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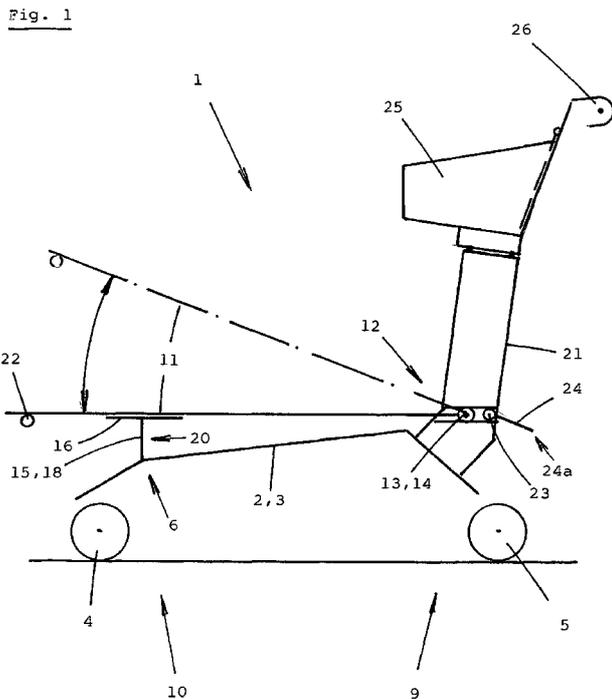
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[Fortsetzung auf der nächsten Seite]

(54) Title: MOBILE TRANSPORTING MEANS

(54) Bezeichnung : FAHRBARES TRANSPORTGERÄT



(57) Abstract: A manually movable transporting means (1) that is nestable with identical transporting means has a chassis (2) equipped with longitudinal members (3), said chassis carrying a loading and/or nesting device (11) which is mounted on the chassis (2) so as to be movable about respective horizontal axes (13) and rests on at least one support (15). A supporting element (22) is provided at the front end of the loading and/or nesting device (11) and at least one inclined deflector surface (24) is arranged in the rear region (9) of the transporting means (1), said deflector surface (24) dropping obliquely towards the rear and being designed to receive the supporting element (22) of a further identical transporting means (1) driven onto said surface, which means can be pushed into a transporting means (1) located in front. At least one clearance (20) is formed next to each support (15), wherein, as viewed in the horizontal view of the transporting means (1) and in the longitudinal direction thereof, each deflector surface (24) is pictured as being located in a clearance (20). When two transporting means (1) are nested, each deflector surface (24) of one transporting means (1) uses or takes up the clearance assigned to the deflector surface (24) of the other transporting means (1).

(57) Zusammenfassung:

[Fortsetzung auf der nächsten Seite]

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**Veröffentlicht:**

— mit internationalem Recherchenbericht (Artikel 21 Absatz 3)

— vor Ablauf der für Änderungen der Ansprüche geltenden Frist; Veröffentlichung wird wiederholt, falls Änderungen eingehen (Regel 48 Absatz 2 Buchstabe h)

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Ein von Hand bewegbares, mit gleichen Geräten stapelbares Transportgerät (1) weist ein mit Längsträgern (3) ausgestattetes Fahrgestell (2) auf, das eine Absteileinrichtung (11) trägt, welche um je eine horizontale Achse (13) bewegbar am Fahrgestell (2) gelagert ist und auf wenigstens einer Stütze (15) aufliegt. Am vorderen Ende der Absteileinrichtung (11) ist ein Abstützelement (22) vorgesehen und im hinteren Bereich (9) des Transportgerätes (1) ist wenigstens eine geneigte Prallfläche (24) angeordnet, die schräg nach hinten abfällt und zum Auffahren für das Abstützelement (22) eines weiteren gleichen Transportgerätes (1) bestimmt ist, das in ein vorausbefindliches Transportgerät (1) eingeschoben werden kann. Neben jeder Stütze (15) ist wenigstens ein Freiraum (20) gebildet, wobei sich in der horizontalen Ansicht des Transportgerätes (1) und entlang seiner Längsrichtung betrachtet jede Prallfläche (24) bildhaft in einem Freiraum (20) befindet. Beim Stapelvorgang zweier Transportgeräte (1) nutzt oder beansprucht jede Prallfläche (24) des einen Transportgerätes (1) den ihr zugeordneten Freiraum des anderen Transportgerätes (1).

