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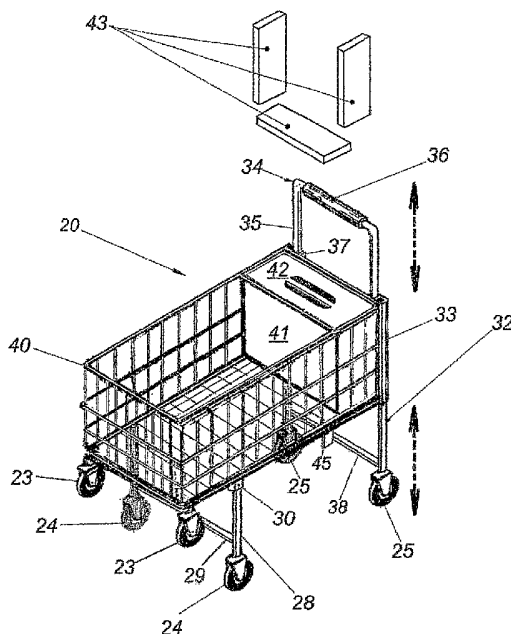
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(54) Title: MULTI-PURPOSE CART



(57) Abstract: Cart (20) for transporting objects and/or multi-purpose equipment and which in turn can advantageously be loaded aboard a vehicle (100). The cart (20), which is particularly useful for shopping in supermarkets, hypermarkets or the like, comprises a supporting frame and at least a basket (40) which is provided with means (41, 42, 43) for transporting frozen and perishable goods. The supporting frame is provided with a plurality of height adjustable pairs of wheels (23, 24, 25) on which said cart (20) is rollingly movable between the loading surface of any vehicle (100) and the support surface along which the cart (20) can be rollingly used to transport objects and/or multi-purpose equipment.

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Multi-purpose cart

Description

The present invention pertains to a multi-purpose cart for transporting objects and/or multi-purpose equipment and which in turn can advantageously be transported aboard a vehicle. In particular, the cart according to the present invention can
5 advantageously be used in both household and working activities to perform all of those utility and maintenance operations involved in moving and transporting objects and/or materials by means of a vehicle.

Preferably but not exclusively, the cart according to the invention facilitates the
10 purchasing operations of goods in supermarkets or similar sales organizations and it is specially adapted to ease the operations for transporting the purchased goods from store to home or workplace.

Supermarkets typically make available to their customers hand operated wheeled carts for collecting the articles taken from the shelves of the supermarket and for
15 transporting the purchased goods to the vehicle in the outside parking space.

Said carts are usually formed by a metallic wire basket fastened to a support structure. The support structure is provided with a pair of swivel front wheels and a pair of swivel rear wheels and the user can move the support structure by pushing or pulling a handle which is transversely extending along the rear side of the cart.

Both the cart's structure and the basket present a front side which is narrower than
20 the rear side in order to allow the carts to be rationally inserted one into the other in horizontal succession and, consequently, to occupy a minimum amount of the storage space in the inside or outside collecting point.

Usually, a coin deposit is required to unlock the locking device which locks the cart
25 to the inside or outside collecting point.

Said locking device will return the coin deposit only when the customer will bring back the cart in the correct collecting position.

With the help of this cart, the user can easily move between the shelves of the supermarket and place the selected goods into the basket.

- 5 After selecting and collecting operations, the customer must remove the items, one by one, from the basket to the conveyor belt of the cash in order to allow the cashier to check the prices of the articles.

After paying, the customer takes the purchased goods, one by one, and loads them in plastic bags or cartons which are returned to the basket in order to transport them
10 to the vehicle.

It is clear that the customer is forced to place the articles, one by one, in the basket again when no cartons or bags are available.

After reaching the vehicle, the customer must transfer the load from the basket into the vehicle and thus the customer must bring back the cart to the collecting point
15 adjacent the entrance of the supermarket.

When the destination of the return trip has been reached, the goods must be unloaded from the vehicle and brought into the home or into the workplace for stocking in shelves, cupboards, refrigerators or freezers according to their appropriate conservation requirements.

- 20 The above described operation becomes particularly tiring when the purchased goods is so heavy and/or bulky as to require several trips (as for example packages of bottled water containers or boxes of washing powder) or when the distance from the parked vehicle to the final destination is relatively far, as in the case of home which can only be reached by means of elevators or flights of stairs. Obviously, this
25 repeated and irrational transferring operation of the goods has numerous disadvan-

tages.

First of all, the user is forced to arrange multiple times the goods inside the basket or into the vehicle in a casual and untidy way running the risk of causing damages to the more fragile articles, as for example eggs or glass bottles.

- 5 Moreover, an unfit or especially elderly and/or disable person performing the movements required by the numerous transferring operations of the goods risks tiring and muscular and/or articular strains.

If the purchased goods further include frozen foodstuffs, the consumer must additionally insert the frozen foodstuffs into a thermal-insulated bag to slow down and
10 minimize their rise in temperature, and transport them into the home refrigerator or freezer as quick as possible.

It is obvious that the more will be the time required to transfer the goods between the basket, the cash, the vehicle and the final destination, the more will be the risk of deterioration of the foodstuffs contained in the thermal-insulated bag.

- 15 It is known that some type of two wheeled carts, which are equipped with a sack shaped container and an extensible handle which a user may use for pulling the cart, have been made in order to alleviate the problems associated with the shopping operations in the supermarkets.

However, such carts are too heavy to lift and difficult to place into the vehicle.

- 20 Carts are also known having a supporting structure and a basket wich are both of foldable and/or dismountable type.

But, the customer using such carts is forced to perform complicated assembling and disassembling operations each time the cart is used in conjunction with a vehicle.

- Moreover, the user must first of all unload the goods from the basket and then
25 proceed to dismount the cart in order to store and to transport all the load into the vehi-

cle.

