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H. A. LILJENBERG

3,106,412

VELOCIPED FRAME STRUCTURE

Filed March 12, 1962

2 Sheets-Sheet 1

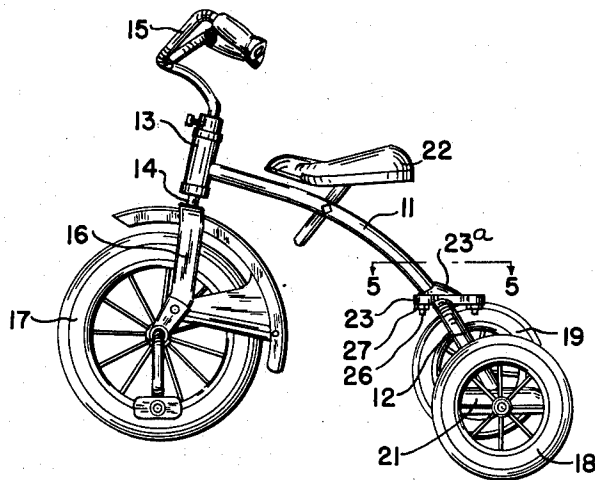


FIG. 1

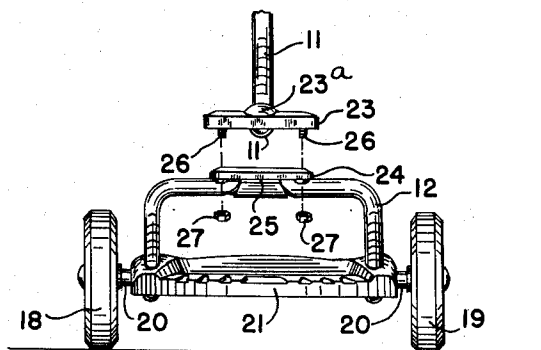


FIG. 2

INVENTOR
HARRY ALLEN LILJENBERG

BY *Woodling, Trust,*
Orange and Trust

ATTORNEYS

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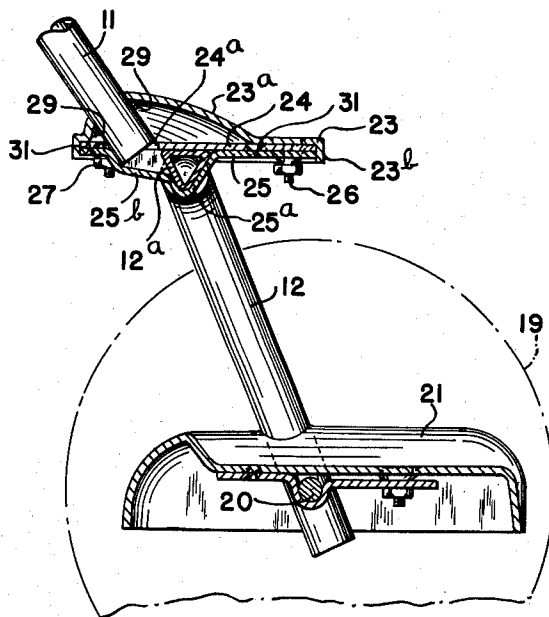


FIG. 3

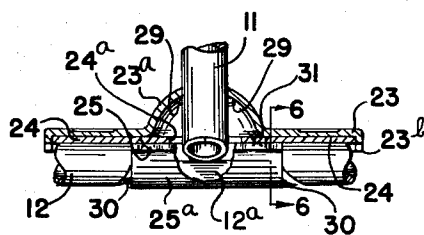


FIG. 4

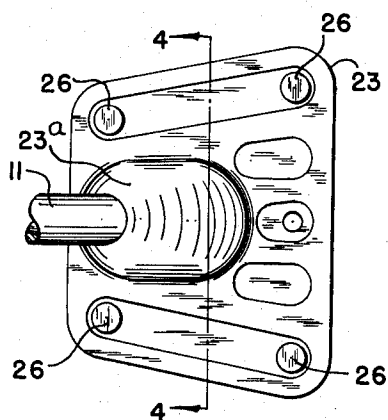


FIG. 5

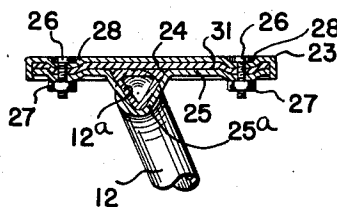


FIG. 6

INVENTOR.
HARRY ALLEN LILJENBERG

BY *Woodling, Frost,*
Branger and Rust.

