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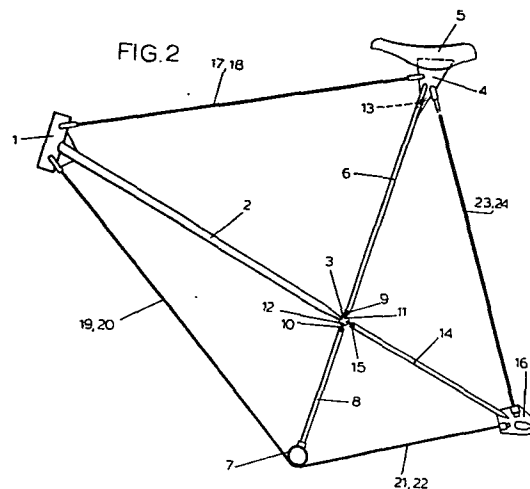
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54 Demountable bicycle frame.

57 A bicycle frame, having the usual front fork, back fork (14), steering head sleeve (1) and pedal shaft sleeve (7) has an oblique tube (2), extending towards the steering head sleeve (1), is pivotably connected to the backfork (14) and is substantially in alignment with the back fork, a bar (6) extends from the pivot point towards a saddle support means (14), and a bar (8) extends towards the pedal shaft sleeve (7), said bars being likewise substantially mutually in alignment, the free ends of the bars (6, 8) being connected to the free end of the back fork (14) and to the steering head sleeve (1) by tensioning wires (17 to 24).

This frame is lighter in weight and yet more rigid due to the tensioning wires (17-24). It is easily demountable and packable into a box when the pivot connections (9-12, 15) and the tensioning wire connections are insert connections (25-28).



Demountable bicycle frame.

The invention relates to a bicycle frame having a front fork, a back fork, a steering head sleeve and a pedal shaft sleeve.

Such a frame is generally known. The known frame comprises tubes which are mutually secured, mainly into triangles, by means of so called lugs (insert sleeves). In order to guarantee sufficient rigidity and strength against compression, flexing and torsional forces, which act in combination, this frame has to be manufactured of relatively thick and therefore heavy material.

The invention aims at obtaining a decrease of the weight and simultaneously a more rigid frame.

This is achieved according to the invention in that an oblique tube extending to the steering head sleeve is pivotably connected to the backfork and extends substantially in alignment with the backfork, while a bar extends from the pivot point towards a saddle support means and a bar extends towards the pedal shaft sleeve, said bars likewise being substantially in mutual alignment, the free ends of the bars being connected to the free end of the back fork and to the steering head sleeve through tensioning wires.

In that the tensioning wires impart a biasing load to the frame, compression forces are supported by the frame and hardly any flexing forces. Thereby the diagonals of the polygon mainly formed by the tensioning wires may be manufactured from material having much less weight. The torsional forces are received mainly by the tensioning wires.

In one embodiment according to the invention the bar extending towards the saddle support means and the bar extending towards the pedal shaft sleeve may be rods, which are pivotably mutually connected and pivotably connected to the pivot point.

In another embodiment according to the invention the bars may constitute one continuous integral rod.

A further substantial advantage of the new frame is that it may be made easily demountable. This is achieved when the pivot connections are easily releasable insert connections.

After releasing the tensioning wires, which e.g. may be connected to the tubes and rods by means of hook-in connections, the pivot connections may be released, whereby the diagonals become

available in three or four pieces. The longest piece then is the continuous tube or rod between the saddle and the pedal shaft sleeve or, if this tube has a pivot between the ends, the oblique tube, this largest length being substantially equal to the diameter of the wheels. The bicycle now may be packed in demounted condition in a suitcase or box, the dimensions of which correspond to those of one wheel. Transport and storage for the factory as well as for the bicycle dealer and the user are thereby much facilitated and much cheaper. Assembling and demounting may be made so simple that the user easily can carry his bicycle in his car or per public transport service while contrary to the so-called folding bicycle a standard bicycle, having standard wheel diameter, may be used. Preferably the tensioning wires are provided in twin couples. Thereby the rigidity of the frame against the torsional forces perpendicular to the frame plane is increased.