It is, therefore, a principal object of the present invention to solve the above stated drawbacks by means of a cart which facilitates, in a quick, easy and rational way, the selecting and purchasing operations of the goods in a supermarket and which
5 may be securely and firmly transported into a vehicle without requiring removal of its load and complicated mounting and dismounting operations of its components.

Another important object of the present invention is to provide a cart which facilitates the operations for collecting, transporting and unloading of frozen foodstuffs.

It is a further object of the present invention to provide a cart which facilitates the
10 operations for unloading the purchased goods from the vehicle also when the distance from the vehicle to the home or to the workplace is far and/or when they can only be reached by means of an elevator.

In the end, it is a further object of this invention to provide a multifunctional cart which, in addition to the advantages attained in supermarket shopping operations,
15 allows for an easy and rational transporting of multi-purpose objects and/or equipment in both household activities (e.g., for going on a trip into the country or for gardening activities) and working activities (e.g., for supporting the equipment of a maintenance operator).

These and other objects are attained according to the invention by a multi-purpose
20 cart having the hereinafter claimed features.

The objects and the features of the cart according to the invention will appear clear from the following description with reference to the accompanying schematic drawing, wherein:

- the Figure 1 is a top perspective view of an embodiment of the cart according to
25 the present invention in the operative position with some components in exploded

view ;

- the Figure 1A shows a structural detail of the cart of figure 1;
- the Figure 2 is an enlarged side view of the cart of figure 1;
- the Figures 3 through 6 are respective stages of the operations for loading the cart
5 20 according to the invention into a vehicle of the type called "station wagon";
- the Figures 7 through 9 are respective stages of the operations for loading the cart
20 according to the invention into a vehicle of the type called "space wagon" or
"minivan" ;
- the Figures 10 through 13 are respective stages of the operations for loading the
10 cart 20 according to the invention into a vehicle of the type called "limousine" or
"sedan"

The description and the drawings refer to a non-limiting example of the cart according to the invention which is used for shopping foodstuffs in supermarkets, hypermarkets or the like.

- 15 It is to be understood clearly that the cart according to the invention affords considerable advantages also in uses which are different from that described hereinafter.

With particular reference to the Figures 1 and 2, the cart 20 according to the invention includes a supporting frame which comprises a horizontal portion 21 and a vertical portion 22 (figure 2), which are both quadrangular in shape and firmly joined
20 together according to a "L" shaped configuration.

In a per se known manner, the supporting frame and its horizontal portion 21 and vertical portion 22 are made from light weight material in order to ease the moving of the cart 20.

- For example, the supporting frame can be manufactured from metallic draw pieces
25 which are preferably formed from aluminum extruded with a quadrangular cross-

section.

Said draw pieces can be reciprocally connected to each other whether in a removable manner, by means of known screw connecting devices, or in a not removable manner by means of welding processes.

- 5 Obviously, the removable fastening is preferable to the permanent fixing because the supporting structure may be modified, dimensioned and adjusted to accommodate the specific requirements of its user.

A parallelepiped-shaped basket 40 having an open upper side is fastened to the supporting structure.

- 10 In a per se known manner, the vertical and horizontal walls of the basket 40 are made of metallic wire which is woven according to a mesh configuration.

A box-shaped and thermally insulated container 41 is removably housed within the basket 40 and is hermetically closable by means of a cover 42.

- A plurality of cooling accumulators 43, each containing an eutectic mixture, may be
15 housed in the thermally insulated container 41 and are adapted to be placed on the bottom and positioned adjacent the inner walls of the thermal-insulation container 41 for ensuring frozen foods conservation (figure 1).

Three pairs of height adjustable wheels 23, 24 and 25, of the caster-swivel type movable about a vertical axis, are associated with the supporting frame.

- 20 A first pair of wheels 23 are suspended in positions corresponding to those of the respective front corners of the horizontal portion 21.

Each wheel 23 is secured to a vertical stem 26 (Figure 1) slidably housed in a corresponding vertical seat 27 protruding downward from the horizontal portion 21.

- As is known in the art, the stem 26 and the seat 27 include several holes formed the-
25 rethrough for removably receiving a corresponding transverse locking pin.

In doing so, the user will be able to lock the suspended wheels 23 at various distances from the horizontal portion 21 for reasons that will be explained later.

A second pair of wheels 24 are fixed in positions corresponding to those of the lower ends of two legs 28 which are extending downwardly from the frontal part of
5 both sides of the horizontal portion 21.

The pivoting axle of each wheel 24 is slightly inclined relative to the longitudinal axis of the respective leg 28 for reasons that will be described hereinafter.

The two legs 28 are connected to each other by means of a transverse stiffener 29 and are hinged to the supporting frame 41 in such a way as to pivot, about a horizontal axis 30 (Figure 4) and towards the interior of the cart 20, from a substantially vertical position to a substantially horizontal position which is shown in
10 dashed lines in the Figure 2.

The cylinder and the stem of a gas spring 44, having a function which will be described hereinafter (Figure 1A), are respectively connected to said horizontal portion 21 of the supporting frame and to said transverse stiffener 29 in such a way as
15 to freely rotate around an horizontal axis.

A lock pin 31 (Figure 2) prevents the pivotable legs 28 from rotating relative to the horizontal portion 21 of the supporting frame 41 of the cart when the lock pin 31 is inserted in its locking position.

20 A further pair of wheels 25 are fixed to respective vertical uprights 32 which are slidably housed in corresponding seats 33 (Figure 1) provided in the vertical portion 22.

The position of the upright 32 in the respective seat 33 is locked by a horizontal cotter pin 34 (Figure 2) which is removably inserted into corresponding holes, not illustrated in the drawings, which are passing completely through the upright 32 and
25

the seat 33.

The position of the uprights 32 with respect to the seat 33 is also ensured by expanding devices, of known and not illustrated type, which are activated and released by means of respective hand-operated handles not shown in the drawings.