ATTORNEYS

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3,106,412

VELOCIPED FRAME STRUCTURE

Harry Allen Liljenberg, Cleveland, Ohio, assignor to The M. T. & D. Company, a corporation of Ohio
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This invention relates to velocipedes or tricycles.

An object of the invention is to provide an improved velocipede frame structure which permits ready assembly and disassembly of the parts of the frame.

Another object is the provision for readily disassembling and assembling the wishbone of a velocipede frame from the backbone of the velocipede frame.

Another object is the provision of an improved frame for a child's velocipede or tricycle which permits the velocipede to be stored and shipped in a smaller container than would otherwise be possible.

Another object is the provision for saving shipping space in the packaging and transportation of velocipedes.

Another object is the provision for an improved coupling between the wishbone and the backbone of a velocipede frame, which coupling provides a rigid connection therebetween and at the same time facilitates ready assembly and disassembly.

Another object is the provision for an efficient and economical means of coupling together separable portions of a velocipede frame.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a side elevational view of a child's velocipede embodying a preferred form of the invention;

FIGURE 2 is a rear view of the back end of the velocipede shown in FIGURE 1 and showing the backbone disassembled from the wishbone of the frame with the parts of the coupling therebetween in an exploded arrangement;

FIGURE 3 is an enlarged longitudinal sectional view through the coupling of the backbone and wishbone of the velocipede and showing the internal structure of the coupling;

FIGURE 4 is a cross-sectional view of the coupling taken through the line 4—4 of FIGURE 5;

FIGURE 5 is an enlarged plan view looking down on the top of the coupling in the direction of the arrows 5—5 of FIGURE 1; and

FIGURE 6 is a cross-sectional view of the coupling taken through the line 6—6 of FIGURE 4.

The velocipede to which the invention is applied has a frame made of steel tubing. This frame includes a backbone or reach 11 and a wishbone or rear fork 12. The backbone 11 extends from the wishbone 12 forwardly to a socket 13 which accommodates a steering column 14. This steering column 14 carries handle bars 15 which turn the steering column 14 on its axis, which, in turn, guides the front wheel fork 16. This front wheel fork 16 has mounted thereto a front wheel 17 in the usual manner. The wheel 17 carries pedals which are operated by the rider of the velocipede in the well-known manner of velocipedes.

A pair of rear wheels 18 and 19 are journaled on a rear axle 20 which extends transversely of the velocipede. This rear axle 20 is secured to and carried by the opposite ends of the wishbone 12. A rear step platform 21, which may be incorporated in the velocipede, is mounted upon the rear axle 20 and secured to the opposite end of the wishbone 12. The seat 22 which supports the rider is secured to the backbone 11 in the well-known manner between the socket 13 and the wishbone 12.

As seen in the drawings, the wishbone 12 is of an in-

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verted U shape with the side arms of the wishbone 12 directed downwardly where they are interconnected by the axle 20 and the step platform 21. The upper central portion or bight of the wishbone 12 is disposed intermediate of the side arms and uppermost thereof so as to be in line with the backbone 11. The invention is directed particularly to the coupling of the backbone 11 with the bight portion of the wishbone 12.

A steel plate member or metal flange 23 is welded to the backbone 11 near the lowermost end thereof. This plate member 23 is disposed in a generally horizontal position substantially parallel to the rear platform 21 and may provide an auxiliary step for the rider in mounting the velocipede. As seen in the drawings, the backbone 11 is inclined from the vertical and also the wishbone 12 is in a plane inclined from the vertical. A suitable welding 29 secures the backbone 11 to the plate member 23 at the place where the backbone extends through an opening in the plate member 23. To accommodate the inclination of the backbone 11 and its lowermost end protruding through the plate member 23, there is a bulged portion 23a formed in the plate member 23 intermediate the sides of the plate member 23. Thus it is seen that the plate member 23 becomes permanently joined to and rigidly mounted to the backbone 11.

