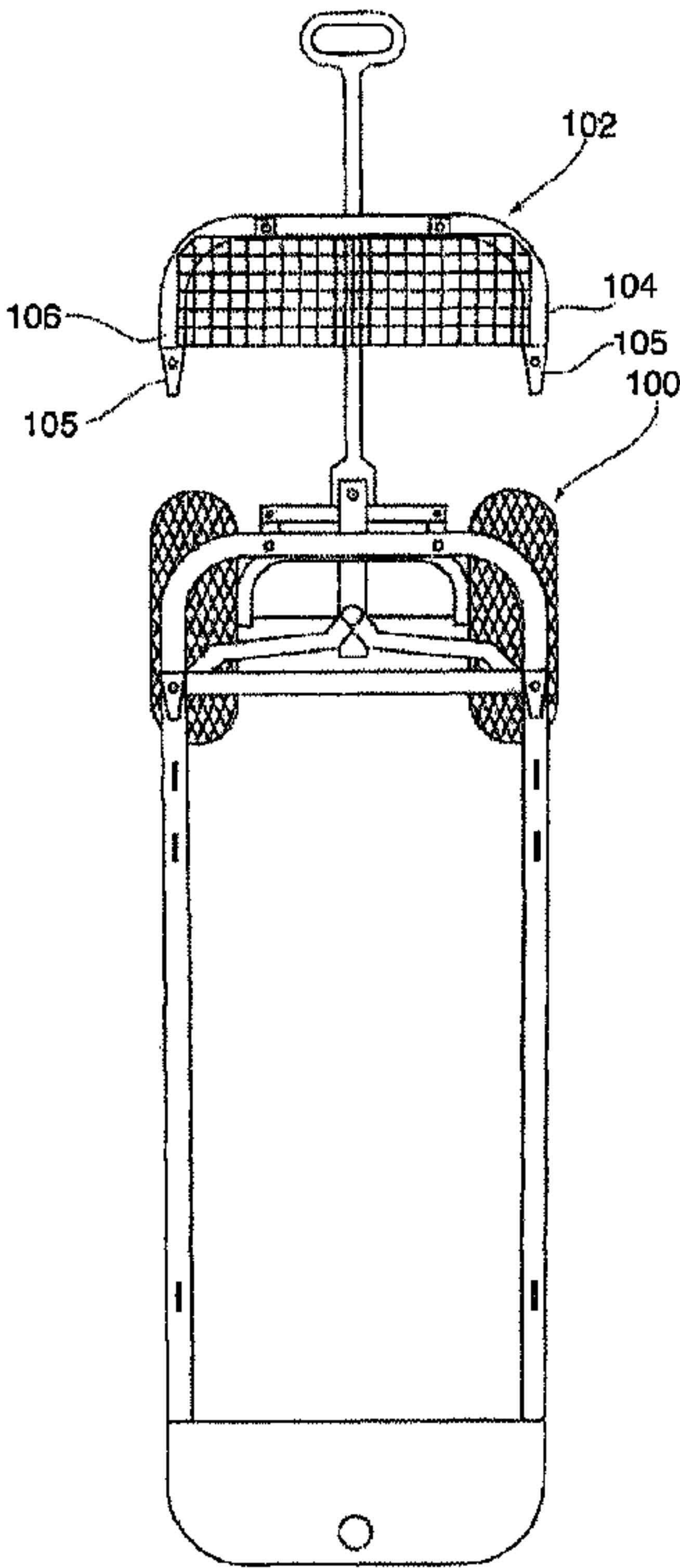




(22) Date de dépôt/Filing Date: 2012/02/13 (41) Mise à la disp. pub./Open to Public Insp.: 2013/08/13 (45) Date de délivrance/Issue Date: 2018/03/27	(51) Cl.Int./Int.Cl. <i>B62B 1/12</i> (2006.01), <i>B62B 1/14</i> (2006.01), <i>B62B 1/20</i> (2006.01) (72) Inventeur/Inventor: CELLI, GIULIANO, CA (73) Propriétaire/Owner: CELLI, GIULIANO, CA (74) Agent: DENNISON ASSOCIATES
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(54) Titre : CONVERSION D'UNE BROUETTE EN CHARIOT
(54) Title: WHEELBARROW WAGON CONVERSION



(57) **Abrégé/Abstract:**
A wheelbarrow conversion kit is used to convert a wheelbarrow structure to a pull wagon. The handles of the wheelbarrow are removed and an adaptor is preferably inserted where the handles were removed. The adaptor includes a pair of steerable wheels and handle for pulling of the wagon. Other embodiments provide additional functionality for use of the wagon in a gardening type application.

ABSTRACT

A wheelbarrow conversion kit is used to convert a wheelbarrow structure to a pull wagon. The handles of the wheelbarrow are removed and an adaptor is preferably inserted where the handles were removed. The adaptor includes a pair of steerable wheels and handle for pulling of the wagon. Other embodiments provide additional functionality for use of the wagon in a gardening type application.

TITLE: WHEELBARROW WAGON CONVERSION

FIELD OF THE INVENTION

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The present application relates to a multi-function wheelbarrow and in particular to a number of cooperating components that extend the functionality of the wheelbarrow.

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BACKGROUND OF THE INVENTION

15 A multi-function hand truck is disclosed in my earlier United States Patents No. 6,945,545 and 7,168,712. The wheelbarrow structure includes moveable front wheels that allow the wheelbarrow to function in different manners including a vertical storage capability.

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My multi-function wheelbarrow can also function as a hand truck and includes a pivoting arm structure for lifting of large loads or containers.

25

I have found that my convertible wheeled device has many applications around the home, but has proven particularly popular as a small wheelbarrow for gardening applications. To further extend the functionality of my wheelbarrow, I have invented a number of cooperating

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components that allow my multi-function wheelbarrow to convert to a wagon structure that preferably includes a support seat for the user. A number of further cooperating components are shown including a top support arrangement for the wheelbarrow when in a wagon

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configuration allowing material to be stored on the top thereof and also a vertically extending rail-type attachment for securement to a top surface of the wagon

configuration. In a further embodiment, additional carrying capacity in a wheelbarrow application is achieved by extending the capacity of the wheelbarrow bucket.

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SUMMARY OF THE INVENTION

A garden wagon according to the present invention
10 comprises an elongate frame with a pair of non steerable wheels at one end thereof, a pair of side members extending from the one end towards a second end with the side members cooperating with the one end to support a load carrying container generally between and below the
15 side members. The second end comprises a removable frame supported by the side frames and mechanically secured thereto. The removable frame includes a pair of steerable wheels supported below the removable frame and a pivoting steering handle coupled to the steerable
20 wheels and allowing steering of the wagon when pulled by the handle.

In an aspect of the invention, the removable frame includes a U-shaped member with two connecting arms
25 joined at one end of the arms by an intermediate portion. The connecting arms cooperate with the side members such that the removable frame closes the second end and forms an extension of the side frames.

30 In a further aspect of the invention, the connecting arms are received in the side frames and form a rigid extension of the side frames with the steerable wheel directly below the removable frame and forward of the load carrying container.

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In a different aspect of the invention, a gardening container as claimed in claim 3 the steerable

wheels include releasable brace members mechanically connecting a stationary frame supporting the steerable wheels to the side members.

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BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention are shown in the drawings, wherein:

10 Figure 1 is a perspective view of my convertible wheelbarrow structure in an operative configuration;

Figure 2 is a perspective view of my wheelbarrow structure with the wheels moved to a storage position;

Figure 3 is a perspective view of my wheelbarrow structure in a storage position;

15 Figure 4 is a perspective view of a wagon wheel adaptor that can be attached to my wheelbarrow structure;

Figure 5 is a top view illustrating attachment of my steerable wheel arrangement to one end of the frame of the multi-function wheelbarrow;

20 Figure 6 is a top view similar to Figure 5 showing an alternate adaptive frame for attaching wagon wheels to one end of my multi-function wheelbarrow;

Figure 7 is a view similar to Figure 5 illustrating a single wheel conversion arrangement;

25 Figure 8 is a perspective view of a seat that can be applied to opposite sides of the wheelbarrow to provide a seat for the user;

30 Figure 9 is a partial perspective view of a foldable grid support that can be applied over the top of the wheelbarrow;

Figure 10 is a perspective view of the support arrangement of Figure 9 in combination with a rail arrangement for attachment to the wheelbarrow;

WH 13846CA

Figure 11 is a partial perspective view of a further adaption where the handles of the wheelbarrow can be secured at one end of the wagon structure;

Figure 12 shows additional details of an adaptive
5 bracket used in the structure of Figure 11;

Figure 13 is a side view of the multi-function wheelbarrow converted to a wagon and having upright supports; and

Figure 14 illustrates a molded wheelbarrow
10 container of additional capacity that can be attached to my multi-function wheelbarrow.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

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My multi-function wheelbarrow is shown in Figures 1, 2 and 3. The wheelbarrow 2 is shown in Figure 1 in the operational position and the wheels 8 have been moved and are generally located below the front of the
20 wheelbarrow container 10. It can be seen that the wheelbarrow includes two removable handles 6 provided at the opposite end of the wheelbarrow.

