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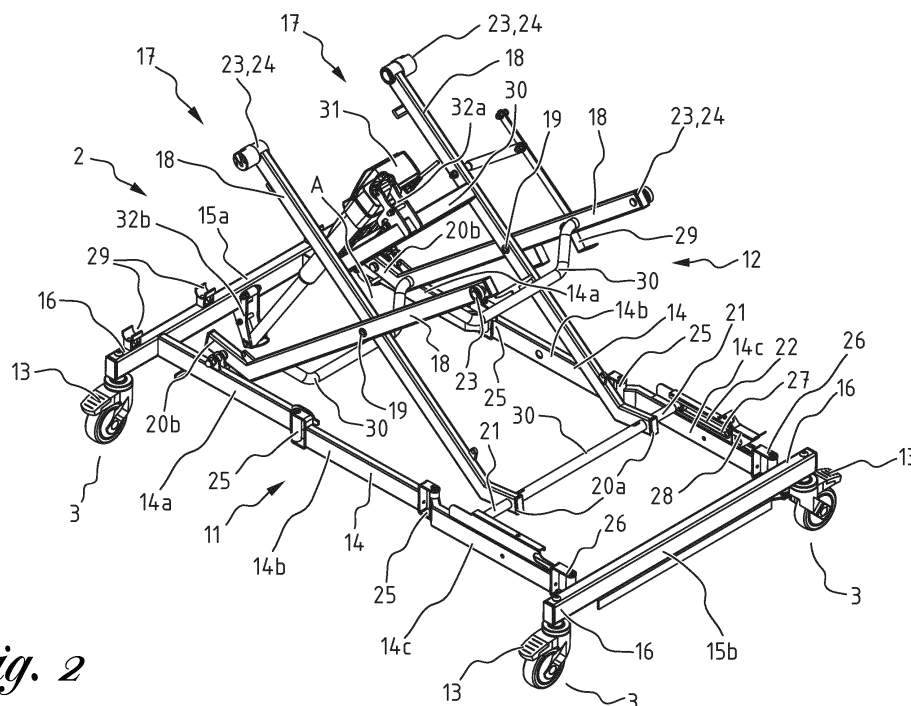
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(54) UNDERCARRIAGE FOR A HOME CARE BED

(57) Undercarriage for a home care bed (1) which comprises a base frame (11) with four wheels (3) with a scissor mechanism (12) mounted thereon, whereby the base frame (11) substantially comprises four sides (14, 15a, 15b), i.e. two longitudinal sides (14) and a headboard side (15a) and footboard side (15b), whereby each longitudinal side (14) comprises two central hinges (25)

which subdivide the longitudinal side (14) into three pieces (14a, 14b, 14c), and one side hinge (26) which connects one end of the longitudinal side (14, 14c) to the headboard side (15a) or the footboard side (15b), whereby the pieces (14a, 14b, 14c) hinge horizontally, i.e. in the plane of the base frame (11).

*Fig. 2***EP 4 681 693 A1**

Description

[0001] The present invention relates to an undercarriage for a home care bed.

[0002] In particular, the invention is intended for people who, due to an illness or accident, are temporarily or permanently unable to sleep in their regular bed.

[0003] This could be because the patient is no longer able to go to their bedroom on an upper or lower floor of their home or because their regular bed is not suited to the needs and care they temporarily or permanently need.

[0004] It is known that home care beds exist that can be temporarily placed on the ground floor of the patient's home to remedy the aforementioned problems.

[0005] The known home care beds consist of an undercarriage with four wheels on which a bed base can be mounted. The mattress is laid on the bed base.

[0006] The undercarriage comprises a base frame on which a scissor mechanism is mounted.

[0007] Through the operation of the scissor mechanism, the home care bed is height-adjustable such that the bed base can be moved up or down.

[0008] Said home care beds can additionally be provided with bed guards or side rails and a trapeze bar or pull up bar. Moreover, they can be tiltable or set in a seat position.

[0009] Said home care beds are temporarily leased by the patient from a home care store or other loan service, for example.

[0010] To simplify the transport of the home care beds between the patient's home and the loan service, such home care beds are collapsible or foldable. It is important that collapsing or folding out the bed can be done simply and preferably by one person.

[0011] In addition, special trolleys or carts are provided with which a collapsed or folded home care bed can be easily transported.

[0012] A disadvantage of such trolleys or carts is that said trolleys or carts need to be stored in the patient's home or taken back to the loan service.

[0013] Not only do they take up extra space, it also requires follow-up and planning of the location of the trolleys.

[0014] Home care beds also already exist whereby the trolleys are mounted to the bed.

[0015] This has the advantage that each bed has a trolley and that no inventory or follow-up of separate trolleys is required.

[0016] A disadvantage is of course that the home care bed is heavier and comprises more moving parts. Indeed, apart from the four wheels of the base frame, another two or four extra wheels are provided for the trolley.

[0017] EP2116217A1 describes such home care bed with extra wheels. The base frame comprises two sets of wheels (11,16). A front frame 5, which has an extra wheel 12, is mounted to the base frame. The bed frame hinges up vertically and rests on the front frame and the wheels (11,12). The front frame thus forms a type of trolley via the

wheels of the front frame.

[0018] Upon use of the home care bed, said extra wheels are often in the way for a passenger lift or separate trapeze bar or the like.

[0019] Said extra wheels also constitute additional components that require maintenance and can fail.

[0020] A disadvantage is also that when folding the bed, the full length (or height) of the base frame ends up in a vertical position, like in EP2116217A1, such that the assembly becomes very high and more difficult to handle and store.

[0021] The purpose of the present invention is to provide a solution to at least one of the aforementioned and other disadvantages.

[0022] The object of the present invention is an undercarriage for a home care bed, on which a bed base can be mounted, said undercarriage comprising a base frame with four wheels with a scissor mechanism mounted thereon,

whereby the base frame substantially comprises four sides, i.e. two longitudinal sides and a headboard side and footboard side, whereby the four wheels are provided near the corners of the base frame, whereby the scissor mechanism comprises two pairs of crossed rods which are hingedly attached to each other, whereby each pair is connected to the base frame at a first end of each rod, and at a second end is provided with coupling means to mount a bed base, whereby each longitudinal side comprises two central hinges which subdivide the longitudinal side into three pieces, and one side hinge which connects an end of the longitudinal side to the headboard side or the footboard side, whereby the pieces hinge horizontally, i.e. in the plane of the base frame, all this such that by folding together the three pieces, the headboard side and the footboard side move towards each other.

[0023] The undercarriage comprises means to move the aforementioned headboard side and footboard side towards each other from a use position so as to bring the aforementioned wheels closer to each other into a folded position, whereby the scissor mechanism is also folded together and put upright to allow the undercarriage to be moved in this folded position, using the aforementioned four wheels.

[0024] The longitudinal sides of the undercarriage correspond with the long sides of the bed or the bed base.

[0025] The headboard side and footboard side of the undercarriage correspond with the short sides of the bed or the bed base, the footboard and headboard of the bed.

[0026] 'Use position' is understood to mean the condition of the undercarriage in which it can be used by a patient in combination with a bed base, mattress and the like.

[0027] This means that the distance between the headboard side and footboard side of the undercarriage is at its maximum and corresponds with the length of the longitudinal sides.

[0028] 'Folded position' is understood to mean here

that the undercarriage is folded, whereby the headboard side and the footboard side lie closer to each other, such that the four wheels are also located closer to each other. In this position the scissor mechanism will be folded together and oriented upright, such that the folded undercarriage can be moved easily, using the four wheels.

[0029] An advantage is that the four wheels of the bed itself can be used to transport or move the undercarriage in folded condition in the form of a trolley.

[0030] Consequently, not only does a separate trolley not need to be provided, no extra components to the undercarriage need to be provided either.

[0031] Indeed, instead of providing the trolley separately or integrating it with the undercarriage, it is ensured that the undercarriage can itself be adapted into the trolley.

[0032] The aforementioned means can be realised in different ways.

[0033] A first preferred possibility is that the aforementioned means are formed by two central hinges in each longitudinal side of the undercarriage, which allow the longitudinal side to be folded into three pieces, and one side hinge per longitudinal side, which connects an end of the longitudinal side to the headboard side or the footboard side, all this such that by folding the three pieces of each longitudinal side together, the headboard side and footboard side move towards each other.

[0034] When folding the three pieces, through the operation of the central hinge located in the middle, the longitudinal side will bend outwardly as it were, such that the two pieces connecting said central hinge, come to lie against each other and subsequently are folded against the third piece of the longitudinal side.

