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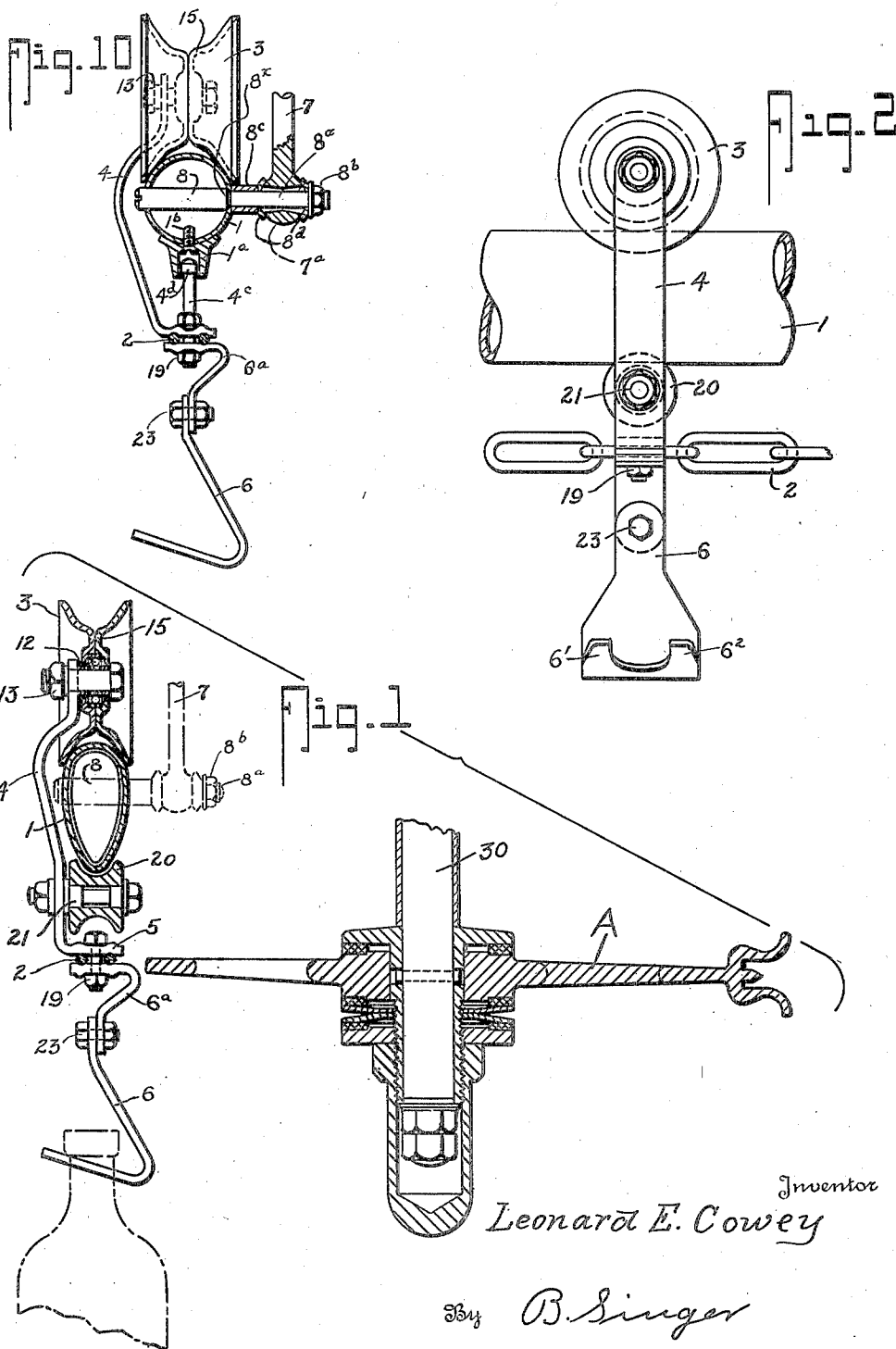
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2,229,002

SUSPENDED CONVEYER

Filed Aug. 17, 1938

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

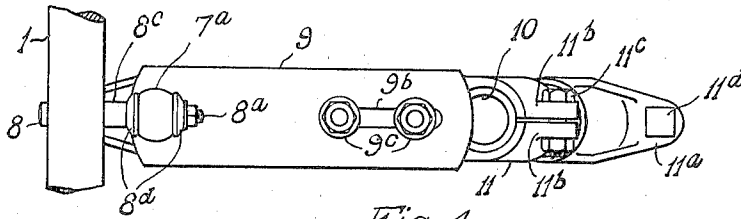


FIG. 4.

