

Aug. 12, 1947.

J. KUCHAR

2,425,698

TRACK WHEEL

Filed Nov. 9, 1942

2 Sheets-Sheet 1

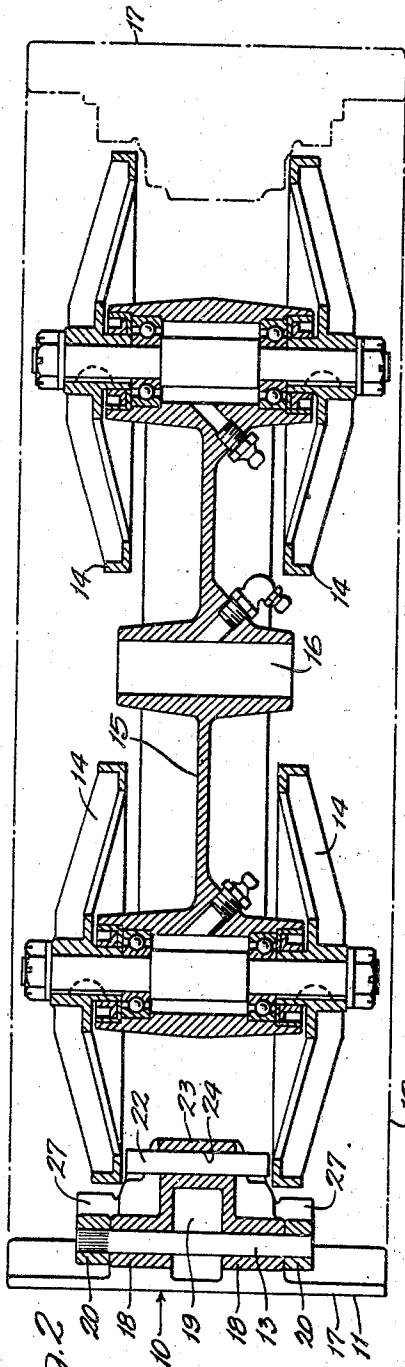


Fig. 2

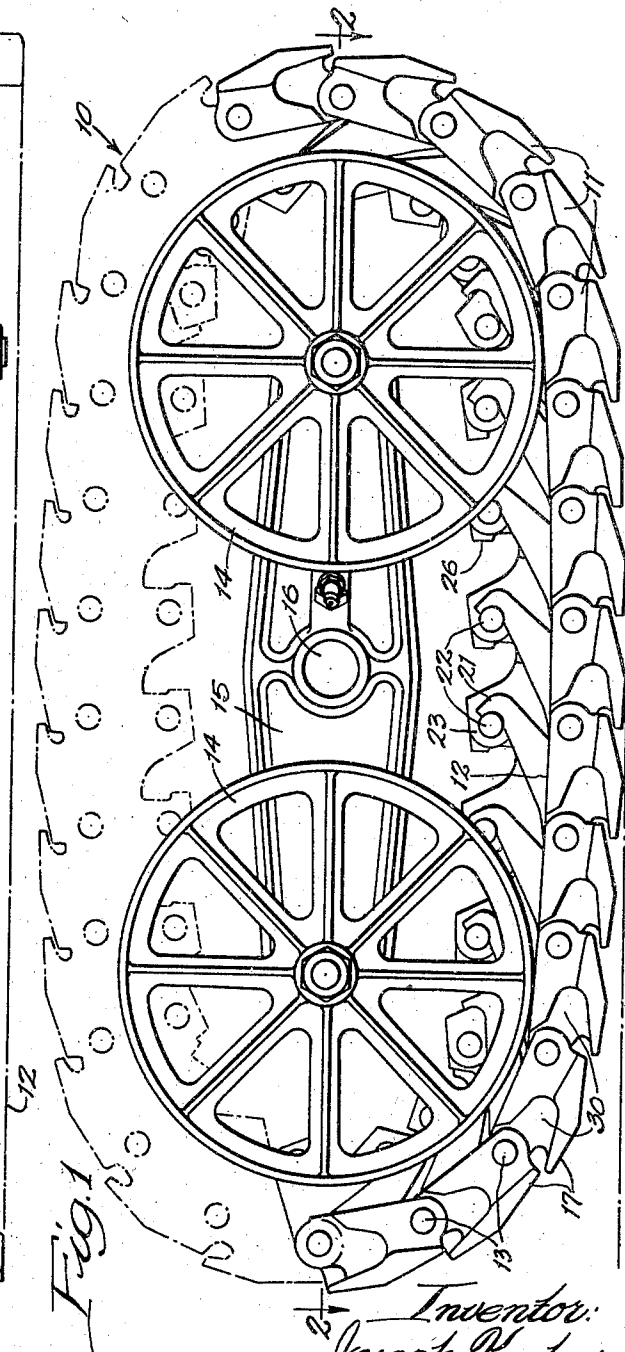


Fig. 1

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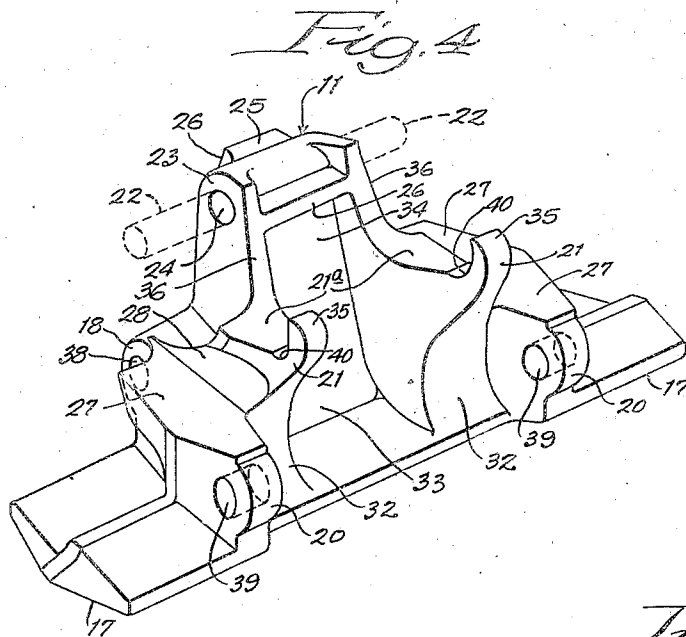
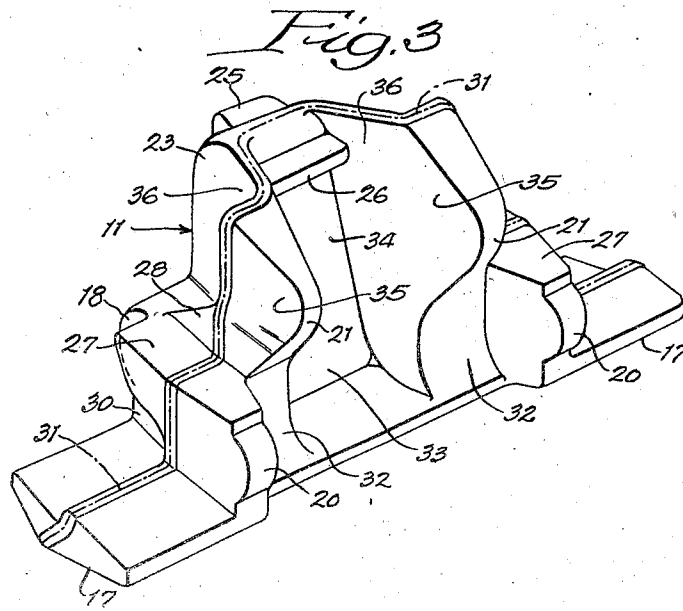
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TRACK WHEEL

Filed Nov. 9, 1942

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,425,698

TRACK WHEEL

Joseph Kuchar, Chicago, Ill., assignor to Athey Products Corporation, a corporation of Illinois

Application November 9, 1942, Serial No. 464,963

4 Claims. (Cl. 305—10)

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My invention relates to track wheels, that is, wheels which lay their own track. It is more especially concerned with that type of endless track trained over front and rear wheels in which the links constituting the track are so articulated that while they permit the track to curve concavely to pass over the front and rear wheels, they are self-trussing to form arches along their top and bottom reaches between the wheels whereby to support the load without the complication of track-engaging rollers for the lower reach of track between the wheels.

