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(56) Documents Cited:  
**GB 2368820 A** **GB 2167355 A**  
**GB 0879833 A** **US 5857684 A**

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UK CL (Edition T ) **B7B BTC BTF2 BTG BTX2**  
INT CL<sup>7</sup> **B62B 1/00 1/02 1/04 1/10 1/12 1/18 1/20 1/26**  
5/06  
Other: **WPI, EPODOC, JAPIO**

(54) Abstract Title: **Folding collapsible golf cart**

(57) Folding collapsible golf cart, which includes an upper rod member 1, a bottom rod member 5, and a lower rod member 2, the lower rod 2 having a top end pivoted to the upper rod member and locked by a locking mechanism 10 and a bottom end coupled to the bottom rod member by a coupling device 4. The coupling device 4 has a locating frame 61,62,63 supported on a torsional spring 44 for locking the lower rod member 2 in the operative position. The lower member 2 is disengaged from the locating frame for folding when the user presses a pedal 4003 with the foot to overcome the spring force of the torsional spring 44.

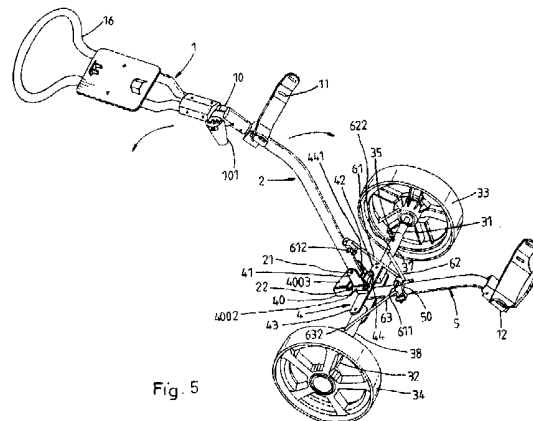


Fig. 5

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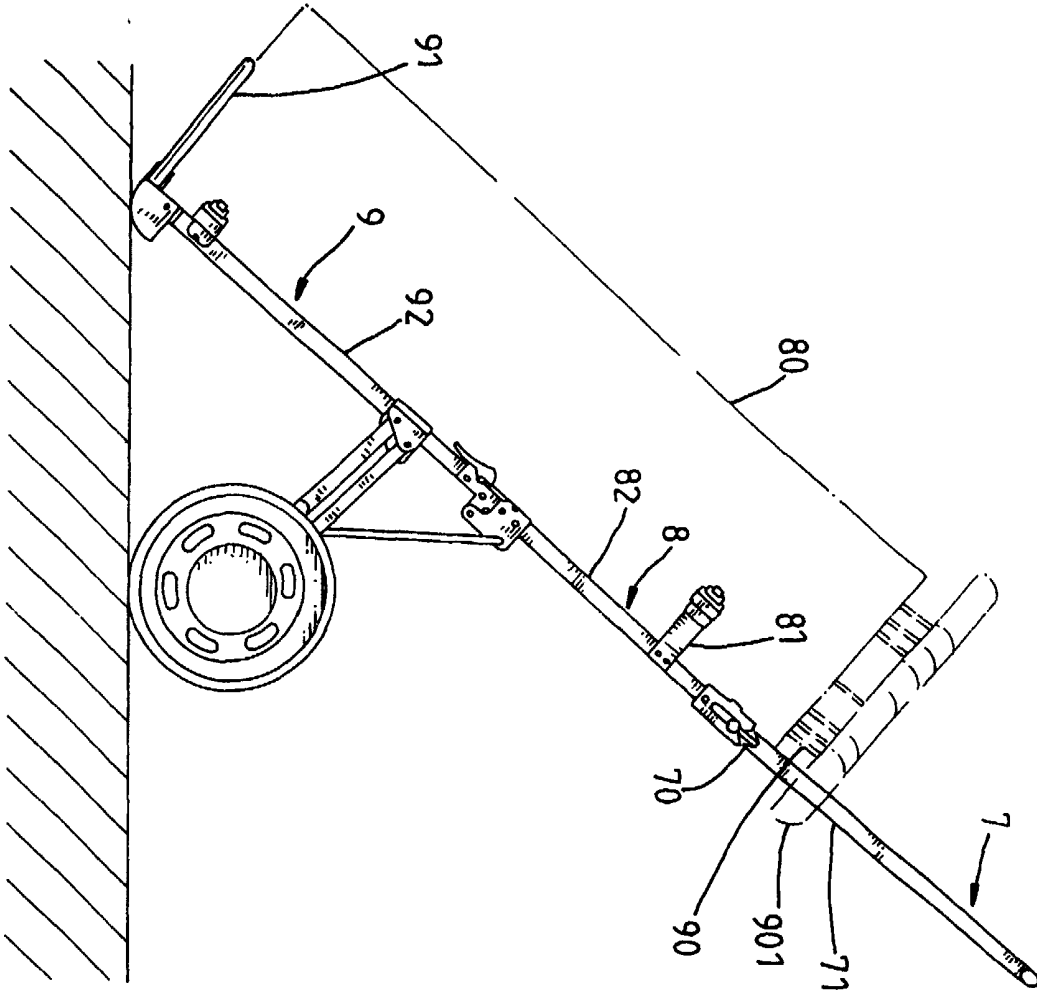


