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(54) FOLDABLE WALKING AID APPARATUS

(57) There is described a foldable walking aid apparatus (1) comprising a foldable frame (10) including first and second side frame members (11, 12) and a folding mechanism (20) coupling the first side frame member (11) to the second side frame member (12), and a foldable seat platform (30) connected at a first end (30.1) to the first side frame member (11) and at a second end (30.2) to the second side frame member (12). The foldable frame (10) and foldable seat platform (30) are configured to be selectively switchable from an unfolded, deployed configuration to a folded configuration, and vice versa. The foldable seat platform (30) is a solid three-piece foldable platform comprising a central seat member (31) that is pivotally connected to first and second outer seat members (35, 36) by means of first and second hinges (30a, 30b), the first and second outer seat members (35, 36) being pivotally connected, at the first and second ends (30.1, 30.2) of the foldable seat platform (30), to the first and second side frame members (11, 12), respectively. The foldable seat platform (30) further comprises a locking mechanism (50) configured to lock the foldable seat platform (30) in the deployed configuration and prevent pivotal movement of the central seat member (31) with respect to the first and second outer seat members (35, 36), thereby locking the foldable frame (10) in the deployed configuration. The locking mechanism (50) is further configured to selectively release the foldable seat platform (30) from the deployed configuration and allow pivotal movement of the central seat member (31) with respect to the first and second outer seat members (35, 36), thereby allowing switching of the foldable frame (10) from the deployed configuration to the folded configuration.

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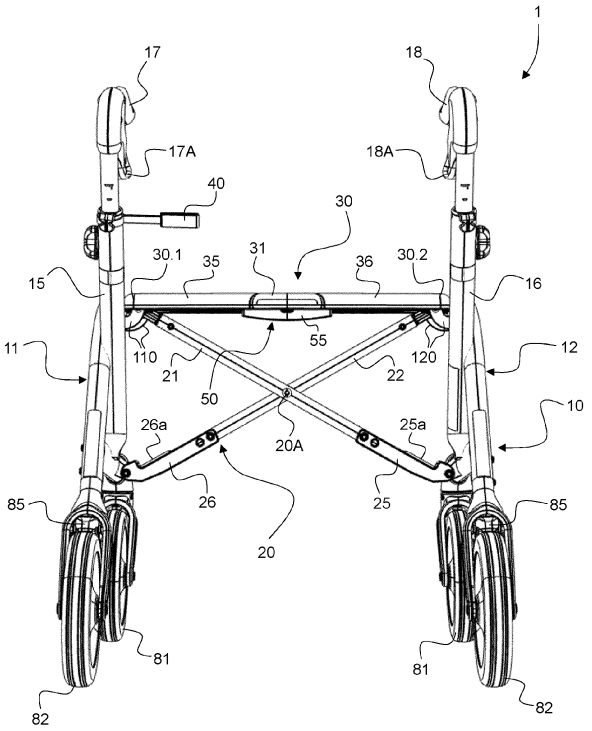
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17
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18A
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110
120
12
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26a
20A
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Fig. 3A

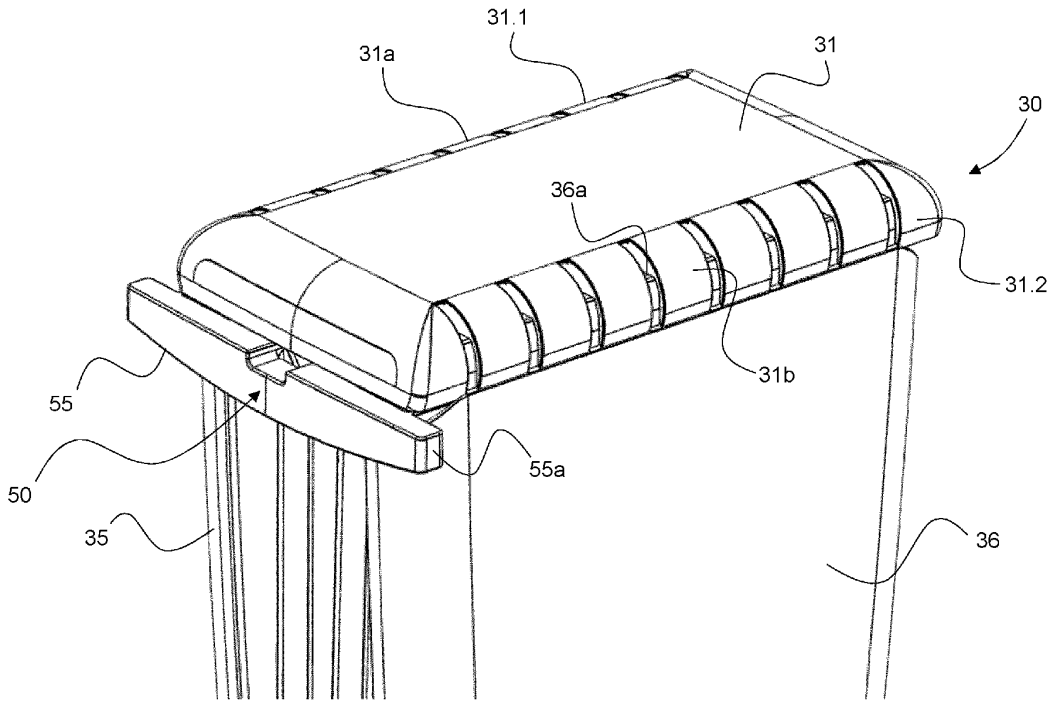

31.1
31a
31
30
36a
31.2
31b
55
55a
50
35
36

Fig. 7B

Description

TECHNICAL FIELD

[0001] The present invention generally relates to a foldable walking aid apparatus, in particular a wheeled walker apparatus (also referred to as "rollator").

BACKGROUND OF THE INVENTION

[0002] Foldable walking aid apparatuses are known as such in the art.

[0003] European Patent Publication No. EP 2 537 503 A1, which is incorporated herein by reference in its entirety (see also International Registered Design No. DM/076258), discloses a foldable seat for a rollator or wheelchair, which foldable seat comprises two rigid seat plates that are pivotally connected to one another by a central hinge so as to be movable between an unfolded configuration in which the two rigid seat plates are aligned within a same plane to form a seating portion and a folded configuration in which the two rigid seat plates are pivoted one against the other. The central hinge is provided with a locking/unlocking system configured to lock the two rigid seat plates in the unfolded configuration, which locking/unlocking system may be actuated by hand by the user so as to allow unlocking and release of the two rigid seat plates allowing switching from the unfolded configuration to the folded configuration, and vice versa. Outer ends of the two rigid seat plates are configured to be pivotally connected to a foldable frame of the rollator or wheelchair. Such a foldable seat is especially used in Invacare's Dolomite Jazz® II rollator.

[0004] U.S. Patent No. US 7,108,004 B2 (corresponding to U.S. Patent Publication No. US 2005/0211285 A1) discloses a foldable walking aid apparatus comprising a solid two-piece foldable seating platform provided with a structural support for distributing the weight of the user to the frame of the foldable walking aid apparatus. The two-piece seating platform comprises two support members that are connected to one another by a central hinge so as to be movable between an unfolded configuration in which the two support members are aligned within a same plane and a folded configuration in which the two support members are pivoted one against the other. The seating platform is locked in the unfolded configuration by means of a pair of solid links that are provided underneath the two support members and that are pivotally connected to one another at a central portion as well as to the two support members at outer ends of the pair of solid links. More specifically, an associated locking feature is further provided at the central portion of the pair of solid links to hold them in an extended position, thereby locking the two support members in the unfolded configuration. A release handle in the form of a strap is provided in such a way that an upward pulling action on the release handle pulls the central portion of the pair of solid links upward, causing release of the locking feature and of the pair of solid links, allowing folding of the two support members into the folded configuration.

[0005] U.S. Patent No. US 8,083,239 B2 (corresponding to U.S. Patent Publication No. US 2010/0083994 A1) discloses yet another foldable walking aid apparatus comprising a solid two-piece foldable seating platform.

[0006] The aforementioned solutions are not entirely satisfactory in that the load generated by a user seating on the seat platform is to a great extent supported by the central hinge, which either requires a very robust seat platform or the provision of additional means to transfer and distribute load, which negatively impacts construction simplicity and therefore production costs, as well as leads to a weight increase of the walking aid apparatus as a whole.

[0007] The solid two-piece foldable seating platform as disclosed in EP 2 537 503A1, US 7,108,004 B2 and US 8,083,239 B2 is furthermore detrimental in that accidental pinching of e.g. body parts or clothes may occur upon switching the seat platform from the folded configuration to the deployed configuration.

[0008] An improved solution is therefore desirable.

SUMMARY OF THE INVENTION

[0009] A general aim of the invention is to provide an improved foldable walking aid apparatus.

[0010] Yet another aim of the invention is to provide such solution that is of simple, lightweight, yet robust construction.

[0011] A further aim of the invention is to provide such a solution that facilitates switching of the foldable walking apparatus from an unfolded, deployed configuration to a folded configuration, and vice versa.

[0012] Still another aim of the invention is to provide such a solution ensuring secured locking of the walking aid apparatus in the deployed configuration and facilitating selective release of the walking aid apparatus from the deployed configuration and switching to the folded configuration.

[0013] A further aim of the invention is to provide such a solution including a foldable seat platform which prevents accidental pinching upon switching of the foldable seat platform from the folded configuration to the deployed configuration.

[0014] These aims are achieved thanks to the solutions defined in the claims.

[0015] In accordance with a first aspect of the invention, there is provided a foldable walking aid apparatus as defined in claim 1, namely a foldable walking aid apparatus comprising:

- a foldable frame including first and second side frame members and a folding mechanism coupling the first side frame member to the second side frame member; and
- a foldable seat platform connected at a first end to the first side frame member and at a second end to

the second side frame member,

wherein the foldable frame and foldable seat platform are configured to be selectively switchable from an unfolded, deployed configuration to a folded configuration, and vice versa.

[0016] According to this first aspect of the invention, the foldable seat platform is a solid three-piece foldable platform comprising a central seat member that is pivotally connected to first and second outer seat members by means of first and second hinges, the first and second outer seat members being pivotally connected, at the first and second ends of the foldable seat platform, to the first and second side frame members, respectively. The foldable seat platform further comprises a locking mechanism configured to lock the foldable seat platform in the deployed configuration and prevent pivotal movement of the central seat member with respect to the first and second outer seat members, thereby locking the foldable frame in the deployed configuration. The locking mechanism is further configured to selectively release the foldable seat platform from the deployed configuration and allow pivotal movement of the central seat member with respect to the first and second outer seat members, thereby allowing switching of the foldable frame from the deployed configuration to the folded configuration.

[0017] By way of preference, the locking mechanism comprises a spring-loaded release handle mounted on the central seat member and movable between a locking position and a release position. The spring-loaded release handle may in particular be mounted underneath the central seat member and be adapted to slide between the locking and release positions along a direction parallel to the pivot axes of the first and second hinges. In this latter context, the spring-loaded release handle preferably comprises a laterally extending locking member that is configured to slide underneath a portion of the central seat member and of the first and second outer seat members, when in the locking position, thereby preventing pivotal movement of the first and second outer seat members with respect to the central seat member, the laterally extending locking member being configured to disengage from and release the first and second outer seat members, when in the release position, thereby allowing pivotal movement of the first and second outer seat members with respect to the central seat member.

[0018] According to a preferred variant, the first and second hinges are configured such that pivotal movement of the central seat member with respect to the first and second outer seat members is prevented beyond the deployed configuration of the foldable seat platform, the first and second outer seat members being only allowed to pivot downwards with respect to the central seat member from the deployed configuration of the foldable seat platform.

[0019] This particular configuration of the first and second hinges constitutes a second aspect of the present invention, which is applicable independently of the aforementioned first aspect of the invention. In that regard, in accordance with a second aspect of the invention, there is provided a foldable walking aid apparatus as defined in independent claim 6, namely a foldable walking aid apparatus comprising:

- a foldable frame including first and second side frame members and a folding mechanism coupling the first side frame member to the second side frame member; and
- a foldable seat platform connected at a first end to the first side frame member and at a second end to the second side frame member,

wherein the foldable frame and foldable seat platform are configured to be selectively switchable from an unfolded, deployed configuration to a folded configuration, and vice versa.

[0020] According to this second aspect of the invention, the foldable seat platform is a solid three-piece foldable platform comprising a central seat member that is pivotally connected to first and second outer seat members by means of first and second hinges, the first and second outer seat members being pivotally connected, at the first and second ends of the foldable seat platform, to the first and second side frame members, respectively. The first and second hinges are configured such that pivotal movement of the central seat member with respect to the first and second outer seat members is prevented beyond the deployed configuration of the foldable seat platform, the first and second outer seat members being only allowed to pivot downwards with respect to the central seat member from the deployed configuration of the foldable seat platform.

[0021] By way of preference, in the deployed configuration, the foldable seat platform exhibits a substantially flat upper surface and, in the folded configuration, the foldable seat platform exhibits an inverted U-shaped upper surface with curved transitions from the central seat member to the first and second outer seat members. In this context, first and second hinged ends of the central seat member each preferably exhibit a convex upper transition surface of substantially constant radius coaxial with a pivot axis of the first, respectively second hinge, which convex upper transition surface is revealed upon switching the foldable seat platform to the folded configuration.

[0022] Each of the first and second outer members may advantageously comprise a stop surface configured to come in abutment with the central seat member in the deployed configuration of the foldable seat platform.

[0023] In accordance with a particularly preferred embodiment, the folding mechanism is a cross-folding mechanism comprising first and second cross-linking elements that are pivotally connected to one another at a central pivot point. A first end of the first cross-linking element is pivotally connected to the first side frame member and a first end of the second cross-linking ele-

ment is pivotally connected to the second side frame member. The first cross-linking element is pivotally connected to a first end of a first connecting element and the second cross-linking element is pivotally connected to a first end of a second connecting element. A second end of the first connecting element is pivotally connected to the second side frame member and a second end of the second connecting element is pivotally connected to the first side frame member.

[0024] Advantageously, the first end of the first cross-linking element may be pivotally connected to the first side frame member so as to pivot about a same pivot axis as the first end of the foldable seat platform, and the first end of the second cross-linking element may likewise be pivotally connected to the second side frame member so as to pivot about a same pivot axis as the second end of the foldable seat platform.

[0025] By way of preference, the first and second connecting elements each comprise a section configured to receive and stop a second end of the first, respectively second cross-linking element, in the deployed configuration of the foldable frame.

[0026] Each of the first and second side frame members preferably exhibits an upper frame section and a lower frame section, the foldable seat platform being connected to the upper frame sections of the first and second side frame members, and the folding mechanism being coupled between the upper and lower frame sections of the first and second side frame members.

[0027] The lower frame section of each of the first and second side frame members may in particular be provided with a pair of wheels including a front wheel and a rear wheel.

[0028] The foldable walking aid apparatus may further comprise first and second upright elements connected to the first and second side frame members, respectively, which first and second upright elements are each provided with a hand grip. The first and second upright elements are preferably configured as telescopic elements allowing adjustment in height of the hand grips.