At the bight of the wishbone 12, the tubing is squeezed or offset to the out-of-round and more particularly to a form of general triangular cross-section. This out-of-round bight portion is designated by the reference character 12a. As seen in FIGURES 3 and 6, the uppermost wall of the bight portion 12a is disposed substantially in a horizontal plane and the other two walls of the bight portion 12a extend downwardly at an angle thereto so that the cross-section of the bight portion 12a substantially forms an equilateral triangle.

An anchoring member or subplate 24 made of a steel strap or plate is positioned over the top of the flat surface of the bight portion 12a. An opening 24a in the anchoring member 24 is provided to accommodate the lowermost end of the backbone 11. The anchoring member 24 generally conforms to the lateral shape of the plate member 23 but is slightly smaller. The plate member 23 has a downwardly extending edge portion 23b which overlaps and extends around the edge of the anchoring member 24.

A strap member or second strap 25 also made of steel strap or plate is positioned below the anchoring member 24 and next adjacent thereto. The strap member 25 has a length approximating the length of the anchoring member 24 but is not as wide as the anchoring member 24. The strap member 25 has a width corresponding approximately to the length of the out-of-round bight portion 12a. As seen in the drawing, the strap member 25 has an offset portion 25a which extends downwardly and around the bight portion 12a to closely embrace the same. At the location of the lower end of the backbone 11 and opposite the opening 24a, the offset portion 25a is formed to provide a dwell portion 25b to accommodate the lower end of the backbone 11. Except at the portion 25b in line with the backbone 11, the offset portion 25a closely complements the two lower inclined walls of the out-of-round bight portion 12a. The strap member 25 and the anchoring member 24 are secured together by a plurality of resistance weldings 31, which firmly and permanently interlock the members 24 and 25 together.

By means of the tight embrace of the out-of-round bight portion 12a by the members 24 and 25, the wishbone 12 is prevented from rotation on the axis of the bight portion 12a relative to the members 24 and 25 secured thereto. If desired, welding 30 also may be provided between the strap member 25 and the bight portion 12a at

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the juncture of the edges of the strap member 25 and the bight portion 12a, such as is indicated in FIGURE 4.

Means for interconnecting the plate member 23 and the assembly made up of members 24 and 25 are provided by four aligned openings in the plate member 23 and the adjacent member 24. These openings are adapted to register to permit threaded bolts 26 to extend therethrough. The plate member 23 is countersunk at each of the four openings to provide dwells 28 which accommodate the heads of the bolts 26. This permits the top of the bolts to be flush or even with the surface of the plate member 23. The threaded lower ends of the four bolts extend through the respective aligned openings in the adjacent member 24 and threaded nuts 27 threadably engage with the bolts 26 so as to interconnect at four spaced locations the plate member 23 with the member 24, which is secured to member 25. The bolts 26 may be permanently secured to the plate member 23 by spot welding the heads of the bolts to the plate member 23.

In FIGURES 1 and 3, the frame is shown in coupled position, that is, in the arrangement in which the plate member 23 is secured by the nut and bolt assemblies 26-27 to the assembled members 24 and 25. As the plate member 23 is secured to the backbone 11 and the members 24 and 25 are secured to the wishbone 12, there is a firm and rigid coupling provided between the backbone 11 and the wishbone 12. The nut and bolt assemblies are spaced laterally from the axis of the backbone 11 at the four spaced locations indicated and this provides a rigid interconnection between the backbone and wishbone.