Fig. 1 PRIOR ART

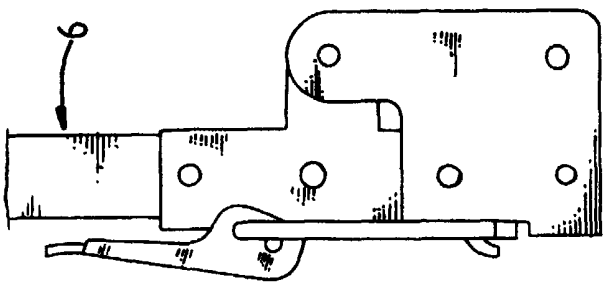


Fig. 2 PRIOR ART

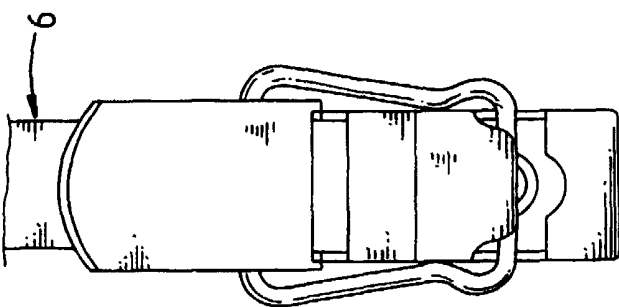


Fig. 3 PRIOR ART