[0029] The foldable walking aid apparatus may further comprise a pair of manually operable brake handles provided proximate to the hand grips, each brake handle being configured to operate a brake pad associated to a corresponding one of the wheels, preferably the rear wheel.

[0030] Further advantageous embodiments of the invention are discussed below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] Other features and advantages of the present invention will appear more clearly from reading the following detailed description of embodiments of the invention which are presented solely by way of non-restrictive examples and illustrated by the attached drawings in which:

Figures 1A and 1B are schematic perspective views of a foldable walking aid apparatus in accordance with a preferred embodiment of the invention, shown in an unfolded, deployed configuration, as normally operated by a user;

Figures 2A and 2B are schematic perspective views of the foldable walking aid apparatus shown in a folded configuration, as used e.g. for storage purposes;

Figure 3A is a frontal view of the foldable walking aid apparatus in the deployed configuration shown from a side where a user would normally operate the walking aid apparatus;

Figure 3B is a cross-sectional view of a portion of the foldable walking aid apparatus shown in Figure 3A illustrating portions of a foldable frame, including a cross-folding mechanism, and of a foldable seat platform of the walking aid apparatus in the deployed configuration;

Figure 3C is a frontal view of the foldable walking aid apparatus in the deployed configuration shown from a side opposite to the side shown in Figure 3A;

Figure 3D is a frontal view of the foldable walking aid apparatus in the folded configuration shown from the same side as shown in Figure 3C;

Figure 4A is a side view of the foldable walking aid apparatus in the deployed configuration;

Figure 4B is a side view of the foldable walking aid apparatus in the folded configuration;

Figure 5A is a top view of the foldable walking aid apparatus in the deployed configuration;

Figure 5B is a cross-sectional view of a central portion of the seat platform of the walking aid apparatus in the deployed configuration as taken along sectional plane A-A shown in Figure 5A;

Figure 5C is a cross-sectional view of a central portion of the seat platform of the walking aid apparatus in the deployed configuration as taken along sectional plane B-B shown in Figure 5A;

Figure 5D is a top view of the foldable walking aid apparatus in the folded configuration;

Figure 5E is a cross-sectional view of a central portion of the seat platform of the walking aid apparatus in the folded configuration as taken along sectional plane C-C shown in Figure 5D;

Figure 5F is a cross-sectional view of a central portion of the seat platform of the walking aid apparatus in the folded configuration as taken along sectional plane D-D shown in Figure 5D;

Figure 6A is a bottom view of the foldable walking aid apparatus in the deployed configuration;

Figure 6B is an enlarged view of the foldable walking aid apparatus shown in Figure 6A illustrating the underside of the foldable seat platform and of the associated cross-folding mechanism;

Figure 6C is an enlarged perspective view of the underside of the seat platform and of the associated cross-folding mechanism in the deployed configuration;

Figure 6D is an enlarged perspective view of the underside of a central portion of the foldable seat platform in the deployed configuration, including a releasable locking mechanism thereof;
Figure 6E is an enlarged perspective view of the releasable locking mechanism shown in Figure 6D;
Figure 7A is an enlarged perspective view of the foldable seat platform in the folded configuration; and
Figure 7B is an enlarged perspective view of an upper portion of the foldable seat platform in the folded configuration showing the releasable locking mechanism in a released position.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0032] The present invention will be described in relation to various illustrative embodiments. It shall be understood that the scope of the invention encompasses all combinations and sub-combinations of the features of the embodiments disclosed herein.

[0033] As described herein, when two or more parts or components are described as being connected, secured or coupled to one another, they can be so connected, secured or coupled directly to each other or through one or more intermediary parts.

[0034] The invention will be described in relation to various embodiments of a foldable walking aid apparatus as shown in Figures 1A-B to 7A-B.

[0035] Figures 1A and 1B are schematic perspective views of a foldable walking aid apparatus, designated generally by reference numeral 1, in accordance with a preferred embodiment of the invention, the foldable waking aid apparatus being shown in an unfolded, deployed configuration as normally operated by a user. The walking aid apparatus 1 is here specifically configured as a wheeled walker apparatus (or rollator) and comprises a foldable frame 10 supported by a pair of front wheels 81 and a pair of rear wheels 82.

[0036] More specifically, the foldable frame 10 includes a pair of side frame members 11, 12, namely a first (left) side frame member 11 and a second (right) side frame member 12, and a folding mechanism 20 coupling the first side frame member 11 to the second side frame member 12. In the illustrated embodiment, each side frame member 11, 12 exhibits an upper frame section 11a, resp. 12a, and a lower frame section 11b, resp. 12b. Each lower frame section 11b, 12b is provided with a corresponding one of the front wheels 81 and a corresponding one of the rear wheels 82. In essence, the first side frame member 11 is the mirrored image of the second side frame member 12.

[0037] The folding mechanism 20 is advantageously configured as a cross-folding mechanism and is here coupled between the upper and lower frame sections 11a, 11b, 12a, 12b of the first and second side frame members 11, 12 in a manner that will be detailed hereafter. Other folding mechanisms could potentially be contemplated, but the illustrated cross-folding mechanism 20 happens to be a particularly simple and robust solution.

[0038] The foldable walking aid apparatus 1 further comprises a foldable seat platform 30 connected at a first end 30.1 to the first side frame member 11 and at a second end 30.2 to the second side frame member 12. More specifically, in the illustrated embodiment, the foldable seat platform 30 is connected to the upper frame sections 11a, 12a of the first and second side frame members 11, 12.

[0039] The illustrated walking aid apparatus 1 further comprises first (left) and second (right) upright elements 15, 16 that are connected to the first and second side frame members 11, 12, respectively, which first and second upright elements 15, 16 are each provided with a handgrip 17, resp. 18, providing grip for the user of the walking aid apparatus 1 in the operative configuration shown in Figures 1A and 1B. Each upright element 15, 16 is preferably configured as a telescopic element allowing adjustment in height of the handgrip 17, 18. More specifically, each upright element 15, 16 includes an outer tube secured to the relevant side frame member 11, 12, respectively, and an inner tube received inside an upper section of the outer tube, the position of the inner tube within the outer tube being adjustable and being securable to the desired position by means of a corresponding thumb screw as is conventional in the art.

[0040] As shown, a securing strap 40 is provided on the first upright element 15, which securing strap 40 can be used to provide attachment to the second upright element 16 when the walking aid apparatus 1 is switched to the folded configuration and thereby secure the walking aid apparatus in this configuration, e.g. for storage purposes.

[0041] Also shown is a pair of manually operable brake handles 17A, 18A provided proximate to, namely underneath, the hand grips 17, 18. Each brake handle 17A, 18A is here configured to operate a corresponding brake pad 85 associated to a corresponding one of the wheels 81, 82, namely each rear wheel 82. Each brake pad 85 is cable-operated by the associated brake handle 17A, 18A in a manner known as such in the art, the relevant brake cables running from each brake handle 17A, 18A to the associated brake pad 85 having been omitted in the illustrations.

[0042] The relevant configuration and operation of the brake handles 17A, 18A are not critical to the realization of the present invention and do not accordingly need to be detailed here. It suffices to understand that the brake handles 17A, 18A are configured and designed to operate in accordance with the principles disclosed in International (PCT) Publication No. WO 93/18946 A1, which publication is incorporated herein by reference in its entirety.

[0043] The foldable frame 10 and foldable seat platform 30 are configured to be selectively switchable from the unfolded, deployed configuration shown e.g. in Fig-

ures 1A and 1B to a folded configuration (and vice versa) as shown e.g. in Figures 2A and 2B.

[0044] Figures 2A and 2B are schematic perspective views of the foldable walking aid apparatus 1 shown in the folded configuration. In the folded configuration, the first and second side frame members 11, 12 are moved close together (allowing attachment of the uprights 15, 16 by means of the securing strap 40) and the foldable seat platform 30 folds in an upward direction to take a substantially inverted U-shape.

[0045] Figures 3A-C, 4A, 5A-C and 6A-E are further views of the walking aid apparatus 1, and portions thereof, in the deployed configuration. Figures 3D, 4B, 5D-F and 7A-B are likewise further views of the walking aid apparatus 1, and portions thereof, in the folded configuration.

[0046] A particularity of the invention resides in the fact that the foldable seat platform 30 is a solid three-piece foldable platform comprising a central seat member 31 that is pivotably connected to first (left) and second (right) outer seat members 35, 36 by means of first (left) and second (right) hinges (which first and second hinges are more readily visible in Figures 3B, 5B-C, 5E-F, 6D-E and are designated by reference signs 30a, 30b, respectively). The first and second outer seat members 35, 36 are pivotally connected at the first and second ends 30.1, 30.2 of the foldable seat platform 30 to the first and second side frame members 11, 12, respectively. More specifically, the first and second outer seat members 35, 36 are pivotally connected to the upper frame sections 11a, 12a, respectively, of the first and second side members 11, 12. Pivotal connection to the first, respectively second outer seat member 35, resp. 36, is here provided by means of a corresponding pair of mounting brackets 110, resp. 120, attached to the upper frame section 11a, resp. 12a of the first, respectively second side frame member 11, resp. 12, as shown especially in Figures 3A-C and 6C.

[0047] In the folded configuration, the central seat member 31 is raised upwards and remains substantially horizontal, while the first and second outer seat members 35, 36 are pivoted downwards with respect to the central seat member 31 and upwards with respect to the upper frame sections 11a, 12a so as to be positioned in a substantially vertical configuration. In the deployed configuration, the foldable seat platform 30 exhibits a substantially flat upper surface, all seat members 31, 35, 36 being extended and aligned along a common horizontal plane between the upper frame sections 11a, 12a of the first and second side frame members 11, 12.

[0048] As already mentioned, the folding mechanism 20 coupling the first and second side frame members 11, 12 is here advantageously designed as a cross-folding mechanism coupling the upper and lower frame sections 11a, 11b, 12a, 12b of the first and second side frame members 11, 12. More specifically, referring especially to Figures 3A-D, the cross-folding mechanism 20 comprises first and second cross-linking elements 21, 22 that are pivotally connected to one another at a central pivot point 20A. A first end 21.1 of the first cross-linking element 21 is pivotally connected to the first side frame member 11 (namely to the upper frame section 11a thereof) and a first end 22.1 of the second cross-linking element 22 is pivotally connected to the second side frame member 12 (namely to the upper frame section 12a thereof). By way of preference, as shown in Figure 3B, the first end 21.1, resp. 22.1 of the first, respectively second cross-linking element 21, resp. 22, is connected to the first, respectively second side frame member 11, resp. 12, so as to pivot about a same pivot axis as the first, respectively second end 30.1, resp. 30.2 of the foldable seat platform 30.

[0049] Furthermore, the first cross-linking element 21 is pivotally connected to a first end 25.1 of a first connecting element 25, and a second end 25.2 of the first connecting element 25 is pivotally connected to the second side frame member 12 (namely to the lower frame section 12b thereof). Likewise, the second cross-linking element 22 is pivotally connected to a first end 26.1 of a second connecting element 26, and a second end 26.2 of the second connecting element 26 is pivotally connected to the first side frame member 11 (namely to the lower frame section 11b thereof).

[0050] The cross-sectional view of Figure 3B is taken along a vertical sectional plane passing through the longitudinal axis of the first cross-linking element 21 and associated first connecting element 25. This cross-sectional view highlights a further refinement of the cross-folding mechanism 20, namely the presence of a section 25a on the first connecting element 25 that is configured to receive and stop a second end 21.2 of the first connecting element 21, in the deployed configuration. The second connecting element 26 is similarly designed and likewise comprises a section 26a configured to receive and stop a second end 22.2 of the second cross-linking element 22 in the deployed configuration. One will understand that deployment of the first and second cross-linking elements 21, 22, beyond the deployed configuration shown in Figures 3A-C is in particular prevented by the provision of the relevant sections 25a, 26a.

[0051] Looking at the illustration of Figure 3B, upon switching the foldable frame 10 and foldable seat platform 30 from the illustrated deployed configuration to the folded configuration, the first connecting element 21 is led to pivot about the central pivot point 20A in the clockwise direction, with the second end 21.2 of the first cross-linking element 21 moving away from the associated first connecting element 25 and out of section 25a. At the same time, the second connecting element 22 is likewise led to pivot about the central pivot point 20A, however in the opposite direction, with the second end 22.2 of the second cross-linking element 22 similarly moving away from the associated second connecting element 26 and out of section 26a. As a result, the first and second connecting elements 25, 26 are led to pivot downwards with respect to the associated side frame members 11, 12 as illustrated e.g. in Figure 3D.

[0052] In accordance with a first aspect of the invention, the foldable seat platform 30 further comprises a locking mechanism, generally designated by reference numeral 50, configured to lock the foldable seat platform 30 (and the associated foldable frame 10) in the deployed configuration. This locking mechanism 50 prevents, in the locked configuration, pivotal movement of the central seat member 31 with respect to the first and second outer seat members 35, 36, thereby locking the foldable frame 10 in the deployed configuration.

[0053] This locking mechanism 50 is further configured to selectively release the foldable seat platform 30 from the deployed configuration and allow pivotal movement of the central seat member 31 with respect to the first and second outer seat members 35, 36, thereby allowing switching of the foldable frame 10 from the deployed configuration to the folded configuration.

[0054] Locking of the foldable seat platform 30 in the deployed configuration could be achieved in a variety of ways. The illustrated embodiment shows one possible, particularly preferred solution. According to this preferred solution, the locking mechanism 50 comprises a spring-loaded release handle 55 mounted on the central seat member 31, which release handle 55 is movable between a locking position (as shown e.g. in Figures 6A-E) and a release position (as shown e.g. in Figures 7A-B).

[0055] In accordance with a particularly preferred variant, as illustrated, the spring-loaded release handle 55 is mounted underneath the central seat member 31 and is adapted to slide between the locking and release positions along a direction parallel to the pivot axes of the first and second hinges 30a, 30b. A pair of compression springs 56 (partly visible in Figures 6B and 6E) is provided to bias the release handle to automatically return to the locking position when the foldable seat platform 30 takes the unfolded, deployed configuration.

[0056] Even more specifically, the spring-loaded release handle 55 comprises a laterally extending locking member 55a that is configured to slide underneath a portion of the central seat member 31 and of the first and second outer seat members 35, 36, when in the locking position, thereby preventing pivotal movement of the first and second outer seat members 35, 36 with respect to the central seat member 31. This laterally extending locking member 55a is configured to disengage from and release the first and second outer seat members 35, 36, when in the release position, as shown e.g. in Figures 5D and 7A-B, thereby allowing pivotal movement of the first and second outer seat members 35, 36 with respect to the central seat member 31.