[0035] A second preferred possibility is that the aforementioned means comprise longitudinal sides made from two end pieces with a middle piece in between, whereby one end piece is detachably connected to the middle piece with a detachable coupling and the other end piece is hingedly connected to the middle piece with a hinge, all this such that by detaching the detachable couplings and putting upright the middle pieces by operation of the hinges, the headboard side and the footboard side move towards each other.

[0036] In both options the longitudinal sides of the base frame are thus shortened or reduced in one way or the other, which subsequently allows the headboard side and footboard side to be moved towards each other.

[0037] Indeed, the longitudinal sides of the base frame can be subdivided into various pieces which are divisible and/or foldable and/or retractable, such that by dividing and/or folding and/or retracting longitudinal sides, the headboard side and footboard side can move towards each other. The longitudinal sides being "subdivided" may imply their being subdivided into separate pieces that can hinge relative to each other, can be detached from each other or for example can also be slid into each other. Indeed, telescopically made longitudinal sides also achieve the intended result.

[0038] Using the means, the headboard side and footboard side can be moved towards each other. An advantage of this is that the full length of the base frame is subdivided such that, particularly in the second option, when putting the base frame upright, the assembly is less high.

[0039] Moreover, for the aforementioned options, the means can be handled by one person and one person alone. Manipulating the means from the folded position to the use position and vice versa can be done by one person, which hugely simplifies the use.

[0040] For the aforementioned first option, preferably the first end of the rods, which is located near the aforementioned corner hinges, is detachably connected to the base frame. When folding the three pieces of the longitudinal sides, this will allow the pieces of the longitudinal sides located on the corner hinges to hinge outwardly, such that the three pieces can be folded together.

[0041] It is clear that other embodiments of the means are also possible, such as for example making the longitudinal sides telescopic. Indeed, this too results in the longitudinal side being subdivided and able to be shortened by the telescopic operation.

[0042] The invention also relates to a home care bed that is provided with an undercarriage according to the invention.

[0043] The advantages of a home care bed according to the invention are of course similar to the aforementioned advantages of the undercarriage according to the invention.

[0044] With the intention of better showing the characteristics of the invention, a few preferred embodiments of an undercarriage for a home care bed according to the invention are described hereinafter by way of an example, without any limiting nature, with reference to the accompanying drawings, wherein:

figures 1a and 1b show a home care bed according to the invention, in a use position and a folded position respectively;

figures 2 to 4 schematically show a perspective view of a first embodiment of an undercarriage according to the invention;

figure 5 shows a variant of the embodiment from figures 1 to 3;

figures 6 to 8 show a second embodiment of an undercarriage according to the invention.

[0045] Figure 1 schematically shows a home care bed 1 according to the invention.

[0046] The home care bed 1 essentially comprises an undercarriage 2 according to the invention with four wheels 3, with a bed base 4 mounted thereon.

[0047] In this case, the bed base 4 comprises a slatted base 5, a headboard 6 and footboard 7.

[0048] It is not excluded that side rails 8 or bed guards 8 are also provided on the sides of the bed base 4, such that the patient lying in the home care bed 1, cannot acciden-

tally fall out of the home care bed 1. A trapeze bar 9 or pull up bar 9 can also be provided.

[0049] On the slatted base 5 of the bed base 4, as is well known, the mattress is provided with sheets, blankets and pillows, as desired.

[0050] Figure 1b shows the same home care bed 1, but in a folded position.

[0051] According to the invention, the wheels 3 of the undercarriage 2 can be brought together and the undercarriage 2 can be folded such that a trolley 10 can be created as it were. Provisions are present on the undercarriage 2 which allow the different components of the bed base 4 to be attached to said trolley 10 such that a compact and easy to move assembly is formed.

[0052] As such the invention relates to an undercarriage that in folded condition forms a trolley that can be transported on the four wheels of the base frame.

[0053] By way of an example, in figure 1b not only the slatted base 5 and headboard 6 and footboard 7 of the bed base 4 are mounted on the trolley 10, but also bed guards 8 and a pull up bar 9. The slatted base 5 is also subdivided into two pieces, to obtain a more compact, i.e. less high, assembly in the folded position.

[0054] In what follows a detailed explanation will be provided as to how the undercarriage 2 can be made to allow said folded position or condition to be obtained.

[0055] Figure 2 schematically shows an undercarriage 2 for a home care bed 1 according to the invention.

[0056] The bed base 4 can be mounted on this undercarriage 2, as shown in figure 1a.

[0057] The undercarriage 2 essentially comprises a base frame 11 with four wheels 3 with a scissor mechanism 12 mounted thereon.

[0058] Using the four wheels 3, the home care bed 1 can be moved. It is possible that one or more of said wheels 3 are provided with a blocking mechanism 13 or brake 13 that prevent the wheels 3 from rolling over the floor.

[0059] The base frame 11 essentially comprises four sides 14, 15, more specifically, two long sides, in what follows referred to as the longitudinal sides 14 and two shorter sides, in what follows referred to as the headboard side 15a and the footboard side 15b.

[0060] The headboard side 15a corresponds with the headboard 6 of the home care bed 1 and the footboard side 15b corresponds with the footboard 7 of the home care bed 1.

[0061] In what follows, the headboard side 15a and footboard side 15b are interchangeable in principle, provided that this happens consistently, unless otherwise indicated.

[0062] The aforementioned wheels 3 are located near the corners of the base frame 11.

[0063] Figure 2 shows that both ends of the headboard side 15a and footboard side 15b are provided with an extension 16 that protrudes beyond the longitudinal sides 14 and that the wheels 3 are provided on these extensions 16. The wider base improves the stability of the

undercarriage and the bed. This is of course just one possible embodiment. It is possible, for example, to provide the wheels 3 near the headboard side 15a or footboard side 15b at the longitudinal side 14 of the base frame 11 instead of at the headboard side 15a or footboard side 15b.

[0064] A scissor mechanism 12 is mounted on the base frame 11 which according to the invention comprises two pairs 17 of crossed rods 18.

[0065] The rods 18 are hingedly attached to each other to form two pairs of 17 crossed rods 18. In this case they are hingedly attached on the level of their middle 19. The angle A that the two crossed rods 18 make relative to each other can be modified by means of the hinge 19.

[0066] According to the invention, each pair 17 of crossed rods 18 is connected to the base frame 11 with a first end 20a, 20b of each rod 18

[0067] In this case, the first ends 20a, 20b are connected to the longitudinal sides 14. The first ends 20a, 20b of one pair 17 of crossed rods 18 are connected to one of the longitudinal sides 14, and the first ends 20a, 20b of the other pair 17 of crossed rods 18 are connected to the other longitudinal side 14. In other words, each pair 17 of crossed rods 18 is connected to one longitudinal side 14.

[0068] One of the aforementioned first ends 20b is rotatably connected to the longitudinal side 14 of the base frame 11.

[0069] In this example, but not necessarily, for each pair 17 of crossed rods 18, one of the aforementioned first ends 20a is slideably connected to the longitudinal side 14 of the base frame 11.

[0070] This allows the rods 18 to be hinged relative to each other by sliding said first ends 20a, such that the angle A between the rods 18 changes, and consequently allows the height of a bed base 4 that is mounted on the undercarriage 2 to be changed.

[0071] It is understood that to be able to efficiently set the height of the bed base 4, preferably these aforementioned first ends 20a are located near the same short side of the base frame 11, i.e. both near the headboard side 15a or near the footboard side 15b of the base frame 11.

[0072] To realise this slideable connection, the aforementioned first ends 20a are provided with a protruding tab 21 which, can slide into a groove 22 provided to that end, in the longitudinal sides of the base frame.

[0073] It is not excluded that blocking means are provided to be able to secure the tabs 21 in a desired position in the groove 22 to thus block the scissor mechanism 12 and secure the home care bed 1 at the desired height.

[0074] The second end 23 of one or more of the rods 18 comprises coupling means 24 to be able to mount or attach a bed base 4 thereon. It is clear that said coupling means 24 can be made in different ways.

[0075] In this figure 2 the undercarriage 2 is shown in the so-called use position.

[0076] The undercarriage 2 is located in a completely 'folded out' or opened condition, whereby a bed base 4

can be mounted thereon. Or, in other words, the undercarriage 2 can be used with a bed base 4 as a home care bed 1.

[0077] Figure 4 shows the undercarriage 2 in the so-called folded position.

