

SPECIFICATION **Vehicle for Children**

The present invention relates to a vehicle for children.

- 5 Among vehicles for children having two front wheels and two rear wheels, there are those which have their front wheels adapted to be steered by the manipulation of steering means. Such vehicles for children having steerable front
10 wheels are advantageous to train the motor nerve.

- However, for a very young child a steerable arrangement for the front wheels is undesirable from the standpoint of safety. Therefore, it is
15 desirable to provide a fixed wheel arrangement when a child is very young and a steerable arrangement at the proper time in the course of growth of the child.

- A fixed wheel arrangement is provided in a
20 known child's vehicle having a manual push handle attached to the rear of the vehicle body. This handle is used, for example, by a grown-up pushing the vehicle with a child placed therein to amuse the child or by the child himself pushing it
25 to amuse himself. From the manner of use of this vehicle, it can be seen that the steerable arrangement described above is not required from the standpoint of operability and for this reason the front wheels have hitherto always been fixed.

- 30 The present invention provides a vehicle for children which can be selectively adapted between a steerable and a fixed wheel mode as desired. The selection procedure in the preferred embodiments is simple.

- 35 The vehicle has a removable handle, and in one manner of use, the handle may be pushed with the front wheels fixed. In the other mode, the front wheels are steerable by a child, and the handle is removed. Both conditions are thus
40 achieved in a single vehicle.

- The appearance of the vehicle may be made more sophisticated by removing the handle when the manual pushing operation has ceased, which, pleases the child. At the same time, by then
45 providing the facility for steering the front wheels, free manoeuvrability is obtained.

According to the invention, there is provided a vehicle for children comprising:

- 50 a vehicle body,
front wheels,
rear wheels,
steering means including a steering shaft for steering said front wheels,
a sleeve portion formed on a relatively forward
55 portion of said vehicle body and rotatably receiving said steering shaft,
a manual push handle removably attached to a relatively rearward portion of said vehicle body, and

- 60 means for selectively fixing said steering shaft against rotation relative to said sleeve portion.

The combination of an arrangement for selectively fixing the steering shaft against rotation and an arrangement for removably

- 65 attaching the handle to the vehicle enables the two modes of operation, one in which the handle is pushed with the front wheels rendered unsteerable and the other in which the front wheels are rendered steerable by a child with the
70 handle removed, to be achieved in a single vehicle.

- In a preferred embodiment of the invention, a pin is used as the means for selectively fixing the steering shaft against rotation. Preferably, such
75 pin is a taper pin. A taper pin can be fixed in position by being driven in from one side and can be extracted by being driven out from the other side. Therefore, the operation for allowing or preventing the rotation of the steering shaft is
80 very simple.

- In another preferred embodiment of the invention, the handle includes vertically extending bars, while the vehicle body is formed with vertically extending holes. Thus, the handle can be
85 attached to the vehicle body by simply inserting the bars into said holes. When it is desired to remove the handle, the bars may be extracted.

- In a further embodiment of the invention, the vehicle is provided with an anti-topple member
90 having a free end disposed rearwardly of the contact region between the rear wheels and the ground, with a small clearance between said member and the ground. This anti-topple member is preferably removably attached to the vehicle,
95 and in the operational mode of the vehicle employing the handle, it advantageously prevents the vehicle for children from toppling over rearwardly when the vehicle is being pushed.

- Thus, the invention provides a vehicle for
100 children having front wheels which are selectively steerable.

- Further, the invention provides a vehicle for children wherein, in addition to such facility of selective steerability, there is a removable handle, whereby various modes of use of the vehicle can
105 be selectively adopted.

- Preferably, the vehicle has a construction permitting the selection of the modes of use mentioned above to be made by a simple operation.

- 110 The described vehicle for children is superior in safety, having an arrangement for preventing the vehicle from toppling over rearwardly in the manner of use of the vehicle employing the handle.