[0057] Referring more specifically to Figures 5A-F, 6A-E and 7A-B, a particular configuration of the foldable seat platform 30 and associated locking mechanism 50 will be detailed. As already mentioned, the central seat member 31 is pivotally connected to the first and second outer seat members 35, 36 by means of first and second hinges 30a, 30b. In the illustrated example, a holding member 32 is attached to the central seat member 31, which holding member 32 includes first and second rod elements extending along the relevant pivot axes of the first and second hinges 30a, 30b. The holding member 32 is positioned on a side of the foldable seat platform 30 opposite to the side where the release handle 55 is located, with the first and second rod elements 32a, 32b extending from one side to the other, through portions of the central seat member 31 and of the first and second outer seat members 35, 36, to act as pivot axes of the first and second hinges 30a, 30b. In the illustrated example, a cross-section of the first and second rod elements 32a, 32b is not truly circular, but shaped as a cross to minimize friction.

[0058] In effect, as shown e.g. in Figures 7A and 7B, each of the first and second outer seat members 35, 36 exhibits a plurality of (namely eight) parallel, relatively thin hinge legs (or teeth) distributed along the pivot axes of the first and second hinges 30a, 30b, which hinge legs engage with a corresponding number of hinge slits formed at first and second hinged ends 31.1, 31.2 of the central seat member 31. As a result, a corresponding plurality of (namely nine) parallel, relatively wide hinge legs (or teeth) distributed along the pivot axes of the first and second hinges 30a, 30b is formed on each of the first and second hinged ends 31.1, 31.2 of the central seat member 31, which hinge legs likewise engage with a corresponding number of hinge spacings formed at the associated ends of the first and second outer seat members 35, 36. A series of hinge holes are formed in the aforementioned hinge legs for engagement with the first and second rod elements 32a, 32b of the holding member 32. One will therefore understand that the central seat member 31 and outer seat members 35, 36 are configured to exhibit mutually engaging combed-shaped interfaces that are held together by the holding member 32 and the first and second rod elements 32a, 32b.

[0059] The aforementioned first and second rod elements 32a, 32b also act as guides along which the aforementioned spring-loaded release handle 55 of the locking mechanism 50 is arranged to slide between the locking and release positions. In that regard, the relevant compression springs 56 used to bias the release handle 55 to return to the locking position are mounted coaxial with the first and second rod elements 32a, 32b and interposed between a portion of a corresponding pair of the hinge legs of the central seat member 31 and a portion of the release handle 55 as partly depicted in Figures 6B and 6E.

[0060] More specifically, the first and second hinges 30a, 30b are configured such that pivotal movement of the central seat member 31 with respect to the first and second outer seat members 35, 36 is prevented beyond the deployed configuration of the foldable seat platform 30, the first and second outer seat members 35, 36 being only allowed to pivot downwards with respect to the central seat member 31 from the deployed configuration of the foldable seat platform. This other aspect is actually implementable independently of (but preferably in com-

bination with) the aforementioned locking mechanism 50, and accordingly forms another independent aspect of the present invention.

[0061] By way of preference, as shown, the foldable seat platform 30 exhibits, in the folded configuration, an inverted U-shaped upper surface with curved transitions from the central seat member 31 to the first and second outer seat members 35, 36. In the illustrated example, the first and second hinged ends 31.1, 31.2 of the central seat member 31 each preferably exhibit a convex upper transition surface 31a, resp.31b, of substantially constant radius coaxial with the pivot axis of the first, respectively second hinge 30a, resp. 30b, which convex upper transition surface 31a, 31b is revealed upon switching the foldable seat platform 30 to the folded configuration, as shown e.g. in Figures 2A-B, 5D-F and 7A-B. In the deployed configuration, the first and second outer seat members 35, 36 are pivoted to cover the upper transition surfaces 31a, 31b. Thanks to this configuration, accidental pinching upon switching of the foldable seat platform 30 from the folded configuration to the deployed configuration is prevented or at least greatly reduced.

[0062] One will appreciate that the configuration of the interfaces between the central seat member 31 and the outer seat members 35, 36 could potentially be reversed, with the relatively larger hinge legs being provided on the outer seat members 35, 36 instead of the central seat member 31 as shown. In that regard, the relevant convex upper transition surfaces could alternatively be provided on the relevant outer seat members 35, 36.

[0063] A further refinement of the aforementioned seat platform 30 may further consist in designing each of the first and second outer seat members 35, 36 so as to further exhibit a stop surface 35a, resp. 36a, configured to come in abutment with the central seat member 31 in the deployed configuration of the foldable seat platform 30 as shown especially in Figure 5C. In effect, in the illustrated example, the relevant stop surface 35a, resp. 36a, is formed at a leading edge of each of the hinge legs of the outer seat members 35, 36 (see also Figure 5F). In this way, when the foldable seat platform 30 is switched to the deployed configuration, the central seat member 31 and outer seat members 35, 36 form an intimate connection suitable to support the load of a user seating on the deployed seat platform 30.

[0064] Various modifications and/or improvements may be made to the above-described embodiments without departing from the scope of the invention as defined by the appended claims. In particular, the locking mechanism may be designed in any appropriate manner. Locking of the foldable seat platform in the deployed configuration could be achieved in a variety of alternate ways, for instance by means of a latch mechanism adapted to take a first (locking) position in which pivotal movement of the outer seat members with respect to the central seat member is prevented, and a second (release) position in which pivotal movement of the outer seat members with respect to the central seat member is allowed. In that respect, although preferred, the use of a spring-loaded release handle is not required. Furthermore, movement of the locking mechanism between the locking and release positions does not necessarily need to occur along a direction that is parallel to the pivot axes of the first and second hinges.

[0065] In addition, other adequate folding mechanisms could potentially be used in lieu of the cross-folding mechanism shown in the drawings. One solution may for instance consist in using a so-called folding gate mechanism configured to fold in a forward/rearward direction as used e.g. in Invacare's Dolomite Jazz® II rollator mentioned in the preamble hereof. The cross-folding mechanism arrangement however constitutes a reasonably compact and lightweight solution that works in an optimal manner in conjunction with the three-piece foldable seat platform of the present invention.

LIST OF REFERENCE NUMERALS AND SIGNS USED THEREIN

[0066]

1	foldable walking aid apparatus (e.g. wheeled walker apparatus / rollator)
10	foldable frame
11	first (left) side frame member of foldable frame 10
11a	upper frame section of first side frame member 11
11b	lower frame section of first side frame member 11
12	second (right) side frame member of foldable frame 10
12a	upper frame section of second side frame member 12
12b	lower frame section of second side frame member 12
15	first (left) upright element connected to first side frame member 11 (height-adjustable telescopic element)
16	second (right) upright element connected to second side frame member 12 (height-adjustable telescopic element)
17	first (left) hand grip provided on first upright element 15
17A	manually operable brake handle provided proximate to first hand grip 17
18	second (right) hand grip provided on second upright element 16
18A	manually operable brake handle provided proximate to second hand grip 18
20	folding mechanism / cross-folding mechanism
20A	central pivot point of cross-folding mechanism 20
21	first cross-linking element of cross-folding mechanism 20
21.1	first end of first cross-linking element 21 pivotally connected to first side frame member 11
21.2	second end of first cross-linking element 21
22	second cross-linking element of cross-folding

mechanism 20

22.1 first end of second cross-linking element 22 pivotally connected to second side frame member 12

22.2 second end of second cross-linking element 22

25 first connecting element of cross-folding mechanism 20

25.1 first end of first connecting element 25 pivotally connected to first cross-linking element 21

25.2 second end of first connecting element 25 pivotally connected to second side frame member 12

25a section of first connecting element 25 configured to receive and stop second end 21.2 of first cross-linking element 21 in unfolded, deployed configuration of foldable frame 10

26 second connecting element of cross-folding mechanism 20

26.1 first end of second connecting element 26 pivotally connected to second cross-linking element 22

26.2 second end of second connecting element 26 pivotally connected to first side frame member 11

26a section of second connecting element 26 configured to receive and stop second end 22.2 of second cross-linking element 22 in unfolded, deployed configuration of foldable frame 10

30 foldable seat platform / solid three-piece foldable platform

30.1 first end of foldable seat platform 30 connected to first side frame member 11 (outer end of first outer seat member 35)

30.2 second end of foldable seat platform 30 connected to second side frame member 12 (outer end of second outer seat member 36)

30a first (left) hinge pivotally connecting central seat member 31 to first outer seat member 35

30b second (right) hinge pivotally connecting central seat member 31 to second outer seat member 36

31 central seat member of foldable seat platform 30

31.1 first (left) hinged end of central seat member 31 coinciding with first hinge 30a

31.2 second (right) hinged end of central seat member 31 coinciding with second hinge 30b

31a convex upper surface of first hinged end 31.1

31b convex upper surface of second hinged end 31.2

32 holding member attached to central seat member 31

32a first rod element of holding member 32 extending along pivot axis of first hinge 30a

32b second rod element of holding member 32 extending along pivot axis of second hinge 30b

35 first (left) outer seat member of foldable seat platform 30 pivotally connected to central seat member 31, via first hinge 30a, and first side frame member 11

35a stop surface of first outer seat member 35 configured to come in abutment with central seat member 31 in deployed configuration of foldable seat platform 30

36 second (right) outer seat member of foldable seat platform 30 pivotally connected to central seat member 31, via second hinge 30b, and second side frame member 12

36a stop surface of second outer seat member 36 configured to come in abutment with central seat member 31 in deployed configuration of foldable seat platform 30

40 securing strap

50 locking mechanism of foldable seat platform 30 / lock-and-release mechanism of foldable frame 10

55 spring-loaded release handle of locking mechanism 50

55a laterally extending locking member of release handle 55

56 pair of compression springs biasing the release handle 55 to return to a locking position

81 front wheels

82 rear wheels

85 (cable-operated) brake pad associated to each rear wheel 82 (operated by brake handle 17A, resp. 18A)

110 pair of mounting brackets attached to upper frame section 11a of first side frame member 11 and providing pivotal connection to first end 30.1 of foldable seat platform 30

120 pair of mounting brackets attached to upper frame section 12a of second side frame member 12 and providing pivotal connection to second end 30.2 of foldable seat platform 30

Claims

1. A foldable walking aid apparatus (1) comprising :

- a foldable frame (10) including first and second side frame members (11, 12) and a folding mechanism (20) coupling the first side frame member (11) to the second side frame member (12); and
- a foldable seat platform (30) connected at a first end (30.1) to the first side frame member (11) and at a second end (30.2) to the second side frame member (12),

wherein the foldable frame (10) and foldable seat platform (30) are configured to be selectively switchable from an unfolded, deployed configuration to a folded configuration, and vice versa,
characterized in that the foldable seat platform (30) is a solid three-piece foldable platform comprising a central seat member (31) that is pivotally connected to first and second outer seat members (35, 36) by means of first and second hinges (30a, 30b), the first and second outer seat members (35, 36) being piv-

otally connected, at the first and second ends (30.1, 30.2) of the foldable seat platform (30), to the first and second side frame members (11, 12), respectively,
in that the foldable seat platform (30) further comprises a locking mechanism (50) configured to lock the foldable seat platform (30) in the deployed configuration and prevent pivotal movement of the central seat member (31) with respect to the first and second outer seat members (35, 36), thereby locking the foldable frame (10) in the deployed configuration, and **in that** the locking mechanism (50) is further configured to selectively release the foldable seat platform (30) from the deployed configuration and allow pivotal movement of the central seat member (31) with respect to the first and second outer seat members (35, 36), thereby allowing switching of the foldable frame (10) from the deployed configuration to the folded configuration.

2. The foldable walking aid apparatus (1) according to claim 1, wherein the locking mechanism (50) comprises a spring-loaded release handle (55) mounted on the central seat member (31) and movable between a locking position and a release position.

3. The foldable walking aid apparatus (1) according to claim 2, wherein the spring-loaded release handle (55) is mounted underneath the central seat member (31) and is adapted to slide between the locking and release positions along a direction parallel to the pivot axes of the first and second hinges (30a, 30b).

4. The foldable walking aid apparatus (1) according to claim 3, wherein the spring-loaded release handle (55) comprises a laterally extending locking member (55a) that is configured to slide underneath a portion of the central seat member (31) and of the first and second outer seat members (35, 36), when in the locking position, thereby preventing pivotal movement of the first and second outer seat members (35, 36) with respect to the central seat member (31),
and wherein the laterally extending locking member (55a) is configured to disengage from and release the first and second outer seat members (35, 36), when in the release position, thereby allowing pivotal movement of the first and second outer seat members (35, 36) with respect to the central seat member (31).

5. The foldable walking aid apparatus (1) according to any one of the preceding claims, wherein the first and second hinges (30a, 30b) are configured such that pivotal movement of the central seat member (31) with respect to the first and second outer seat members (35, 36) is prevented beyond the deployed configuration of the foldable seat platform (30), the first and second outer seat members (35, 36) being only allowed to pivot downwards with respect to the central seat member (31) from the deployed configuration of the foldable seat platform (30).

6. A foldable walking aid apparatus (1) comprising :

- a foldable frame (10) including first and second side frame members (11, 12) and a folding mechanism (20) coupling the first side frame member (11) to the second side frame member (12); and
- a foldable seat platform (30) connected at a first end (30.1) to the first side frame member (11) and at a second end (30.2) to the second side frame member (12),

wherein the foldable frame (10) and foldable seat platform (30) are configured to be selectively switchable from an unfolded, deployed configuration to a folded configuration, and vice versa,
characterized in that the foldable seat platform (30) is a solid three-piece foldable platform comprising a central seat member (31) that is pivotally connected to first and second outer seat members (35, 36) by means of first and second hinges (30a, 30b), the first and second outer seat members (35, 36) being pivotally connected, at the first and second ends (30.1, 30.2) of the foldable seat platform (30), to the first and second side frame members (11, 12), respectively,
and **in that** the first and second hinges (30a, 30b) are configured such that pivotal movement of the central seat member (31) with respect to the first and second outer seat members (35, 36) is prevented beyond the deployed configuration of the foldable seat platform (30), the first and second outer seat members (35, 36) being only allowed to pivot downwards with respect to the central seat member (31) from the deployed configuration of the foldable seat platform (30).

7. The foldable walking aid apparatus (1) according to claim 5 or 6, wherein, in the deployed configuration, the foldable seat platform (30) exhibits a substantially flat upper surface,
wherein, in the folded configuration, the foldable seat platform (30) exhibits an inverted U-shaped upper surface with curved transitions (31a, 31b) from the central seat member (31) to the first and second outer seat members (35, 36),
and wherein first and second hinged ends (31.1, 31.2) of the central seat member (31) each preferably exhibit a convex upper transition surface (31a, 31b)of substantially constant radius coaxial with a pivot axis of the first, respectively second hinge (30a, 30b), which convex upper transition surface (31a, 31b) is revealed upon switching the foldable seat platform (30) to the folded configuration.

8. The foldable walking aid apparatus (1) according to any one of claims 5 to 7, wherein each of the first and second outer members (35, 36) comprises a stop surface (35a, 36a) configured to come in abutment with the central seat member (31) in the deployed configuration of the foldable seat platform (30).