[0078] The undercarriage 2 is folded into a compact assembly, whereby the four wheels 3 have come closer towards each other because the headboard side 6 and footboard side 7 have been brought to each other and thus are located closer to each other relative to the use position in figure 2 and the scissor mechanism 12 is folded shut and standing upright. In said position the undercarriage 2 can be used as a trolley 10, as will be explained below.

[0079] To this end, the undercarriage 2 according to the invention comprises means to move the aforementioned headboard side 6 and footboard side 7 towards each other from a use position so as to move the aforementioned wheels 3 closer to each other into a folded position, whereby the scissor mechanism 12 is also folded together and put upright to allow moving the undercarriage 2 in this folded position, using the aforementioned four wheels 3.

[0080] In the specific case of figures 2 to 4, said means are formed by two central hinges 25 in each longitudinal side 14 of the undercarriage and one side hinge 26 per longitudinal side 14.

[0081] The two central hinges 25 subdivide each longitudinal side 14 into three pieces 14a, 14b, 14c as it were and allow the longitudinal side 14 to be folded into three pieces 14a, 14b, 14c.

[0082] In this example the longitudinal side 14 is subdivided into three practically equal pieces 14a, 14b, 14c. The three pieces 14a, 14b, 14c are configured such that the pieces, in folded condition, extend between both ends 15a, 15b of the base frame 11. Consequently, the distance between the headboard side 15a and the footboard side 15b is minimal. The undercarriage is folded at its most compact.

[0083] The side hinges 26, located at the end of the longitudinal side 14, hingeably connect said end of the longitudinal side 14 to the headboard side 15a or the footboard side 15b.

[0084] In this case the side hinges 26 are located along the same side as where the aforementioned first ends 20a of the rods 18 are slideable in the grooves 22. In other words: the grooves 22 are located near the side hinges 26.

[0085] The hinges 25, 26 are configured such that by folding the three pieces 14a, 14b, 14c of each longitudinal side 14 against each other, the headboard side 15a and footboard side 15b move towards each other.

[0086] Through the operation of the hinges 25, 26, the pieces 14a, 14b, 14c of the longitudinal sides 14 hinge horizontally, i.e. in the plane of the base frame 11.

[0087] The operation of the mechanism is shown in figure 3, whereby the undercarriage 2 is shown in a condition at a point from the movement of the use position

to the folded position.

[0088] As shown in figure 3, in this case, but not necessarily for the invention, the first ends 20a of the rods 18 that are slideably connected to the longitudinal sides 14 and located near the aforementioned side hinges 26, are detached from the base frame 11.

[0089] Indeed, the first end 20a of the rods 18, located near the aforementioned side hinges 26, are detachably connected to the base frame 11.

[0090] In this case this is realised by providing the aforementioned grooves 22, in which said first ends 20a are applied with their tab 21, with an opening 27 from which the tabs 21 can be taken out of the grooves 22.

[0091] By partially detaching the scissor mechanism 12 from the base frame 11 in this way, the intended movement of the three pieces 14a, 14b, 14c of the longitudinal sides 14 is made possible.

[0092] As shown in figure 3, during this movement by moving the headboard side 15a and the footboard side 15b towards each other, the two pieces 14c of the longitudinal sides 14 bordering the side hinges 26 move away from each other, and in this way also take the middle pieces 14b of the longitudinal side 14 along with them, such that two outwardly facing pivots are formed in the longitudinal sides 14, defined by the middle hinge, i.e. the central hinge 25 located next to the side hinge 26.

[0093] By moving the headboard side 15a and the footboard side 15b even closer towards each other, the three pieces 14a, 14b, 14c of the longitudinal sides 14 will be folded further, until they are completely folded against each other in the folded position, whereby the scissor mechanism 12 is also folded shut and put upright, as shown in figure 4.

[0094] Said movements can be easily done by one person.

[0095] Note that in folded condition the height of the trolley is not determined by the height/length of the base frame, like in the known home care bed of EP2116217A1. In folded condition the base frame remains parallel with the ground and is made more compact lengthwise. The piece 14a is fixedly connected to a headboard 15a/footboard 15b. The wheels of the headboard 15a and footboard 15b are moved closer towards each other up to the length of the fixed piece 14a (with the exception of the space taken up by the hinges).

[0096] This also determines the useful space of the trolley, which is solely rested and transported on the wheels 13 of the base frame. It can also be assumed that the base of the trolley, i.e. the folded form of the base frame, receives extra reinforcement by the three pieces 14a, 14b, 14c that come to lie next to each other.

[0097] In this example the wheelbase on the headboard and footboard is extended relative to the longitudinal sides. The three pieces 14a, 14b, 14c that are folded against each other are housed in said extra space within the wheelbase.

[0098] Further in this embodiment, but not necessarily for the invention, locking means 28 are provided on the

undercarriage 2 to securely fasten the rods 18 of the scissor mechanism in folded condition. Said locking means 28 comprise a clamp 28 near the opening 27 of one of the grooves 22 in which the tab 21 of the relevant aforementioned first end 20a can be clamped.

[0099] This will prevent the rods 18 of the scissor mechanism 12 from opening in the folded position of the undercarriage.

[0100] In this embodiment, the undercarriage 2 is further provided with anchoring means 29 for a bed base 4 to, in folded condition of the undercarriage 2, be able to anchor the bed base 4 to the undercarriage 2.

[0101] These are shown in the figures and are provided on the headboard side 15a or footboard side 15b, and on a rod 18 of the scissor mechanism 12, among others.

[0102] Said anchoring means 29 allow the undercarriage to be used as a trolley 10 in this folded condition.

[0103] After folding the undercarriage 2, the bed base 4, or the pieces of the bed base 4, can be attached to the folded undercarriage 2. Any bed guards 8, trapeze bar 9 can be attached in the same way.

[0104] In this way all pieces of the home care bed 1 can be attached and the assembly can be easily moved and transported.

[0105] Finally, the undercarriage is provided with connecting rods 30 which connect the corresponding rods 18 of each pair 17 of crossed rods 18 relative to each other.

[0106] In this case two connecting rods 30 are provided for each pair 17 of crossed rods 18, but this can also be only one per pair 17. The connecting rods 30 are located near the ends of the rods 18.

[0107] First of all, this is done for the stability of the undercarriage 2 and the stability of the movement of the scissor mechanism 12.

[0108] In addition, one of said connecting rods 30 is also used to support a motor 31.

[0109] In the example shown in figures 2 to 4, the undercarriage 2 is provided with a motor 31 for driving the scissor mechanism 12 to be able to set the height of the home care bed 1 using said motor 31.

[0110] The motor 31 is a linear actuator in this case.

[0111] The motor 31 is hingedly connected to one of the aforementioned connecting rods 30 and to the headboard side 15a or footboard side 15b of the base frame 11.

[0112] To this end, the motor 31 is attached between on the one hand, a hinged attachment point 32a on the relevant connecting rod 30 and on the other hand on a hinged attachment point 32b on the headboard side 15a or footboard side 15b.

[0113] Said configuration allows the movement described above to be carried out, whereby the undercarriage 2 is folded together, without the motor 31 obstructing said movement.

[0114] Figure 5 shows a variant according to figure 2, whereby, in this case, the undercarriage 2 is provided with an additional bar 33.

[0115] One end 34a of said bar 33 is connected to an

extension 35 provided to that end of one of the side hinges 26 beyond the headboard side 15a or footboard side 15b. Said extension 35 lies in the extension of the relevant longitudinal side 14 of the base frame 11.

[0116] The other end 34b of the bar 33 is connected to a point 36 on the other longitudinal side 14 which is connected to the other side hinge 26 at a distance B of said other side hinge 26.

[0117] In other words, the bar 33 connects two points on the longitudinal sides 14 or the geometric extension of the longitudinal side 14 with each other, each located at a distance B from the side hinge 26, whereby one point is located 'in front of' and one point is located 'behind' the headboard side 15a or footboard side 15b of the base frame 11.

[0118] In this case, but not necessarily, the distance B between the side hinges 26 and the relevant end 34a, 34b of the bar 33 is the same.

[0119] I.e. the length of the extension 35 and the aforementioned distance B are the same.

[0120] The consequence of the addition of said bar 33 is that the range of movement of the pieces 14a, 14b, 14c of the longitudinal sides 14 and the hinges 25, 26 is somewhat restricted, and more specifically it will synchronise the movement of both longitudinal sides 14.

[0121] This has the advantage that when folding or unfolding the undercarriage 2 the movement can be kept under control better and can very easily be carried out by one person.