My improved design of track link and the method of making it is especially well adapted for tracks in the small sizes to be used, for example, on the carriages employed, often connected together in trains, for carrying aerial bombs from the depot out onto a flying field for loading on bombing planes. In such cases the front and rear wheels themselves may be of a diameter in the order of only six inches. To make feasible the use of tracks in these small sizes, despite the great advantage of tracks over ground wheels, expensive machine operations on each track link must be reduced to a minimum.

In general, my invention is concerned with the design of, and method of making, links for such diminutive tracks which will permit the cost of the track links to be reduced somewhat in proportion to the reduction in size of the track wheel as a whole.

Other objects of my invention include a design of track link better adapted to be forged, which is easily machined to completion by a few simple operations, and in which the blank is a design which may be readily forged without excessive die breakage. To this end, even though the finished track link must have hooks, cut out overhangs, and the like, the forged blank is free from cut-outs, overhangs, hooks, or the like, and adapts itself to a ready draft from the die to the exclusion of any thin edges or thin regions in the blank on either side of the parting line of the forging dies.

Thus my link may be forged as one piece, as distinguished from being built up from a number of forged pieces.

The foregoing, together with other objects, features and advantages, are set forth in the following description of a specific embodiment thereof with reference to the accompanying drawings, wherein:

Fig. 1 is a side elevation of a track laying wheel unit employing the links of my invention;

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Fig. 2 is a plan section thereof taken on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of the forged blank for one of the track links;

Fig. 4 is a similar perspective view thereof but after the machining operations have been completed.

I shall first describe the track link and its relation to the track and track wheel as a whole and later I shall describe the method of making the link.

Even though executed in a reduced size, the track wheel unit 10 preferably follows the general construction of standard trussed track wheel units save for my improved design of the links themselves. Thus, the links 11 are successively interdigitated and pivoted together into the endless track 12 by pintles 13. The track 12 is trained around the wheels 14, there being a pair of axially spaced wheels 14 journaled at each end of the beam 15, and the beam has a bearing 16 at its midpoint whereby it, and in turn the entire track wheel unit, is mounted on the end of an axle of the carriage or vehicle more or less in lieu of an ordinary road wheel.

The design of each link 11 will now be described.

At the leading side and above the tread 17, it has an inner pintle bearing 18 extending longitudinally (that is, longitudinally in reference to the link itself as seen in Fig. 4, although transversely in reference to the track).

For lightness and to reduce the quantity of metal, the body of the link is preferably recessed from the leading side to form a pocket 19, which, if employed, separates the pintle bearing 18 into two spaced apart sections.

On its other or trailing side (I use "leading" and "trailing" only in a relative sense for a convenient designation of the two sides; the terms do not necessarily refer to the direction in which the track or track wheel unit runs) and also above the tread, the link has an outer pintle bearing or mounting 20 in two sections widely spaced apart longitudinally of the link, the spacing of the sections being a little greater than the over-all length of the pintle bearing 18. Thus, the pintle bearing 18 of one link may lie between and be interdigitated with the outer pintle bearings 20 of the adjoining link, bringing the bore of the two bearings of the respective links into registry for reception of the common pintle 13 after the fashion often employed in track links.

The tread 17 underlies the bearings 18 and 20 and preferably extends outwardly some distance

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therebeyond at the end of the link whereby to distribute the load over more ground engaging surface. The leading margin of the tread is somewhat offset vertically below the trailing edge whereby the lateral margin of one link tread will partially overlap the tread of an adjoining link as seen in Fig. 1. To secure this tread overlap, the width of the tread is somewhat greater than the transverse spacing of the leading and trailing pintle bearings of the link.

The self-trussing feature of the link is effected by a pair of hooks 21 spaced apart longitudinally of the link, extending in a trailing direction therefrom and upwardly opening and adapted to engage a stop pin 22 (Fig. 1) carried on the trailing adjoining link.