In Figure 2, the wheels have been moved forwardly
25 and inwardly and are located in front of and generally within the width of the container 10. This allows the wheelbarrow structure to in one embodiment function as a hand truck and additionally to move to the wheels to the forward position shown in Figure 3. Basically, the
30 wheelbarrow can store in a vertical orientation supported by the wheels 8 and a front portion 12 as shown in figure 3.

It has been found that my wheelbarrow structure is
35 particularly popular for home gardening applications perhaps due to its multi-function capability, unique

WH 13846CA

wheelbarrow configuration and/or the ability to store in a space efficient manner.

Figure 4 shows my wagon conversion structure that allows the wheelbarrow to additionally function as a pull wagon. A wagon adaptor 100 is shown in Figure 4 and includes a U-shaped frame 102 having two slightly angled end tubes 104 and 106 that are sized for insertion in the end rail 20 where the handles 6 are normally secured. In order to secure the wagon adaptor 100, the handles 6 are removed and the end tubes 104 and 106 of the U-shaped bracket 102 are inserted in the upper ports 114 and 116 that normally receive the handles 6. The rails 20 of my structure slightly diverge from the end 12 towards to the handles 6 and for this reason the ends 104 and 106 are slightly tapered to allow the ends 104 and 106 to be first inserted into the ports 114 and 116 and subsequently pushed to a secure position.

As shown in Figure 3, the handles 6 are each secured to the body 25 of the wheelbarrow by bolts 118 and 120 and a handgrip nut shown as 122. To secure my wagon adaptor 100, the bolts 118 and 120 are removed, the handles 6 are removed from the wheelbarrow body 25. The ends 104 and 106 are inserted into the upper ports 114 and 116 that previously received the handles. The bolts 118 and 120 and handgrip nuts 122 are then reinserted and tightened to secure the ends 104 and 106 to the wheelbarrow body 25.

The bracket members 130 and 132 are located beneath the securing portion of the ports 114 and 116 and are also secured by the bolts 118 and 120. These basically provide a stabilizer arrangement for the downwardly extending wheel structure shown as 140. This downwardly extending wheel structure 140 includes a U-shaped member 142 secured to member 102 by bolts. Member

142 is connected by a flat bar member 150 that extends between the ends of the U-shaped bracket 142. The bar member 150 supports pivoting bushings 160 of each wheel between the member 150 and an upper bracket 170.

- 5 Basically, the U-shaped member 142 is secured to member 150 by welding (or otherwise securing) the bracket 170 to the arms of the U-shaped bracket 142. A steering link 180 connects forwardly extending levers 182 and 184 of each wheel and allow pivoting and steering of the wagon.
- 10 A steering handle shown as 190 pivots about 192 and thus, movement of the handle 190 causes a shifting of the steering linkage 180.

It can be appreciated that other arrangements for steering of the wheels 200 and 202 can be provided. The important aspect is the securement of the wagon adaptor 100 to one end of the frame of my wheelbarrow remote the original wheelbarrow wheels 8. Preferably, this securement is achieved using the U-shaped bracket 102

20 having the end portions 104 and 106 thereof inserted in the securing ports that normally receive the removable handles 6. Tightening of the bolts 118 and 120 firmly secure the U-shaped bracket 102 to the end of the wheelbarrow remote the original wheels 8 and allow

25 conversion to a steerable wagon.

With the adaptor 100 secured at the end of my multi-function wheelbarrow it has now been converted to a wagon-type structure having a pivoting handle for pulling

30 and steering of the wagon. The attachment of the wagon adaptor 100 advantageously uses the existing structure of the wheelbarrow to allow the wagon adaptor 100 to be a simple structure that is easily secured.

35 As previously mentioned, the ends 104 and 106 slightly include a taper for ease of attachment. This allows the ends 104 and 106 to initially be placed in the

ports 114 and 116 as there is some play due to the taper. Once the ends have been inserted, it is then possible to push the adaptor 100 to a secure position where the bolts 118 and 120 and the handgrip nuts can be reattached. As
5 can be appreciated, this movement to the securing position as shown in Figure 5 provides a snug removable fit of the ends 104 and 106 in the ports 114 and 116. Furthermore, the wagon adaptor 100 is held in place and effectively tightened by the bolts 114 and 116.

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As shown in the top view of Figure 5, the ends 104 and 106 can also include a tapered insert 105 and 107 that are permanently secured to the ends of the U-shaped bracket 102. The purpose of the tapered plugs 105 and
15 107 is to simplify securement while also allowing a snug fit of the wagon adaptor 100 to the rail members of the body of the wheelbarrow.

As shown in Figures 4 and 5, the U-shaped bracket
20 102 preferably includes a cover screen 220. The cover screen 220 effectively closes the gap between the arms of the U-shaped bracket and acts as a barrier to the underlying space used by the steering linkage. This parallelogram-type steering linkage is a potential safety
25 hazard and the screen 220 acts as a safety guard against inadvertent insertion of hands or fingers into this space.

In the alternate embodiment of Figure 6, the U-
30 shaped bracket 102 has been broken into a first component 102A and a second component 102B. These components are secured to each other by a plug portion 103 being inserted in the end 109 and mechanically fastening the bolt 111 that passes through the elongate port 113. The
35 elongate port 113 allows for some play or movement between the two brackets before the bolt 111 is tightened. This allows initial insertion of ends 104A

and 106A in the ports 114 and 116. The components 102A and 102B can then be moved to a secured position where parts 102A and 102B basically abutt. 102A and 102B are then fixed by tightened of the bolt 111.

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In Figure 7, a different wagon adaptor 100A is shown that again uses a U-shaped bracket however in this case, a single wheel is secured beneath the U-shaped bracket. This structure is somewhat simpler than the
10 embodiment of Figure 6 or Figure 5 however the single wheel is not as stable as the dual wheel embodiment. The double wheel arrangement of Figures 4 and 5 is preferred.

In Figure 7, a seat 150 is shown that is of a size
15 to straddle the wheelbarrow cavity such that the side rails of the wheelbarrow pass through the elongate slots 152 and 154. With this arrangement, the seat 150 may be placed over the wheelbarrow cavity and the top surface of the seat provides the support for a user. Thus the user
20 can convert the wheelbarrow structure to the wagon arrangement and this essentially supports the upper edge of the wheelbarrow in a horizontal manner. The rails of the wheelbarrow that are extending from end to end can be located within the slots 152 and 154. It has been found
25 that when a person is gardening it may be desirable to use the seat from time to time. Various arrangements can be used to secure the seat (including a simple pin arrangement) if desired.

30 In Figure 9, a foldable grid support 300 is shown. This includes a grid portion 302 at one end thereof having tab-type members 304 and 306. These members can be fixedly secured to the U-shaped bracket 102 in a manner as shown in Figure 4. Preferably the grid support
35 300 includes individual grid sections 302, 310, 312, 314, 316 and 318. These sections are preferably hingedly connected to one another to allow folding of the support

on the sections to provide a compact storage arrangement. As can be appreciated, it is desirable that the support be convertible to a storage arrangement for space efficiency.

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The support 300 is designed to cover the open cavity of the wheelbarrow and is secured to the wheelbarrow upper portion in any of a number of different ways. For example, small tabs may be provided around the
10 edge of the wheelbarrow cavity to allow securement. An alternate embodiment is shown in Figure 10 where the support 300 includes an upper rail portion 380. The support 300 includes slot areas 385 for receiving the vertical rail members 382 that are received in ports (not
15 shown) provided the upper edge of the wheelbarrow. With this arrangement, the wagon has a rail arrangement similar to many known child's wagons. The purpose of the wagon is for gardening-type applications as opposed to a structure for use by a child. However the rail
20 arrangement is useful in supporting loads placed on the support member 300.

Figures 11 and 12 show a further embodiment of the invention where the bracket member 400 co-operates with
25 the U-shaped member 102 and provides upwardly extending securing plugs 402 and 404 for receiving the handles 6. The handles 6 effectively slide over the plugs 402 and 404 and can be secured thereto by bolts. With this arrangement, the wagon structure can additionally be
30 pushed from one end as opposed to being pulled.

In Figure 13, it can be seen that the wagon structure now has the handles 6 secured in a vertical manner by the bracket 400 to the U-shaped member 102. In
35 addition, the lifting arms 75 have been moved to their normal operating position and form a further upwardly extending support member. With this structure as shown

in Figure 13, the wagon includes upwardly extending members to allow stacking of material on the top support of the wagon or stacked in the wagon cavity.

5 In Figure 14, a further embodiment of my invention is shown wherein a further molded wheelbarrow cavity 500 is shown. This member includes a lower portion 502 that is shaped for a snug fit within the existing cavity of the wheelbarrow. Member 500 includes outwardly extending
10 side members 504 and 506 and outwardly extending end portions 508 and 510. A series of clips or brackets 512 and 514 can be provided around the perimeter of member 500 for engagement with the upper portion of the wheelbarrow. In this way, the higher capacity insert 500
15 can be inserted and held within the wheelbarrow. This allows the capacity of the wheelbarrow to be extended in a simply manner and to also allow for other uses that may require additional capacity. Furthermore, there may be applications where it is desirable to protect the normal
20 cavity of the wheelbarrow and this can be done by inserting the larger cavity member 500.