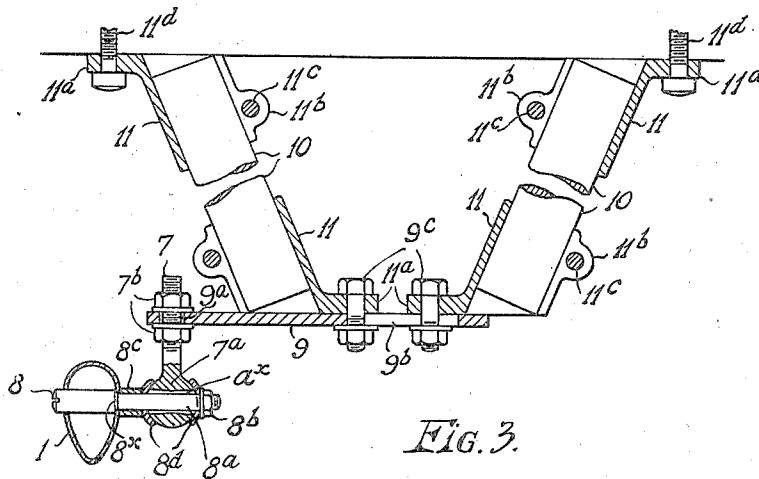


FIG. 3.

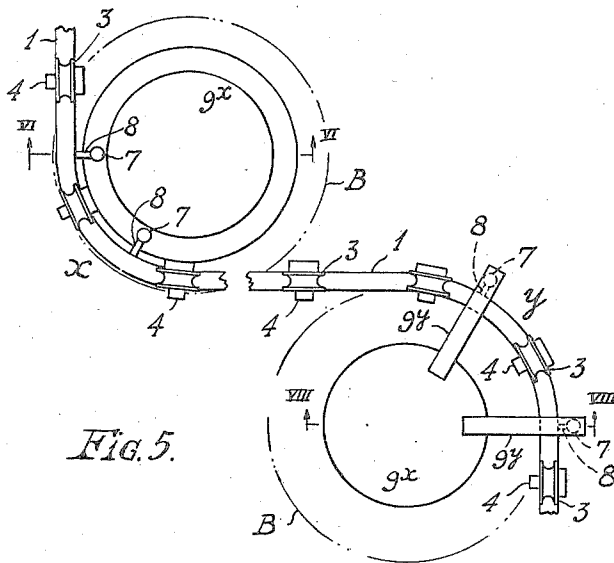


FIG. 5.