[0122] Figures 6 to 8 show an alternative embodiment of an undercarriage 2 comprising a base frame with longitudinal sides in three pieces, whereby the middle piece 14b is hingeable in a plane perpendicular to the plane of the base frame. The two other pieces are fixedly connected to the headboard and footboard.

[0123] The middle piece 14b moves in parallel to the rods 18 and is folded in the plane of the rods 18. The length of the middle piece 14b is such that it is practically equal to the length of the rods and in folded condition does not take up extra space. Putting the middle piece 14b upright coincides with folding together the scissor mechanism 12.

[0124] Said embodiment is similar to the first embodiment, except that the aforementioned means comprise, in this case, longitudinal sides 14 that are made up of two fixed end pieces 14a, 14c with a hinged middle piece 14b in between. The middle piece 14b is longer than the two end pieces 14a, 14c.

[0125] One end piece 14a is detachably connected to the middle piece 14b by means of a detachable coupling 37. In other words, by detaching or opening the detachable coupling 37, the longitudinal side 14 is subdivided into two separate pieces 14a, 14b.

[0126] The other end piece 14c is hingedly connected to the middle piece 14b by a hinge 38. This has as a consequence that the longitudinal side 14 can be folded on the level of said hinge 38, whereby the middle piece 14b will hinge or bend relative to the relevant end piece

14c.

[0127] Whereas in the previous example, the pieces 14a, 14b, 14c of the longitudinal sides 14 hinge horizontally, i.e. in the plane of the base frame 11, in this embodiment the middle piece 14b can be folded up vertically from the plane of the base frame 11.

[0128] Figure 6 shows the undercarriage in the use position.

[0129] The hinges 38 and the detachable couplings 37 are configured such that, by detaching the detachable couplings 37 and putting the middle pieces 14b upright by operation of the hinges 38, the headboard side and the footboard side move towards each other, into the position, as shown in figure 8.

[0130] Indeed, by, as it were, breaking up the longitudinal side 14, putting the middle piece 14b upright and folding together the scissor mechanism 12, the distance between the headboard side 15a and the footboard side 15b can be reduced.

[0131] This is clearly shown in figure 7. Figure 7 shows a position of the undercarriage 2 between the use position and the folded position. It is clear from the comparison of figures 6 and 7 that said mechanism brings the wheels 3 closer to each other practically automatically. Said mechanism can also easily be operated and carried out by one person.

[0132] Figure 8 shows the fully folded position of the undercarriage 2, which clearly shows that it can be used as a trolley 10 for the home care bed 1.

[0133] In this case too, the motor 30, which is mounted on the undercarriage 2 in a similar way using a rod 32, will not obstruct the movements of the folding undercarriage 2.

[0134] In addition, in this example the geometric extensions of the two end pieces 14a, 14c of the longitudinal sides 14 are located at a distance from each other, such that, when the headboard side 15a and the footboard side 15b move towards each other, the end pieces 14a, 14c of the longitudinal side 14 can overlap.

[0135] This is clearly shown in figure 8.

[0136] Consequently, the distance between the headboard side 15a and footboard side 15b can be reduced even more, such that a more compact trolley 10 and more compact folded home care bed 1 can be obtained.

[0137] The present invention is by no means limited to the embodiments described as an example and shown in the drawings, but an undercarriage for a home care bed according to the invention can be realised in all kinds of forms and dimensions without departing from the scope of the invention.

Claims

1. Undercarriage (2) for a home care bed (1) on which a bed base (4) can be mounted, said undercarriage (2) comprising a base frame (11) with four wheels (3) with a scissor mechanism (12) mounted thereon,

whereby the base frame (11) substantially comprises four sides (14, 15a, 15b), i.e. two longitudinal sides (14) and a headboard side (15a) and footboard side (15b), whereby the four wheels (3) are provided near the corners of the base frame (11), whereby the scissor mechanism (12) comprises two pairs (17) of crossed rods (18) that are hingedly attached to each other, whereby each pair (17) is connected to the base frame (11) with a first end (20a, 20b) of each rod (18) and at a second end (23) can be provided with coupling means (24) to mount a bed base (4), **characterised in that** each longitudinal side (14) comprises two central hinges (25) which subdivide the longitudinal side (14) into three pieces (14a, 14b, 14c), and one side hinge (26) which connects an end of the longitudinal side (14, 14c) to the headboard side (15a) or the footboard side (15b), whereby the pieces (14a, 14b, 14c) hinge horizontally, i.e. in the plane of the base frame (11), all this such that by folding the three pieces against each other, the headboard side (15a) and the footboard side (15b) move towards each other.

2. Undercarriage according to claim 1, **characterised in that** the hinges (25, 26) are configured such that the pieces (14c) of the longitudinal sides (14) bordering the side hinges (26) move away from each other and in this way take the middle pieces (14b) along with them, such that two outward facing pivots are formed in the longitudinal sides (14) defined by the middle hinge, i.e. the central hinge (25) located next to the side hinge (26).
3. Undercarriage according to claim 1 or 2, **characterised in that** the three pieces (14a, 14b, 14c) of the longitudinal sides (14) are fully folded against each other in a folded position.
4. Undercarriage according to claim 1, **characterised in that** the scissor mechanism (12) can be folded shut and put upright.
5. Undercarriage according to claim 1, **characterised in that** for each pair (17) of crossed rods (18), one of the aforementioned first ends (20a) is slideably connected to the longitudinal side (14) of the base frame (11).
6. Undercarriage according to claim 5, **characterised in that** said aforementioned first ends (20a) are provided with a protruding tab (21) provided to that end which can slide in a groove (22) provided to that end in the longitudinal sides (14) of the base frame (11).
7. Undercarriage according to claim 1, **characterised in that** the first end (20a) of the rods (18) which are

located near the aforementioned side hinges (26),
are detachably connected to the base frame (11).

8. Undercarriage according to claims 6 and 7, **characterised in that** the grooves (22) in the longitudinal sides (14) of the base frame (11) are provided with an opening (27) from which the tabs (21) can be taken out of the grooves (22). 5
9. Undercarriage according to claim 7 or 8, **characterised in that** fastening means (28) are provided on the undercarriage (2) to secure the rods (18) of the scissor mechanism (12) in folded condition. 10
10. Undercarriage according to any one of the previous claims, **characterised in that** the undercarriage (2) is provided with a bar (33), one end (34a) of which is connected to an extension (35) provided to the end of one of the side hinges (26) beyond the headboard side (15a) or the footboard side (15b), and the other end (34b) is connected to a point (36) on the longitudinal side (14), which is connected to the other side hinge (26) and at a distance (B) from said other side hinge (26), whereby preferably the length of the extension (35) and the aforementioned distance (B) are the same. 15
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11. Undercarriage according to any one of the previous claims, **characterised in that** the undercarriage (2) is provided with anchoring means (29) for a bed base (4) to be able to anchor the bed base (4) to the undercarriage (2) in folded condition of the undercarriage (2). 30
12. Undercarriage according to any one of the previous claims, **characterised in that** the corresponding rods (18) of each pair (17) of crossed rods (18) are connected to each other by means of a connecting rod (30). 35
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13. Undercarriage according to the previous claim 12, **characterised in that** the undercarriage (2) is provided with a motor (31) for driving the scissor mechanism (12), whereby the motor (31) is hingedly connected to one of the aforementioned connecting rods (30) and to the headboard side (15a) or footboard side (15b) of the base frame (11). 45
14. Undercarriage according to any one of the previous claims, **characterised in that** in folded condition the undercarriage forms a trolley which can be transported on the four wheels (3) of the base frame (11). 50
15. Home care bed, **characterised in that** it is provided with an undercarriage (2) according to any one of the previous claims. 55

