Sept. 14, 1943. C. V. STEWART 2,329,303

REVERSIBLE TRACTOR TRACK

Filed May 4, 1942

FIG. 1.

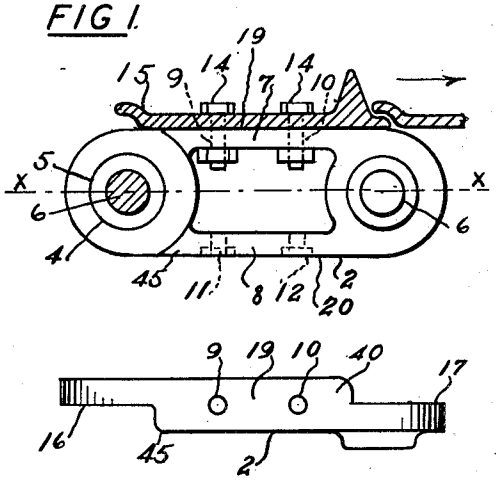


FIG. 2.

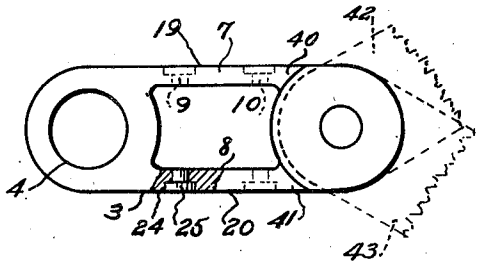


FIG. 3.

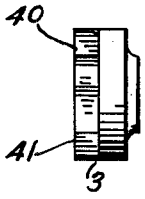


FIG. 4.

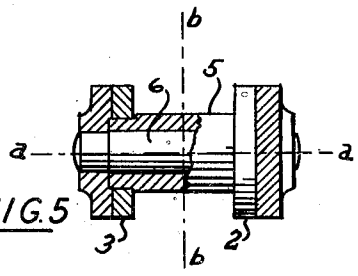


FIG. 5

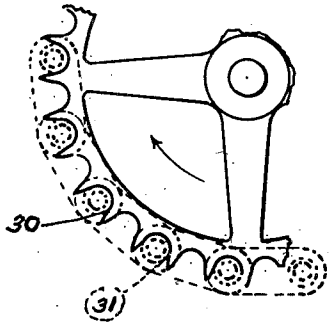


FIG. 6

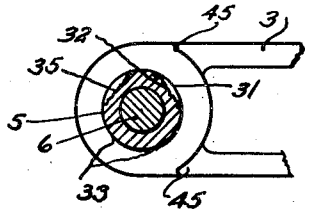


FIG. 7

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Patented Sept. 14, 1943

2,329,303

UNITED STATES PATENT OFFICE

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REVERSIBLE TRACTOR TRACK

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Application May 4, 1942, Serial No. 441,741

1 Claim. (Cl. 305—10)

This invention pertains to tractor track links and tracks of track type tractors wherein propulsion is effected by means of a two sprocket driving wheels running on a movable track consisting of links carrying track shoes on their outer surfaces. The weight of the vehicle is supported on rollers at the bottom of the span between the rear and forward wheels.

In common practice, links of the chain belt which forms the tracks are made from pairs of forgings shaped to have right and left corresponding counterparts, with holes at one end to receive a thimble and at the other to receive a bearing pin extending through the thimble of the next succeeding link. The thimbles form contact surfaces with the teeth of the driving sprocket. The flat faces of links, as now constructed, consist of a shoe side having bolt holes to receive bolts to hold the shoe plates in place, and on the inside a rail side or track face adapted to roll over the forward untoothed wheel and the weight supporting rollers at the bottom. All contacting portions are subject to wear and in ordinary practice it is not possible to lubricate either the contacting surfaces of the rail side of the links nor the bearing surfaces of the pins in the thimbles. Therefore, all these parts are subject to dry friction wear and abrasion.

