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(54) Title: FOLDABLE UTILITY TRAILER

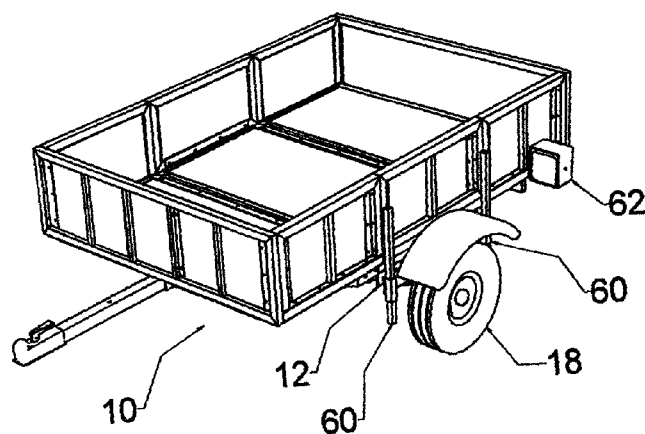


Fig. 1

(57) Abstract: A collapsible foldable utility trailer for the transportation and/or storage of objects, the trailer comprising a supporting chassis frame; suspension means for supporting the chassis frame; bed means retained upon the chassis frame for receiving the objects and comprising a plurality of bed sections comprising (a) a first bed section having i) a first planar bed member for receiving an object thereupon; ii) a pair of opposing first bed side walls mounted on the first bed member; (b) a second bed section having i) a second planar bed member for receiving an object thereupon; ii) a pair of opposing second bed side walls mounted on the second bed member; iii) a second bed end wall mounted to the second bed member between the pair of opposing second bed side walls; wherein the second planar bed member is hingedly connected between the pair of opposing second bed side walls to the first planar bed member between the pair of opposing first bed side walls to allow 90° rotation of the second bed section to effect abutment with the first bed section. A large folding trailer that can be used at full size, or be folded to be used as a short trailer, as well as be folded again to store in a compressed con-

figuration and, in this configuration, it is still possible to be used for storage.

FOLDABLE UTILITY TRAILER

5 FIELD OF THE INVENTION

The invention relates to a utility trailer for the transportation and storage of goods and articles that can be used using its full bed length as a large trailer when it is necessary, or which can be folded and used as a short trailer and easier to pull. It can be further folded to a
10 minimum length when it is desired to store objects.

BACKGROUND OF THE INVENTION

While utility trailers are most useful for moving objects, goods, articles and other
15 merchandise, they have two big inconveniences and disadvantages. Pulling trailers, generally, by cars or pick-up trucks is not easy, especially when moving backwards or parking. This inconvenience is increased as the trailer becomes bigger. Further, a relatively big space is necessary to store them.

The market offers a huge variety of trailers, for almost all needs. There are
20 manufacturing factories if a custom designed trailer is needed whereby people can choose between large and smaller trailers depending on what is needed to be hauled.

Typically, utility trailers have a fixed bed that cannot be changed unless parts are added or removed.

If people or industries need a trailer and haven't enough room for storing it, they can
25 currently choose trailers that fold to decreased their storage size. However, they cannot be used in their folded states to transport or store merchandise.

Accordingly, there is a need for a trailer that can be used as a large trailer or readily modified to a shorter trailer, and visé versa.

30 SUMMARY OF THE INVENTION

The present invention provides a market need for a trailer that allows of the variable selection between a large or short trailer as well as the need to fold the trailer for storage while not losing the merchandise storage condition.

