Jan. 6, 1953 E. N. WILLIAMS 2,624,449

TROLLEY CONVEYER

Filed Sept. 18, 1950

Fig. 1

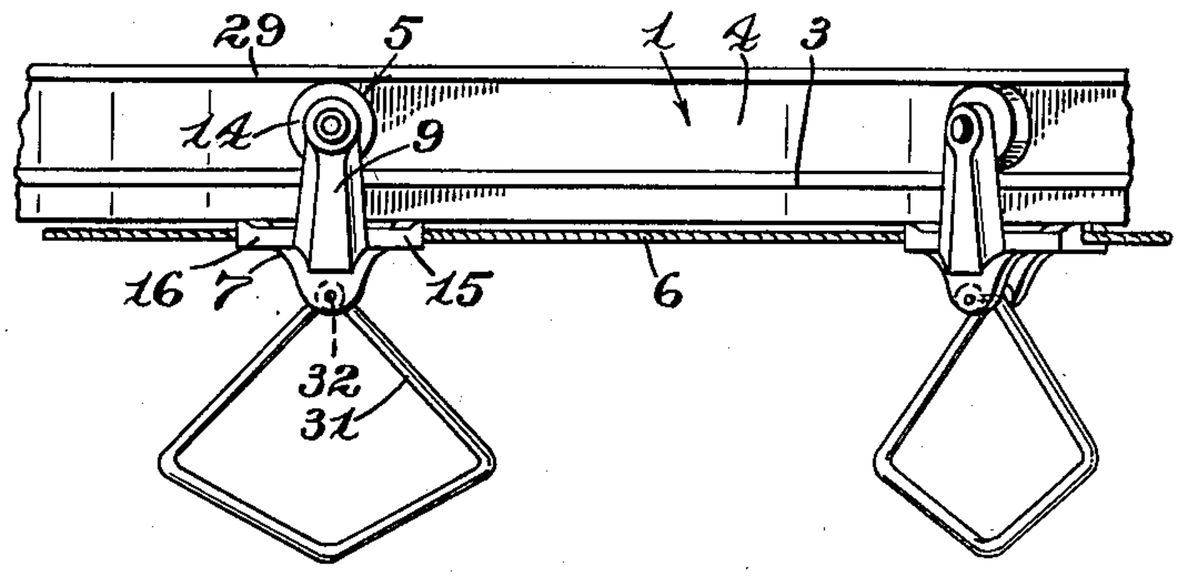


Fig. 2

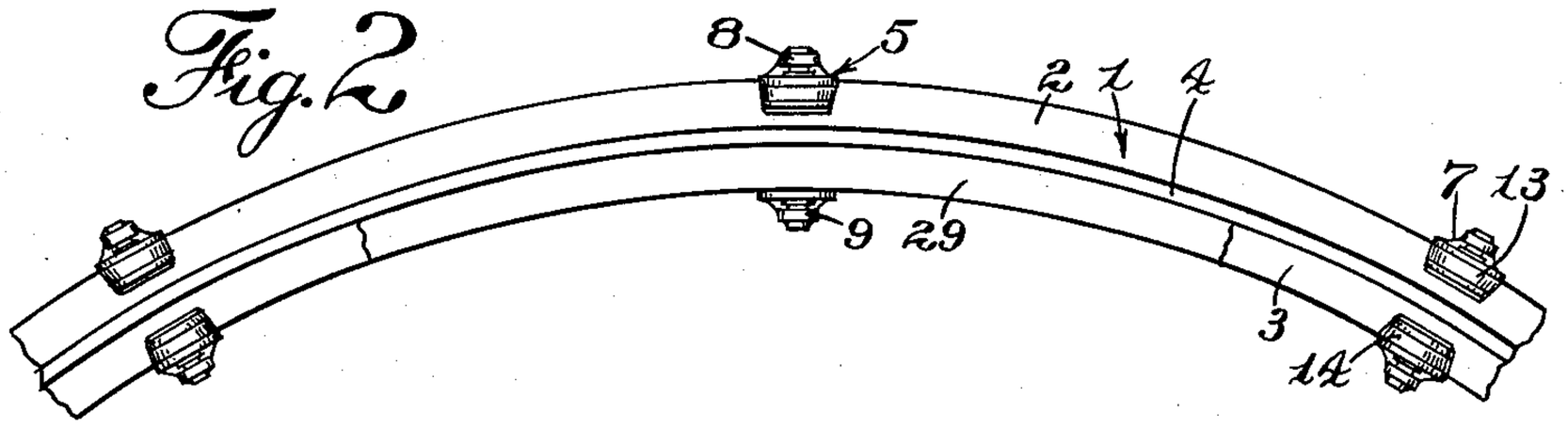


Fig. 3

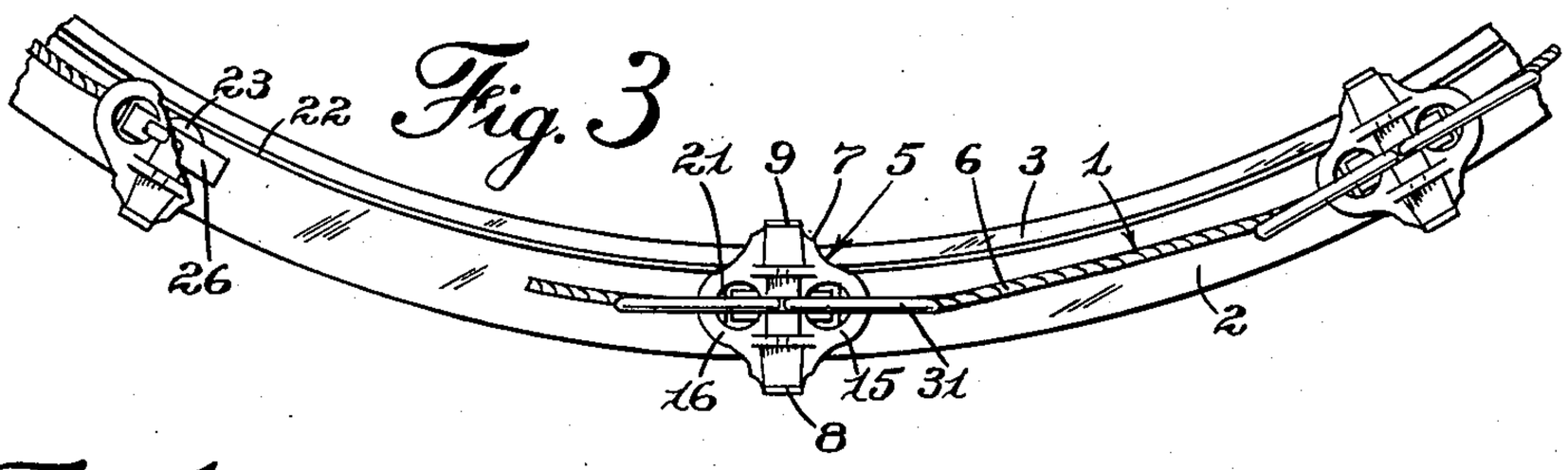


Fig. 4

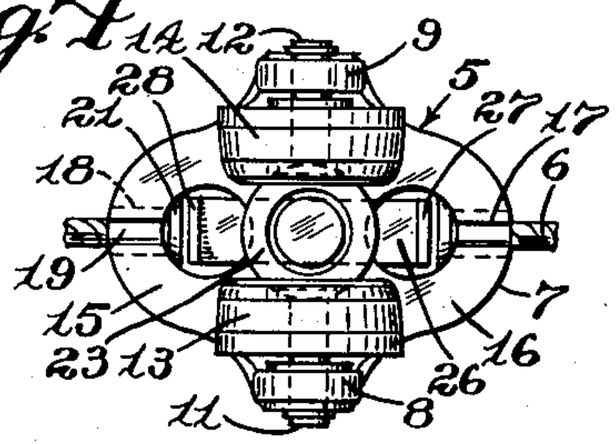


Fig. 6

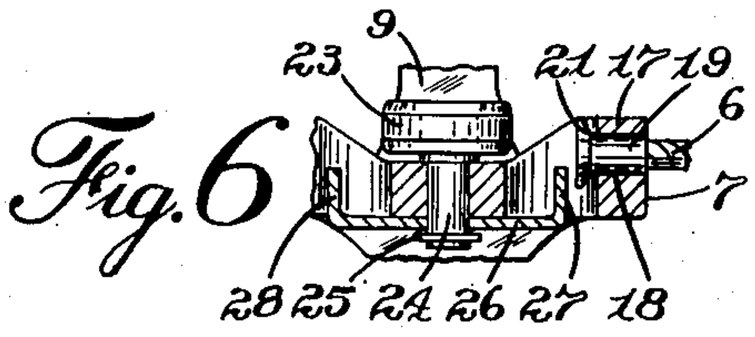
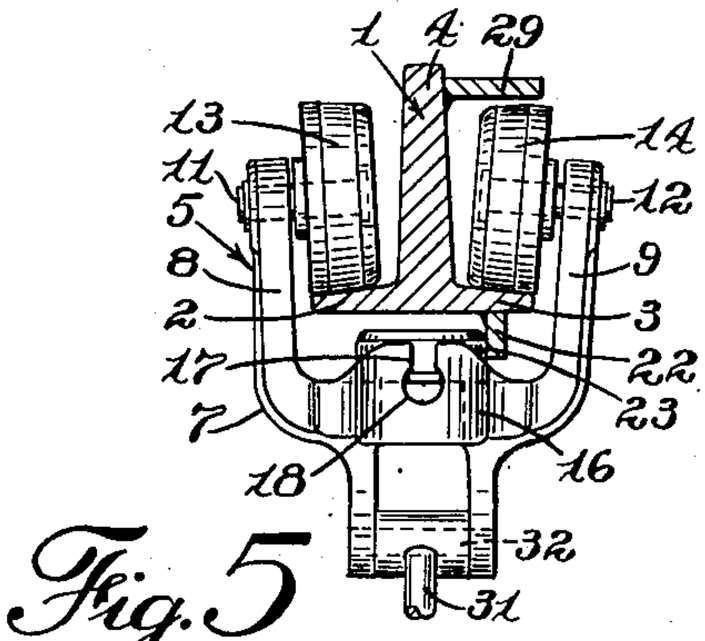


Fig. 5



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TROLLEY CONVEYER

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3 Claims. (Cl. 198—177)

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The present invention relates to conveyers, and more particularly to overhead trolley conveyers such as used for manufacturing and/or assembly purposes.

In conveyers of this type which are required to follow a curved or sinuous path, it is customary to connect the carriers or trolleys by means of flexible cables or linkage to produce an endless belt or chain, and to place rotatable sprockets or roller turns at the junction of the straight portions of the track in order to guide the chain from one straight portion to the next. This arrangement is expensive and wasteful of space, and not well adapted to installations comprising a plurality of gradual curves or bends.