5 Also the uprights 32 of the wheels 25 are connected by means of a transverse stiffener 38 (Figure 1) in a manner similar to that of the pivotable legs 28.

Each of the wheel 25 is provided, in a well known manner, with a braking device which is used to block the wheels from rotating about their horizontal axes as well as from pivoting about their vertical axes, thus preventing the cart 20 from rolling
10 accidentally on sloping surfaces.

The cart 20 comprises a handle 34 which is formed by two vertical legs 35 connected by an horizontal handgrip 36 for manually pushing or pulling said cart 20.

The vertical legs 35 are slidably received in corresponding seats 37 provided in the vertical portion 22 and fixed in position by means of known and not illustrated
15 clamping systems.

The slidable engagement of the legs 35 enables the user to adjust the height of the handgrip 36 between a lowered position, wherein the legs 35 are almost entirely housed within their respective seats 37 (Figures 6, 9, 12 and 13) and a raised position which may be chosen according to the user comfort.

20 The manner of usage and operation of the cart 20 in accordance with the present invention will be described hereinafter starting from the position illustrated in the Figure 3 which is showing the operation for loading the cart 20 into a motorvehicle of the type "estate car" also called "station wagon" for distinguishing a two volumes car with a vertical rear door and a storage area or trunk arranged within the driver
25 and passenger compartment.

The basket 40 of the cart is illustrated in empty condition for the sake of clarity but it is clear that the hereinafter described operations can also be performed when the cart 20 is in a fully loaded condition. The cart 20 can be wheeled to the loading door of a motor vehicle 100 (Figure 3). The pair of suspended wheels 23 are adjusted to an height such that they can be supported by the loading sill 101 of the motor vehicle 100, as illustrated in the Figure 3.

The withdrawal of the lock pin 31 frees the legs 28 of the pair of wheels 24 to pivot about their respective hinged axes and to be folded towards the horizontal portion 21 of the supporting frame due to contact with the body of the vehicle.

The oscillation of the legs 28 causes the sliding of the stem of the gas spring 44 which in turn pulls the transverse stiffener 29 in such a way as to promote the oscillation of the legs 28 until they are arrested by stop protrusions 45 (Figures 4 and 5) which are protruding downwards from the underside of the horizontal portion 21.

As previously described, the pivoting axle of each wheel 24 is slightly inclined for allowing the wheels 24 to roll along the loading surface 102 of the vehicle 100 during loading and unloading operations of the cart 20.

In this disposition, the weight of the cart 20 is mainly supported by the suspended wheels 23 and by the pivoting wheels 24 which are rotated to a position adjacent to the supporting legs 32 of the wheels 25.

After activating the handles of the expanding devices, the pair of legs 32 can then easily and slidably be moved with respect to their respective seats 33 and successively fixed in the retracted position of the Figure 6. Also the vertical legs 35 of the handgrip 36 can slidably be inserted in their seats 37 for lowering the handle 34.

At this point, the cart 20 is safely supported by three pairs of wheels 23, 24 and 25 and it may be completely stored in the vehicle 100 as illustrated in the Fig. 6.

Anchoring devices (as for example guiding and stopping rails) which are so sufficiently well known as not to require further details, ensure the correct stored position of the cart 20 within the transport vehicle 100.

After return trip, the cart 20 can be unloaded from the motor vehicle 10 by inverting
5 the order of the above described sequential operations.

In particular, the pair of legs 32 of the rear wheels 25 can easily and slidably moved with respect to their respective seats 33 by activating the handles of the expanding devices, and then the pair of legs 32 can be extracted and fixed in the position illustrated in the Figure 5.

10 Then, the cart 20 can be further withdrawn from the trunk of the motor vehicle 100 for allowing the pair of legs 28 of the intermediate wheels 24 to be disengaged from the respective stop protrusions 45 and to be pivoted vertically (Figure 4) against the bias of the gas spring 44.

It is obvious that the force of the gas spring 44 may be chosen to fulfill all the re-
15 quirements which are needed for the normal operation of the cart 20.

Finally, the pair of legs 28 are fixed in vertical position (Figure 3) and the cart 20 is now ready to collect the articles taken from the shelves of the supermarket and to transport the purchased goods to the motor vehicle 100 as well as to transport the loaded goods from the motor vehicle 100 to the home or to the work site.

20 It is to be pointed out that the mean time required to load and unload the cart 20 from the vehicle 100 is significantly lower than the time normally required to transfer all the goods between the basket 40 of the cart 20 and the inside of the vehicle 100.

Moreover, the cart 20 according to the present invention enables the conservation of
25 the frozen foodstuffs in the thermal-insulated container 41.

In the Figures 7 through 9 are illustrated the operative stages for loading the cart 20 according to the invention into a vehicle 100 of the type called "space wagon" or "minivan" with a side sliding door.

In the Figures 10 through 13 are shown the operative stages for loading the cart 20 according to the invention into a vehicle of the type called "limousine" or "sedan" for distinguishing a three volumes car with an accentuated rear overhang.

As illustrated best in the Figures 10 through 13, the cart 20 has height and depth which are adequately dimensioned relative to the height above ground and to the capacity dimensions of the receiving trunk into the vehicle 100.

Therefore, the cart 20 according to the invention is dimensioned to accommodate the specific requirements of the user and to be receivable within a specific vehicle's trunk.

From what stated, it will be seen that the primary object of present invention is achieved by providing a cart 20 which allows for a quick, easy and rational support of merchandise, articles and/or equipment for many different purposes.

In particular, the cart 20 rationalizes the selecting and purchasing operations of the goods in a supermarket and it can be securely and firmly transported into a vehicle 100 without requiring removal of its load and complicated mounting and dismounting operations of its components.

Moreover, the cart 20 according to the invention facilitates the collecting, transporting and unloading operations of frozen foodstuffs.

The cart 20 according to the invention further achieves the object of facilitating the operations for unloading the purchased goods from the vehicle also when the distance from the vehicle to the home or to the workplace is far and/or when they can only be reached by means of an elevator.