In one broad aspect, the invention provides a collapsible, foldable utility trailer for the transportation and/or storage of objects, said trailer comprising

a supporting chassis frame;

suspension means for supporting said chassis frame;

5 bed means retained upon said chassis frame for receiving said objects and comprising a plurality of bed sections comprising

(a) a first bed section having

i) a first planar bed member for receiving an object thereupon;

10 ii) a pair of opposing first bed side walls mounted on said first bed member;

(b) a second bed section having

i) a second planar bed member for receiving an object thereupon;

15 ii) a pair of opposing second bed side walls mounted on said second bed member, wherein said second bed sidewalls have inner vertical edges;

15 iii) a second bed end wall mounted to said second bed member between said pair of opposing second bed side walls;

wherein said second planar bed member is hingedly connected between said pair of opposing second bed side walls to said first planar bed member between said pair of opposing first bed side walls to allow 90° rotation of said second bed section to effect
20 abutment of said second bed sidewalls inner vertical edges with said first bed section first planar bed member.

In a further embodiment the invention provides a trailer as hereinabove defined wherein said bed means comprises

(c) a third bed section having

25 i) a third planar bed member for receiving an object thereupon;

ii) a pair of opposing third bed side walls mounted on said third bed member, wherein said third bed sidewalls have inner vertical edges;

30 iii) a third bed end wall mounted to said third bed member between said pair of opposing third bed side walls;

wherein said third planar bed member is hingedly connected between said pair of opposing third bed side walls to said first planar bed member between said pair of opposing

first bed side walls to allow 90° rotation of said third bed section to effect abutment of said third bed sidewalls inner vertical edges with said first bed section first planar bed member.

5 In a further embodiment the invention provides a trailer as hereinabove defined wherein said pair of opposing first bed sidewalls are removable.

In a yet further embodiment the invention provides a trailer as hereinabove defined wherein said pair of opposing first bed side walls are hingedly mounted to said first bed member.

10 In a further embodiment the invention provides a trailer as hereinabove defined wherein said second bed end wall is removable.

In a yet further embodiment the invention provides a trailer as hereinabove defined wherein said second bed end wall is hingedly mounted to said second bed member.

In a further embodiment the invention provides a trailer as hereinabove defined wherein said third bed end wall is removable.

15 In a yet further embodiment the invention provides a trailer as hereinabove defined wherein said third bed end wall is hingedly mounted to said third bed member.

In a yet further embodiment the invention provides a trailer as hereinabove defined comprising

20 a traction frame connected to said chassis frame and connectable to transport means by which said trailer is operably moved.

In a further embodiment the invention provides a trailer as hereinabove defined wherein said traction frame comprises retractable, telescopic traction means.

In a further embodiment the invention provides a trailer as hereinabove defined wherein said suspension means comprises biasing means, axle means and wheels.

25 In a further embodiment the invention provides a trailer as hereinabove defined wherein said chassis frame comprises

a main support frame and an extension support frame retractable within said main support frame;

30 wherein said first bed section is retained on said main support frame and said second bed section is retained (i) on said extension support frame when said trailer is in an extended mode; and (ii) is retained on said main support frame when in a collapsed mode.

In a further embodiment the invention provides a trailer as hereinabove defined wherein said pair of opposing first bed side walls are hingedly mounted on said first bed member as to be operably rotatable 90° to effect said first bed side walls in full abutment with and upon said first planar bed member.

5 In a further embodiment the invention provides a trailer as hereinabove defined wherein said second bed end wall constitutes (i) the rear end of said trailer when said trailer is in an extended mode; and (ii) comprises an operable top of said trailer when said trailer is in a collapsed mode.

10 In a yet further embodiment the invention provides a trailer as hereinabove defined wherein said third bed end wall constitutes (i) the front end of said trailer when said trailer is in an extended mode; and (ii) comprises an operable top of said trailer when said trailer is in a collapsed mode.

Preferably, the chassis frame comprises an A-frame and by which the chassis frame is removably attached to a vehicle.

15 The chassis frame is preferably attached to a plurality of height adjustable legs, typically four suitably located around the chassis to provide stability to the trailer on the ground surface upon which the trailer wheels rest.

In some embodiments the width in the transverse direction and lengths of the second and/or third portions may be different to the central first portion.

20 The trailer in the compact state is most preferably moveable and storable, whereby articles, goods or the like can be added or removed via the opened top of rotated second and/or third sections, by removal, displacement or lifting of second end wall and/or third end wall, respectively.