**Mobile transporting means**

The invention relates to a mobile transportation apparatus which is nestable in a space-saving manner with like transportation apparatuses and has a chassis with longitudinal beams, which carries at least one storage installation for storing items, wherein each storage installation is mounted on the chassis so as to be movable in each case about a horizontal axis and bears on at least one support which is located on the chassis, and wherein at the front end of the storage installation at least one support element is provided and in the rear region of the transportation apparatus at least one inclined impact face which is downwardly inclined toward the rear and is specified for the at least one support element of a further like transportation apparatus, which may be pushed into a transportation apparatus located in front, to be run thereonto is disposed.

A transportation apparatus of this type is already known by way of a transportation cart which is described in document DE 82 14 932 U1. In order for transportation apparatuses of this type, equipped with a storage installation, to be able to be pushed into one another in a space-saving manner, that is to say to be nested, the chassis of said transportation apparatuses when viewed from above have a trapezoidal plan view, the longer parallel chassis frame side thereof missing. The storage installation which is designed as a load-carrying platform at the front has at least one support element. An impact face which is downwardly inclined toward the rear is disposed at the rear end of the transportation apparatus, so as to facilitate nesting. It cannot be derived from the document how the storage installation is supported on the chassis at the front. In the case of known transportation carts which have neither support elements nor impact faces, support elements which are

configured so as to be comparatively high and which support the storage installation on the chassis are located on the lower side of the storage installation. High support elements cause a large nesting spacing between two nested  
5 transportation apparatuses, which for reasons of space is not desirable.

A transportation apparatus in the preferred form of a shopping cart is described in document  
10 DE 20 2011 003 780 U1. This transportation apparatus also has a trapezoidal chassis, but this chassis is designed such that transportation apparatuses which are equipped with such chassis may be nested in a far tighter manner than has been previously possible. However, this transportation apparatus  
15 has neither a support element nor an impact face of the type described at the outset.

The same similarly applies to a transportation container according to document EP 1 775 193 A3. Also in the case of  
20 this transportation container neither impact faces nor support elements are provided for each storage installation.

It is desired, therefore, to alleviate one or more difficulties of the prior art, or to at least provide a  
25 useful alternative.

Embodiments of the present invention include a transportation apparatus of the type mentioned at the outset such that this transportation apparatus may be nested with a  
30 further like transportation apparatus in an extremely tight manner. Nesting spacings such as are possible in the case of transportation apparatuses according to DE 20 2011 003 70 U1 are targeted.

35 In accordance with the present invention, there is provided a first transportation apparatus which is nestable in a

space-saving manner with a second transportation apparatus that is identical to the first transportation apparatus, the first transportation apparatus includes a chassis with longitudinal beams, wherein upward running spars located in a rear section of the first transportation apparatus emanate from each longitudinal beam,

wherein a storage installation is mounted on the chassis so as to be movable relative to the chassis about a horizontal axis which is located in the rear section of the first transportation apparatus and bears on two upward running supports which are located on the chassis to form a free space between the two upward running supports,

wherein at least one support element is provided at a front end of the storage installation,

wherein the rear section of the first transportation apparatus includes at least one inclined impact face which is downwardly and rearwardly inclined and is specified for two support elements of the second transportation apparatus, wherein the first transportation apparatus is able to be pushed into the second transportation apparatus located in front of the first transportation apparatus, to be run thereonto,

wherein the free space starts at a transverse connection piece, which connects the longitudinal beams or the two upward running spars, and the free space vertically ends lower than a lower delimitation of the at least one inclined impact face, such that in a horizontal view of the first transportation apparatus and when viewed along the longitudinal direction, each inclined impact face of the first transportation apparatus is positioned so as to be plunged into a free space of the second transportation apparatus, such that during nesting of the first and second transportation apparatuses each inclined impact face of the

first transportation apparatus occupies the free space of the second transportation apparatus, and a front end of a storage installation of the second transportation apparatus is disposed between front and rear ends of the storage installation of the first transportation apparatus such that the storage installation of the second transportation apparatus is stacked upon the storage installation of the first transportation apparatus.