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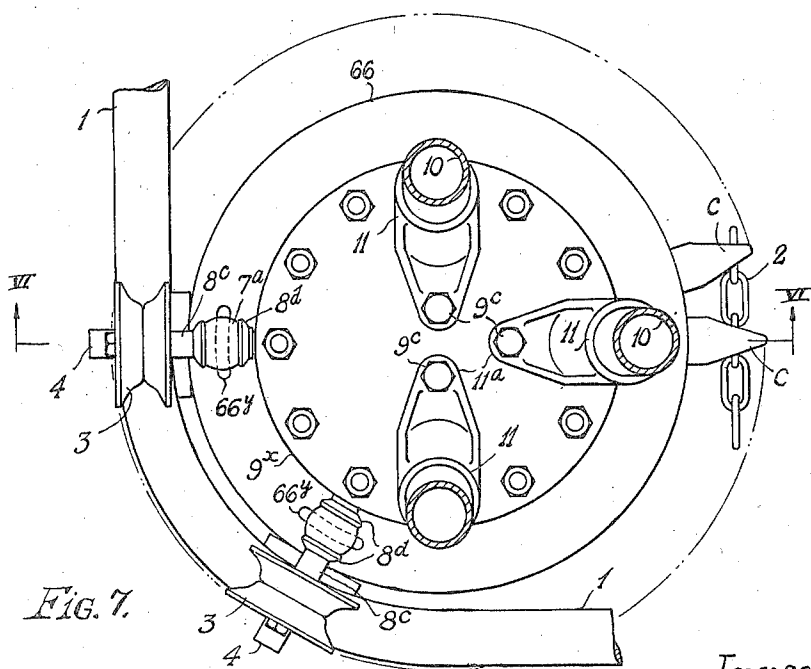
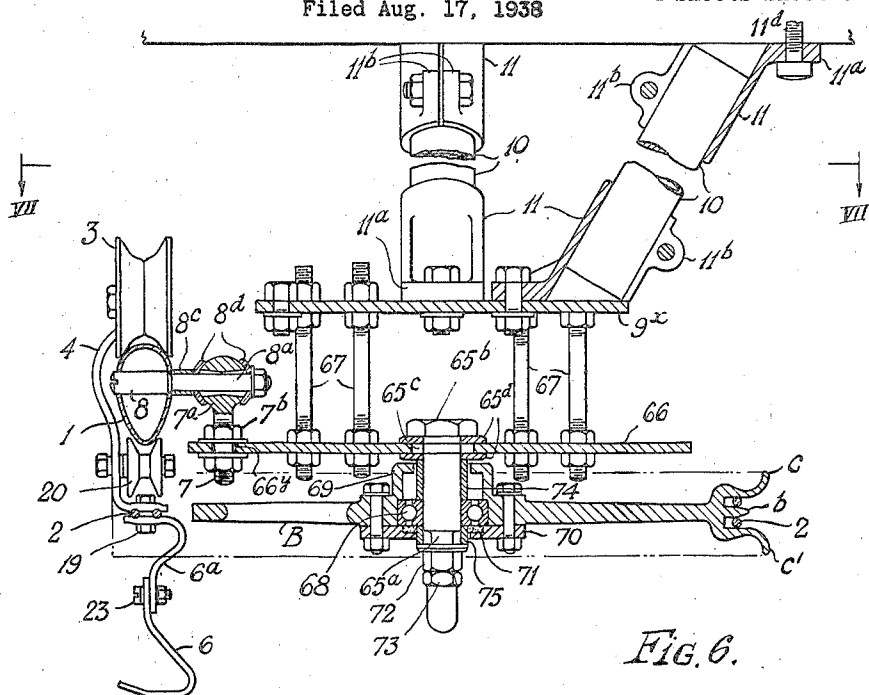
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4 Sheets-Sheet 3



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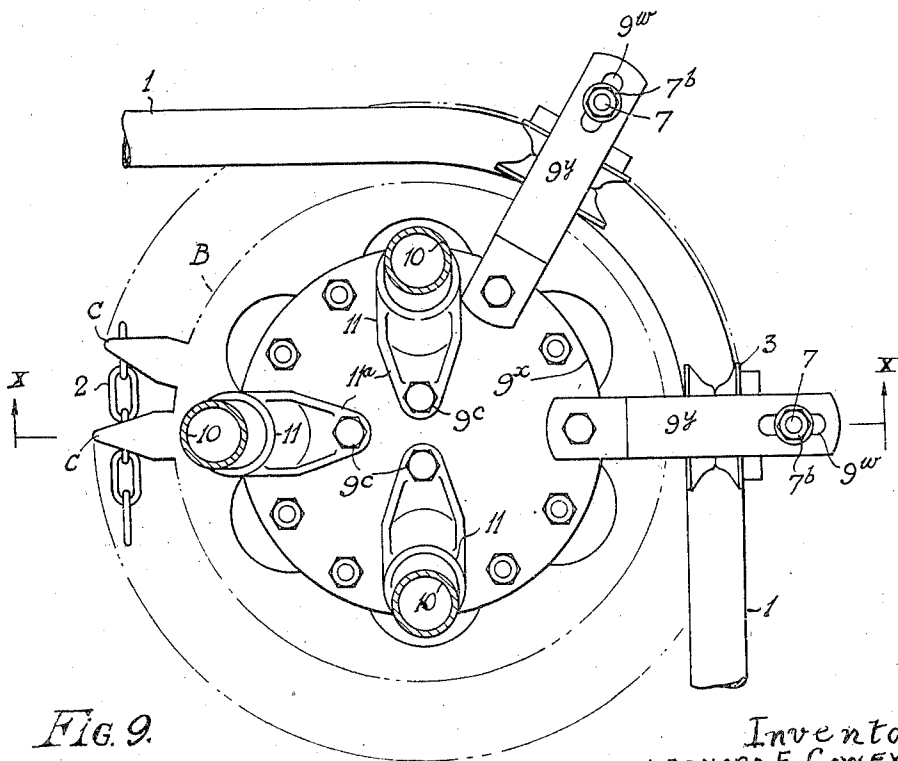
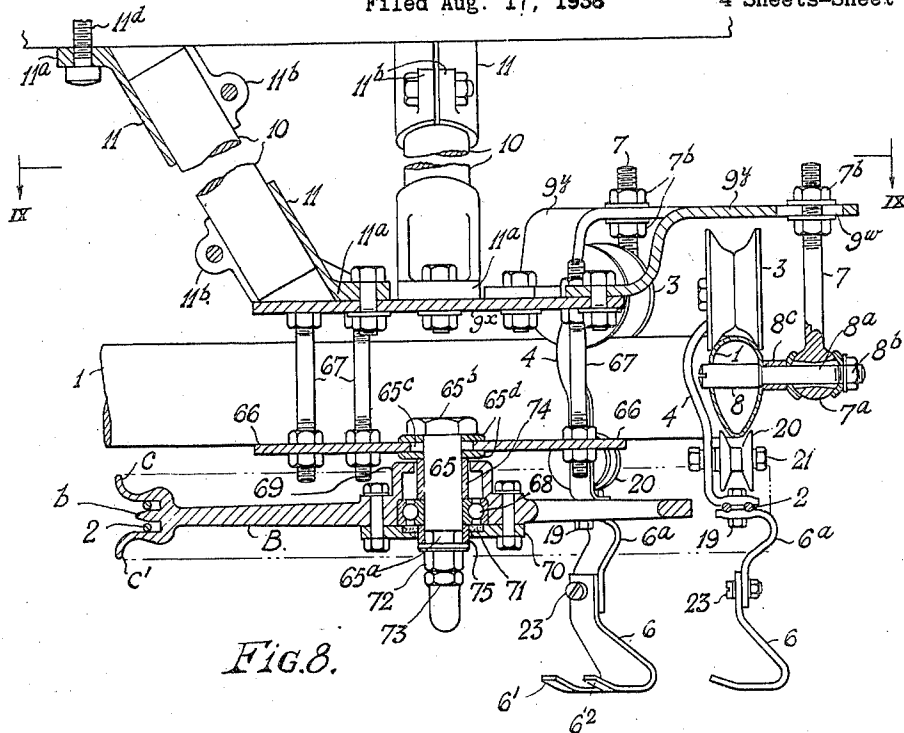
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SUSPENDED CONVEYER