- 115 The invention is described further, by way of example, with reference to the accompanying drawings, in which:—

Fig. 1 is an external perspective view of an embodiment of the invention;

- 120 Fig. 2 is a plan view of Fig. 1, with the handle removed,

Fig. 3 is a partly broken-away side view of Fig. 1;

- Fig. 4 is an exploded perspective view of some parts shown in Fig. 3;

Fig. 5 is a sectional view showing the parts of Fig. 4 put together;

Fig. 6 is a perspective view of another

embodiment of the invention corresponding to the parts shown in Fig. 4;

Fig. 7 is a sectional view showing the parts of Fig. 6 put together;

Fig. 8 is a view for explaining another embodiment of the invention, showing a part of a vehicle for children in section;

Fig. 9 is a perspective view showing the principal portion of Fig. 8 disassembled, and also showing parts corresponding to Fig. 4;

Fig. 10 is a sectional view showing the parts of Fig. 9 put together;

Fig. 11 is a plan view of a part of a vehicle for children, explaining another embodiment of the invention;

Fig. 12 is a sectional view taken along the line II—II of Fig. 11;

Fig. 13 is a perspective view of a part of a steering shaft, explaining another embodiment of the invention;

Fig. 14 is a sectional view showing an arrangement associated with the steering shaft shown in Fig. 13;

Fig. 15 is an enlarged perspective view of a toppling-preventive member; and

Fig. 16 is a fragmentary side view showing a part of a vehicle for children having the toppling-preventive member of Fig. 15 attached thereto.

Description of the Preferred Embodiments:

Referring to Figs. 1 through 3, a vehicle for children has a vehicle body 1 made, for example, of rigid plastic. A seat 2 is provided on the upper surface of the vehicle body in a relatively rearward portion thereof. Preferably, the seat 2 is arranged to be capable of being opened and closed so as to store things under the seat 2. A steering wheel 3 is installed at a position enabling a child on the seat 2 to operate the same. The steering wheel 3 is held by a steering shaft 4 with respect to the vehicle body 1. The lower end of the steering shaft 4 supports a front axle 5 rotatably carrying front wheels 6 at its opposite ends. A rear axle 7 (Fig. 16) is provided in the rear of the vehicle body 1 and carries rear wheels 8 at its opposite ends. A handle 9 extends upwardly from the rear end of the vehicle body 1. The handle 9 is provided for pushing the vehicle for children from behind and is arranged so that it can be extracted from the vehicle body 1 when becoming unnecessary. More particularly, the handle has vertically extending bar-like bodies 9a which are simply inserted in holes 1a formed in the vehicle body.

Fig. 3 shows how the steering shaft 4 is attached. Referring to Fig. 3 and also Figs. 4 and 5, the steering shaft 4 comprises an upper tube 10, an intermediate shaft 11 and a lower block 12. Thus, the steering wheel 3 is fixed to the upper tube 10, while front wheels 5 are held by the lower block 12. The intermediate shaft 11 has its upper end inserted in the upper tube 10 and is fixed to the upper tube 10 by a screw 13, it being fixed to the lower block 12 in advance. The vehicle body 1 is provided with a sleeve portion 14 for turnably holding the steering shaft 4. In

practice, the sleeve portion 14 receives the intermediate shaft 11, and the upper and lower end surfaces of the sleeve portion 14 abut against the lower end surface of the upper tube 10 and the upper end surface of the lower block 12,

respectively, whereby the slipping-off is prevented. The sleeve portion 14 is provided with a notch 15 which is formed, for the reason to be presently described, by relieving the wall of the sleeve portion 14 over a predetermined angular range. The intermediate shaft 11 is provided with a projection 16 at a position such that it is received in the notch 15 when the intermediate shaft 11 is inserted into the sleeve portion 14. Since the projection 16 is limited in the range of its movement within the notch 15, the range of turning of the steering shaft 4 is predetermined. This arrangement assures safety and satisfactory operability.

What are described below are characteristic of the present invention. The projection 16 is provided with a throughgoing hole 17 extending in a direction to cross the axis of the steering shaft 4. A pin 18, such as a taper pin, is inserted in said throughgoing hole 17. A taper pin would be easy to fix in position by simply driving it into the throughgoing hole 17. The state of the pin 18 driven in is shown in Fig. 5. In Fig. 5, the pin 18 is also in contact with the two lateral edges of the notch 15. In this state, therefore, the intermediate shaft 11, i.e., the steering shaft 4 is prevented from turning with respect to the sleeve portion 14, i.e., the vehicle body 1.

