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**CN 101323341 A**

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(54) Title of the Invention: **Cycle convertible into a shopping trolley**  
 Abstract Title: **Cycle convertible into a shopping trolley**

(57) A cycle incorporating a detachable container 3 mounted over the rear wheel on a cycle main frame 1 where a steering column support member 4 can be moved along slide rails 2 mounted on the main frame and be clamped in the forward (or cycling) mode or in the backward (or shopping) mode, together with a saddle mounting 13 placed on one side of the sliding rails. The pedal crankshaft support frame 7 is pivoted and supported by a link 10 with the steering column support member 4 to raise it upward during the movement from cycling to shopping mode. Trolley wheels 14 are mounted on an extension of the pedal crankshaft support frame 7 such that they are lowered as the pedal crankshaft support frame rises, thereby coming into effect in the shopping mode. The trolley wheels may also be articulated to fold upwards in the cycling mode. The saddle 12 is pivoted to permit it to be tilted to allow the steering column to take up its rearmost position.

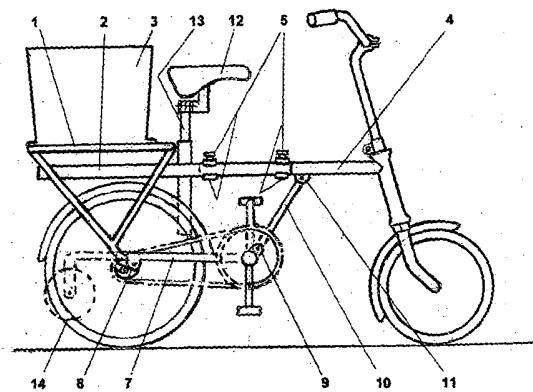


Figure 1

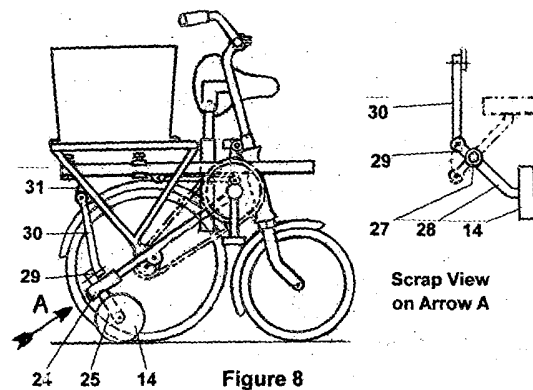


Figure 8

GB 2479123 A

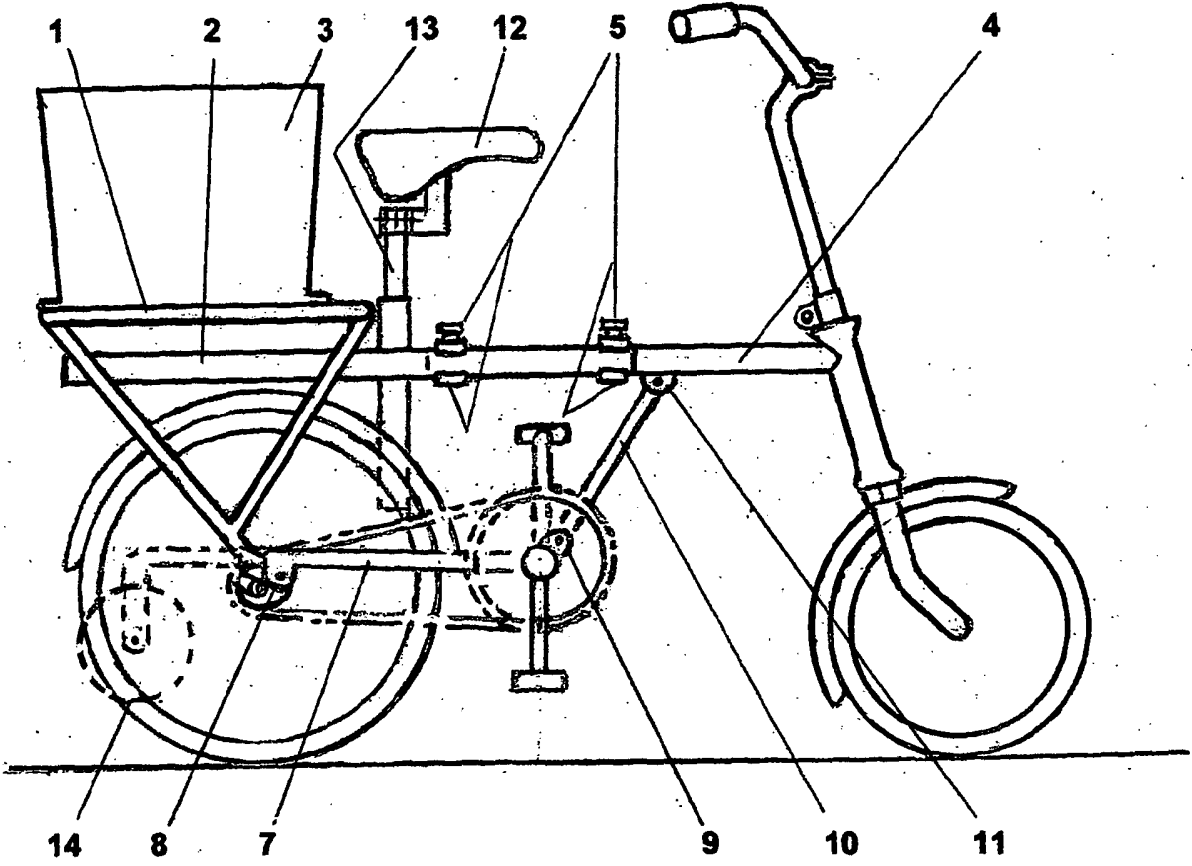