10 The decisive advantage of embodiments of the invention is evident, for example, when a transportation apparatus which is equipped with two supports is pushed into a like transportation apparatus which is located in front, so as to be able to store both transportation apparatuses in a nested and space-saving manner. When being pushed into one another, 15 the two supports of the transportation apparatus to be pushed in pass to the right and the left of the impact face of the transportation apparatus located in front. The clear spacing between the supports is larger than the width of the impact face, such that the impact faces and supports of the transportation apparatuses do not impede one another when 20 being pushed into one another. The impact face of the transportation apparatus located in front here utilizes the free space of the transportation apparatus to be pushed thereinto and thus permits that like transportation apparatuses may be nested in a space-saving manner in an even tighter manner than has been previously possible and without any mutual obstruction. The same advantages are gained when the at least one support and the impact faces 25 and the support elements are disposed in a different manner to what has just been described but in consideration of the proposed concept of the invention, as will be described hereunder. 30

Some embodiments of the present invention are hereinafter described, by way of example only, with reference to the accompanying drawings, wherein:

5 Fig. 1 shows a side view of a transportation apparatus in the form of a transportation cart, the storage installation of which is configured as a load-carrying platform;

10 Fig. 2 shows the same transportation apparatus in a view oriented in the longitudinal direction of the transportation cart;

Fig. 3 shows a side view of a transportation apparatus having three platform-type storage installations, and in outlines a further like transportation apparatus;

15 Fig. 4 shows a transverse piece having two supports and a downwardly extending free space; and

Fig. 5 shows a transverse piece having one support and two downwardly extending free spaces.

20 The same transportation apparatus 1 which is shown in a schematic illustration both in figs. 1 and 2 has a chassis 2. The chassis 2 has two longitudinal beams 3, for example, such as have been described in DE 20 2011 003 780 U1. Front and rear castors 4, 5 are disposed at the free ends of the  
25 longitudinal beams 3. The wheel track of the front castors 4 is smaller than the wheel track of the rear castors 5. The longitudinal beams 3 near the front castors 4 are connected by a transverse web 6. In the rear region 9 of the thus mobile transportation apparatus 1, and emanating from each  
30 longitudinal beam 3, in each case one spar 21 runs upward. The chassis 2 carries a storage installation 11 in the shape of a known load-carrying platform. In the rear region 9, the storage installation 11 is mounted on the chassis 2 so as to be movable about a horizontal axis 13. In the example, the  
35 hearings 14 which are specified for this purpose are located on the spars 21.

In the front region 10, the storage installation 11 bears on two supports 15 which are fastened to the chassis 2 and are upwardly oriented. Each support 15 has a horizontal bearing portion 16. The bearing portions 16 are disposed so as to be in mutually opposite directions and point outward toward the two longitudinal sides 7 of the transportation apparatus 1. Shock-absorbing sections 17 on which the storage installation 11 bears may be located on the bearing portions 16. The illustration drawn with dash-dotted lines clarifies the mobility of the storage installation 11. In a known manner, this mobility is required in order to be able to nest like transportation apparatuses 1. The supports 15, by way of their lower ends, are fastened in each case to one longitudinal beam 3, for example. However, said supports 15 may also be provided on the transverse web 6. The spaced-apart vertical portions 18 of the supports 15 may be connected by a transverse piece 19. As can be seen from the drawing, a free space 20, which in the exemplary embodiment commences at a transverse stay 23a and following the vertical direction terminates at the bottom at the transverse piece 19, is formed between the sections 18. At least one free space 20 is thus formed beside each support 15. The supports 15 are disposed so as to be symmetrical to the vertical central axis 8 of the transportation apparatus 1, this also applying to the following exemplary embodiments. Lying on the central axis 8, at least one support element 22 in the form of a roller which is rotatable about a horizontal axis or in the shape of at least one slider which is disposed in a locationally fixed manner is provided at the front end of the storage installation 11. This at least one support element 22 in the known manner serves for being driven onto an impact face 24 of a transportation apparatus 1 which is located in front when two transportation apparatuses 1 have to be pushed into one another in a space-saving

