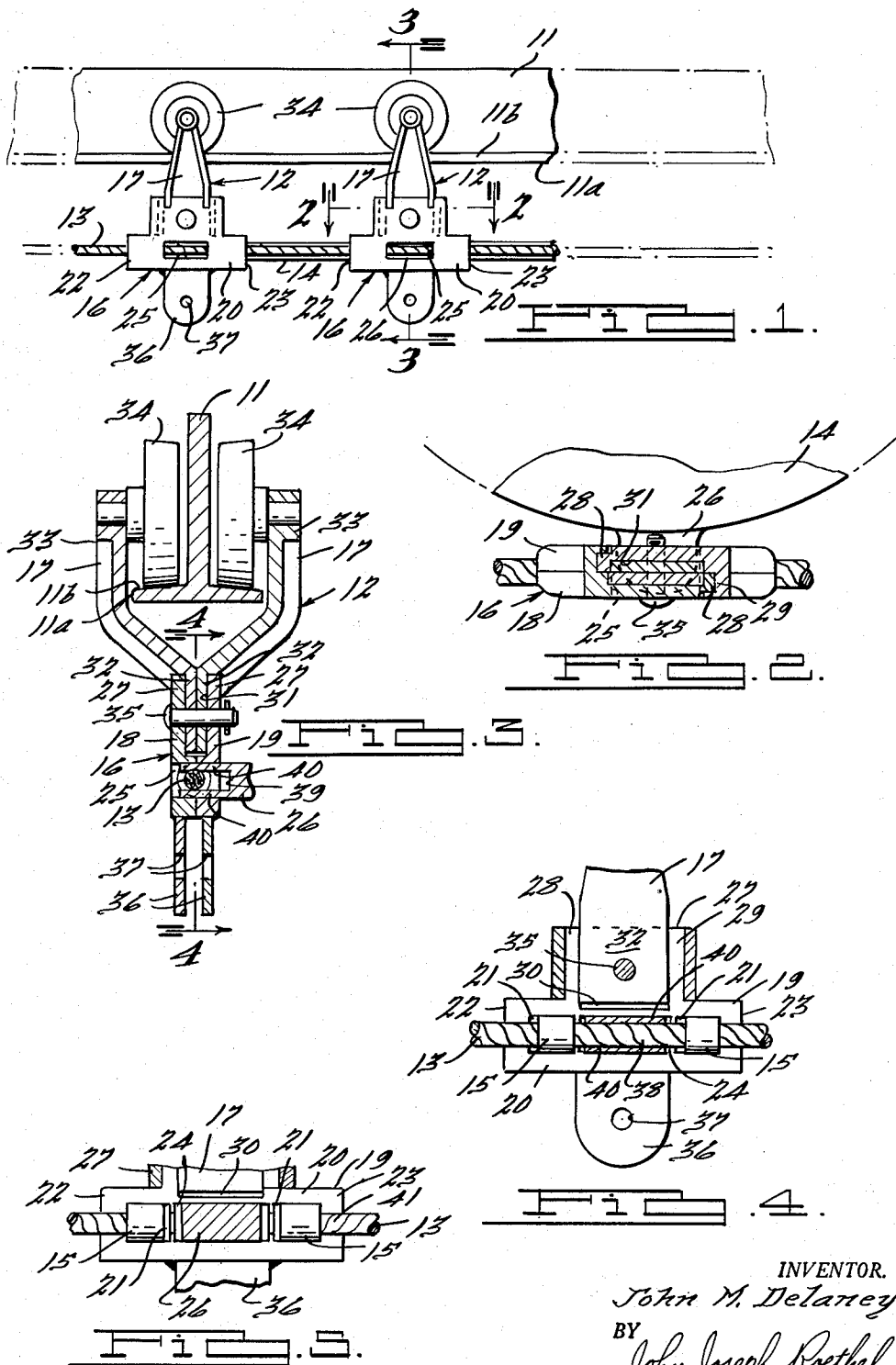
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CONVEYOR BRACKET

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CONVEYOR BRACKET

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This invention relates to conveyors and particularly to a mono-rail conveyor system having a plurality of conveyor brackets movably suspended from a mono-rail, said brackets being maintained in spaced relationship with each other by flexible cable means, there being provided at one or more stations in the line of travel of the conveyor system driving sprockets adapted to successively engage each bracket passing thereby, whereby the bracket engaged by the sprocket and all others linked thereto by the cable means are propelled along the system at a predetermined rate.