Member 500 need not include a bottom portion to provide the additional capacity. In an open structure of
25 member 500, the bottom portion of the existing wheelbarrow cavity is used and member 500 merely extends the sides and end walls.

As shown in the drawings, my convertible
30 wheelbarrow structure has been further enhanced by the addition of a wagon adaptor at one end of the wheelbarrow and a series of additional components that allow the converted wagon structure and/or wheelbarrow structure to function in different manners.

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Although preferred embodiments of the invention have been described herein, it would be understood by

WH 13846CA

those skilled in the art that variations may be made thereto and these variations are intended to be covered by the appended claims.

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A garden wagon comprising an elongate frame with a pair of non-steerable wheels at one end thereof, a pair of side members extending from said one end towards a second end with said side members cooperating with said one end to support a load carrying container generally between and below said side members, said second end comprising a removable frame supported by said side frames and mechanically secured thereto; said removable frame including a pair of steerable wheels and steering linkage supported below said removable frame and a pivoting steering handle coupled to said steerable wheels and allowing steering of said wagon when pulled by said handle and positioned to appropriately position said steerable wheels; and wherein said removable frame includes a U-shaped member with two connecting arms joined at one end of said arms by an intermediate portion, said connecting arms cooperating with said side members such that said removable frame closes said second end and forms an extension of said frames.

2. A garden wagon as claimed in claim 1 wherein said two connecting arms and said intermediate portions are integral.

3. A garden wagon as claimed in claim 1 wherein said connecting arms are received in said side frames to form a rigid extension of said frames with said steerable wheels directly below said removable frame and forward of said load carrying container.

4. A garden wagon as claimed in claim 3 wherein said removable frame includes releasable brace members mechanically connecting a lower stationary frame supporting said steerable wheels to said side members; said lower stationary frame forming part of a steering support arrangement for said steerable wheels.

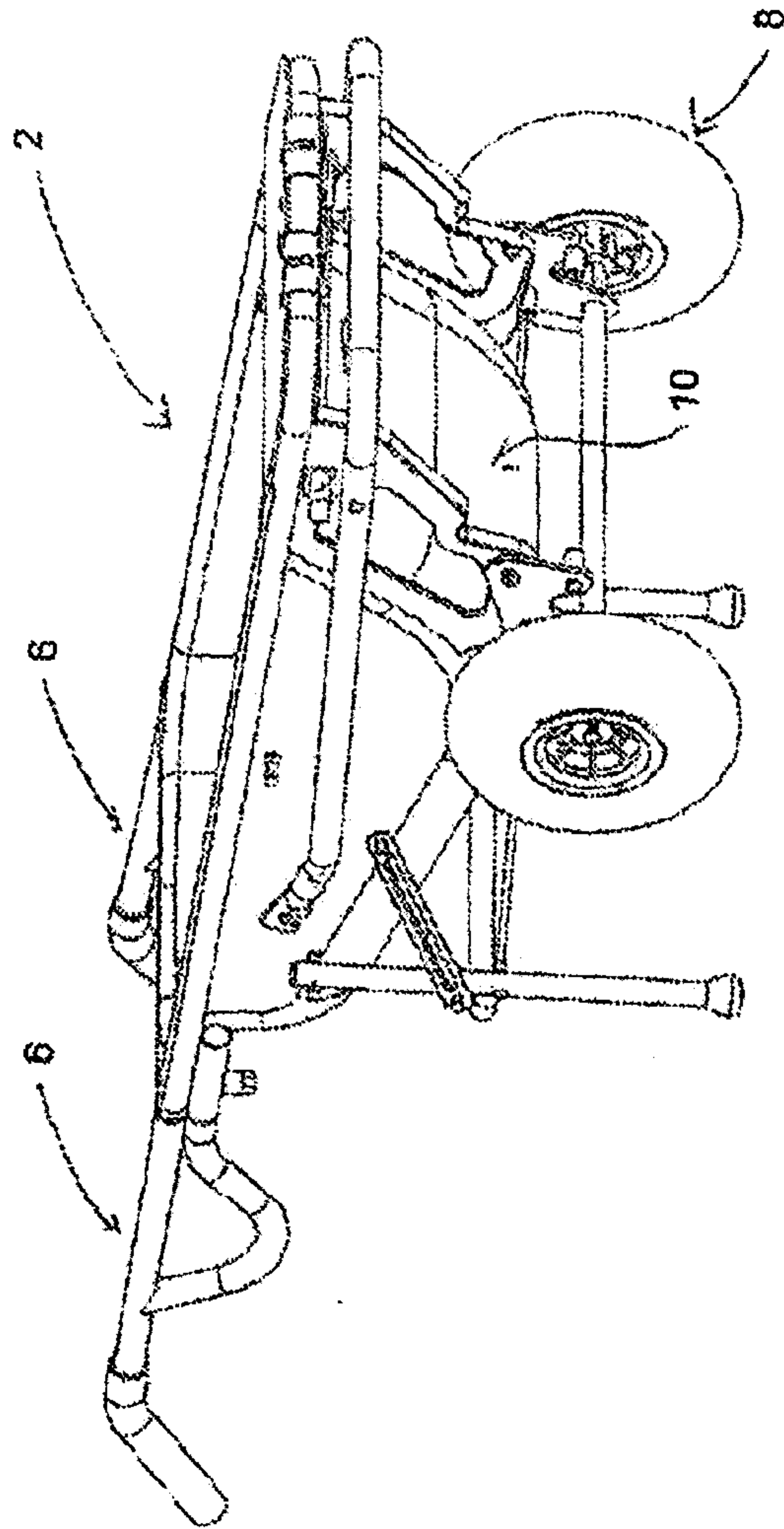


Fig. 1 (PRIOR ART)