In this way, the steering wheel 3 and the front wheels 6 are prevented from steering. If it is desired to steer the vehicle by means of the steering wheel 3, this may be achieved by striking the thinner end of the pin 18 to drive it out of the throughgoing hole 17. As a result, the steering shaft 4 becomes turnable within the predetermined range, so that it becomes possible to steer the front wheels by manipulating the steering wheel 3.

As for the arrangement for selectively fixing the steering shaft 4 against rotation, a number of modifications may be contemplated, as described below.

Figs. 6 and 7 are views for explaining another example of the means for fixing the steering shaft against rotation. What is shown in Figs. 6 and 7 is a minor modification of what is shown in Figs. 4 and 5 described above. The corresponding parts are given like reference numerals, and only the different portions of the arrangement will be described.

The sleeve portion 14 is provided with throughgoing holes 19 extending through the wall thereof. The intermediate shaft 11 is also provided with a throughgoing hole 20 extending laterally thereof. In addition, the projection 16 is provided with nothing corresponding to the throughgoing hole 17.

With the arrangement described above, when the intermediate shaft 11 is inserted into the sleeve portion 14, the projection 16 is received in

the notch 15 and the throughgoing holes 19 and 20 are aligned with each other. If, therefore, the pin 21 is driven into the aligned throughgoing holes 19 and 20, the intermediate shaft 11, i.e., the steering shaft 4 is fixed to the sleeve portion 14.

Figs. 8 through 10 are views for explaining another example of selectively fixing the steering wheel against rotation. In Figs. 8 through 10, the parts corresponding to those shown in Figs. 3 through 5 are given like reference numerals, and only the arrangement of the different portions will be described.

The sleeve portion 14 is provided with a second notch 22 as well as a notch 16 for receiving the projection 16. A key-like member 23 is prepared in correlation to the size of the notch 22. The key-like member 23 is attached to the side of the intermediate shaft 11 by means of a screw 24. The attached state is shown in Fig. 10, from which it is seen that the key-like member 23 is intimately received in the second notch 22.

As described above, the intermediate shaft 11, i.e., the steering wheel 4 is fixed to the sleeve portion 14. If the screw 24 is extracted as by a screw-driver, the key-like member 23 is separated, allowing the rotation of the steering shaft 4.

Figs. 11 and 12 illustrate another example of the means for selectively fixing the steering shaft against rotation. In Figs. 11 and 12, the parts corresponding to those shown in Figs. 1 through 5 described above are given like reference numerals, and only the different arrangement will be described.

In the example shown therein, said notch 15 and projection 16 are not provided. Instead, a flange 25 is provided which extends from the upper tube 10. The flange 25 is received in a segmental recess 26 formed on the upper surface of the vehicle body 1. Thus, the combination of the flange 25 and recess 26 limits the range of rotation of the upper tube 10, i.e., the steering shaft 4. The flange 25 is provided with a throughgoing hole extending through the vehicle body 1 and a pin 27 is driven into said throughgoing hole, whereby the rotation of the steering shaft 4 is prevented.

Figs. 13 and 14 illustrate another example of the means for selectively fixing the steering shaft against rotation. Suffice it to say that the example shown therein is a modification of the example shown in Figs. 6 and 7. Thus, the parts corresponding to those shown in Figs. 6 and 7 are given like reference numerals, and only the different arrangement will be described.

In this example, said throughgoing holes 19 and 20 shown in Figs. 6 and 7 are not provided. Instead, the upper tube 10 is provided with a flange 28. This flange 28 contacts the upper surface of the vehicle body 1. The flange 28 is provided with a throughgoing hole 29, while the vehicle body 1 is provided with a throughgoing hole 30 in alignment with said throughgoing hole 29.

With this arrangement, when a pin 31 is driven into the throughgoing holes 29 and 30, the upper tube 10, i.e., the steering shaft 4 is fixed.

Other examples of the means for selectively fixing the steering shaft 4 against rotation may be contemplated.

According to the various embodiments of the invention described above, the two manners of use, one in which the manual push handle 9 is attached while the front wheels 6 are rendered unsteerable and the other in which the handle 9 is removed while the front wheels 6 are rendered steerable, can be achieved in a single vehicle for children. Therefore, the manners of use may be suitably selected as a child grows up, and since this is possible with a single vehicle for children, the invention is very advantageous also economically.