The invention has for its object, generally, an improved construction and arrangement of parts which provides a conveyor bracket which is relatively simple and compact in construction, efficient and positive in action, and economical to manufacture in large quantities. More particularly it is an object of the present invention to provide an improved conveyor bracket which may be partially disassembled to permit repair or replacement of the wheels movably supporting the conveyor bracket on the mono-rail without requiring displacement of the bracket from the cable. It is a further object to provide an improved conveyor bracket embodying means permitting the bracket to be engaged by a driving sprocket in a novel manner so as to ensure that driving contact will be maintained for a maximum degree of rotation of the driving sprocket even when a driving sprocket of relatively small diameter is used, such as is necessary when it is desired to make a sharp turn or bend in the system.

In its illustrated embodiment, the invention embodies an improved conveyor system bracket and an improved manner of engagement between the bracket and a driving sprocket whereby the engaged bracket and all others linked thereto by a flexible cable are propelled along a mono-rail. The improved conveyor bracket comprises a body structure having an elongated conveyor cable receiving portion. This body structure comprises two half sections, the plan of cleavage being a vertical plane which includes the longitudinal axis of the cable receiving portion. Each half section is provided on an upper portion thereof with means interlocking with cooperating means on the other half section to retain said half sections against displacement relative to one another in a direction normal to said vertical plane. Each half section is provided with a cavity therein extending downwardly from the upper edge thereof, said cavities when said half sections are in face to face contact with each other forming a downwardly extending recess. The bracket assembly includes a pair of arms each having the lower portion thereof extending into the recess in the body structure. Means, preferably a pin, removably projects through said body structure half sections and said lower portion of the arms to retain the latter within said recess. The upper portions of the arms carry roller means adapted to movably suspend the bracket from a rail. The cable receiving portion of the body structure is provided with internal recesses near each end thereof adapted to receive driving lugs secured to the conveyor

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cable, said driving lugs being adapted to cooperate with the walls of said recesses to maintain the bracket in fixed position relative to the cable. The cable receiving portion of the body structure is also provided with a centrally located transverse opening, the walls of said opening being adapted to be engaged by a tooth on the driving sprocket to move said bracket and all other brackets linked thereto by the flexible cable along said rail.

Other objects and features of this invention will appear in the following description and appended claims, reference being had to the accompanying drawing forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

Fig. 1 is a side elevation showing two of the brackets or trolley units assembled with a track and cable.

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

Fig. 3 is a sectional view taken along line 3—3 of Fig. 2 looking in the direction of the arrows.

Fig. 4 is a sectional view taken along line 4—4 of Fig. 3 looking in the direction of the arrows.

Fig. 5 is a view in part similar to Fig. 4 illustrating a second embodiment of the present invention.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring now to the drawing, and particularly to Figs. 1 to 4 inclusive, wherein there is illustrated, by way of example, one embodiment of the present invention, there is shown a fragmentary portion of a flanged beam or mono-rail 11 from which are movably suspended or supported conveyor brackets, generally designated 12. As illustrated in Fig. 1, the conveyor brackets 12 are anchored at spaced intervals to a stranded steel cable 13. The conveyor brackets 12 are propelled along the mono-rail by a gear or sprocket 14 the periphery of which is toothed to establish a driving engagement with the conveyor brackets as they pass across the periphery of the gear. The conveyor brackets 12 are anchored at fixed intervals on the steel cable 13 by means of driving lugs 15. As illustrated, the driving lugs 14 are in the form of cylindrical sleeves which are swaged onto the cable at spaced intervals. As illustrated two spaced driving lugs 15 are provided for each conveyor bracket 12.

Each conveyor bracket 12 comprises a body structure 16 surmounted by a pair of symmetrical trolley arms 17. The body structure 16 consists of a pair of duplicate half sections 18—19. Each half section 18—19 has an elongated horizontally extending center section 20 provided with two semi-cylindrical cavities or recesses 21 therein, each cavity 21 being spaced inwardly of the respective ends 22 and 23 of the center section 20. The spacing of the recesses 21 is complementary to the spacing of the driving lugs 15 on the cable 13. When the two center sections 20 are placed in facial contact, the adjacent cavities or recesses 21 form cylindrical recesses adapted to receive a driving lug 15. The recesses 21 are slightly longer than the driving lugs 15 to provide tolerance for manufacturing and assembly inaccuracies. It will be understood that the end walls of the recesses 21 are bored through to accommodate the steel cable 13.