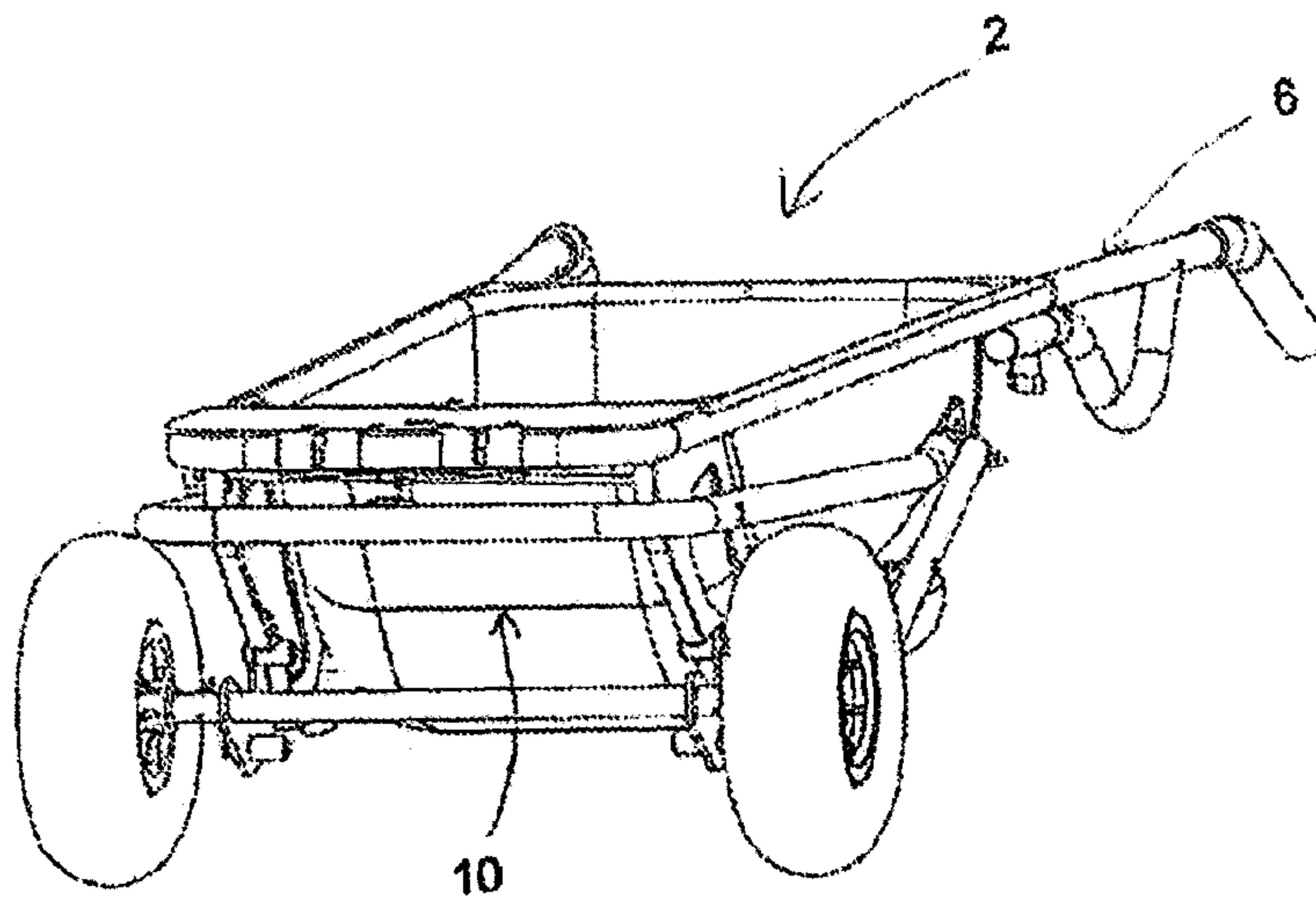
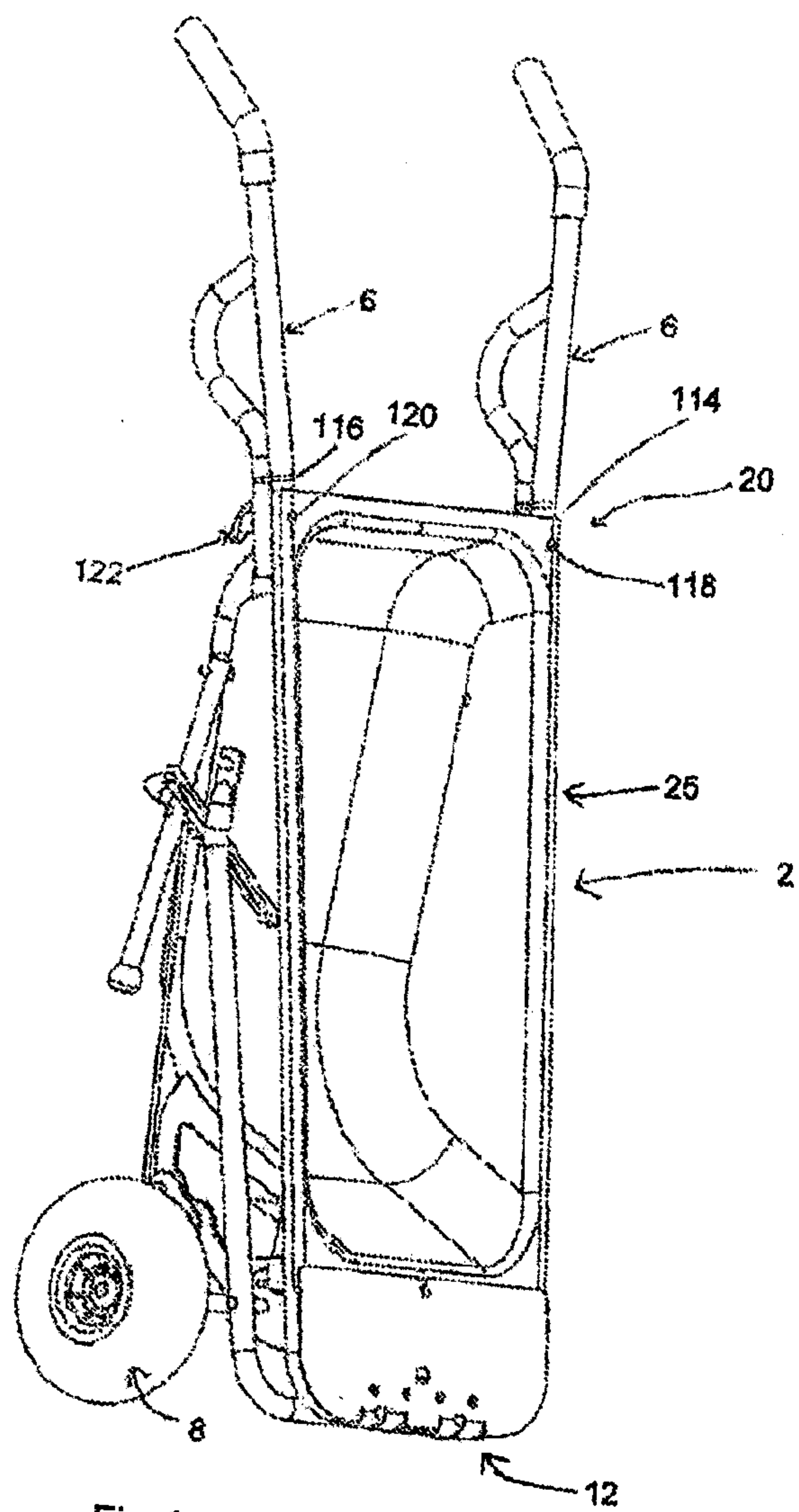


Fig. 2 (PRIOR ART)