In connection with the manners of use described and particularly one in which the handle 9 is used to push the vehicle, it has been found that a situation which is undesirable from the standpoint of safety often occurs. More particularly, the handle 9 is attached to the rear end of the vehicle body 1 and the position of the handle is considerably low for grown-ups. Therefore, a grown-up is compelled to slouch in pushing the handle 9, so that it often happens that the force component to propel the vehicle is exceeded by the force component to depress the vehicle. The depressing force component is not desirable from the standpoint of safety in that it often acts to cause a toppling with the front of the vehicle raised around the rear wheels 8 even if a child is sitting on the vehicle, since children are generally light in weight.

The problem described above can be advantageously solved by attaching a toppling-preventive member 32 of simple construction shown in Fig. 15 in a manner shown in Fig. 16.

Referring to Figs. 15 and 16, the toppling-preventive member 32 is U-shaped as a whole and formed, for example, of a bar. The two open ends of the toppling-preventive member 32 are suitably upwardly bent, thereby determining the direction in which the toppling-preventive member 32, when attached to the vehicle body 1, extends. The open ends 33 are each provided with a flange 34 and an external thread 35 which will receive a nut, e.g., box nut 36.

Fig. 16 shows the toppling-preventive member 32 in its attached position. The method of attachment comprises inserting the open ends 33 of the toppling-preventive member 32 into predetermined attaching holes 37 from below the vehicle body 1. The end of insertion is determined by the flanges 34. Next, the seat 2 is opened to give access to the external threads 35 for screwing the box nuts 36 onto the latter. Upon completion of the screwing operation, the seat 2 is closed. In this way, the toppling-preventive member 32 is attached as shown in Fig. 16. In this state, the free end of the toppling-preventive member 32 is positioned with a slight clearance 39 maintained between it and the ground 38. The

free end of the toppling-preventive member 32 opposed to the ground 38 with said clearance maintained therebetween is bent as at 40. The presence of said bend 40 assures the smooth travel of the vehicle for children even if the ground is somewhat irregular or the vehicle moves back.

When the handle 9 becomes unnecessary and hence the danger of toppling of the vehicle no longer exists, the toppling-preventive member 32 can be easily removed. This is achieved by simply unscrewing the box nuts 36 from the external threads 35 and extracting the toppling-preventive member 32.

Although the present invention has been described and illustrated in detail, it is clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of the present invention being limited only by the terms of the appended claims.

Claims

1. A vehicle for children comprising:

a vehicle body,
front wheels,

rear wheels,

steering means including a steering shaft for steering said front wheels,

a sleeve portion formed on a relatively forward portion of said vehicle body and rotatably receiving said steering shaft,

a manual push handle removably attached to a relatively rearward portion of said vehicle body, and

means for selectively fixing said steering shaft against rotation relative to said sleeve portion.

2. A vehicle for children as set forth in Claim 1, wherein:

said handle includes vertically extending bars, said vehicle body is formed with vertically

extending holes, and

said handle is attached with said bars inserted in said holes.

3. A vehicle for children as set forth in Claim 1, wherein said means for selectively fixing is a pin.

4. A vehicle for children as set forth in Claim 3, wherein said pin is a taper pin.

5. A vehicle for children as set forth in Claim 3, wherein:

the lateral wall of said sleeve portion is

provided with a notch extending over a predetermined angular range, and

a projection to be received in said notch is provided on said steering shaft to extend from the lateral surface thereof,

said projection being formed with a throughgoing hole extending in a direction to cross the axis of said steering shaft,

said pin being inserted in said throughgoing hole to abut against the two lateral edges of said notch, whereby said steering shaft is fixed against rotation relative to said sleeve portion.

6. A vehicle for children as set forth in Claim 3, wherein:

the lateral wall of said sleeve portion is

provided with a first throughgoing hole, and

said steering shaft is provided with a second throughgoing hole which is aligned with said first throughgoing hole,

said pin extending through said first and

second throughgoing holes.

7. A vehicle for children as set forth in Claim 3, wherein:

said steering shaft is provided with a flange, said flange being formed with a first

throughgoing hole approximately parallel with said steering shaft, and

said vehicle body is provided with a second throughgoing hole which is aligned with said first throughgoing hole,

said pin extending through said first and second throughgoing holes.