25 The first, second and third bed members are essentially horizontal and desirably coplanar in a fully extended mode.

The second bed member or third bed member is perpendicular to the first bed member when said trailer is in a first foldable mode; and both second bed member and third bed member are perpendicular to the first bed member when the trailer is in a fully folded mode. The trailer is moveable and, optionally, goods-containing in each of aforesaid modes.

30 Preferably, a trailer as hereinabove defined wherein said traction frame is pivotally connected to said chassis frame to operably allow of vertical rotation of said traction frame relative to said chassis.

BRIEF DESCRIPTION OF THE DRAWINGS

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In order that the invention may be better understood, preferred embodiments will now be described, by way of example only, with reference to the accompanying drawings wherein

Fig. 1 is a diagrammatic perspective view of a trailer according to the invention in the larger transporting mode;

10 Fig. 2 is an exploded view of a trailer shown in Fig. 1;

Fig. 3 is a vertical side view of a trailer in the larger transporting mode according to the invention;

Fig. 4 is a vertical side view of a trailer in the smaller transporting mode according to the invention;

15 Fig. 5 is a vertical side view of a trailer in the stationery stored mode according to the invention;

Fig. 6 represents diagrammatic perspective views illustrating the steps involved in the conversion of a trailer according to the invention from a larger transportable mode via a smaller transportable mode to a stored mode; and wherein the same numerals denote like

20 parts.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

25 With reference to Fig. 1 this shows generally as 10 a trailer having a goods supporting chassis frame 12, supported on axle 14, leaf spring 16 on wheels 18. Chassis frame 12 supports a first bed section 20a, a second bed section 20b and a third bed section 20c. Chassis frame 12 is made up of a main support frame 22 upon which bed section 20a is retained, an extension support frame 24 retractable within main support 22 and upon which
30 second bed section 20b is retained, and a traction frame portion 26 of traction frame shown generally as 28 upon which third bed section 20c is retained.

Bed sections 20a, 20b and 20c have planar bed members 30a, 30b and 30c, respectively, upon which objects, merchandise and articles may be retained. Bed member 30a is hingedly connected by hinges 32 and 34 respectively to bed members 30b and 30c, respectively, by hinges 32a and 34a, respectively.

5 Bed section 20a has a pair of opposing side walls 36 hingedly mounted by hinges 38 to bed member 30a. Side walls 36 may be rigidly fixed upright or laid horizontally upon bed member 30a when desired by rotation through 90°. In alternative embodiments, side walls 36 may be alternatively retained vertically to bed member 30a and physically removed therefrom, when desired.

10 Bed section 20b has a pair of opposing side walls 40 mounted to bed member 30b and an end wall 42 hingedly mounted by hinge 43 to bed member 30b.

 Bed section 20c has a pair of opposing side walls 44 mounted to bed member 30c and an end wall 46 hingedly mounted to bed member 30c by hinge 48.

15 Traction frame 28 is of a tubular structure having a Y-shaped portion 50 having at its proximal end 52 adjacent traction bar 54 by which trailer 10 is pulled via retaining knob 56 hitched to a transport vehicle.

 Y-shaped portion 50 at each of its distal ends is rotatably mounted to chassis frame 12. Vertical rotation of traction frame 28 at distal ends 58 enables traction frame 28 to be vertically aligned adjacent the underside of bed member 30c when trailer is in the collapsed,
20 folded storage mode.

 Trailer 10 has a set of four adjustable legs 60 to stabilize trailer 10 when in a stationery mode not connected to a vehicle.

 Most preferably, bed sections 30a, 30b and 30c are of the same width, i.e. in the transverse axle direction.

25 Trailer 10 has suitably located lights 62 rotatable through 90° in order to face backwards before and after folding.

 Reference to Fig. 6 shows the sequence of steps followed in shortening and, subsequently, storing the trailer.

30 At steps 5 to 7, the shorter trailer 64 has a bed of about 1/3 the length of the full longer trailer. Step 7 shows the opened top of trailer 64, while step 8 shows the fully folded trailer occupying minimal area.