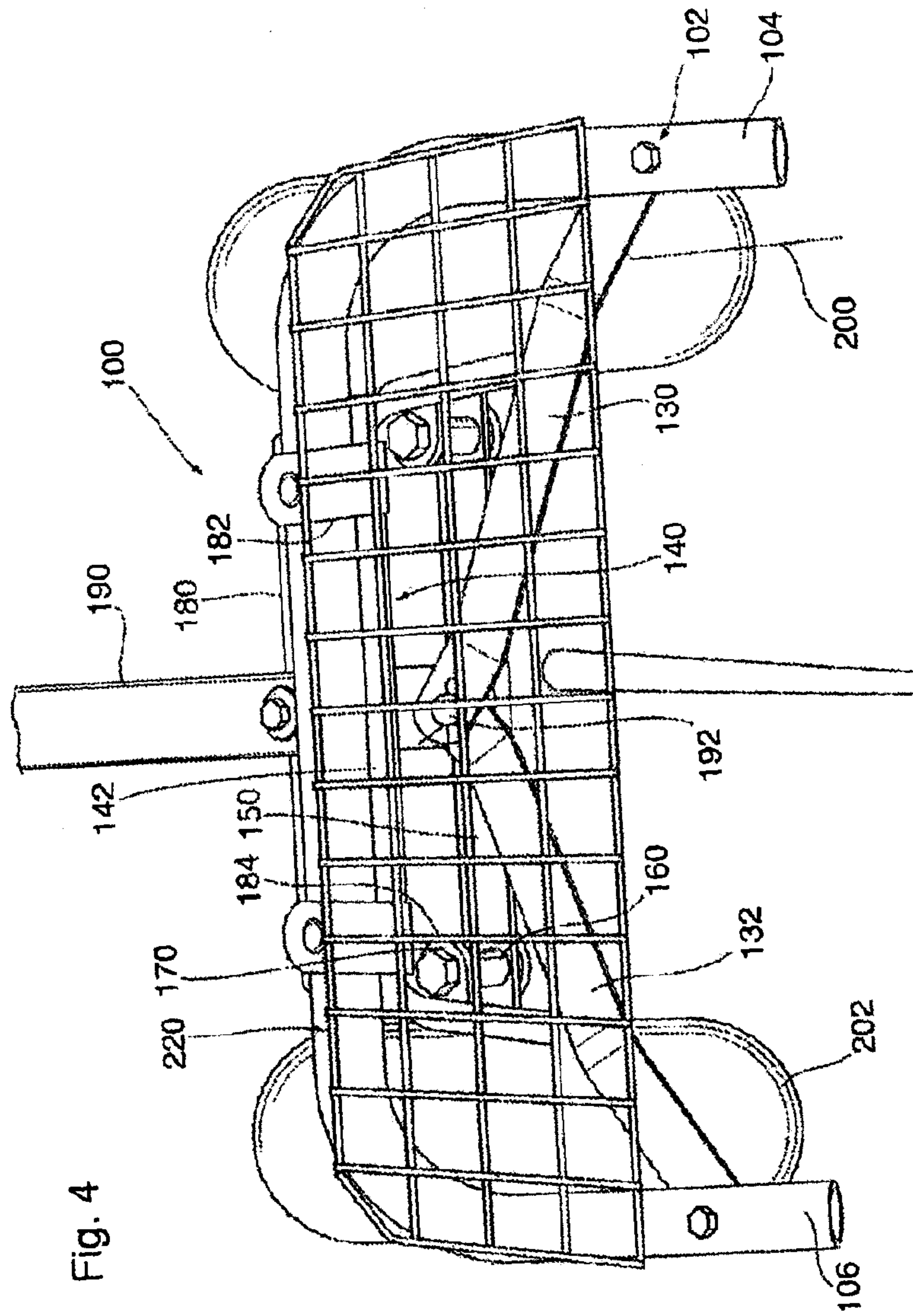


Fig. 4

Fig. 5

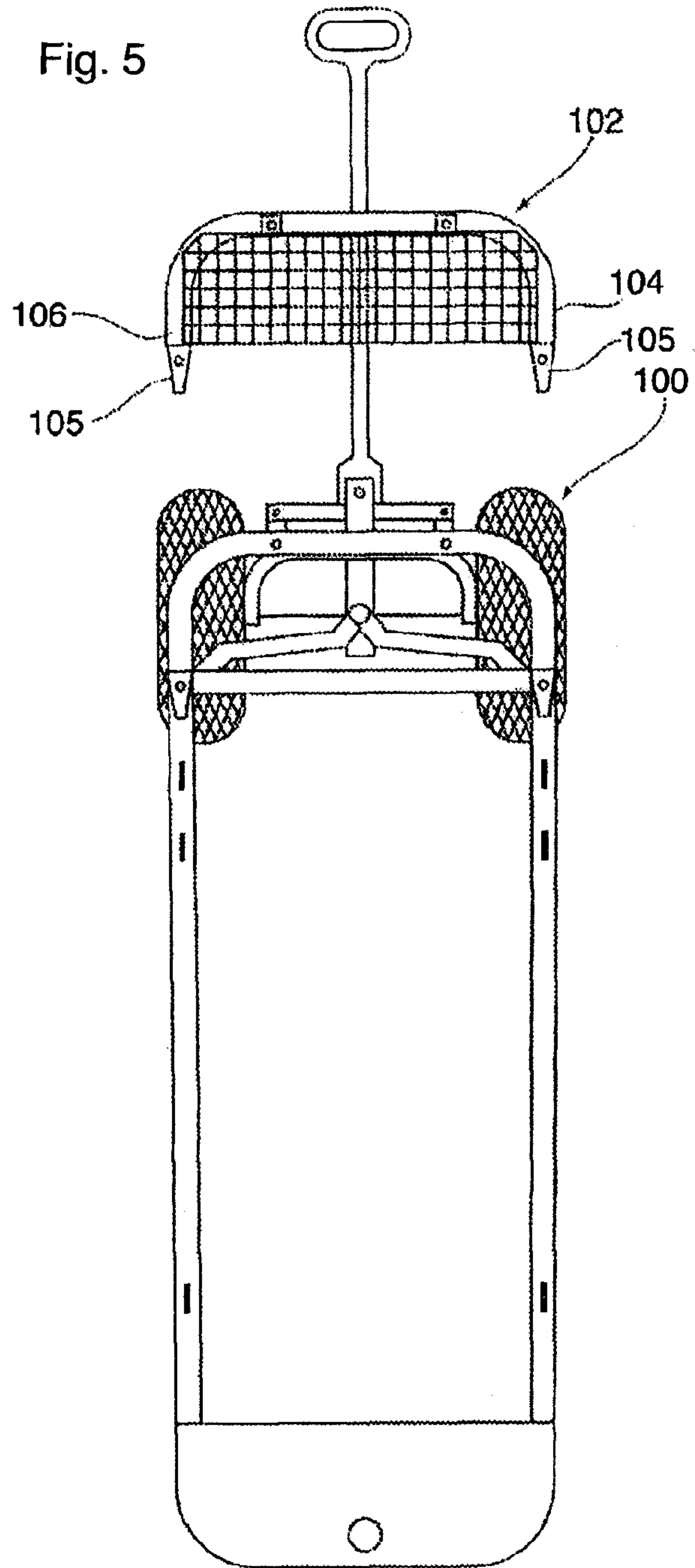


Fig. 6

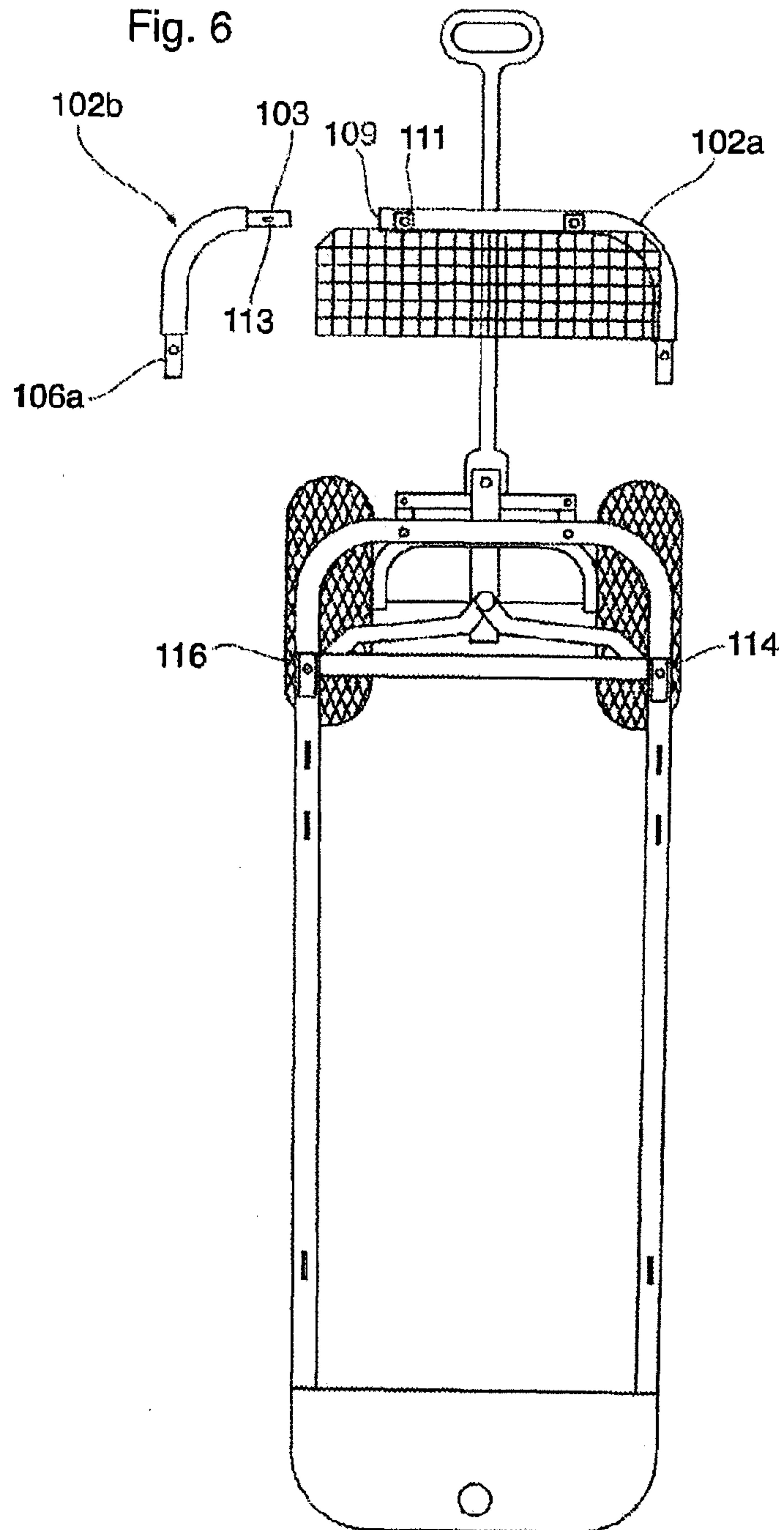
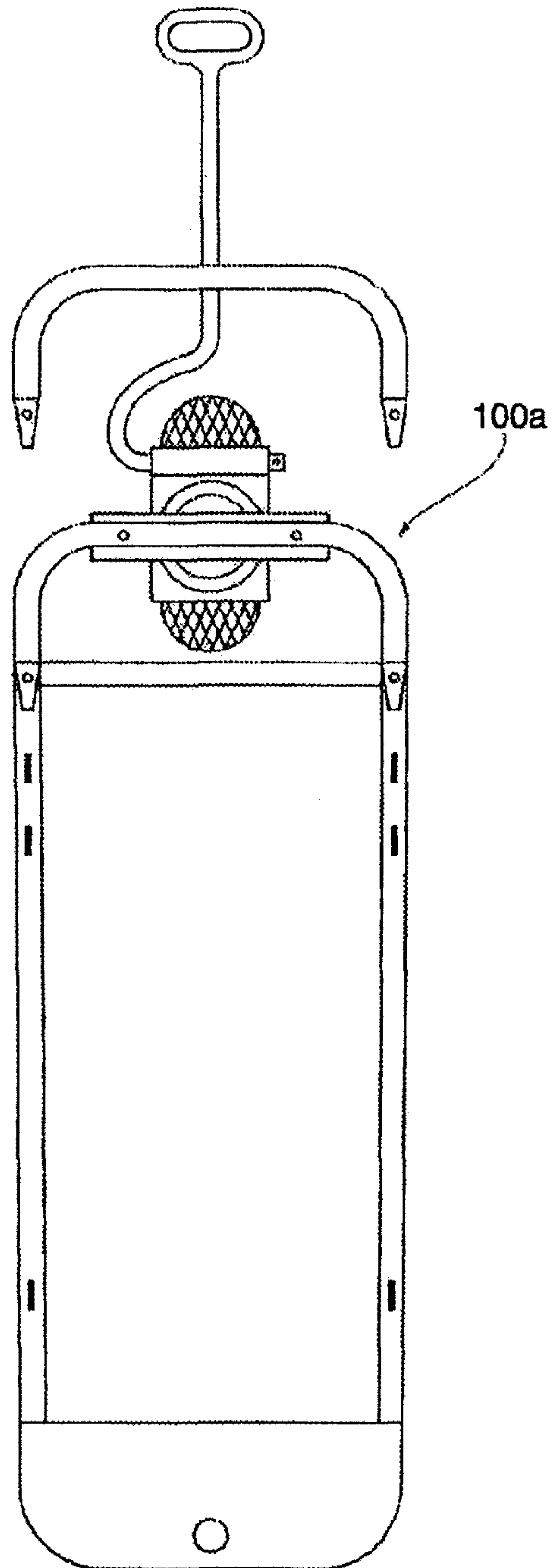