manner. The impact face 24 is located behind the rear end 12 of the storage installation 11. The impact face 24 points to the rear and is downwardly inclined. The impact face 24, of which there may also be two, in the example is fastened to the horizontal transverse stay 23a which, disposed so as to be spaced apart from the horizontal axis 13, connects either the two longitudinal beams 3 or the two spars 21. In the example, the two spars 21 carry a conical basket 25 which is intended for further goods, as is typical in the case of nestable shopping carts. Means 26, such as handles, which enable the transportation apparatus 1 to be manually moved, are provided on the basket 25. The transportation apparatus 1 may also be equipped without the basket 25. In this case, the spars 21 lead further up and at their ends carry the means 26 provided for moving the transportation apparatus 1. Given a corresponding design, the means 26 may also be formed by the spars 21 themselves. It can be derived from the selected view (front view) in the longitudinal direction of the transportation cart 1 according to fig. 2 that the at least one impact face 24 is visualized to be located between the two supports 15, that is to say beside each support 15 and thus in the free space 20. Each impact face 24 is thus visualized to be plunged into a free space 20. The clear spacing of the two supports 15, and thus also the width of the free space 20, here is larger than the measured horizontal width of the at least one impact face 24. The free space 20 is likewise designed to be so deep that there is no collision between the impact face 24 of the transportation apparatus 1 which is located in front and parts of the transportation apparatus 1 to be pushed in which are adjacent to the free space 20 thereof, when two transportation apparatuses 1 are being pushed into one another (cf. also fig. 4). The or each downwardly oriented free space 20 therefore in the vertical direction terminates lower down than the lower

delimitation 24a of the at least one impact face 24 (cf. also fig. 1 and fig. 4, dimension a). When transportation apparatuses 1 are pushed into one another, the two supports 15 of a transportation apparatus 1 to be pushed in thus also do not contact the at least one impact face 24 of the transportation apparatus 1 which is located in front. The impact face 24 of the transportation apparatus 1 which is located in front utilizes the free space 20 of the transportation apparatus 1 to be pushed in when the transportation apparatuses are being pushed into one another. The same applies in an analogous manner to the following exemplary embodiment. On account of these inventive measures it is possible for like transportation apparatuses 1 to be nested in an extremely tight manner, even when the storage installation 11 in the use position is disposed so as to be exactly horizontal, as is illustrated. In the nested state the storage installations 11 of the transportation apparatuses 1 stored in one row are raised in a known manner.

Fig. 3 shows a side view of a mobile transportation apparatus 1 which is likewise manually movable and in contrast to figs. 1 and 2 is equipped with more than one storage installation 11. In the example there are three storage installations 11 which are disposed on top of one another. Proceeding from the chassis 2 which is equipped with castors 3 and 4, two spars 21 in pairs extend vertically upward in the rear region 9, emanating from the two longitudinal sides 7 of the transportation apparatus 1. Means such as known handle portions for pushing or moving the transportation apparatus 1 are provided on the spars 21. In the exemplary embodiment each storage installation 11 is mounted so as to be pivotable about in each case one horizontal axis 13 at the rearmost of the two spars 21. Each storage installation 11 is supported on two

supports 15, located respectively on a transverse connection piece 23, wherein each transverse connection piece 23 connects the frontmost of the two spars 21 which are disposed in pairs. At the rear end 12 of each of the storage installations 11 in each case at least one impact face 24 which is downwardly inclined toward the rear is provided. Each storage installation 11 at its front end again has at least one support element 22, wherein each storage element 22, as has already been described in fig. 1 and fig. 2, is specified for driving onto an impact face 24 of a transportation apparatus 1 which is located in front when two transportation apparatuses 1 have to be pushed into one another in a space-saving manner.