It is obvious that, in addition to the advantages attained in supermarket shopping operations, the cart 20 according to the invention allows for an easy and rational transporting of multi-purpose objects and/or equipment.

In particular, the cart 20 may be used to carry foods for going on a pleasure trip or
5 on a trip into the country, as well as to transport plants, sacks of soil, sacks of fertilizer or other materials between the garden and the motor vehicle 100.

Within the work circle, the cart 20 can be most helpful in the support and transport of the equipment used by a maintenance operator (electrician, plumber ecc.) which, otherwise, should be forced to make several trips to move the equipment between
10 the vehicle to a work location.

After all, the cart according to the present invention reduces the time required for transporting any type of merchandise or equipment within a vehicle 100 and permits to maintain said merchandise or equipment in a correct, tidy and safe position within any type of motor vehicle 100.

15 It is well understood that modifications and variations may be made to the cart 20 forming the object of the present invention without departing however from the scope defined by the following claims with reference to the accompanying drawings and thence from the protection extent of the present industrial invention.

For example, additional elastic devices may be respectively anchored to the horizontal
20 portion 21 of the supporting frame and to the transverse stiffener 38 connecting the two uprights 32 of the wheels 25 in order to facilitate the sliding movement of the uprights 32 in the respective seats 33.

Instead of the particular gas spring 44 used in the described embodiment of the present invention, other devices such as a coil spring can be used.

25 In alternative, the cart 20 could be equipped with a basket 40 having a configuration

(as for example the box-shaped container of a barrow) and formed of materials (as for example plastic material) which are differing from those described above.

Moreover, the basket 40 may be removably attachable to the horizontal 21 and vertical portion 22 of the supporting structure and/or it may be equipped with several
5 sections which are stacked on top of each other to enable a user of the cart 20 to adapt the capacity of the basket to the variable features of the load to be transported.

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CLAIMS

- 1) Cart (20) for transporting objects and/or multi-purpose equipment and which in turn can advantageously be loaded aboard a vehicle (100), characterized in that it comprises: a supporting frame and at least a basket (40) which is provided
5 with means (41, 42, 43) for transporting frozen and perishable goods and grasping means (34, 35, 36) for manually moving the cart (20), said supporting frame is provided with a plurality of height adjustable pairs of wheels (23, 24, 25) on which said cart (20) is rollingly movable between the loading surface of any vehicle (100) and the support surface along which the cart (20) can be rollingly used to transport objects and/or multi-purpose equipment.
10
- 2) Cart (20) according to the claim 1, characterized in that said supporting frame is preferably made from metallic draw pieces which are reciprocally connected to each other to form a horizontal portion (21) and a vertical portion (43), said portion are both quadrangular in shape and firmly joined together according to a
15 "L" shaped configuration.
- 3) Cart (20) according to the claim 1, characterized in that it comprises a first pair of suspended wheels (23) which are provided with height adjustable legs (26) in positions corresponding to those of the respective front corners of the horizontal portion (21), a second pair of wheels (24) which are provided in the frontal part
20 of both sides of the horizontal portion (21) and equipped with legs (28) which are urged by elastic means (44) to pivot about a horizontal axle, a third pair of wheels (25) are provided with legs (32) which are slidably and vertically retractable in corresponding seats (33) provided in the vertical portion (22), said cart (20) being rollingly movable at least on said second (24) and third (25) pairs of
25 wheels for transporting objects and/or multi-purpose equipment.

- 4) Cart (20) according to the previous claims, characterized in that said basket (40) is fixed to said horizontal (21) and vertical (22) portions of said supporting structure and it presents a substantially parallelepipedal shape having an open upper side, said basket (40) houses, in a removable way, a thermally insulated container (41) which is hermetically closable by means of a cover (42) and which houses a plurality of cooling accumulators (43) of the type containing an eutectic mixture, said cooling accumulators (43) are adapted to be placed on the bottom and positioned adjacent the inner walls of the thermal-insulation container (41) for ensuring frozen foods conservation.
- 5) Cart (20) according to the previous claims, characterized in that said basket (40) comprises a handle (34) which is formed by two vertical legs (35) connected by an horizontal handgrip (36) for manually pushing or pulling said cart (20); said vertical legs (35) are slidably housed in corresponding seats (37) provided in said vertical portion (22) of said supporting structure and can be fixed in position by means of known clamping systems, said handgrip (36) being height adjustable between a fully lowered position during the loading of the cart (20) in the vehicle (100), wherein the legs (35) are almost entirely housed within their respective seats (37) and a raised position for manually moving the cart (20).
- 6) Cart (20) according to the previous claims, characterized in that during the operations for loading the cart (20) into any transport vehicle (100), said first pair of suspended wheels (23) are adapted to engage the loading floor (101) of the vehicle (100), that said second pair of pivotable wheels (24) are urged by said elastic means (44) to pivot towards the horizontal portion (21) of the supporting structure and to engage the loading floor (101) of the transport vehicle (100) near the supporting legs (32) of said third pair of wheels (25), that said third pair

of wheels (25) are slidably retractable towards the horizontal portion (21) of the supporting structure until said third pair of wheels (25) engages the loading floor (101) of the transport vehicle (100) and supports the cart (20) within the transport vehicle (100) in cooperation with the pair of suspended wheels (23) and the pair of pivoting wheels (24) .