Figure 1

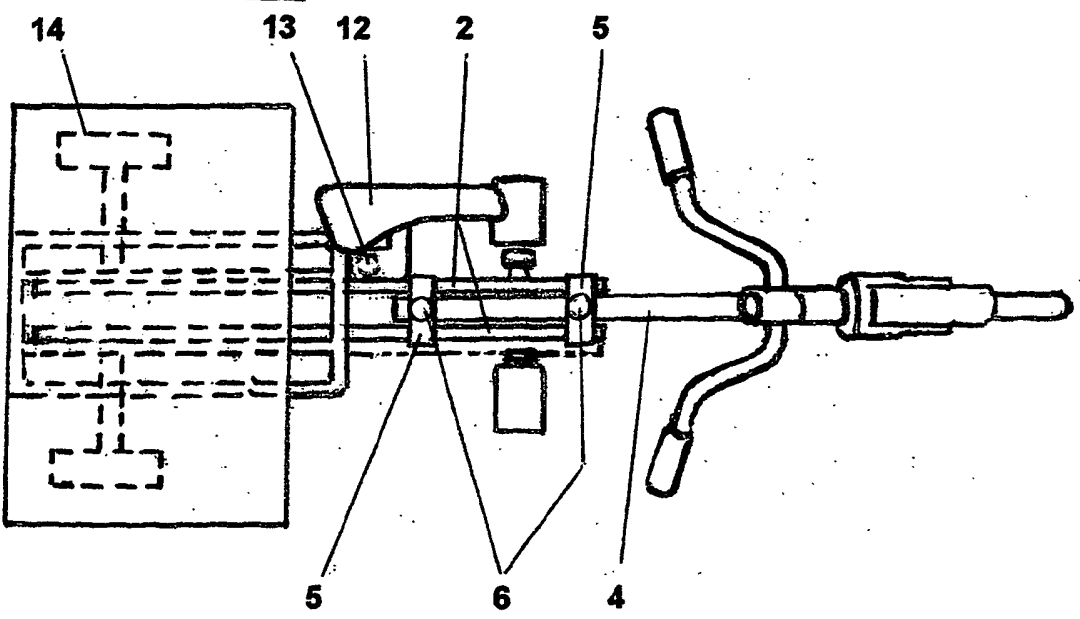


Figure 2



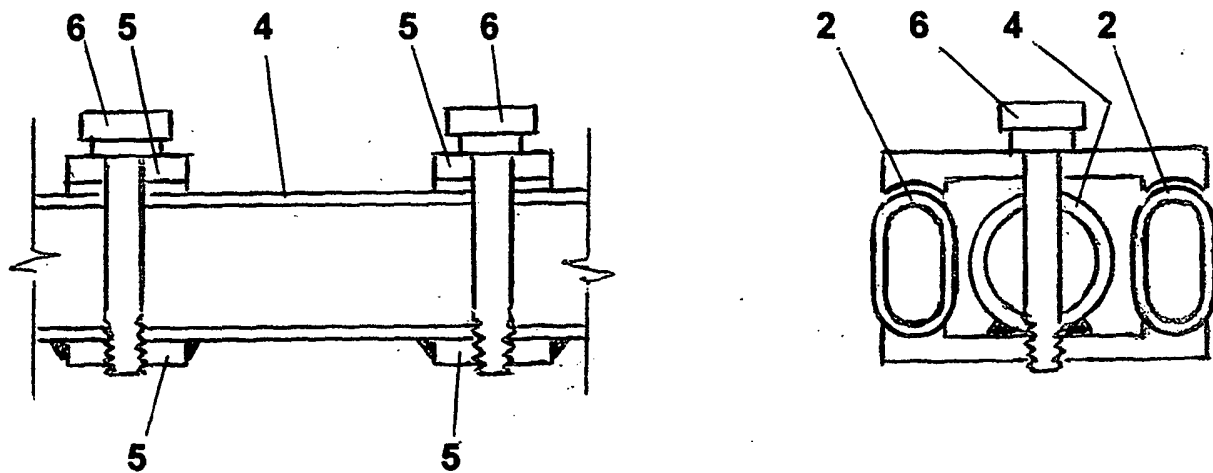


Figure 4

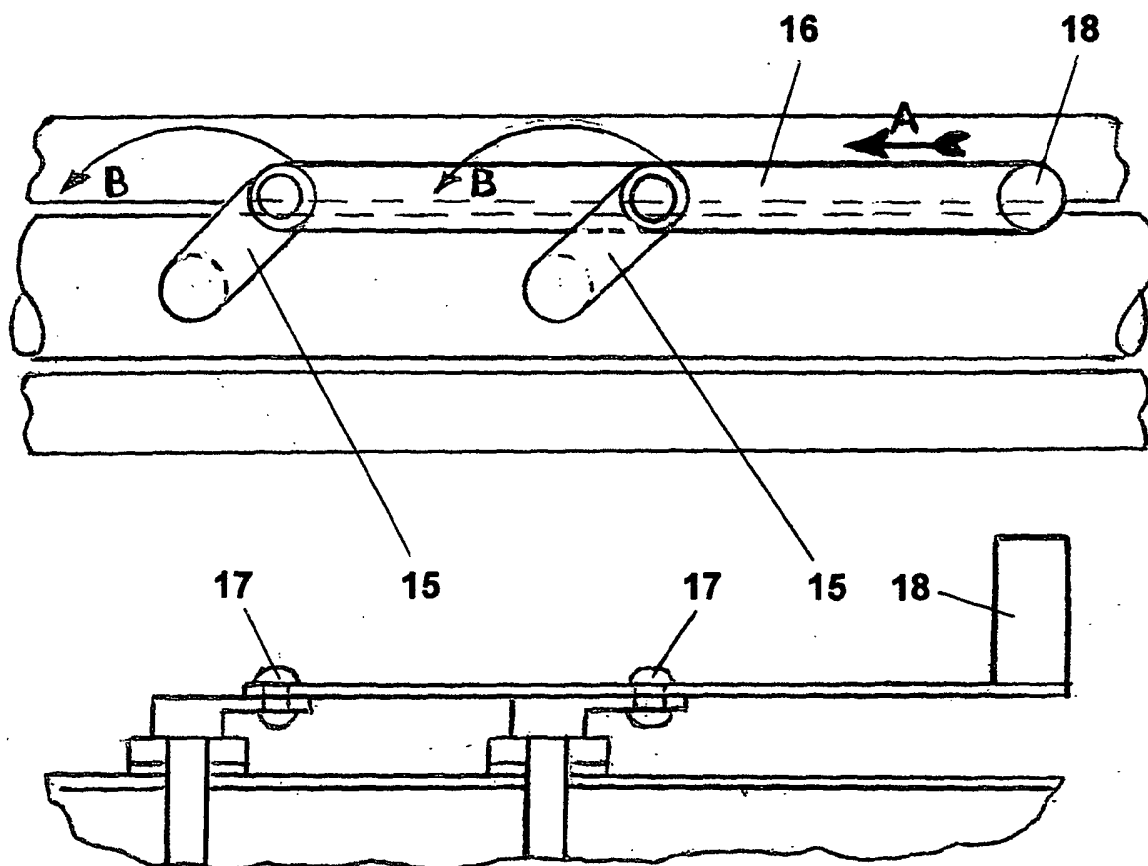


Figure 5

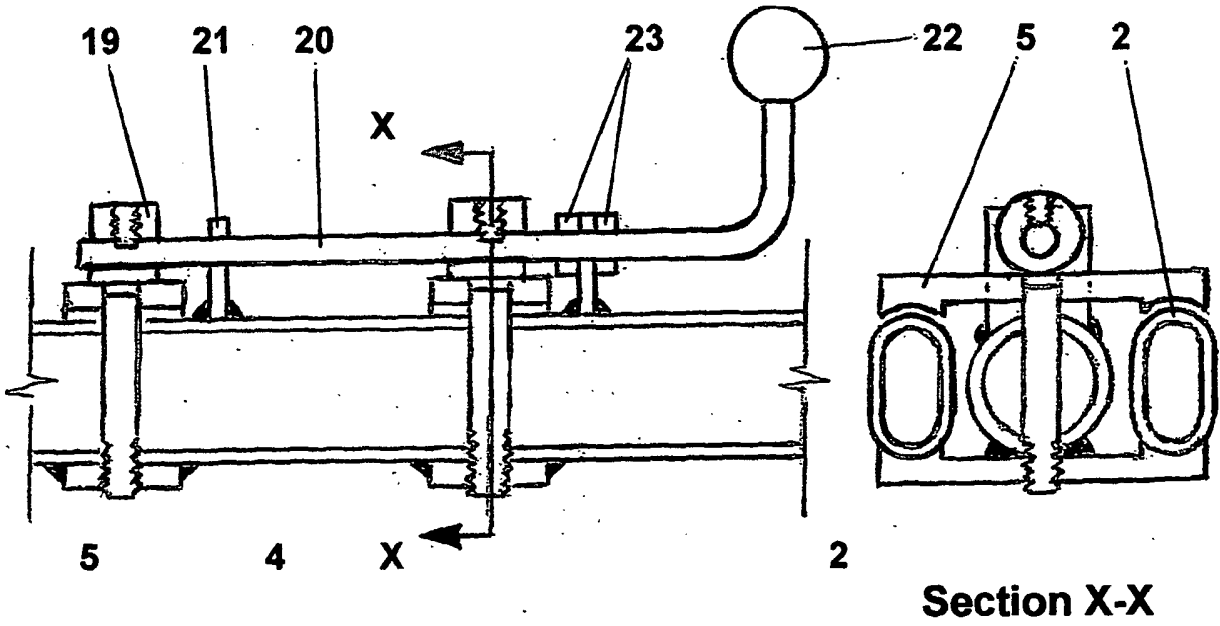


Figure 6

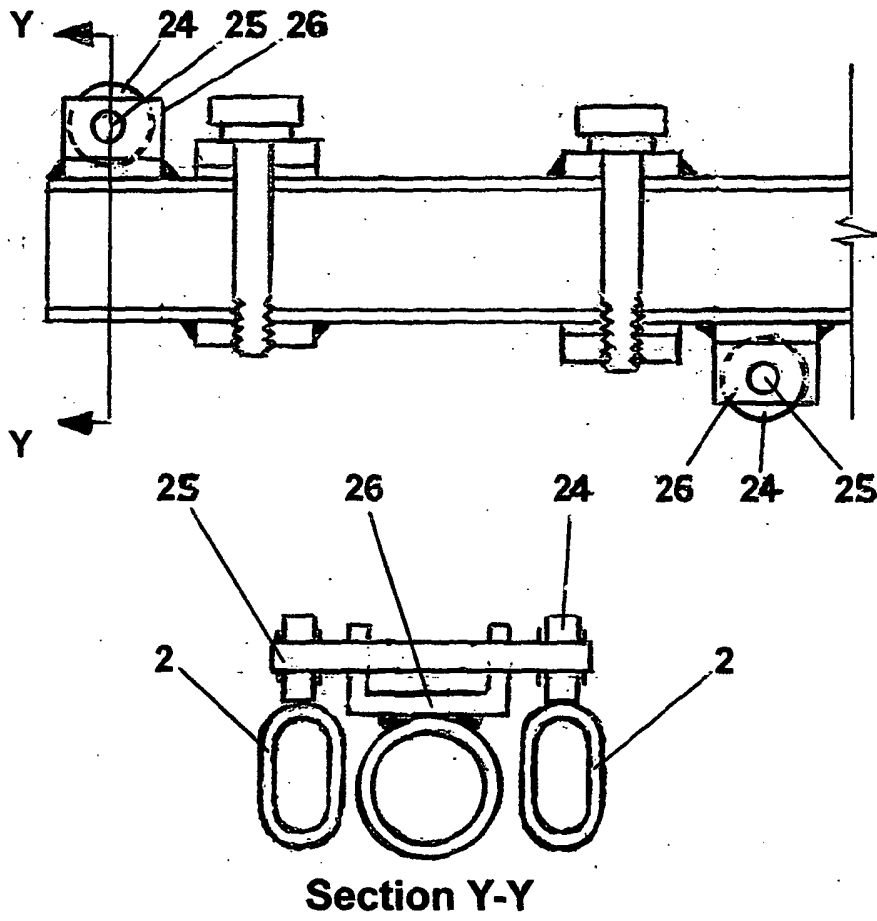
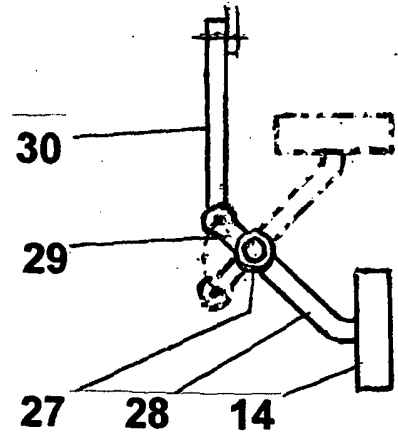
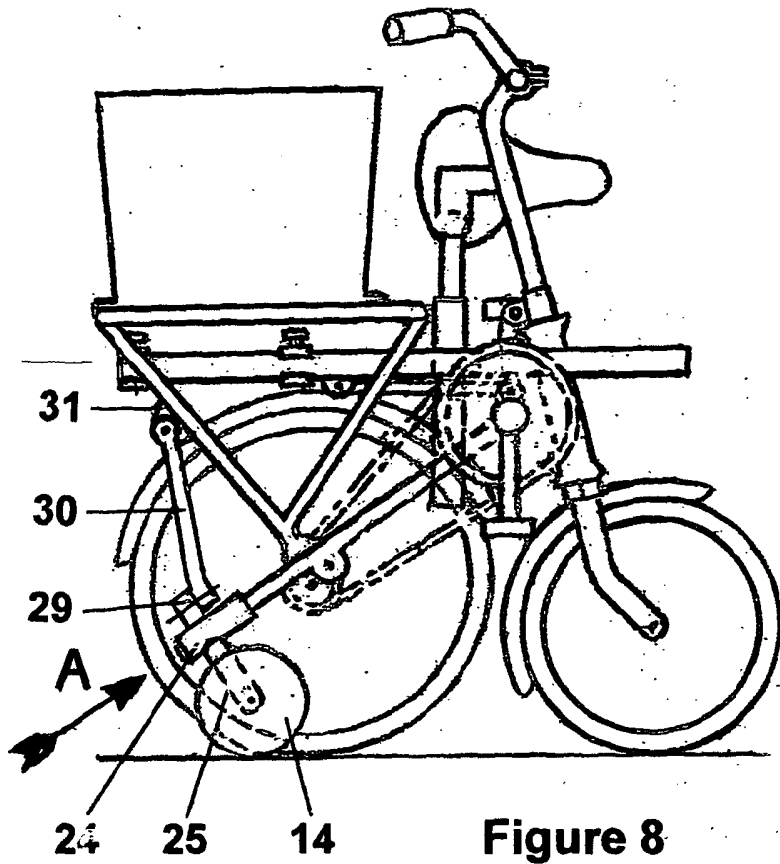