15 A further like transportation apparatus 1 which has been pushed in a space-saving manner into the just described transportation apparatus, is illustrated with dotted-dashed lines. The minimum spacing of the two transportation apparatuses 1, which is established here, is identified by the letter A. On account of the formed free spaces 20, each transverse connection piece 23 by way of its supports 15 has undershot the rearwardly projecting impact faces 24 of the transportation apparatus 1 which is located in front (cf. figs. 4 and 5). On account thereof, it is possible to achieve extremely small nesting spacings having the dimension A. In contrast to the exemplary embodiment which has been described in figs. 1 and 2 and in which the supports 15 are located in the front region 10 and the horizontal axes 13 are located in the rear region 9, in the exemplary embodiment described here both the supports 15 as well as the horizontal axes 13 are disposed only in the rear region 9. In the example, the impact faces 24 of the transportation apparatus 1 which is located in front (on the left side of the drawing) claim the free spaces 20 of the transportation cart 1

which has been pushed in (cf. also the enlarged illustration).

Fig. 4 shows one of the three transverse connection  
5 pieces 23 (cf. fig. 3) on which the supports 15 are  
located. By means of the drawing the frontmost of the  
two spars 21 which are connected by the transverse  
connection piece 23, can be seen. The two supports 15  
are outlined. Each transverse connection piece 23 in  
10 the center is bent downward so that a downwardly  
extending free space 20 is formed on account of the  
resulting depth  $t$  and on account of the thickness of  
the transverse connection piece 23. The free space 20  
in the vertical direction terminates lower down than  
15 the lower delimitation 24a of the impact face 24 (see  
dimension  $a$  and fig. 5). The two supports 15 are  
separated by the downwardly extending free space 20. An  
impact face 24 of the transportation apparatus 1 is  
illustrated in a dotted-dashed manner. In relation to  
20 each transverse connection piece 23, at least one  
downwardly extending free space 20 is thus formed  
beside the two supports 15, wherein in the horizontal  
view of the transportation apparatus 1 along the  
longitudinal direction thereof the impact face 24 is  
25 visualized so as to be located between the supports 15  
and plunging into the free space 20 while claiming at  
least part of the free space 20. The transportation  
apparatus may also be equipped with two impact faces 24  
which then are also visualized to plunge into the free  
30 space 20.

In a modification of the achieved solutions previously  
shown, fig. 5 shows a transverse connection piece 23  
having only one support 15 which is located between or  
35 beside two free spaces 20. Two impact faces 24 and two  
support elements 22 are thus provided, wherein when  
viewed in the horizontal direction of the

transportation apparatus 1, each impact face 24 plunges into a free space 20.

5 The mobile transportation apparatuses 1 described above have preferably been described as carts which are manually movable. Notwithstanding, the invention also extends to all mobile transportation apparatuses 1 which have motive power, for example, and either lend a facilitating effect to the user of such transportation apparatuses 1, or are driven by 10 the user, or are equipped with corresponding steering means so as to be also suitable for autonomous driving.