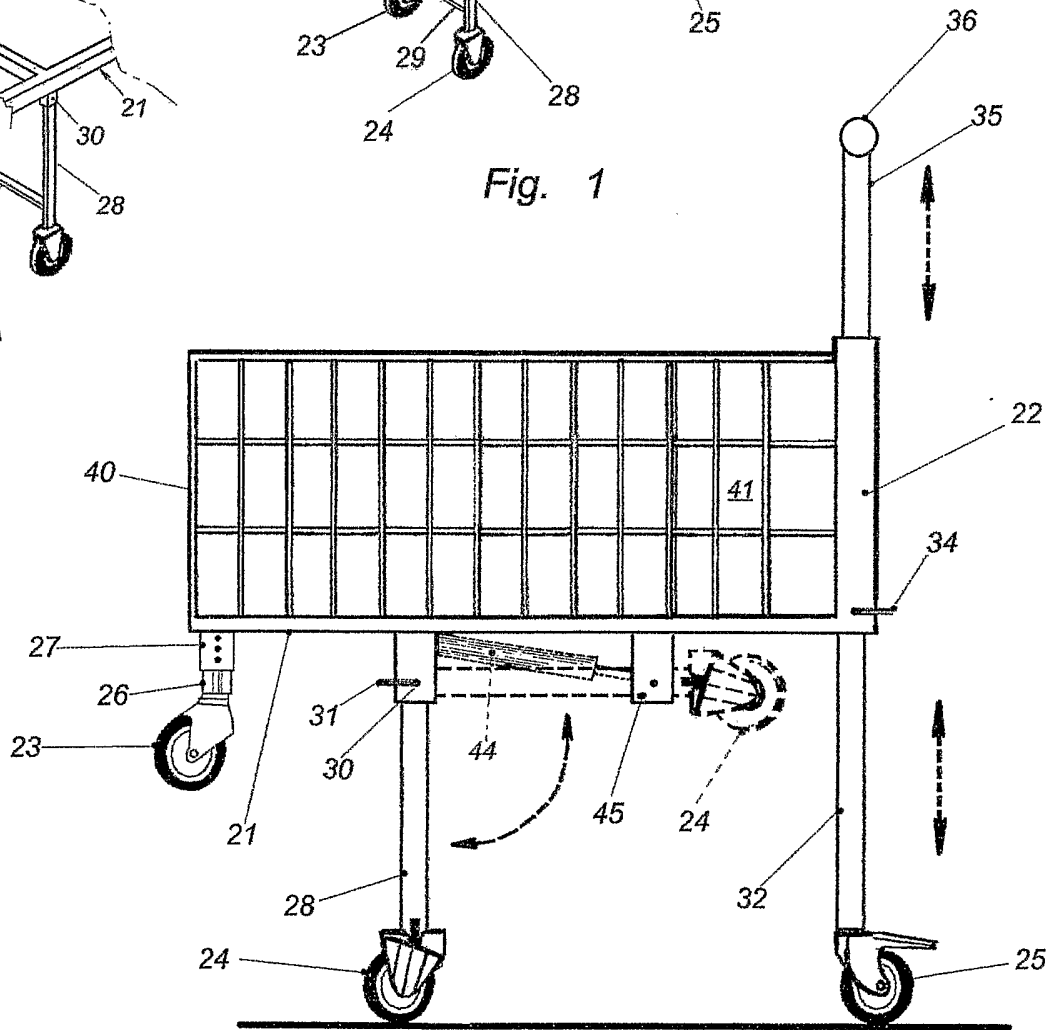
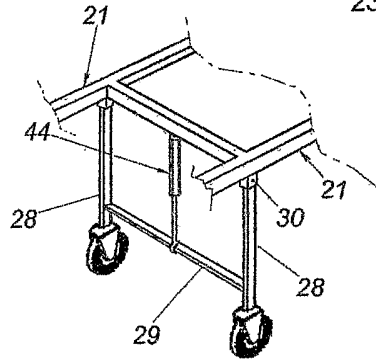
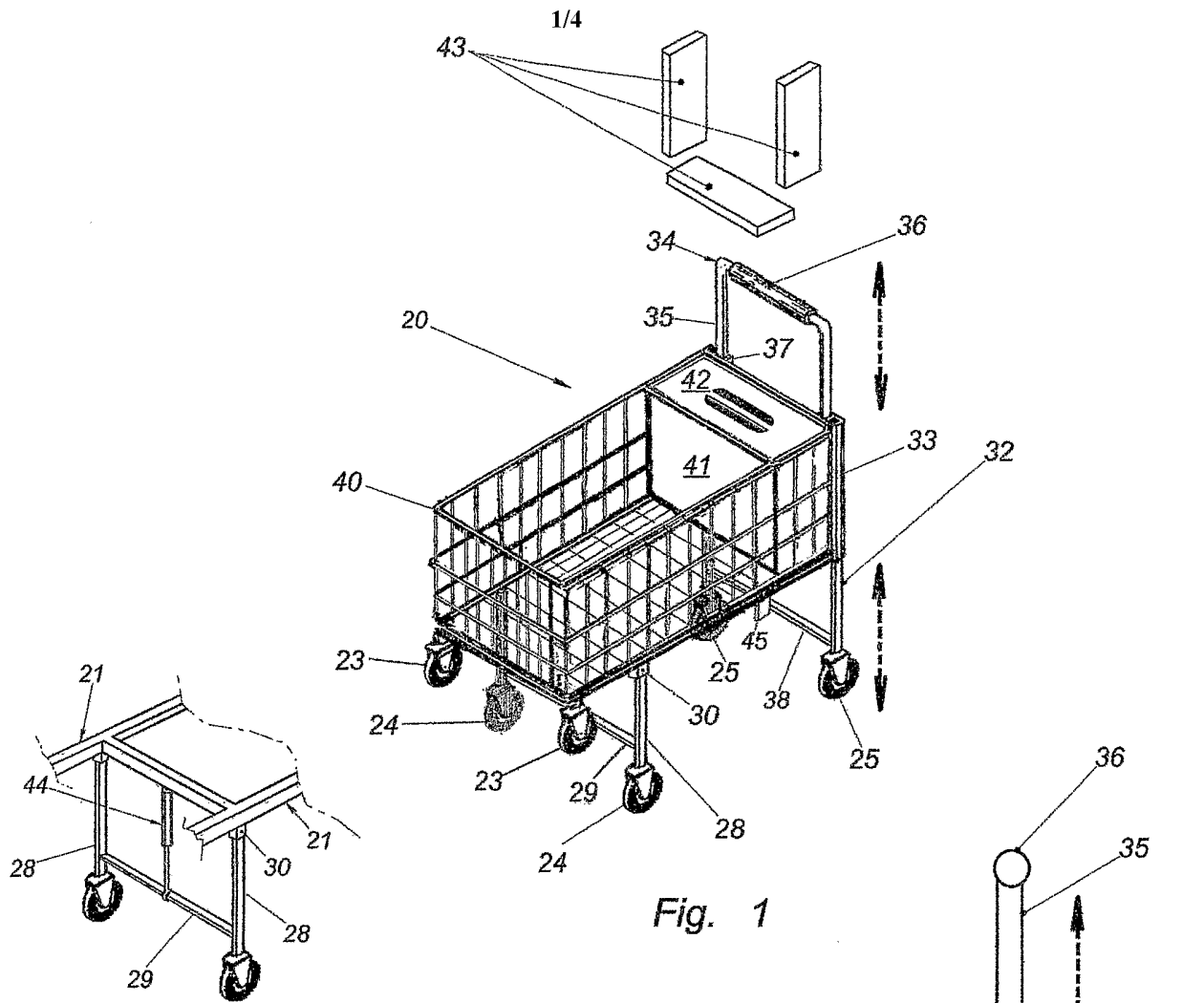
7) Cart (20) according to the previous claims, characterized in that said elastic means which promote the pivotal movement of the legs (28) of said second pair of wheels (24) are constituted by a single gas spring (44), the cylinder and the stem of the gas spring (44) are respectively connected to said horizontal portion (21) of the supporting frame and to the transverse stiffener (29) which is connecting said pivoting legs (28).