The torsional rigidity is further increased when the tensioning wires of a couple extend mutually crosswise.

For tensioning the tensioning wires, a tensioning device may be provided at the end of each thereof, e.g. in the shape of a so-called turnbuckle.

It is sufficient and with respect to mounting and demounting and to the manufacturing costs preferable to provide one of the tensioning wires or couples of tensioning wires respectively with a tensioning device.

Preferably the tensioning device comprises a rotary handle, cooperating with a cam profile or a cam follower means respectively.

It is also possible to provide the tensioning device in the pivot point.

The invention will hereunder be illustrated with reference to the drawing in which an embodiment as an example of the bicycle frame according to the invention is shown.

Fig. 1 shows a side view of a bicycle having the frame according to the invention.

Fig. 2 is a side view on an enlarged scale of the frame without the front fork.

Fig. 3 is a back view of the frame bars extending from the pivot point.

Fig. 4 is a plan view of the upper tensioning wires.

The frame as shown comprises a steering head sleeve 1 ,
which is secured to or integral with an oblique tube 2 extending
obliquely from said steering head sleeve downwardly and rearwardly.
In the embodiment shown a transverse sleeve 3 is secured to the free
5 end of the oblique tube 2 perpendicular to its longitudinal
direction, whereto said end is somewhat flattened at that position.
An upper rod 6 extends upwardly from the sleeve 3 toward a saddle
support means 4 to which a pin (not shown) for a saddle 5 may be
connected. Likewise from the transverse sleeve 6 extends, downward-
10 ly, towards a pedal shaft sleeve 7, and secured thereto, a lower bar
8.

At the ends of the bars 6 and 8 adjacent the sleeve 3
a plate shaped part 9 and 10 resp. is secured, extending in the
longitudinal direction of the sleeve 3. Said plates 9 and 10 are
15 in engagement with corresponding slots 11, 12 extending in the
longitudinal direction of the sleeve 3.

It appears from fig. 3 that the bars 6 and 8 have been
doubled, i.e. the bar 6 comprises two rods or thin tubes 6A, 6B
extending somewhat convergingly from the sleeve 3 and being mutually
20 secured at the ends adjacent the sleeve 3 by means of the transverse
plate 9 and at the end adjacent the saddle 5 by means of a
transverse plate 13.

Likewise the bar 8 comprises two rods or thin tubes 8A,
8B extending convergingly from the sleeve 3 towards the pedal
25 shaft sleeve 7 and there secured at their ends to said pedal shaft
sleeve, and at the end adjacent the sleeve 3 by the transverse plate
10.

A backfork 14 extends from the transverse sleeve 3
substantially in alignment with the oblique tube 2, said fork like-
30 wise comprising two rods or thin tubes 14A, 14B which are mutually
secured adjacent the sleeve 3 by means of a transverse plate 15,
said rods extending divergingly from the sleeve 3 and being each
secured at the free ends to a plate 16.

As appears from the drawing also the rods 6 and 8 are
35 substantially in mutual alignment.

Through the connections between the plates 9, 10 and 15 with

the slots in the transverse sleeve 3 a certain pivotal movement is permitted between the rods 6, 8 and the fork 14 on the one hand and the sleeve 3 on the other hand. The rigidity of the frame is obtained by tensioning wires which, in the embodiment shown, are each time provided in a set of two wires. Thereby the steering head sleeve 1 is connected to the saddle support means 4 by two tensioning wires 17, 18 which extend mutually crosswise as appears from fig. 4. The steering head sleeve 1 is connected to the pedal shaft sleeve 7 by two crossed-tensioning wires 19, 20, the pedal shaft sleeve 7 is connected to the plate 16 on the backfork by two tensioning wires 21, 22 which, because of the presence of the backwheel of the bicycle do not cross each other, while finally the plate 16 is connected to the saddle attachment means 4 by two tensioning wires 23, 24. The wires 23, 24 may be substantially parallel but may also cross each other provided care is taken that the crossing point does not hinder the presence of the bicycle backwheel.