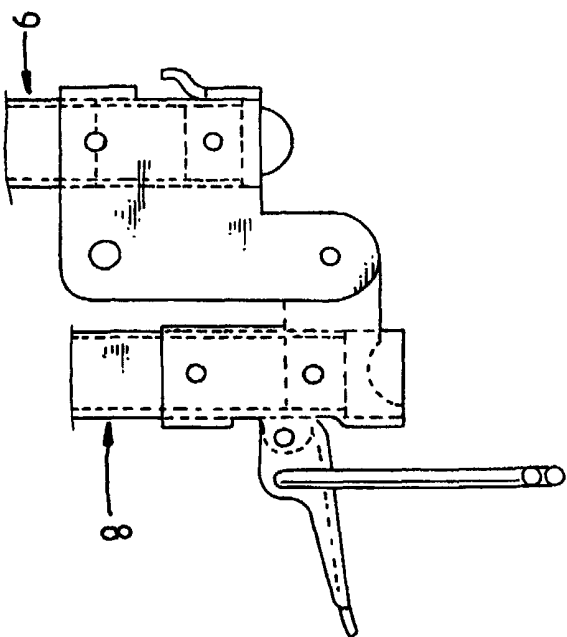


Fig. 4 PRIOR ART

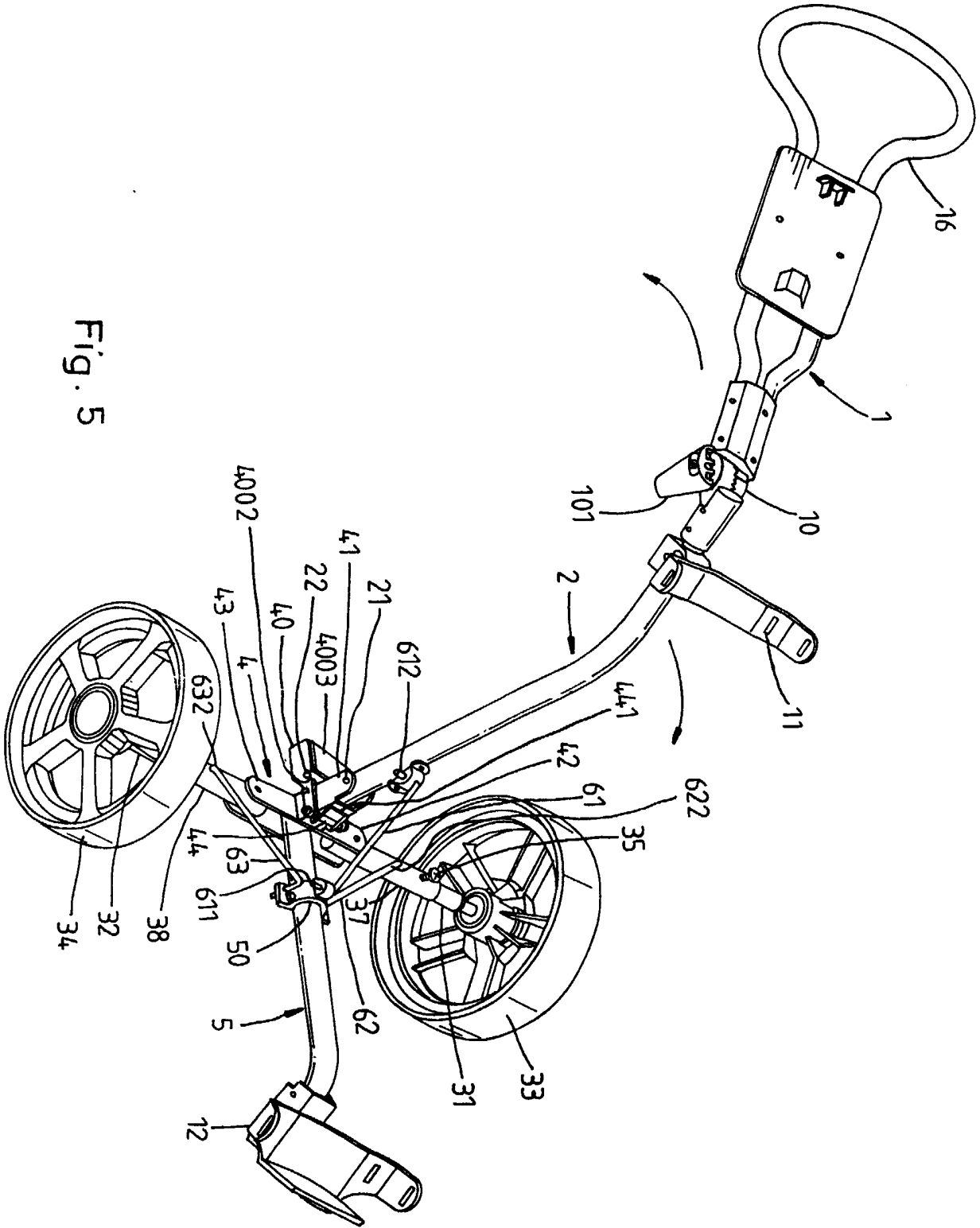


Fig. 5

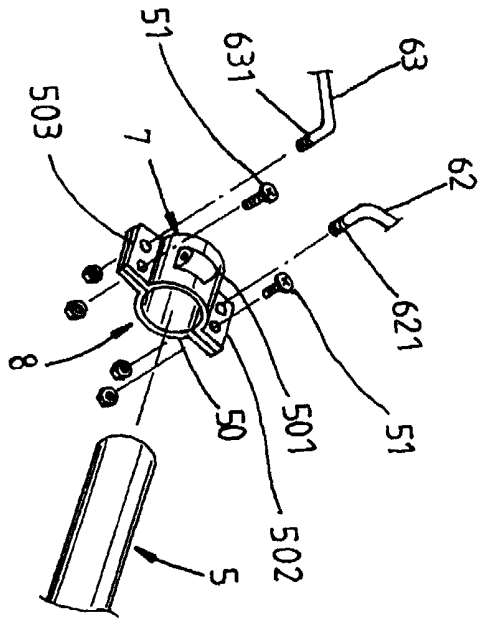


Fig. 6