8) Cart (20) according to the previous claims, characterized in that additional elastic devices are respectively anchored to the horizontal portion (21) of the supporting frame and to the transverse stiffener (38), which is connecting the uprights (32) of said third pair of wheels (25), and facilitate the sliding movement of the uprights (32) in the respective seats (33).

9) Cart (20) according to the previous claims, characterized in that said basket (40) is constituted by elements which are vertically stacked to enable a user to adapt its capacity to the variable features of the load to be transported.

10) Cart (20) according to the previous claims, characterized in that the vertical and horizontal walls of the basket (40) are made of metallic wire which is woven according to a mesh configuration.

11) Cart (20) according to the previous claims, characterized in that the vertical and horizontal walls of the basket (40) are closed and formed of plastic material.



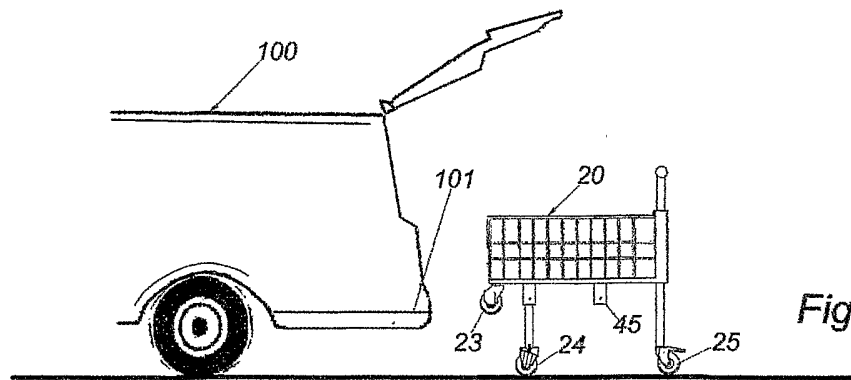


Fig. 3

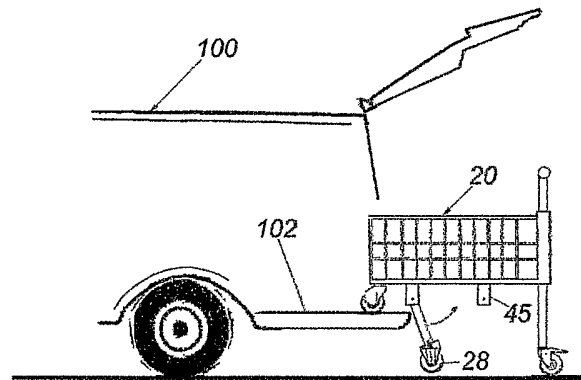


Fig. 4

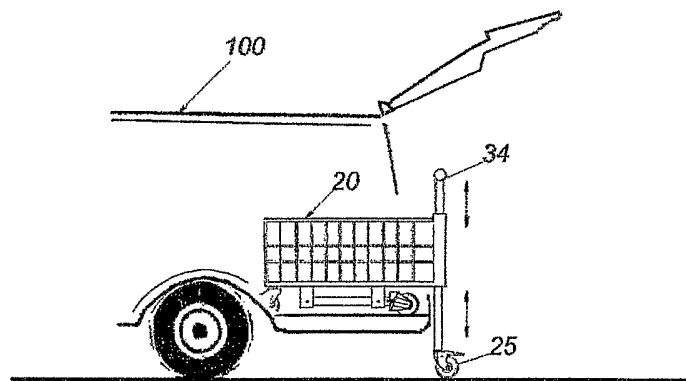


Fig. 5

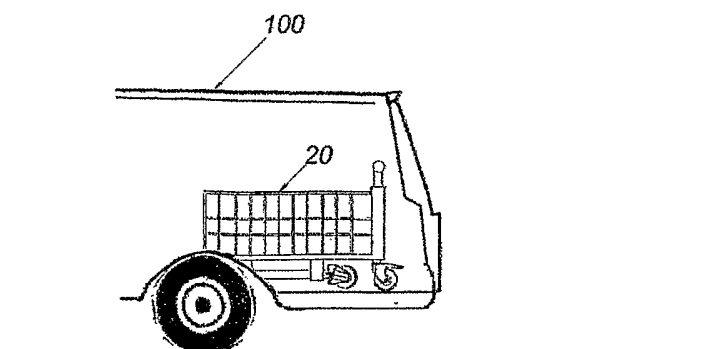


Fig. 6

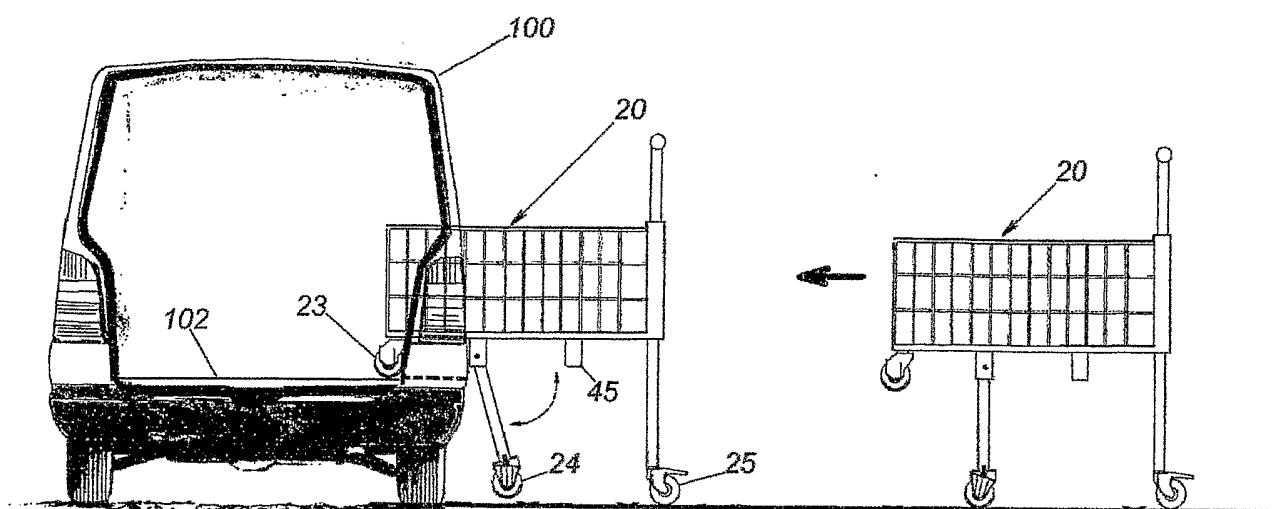


Fig. 7

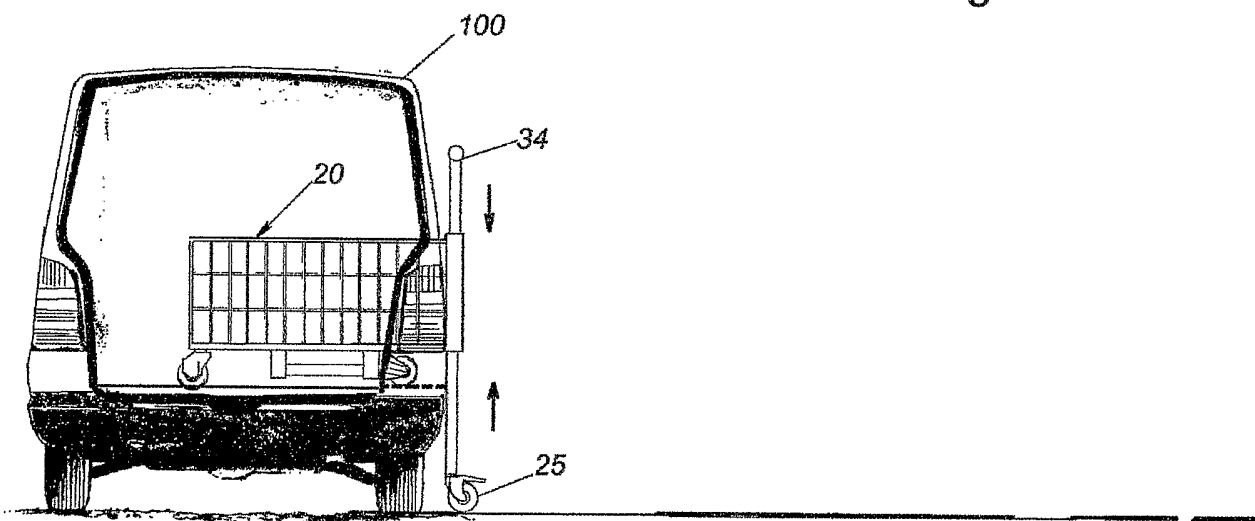


Fig. 8

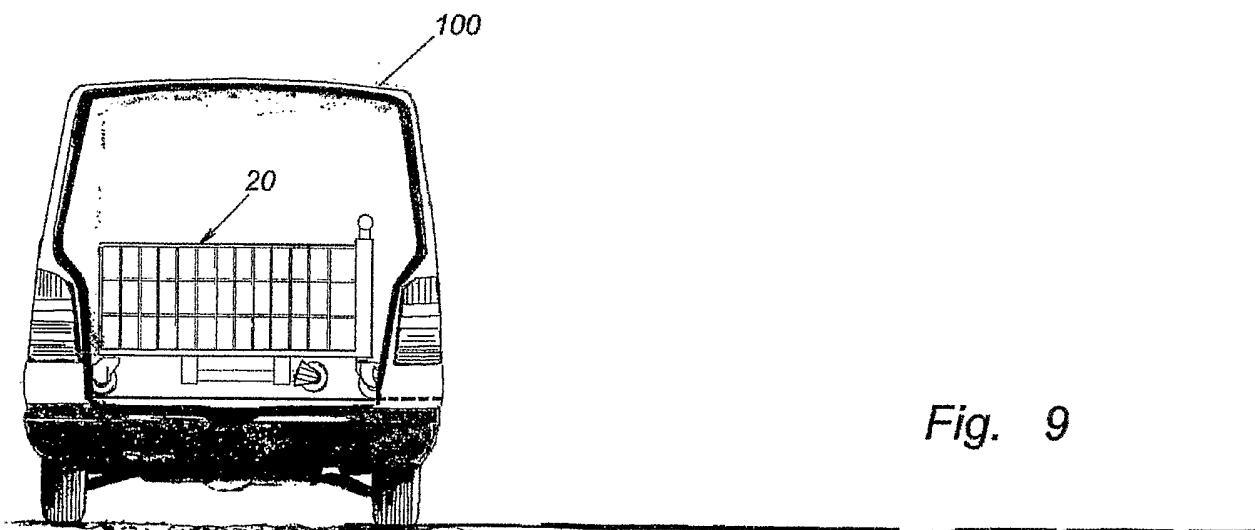
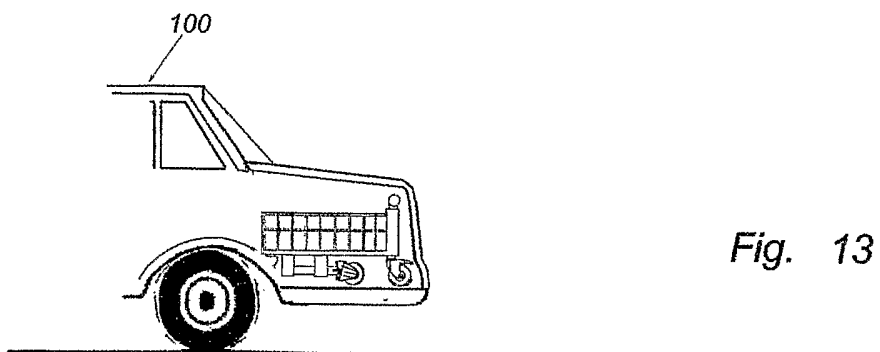
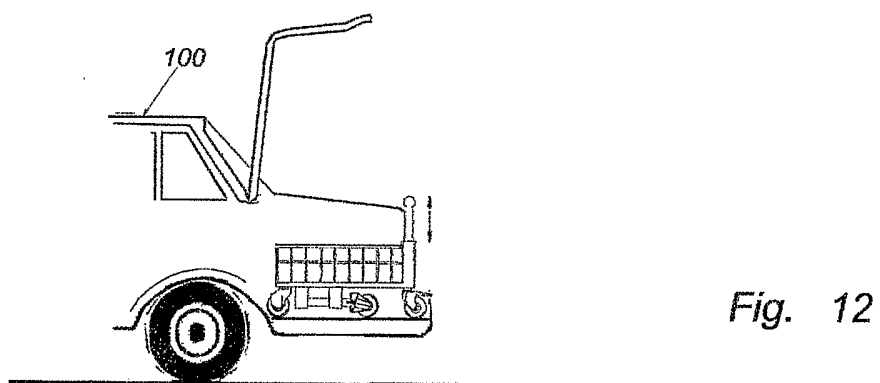