Intermediate the inner ends of the recesses 21, the center sections are provided with apertures 24. The apertures 24 are rectangular in cross-section with the long side thereof paralleling the longitudinal axis of the center section 20. When the two center sections 20 of the respec-

tive half sections 18—19 are placed in facial contact, the apertures 24 provide an opening 25 extending through the body member 16. It is the walls of this opening 25 which are engaged by the driving tooth 26 on the driving gear or sprocket 14. It will thus be noted that in the present embodiment the driving force for the entire conveyor system is transmitted from the gear or sprocket 14 to the cable 13 through the successive engagement of the gear teeth 26 with each individual bracket.

Each center section 20 of the respective half sections 18—19 is provided with an upwardly extending projection 27. Each projection 27 is provided on one side edge thereof with a tongue 28 and on the opposite side edge thereof with a groove 29. As best can be visualized by referring to Fig. 2, the two half sections 18—19 are assembled by placing the same in face to face contact and then sliding one relatively to the other to cause the respective tongues 28 and grooves 29 to interlock. When so interlocked the two half sections 18—19 cannot be displaced relatively to one another in a direction normal to the horizontal longitudinal axis of the body structure.

Each projection 27 is formed with a cavity 30 extending inwardly from the inner face thereof and downwardly from the upper edge thereof. When the projections 27 are in facial contact with each other, the cavities 30 form a downwardly extending recess 31. This recess 31 is utilized for securing the trolley arms 17 to the body structure 16. Each trolley arm 17 comprises a lower portion 32 adapted to be inserted within the recess 31 and an upwardly and outwardly flaring upper portion 33. When the two body portions are in place on the body structure 16 the upper portions thereof are spaced a sufficient distance apart to provide clearance for the lower flange 11a of the flanged beam or mono-rail 11 as the bracket 12 is moved therealong. Flanged rollers 34 are suitably journaled on the upper ends of the trolley arms 17 and ride on the upper or inner surfaces 11b of the flange 11a. The trolley arms 17 are secured to the body structure 16 by means of a single pin 35 which projects through the body structure projections 27 and through the lower portions 32 of the trolley arms 17.

The lower end of each center section has a downwardly extending appendage 36 thereon which, when the center sections 20 are in face to face contact, are spaced from each other as shown in Fig. 3. It will be understood that the load to be carried by the conveyor bracket 12 will be suspended in any suitable manner from these appendages. Apertures 37 are provided in these appendages for the insertion of any hook supporting pins or other means as desired.

It has been found that the part or parts of a trolley type conveyor bracket most susceptible to wear is the wheel or wheels supporting the conveyor bracket on the mono-rail. It will be readily apparent that to change a wheel or wheels on the conveyor bracket embodied in the present invention, it is only necessary to pull the pin 35 from the body structure 16 whereupon either one of the trolley arms 17 is removable from the body structure 16 without disturbing the relationship of the body structure to the cable. If necessary, it is even possible to change wheels on any particular conveyor bracket while a load is being carried on said bracket. The conveyor brackets are normally spaced at uniform intervals of 18 inches or 24 inches apart. With such spacing the cable is normally strong enough to hold up any ordinary load even if the trolley wheels are not supporting the bracket from the mono-rail. Because of the interlocking connection between the parts of the projections 26 on the two body half sections 18—19 the bracket will come apart even if the pin 35 has been removed therefrom unless the two half sections 18—19 are deliberately moved laterally with respect to one another.

As noted above, the sprocket or gear tooth 26 carried on the sprocket or gear 14 has been described as being engageable with the walls of the opening 25 located central-

ly of the center section of the combined body half sections 18—19. In one form of conveyor bracket currently in use, the conveyor bracket body section corresponding to the center section 20 of the conveyor bracket body structure 16 herein described must fit into a notch in the driving sprocket to establish a driving engagement. Because of the distance between the ends 22 and 23 of the center section 20, it will be readily apparent that the diameter of the driving sprocket must be relatively large in order that the driving engagement between the sprocket and the bracket be maintained for a sufficient period of time to cause the bracket and all others maintained thereto by the common cable to be propelled along the system. It is believed readily apparent that the wider the notch required to receive the center section corresponding to applicant's center section 20, the flatter the curvature of the peripheral surface of the driving sprocket must be. This means that the driving sprocket must be of relatively large diameter. Further, should it be desired to have the system change direction at the driving sprocket, any corner that would be negotiated necessarily must be in the form of a sweeping curve. Any attempt to negotiate a sharp curve would cause the notch in the driving sprocket to lose engagement with the ends of the center body section. Because of the structure involved in the present invention these disadvantages have been obviated. The driving tooth 26 engages the bracket near the center thereof. As a result of the centralized engagement of the driving tooth 26 with the bracket 12, smaller diameter driving sprockets may be utilized and sharper corners may be negotiated.