It is an object of the present invention to provide a trolley conveyer structure which is efficient and reliable in operation, and simple and economical in construction.

It is another object to provide such a device comprising a supporting track and a plurality of linked trolleys or carriers pendant therefrom, in which the track has one or more curved or bent sections, and such curved sections and the carriers are provided with means for maintaining the carriers in a substantially vertical position and preventing cocking or cramping of the parts as they traverse such sections without the use of such rotatable sprockets or roller turns.

Further objects and advantages will be apparent from the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a side elevation of a curved portion of a conveyer mechanism comprising a preferred embodiment of the invention;

Fig. 2 is a top plan view of the structure shown in Fig. 1;

Fig. 3 is a view of the underside of the conveyer, part of one of the trolleys being broken away and shown in section;

Fig. 4 is a top plan view of one of the trolleys or carriers on a somewhat enlarged scale;

Fig. 5 is an end view of a carrier also on an enlarged scale showing the cooperation of the support and guide rollers with the conveyer rail; and

Fig. 6 is a detail of the carrier structure showing particularly the means for retaining the cable connectors.

In Fig. 1 of the drawing there is illustrated a support rail, indicated generally by numeral 1, having a pair of laterally extending supporting flanges 2 and 3 (Fig. 5) and a substantially vertical web 4 therebetween. A plurality of trolleys

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or carriers 5 are arranged to travel on the supporting rail and are connected by flexible links 6 so as to form an endless chain.

Each trolley comprises an integral frame 7 having upstanding arms 8, 9 in the ends of which are mounted in any suitable manner a pair of pins or gudgeons 11, 12 which form bearings for supporting the rollers 13, 14 which rest on the flanges 2, 3 of the rail 1.