In view of the foregoing, it is an object of this invention to provide a link for the chain track of the above described type of tractor which is so designed, formed and shaped that the wear surfaces may be shifted by turning over or reversing the position of the link in the chain so that the shoe side of the link becomes the rail side of the link.

A further object is to provide a chain track for tractors composed of links formed so that the entire chain may be reversed or turned over whereby the shoe side of the links of the entire track will become the rail side.

A third object is to provide a link composed of two side pieces connected by a thimble at one end and adapted to receive the link or bearing pin of the next succeeding link at the other end, so designed and shaped that they are longitudinally symmetrical whereby they may be reversed and the shoe side will become the rail side of the link as set up in the track chain.

A still further object of the invention is to provide a track chain composed of links which are symmetrical relative to their longitudinal axis so that when either the chain or the individual links are rotated through 180 degrees on said axis the area of the thimble, connecting the side members of the link, which contacts the wear or driving face of the sprockets on the driving wheel will be reversed so that a new unworn surface will be presented to the sprocket teeth, all of which may be effected without disassembling the links in the track.

Other objects will appear hereinafter.

I attain the foregoing objects by means of the devices, construction and design illustrated in the accompanying drawing in which,—

Figure 1 is an outside elevation of a link embodying my improvements;

Figure 2 is an inside elevation of a similar link;

Figure 3, a plan view of a side member of a link;

Figure 4, an end elevation of the link member shown in Figure 2;

Figure 5 is a section of the end of an assembled link connection showing the position of the link side members relative to the thimble and bearing pin;

Figure 6 is a fragmentary section of a sprocket driving wheel and a portion of a chain track in contact therewith, showing particularly the relation of the parts which cause excessive wear; and

Figure 7 is a somewhat enlarged sectional elevation of a link fragment, showing diagrammatically the area of wear on the thimble.

Similar numerals refer to similar parts in the several views.

While there are several types of link chain tracks now in general use on track propelled tractors, for the most part these tracks are composed of links embodying the same general structure. A link is composed of pairs of side members made right and left accordingly and having registering holes at one end, adapted to receive a thimble. The thimble, in turn, receives a bearing pin which fits into the respectively opposite ends of the side members of the next succeeding link. The ends of the thimble fit into the holes in the side members with a rigid force fit. Likewise the ends of the bearing pin fit into the holes in the opposite ends of the link members. The bearing pin works freely within the connecting thimble. The track is put together by pressing the side members onto a thimble at one end and onto a pin inserted through the thimble of an already assembled link at the other end. In this manner, the chain is assembled; the bearing pin of each link turns in the thimble of the next link. After the chain

is assembled shoe plates are attached by bolts to the outside face of each link member on what is called the shoe side. The chain is placed upon the wheels of the tractor and finally locked in place by a master link with a manually replaceable pin.

In Figure 1, 2 indicates the right hand side element or member of a link; in Figure 2, 3 indicates the left hand or far side element of the same or a similar link. At the left end of these side elements, holes 4 are provided and sized to receive a thimble 5 with a firm press fit. The opposite ends of the elements are drilled to receive a bearing pin 6 with a firm press fit. Between these two end portions there are outer and inner side webs 7 and 8, forming the shoe side face and track face, respectively. Unlike the type of link side element now in general use, these webs are similarly shaped and are both drilled with aligned and registering holes 9, 10, 11, and 12, all sized to receive bolts 14. The position of the shoe 15 as attached is shown in Figure 1.

In Figure 3, it will be noted that the outer bearing face 16 of the thimble end is offset inwardly relative to the inner bearing face 17 of the bearing pin end of this link. Thus, the faces 16 and 17 of each succeeding link bear against each other. It is also to be noticed that the center line *xx*, Figure 1, denotes an axis of symmetry and that each link side element is symmetrical on either side of this axis; that is, the faces 19 and 20 correspond relative to this axis of symmetry and the shoe bolt holes 11 and 12 are symmetrically positioned relative to the shoe bolt holes 9 and 10. Due to this symmetry the right hand or outer link, as illustrated in Figure 1, may be revolved on axis *xx* and used as a left hand link in the position shown in Figure 2.