9. The foldable walking aid apparatus (1) according to any one of the preceding claims, wherein the folding mechanism (20) is a cross-folding mechanism comprising first and second cross-linking elements (21, 22) that are pivotally connected to one another at a central pivot point (20A),
wherein a first end (21.1) of the first cross-linking element (21) is pivotally connected to the first side frame member (11) and a first end (22.1) of the second cross-linking element (22) is pivotally connected to the second side frame member (12),
wherein the first cross-linking element (21) is pivotally connected to a first end (25.1) of a first connecting element (25) and the second cross-linking element (22) is pivotally connected to a first end (26.1) of a second connecting element (26),
and wherein a second end (25.2) of the first connecting element (25) is pivotally connected to the second side frame member (12) and a second end (26.2) of the second connecting element (26) is pivotally connected to the first side frame member (11).

10. The foldable walking aid apparatus (1) according to claim 9, wherein the first end (21.1) of the first cross-linking element (21) is pivotally connected to the first side frame member (11) so as to pivot about a same pivot axis as the first end (30.1) of the foldable seat platform (30),
and wherein the first end (22.1) of the second cross-linking element (22) is pivotally connected to the second side frame member (12) so as to pivot about a same pivot axis as the second end (30.2) of the foldable seat platform (30).

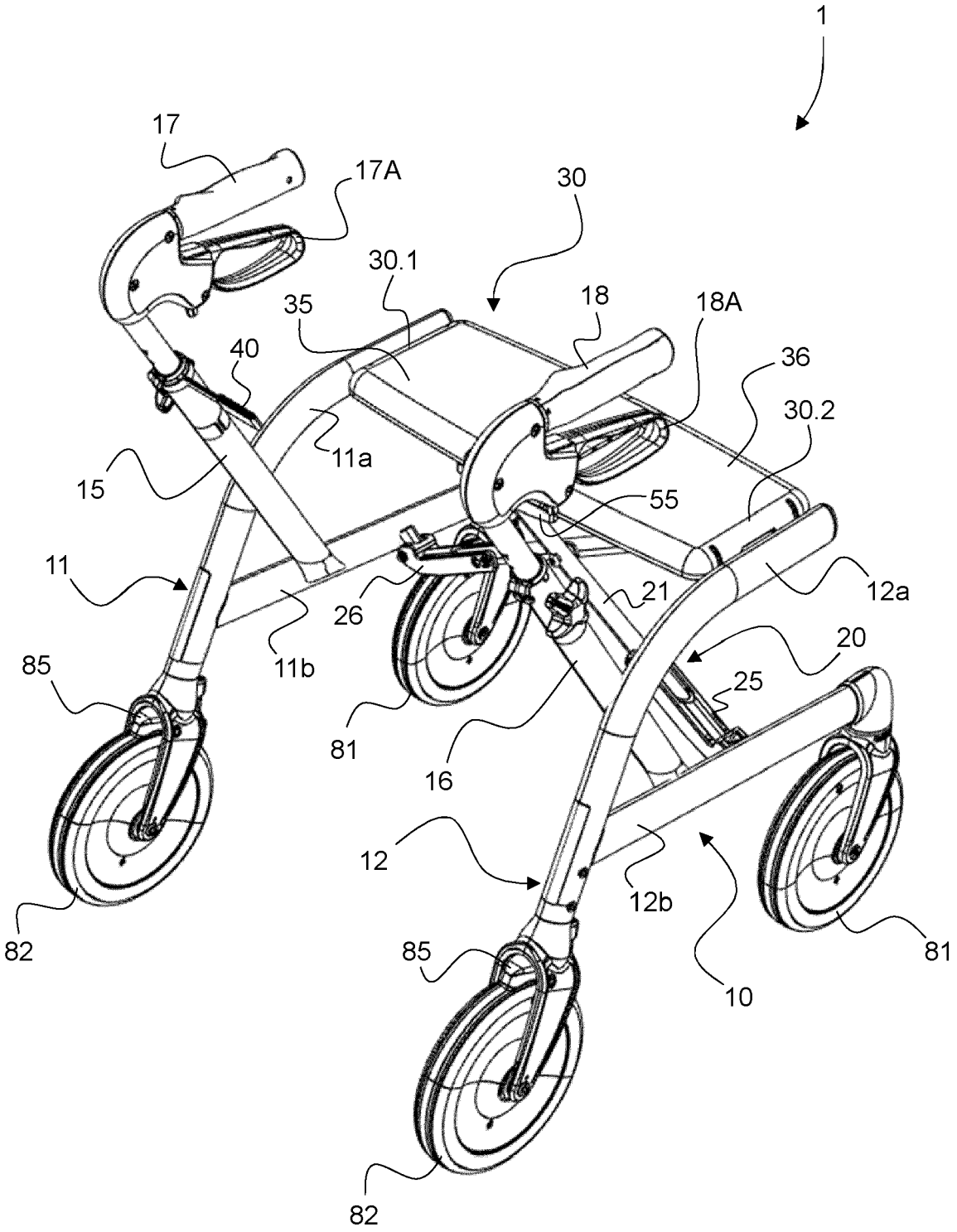
11. The foldable walking aid apparatus (1) according to claim 9 or 10, wherein the first and second connecting elements (25, 26) each comprise a section (25a, 26a) configured to receive and stop a second end (21.2, 22.2) of the first, respectively second cross-linking element (21, 22), in the deployed configuration of the foldable frame (10).

12. The foldable walking aid apparatus (1) according to any one of the preceding claims, wherein each of the first and second side frame members (11, 12) exhibits an upper frame section (11a, 12a) and a lower frame section (11b,12b),
wherein the foldable seat platform (30) is connected to the upper frame sections (11a, 12a) of the first and second side frame members (11, 12),
and wherein the folding mechanism (20) is coupled between the upper and lower frame sections (11a, 11b, 12a, 12b) of the first and second side frame members (11, 12).

13. The foldable walking aid apparatus (1) according to claim 12, wherein the lower frame section (11b, 12b) of each of the first and second side frame members (11, 12) is provided with a pair of wheels (81, 82) including a front wheel (81) and a rear wheel (82).

14. The foldable walking aid apparatus (1) according to any one of the preceding claims, further comprising first and second upright elements (15, 16) connected to the first and second side frame members (11, 12), respectively, which first and second upright elements (15, 16) are each provided with a hand grip (17, 18),
wherein the first and second upright elements (15, 16) are preferably configured as telescopic elements allowing adjustment in height of the hand grips (17, 18).

15. The foldable walking aid apparatus (1) according to claim 13 and 14, further comprising a pair of manually operable brake handles (17A, 18A) provided proximate to the hand grips (17, 18), each brake handle (17A, 18A) being configured to operate a brake pad (85) associated to a corresponding one (82) of the wheels (81, 82), preferably the rear wheel (82).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30
30.1
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18A
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36
30.2
11a
15
55
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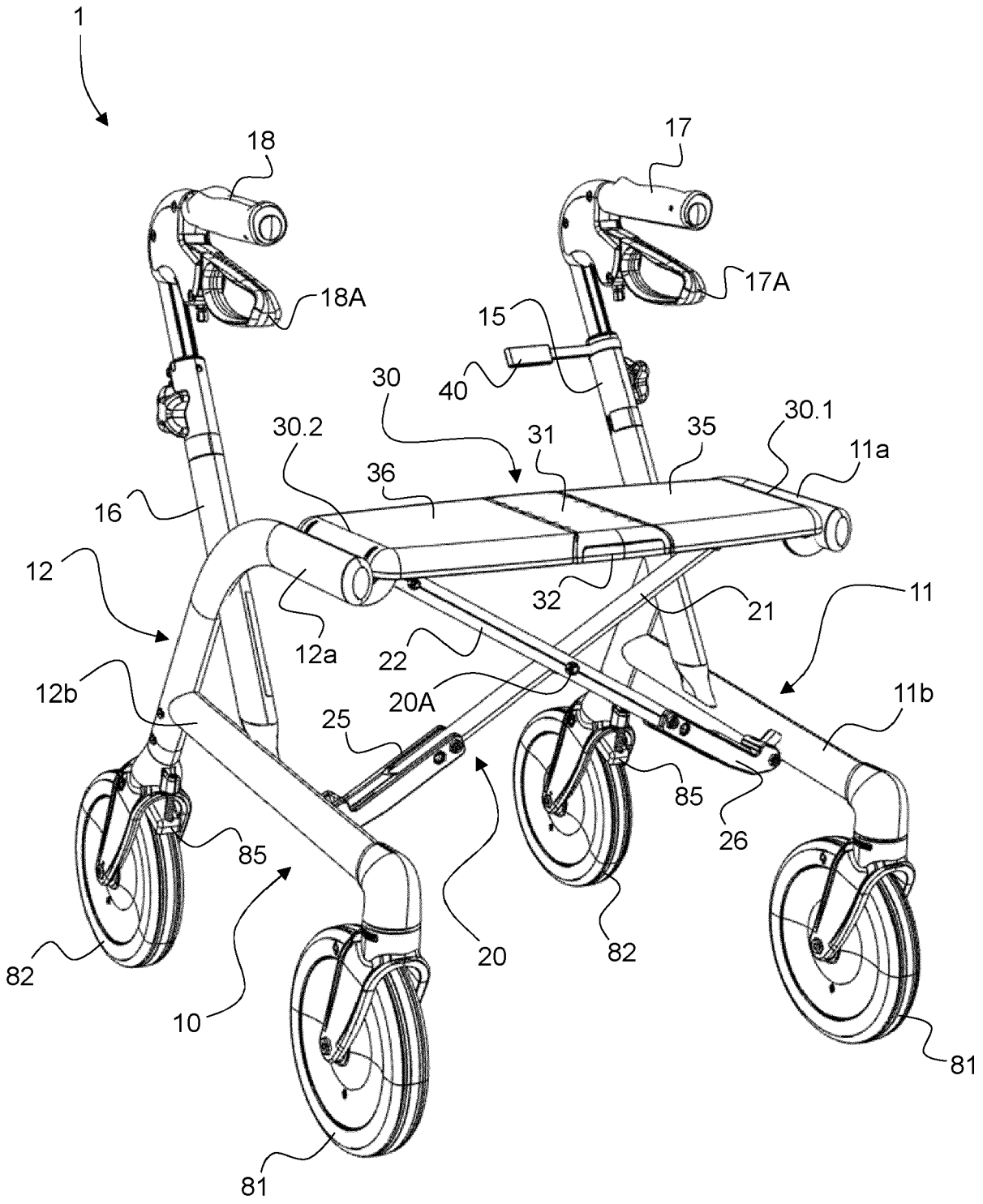
85
11b
25
81
16
12
12b
82
85
81
10
82

Fig. 1A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12a
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12b
20A
11b
25
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26
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20
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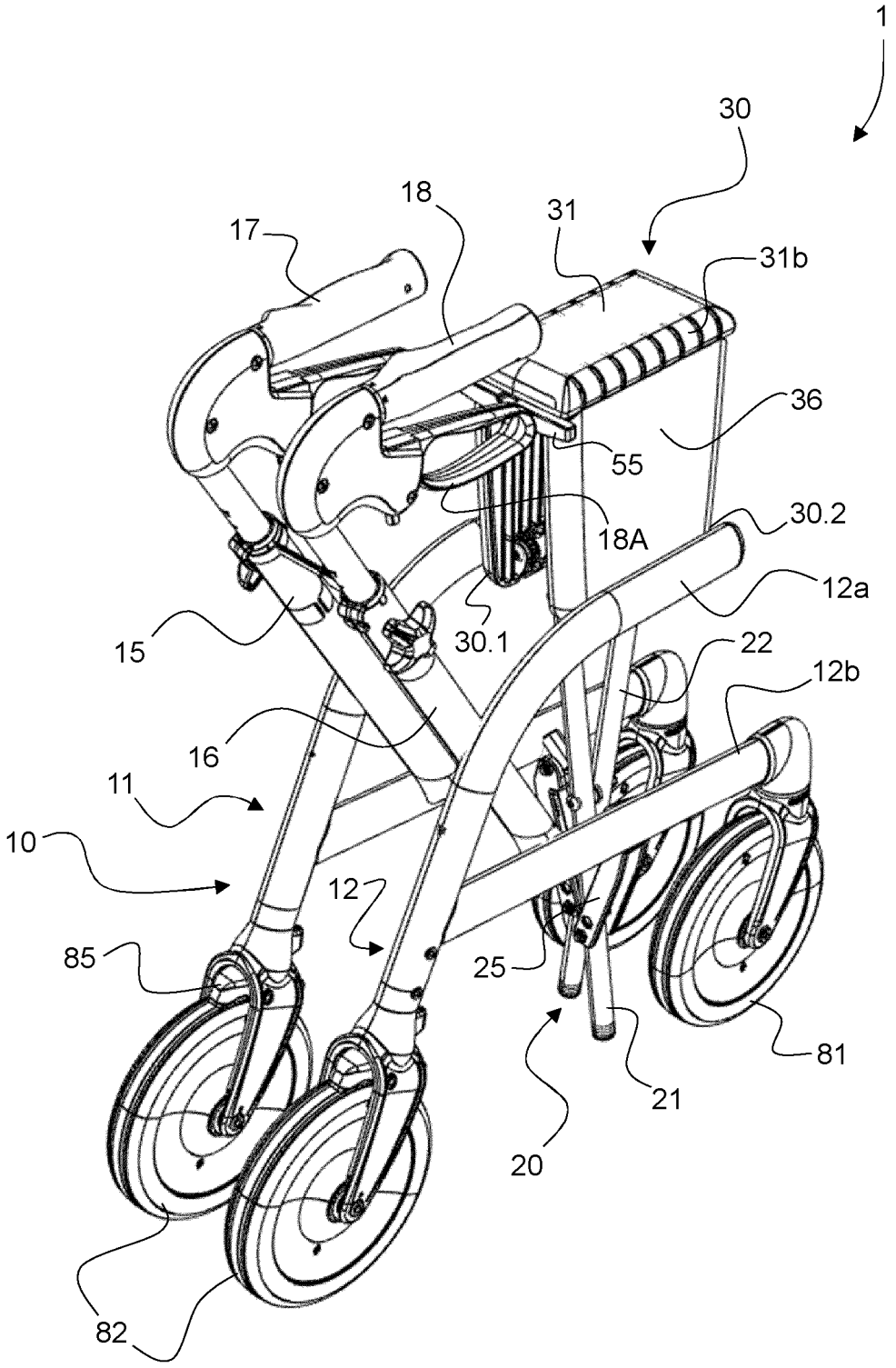
10
81
81