The trolley frame 7 is also provided with laterally extending bow-shaped members 15, 16 which are slotted as shown at 17 in Fig. 5, the slots communicating with openings 18 extending through said bowed portions. The slots 17 are arranged to slidably receive the ends of the flexible links 6, and the openings 18 are formed to receive ferrules 19 fixed in any suitable manner on the ends of the links 6. Ferrules 19 have enlarged heads 21 formed thereon which bear on the inner sides of the bows 15, 16 as best shown in Fig. 4 so as to anchor the links 6 to the trolleys.

According to the present invention means are provided for maintaining the trolleys 5 in a substantially vertical position and preventing cramping or sticking of the trolleys to the rail when traversing curved sections of the rail. As here shown, this is accomplished by forming or mounting a vertical guide flange 22 underneath the curved portions of the rail on the side toward the center of curvature thereof, and mounting a guide roller 23 on a vertical axis in the trolley frame in position to engage the guide flange as best shown in Fig. 5.

The roller 23 is preferably mounted on a pin 24 traversing the trolley frame 7 and retained in any suitable manner as by means of a lock ring 25 (Fig. 6).

Means for preventing accidental disconnection of the links 6 from the trolleys 5 is provided in the form of a U-shaped clip 26 having upwardly extending fingers 27, 28 located behind the heads 21 of ferrules 19 so as to prevent the ferrules from sliding out of their openings 18. The clip 26 is mounted on the vertical pin 24 and retained by the lock ring 25.

In some instances it has been found desirable to supplement the guiding action of the flange 22 on the guide roller 23 by mounting a horizontal flange 29 (Fig. 5) on the web 4 of the rail 1 above the support roller 14 which is on the side of the trolley nearest the center of curvature. When the curvature is quite sharp, the tension of the links 6 may tend to raise the roller 14 off the support flange 3. In such case the roller engages the supplemental guide flange 29 and

thereby cooperates with the vertical roller **23** in maintaining the trolley in substantially vertical position.

The trolleys **5** are provided with load supporting elements **31** pivoted to the lower portions of the frame **7** as indicated at **32**.

In assembling the conveyer, the trolleys, after being mounted on the rail are connected to the links **6** by passing the end of a link through the slot **17** and then drawing it out until the ferrule **19** seats in the opening **18** with its head **21** against the interior of the frame **7**. After both links have been so attached to a trolley, the clip **26** is slipped on the vertical pin **24** and retained by lock ring **25** so as to prevent disconnection of the links.

In operation, the endless chain formed by the trolleys and links is moved along the rail **1** by any suitable driving means such as a sprocket member or caterpillar drive in the usual manner. When the trolleys encounter curved sections of track they are maintained in proper vertical position by means of the guide roller **23** and flange **22**, and by the supplemental guide flange **29** when the latter is employed.

Although but one form of the invention has been shown and described in detail, it will be understood that other embodiments are possible and that changes may be made in the precise design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. In an overhead conveyer, a track having a pair of supporting flanges and a vertical web therebetween, a plurality of trolleys each comprising an integral frame, a pair of rollers journaled thereon adapted to bear on the flanges of the rail, and a third roller journaled on the frame

on a substantially vertical axis; said rail having a portion curved in a horizontal plane, and said curved portion being provided with a vertical guide flange positioned to engage the third roller of the trolleys and thereby prevent tilting of the trolleys as they traverse said curved portion; and flexible links connecting said trolleys in the form of sections of flexible cable having headed ferrules fixed on each end, said trolley frames being provided with slots slidably receiving the cables and communicating with cylindrical openings fitting said ferrules, and abutment surfaces adjacent said openings engageable by the heads of the ferrules to anchor the links in the frames.

2. A conveyer as set forth in claim 1 including further detachable means for limiting axial movement of the heads of the ferrules away from said abutment surfaces so as to confine the ferrules in the openings of the trolley frames.

3. A conveyer as set forth in claim 2 including further a vertical bearing bolt traversing each trolley frame on which the third roller of the trolley is journaled, said means for limiting the axial movement of the ferrule heads being in the form of a clip mounted on said bolt beneath the frame and having arms extending back of said heads to prevent withdrawal of the ferrules from said openings.

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