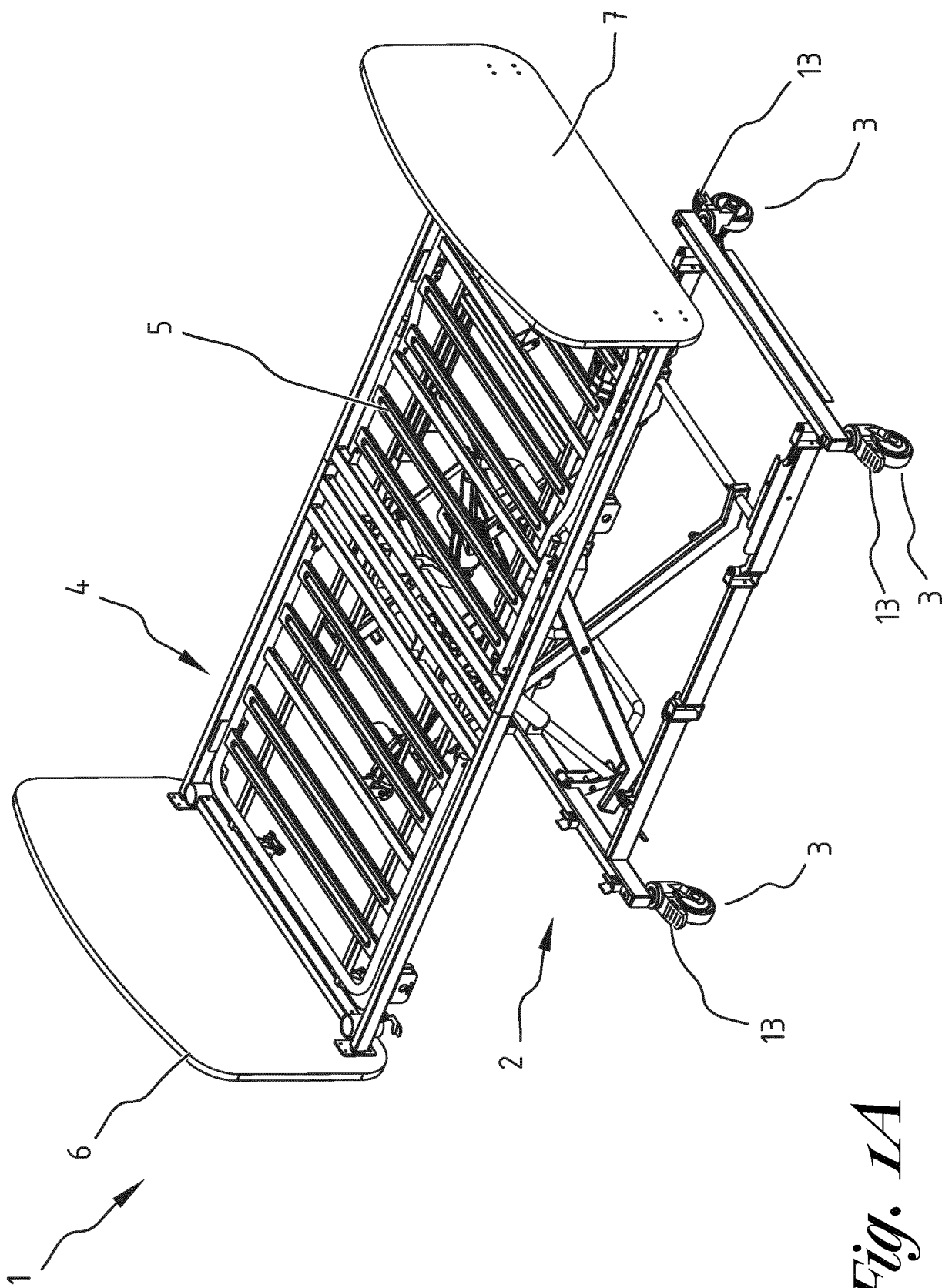


Fig. 1A

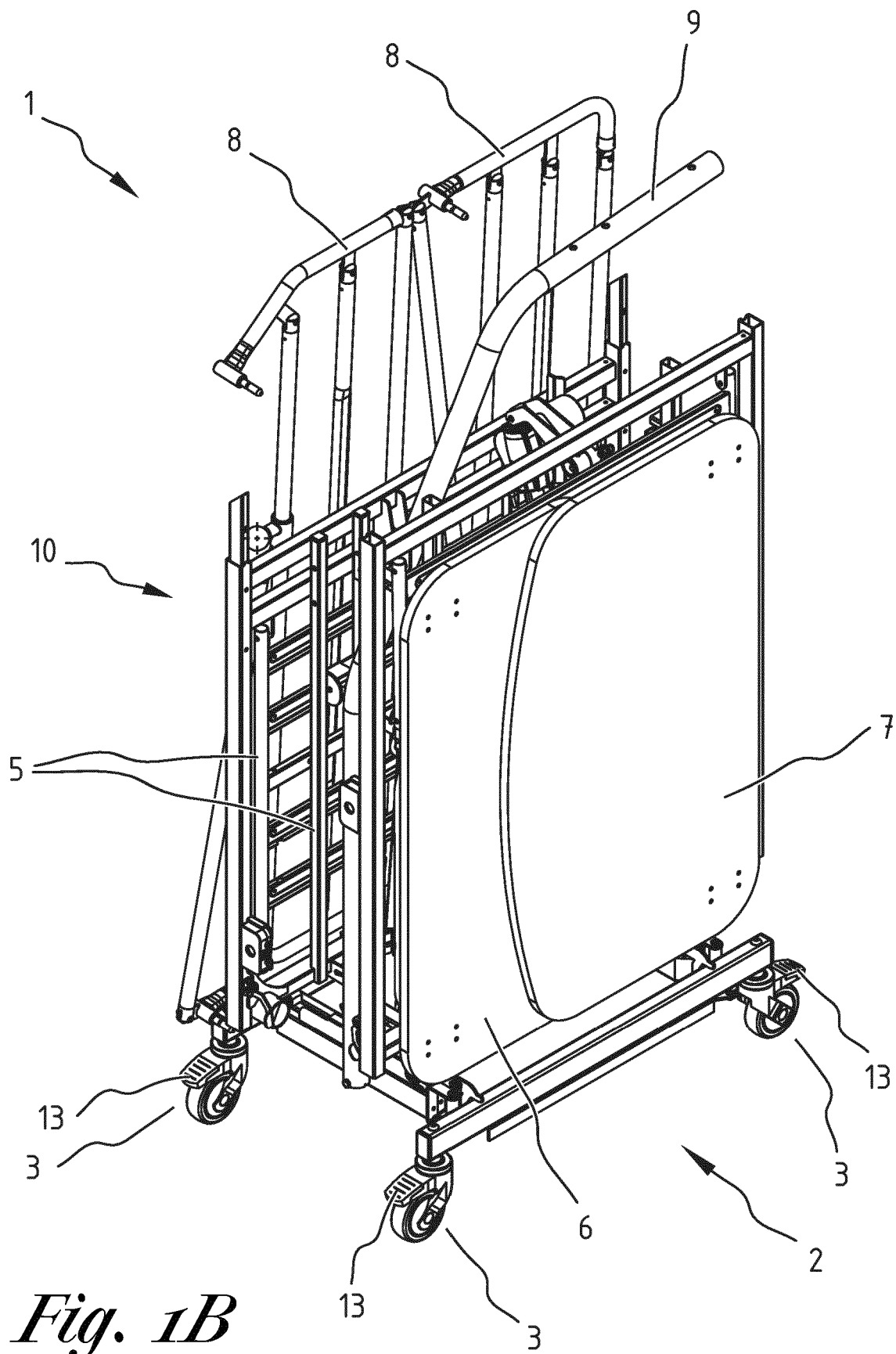


Fig. 1B

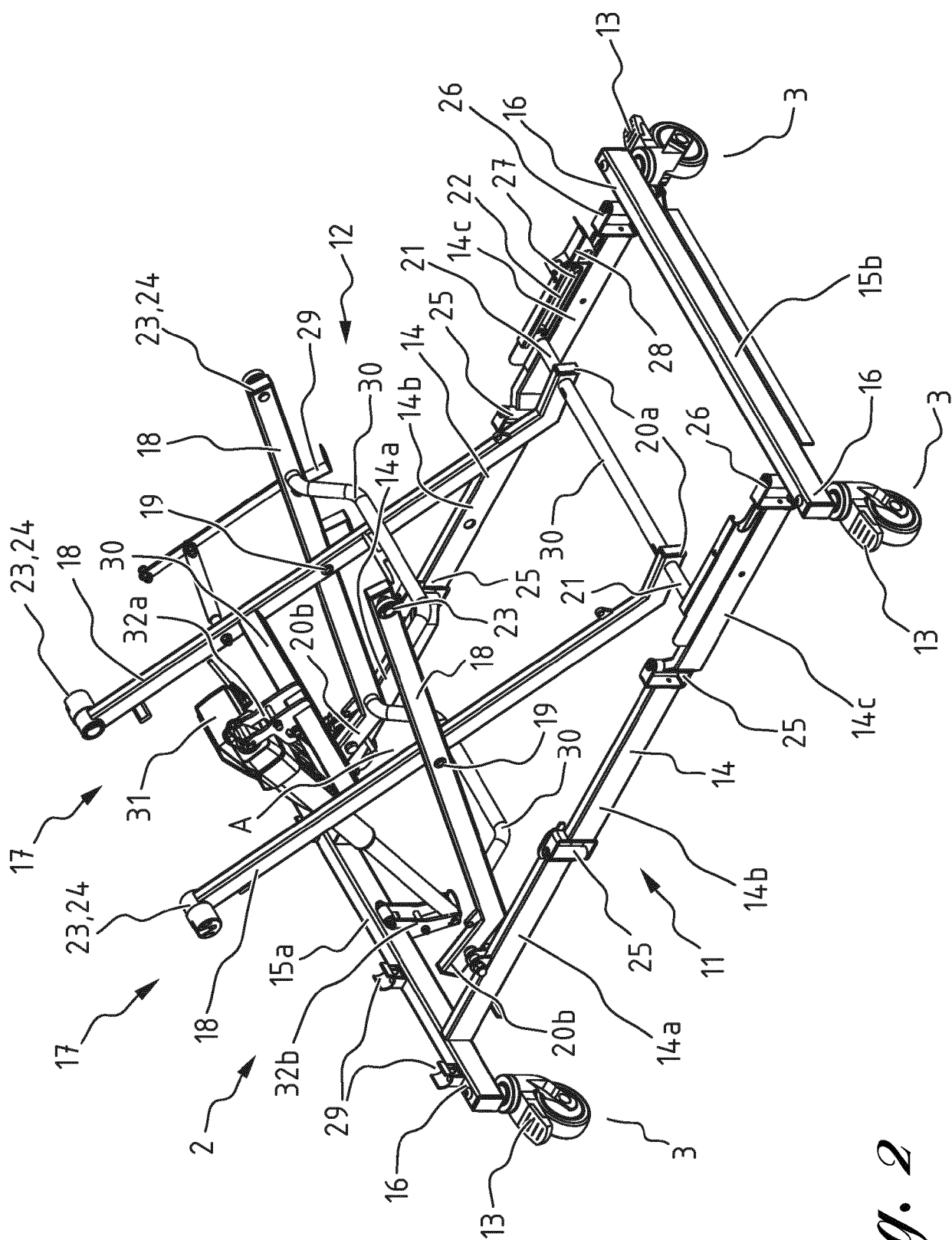


Fig. 2

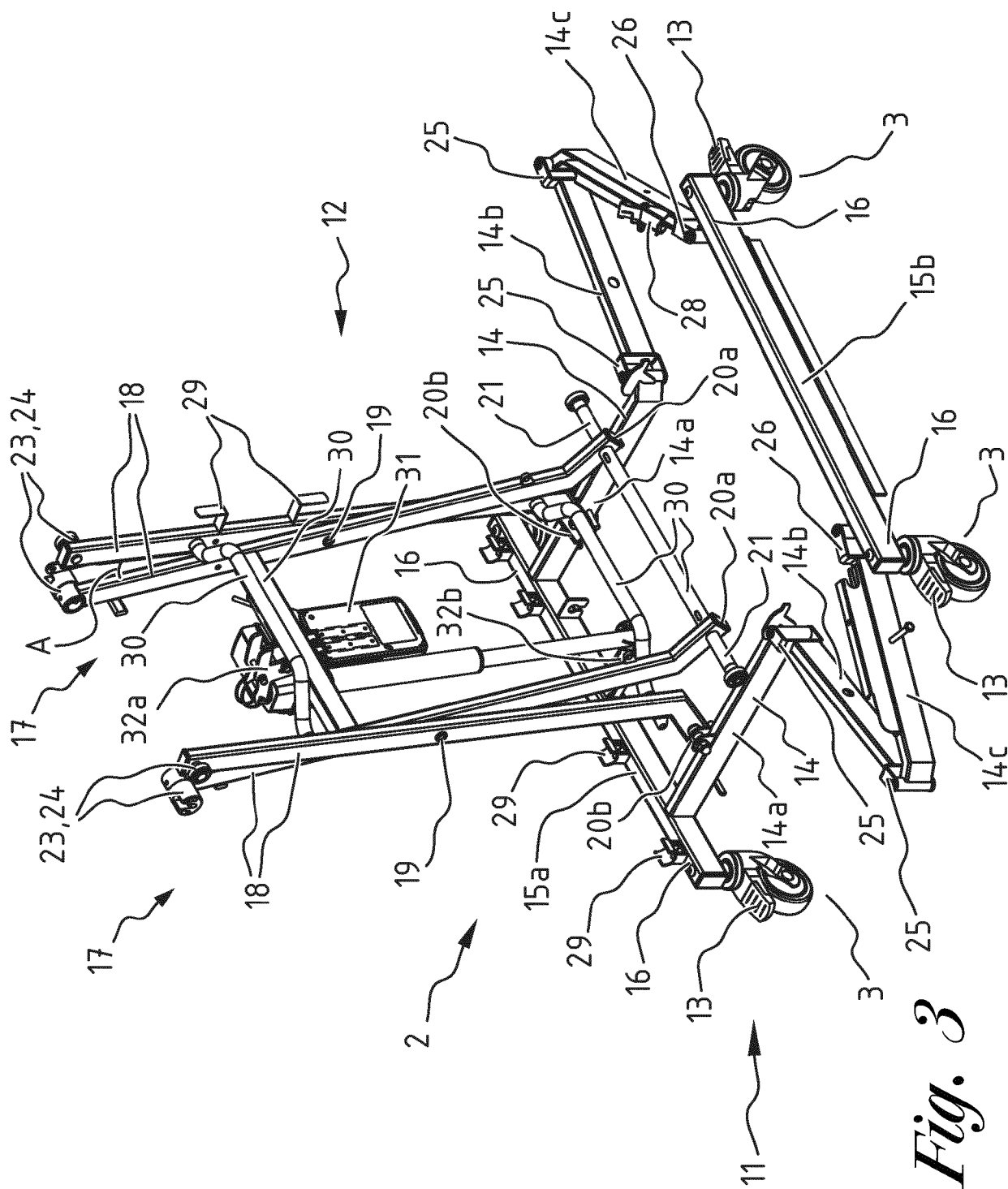


Fig. 3