Fig. 1B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30.2
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16
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12
85
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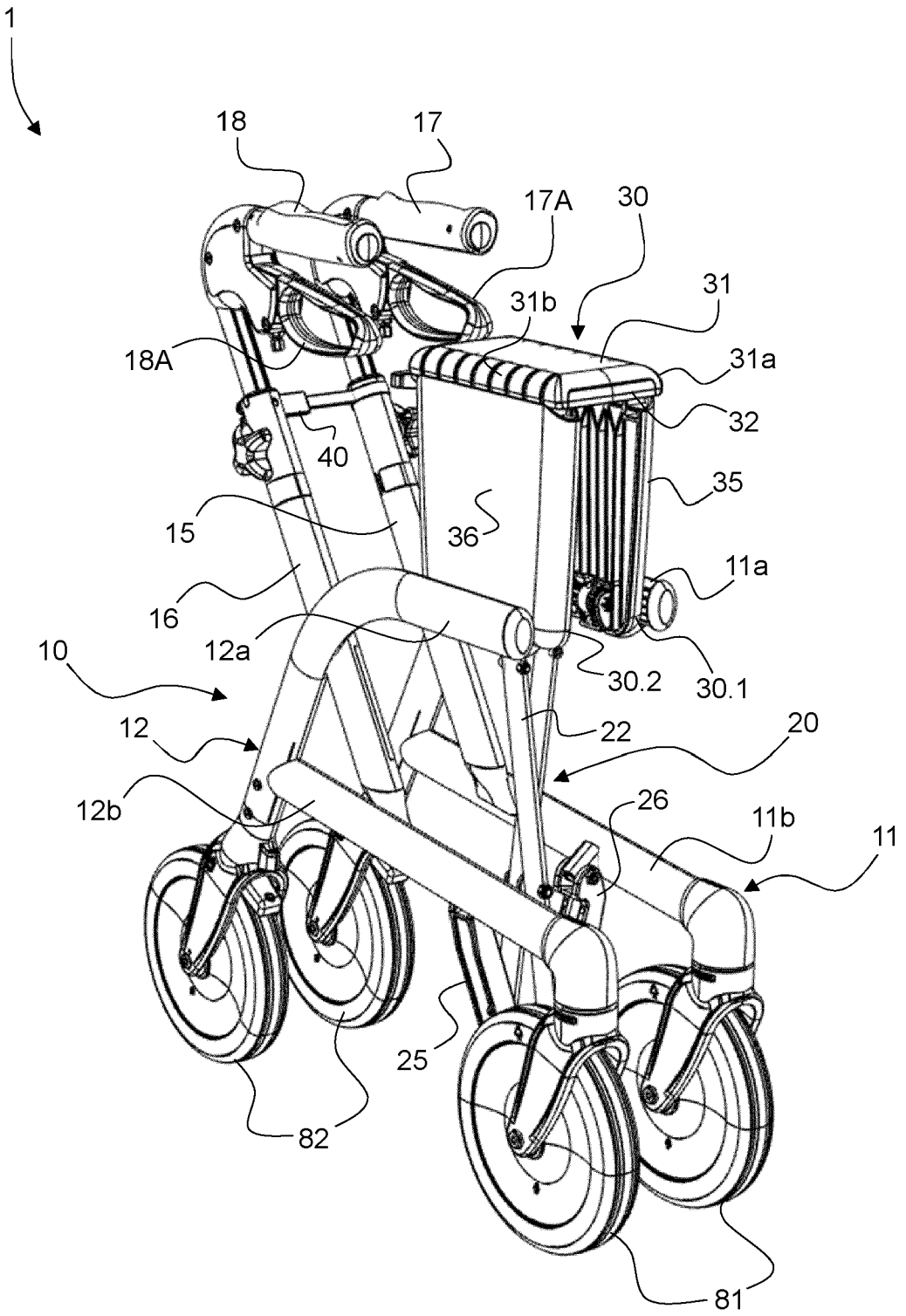
81
21
20
82

Fig. 2A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18A
31a
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35
15
36
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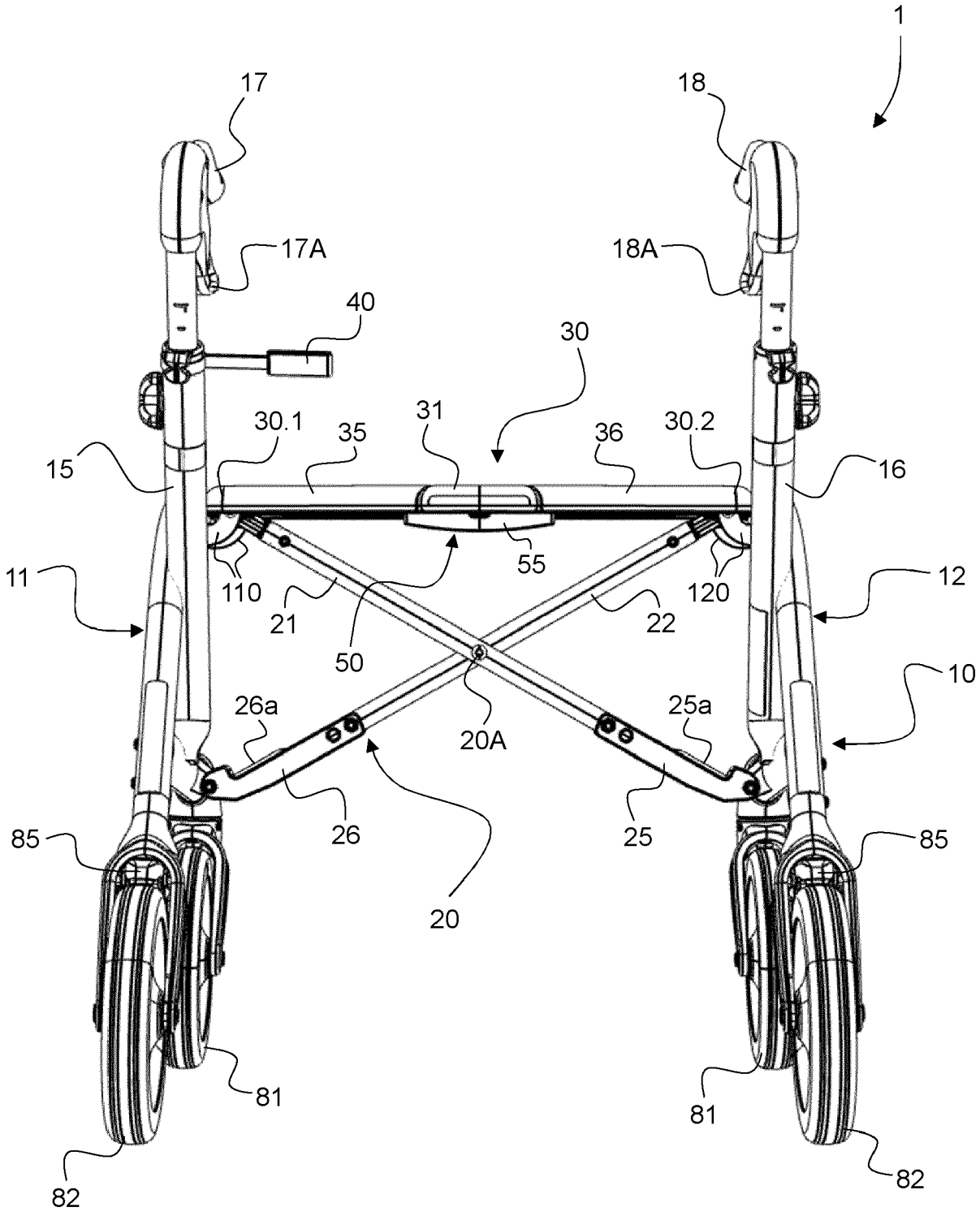
30.1
12
22
20
12b
26
11b
11
25
82
81

Fig. 2B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18A
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30.2
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11
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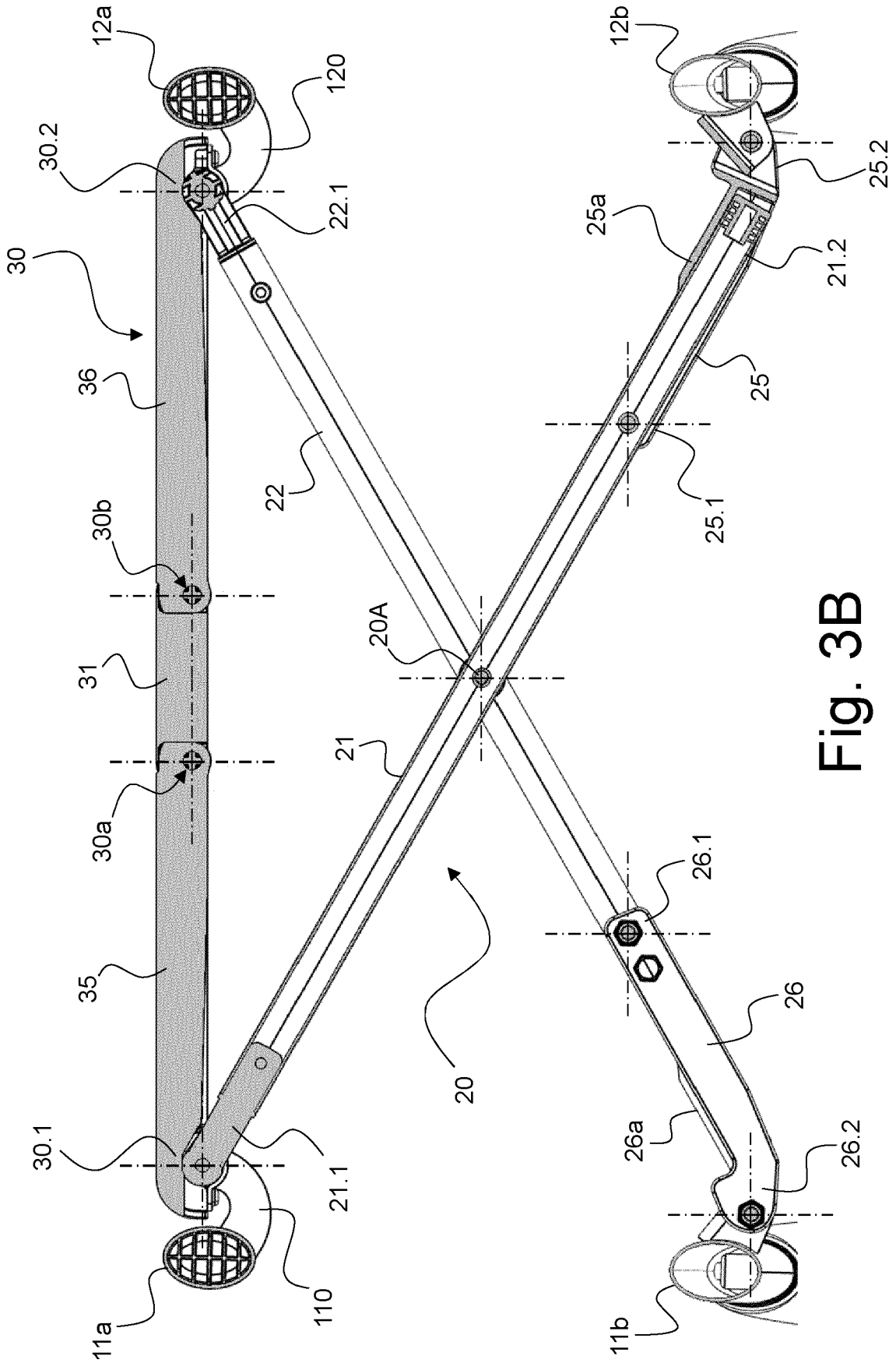
120
12
21
22
50
10
26a
20A
25a
85
26
25
85
20
81
81
82
82

Fig. 3A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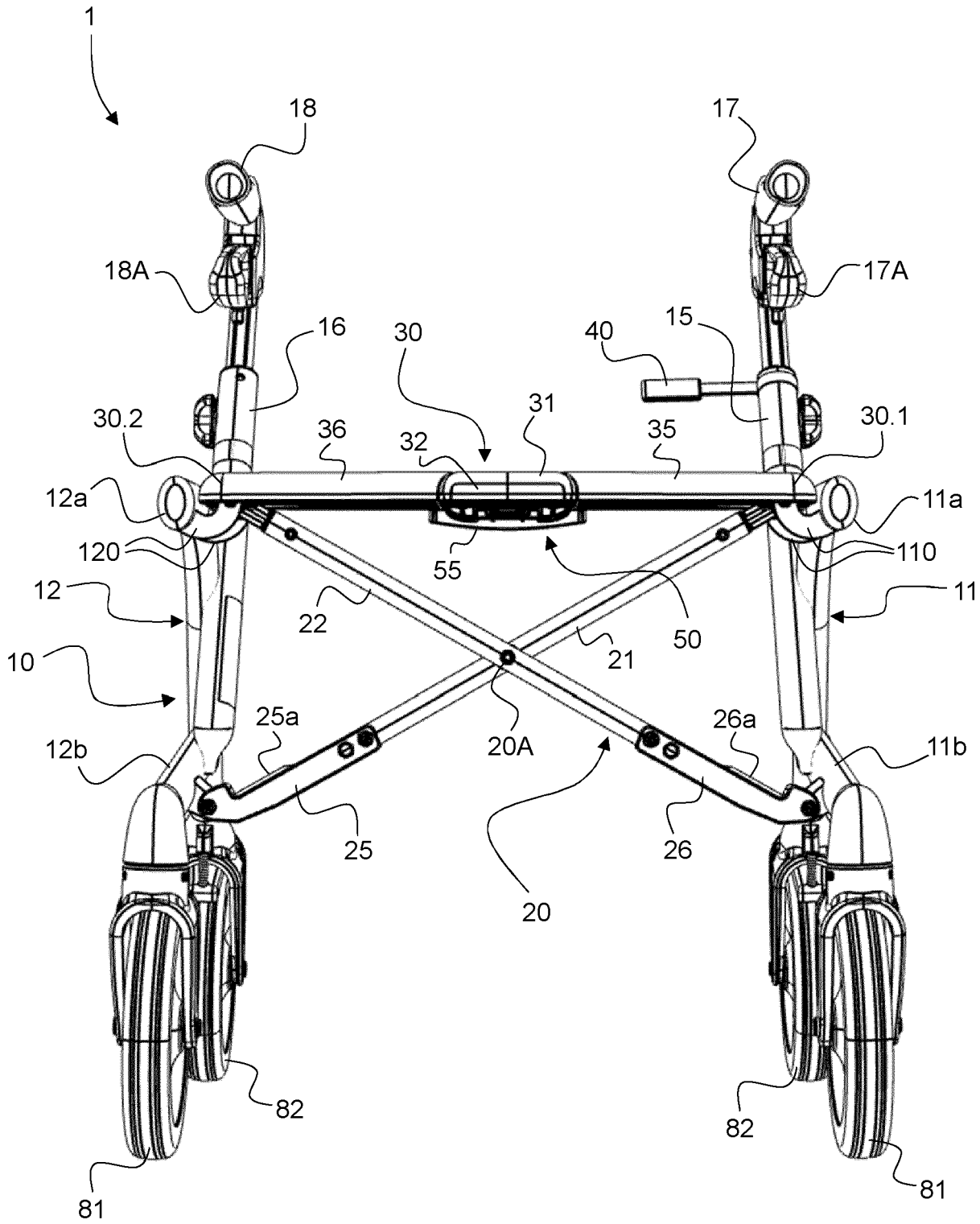
25a
21.2
25
25.1
26.1
26
26a
26.2
11b