Although this disclosure has described and illustrated certain preferred embodiments of the invention, it is to be understood that the invention is not restricted to those particular embodiments. Rather, the invention includes all embodiments which are functional or mechanical equivalence of the specific embodiments and features that have been described
5 and illustrated.

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CLAIMS:

1. A collapsible foldable utility trailer for the transportation and/or storage of objects, said trailer comprising

5 a supporting chassis frame;

suspension means for supporting said chassis frame;

bed means retained upon said chassis frame for receiving said objects and comprising a plurality of bed sections comprising

(a) a first bed section having

10 i) a first planar bed member for receiving an object thereupon;

ii) a pair of opposing first bed side walls mounted on said first bed member;

(b) a second bed section having

i) a second planar bed member for receiving an object thereupon;

15 ii) a pair of opposing second bed side walls mounted on said second bed member, wherein said second bed sidewalls have inner vertical edges;

iii) a second bed end wall mounted to said second bed member between said pair of opposing second bed side walls;

20 wherein said second planar bed member is hingedly connected between said pair of opposing second bed side walls to said first planar bed member between said pair of opposing first bed side walls to allow 90° rotation of said second bed section to effect abutment of said second bed sidewalls inner vertical edges with said first bed section first planar bed member.

25 2. A trailer as claimed in claim 1 wherein said bed means comprises

(c) a third bed section having

i) a third planar bed member for receiving an object thereupon;

ii) a pair of opposing third bed side walls mounted on said third bed member, wherein said third bed sidewalls have inner vertical edges;

30 iii) a third bed end wall mounted to said third bed member between said pair of opposing third bed sidewalls;

wherein said third planar bed member is hingedly connected between said pair of opposing third bed side walls to said first planar bed member between said pair of opposing first bed side walls to allow 90° rotation of said third bed section to effect abutment of said third bed sidewalls inner vertical edges with said first bed section first planar bed member.

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3. A trailer as claimed in claim 1 or claim 2 wherein said pair of opposing first bed sidewalls are removable.

4. A trailer as claimed in claim 1 or claim 2 wherein said pair of opposing first bed side walls are hingedly mounted to said first bed member.

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5. A trailer as claimed in any one of claims 1 to 4 wherein said second bed end wall is removable.

6. A trailer as claimed in any one of claims 1 to 4 wherein said second bed end wall is hingedly mounted to said second bed member.

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7. A trailer as claimed in any one of claims 2 to 6 wherein said third bed end wall is removable.

20

8. A trailer as claimed in any one of claims 2 to 6 wherein said third bed end wall is hingedly mounted to said third bed member.

9. A trailer as claimed in any one of claims 1 to 8 comprising
a traction frame connected to said chassis frame and connectable to transport means by which said trailer is operably moved.

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10. A trailer as claimed in claim 9 wherein said traction frame comprises retractable, telescopic means.

30

11. A trailer as claimed in any one of claims 1 to 10 wherein said suspension means comprises biasing means, axle means and wheels.

12. A trailer as claimed in any one of claims 1 to 11 wherein said chassis frame comprises a main support frame and an extension support frame retractable within said main support frame

5 wherein said first bed section is retained on said main support frame and said second bed section is retained (i) on said extension support frame when said trailer is in an extended mode; and (ii) is retained on said main support frame when in a collapsed mode.

13. A trailer as claimed in any one of claims 1 to 12 wherein said pair of opposing first
10 bed side walls are hingedly mounted on said first bed member as to be operably rotatable 90° to effect said first bed side walls in full abutment with and upon said first planar bed member.

14. A trailer as claimed in any one of claims 1 to 13 wherein said second bed end wall constitutes (i) the rear end of said trailer when said trailer is in an extended mode; and (ii)
15 comprises an operable top of said trailer when said trailer is in a collapsed mode.

15. A trailer as claimed in any one of claims 2 to 14 wherein said third bed end wall constitutes (i) the front end of said trailer when said trailer is in an extended mode; and (ii) comprises an operable top of said trailer when said trailer is in a collapsed mode.