Figure 7



Scrap View  
on Arrow A

Figure 8

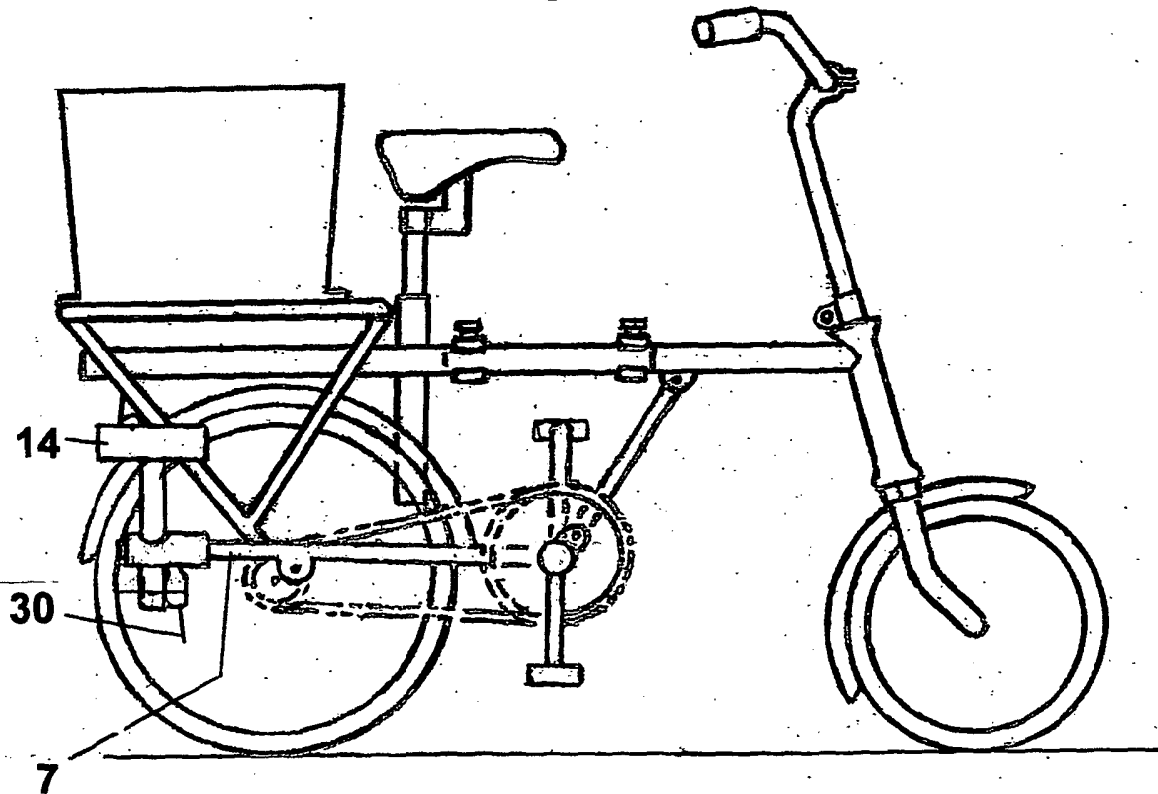


Figure 9

## **Cycle convertible into a shopping trolley**

**This invention relates to cycles which may be bicycles or tricycles, with a container for carrying goods behind the saddle, the tricycle being of the type where two wheels are placed at the back.**

**Known cycles of this type used for carrying goods in a container positioned behind the saddle are too long to be used in supermarkets or shopping precincts.**

**According to the present invention there is provided a cycle with a removable shopping container positioned over the cycle rear wheel or wheels where a frame member supporting the steering wheel column rests on slide rails to permit it to slide horizontally along the cycle main frame from a normal forward position in the cycling mode to a rearward position in the shopping mode, and means to clamp said steering column support member at either end of its movement, said movement being enabled by providing a pivotal mounting for the pedal crankshaft frame near the rear wheel axle to permit it to be tilted upwards to make room for the front wheel and steering column in the shopping mode, and by locating the saddle pillar column to one side of said slide rails with the saddle mounted centrally by means of a pivoted saddle support bracket to permit the saddle to be tilted to make room for the steering column in the shopping mode, said pedal crankshaft frame in the case of bicycles extending beyond the rear wheel axle to support a trolley wheel on each side, such that in the shopping mode position the trolley wheels contact the ground thus lifting the rear wheel clear off the ground, thereby converting the bicycle into a three wheeled trolley.**

**A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which :-**

**Figure 1 shows a section adjacent to the chain wheel of the tricycle version or a side view of the bicycle version with trolley wheels and supports shown dotted, in the cycling mode.**

**Figure 2 shows a plan view of the bicycle version in the cycling mode**

**Figure 3 shows a side view of the bicycle version in the shopping mode**

**Figure 4 shows sections through the steering support member and the clamping saddles applicable to both bicycle and tricycle versions**

**Figure 5 shows a plan view and section of an alternative clamping arrangement applicable to both bicycle and tricycle versions.**

**Figure 6 shows two sections of a further alternative clamping arrangement applicable to both bicycle and tricycle versions.**

**Figure 7 shows a clamping arrangement provided with rollers applicable to both bicycle and tricycle versions**

**Figure 8 shows the bicycle version in the shopping trolley mode with**

articulated trolley wheels

Figure 9 shows a side view of the bicycle version with articulated trolley wheels in the cycling mode

Referring to the drawings:

Figure 1 shows a section of the tricycle adjacent to the chain wheel or a side view of the bicycle in the cycling mode, with a main frame 1 supported by the rear wheel or wheels carrying slide rails 2 affixed to it and a shopping container 3 clamped to it by means not shown. A steering column support member 4 is provided with pairs of top and bottom clamp saddles 5, with either the top or the bottom saddle being secured or welded to said steering support member, said clamp saddles engaging with the slide rails 2 and provided with clamping thumb screws 6 which also pass through said steering support member allowing it to be clamped to said slide rails in the position shown.