Fig. 3B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55
110
12
22
50
11
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10
25a
26a
12b
20A
11b
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26
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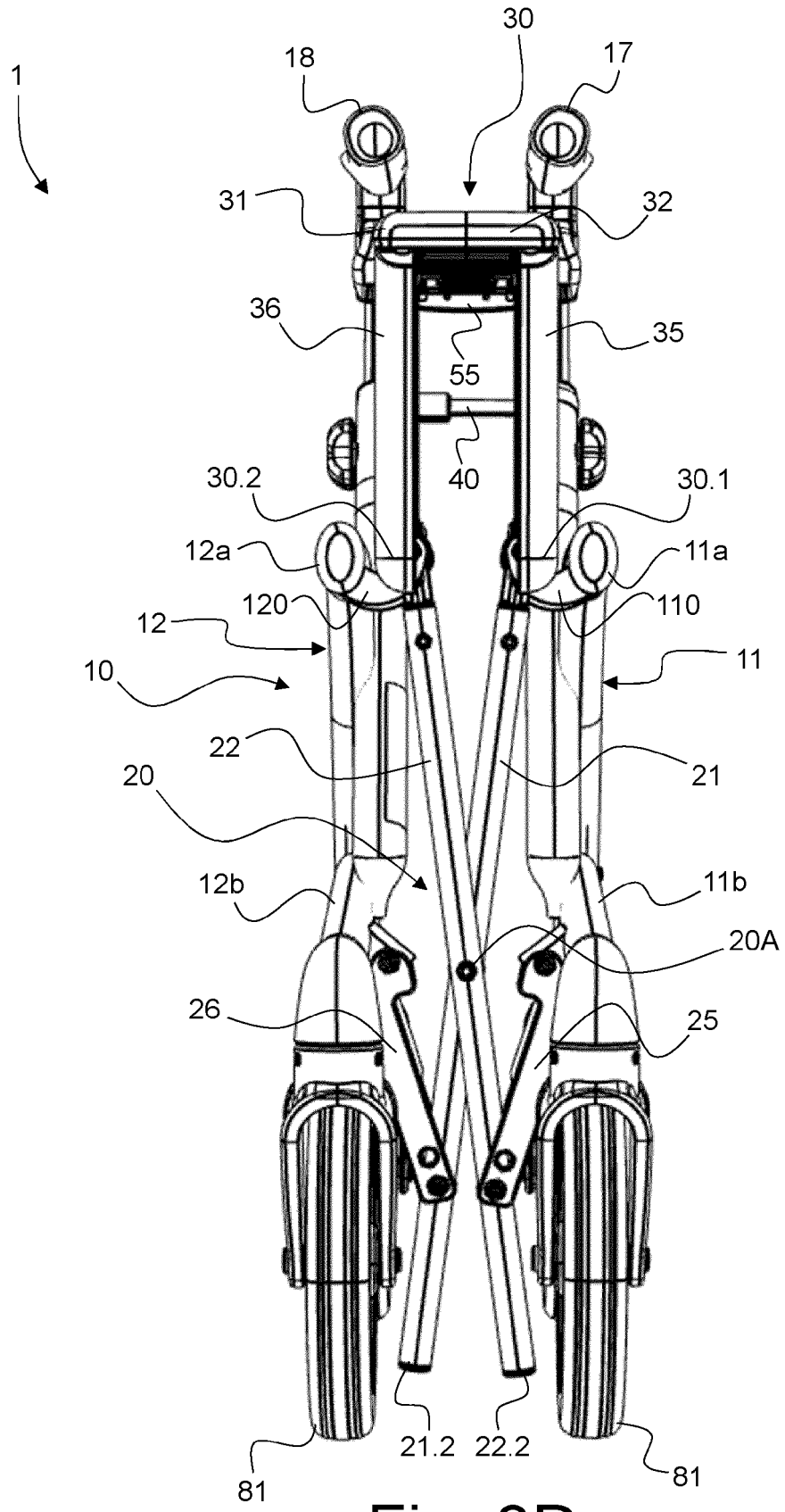
81
81

Fig. 3C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11a
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12b
11b
20A
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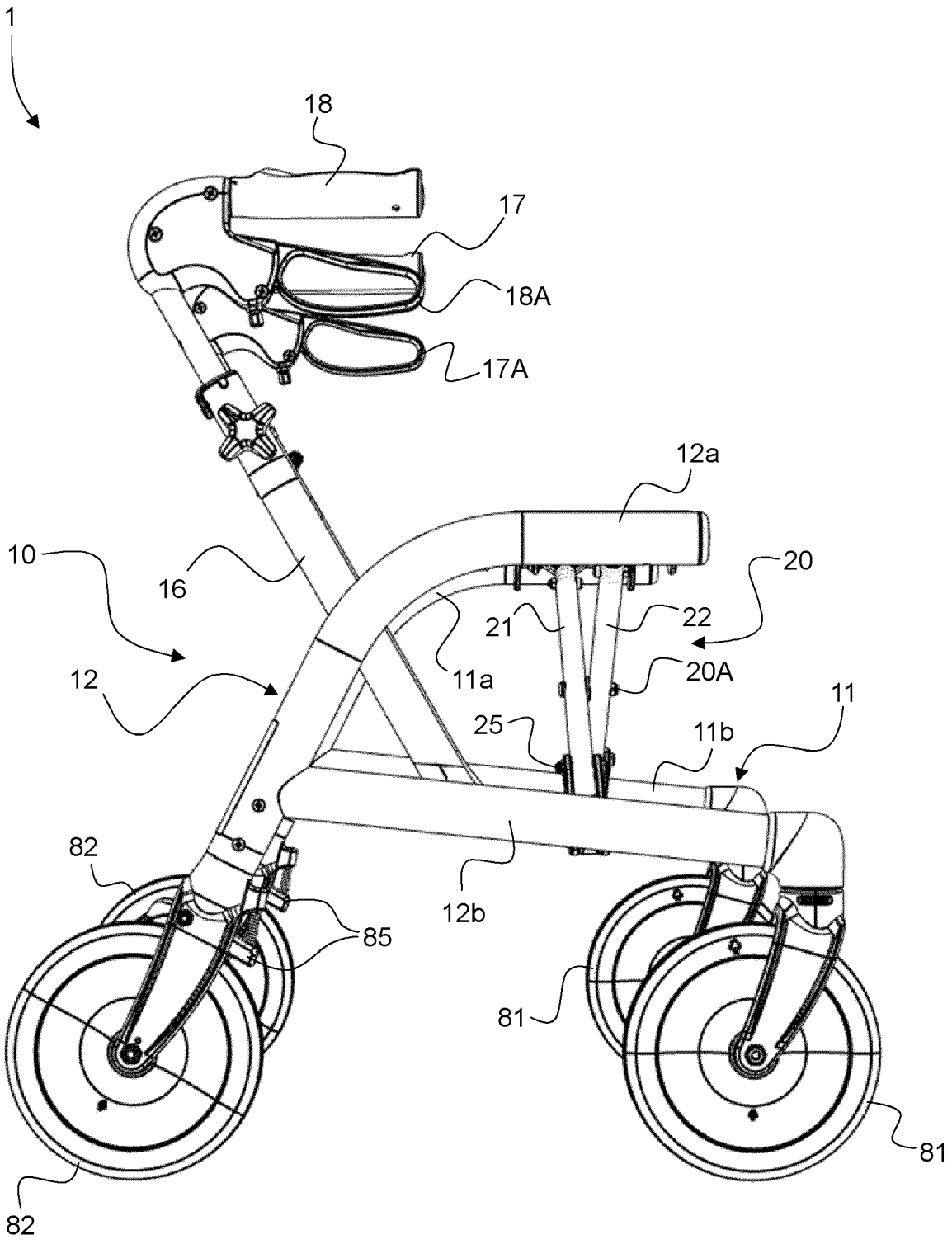
21.2
22.2
81
81

Fig. 3D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12b
85
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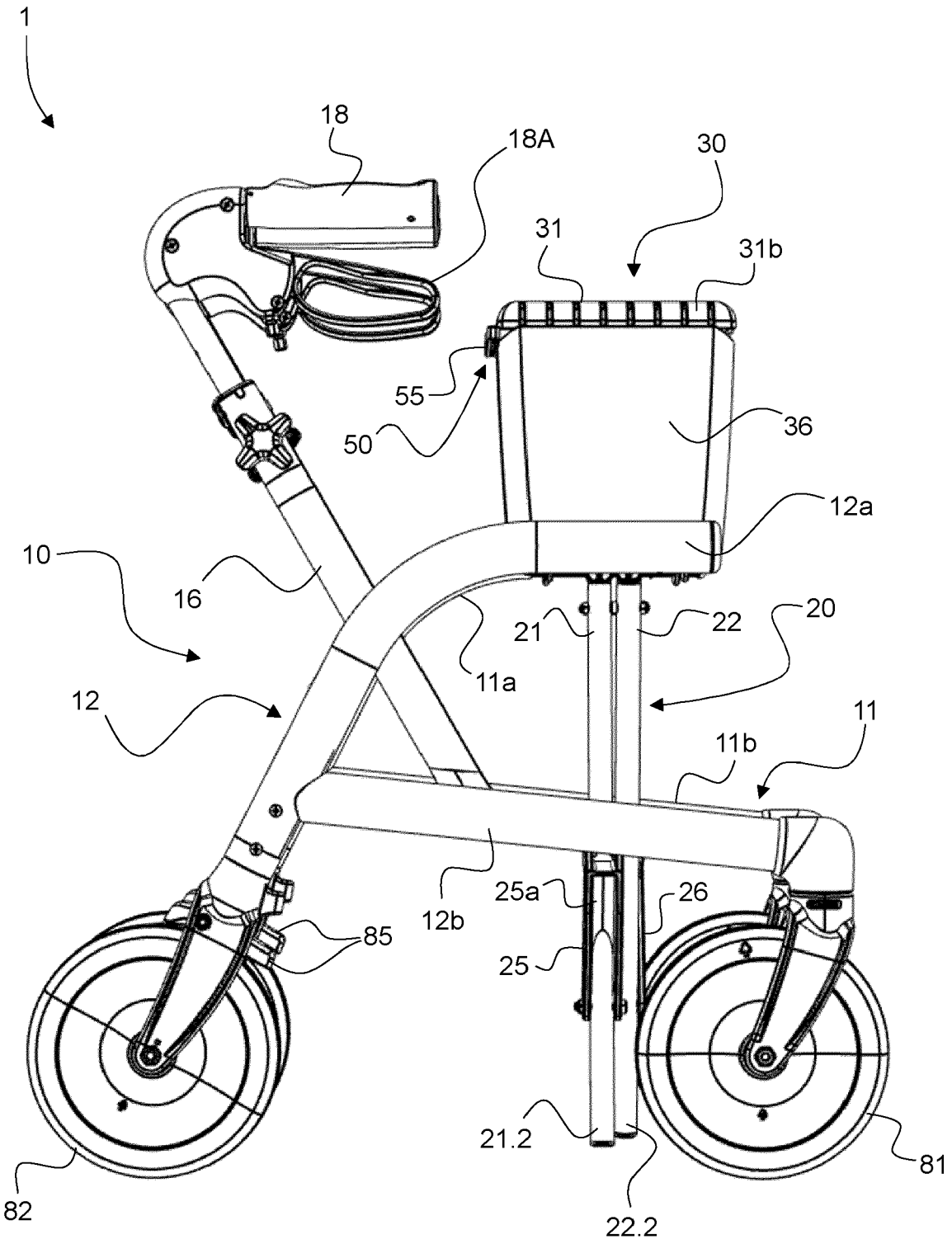
81
82

Fig. 4A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31b
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16
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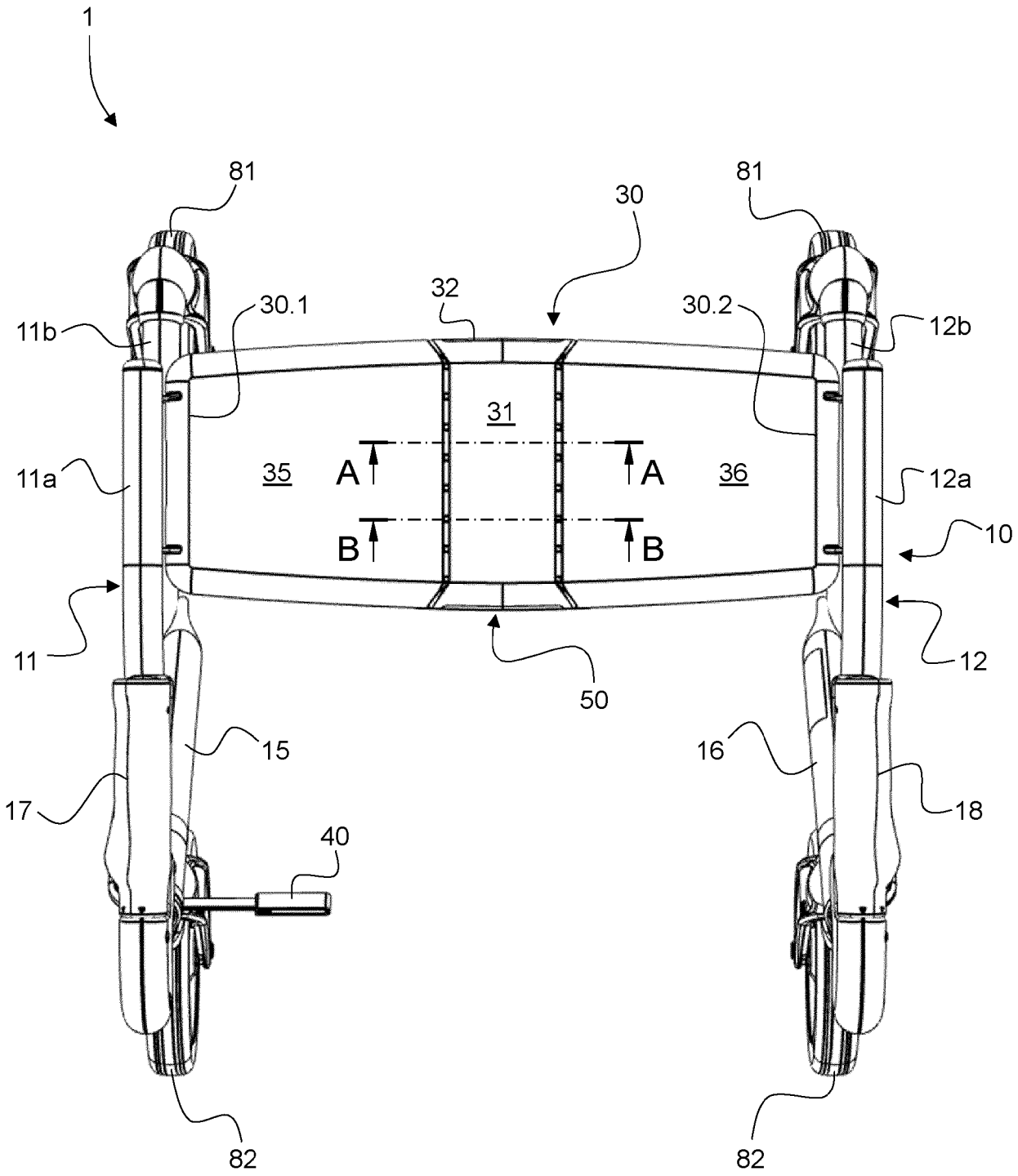
12b
25a
26
85
25
21.2
81
82
22.2