It should also be mentioned that the at least one storage installation 11 need not necessarily be designed so as to be 15 of a platform type. The term storage installation 11 rather extends to all suitable and known installations on which items may be stored or may also be hooked onto rods or hooks. Two storage installations 11, for example configured as raisable rails, may also be disposed beside one another. 20

Throughout this specification and claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or 25 step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

The reference in this specification to any prior publication (or information derived from it), or to any matter which is 30 known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that that prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to which this specification relates. 35

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A first transportation apparatus which is nestable in a space-saving manner with a second transportation apparatus that is identical to the first transportation apparatus, the first transportation apparatus includes a chassis with longitudinal beams, wherein upward running spars located in a rear section of the first transportation apparatus emanate from each longitudinal beam,

wherein a storage installation is mounted on the chassis so as to be movable relative to the chassis about a horizontal axis which is located in the rear section of the first transportation apparatus and bears on two upward running supports which are located on the chassis to form a free space between the two upward running supports,

wherein at least one support element is provided at a front end of the storage installation,

wherein the rear section of the first transportation apparatus includes at least one inclined impact face which is downwardly and rearwardly inclined and is specified for two support elements of the second transportation apparatus, wherein the first transportation apparatus is able to be pushed into the second transportation apparatus located in front of the first transportation apparatus, to be run thereonto,

wherein the free space starts at a transverse connection piece, which connects the longitudinal beams or the two upward running spars, and the free space vertically ends lower than a lower delimitation of the at least one inclined impact face, such that in a horizontal view of the first transportation apparatus and when viewed along the longitudinal direction, each inclined impact face of the first transportation apparatus is positioned so as to be plunged into a free space of the second transportation apparatus, such that during nesting of the first and second transportation apparatuses each inclined impact face of the first transportation apparatus occupies the free space of

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the second transportation apparatus, and a front end of a storage installation of the second transportation apparatus is disposed between front and rear ends of the storage installation of the first transportation apparatus such that  
5 the storage installation of the second transportation apparatus is stacked upon the storage installation of the first transportation apparatus.

2. The first transportation apparatus as claimed in claim  
10 1, wherein the upward running supports are disposed so as to be symmetrical with each other about to a vertical central axis of the first transportation apparatus.

3. The first transportation apparatus as claimed in claim  
15 1, wherein the upward running supports are disposed either on the longitudinal beams or on a transverse web which connects the longitudinal beams.

4. The first transportation apparatus as claimed in claim  
20 1, wherein each upward running support has a bearing portion, the bearing portions extend laterally outward in opposite directions.

5. The first transportation apparatus as claimed in claim  
25 4, wherein each bearing portion is equipped with an elastic and shock-absorbing section and the storage installation bears on the shock-absorbing sections.

6. The first transportation apparatus as claimed in claim  
30 1, wherein the at least one impact face is fastened to a transverse stay which connects either the longitudinal beams or the upward running spars.

7. The first transportation apparatus as claimed in claim  
35 1, wherein the at least one impact face is disposed at a rear end of the at least one storage installation.

8. The first transportation apparatus as claimed in claim 1, wherein the storage installation is disposed so as to be horizontal.

5 9. The first transportation apparatus as claimed in claim 1, wherein the at least one inclined impact face is located at the transverse connection piece.

10 10. The first transportation apparatus as claimed in claim 1, further comprising at least one additional storage installation, which is mounted on the chassis so as to be movable about a horizontal axis and which bears on at least two additional upward running supports to form an additional free space between each additional two supports.