8. A vehicle for children as set forth in Claim 1, wherein:

the lateral wall of said sleeve portion is

provided with a notch extending over a predetermined angular range, and

said means for selectively fixing is a key-like member intimately received in said notch and screwed to said steering shaft.

9. A vehicle for children as set forth in Claim 1, further comprising an anti-topple member having a free end positioned rearwardly of the place of contact between the rear wheels and the ground with a slight clearance maintained between it and the ground.

10. A vehicle for children as set forth in Claim 9, wherein said anti-topple member is removably attached to said vehicle body.

11. A vehicle for children as set forth in Claim 10, wherein said anti-topple member is screwed to said vehicle body.

12. A vehicle for children as set forth in Claim 9, wherein said anti-topple member is U-shaped and is attached at the two open ends of the U to said vehicle body to extend relatively downwardly.

13. A vehicle for children substantially as herein described with reference to the accompanying drawings.



free end of the toppling-preventive member 32 opposed to the ground 38 with said clearance maintained therebetween is bent as at 40. The presence of said bend 40 assures the smooth travel of the vehicle for children even if the ground is somewhat irregular or the vehicle moves back.

When the handle 9 becomes unnecessary and hence the danger of toppling of the vehicle no longer exists, the toppling-preventive member 32 can be easily removed. This is achieved by simply unscrewing the box nuts 36 from the external threads 35 and extracting the toppling-preventive member 32.

Although the present invention has been described and illustrated in detail, it is clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of the present invention being limited only by the terms of the appended claims.

Claims

1. A vehicle for children comprising:
a vehicle body,
front wheels,
rear wheels,
steering means including a steering shaft for steering said front wheels,
a sleeve portion formed on a relatively forward portion of said vehicle body and rotatably receiving said steering shaft,
a manual push handle removably attached to a relatively rearward portion of said vehicle body, and
means for selectively fixing said steering shaft against rotation relative to said sleeve portion.
2. A vehicle for children as set forth in Claim 1, wherein:
said handle includes vertically extending bars,
said vehicle body is formed with vertically extending holes, and
said handle is attached with said bars inserted in said holes.
3. A vehicle for children as set forth in Claim 1, wherein said means for selectively fixing is a pin.
4. A vehicle for children as set forth in Claim 3, wherein said pin is a taper pin.
5. A vehicle for children as set forth in Claim 3, wherein:
the lateral wall of said sleeve portion is provided with a notch extending over a predetermined angular range, and
a projection to be received in said notch is provided on said steering shaft to extend from the lateral surface thereof,

- 55 said projection being formed with a throughgoing hole extending in a direction to cross the axis of said steering shaft,
said pin being inserted in said throughgoing hole to abut against the two lateral edges of said notch, whereby said steering shaft is fixed against rotation relative to said sleeve portion.
- 60 6. A vehicle for children as set forth in Claim 3, wherein:
the lateral wall of said sleeve portion is provided with a first throughgoing hole, and
said steering shaft is provided with a second throughgoing hole which is aligned with said first throughgoing hole,
said pin extending through said first and second throughgoing holes.

7. A vehicle for children as set forth in Claim 3, wherein:
said steering shaft is provided with a flange,
said flange being formed with a first throughgoing hole approximately parallel with said steering shaft, and
said vehicle body is provided with a second throughgoing hole which is aligned with said first throughgoing hole,
said pin extending through said first and second throughgoing holes.

8. A vehicle for children as set forth in Claim 1, wherein:
the lateral wall of said sleeve portion is provided with a notch extending over a predetermined angular range, and
said means for selectively fixing is a key-like member intimately received in said notch and screwed to said steering shaft.
9. A vehicle for children as set forth in Claim 1, further comprising an anti-topple member having a free end positioned rearwardly of the place of contact between the rear wheels and the ground with a slight clearance maintained between it and the ground.

10. A vehicle for children as set forth in Claim 9, wherein said anti-topple member is removably attached to said vehicle body.
11. A vehicle for children as set forth in Claim 10, wherein said anti-topple member is screwed to said vehicle body.
12. A vehicle for children as set forth in Claim 9, wherein said anti-topple member is U-shaped and is attached at the two open ends of the U to said vehicle body to extend relatively downwardly.
13. A vehicle for children substantially as herein described with reference to the accompanying drawings.

ERRATUM

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Kassal KK read Kassai KK**

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