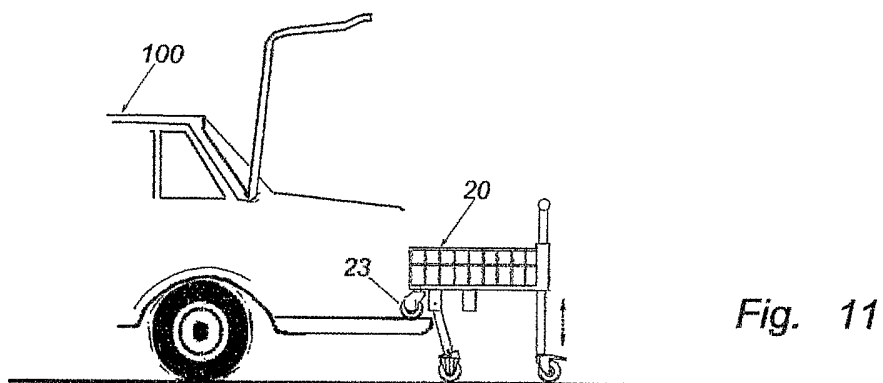
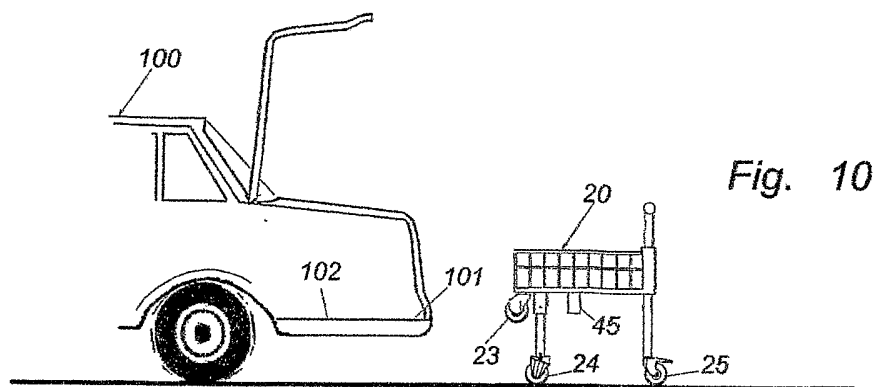


Fig. 9



INTERNATIONAL SEARCH REPORT

PCT/IB2004/002980

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B62B5/00

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 7 B62B

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 537 077 A (ROL JEAN) 8 June 1984 (1984-06-08) page 2, line 2 - line 29 page 3, line 12 - line 27 figures 1-3	1,2
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Y	FR 2 827 262 A (OLIVO) 17 January 2003 (2003-01-17) page 10, line 1 - line 21 claims 1,11 figures 1,2,10	4
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search

21 December 2004

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