Fig. 7



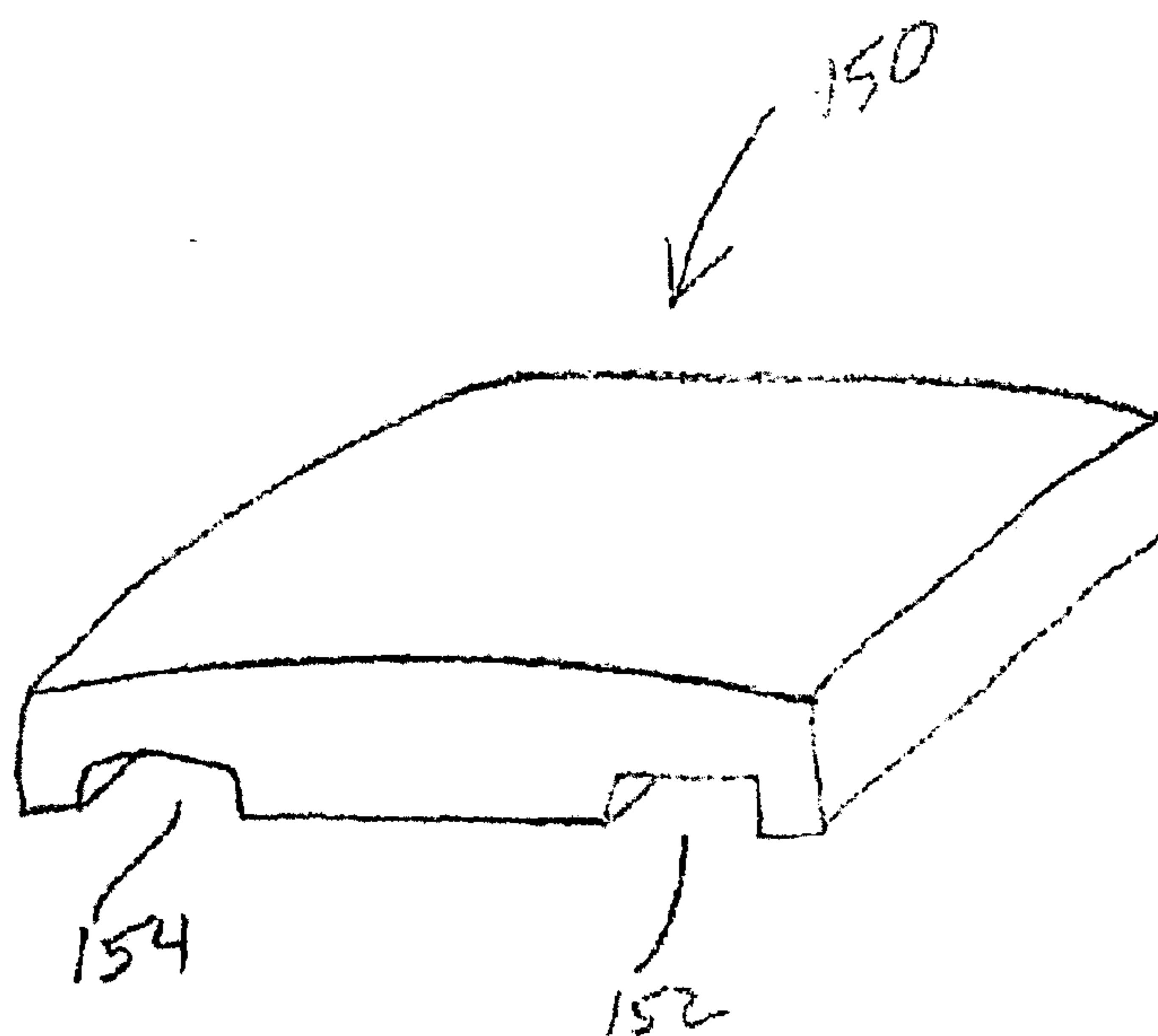
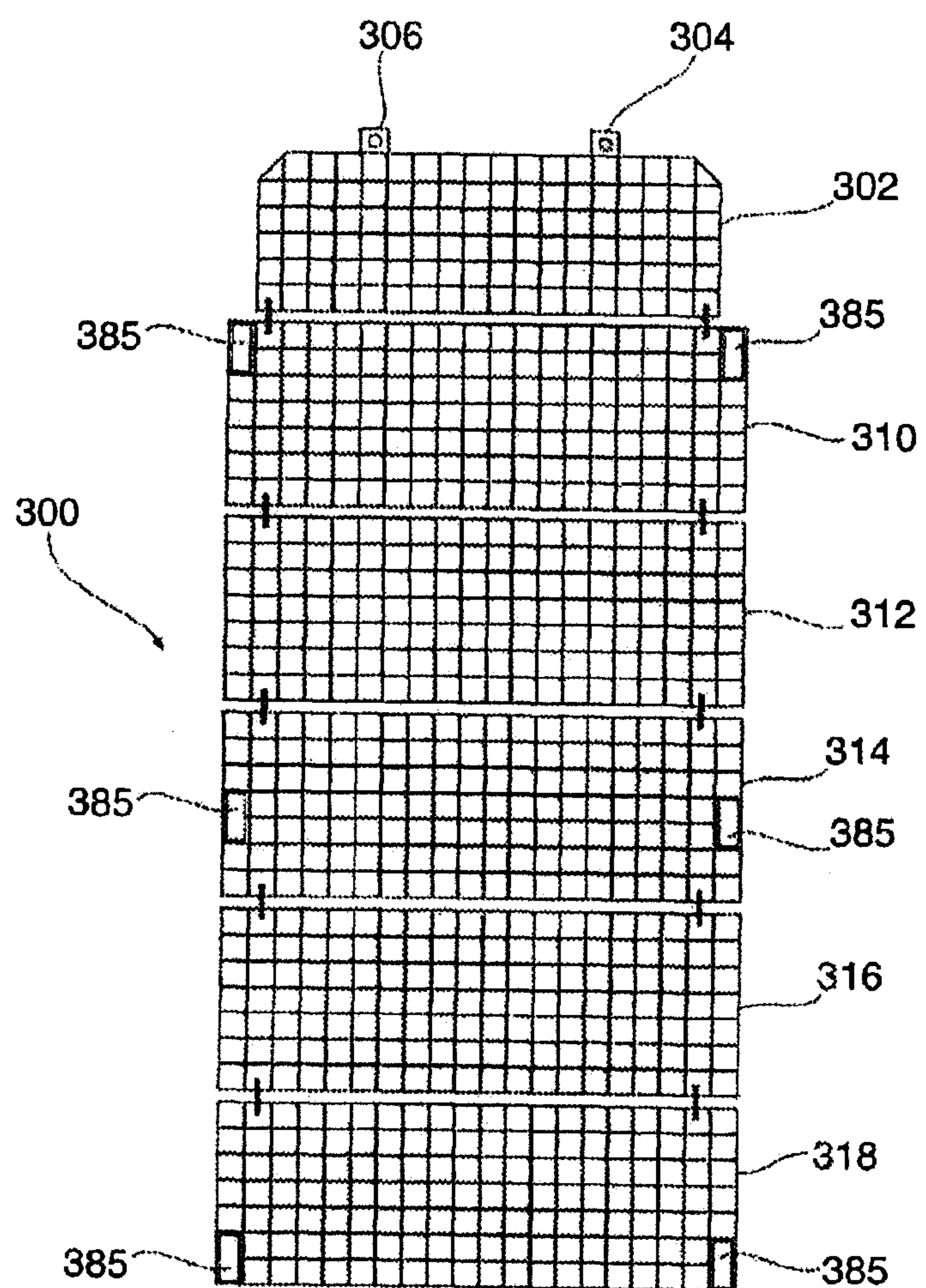