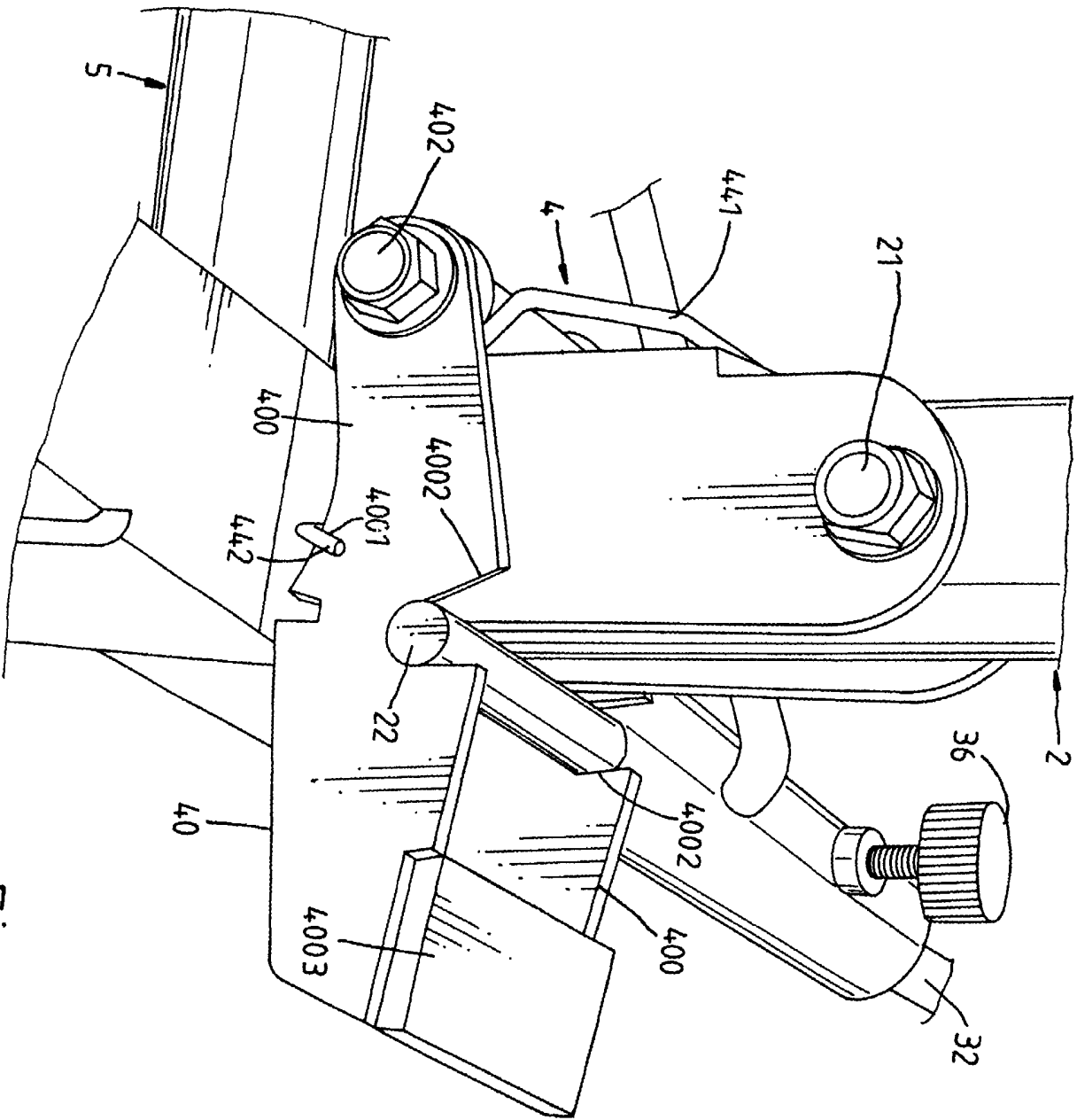


Fig. 7

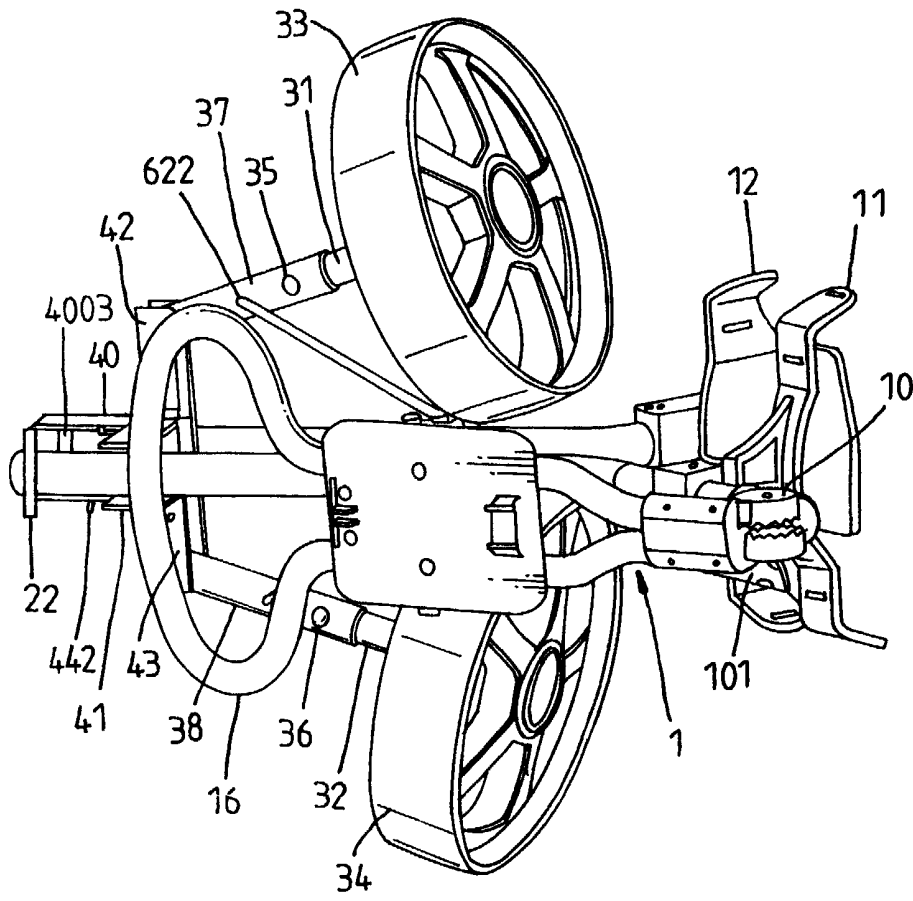


Fig. 8

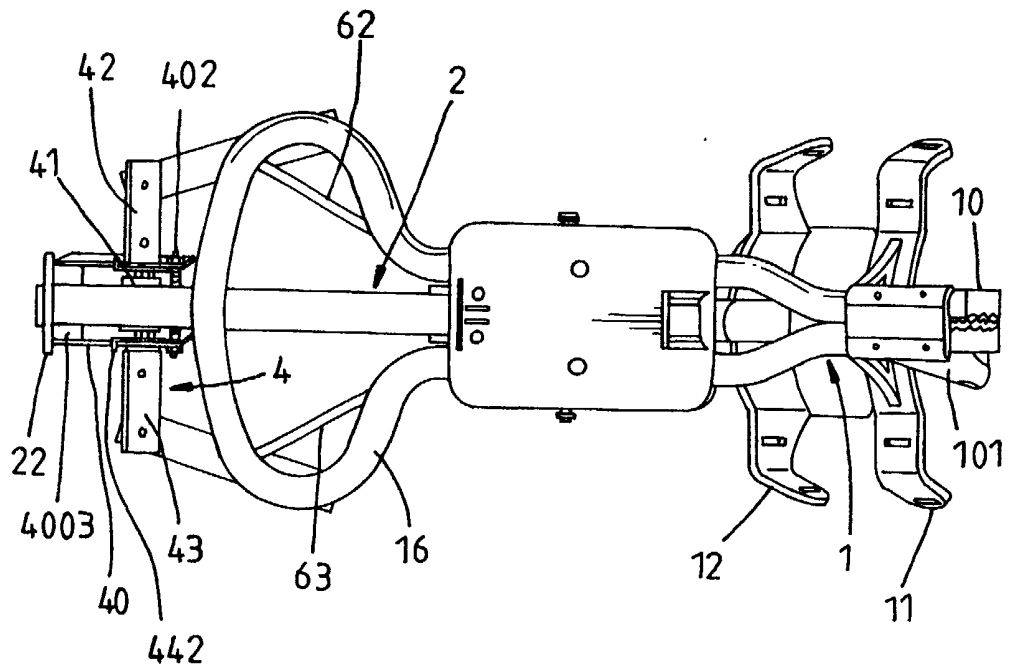


Fig. 9



3-FOLD COLLAPSIBLE GOLF CART

The present invention relates to a golf cart and, more particularly, to a 3-fold folding collapsible golf  
5 cart.