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,229,002

SUSPENDED CONVEYER

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Application August 17, 1938, Serial No. 225,462
In Great Britain August 17, 1937

1 Claim. (Cl. 104—111)

This invention relates to overhead conveyers for transporting goods of the kind comprising a single overhead trackway for trolleys and the like, each trolley comprising a pendant arm suspended on a grooved wheel or roller which is driven along the track by means of a chain arranged beneath the track and operated from a source of power through sprocket gearing.

The object of the invention is to simplify and improve the construction of the track rail and its supports and likewise the trolleys which run thereon, in order to provide a light and efficient construction of overhead conveyer of the kind referred to, which is relatively cheap to install and maintain and durable and efficient in use.

These objects are attained by the means illustrated in the accompanying drawings, wherein similar references indicate like parts.

Fig. 1 is a transverse vertical section illustrating one construction of overhead track conveyer in accordance with the present invention; Fig. 2 is a side view of the trolley and its load carrying device on a horizontal section of the conveyer track shown in Fig. 1; Fig. 3 is a cross-sectional elevation, and Fig. 4 an inverted plan view further illustrating the adjustable supports for the track rail indicated by chain lines in Fig. 1; Fig. 5 is a diagrammatic plan view of reversely curved sections of the track rail including the guiding sprockets at the reverse bends; Fig. 6 is a vertical cross section on the line VI—VI, Fig. 5, illustrating on an enlarged scale the adjustable supports for the track and guiding sprocket wheel at the outside track bend x' and Fig. 7 a sectional plan view on the line VII—VII Fig. 6; Fig. 8 is a vertical cross section on the line VIII—VIII, Fig. 5, illustrating on an enlarged scale the adjustable supports for the track rail and guiding sprocket wheel at the inside track bend y , and Fig. 9 is a sectional plan view of the line IX—IX Fig. 8; Fig. 10 illustrates a slightly modified construction of the conveyer track and trolley in accordance with the present invention.

Referring to the drawings, 1 indicates the conveyer track which is formed of steel tubing which may be of streamline or oval cross section as shown in Figs. 1, 3, 6 and 8, or the track may be formed of circular tubing as in the modified construction illustrated at Fig. 10 and presently more particularly referred to.