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16. A trailer as claimed in claim 9 or claim 10 wherein said traction frame is pivotally connected to said chassis frame to operably allow of vertical rotation of said traction frame relative to said chassis.

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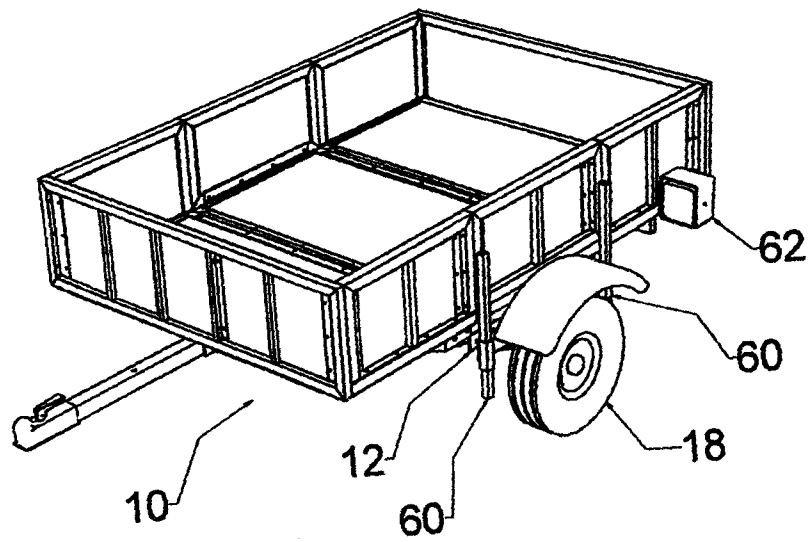


Fig. 1

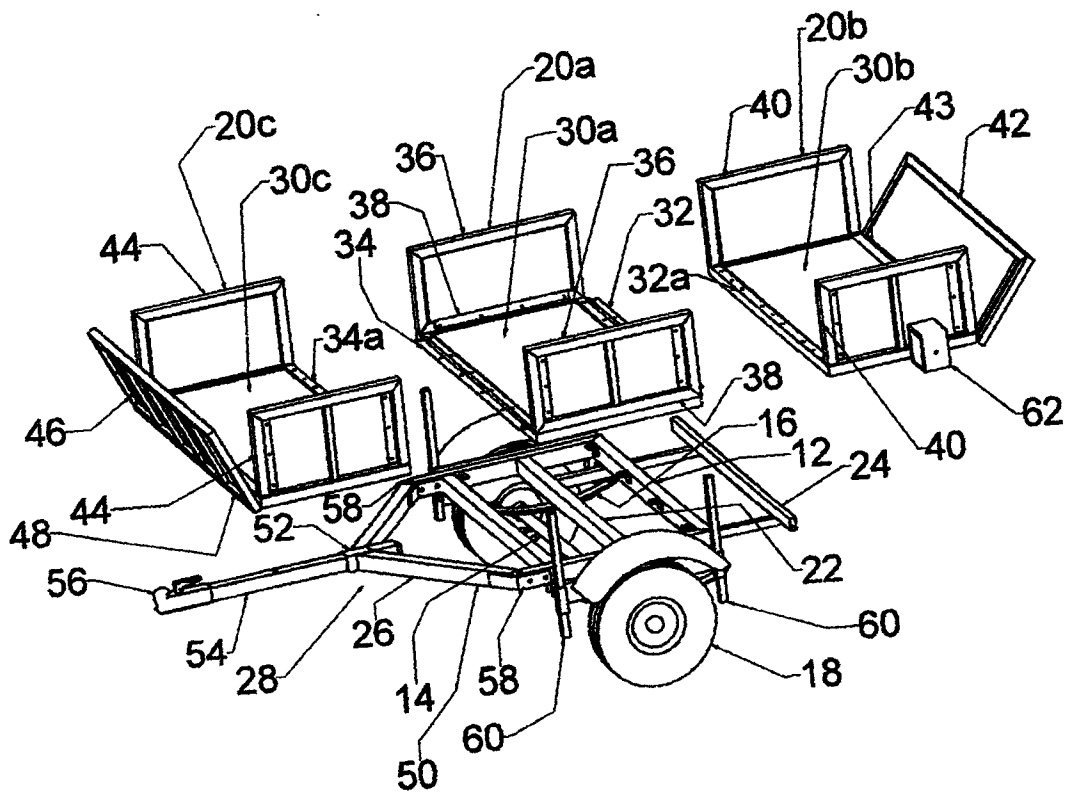
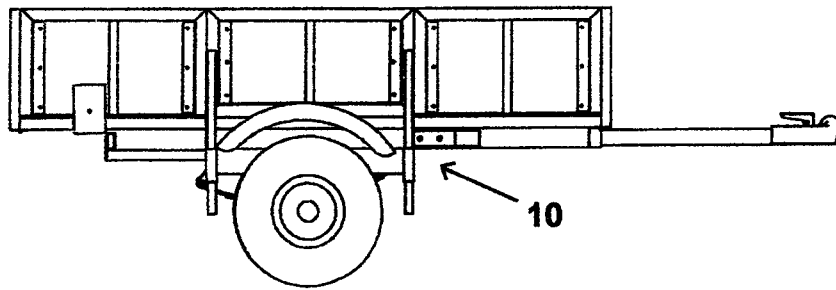