To readily disassemble the coupling so as to permit separation of the wishbone and parts carried thereby from the backbone and parts carried thereby, the four nuts 27 are removed from the bolts 26 so as to permit the withdrawal of the assembled members 24 and 25 from the bolts 26. This permits the raising of the plate member 23 upwardly from the anchoring member 24 secured to the strap member 25, such as shown in the exploded view of FIGURE 2. When thus separated, the wishbone and arms carried thereby may be reoriented so as to provide a better packing arrangement for placing the entire velocipede in a container, such as in a packing case. Conversely, the parts may be readily assembled again by placing the wishbone below and in alignment with the backbone so as to align the bolts 26 with the openings in the anchoring member 24, by inserting the bolts 26 through the openings in the anchoring member 24 and by assembling the nuts 27 to the bolts 26 and thus securing the coupling together.

It will be seen that there is provided by this invention a sturdy and efficient coupling of economical fabrication which permits the rapid and easy assembly and disassembly of the frame of a velocipede to which the coupling is applied.

The present disclosure includes that contained in the appended claims, as well as that of the foregoing description.

Although this invention has been described in its preferred form with a certain degree of particularity, it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

What is claimed is:

1. In a velocipede frame having a wishbone of metal tubing adapted to carry the rear wheels of the velocipede and having a backbone of metal tubing adapted to extend horizontally of the velocipede between said wishbone and a socket accommodating a front-wheel carrying column, the improvement of a joint interconnecting said wishbone and backbone comprising a portion of said tubular wishbone intermediate the ends thereof and near

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said backbone having a non-circular cross-sectional form, a first metal strap having an intermediate portion, a second metal strap disposed over said first metal strap, said second metal strap having an intermediate portion disposed in opposition to the intermediate portion of said first strap, at least one of said intermediate portions being offset to define a transverse horizontally disposed open space therebetween for snugly receiving therein said non-circular portion of said wishbone, said open space having a non-circular cross-sectional form complementing the outer surface of said non-circular form of the wishbone to embrace the same whereby the wishbone is held against rotation on the axis of said non-circular portion, a metal plate welded to the lower end of said backbone and disposed in a substantially horizontal plane over said second metal strap, securing means securing together said second metal strap and said first metal strap in an assembly, and threaded attaching means threadably attaching said metal plate and said assembly of metal straps, said attaching means being readily detachable for separating said assembly of metal straps from said metal plate whereby said wishbone may be readily separated from said backbone.

2. A coupling for readily coupling and uncoupling the wishbone from the backbone of a velocipede, said wishbone having an intermediate portion at the bight thereof of non-circular cross-sectional shape, comprising in combination, a metal plate welded to said backbone at the rear end thereof and disposed in a substantially horizontal plane, a pair of metal strap members embracing therebetween said intermediate portion of the wishbone, at least one of said strap members having a portion spaced from the other strap member to define an open space between said strap members, said open space having a non-circular cross-sectional shape complementing the non-circular cross-sectional shape of said intermediate portion of the wishbone whereby the wishbone is restrained against rotation on the axis of said intermediate portion, securing means securing said strap members together, and attaching means for readily attaching and detaching said strap members and said metal plate for the selective coupling and uncoupling of said wishbone and backbone.

3. A coupling for readily coupling and uncoupling the wishbone from the backbone of a velocipede, comprising in combination, a plate member welded to the rear end of the backbone and disposed in a substantially horizontal plane transversely of said backbone, an anchoring member disposed below said plate member and over said wishbone, a metal strap member disposed below said anchoring member and secured thereto, said anchoring member and said strap member having spaced and oppositely facing portions embracing said wishbone, said oppositely facing portions and the wishbone embraced thereby being of complementary non-circular form to restrain said wishbone against rotation on its axis relative to said backbone, and threaded fastening means extending downwardly from said plate member to said anchoring member for attaching the plate member to the anchoring member, said fastening means being readily detachable for the uncoupling of the said wishbone from said backbone.