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Fig. 2

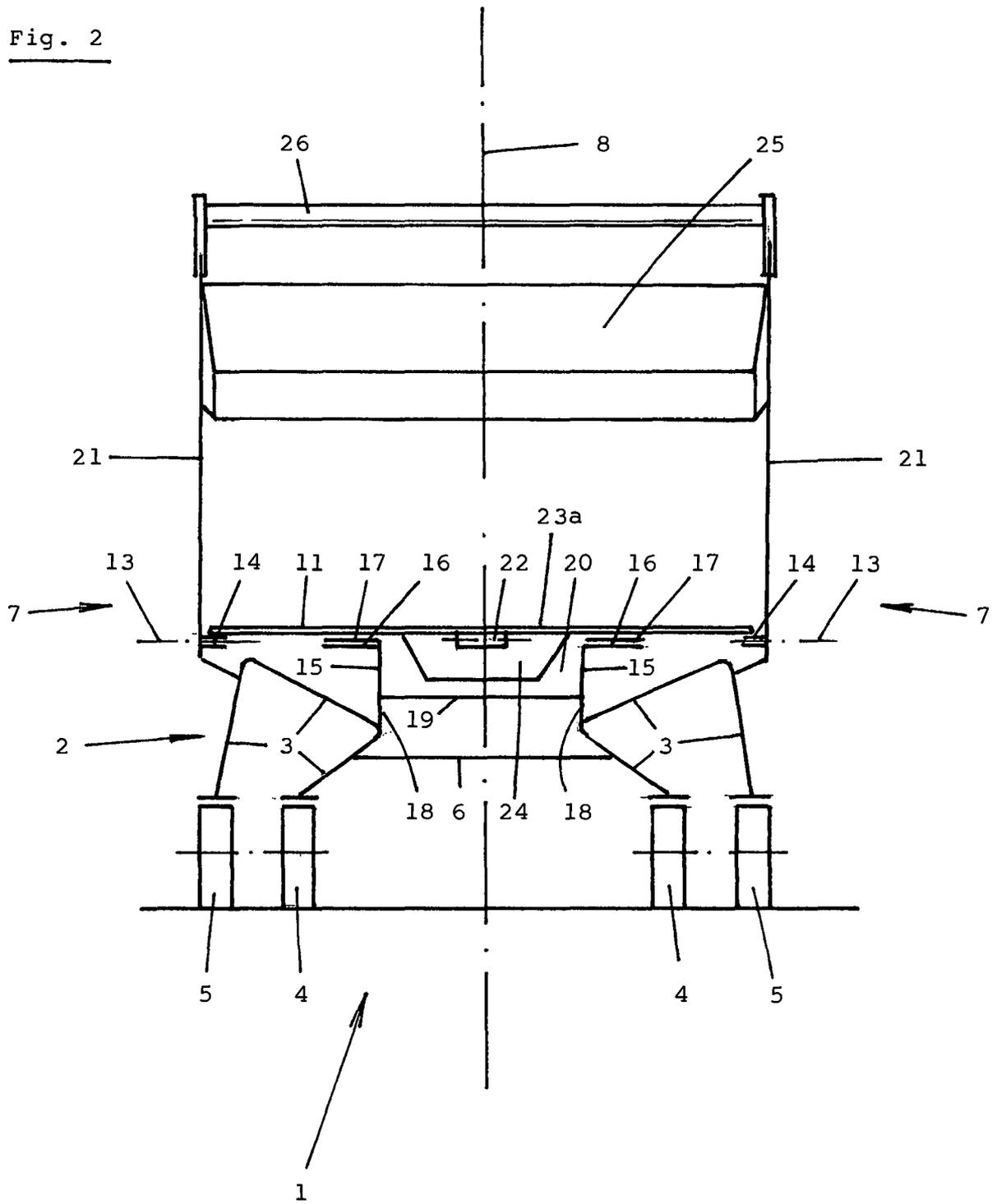