Fig. 8

Fig. 9



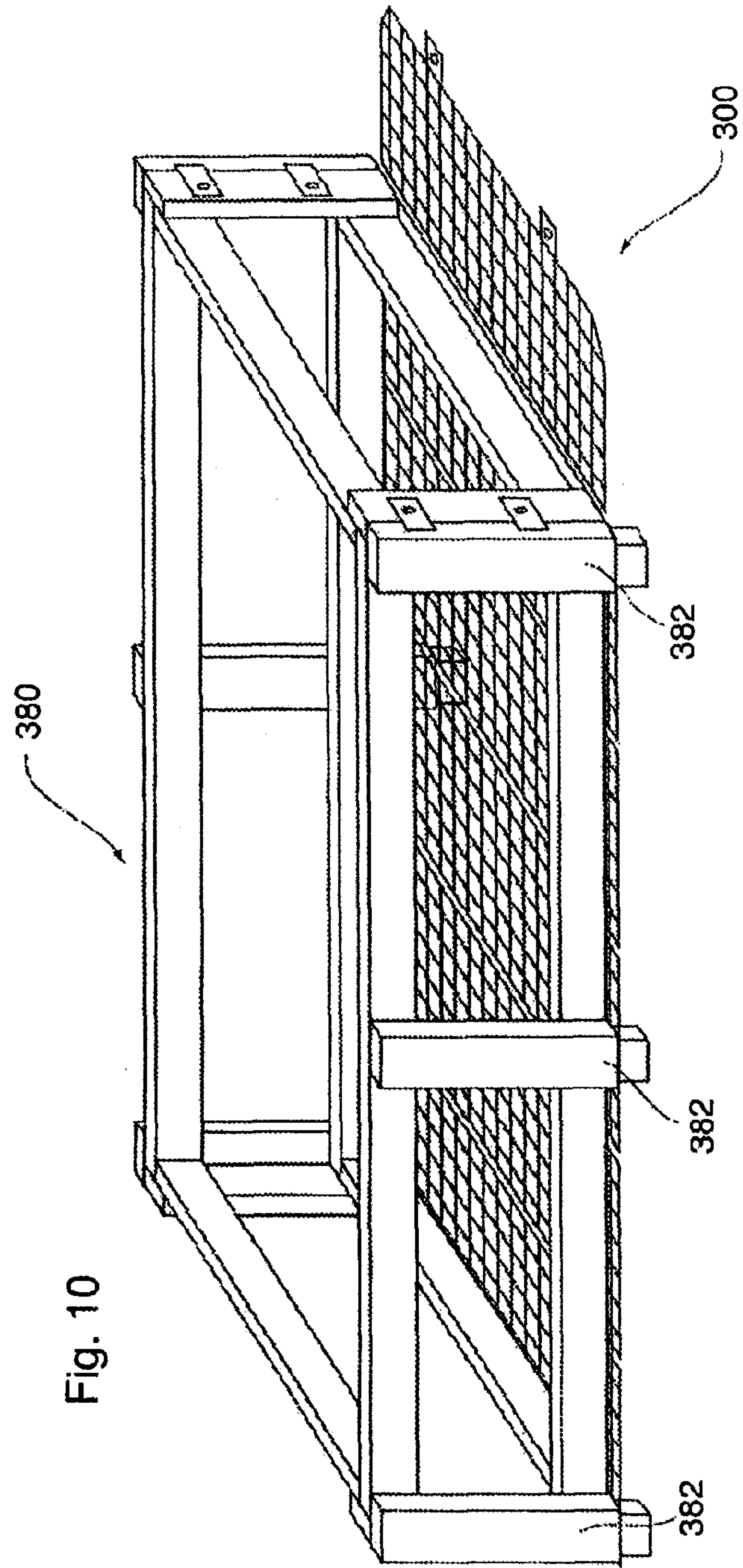


Fig. 10

Fig. 11

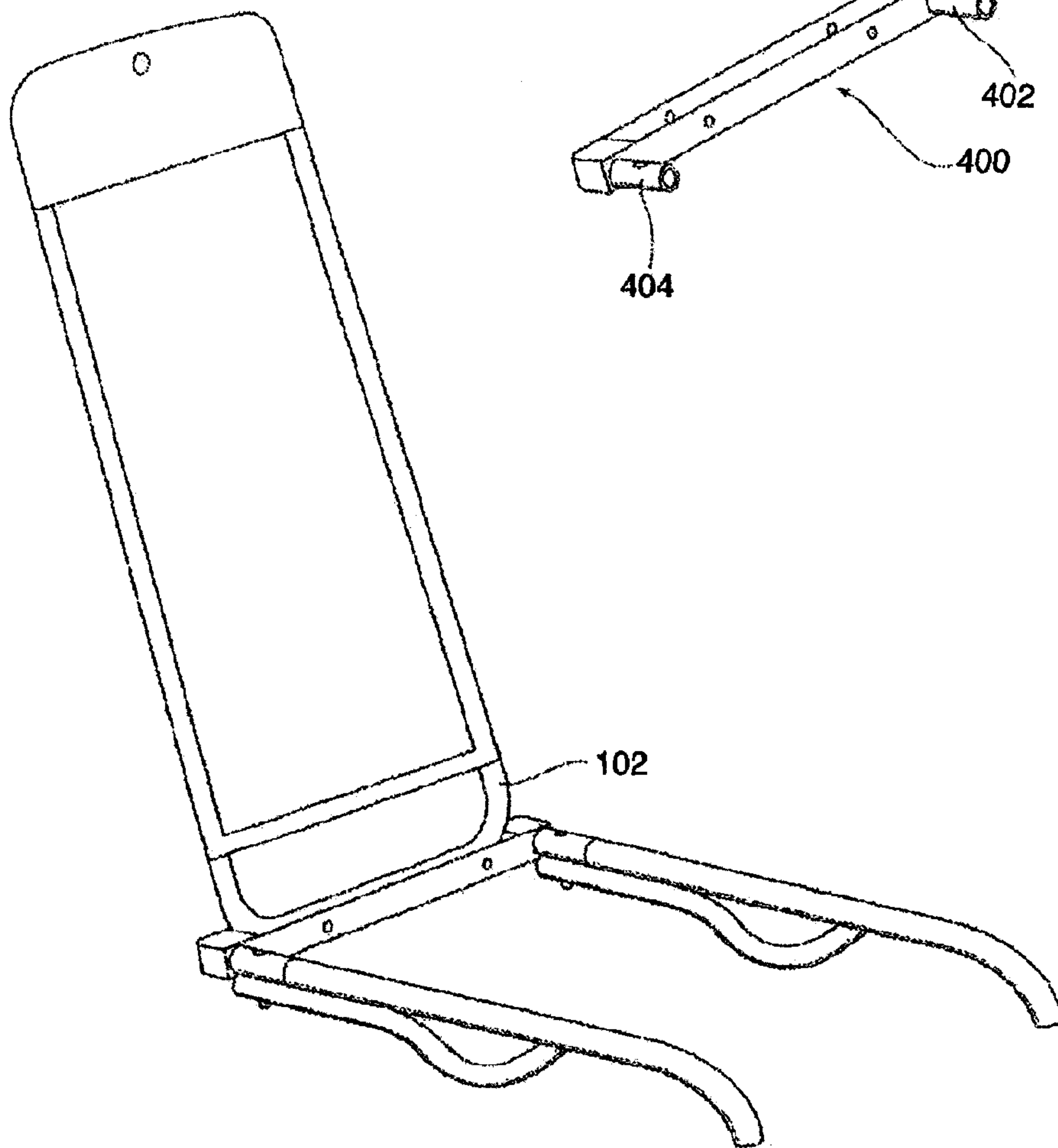


Fig. 12