Figure 1 shows a folding collapsible golf cart according to the prior art. This structure of folding collapsible golf cart comprises an intermediate frame unit 8, the intermediate frame unit 8 having a main rod member 82 holding an upper bag cradle 81, a front frame unit 7, the front frame unit 7 having a rod member 71 axially slidably inserted into the main rod member 82 of the intermediate frame unit 8 and selectively locked by a  
10 lock screw 70, a rear frame unit 9, the rear frame unit 9 having a rod member 92 pivoted to the rear end of the main rod member 82 of the intermediate frame unit 8 and holding a rear bag cradle 91 and locked by a locking mechanism. This structure of 3-fold folding collapsible  
15 golf cart has numerous drawbacks as outlined hereinafter.

- 20 1. The lock screw 70 wears quickly with use because it frequently receives vibrations from the folding collapsible golf cart when carrying a golf bag 80 on the golf course.
- 25 2. The heads 901 of the golf clubs 90 carried in the golf bag 80 tend to be forced against the rod member 71 of the front frame unit 7 when moving the folding collapsible golf cart on the golf course, thereby making a noise.
- 30 3. When receiving the intermediate frame unit 8 and the rear frame unit 9 (see Figures 2-4), the user has to turn the locking lever of the locking mechanism upwards to release the hook of the locking mechanism from the rear frame unit 9. This procedure for collapsing the golf cart is complicated.

The present invention has been accomplished to provide a folding collapsible golf cart, which alleviates or eliminates the drawbacks of the aforesaid prior art design. It is one object of the present invention to  
5 provide a folding collapsible golf cart, which requires less storage space when collapsed.

The invention provides a collapsible golf cart comprising:

an upper rod member, said upper rod member having a  
10 front end provided with a handle;

a lower rod member, said lower rod member having a front end pivoted to the rear end of said upper rod member;

a locking mechanism for locking the rear end of said  
15 upper rod member and the front end of said lower rod member;

a bottom rod member, said bottom rod member having a front end coupled to the rear end of said lower rod member and a rear end carrying a lower bag cradle;

20 a coupling device coupled between the rear end of said lower rod member and the front end of said bottom rod member; and

two wheel assemblies coupled to either side of said coupling device, said wheel assemblies each comprising a  
25 wheel axle and a wheel rotatably mounted on said wheel axle;

wherein said wheel axles are pivotally mounted on said coupling device and a collapsible coupling frame is pivotally connected to said lower rod member, bottom rod  
30 member and wheel axles, said coupling device being releasable to allow the coupling frame to collapse and fold the bottom and lower rod members towards each other and fold said wheel axles against said bottom rod member.

According to one embodiment of the present invention, the 3-fold folding collapsible golf cart comprises an upper rod member holding a handle and an upper bag cradle, a bottom rod member holding a lower bag cradle, two wheel assemblies, and a lower rod member. The lower rod has a top end pivoted to the upper rod member and locked by a locking mechanism, and a bottom end coupled to the bottom rod member by a coupling device. The coupling device comprises a torsional spring, and a locating frame supported on the torsional spring and adapted for locking the lower rod member in the operative position. The lower member is disengaged from the locating frame for folding when the user pressed the locating frame with the foot to conquer the spring force of the torsional spring. Such a collapsible golf cart can easily be collapsed from an extended (operative) configuration to a folded (non-operative) configuration.

Preferably the wheel assemblies each comprise a wheel axle supporting a wheel and coupled to a slide at the bottom rod member by a respective link, and a connecting tube. The connecting tube has one end fixedly fastened to the respective wheel axle, and the other end pivoted to the coupling device. The slide has a top side coupled to the lower rod member by a link, and two opposite lateral sides respectively coupled to the wheel axles of the wheel assemblies by a respective link. Therefore, the wheel assemblies can be turned toward each other and received when the lower rod member is unlocked and turned toward the bottom rod member.

Further preferred features are defined in the dependent claims.