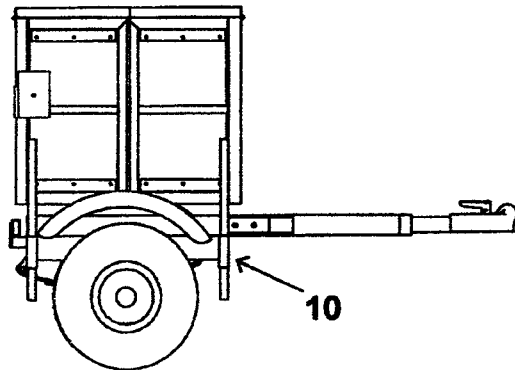
Fig. 2

2/3



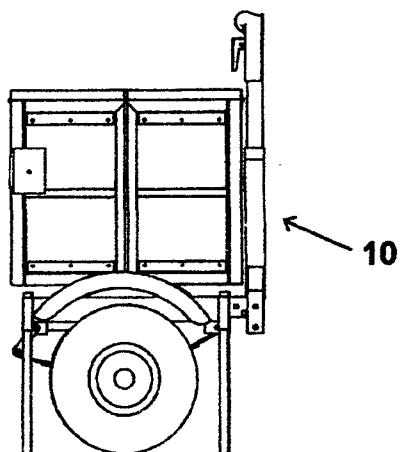
Large Trailer

Fig. 3



Short Trailer

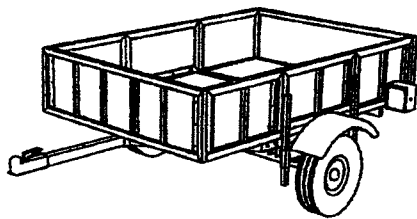
Fig. 4



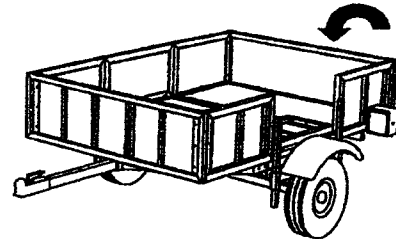
Stored Trailer

Fig. 5

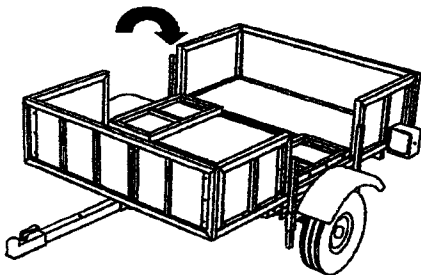
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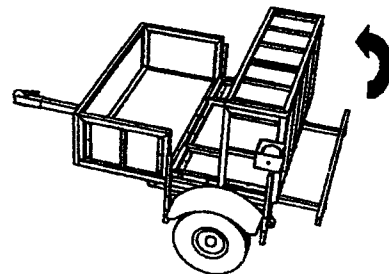
Step 1