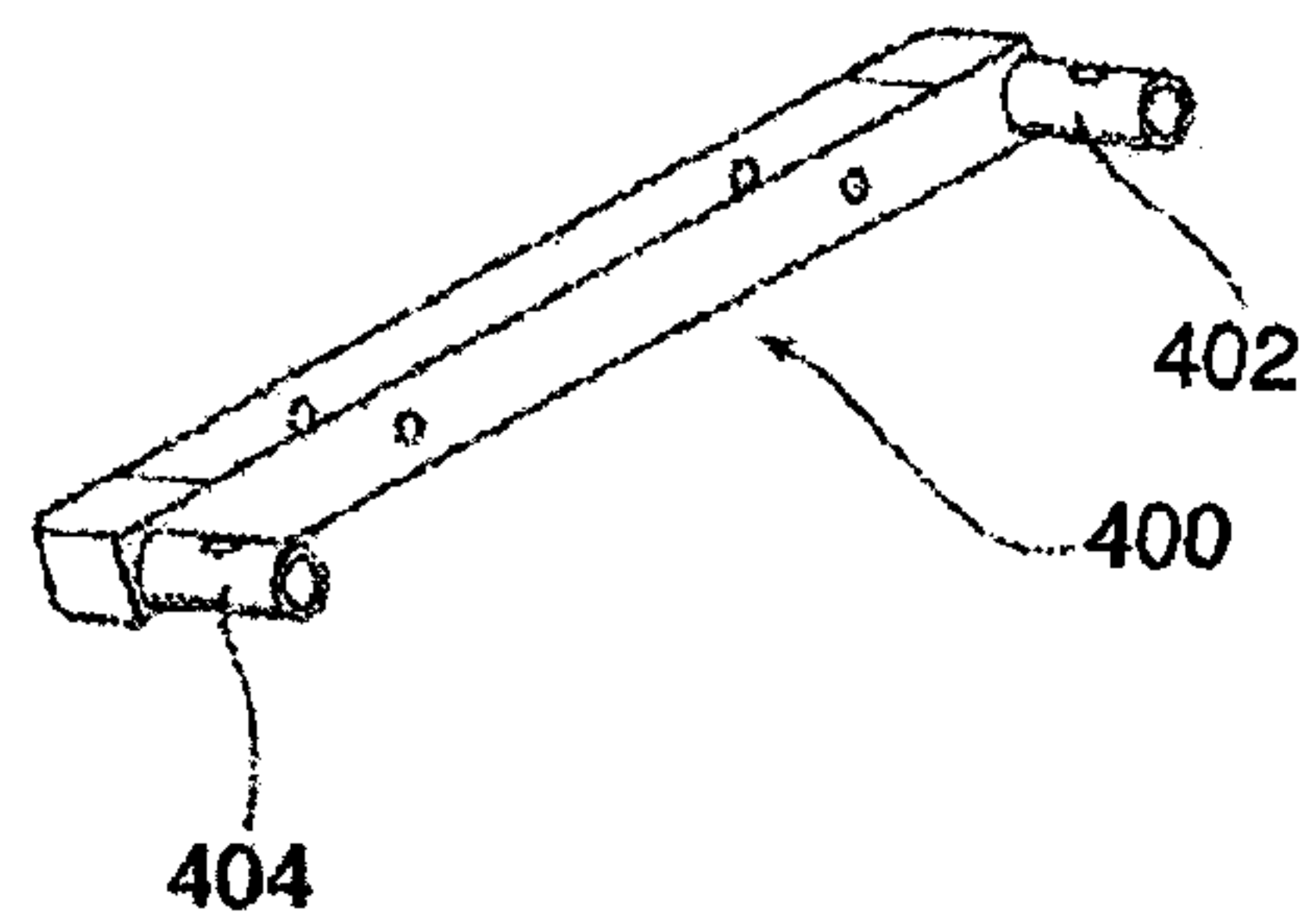
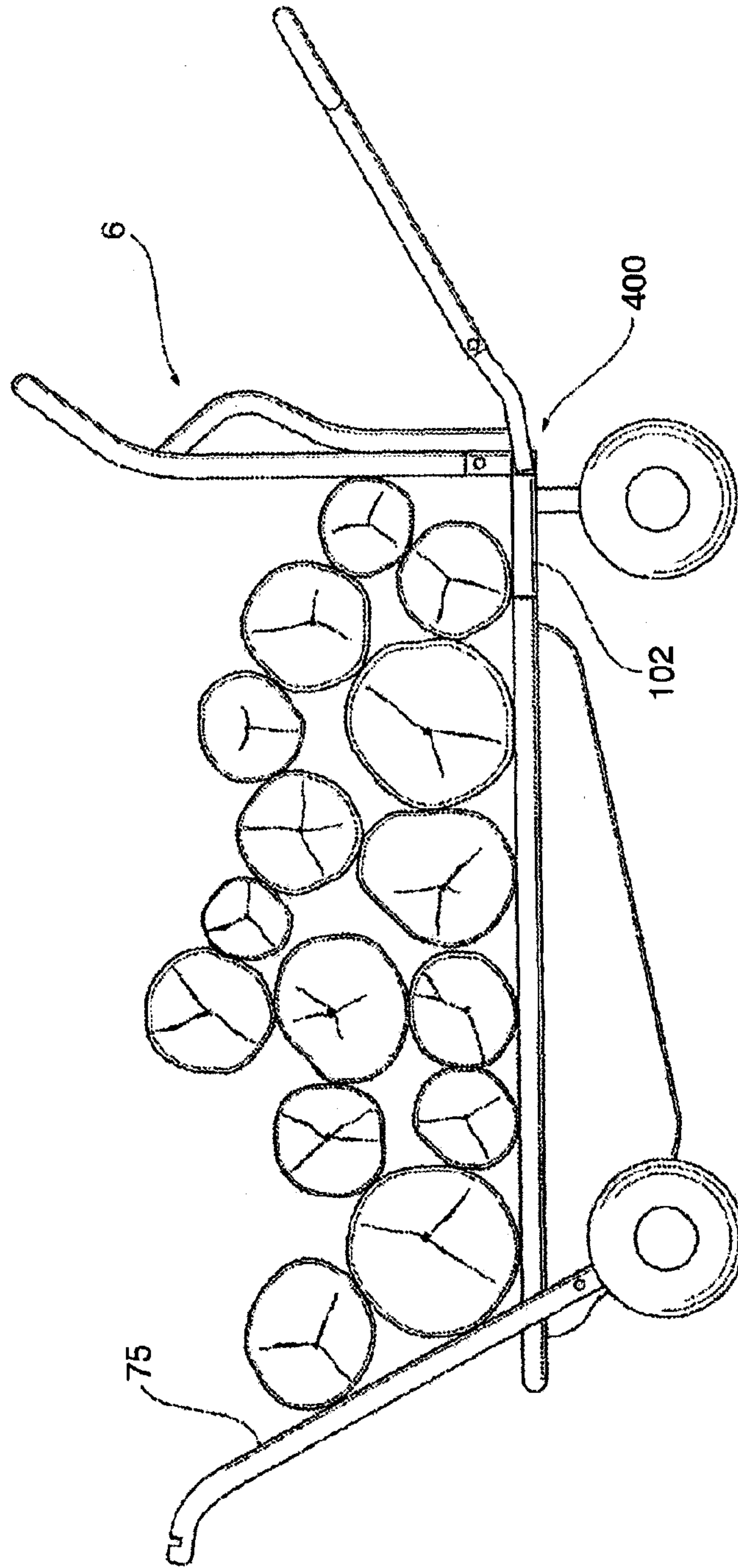


Fig. 13



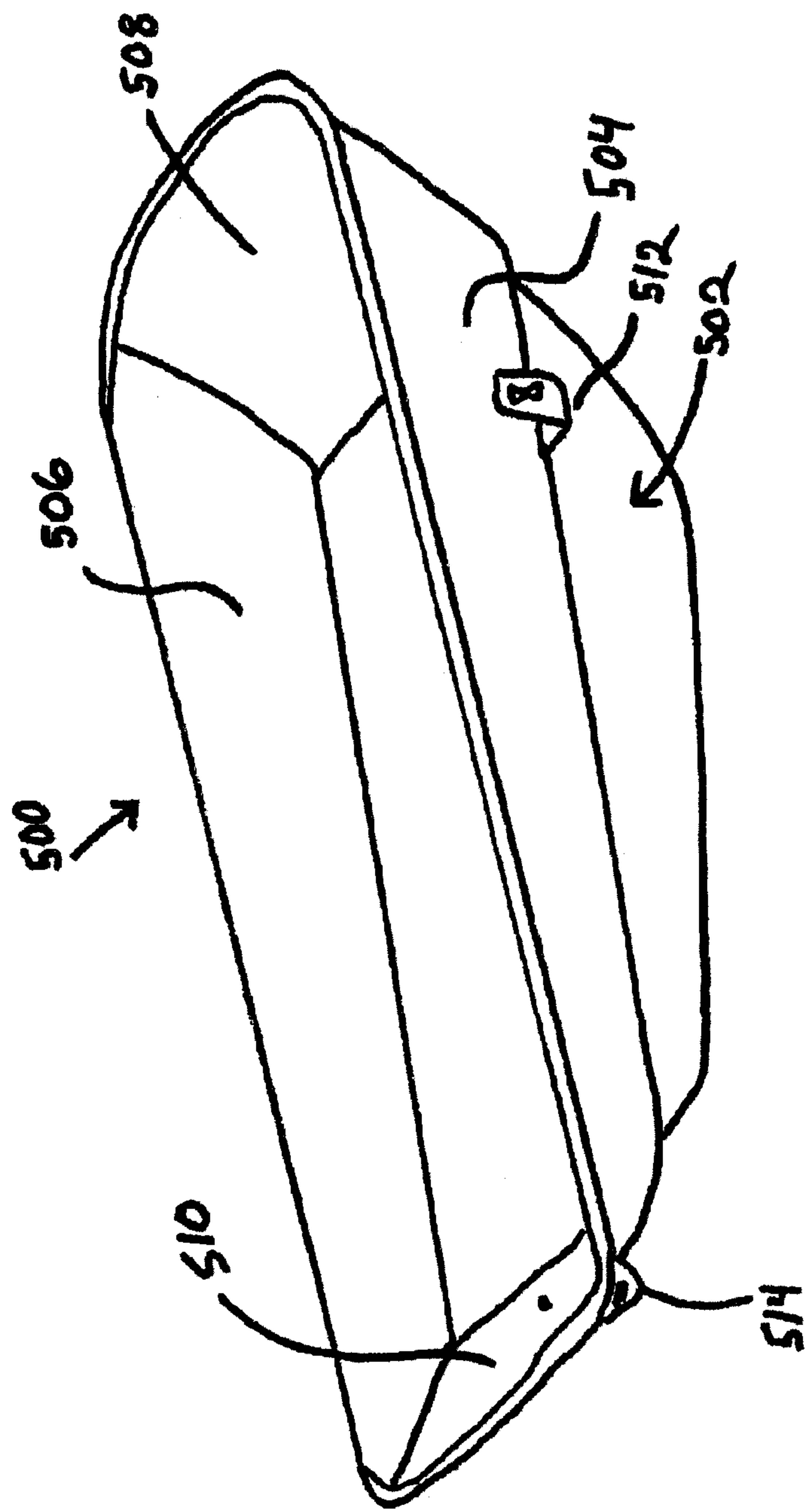


FIG. 14