The stop pin 22 is fixedly carried by a stop pin mounting 23 which rises at a midpoint of the length of the link and adjoining its leading side and carries a hole 24 into which the stop pin 22 is driven to protrude on either side thereof. The hooks 21 are spaced apart to permit them to straddle the stop pin mounting 23 of the adjoining link.

As will be seen from Fig. 1, when the pintle-interconnected links descend from their engagement about the wheel at one end of the track, and approach the more or less straight line reach between wheels, the load which they bear in that reach causes them to rock away from each other but this is limited by engagement of the hooks 21 upon the stop pins 22 which limits the lower reach of track from flexing upwardly. However, the track is free to flex into greater convexity where it passes around the wheels, the hooks of one link then swinging in a direction toward the tread of the trailing adjoining link.

This relative movement of the links tending to convex the track is limited quite accurately by the engagement of a stop lug 25, extending from the leading side of the stop pin mounting 23, engaging a stop face 26 on the trailing side of the stop pin mounting 23.

Each link also carries a pair of longitudinally spaced upwardly facing seats 27 to engage the rims of the respective wheels 4. These seats 27 preferably extend rearwardly from the two longitudinally spaced sections of the trailing pintle bearings 20. The seats 27 preferably adjoin the bases of the hooks 21 and the outer faces of the hooks are preferably somewhat inclined as shown at 28 to help guide the shoes into proper registry with the wheels as they encounter the wheels.

Wherever possible without sacrificing essential structure or necessary strength, the link is cut away to reduce weight and consumption of metal. Thus, the leading ends of the wheel seats 27 are terminated short of the pintle bearing 18 to afford clearance for the pintle bearings 20 of the leadingly adjoining link; but in addition thereto, the metal is recessed at 30 to form pockets or recesses beneath the leading portions of the seats 27, above the leading half of the tread and on the leading side of the plane of the parting line 31.

Again, beneath the hooks 21, the material of the link is cut away between the longitudinally spaced pintle bearings 20 about as far back as the parting line to form recesses 32 which afford clearance for the pintle bearings 18 of the adjoining link, and between the hooks 21 the material is cut away and recessed even farther back from the trailing edge to form a recess 33 which is bounded by the tread 17, the bases of the hooks 21, and the resulting horizontal web which presents the stop face 26.

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The previously mentioned recess 19 separating the pintle bearing sections 18 and extending inwardly from the leading side, and the last-mentioned recess 33 extending inwardly from the trailing side, leave between them but a thin vertical web 34 in a plane longitudinally of the link.

While I have described my link as being forged, I contemplate that my invention is applicable to links formed by steel casting or malleable iron casting, in which case the cope and drag of the mold would be substituted for the upper and lower forging die molds. Also, while I prefer, especially where the link is forged, to form the stop as a stop pin, I contemplate that the stop could be cast or otherwise formed integrally with the body of the link.

While I have described and illustrated this specific embodiment of my invention, I contemplate that many substitutions and changes may be made without departing from the scope or spirit of my invention.

I claim:

1. A one-piece link to be assembled by pintled interdigitation with like links into a self-trussing track for a track wheel, the link comprising a mounting, in two longitudinally spaced sections, for the pintle along the trailing side of the link; longitudinally spaced apart horizontal wheel seats over, and extending leadingly from, the respective pintle mounting sections; a longitudinally extending pintle mounting along the leading side and of an over-all length longitudinally of the link to be received between the trailing mounting sections of an adjoining link; a stop mounting rising centrally from the link of the leading side thereof and longitudinally spaced inwardly from the ends of the leading pintle mounting, for mounting a stop protruding longitudinally beyond the stop mounting at opposite sides thereof; a pair of longitudinally spaced hooks extending transversely of the link upwardly and trailingly from the leading pintle mounting in transverse alignment with the end portions of the latter and longitudinally beyond the stop mounting, whereby to straddle the stop mounting of an adjoining link inwardly of its wheel seats, the bights of the hooks being adapted to engage the stop of the adjoining link to limit the swing of the link, about the common pintle, away from the trailingly adjacent link; and a tread underlying the previously mentioned parts of the link.