Fig. 4B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40
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82

Fig. 5A

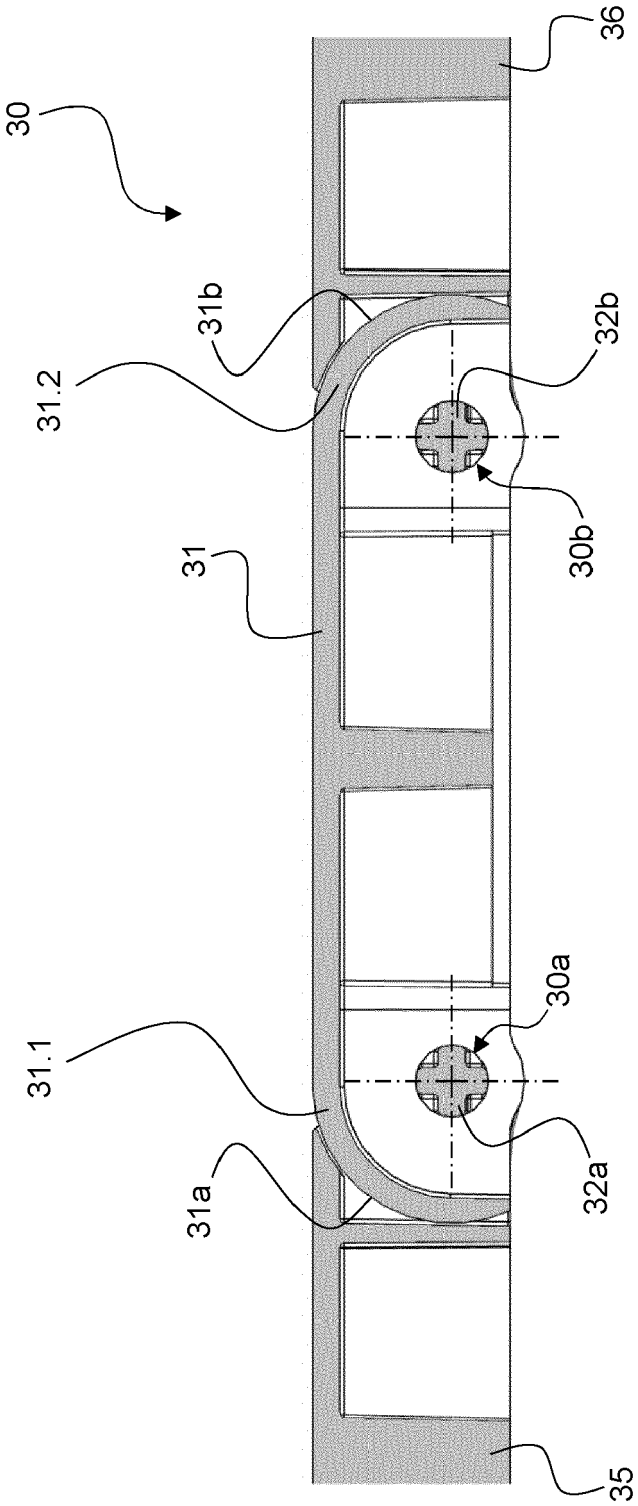


Fig. 5B
(A-A)

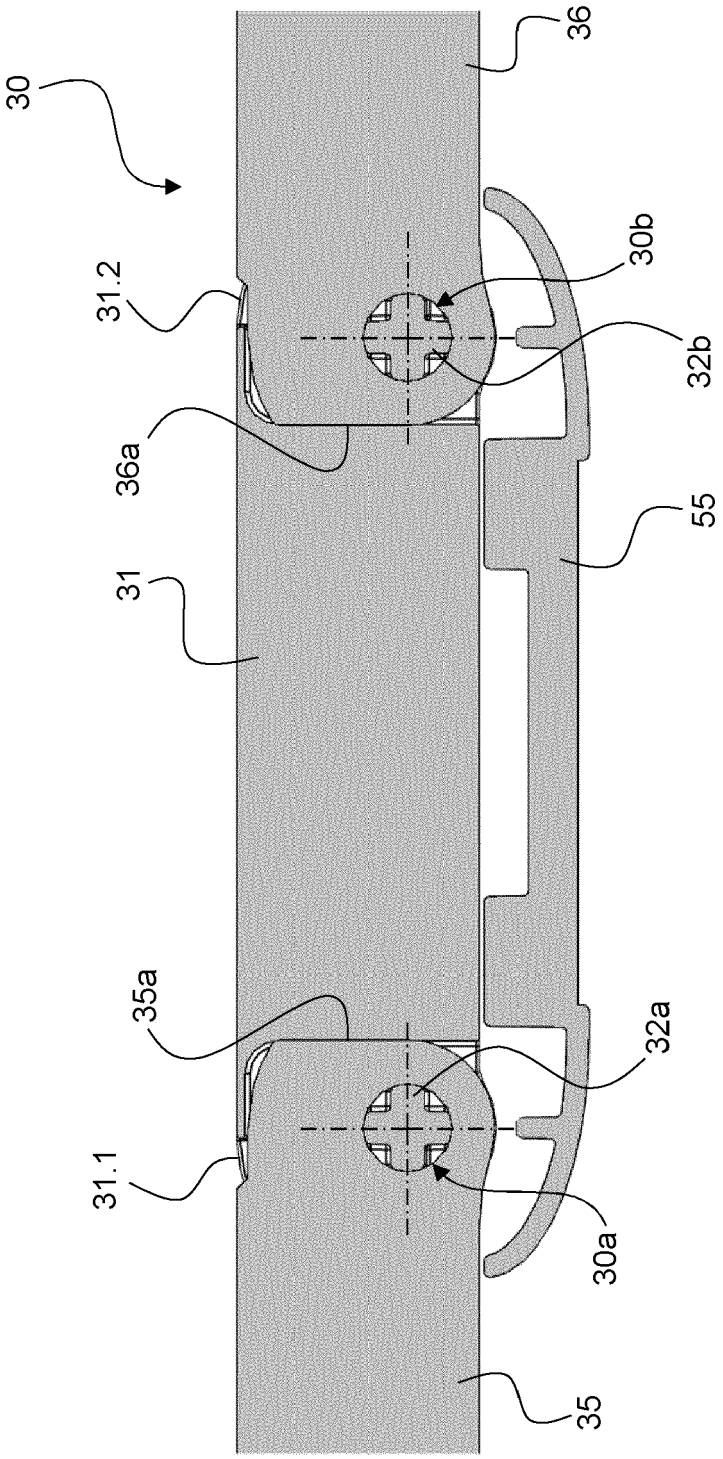
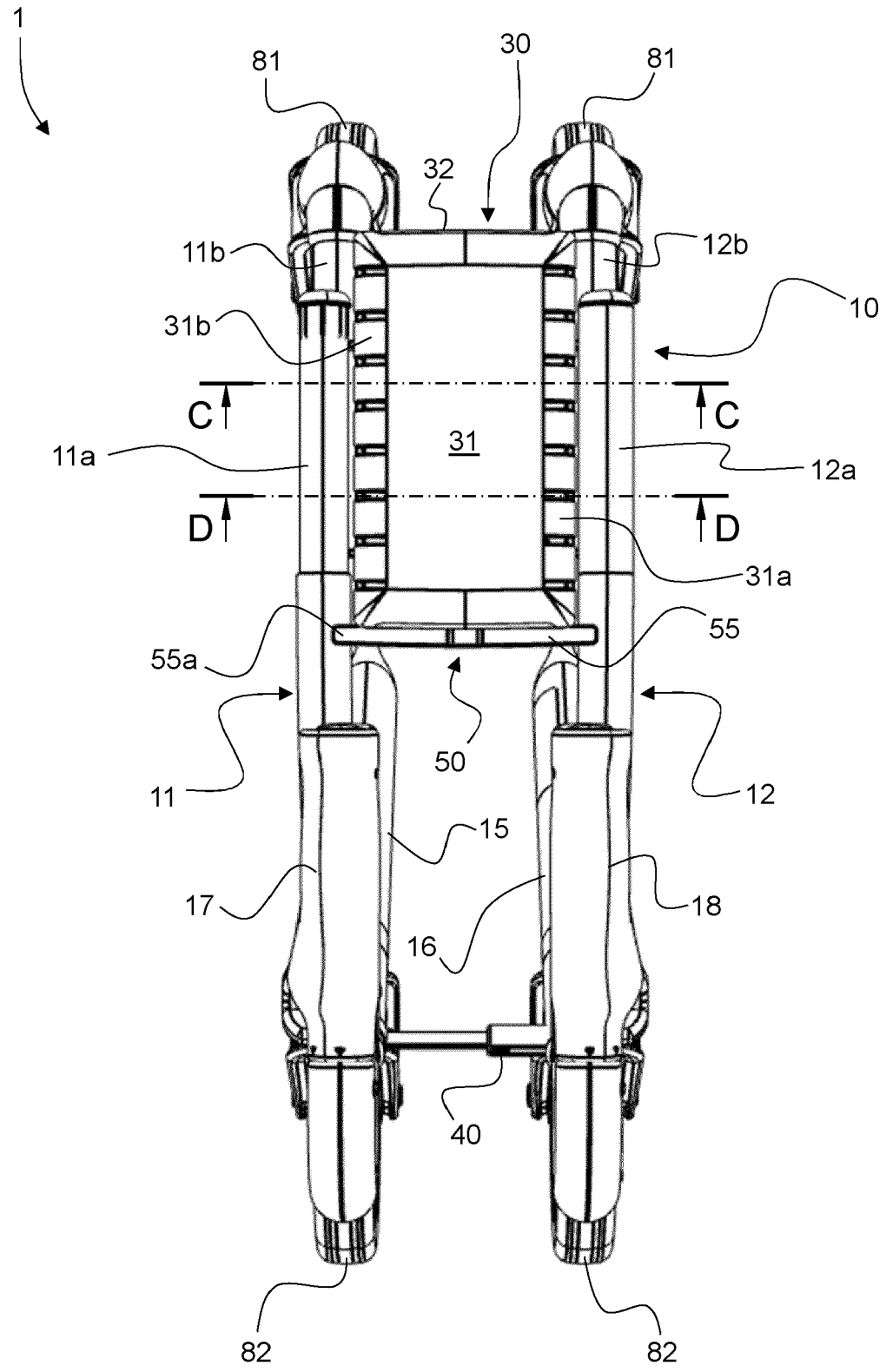


Fig. 5C
(B-B)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81
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11b
12b
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31b
C
C
31
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D
D
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55a
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11
12
15
17
18
16
40
82
82

Fig. 5D

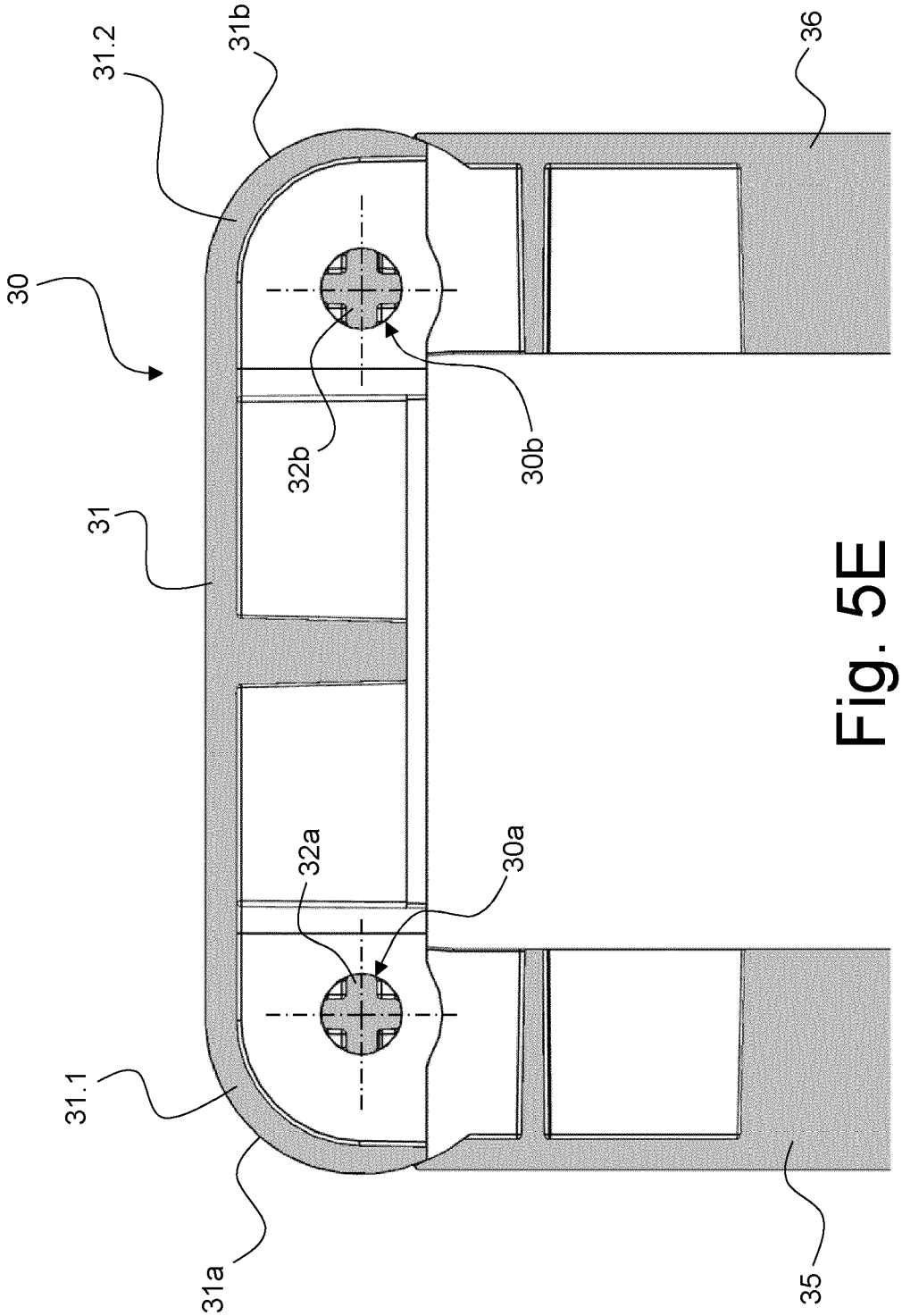


Fig. 5E
(C-C)