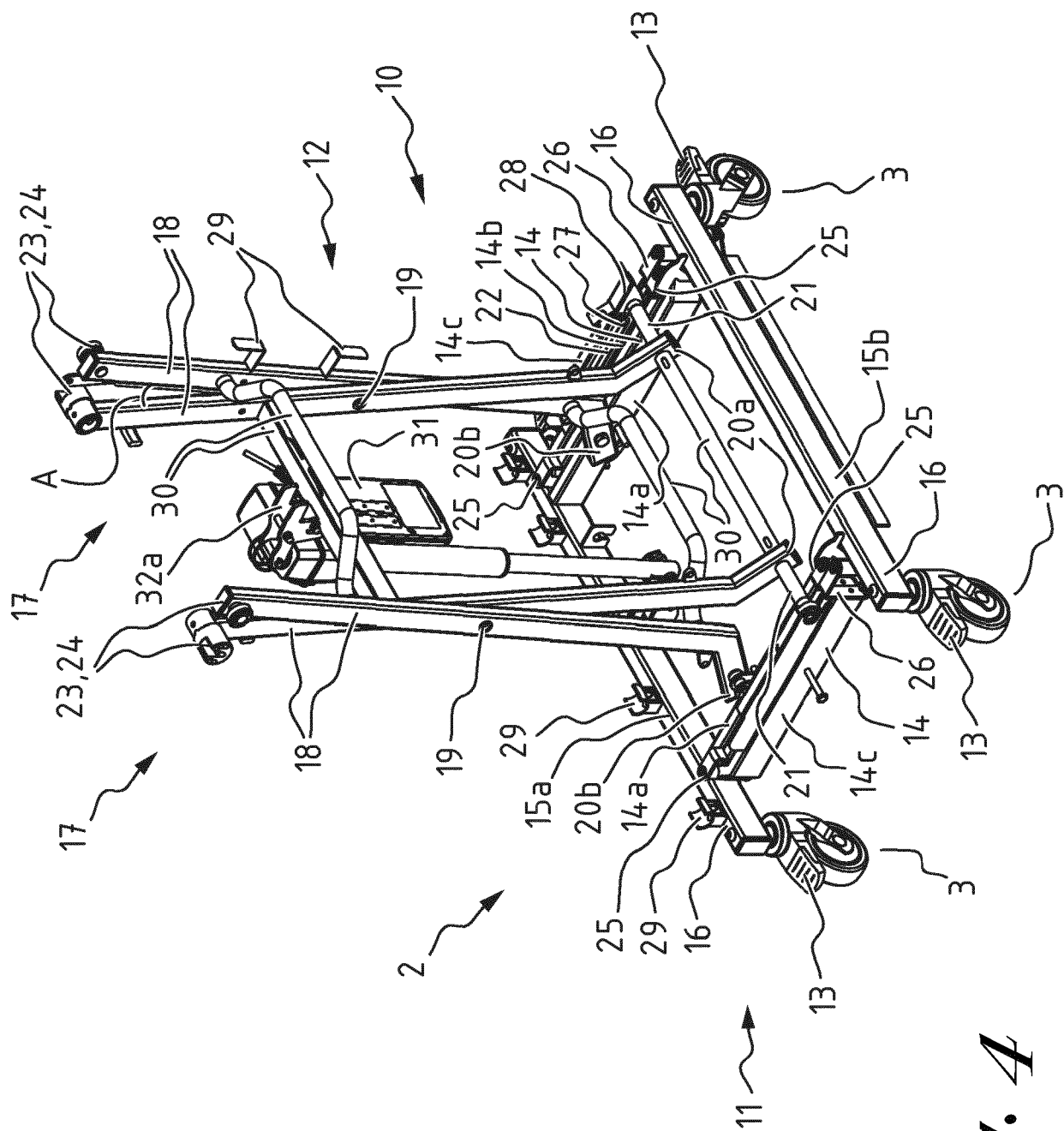


Fig. 4

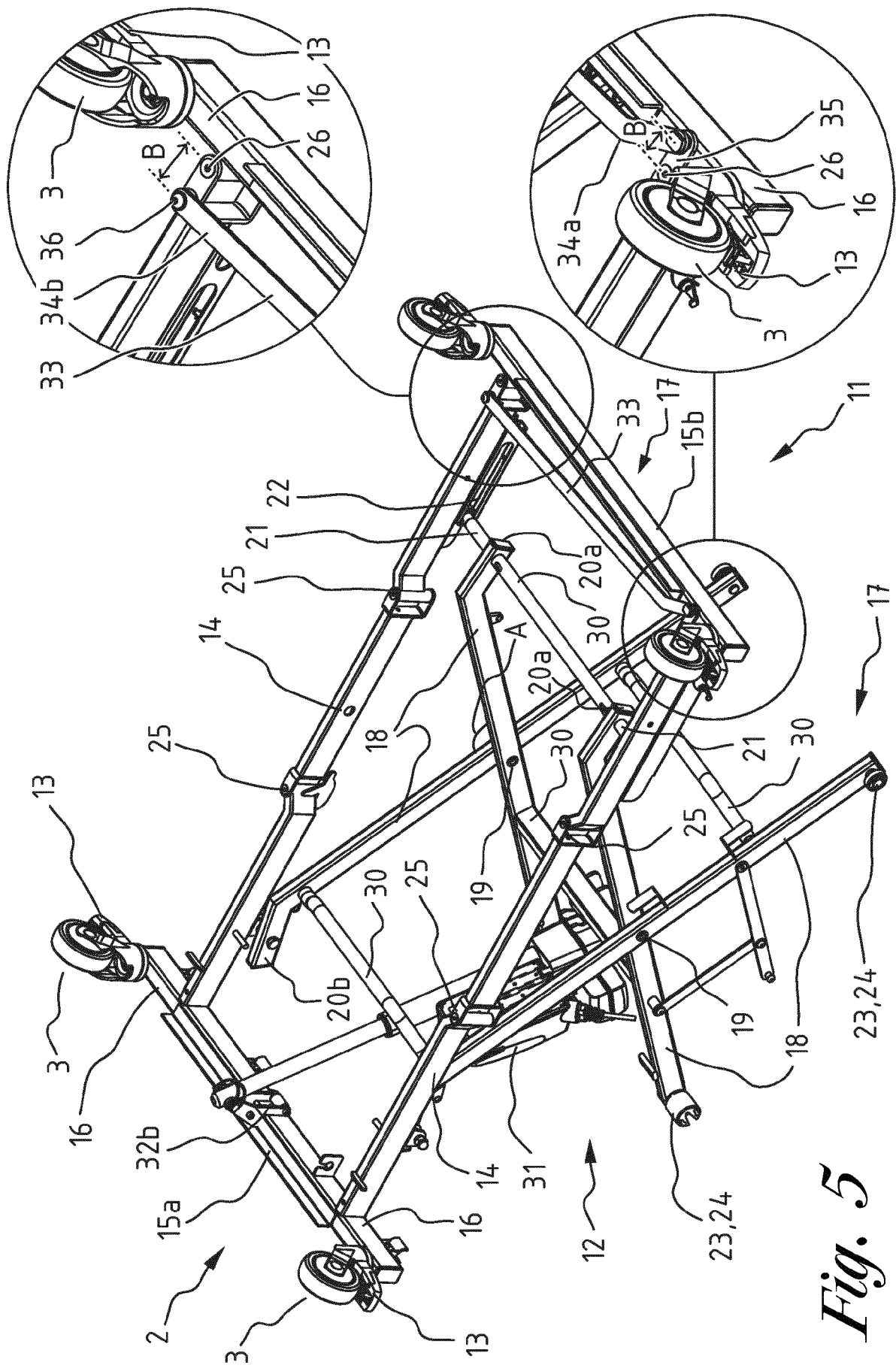


Fig. 5

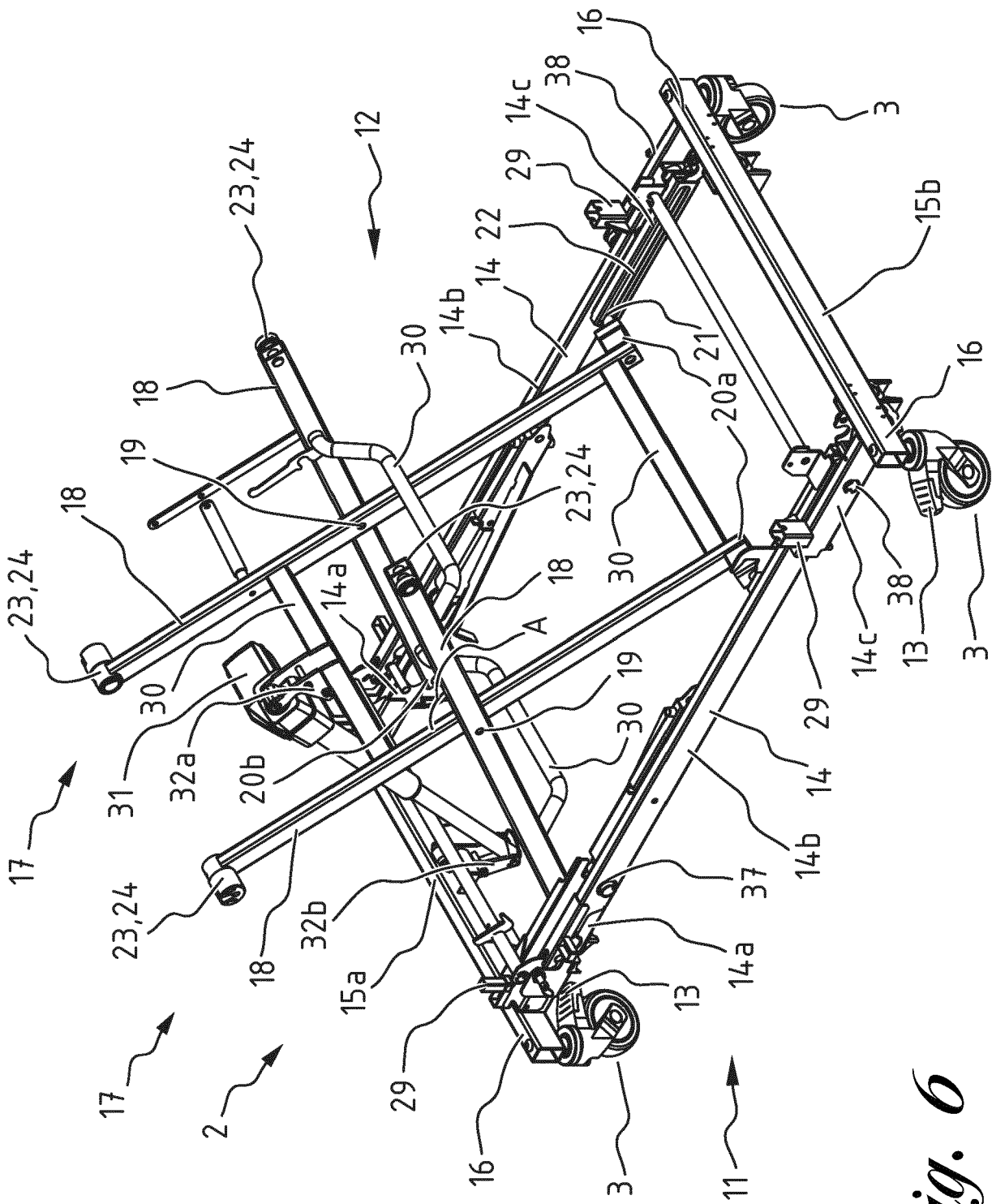


Fig. 6

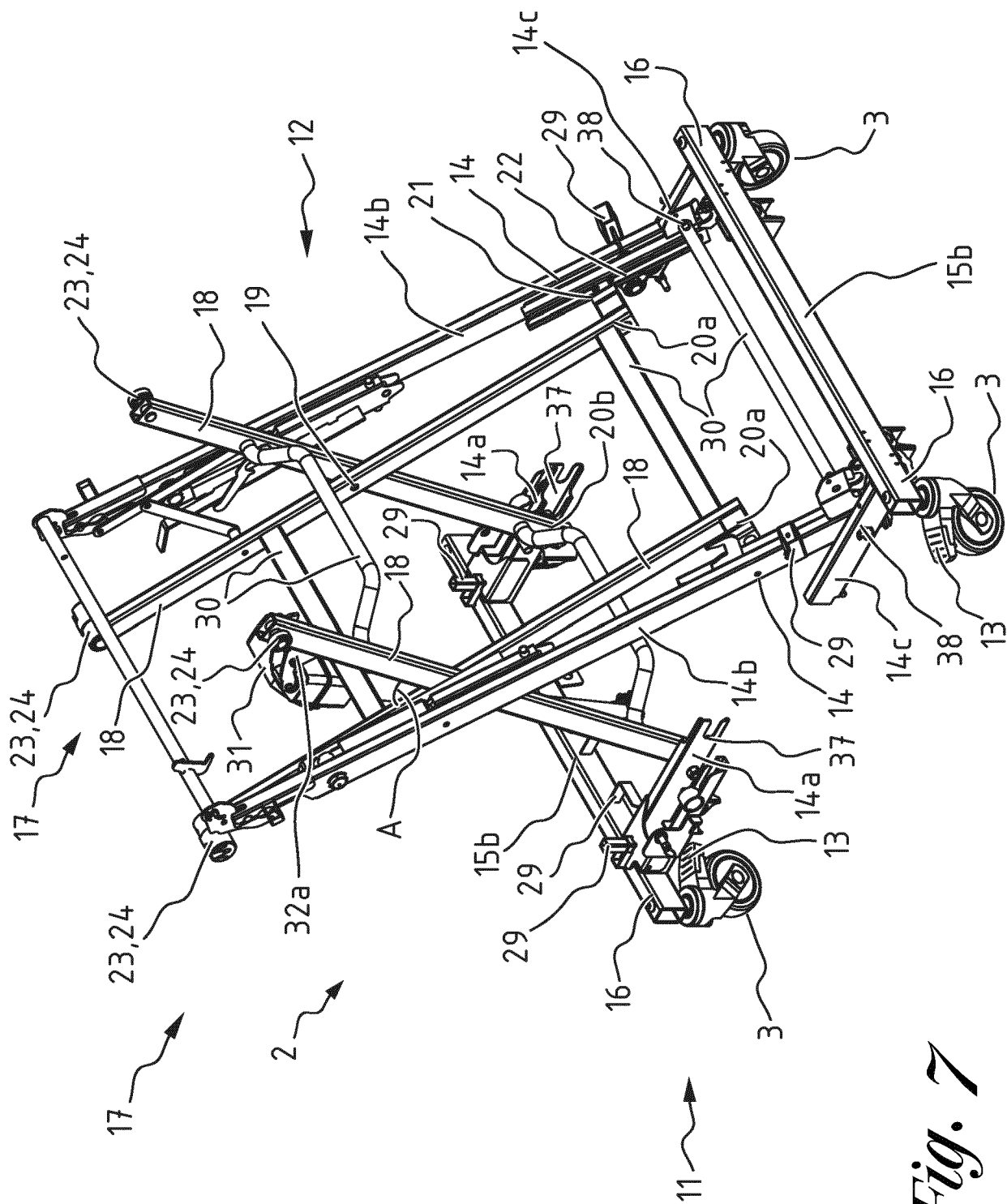


Fig. 7

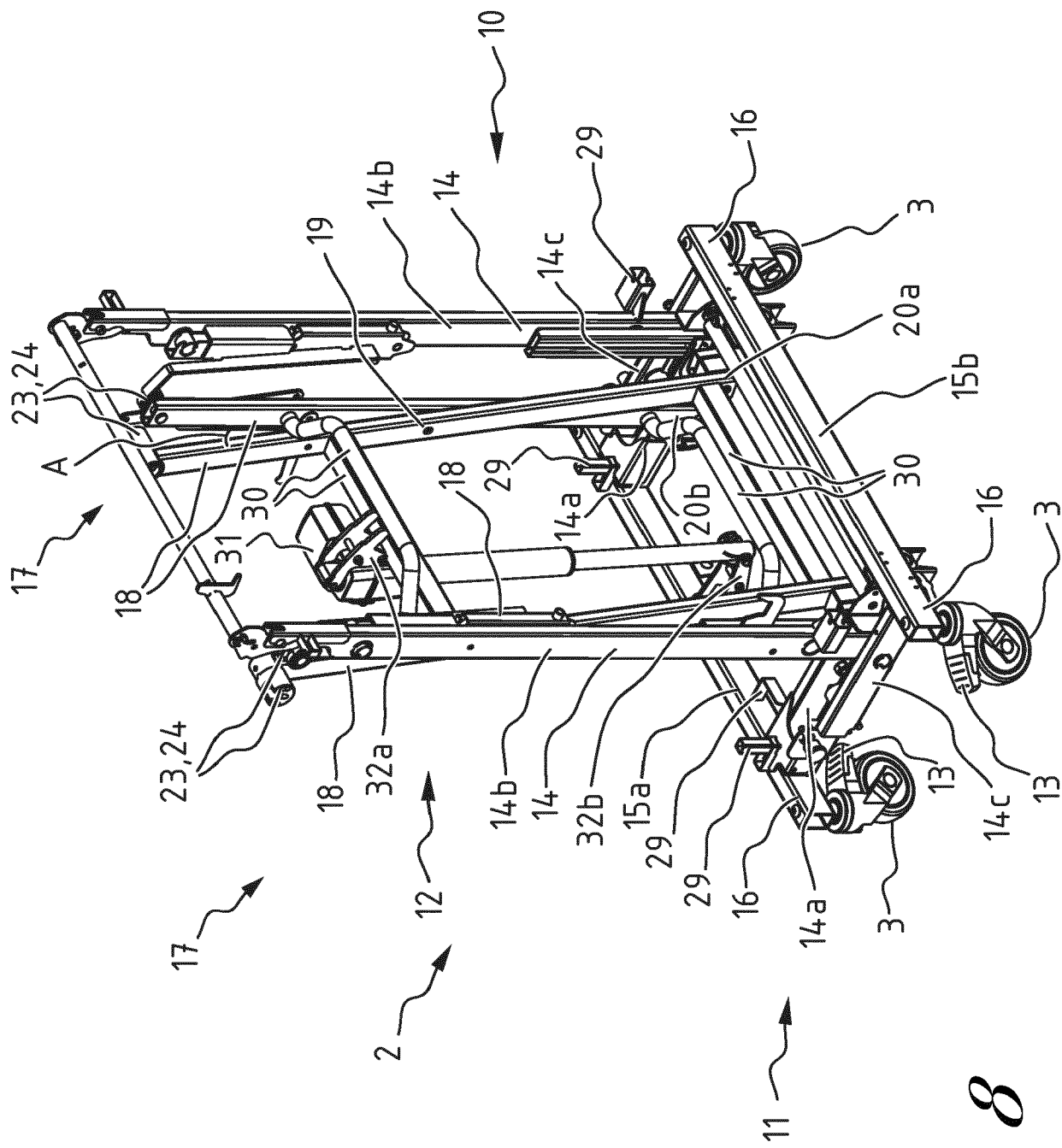


Fig. 8



EUROPEAN SEARCH REPORT

Application Number

EP 25 19 0321

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			A61G A47D A47C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		6 November 2025	Kroeders, Marleen
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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06-11-2025

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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