Furthermore, due to this symmetry the composite link, including right and left side members 2 and 3, a thimble 5 and a pin 6, may be revolved on a longitudinal axis of symmetry passing through its longitudinal center, as indicated by the intersection of lines *aa* and *bb*, Figure 5. When this is done the lower or rail side face 20 becomes the outer or shoe side face 19. This construction permits the link side members to be made exactly the same and it is not necessary to provide dies or shaping devices to manufacture them in pairs of right and left members, respectively. This reduces the cost of manufacture as well as the number of spare parts necessary for replacement in ordinary servicing and maintenance.

To provide a maximum of bearing surface on the weight supporting rollers of the tractor the faces 19 and 20 are made as wide and long as is possible. The forward edges of shoulders 40 and 41 extend toward the axis of the joint just as far as possible considering the strength of the material in order to minimize the gap between links when on the track side face. However, these shoulders must each be terminated to provide sufficient space so that the next link will be free to move angularly on either side of the horizontal longitudinal center plane of each link as indicated by the dotted outlines 42 and 43. Shoulder overhang 45 at the other end of each link member is likewise limited.

In order to provide a smooth wear surface on the rail face 20 of the link side members, the shoe bolt holes are rimmed out slightly, as shown particularly in the fragmentary section, Figure 2, at 24. A flat headed pin plug is forced into this hole. Its head and stem are sized and proportioned so that when it is set up the head is flush with face 20. These pins 25 are made of the same material as the link and forced into the shoe bolt holes with a tight press fit. When the chain is originally made they are set on the rail face of all link elements. When, through wear, it is necessary to turn the links over they are pressed out and new pins forced into the new rail faces of the side members. Optionally, the pins may be tapered and splined to secure an adequate retention. New pins, if used, are ground off flush with the new track face of the links.

In using my type of track link the track is put together in the usual manner, using a hydraulic or other press to force the side members onto the thimbles and bearing pins. The plates are then attached in the same manner as with ordinary links and the track placed in use upon the tractor. In use the driving face 30 of each tooth firmly engages the arcuate cheek face 31 of each thimble. Wear within this area is inevitable and rapid and in time not only is the sprocket tooth worn but in even greater proportion the cheek face 31 of each thimble is worn until it assumes the shape shown at 32 in Figure 6. Reversing the tractor causes wear, indicated at 35. The opposite side 33 of the thimble, however, is not worn and still represents a good and adequate contacting surface for the sprocket teeth. The track face also wears away and becomes thin. When the chain is in this condition it must be replaced if ordinary links are used but when my improved links are used the shoe plates are removed from the other link faces and the entire chain is turned over. In doing this, each link is revolved upon its longitudinal axis of symmetry. All the link shoe faces may now be used as track faces. The filler pins 25 are pressed out of the bolt holes on the track side and the shoes replaced on the former track faces of the links. The only labor necessary to this reversal is that of removing the track chain by withdrawal of the pin of the master link, removal of the shoe plates, exchange of filler pins and the replacement of the track. In making this reversal, new track faces are made available as well as fresh wear surfaces for the sprockets on the thimbles.

Where due to accidents or faulty material, an individual link becomes excessively worn, either on the track face or on the contact face of its thimble, this link may be reversed independently by disassembling and reversing the side members and re-assembling.

I claim:

A reversible tractor link including side members, a thimble and a bearing pin, said side members being shaped to be interchangeable, and symmetrically shaped relative to a line projected longitudinally through the axes of the thimble and bearing pin, similarly shaped webs on both track and rail faces, bolt holes for attaching shoes provided in said webs so that shoes may be attached to either face of said side members, and filler plugs inserted in the bolt holes on the rail face thereof.

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