The form of the driving tooth may be as shown in Figs. 1 to 4 inclusive or as shown in the modification in Fig. 5. It will be noted that in Figs. 1 to 4 the cable 13 is shown as a continuous strand having the driving lugs 15 mounted thereon at properly spaced intervals. A part 38 of the cable 13 extends through the opening 25. Accordingly, the driving tooth 26 is provided with a cutout 39 leaving two relatively thin sections 40 which project between the cable and the upper and lower edges of the opening 25.

In the embodiment illustrated in Fig. 5 the driving lugs 15 are shown as mounted on cable ends 41. Thus, in this embodiment the driving tooth 26 may be solid, if desired. It will be readily apparent, however, that the driving tooth shown in cross-section in Fig. 3 would work just as well with the arrangement shown in Fig. 5.

I claim:

1. In a conveyor system bracket, a body structure having an elongated conveyor cable receiving portion, said cable receiving portion being provided with an internal recess near each end thereof adapted to receive at least one driving lug secured to a conveyor cable, said driving lug being adapted to cooperate with the end walls of said receiving recess to maintain said bracket in fixed position relative to the cable, said body structure being severed into two half sections along a vertical plane which includes the longitudinal axis of said cable receiving portion, each half section being provided on an upper portion thereof with means interlocking with cooperating means on the other half section to retain said half sections against displacement relative to one another in a direction normal to said vertical plane, each half section having a cavity therein extending downwardly from the upper edge thereof, said cavities when said half sections are in face to face contact forming a downwardly extending recess, a pair of arms each having the lower portion thereof extending into said recess, means removably projecting through said half sections and said lower portions of the arms to retain the latter within said recess, and roller means carried by the upper portion of said arms adapted to movably suspend said bracket from a rail, said cable receiving portion being provided with a centrally located transverse opening, the walls of said opening being engageable by a tooth on a driving sprocket to move said bracket along said rail.

2. In a conveyor system, comprising, in combination,

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a conveyor bracket having a longitudinally extending body portion, means movably suspending said conveyor bracket from an overhead rail, said body portion having an internal recess extending lengthwise therein and opening through both ends thereof, said recess receiving a portion of a conveyor cable having at least one driving lug secured thereon, said body portion being provided with a slot at right angles to said recess, and a drive member having a plurality of teeth extending from the periphery thereof, any one of said teeth being adapted to enter into said slot and to engage an end wall thereof to propel said bracket along the conveyor system.

3. In a conveyor system, comprising, in combination, a conveyor bracket having a longitudinally extending body portion, means movably suspending said conveyor bracket from an overhead rail, said body portion having an internal recess extending lengthwise therein and opening through both ends thereof, said recess receiving the end portions of a segmental conveyor cable, each end portion having a driving lug secured thereon, said body portion being provided with a slot at right angles to said recess, said slot extending through said body portion for substantially the depth thereof and between the driving lugs, and a drive member having a plurality of teeth extending from the periphery thereof, any one of said teeth being adapted to enter into said slot between the driving

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lugs and to engage an end wall thereof to propel said bracket along the conveyor system.

4. In a conveyor system, comprising, in combination, a conveyor bracket having a longitudinally extending body portion, means movably suspending said conveyor bracket from an overhead rail, said body portion having an internal recess extending lengthwise therein and opening through both ends thereof, said recess receiving a portion of a conveyor cable having at least one driving lug secured thereon, said body portion being provided with a slot at right angles to said recess, said slot extending through said body portion for substantially the depth thereof, said conveyor cable being exposed in said slot, and a drive member having a plurality of teeth extending from the periphery thereof, each of said teeth being bifurcated to receive the cable therebetween, any one of said teeth being adapted to enter into said slot and to engage an end wall thereof to propel said bracket along the conveyor system.

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