2 indicates the driving chain which is arranged beneath the tubular conveyer track 1 that forms the runway for the trolleys. The trolleys each comprise a wheel or roller 3 and a pendant arm 4, the lower end 5 of which latter is connected with a

driving chain and with a pivotal load carrying device 6. The pendant trolley arms serve to maintain the driving chain 2 in correct relationship with the conveyer track 1 so that the chain can be operatively engaged by a driving sprocket wheel A (see Fig. 1) connected with a source of power and by guiding and idler sprockets B (see Figs. 6 and 8) by which the driving chain is guided so as to follow the contours of the track.

The rail track is constructed of steel tubing which is carried laterally of adjustable supports 7 by adjustable horizontal arms or brackets 8 (see Figs. 3 and 6). Each of the arms or brackets 8 is in the form of a round pin that terminates in a reduced shank 8a, the free end of which is screw threaded and furnished with a nut 8b.

The track tubing is perforated at intervals to enable the bracket pins 8 to be passed through the apertures on the outer face of each tube until the shouldered end 8z of the pin abuts the opposite side of the track tube, in which side a smaller perforation is formed for the passage of the reduced shank 8a.

The shank is furnished with a tubular distance piece 8c and projects through a transverse perforation a^x in the spherical head 7a of the support 7. A pair of concave washers 8d are mounted upon the shank so that they respectively seat upon the opposite sides of the spherical head 7a of the support 7 when the shank is assembled to the latter.

Each of the bracket pins 8 is firmly secured in its corresponding support 7 by screwing up the nut 8b upon the threaded end of its shank 8a, so drawing up the shank until the distance piece or sleeve 8c and washers 8d are clamped tightly against the head 7a of the support and the adjacent face of the track tube 1.

The perforation a^x in the head 7a of each support is flared or tapered outwardly from its centre so as to enable universal angular adjustments of the shank 8a of the bracket pin 8 to be made in the head 7a when the nut 8b is slackened to allow relative angular movements of the shank together with the concave washers 8d carried thereon.

Each of the supports 7 consists of a shank threaded at one end and furnished with a pair of threaded nuts 7b whereby such shanks can be secured in perforations 9a in a carrier plate 9, which perforations may be elongated to allow of limited adjustments of the supports 7 while the carrier plate is furnished with a longitudinal slot 9b by which it is adjustably secured by threaded bolts and nuts 9c to overhead supports.

As illustrated, the overhead supports each con-

sist of a tube 10 to each end of which a split tubular socket member 11 is firmly secured. Each of such split socket members comprises a perforated lug 11a and a pair of perforated ears 11b in which a screw bolt and nut 11c is mounted. The split sockets are frictionally secured to the opposite ends of each tube 10 by tightening up the screw bolts and nuts 11c in the perforated ears 11b thereof to form a suspensory support.

The upper end of the support so formed is secured to a ceiling or overhead member by means of a screw bolt 11d, while the slotted carrier plate 9 is secured to the perforated lugs 11a at the lower ends of the overhead supports by means of the threaded nuts and bolts 9c which are passed through the slot 9b in such plate.

When the trackway is formed of tubing of streamline or oval cross-section, such tubing is mounted on its supports with its broad end upwards to form the running surface for the conveyer trolleys as shown at Fig. 1. The trolleys each comprise a grooved wheel 3 mounted through ball bearings 12 upon a central bolt or spindle 13 upon one end of which the dependent arm 4 of the trolley is secured, such trolley arm being cranked laterally and mounted upon the spindle 13 so that it is suspended on the side of the track rail remote from the supporting brackets 8 of the latter, while the peripheral groove of the wheel is shaped so as to straddle the track rail 2 and bear thereon at points on opposite sides of the track rail as shown in Figs. 1 and 10 in order to increase the stability of the trolley when in operation.

The lower end 5 of the dependent trolley arm is perforated and secured to one of the horizontal links of the driving chain 2 together with one element 6a of a load carrying device 6 by means of a bolt and nut 19 as shown in Fig. 1, so that the link of the chain is firmly clamped between the adjacent faces of the trolley arm end 5 and the element 6a, both of which may be grooved as shown to seat securely on the sides of the link.

As shown in Figs. 1 and 2, the load-carrying device is in the form of a hook which is pivotally connected by a bolt and nut 23 to the load carrying element 6a so as to enable such hook and its load to hang plumb as the trolley follows inclined contours of the track rail.