A preferred embodiment of the invention is described below by way of example only with reference to Figures 1 to 9 of the accompanying drawings wherein:

Figure 1 is a side view of a 3-fold folding  
5 collapsible golf cart according to the prior art.

Figure 2 is a side view of a part of the prior art 3-fold folding collapsible golf cart.

Figure 3 is a front view of a part of the prior art 3-fold folding collapsible golf cart.

10 Figure 4 is a perspective view of a part of the prior art 3-fold folding collapsible golf cart, showing the locking mechanism unlocked.

Figure 5 is an elevational view of a 3-fold folding collapsible golf cart according to the present invention.

15 Figure 6 is an exploded view of a part of the present invention.

Figure 7 is an enlarged view of a part of the present invention.

20 Figure 8 illustrates a 3-fold folding collapsible golf cart collapsed according to the present invention.

Figure 9 illustrates the 3-fold folding collapsible gold cart collapsed after removal of the wheels according to the present invention.

Referring to Figures from 5 through 7, a 3-fold  
25 folding collapsible golf cart in accordance with the present invention is shown comprised of an upper rod member 1, an upper bag cradle 11, a lower rod member 2, a left wheel axle 31, a right wheel axle 32, two wheels 33 and 34, a lower bag cradle 12, a coupling device 4, and a  
30 bottom rod member 5.

The upper rod member 1 has a front end provided with a handle 16, and a rear end pivoted to one end, namely, the front end of the lower rod member 2 and locked by a

locking mechanism 10. When the locking lever 101 of the locking mechanism 10 turned to the unlocking position, the upper rod member 1 can be turned downwardly backwards and closely attached to the lower rod member 2. The upper bag cradle 11 is fixedly mounted on the lower rod member 2 near the front end of the lower rod member 2. The wheels 33 and 34 are respectively pivoted to the left wheel axle 31 and the right wheel axle 32. The lower bag cradle 12 is fixedly mounted on the bottom rod member 5.

10 The main features of the preferred embodiment of the present invention are outlined hereinafter. The coupling device 4 comprises a top upright lug 41, a locating frame 40 coupled thereto, a torsional spring 44, and two horizontal side lugs 42 and 43. The locating frame 40 has two parallel sidewalls 400, a shaft 402 connected between the rear ends of the parallel sidewalls 400, two top locating notches 4002 respectively disposed in the sidewalls 400 at the top, and a footplate 4003 connected between the front ends of the parallel sidewalls 400.

15 The torsional spring 44 is mounted on the shaft 402, having a protruded middle part 441 stopped at the top upright lug 41 and two hooked ends 442 respectively hooked on the bottom edges 4001 of the parallel sidewalls 400. The lower rod member 2 has a part near the rear end thereof pivoted to the top upright lug 41 of the coupling device 4 by a pivot 21, and a transverse locating rod 22 fixedly fastened to the rear end and adapted for engaging into the top locating notches 4002 of the locating frame 40 of the coupling device 4 (see also Figure 7).

20 Further, the rear end of the lower rod member 2 is coupled to one end, namely, the top end 612 of an intermediate link 61. When the footplate 4003 is pressed downwards with the foot, the locating frame 40 is moved

25

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downwards to disengage the locating notches 4002 from the transverse locating rod 22 of the lower rod member 2.

Two connecting tubes 37 and 38 are provided, each having an inner end respectively pivoted to the side lugs 42 and 43 of the coupling device 4 and an outer end respectively sleeved onto the wheel axles 31 and 32 and fixedly secured thereto by a respective lock screw 35 or 36. The bottom rod member 5 is mounted with a slide 50. The slide 50 has a top side 501 coupled to the bottom end 611 of the intermediate link 61, and two opposite lateral sides 502 and 503 respectively coupled to the bottom ends 621 and 631 of two side links 62 and 63. The top ends 622 and 632 of two side links 62 and 63 are respectively coupled to the wheel axles 31 and 32.

To collapse the 3-fold folding collapsible golf cart, the locking lever 101 of the locking mechanism 10 is moved from the locking position to the unlocking position for enabling the upper rod member 1 to be turned downwardly backwards and folded against the lower rod member 2 (see the directional indication of the upper arrow shown in Figure 5). The footplate 4003 is then pressed downwards with the foot to disengage the locating frame 40 from the transverse locating rod 22 of the lower rod member 2, to enable the lower rod member 2 to be turned with the collapsed upper rod member 1 about the pivot 21 toward the bottom rod member 5 (see the directional indication of the lower arrow shown in Figure 5). When the lower rod member 2 is turned with the collapsed upper rod member 1 toward the bottom rod member 5, the side links 62 and 63 are forced to move the wheels 33 and 34 towards each other to the collapsed configuration (see Figure 8).