2. The link of claim 1 wherein the leading pintle mounting is divided into sections at a transverse mid plane of the link to form a leadingly opening recess, and there is a trailingly opening recess between the bases of the hooks, the two recesses being separated by a thin vertical web.

3. A one-piece forged link to be assembled by pintled interdigitation with like links into a self-trussing track for a track wheel, the link comprising a mounting, in two longitudinally spaced sections, for the pintle along the trailing side of the link; longitudinally spaced apart horizontal wheel seats over, and extending leadingly from, the respective pintle mounting sections; a longitudinally extending pintle mounting along the leading side and of an over-all length longitudinally of the link to be received between the trailing mounting sections of an adjoining link; a stop pin mounting rising centrally from the link of the leading side thereof and longitudinally spaced inwardly from the ends of the leading pintle mounting, for mounting a separately formed stop pin protruding longitudinally beyond the stop pin mounting; a pair of longitudinally

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spaced hooks extending transversely of the link upwardly and trailingly from the leading pintle mounting in transverse alignment with the end portions of the latter and longitudinally beyond the stop pin mounting, whereby to straddle the stop pin mounting of an adjoining link inwardly of its wheel seats, the bights of the hooks being adapted to engage the stop pin of the adjoining link to limit the swing of the link, about the common pintle, away from the trailingly adjacent link; and a tread underlying the previously mentioned parts of the link.

4. A one piece link adapted to be assembled with similar links to form a self-trussing track to be mounted on track wheels, said link comprising a body formed on its lower side with a tread surface, said tread surface being carried by a pair of flanges extending laterally of the track, an upwardly extending body integrally joined to said flanges and provided at its upper end with a centrally located bearing portion, a transverse pin carried by said bearing portion and projecting outwardly from each end of the bearing portion, said upwardly extending body portion being formed with a pair of upwardly extending hooks located to engage the ends of a similar pin on an adjacent link, a pair of laterally spaced bearing portions carried by the leading end of said link

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and also a pair of bearing portions carried by the controlling end of said link, the bearing portions on one end being located to be received between the bearing portions on the other end of a similar link, and a pair of wheel-engaging shoulders located on each side of said upwardly extending body to be engaged by the supporting wheels for the track, the said hooks being located to engage said similar pin to effect a self-trussing action of the link by limiting the inward movement of the track toward the space between the wheels, without preventing the links from bending about the wheels in the opposite direction upon their bearings and pintles in said bearings.

JOSEPH KUCHAR.

REFERENCES CITED

The following references are of record in the file of this patent:

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2,064,597	Strong	Dec. 22, 1936
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Certificate of Correction

Patent No. 2,425,698.

August 12, 1947.

JOSEPH KUCHAR

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Column 6, line 14, after the word and period "bearings." and before the signature to the specification, insert the following claim—

5. A one-piece forged link to be assembled by pintled interdigitation with like links into a self-trussing track for a track wheel, the link comprising a mounting, in two longitudinally spaced sections, for the pintle along the trailing side of the link; longitudinally spaced apart horizontal wheel seats over, and extending leadingly from, the respective pintle mounting sections; a longitudinally extending pintle mounting along the leading side and of an over-all length longitudinally of the link to be received between the trailing mounting sections of an adjoining link; a stop pin mounting rising centrally from the link of the leading side thereof and longitudinally spaced inwardly from the ends of the leading pintle mounting, for mounting a separately formed stop pin protruding longitudinally beyond the stop pin mounting; a stop pin carried by said mounting; a pair of longitudinally spaced hooks extending transversely of the link upwardly and trailingly from the leading pintle mounting in transverse alignment with the end portions of the latter and longitudinally beyond the stop pin mounting, whereby to straddle the stop pin mounting of an adjoining link inwardly of its wheel seats, the bights of the hooks being adapted to engage the stop pin of the adjoining link to limit the swing of the link, about the common pintle, away from the trailingly adjacent link; and a tread underlying the previously mentioned parts of the link.

and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of September, A. D. 1947.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.