The main frame supports the pedal crank frame 7 on mounting axles 8 offset from the rear wheel axle, said pedal crank frame incorporating the chain wheel and chain shown chain-dotted together with the pedals and pedal crank bearing hub, said hub carrying a pinned joint bracket 9 allowing it to be supported off the steering support member 4 by means of connecting link 10 and pinned joint 11. The centrally placed saddle 12 is supported off saddle pillar 13 which is offset from the centre line of the cycle, said saddle incorporating means to allow it to be pivoted through 90 degrees in order to make room for the steering column in its rearmost position. The pedal crank frame 7 in the case of the bicycle version is extended rearwards beyond the rear wheel axle and carries a trolley wheel 14 on each side, as here shown dotted.

Figure 2 shows a plan view of the bicycle version in the cycling mode, with the trolley wheels 14, shown dotted, supported on extensions from both sides of the pedal crank frame. The clamping thumb screws 6 clamping the clamp saddles 5 to slide rails 2 are shown in this view, as is the saddle 12 tilted vertically on a hinge pin not shown in the saddle pillar 13 in order to make room for the steering column in the shopping mode.

Figure 3 shows a side view of the bicycle version or a section of the tricycle version adjacent to the chain wheel, the latter version not incorporating the trolley wheels 14, in the shopping trolley mode being guided by the user with a child shown seated in the container. The steering column is here in its rearmost position, and the pedal crank frame 7 is shown raised to its topmost position due to the movement of the connecting link 10. The trolley wheels 14 applicable to the bicycle version only are shown in contact with the ground, and may preferentially be located such as to raise the rear wheel clear off the ground, since this would obviate the necessity of introducing a 'neutral' gear change position to prevent the pedal cranks from rotating when the trolley is



moved backwards.

Figure 4 is to a larger scale and applicable to both bicycle and tricycle versions, and shows a vertical section along the centre line of the steering support column 4 and a section at right angles to it through the clamp saddles 5, the steering support member 4, the slide rails 2 and the clamping thumb screws 6. The slide rails 2 are here shown as being flat sided oval tubes, but may be round or square or rectangular tubes, and this also applies to the steering column support member 4 which may be of any tubular section. The lower clamp saddle 5 is fixed to the steering support member 4 by means of welding or other means, and is threaded to suit the clamping thumb screw. The upper clamp saddles 5 are provided with a clearance holes for the thumb screws 6, and are spaced from the steering support member 4 to permit the upper saddle to clamp on to the slide rails 2 not shown here when the clamping thumb screws are tightened

Figure 5, applicable to both bicycle and tricycle versions, shows a plan view and scrap section of an alternative clamping arrangement where the heads of the individual clamping thumb screws are replaced by levers 15 interconnected to link 16 by means of bearing pins 17 so as to permit both clamping screws to be moved through an angle of around 90 degrees as indicated by the arrows B by means of moving said link 16 in the direction of arrow A using the handle 18, which is shown in the clamped position. The length of said link 16 may be larger than shown to facilitate access to the handle 18 in the shopping mode.

Figure 6, applicable to both bicycle and tricycle versions, shows a longitudinal section and a section X-X at right angles of another alternative clamping arrangement where the clamp saddles 5 are clamped together by means of eccentric sleeves 19 affixed to a spindle 20 supported in bearing brackets 21 affixed to the steering support member 4, said spindle being provided with an operating knob 22 such that the movement of said operating knob through an arc of around 90 degrees will effect the clamping together of the clamp saddles 5 on to the slide rails 2. Locating collars 23 secured to the spindle 20 by set screws not shown allow the operating knob to be used in effecting movement of the steering column support member along the slide rails. The length of projection of the spindle 20 from the clamping saddle to the operating knob may be larger than shown to facilitate access to the operating knob.