Referring to Figure 6 again, the slide 50 comprises two symmetrical half shells 7 and 8 fixedly fastened together by fastening devices, for example, screws 51.

Although the present invention has been explained in  
5 relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the invention as hereinafter claimed.

## CLAIMS:

1. A collapsible golf cart comprising:
  - an upper rod member, said upper rod member having a  
5 front end provided with a handle;
  - a lower rod member, said lower rod member having a  
front end pivoted to the rear end of said upper rod  
member;
  - a locking mechanism for locking the rear end of said  
10 upper rod member and the front end of said lower rod  
member;
  - a bottom rod member, said bottom rod member having a  
front end coupled to the rear end of said lower rod  
member and a rear end carrying a lower bag cradle;
  - 15 a coupling device coupled between the rear end of  
said lower rod member and the front end of said bottom  
rod member; and
  - two wheel assemblies coupled to either side of said  
coupling device, said wheel assemblies each comprising a  
20 wheel axle and a wheel rotatably mounted on said wheel  
axle;
  - wherein said wheel axles are pivotally mounted on  
said coupling device and a collapsible coupling frame is  
pivotally connected to said lower rod member, bottom rod  
25 member and wheel axles, said coupling device being  
releasable to allow the coupling frame to collapse and  
fold the bottom and lower rod members towards each other  
and fold said wheel axles against said bottom rod member.
- 30 2. A collapsible golf cart according to claim 1 wherein  
said coupling device comprises a top upright lug, a pivot  
mounted in said top upright lug, a locating frame coupled  
thereto, a torsional spring, and two horizontal side



lugs, said locating frame having two parallel sidewalls, a shaft connected between rear ends of said parallel sidewalls, two top locating notches respectively disposed in said parallel sidewalls, and a footplate connected  
5 between front ends of said parallel sidewalls, said torsional spring being mounted on said shaft, said torsional spring having a protruding middle part stopped at said top upright lug and two hooked ends respectively hooked on said parallel sidewalls;

10 said lower rod member is pivoted to the pivot at the top upright lug of said coupling device, having a transverse locating rod fixedly fastened to the rear end thereof and adapted for engaging into the top locating notches of said locating frame of said coupling device;

15 said wheel assemblies each further comprise a connecting tube, said connecting tube having an inner end respectively pivoted to one side lug of said coupling device and an outer end respectively sleeved onto the respective wheel axle and fixedly secured thereto by a  
20 respective fastening element;

said bottom rod member carries a slide, said slide having a top part coupled to said lower rod member by a link, and two opposite lateral sides respectively coupled to the wheel axles of said wheel assemblies by respective  
25 links;

whereby on pressing a footplate of said coupling device downwards with the foot, said locating frame is moved downwards to disengage the locating notches from said transverse locating rod of said lower rod member,  
30 enabling said lower rod member to be turned about said pivot toward said bottom rod member and collapse the golf cart.

3. A collapsible golf cart according to claim 1 or claim 2 wherein said wheels are removable.

4. A collapsible golf cart substantially as described  
5 herein with reference to Figures 5 to 8 optionally as modified in accordance with Figure 9 of the accompanying drawings.



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INVESTOR IN PEOPLE

Application No: GB 0219025.4  
Claims searched: 1 to 4

Examiner: Guy Robinson  
Date of search: 14 November 2002

### Patents Act 1977 Search Report under Section 17

#### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): B7B (BTC, BTF2, BTX2, BTG)

Int Cl (Ed.7): B62B (1/00, 1/02, 1/04, 1/10, 1/12, 1/18, 1/20, 1/26, 5/06)

Other: ONLINE: WPI, EPODOC, JAPIO

#### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2368820 A (UNIQUE PRODUCT & DESIGN)	-
A	GB 2167355 A (HART)	-
A	GB 879833 (ALLEN)	-
X	US 5857684 (LIAO et all) Figs 1 to 10, column 5 line 5 to column 6 line 21 & column 7 line 48 to column 9 line 50	1 & 3

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