To prevent the trolley being displaced from the track a grooved guard roller 20 is mounted upon the inner face of the cranked trolley arm 4 adjacent to the reduced lower end of the streamline track tube 1 as shown in Fig. 1. The grooved guard roller is rotatably mounted upon a spindle 21 secured in the trolley arm 4 so that the grooved periphery of the guard roller registers with the lower end of the track rail 1 while affording sufficient clearance to allow limited lateral and vertical displacements thereof so that the trolley wheel can readily follow the contours of the track with a minimum of friction.

The conveyer is operated by means of the driving sprocket A (see Fig. 1) which is mounted upon a rotatable driving shaft 30 connected in any preferred manner with the source of power.

Each of the idler or guiding sprockets B (see for example Figs. 6 and 8) is mounted on a fixed spindle that is adjustably secured in a perforated plate 66 carried by screw bolts and nuts 67 secured in a carrier plate or disc 9x suspended by overhead supports, each consisting of a tube 10 secured in split tubular socket members 11 each comprising a perforated lug 11a and a pair of perforated

ears 11b as described with reference to Fig. 3 of the drawings.

The spindle 65 of each guiding sprocket B is provided with a flanged head 65b and is adjustably mounted in a relatively large aperture 65c formed in the plate 66 (see Fig. 5) by means of a pair of relatively large washers 65d mounted upon such spindle and disposed upon opposite sides of the plate 66.

The large aperture 65c and washers 65d allow 10 the spindle 65 together with the sprocket wheel B mounted thereon to be readily adjusted relatively to the plate 66 for the purpose of taking up slack in the driving chain 2 when desired.

The driving sprocket A and likewise the guiding sprocket B are usually arranged upon the same side of the fixed conveyer track 1 as the supports 7 and bracket pins 8 thereof so that the opposite sides of the track on which the trolley arms 4 are suspended is entirely free from obstruction which might foul such arms. Where, however, the track 1 has a reverse bend as shown at y, Fig. 5, a guiding sprocket wheel B must be arranged on the inner side of such bend to cause the driving chain 2 to follow the contour of the track 1, while the arms 4 of the trolleys in following such contour are suspended upon the inside of the reverse bend.

The supports 7 and bracket pins 8 of the track are arranged upon the outside of the reverse bend y remote from the sprocket B in such reverse bend, as indicated at y Fig. 5, and in Figs. 8 and 9, to avoid fouling the suspended trolley arms 4 as they pass round the inside of the reverse bend y.

To effect this, the supports 7 and bracket pins 8 are disposed upon the outside of the return bend y by means of bracket plates 9y which are secured to the carrier plate 9x by which a guide sprocket B is supported within the reverse bend y, (see Figs. 5, 8 and 9). The bracket plates 9y are disposed radially of the reverse bend y, (see Figs. 5 and 9), and are bent upwards as shown in Fig. 8 so as to allow the trolley wheels 3 to pass freely thereunder as they travel upon the curved rail track 1.

The outer ends of the radially disposed bracket plates 9y are slotted radially of the curve y as indicated at 9w to enable the corresponding track supports to be adjusted therein by means of the nuts and washers 7b.

At the first or forward bend x' of the double curve the plate 66 which carries the guide sprocket B in such curve x' is utilised for holding the supports 7 of the track 1, (see Figs. 6 and 7) and for this purpose circumferential slots 66y are formed in this plate to enable the supports to be adjustably secured in such slots by means of the nuts 7b.

In the modified construction shown in Fig. 10 the bottom of the cylindrical track tube 1 is furnished with a grooved guide 1a that is secured by screws 1b centrally of the underside of the track tube and runs continuously along the latter, while the bottom of the cranked conveyer arm 4 is furnished with a vertically disposed pin 4c which carries a boss 4d or a roller that projects into the grooved guide 1a so as to leave vertical and lateral movements of the trolley wheel 3 on the track 1 while preventing the trolley being displaced from the track.

I claim:

In an overhead conveyer of the character described, a single tubular track rail, transverse angularly adjustable bracket pins on which said

track rail is mounted, perforated vertical supports in which said pins are secured, carrier plates suspended laterally of the tubular track rail on which said perforated vertical supports are mounted, inclined tubes suspending said carrier plates, split tubular socket members in which said tubes are secured, and a clamp screw for each

socket member, each socket member having a perforated lug at its free end, the split socket at one end of each tube being bolted to the overhead support and that at the other end of each tube being secured to said carrier plate.

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