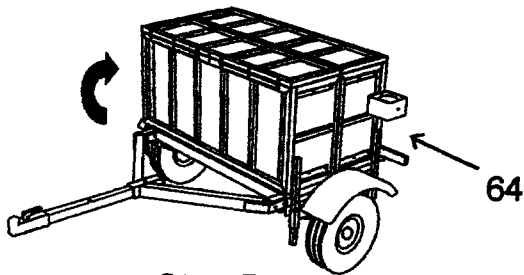
Step 2



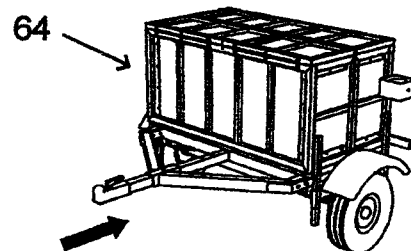
Step 3



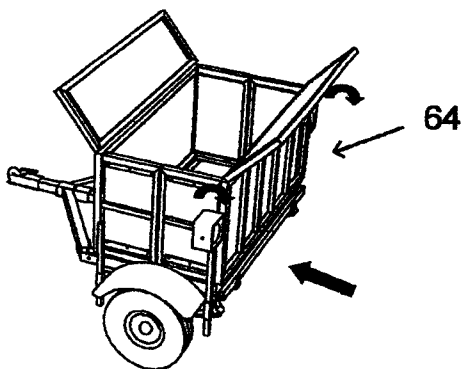
Step 4



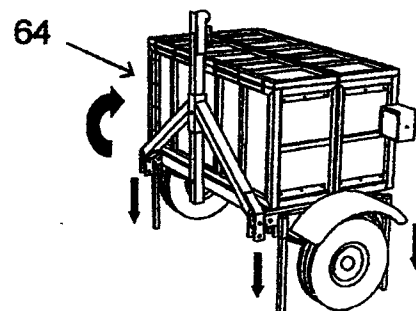
Step 5



Step 6



Step 7



Step 8

Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2010/001879

A. CLASSIFICATION OF SUBJECT MATTER

IPC: B62D 63/06 (2006.01) , B60P 3/42 (2006.01) , B62B 3/02 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: B62D 63/06 (2006.01) , B60P 3/42 (2006.01) , B62B 3/02 (2006.01)

USPC: 280/639, 280/656

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Canadian Patent Database

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

TotalPatent, keywords: trailer, fold*, bed, hing*

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant	Relevant to claim No.
X ---- A	WO 2006/045155 A1 (NORTON, M.) 4 May 2006 (04-05-2006) *see entire document*	1-11 and 13-16 ---- 12
X ---- A	US 4,239,258 A (BURRIS, F.) 16 December 1980 (16-12-1980) *see entire document*	1-11 and 13-16 ---- 12
A	US 2003/0102655 A1 (THOMPSON, D.) 5 June 2003 (05-06-2003) *see entire document*	1
A	US 4,786,073 A (HARPER, C.) 22 November 1988 (22-11-1988) *see entire document*	1
A	GB 2,361,460 A (PHELPS, K.) 24 October 2001 (24-10-2001) *see entire document*	1

[] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

24 January 2011 (24-01-2011)

Date of mailing of the international search report

11 February 2011 (11-02-2011)

Name and mailing address of the ISA/CA
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Facsimile No.: 001-819-953-2476

Authorized officer

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2010/001879

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
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US4786073A	22 November 1988 (22-11-1988)	None	
GB2361460A	24 October 2001 (24-10-2001)	GB0005802D0 GB2361460B	03 May 2000 (03-05-2000) 07 August 2002 (07-08-2002)