Figure 7 shows a longitudinal section through a clamping arrangement similar to those previously described in figures 5 and 6 but provided in addition with rollers 24 bearing on spindles 25 mounted in brackets 26 welded to the steering column support member 4 adjacent to the top and bottom clamp saddles at the rear and front respectively, which are shown unclamped, thus permitting said steering column support member to engage and roll along

said slide rails due to the torque exerted by the respective weights of the front and rear assemblies of the bicycle in the un-clamped position, thus reducing the sliding resistance between the steering column support member and the slide rails. The top half of the front clamp saddle is here affixed to the top of the steering support member 4 in order to provide the necessary gap at the bottom clamp saddle to permit the front rollers 24 to engage the bottom of said steering column support member when front thumb screw 6 is loosened. Similar provisions may be made for the clamping method described in figure 6.

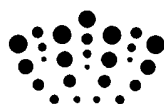
Figure 8 shows a side view of the bicycle version in the trolley mode with means of mounting the trolley wheels 14 on sleeves 27 rotationally mounted on the extensions of pedal crank frame 7 such as to permit said trolley wheels to be folded upwards in the cycling mode, said sleeves being attached to the trolley wheel support member 28 and provided with an actuator extension 29. The upward folding is achieved by means of links 30 provided with universal joints at both ends, the bottom end being connected to the actuator extension 29 and the top end to a bracket 31 attached to the main frame. The Scrap View on Arrow A shows the arrangement of these parts in the trolley mode in full, and in the cycling mode chain-dotted.

Figure 9 shows a side elevation of the bicycle version in the cycling mode, with the trolley wheels 14 moved to their topmost position due to the relative movement between the lower and upper mounting points of the link 30 occasioned by the rotational movement of the pedal crank frame 7 from the shopping to the cycling mode.

## Claims

1. A bicycle with a removable shopping container positioned over the cycle rear wheel where a frame member supporting the steering wheel column rests on slide rails to permit it to slide horizontally along the cycle main frame from a normal forward position in the cycling mode to a rearward position in the shopping mode, and means to clamp said steering column support member at either end of its movement, said movement being enabled by providing a pivotal mounting for the pedal crankshaft frame near the rear wheel axle to permit it to be raised upwards to make room for the front wheel and steering column in the shopping mode, and by locating the saddle pillar column to one side of said slide rails with the saddle mounted centrally by means of a pivoted saddle support bracket to permit the saddle to be tilted to make room for the steering column in the shopping mode, said pedal crankshaft frame extending beyond the rear wheel axle to support a trolley wheel on each side, such that in the shopping mode position the trolley wheels contact the ground thus lifting the rear wheel clear off the ground, thereby converting the bicycle into a three wheeled trolley.
2. A bicycle according to Claim 1 where the shopping container incorporates a central compartment with bottom opening adapted to fit a proprietary child seat.
3. A bicycle according to Claims 1 and 2 where the clamping of the steering column support member to the slide rails is effected by means of thumb screws passing through clamp saddles attached to the steering support member, said clamp saddles designed to slide along the slide rails between the cycling and the shopping mode when the thumb screws are loosened.
4. A bicycle according to Claims 1 and 2 where the clamping is effected by thumb screws remotely actuated by a link mechanism incorporating a handle.
5. A bicycle according to Claims 1 and 2 where the clamping is effected by means of eccentric sleeves on a spindle remotely actuated by an operating knob or handle.
6. A bicycle according to any of the preceding claims where rollers are provided adjacent to the clamping means to make contact with the slide rails in the un-clamped or sliding mode.

7. A bicycle in accordance with Claim 1 where the trolley wheel supports are articulated to permit them to be raised further off the ground in the cycling mode using a linkage actuated by the movement of the pedal crank support frame from the shopping to the cycling mode.



**Application No:** GB1005193.6

**Examiner:** Mr Philip Osman

**Claims searched:** 1-7

**Date of search:** 2 March 2011

**Patents Act 1977: Search Report under Section 17**

**Documents considered to be relevant:**

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	CN101870317 A (FUSHENG) See English language abstract and figures
A	-	CN101870321 A (FUSHENG) See English language abstract and figures
A	-	CN101323341 A (SHANGHAI HIGH MINDED BICYCLE CO) See English language abstract and figures

**Categories:**

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

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Worldwide search of patent documents classified in the following areas of the IPC

B62B; B62K
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The following online and other databases have been used in the preparation of this search report

EPODOC, WPI
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**International Classification:**

Subclass	Subgroup	Valid From
B62K	0013/00	01/01/2006
B62B	0003/00	01/01/2006