Fig. 3

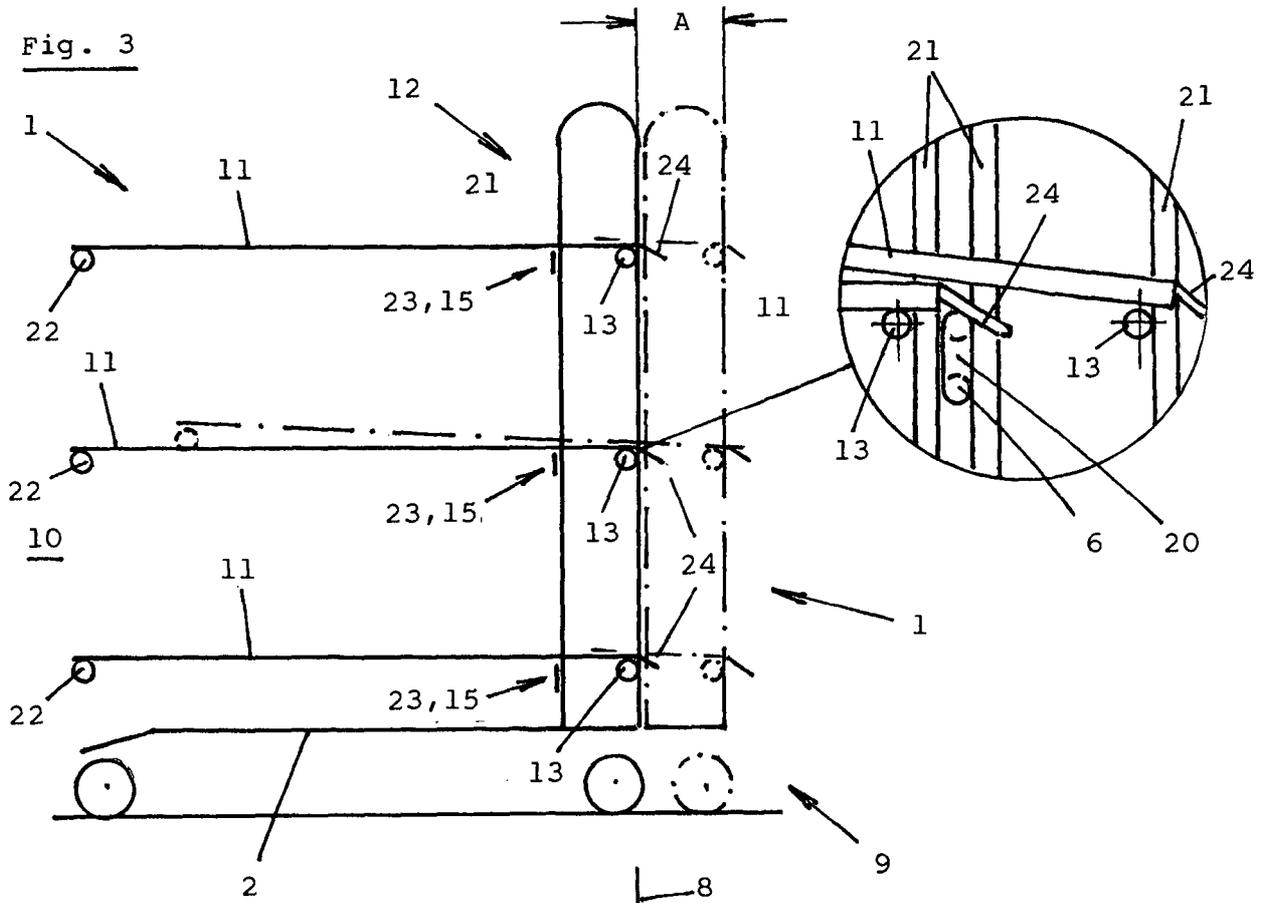


Fig. 4

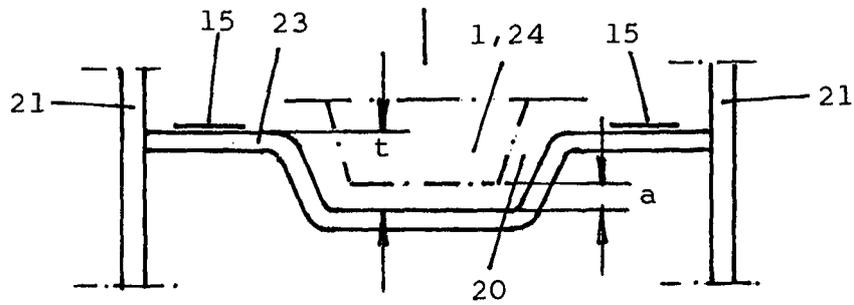


Fig. 5