The connection of the ends of the tension wires may be a hook-in-connection as e.g. is shown for the ends of the wires 21, 22 which are connected to the plate 16. A small block 25 has been secured to the plate 16, said block having a slot 26 extending in the longitudinal direction of the wire 21, 22, the slot being open at the side remote from the plate 16. Said slot has a widened portion 27 at one end into which fits a small block 28 connected to the end of the tensioning wire through welding or soldering or in another manner. The tensioning wire may thereby be placed into the slot 26 from the lateral side, whereby the block 28 is received in the widened portion 27. Through tensioning the tensioning wire a rigid connection is obtained in that the block 28 is drawn against the end of the widened portion. All ends of all tensioning wires may be secured in this manner.

It is possible to provide a so called turnbuckle in each tensioning wire but preferably a tensioning device is only provided in both tensioning wires 23, 24 extending from the plate 16 towards the saddle support means 4. In connection with quick assembling and demounting of the bicycle it is preferable to replace the turnbuckles by a rotary locking connection (not shown). Thereby in known manner a handle, connected to a cam profile is rotated with respect to a

corresponding surface of a part connected to one of the tensioning wire ends. The cam profile of the handle is connected to the end of the other tensioning wire. .

5 The tensioning wires may be manufactured from steel, but may also be so called carbon fibres. The further frame parts likewise may be made of steel, synthetic material or other metals or combinations thereof.

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C L A I M S

1. A bicycle frame having a front fork and a back fork, a steering head sleeve and a pedal shaft sleeve, characterized in that an oblique tube (2) extending towards the steering head sleeve (1), is pivotably connected to the backfork (14) and is substantially in alignment with the back fork, a bar (6) extends from the pivot point towards a saddle support means (14), and a bar (8) extends towards the pedal shaft sleeve (7), said bars being likewise substantially mutually in alignment, the free ends of the bars (6, 8) being connected to the free end of the back fork (14) and to the steering head sleeve (1) by tensioning wires (17 to 24).

2. A bicycle frame according to claim 1, characterized in that the bar (6) extending towards the saddle support means (4) and the bar (8) extending towards the pedal shaft sleeve (8), are connected pivotably mutually and to the pivot point.

3. A bicycle frame according to claim 1, characterized in that the bar (6) extending towards the saddle support means (4) and the bar (8) extending towards the pedal shaft sleeve (8) constitute a continuous integral rod.

4. Frame according to claims 1-3, characterized in that the pivotal connections are easily releasable insert connections.

5. Frame according to claims 1-4, characterized in that the tensioning wires (17-24) are provided in twins or couples.

6. Frame according to claim 5, characterized in that the tensioning wires (17, 18; 19, 20; 23, 24) of a couple extend mutually crosswise.

7. Frame according to one or more of the preceding claims, characterized in that at least one of the tensioning wires or couples of tensioning wires resp. are provided with a tensioning device (13).

8. Frame according to claim 7, characterized in that the tensioning device comprises a rotary handle, cooperating with a cam profile or with a cam follower means respectively.

9. Frame according to one or more of the preceding claims, characterized in that a tensioning device is provided in the pivot point.

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FIG. 1

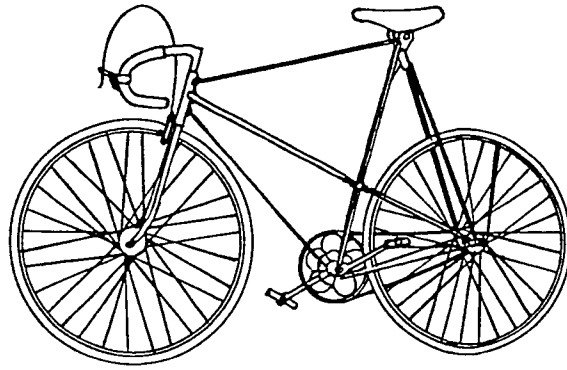


FIG. 2