4. In a velocipede having a tubular metal wishbone carrying the rear wheels and a tubular metal backbone extending forwardly from said wishbone at a location intermediate the ends thereof, the improvement of a metal plate carried by said backbone at the rear end thereof and disposed transversely thereof in a substantially horizontal plane, a metal anchoring member disposed adjacent said metal plate on the bottom side thereof and over said wishbone, a metal strap member secured to said anchoring member and disposed under said wishbone at said intermediate location and in non-rotative engagement therewith to restrain said wishbone against rotation on its axis relative to said backbone, and a plurality of threaded

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members extending through said metal plate and threadably secured to said anchoring member on opposite sides of said wishbone, said threaded members being readily detachable to permit separation of said strap member and said anchoring member from said metal plate for the uncoupling of said wishbone from said backbone.

5. In a velocipede having a wishbone and a backbone of metal tubing, a coupling structure for the ready coupling and uncoupling of the wishbone and backbone at the rear end of the backbone and at an intermediate location of the wishbone, said wishbone having a non-circular portion at said intermediate location, the improvement of a plate member secured to the rear end of the backbone and extending laterally of the velocipede in a generally horizontal plane, a mounting member having a complementary non-circular portion accommodating the non-circular portion of the said wishbone and embracing said wishbone at said intermediate location in interengagement therewith for restraining rotation of the wishbone on its axis at said intermediate location, said mounting member extending laterally of said velocipede below said plate and substantially within the lateral extent of said plate, and readily attachable and detachable means for attaching said mounting member to said plate member at a plurality of positions offset from the axis of said backbone adjacent said plate, and for detaching the mounting member from said plate member to permit uncoupling of the said wishbone from said backbone.

6. A coupling for a velocipede frame of metal tubing to provide a rigid connection between the wishbone or rear fork and the backbone or reach of the velocipede and to provide for ready separation thereof, comprising the combination of, a metal flange member welded to the backbone at the rear end thereof and extending laterally of the axis thereof in a generally horizontal plane, a mounting member disposed below said flange member, said mounting member including an anchoring portion disposed over said wishbone and a strap portion disposed beneath said wishbone at a location intermediate the ends thereof, said strap portion and said anchoring portion having complementary opposed spaced surfaces forming a non-circular socket and said wishbone at said at said location having a non-circular form complementarily interfitting said socket, and a plurality of threaded members interconnecting said flange member and said mounting member at a plurality of locations spaced laterally from the axis of said backbone for rigidly connecting the flange member and mounting member together and for selectively disconnecting the flange member and mounting member to separate the wishbone and backbone of the velocipede.

7. A coupling for a velocipede frame of metal tubing to provide facile means for assembling and disassembling the wishbone or rear fork and the backbone or reach of the velocipede frame, comprising the combination of, a flange member secured to the backbone adjacent the rear

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end thereof, an anchoring member secured to the wishbone adjacent the bight thereof and disposed beneath and substantially parallel to said flange member, said anchoring member including an embracing portion embracing said wishbone at said bight, the tubing of the wishbone at said bight being upset to the out-of-round and the said embracing portion being formed in the out-of-round to complementarily embrace and interengage with the tubing of the wishbone at said bight, and readily engageable and disengageable means for connecting said flange member and said anchoring member together at a plurality of locations offset from the backbone to assemble the wishbone rigidly to the backbone, and for disconnecting said flange member and said anchoring member to disassemble the wishbone and backbone of the velocipede frame.

8. A coupling for a velocipede frame of metal tubing adapted to permit facile assembly of the wishbone and backbone of the frame and disassembly thereof, comprising in combination, a metal step-plate welded to the backbone adjacent the rear end thereof and disposed in a substantially horizontal plane, said step-plate extending laterally from said backbone to provide a step for the rider mounting the velocipede, a metal subplate disposed below and adjacent said step-plate, securing means securing said subplate to said wishbone at the bight thereof and restraining the wishbone against rotation on its axis at said subplate, and connecting means spaced laterally of said plates from said backbone for readily connecting and disconnecting said plate and said subplate for the ready coupling and uncoupling of the wishbone and backbone.

9. A coupling as defined in claim 8 and in which said subplate includes a portion embracing in non-rotative interengagement said wishbone at the bight thereof.

10. A coupling as defined in claim 8 and in which said connecting means include a plurality of threaded nut and bolt assemblies.

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