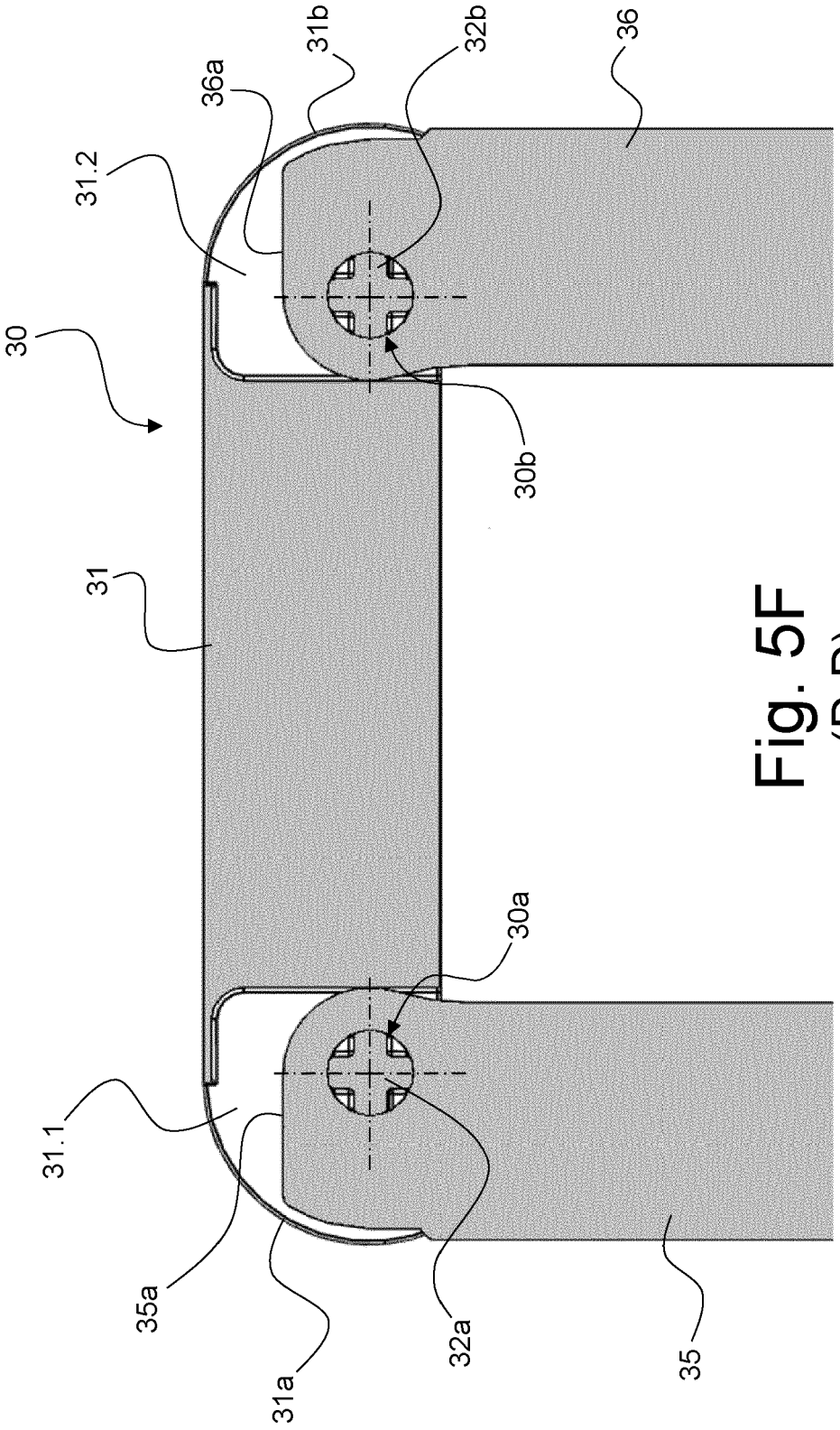
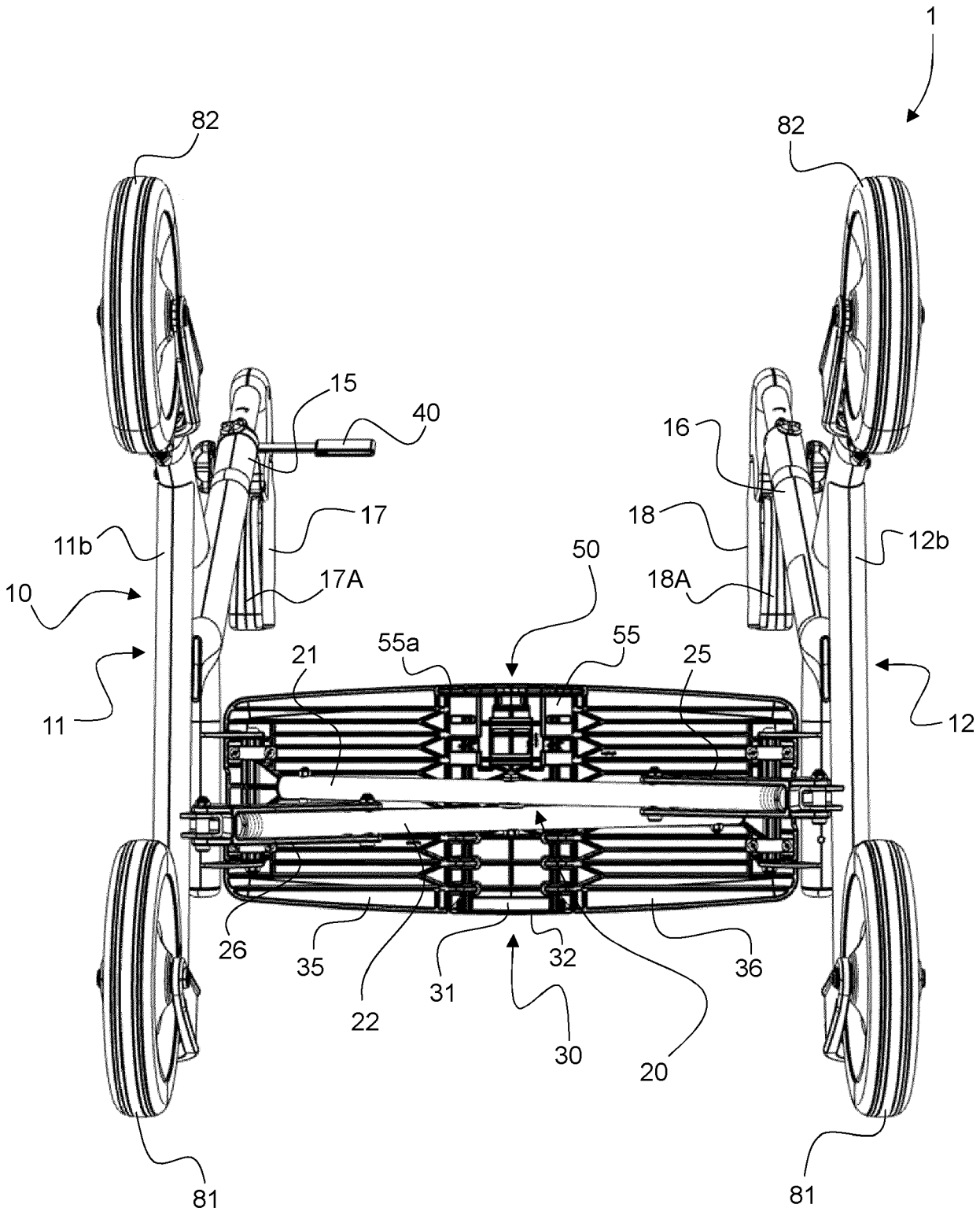


Fig. 5F
(D-D)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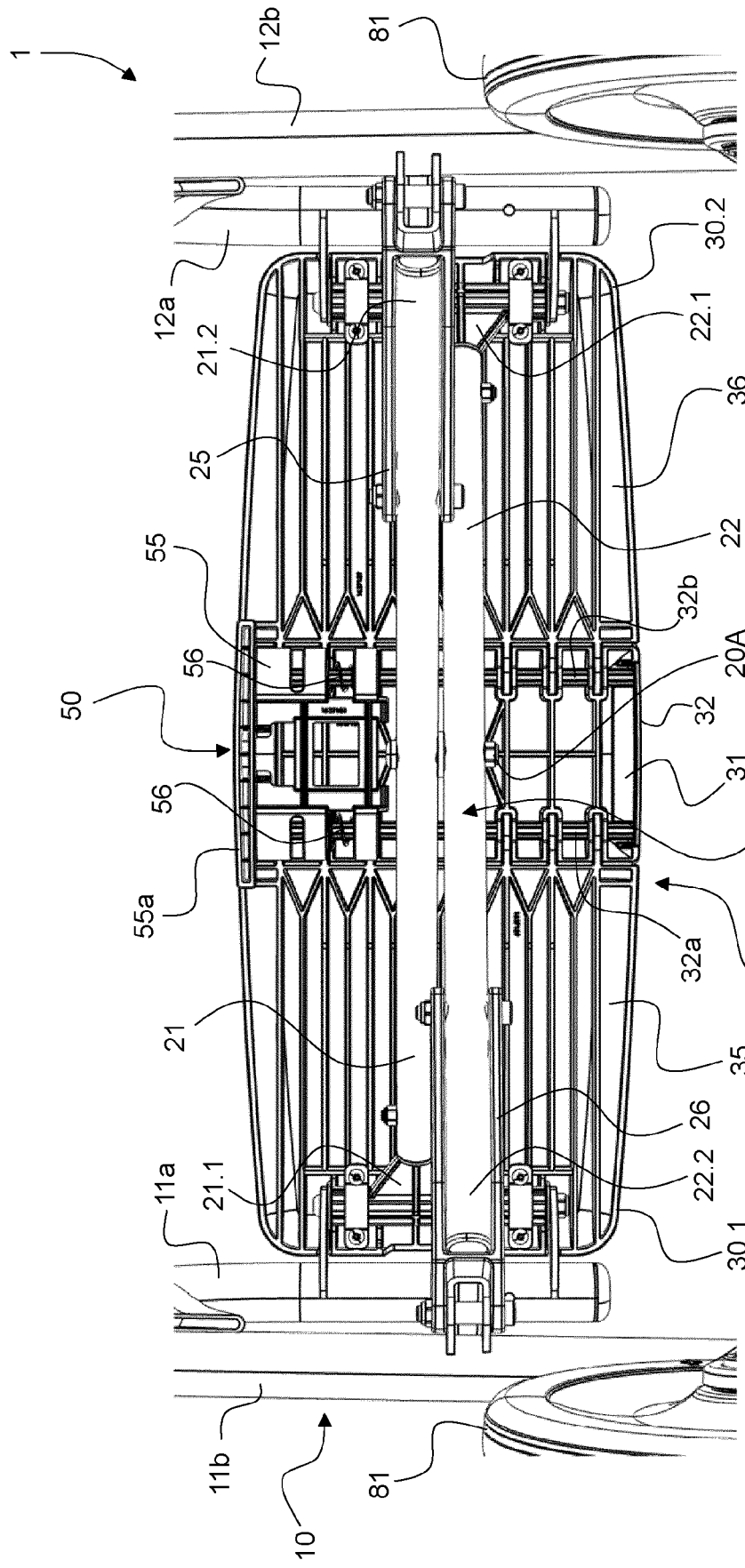
20
81
81

Fig. 6A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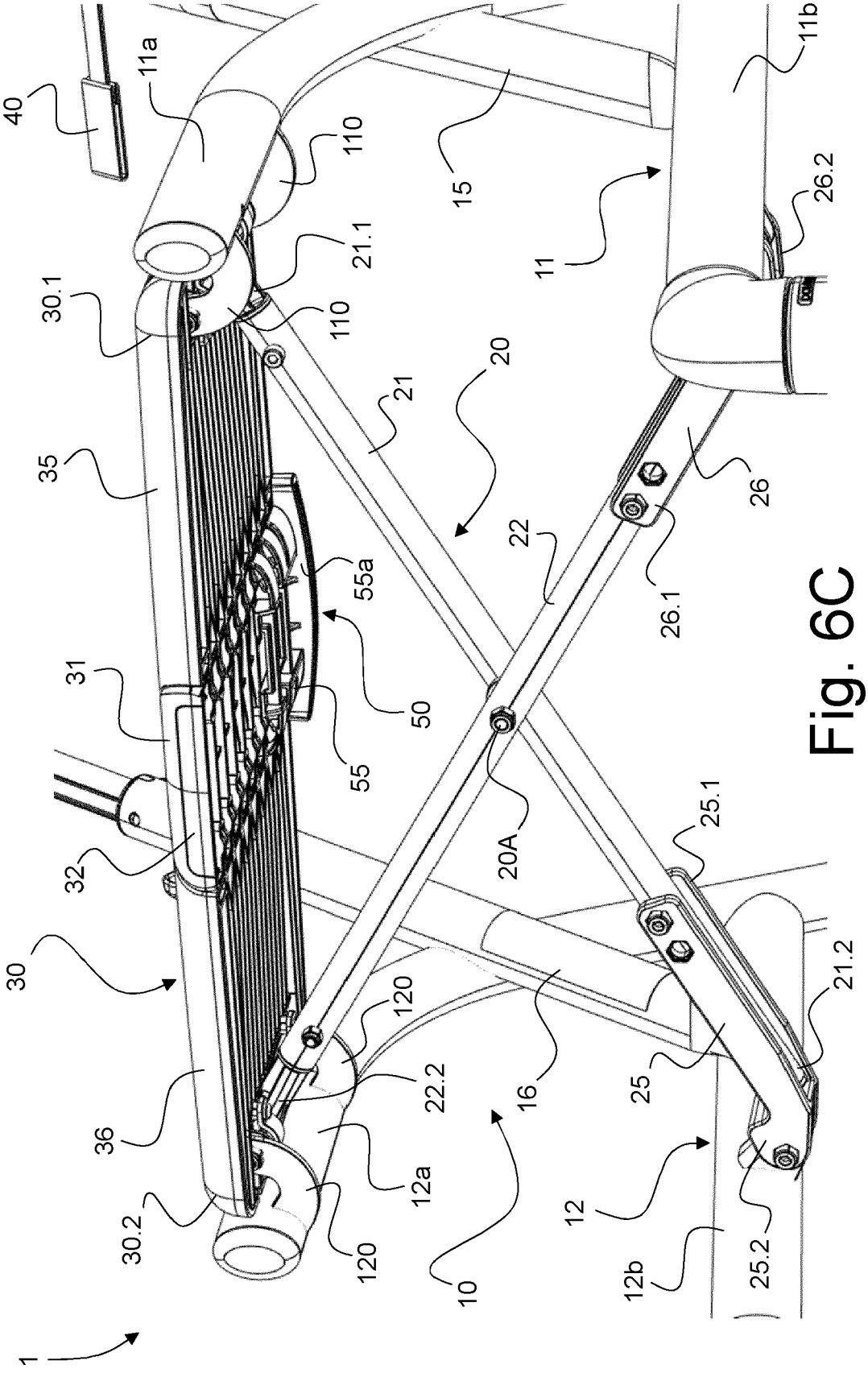
26
11a
22.2
21.1
30.1
11b
10
81

Fig. 6B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110
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55a
26.1
50
31
55
20A
25.1
32
30
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22.2
16
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12a
12
30.2
120
10
12b
25.2
1

Fig. 6C

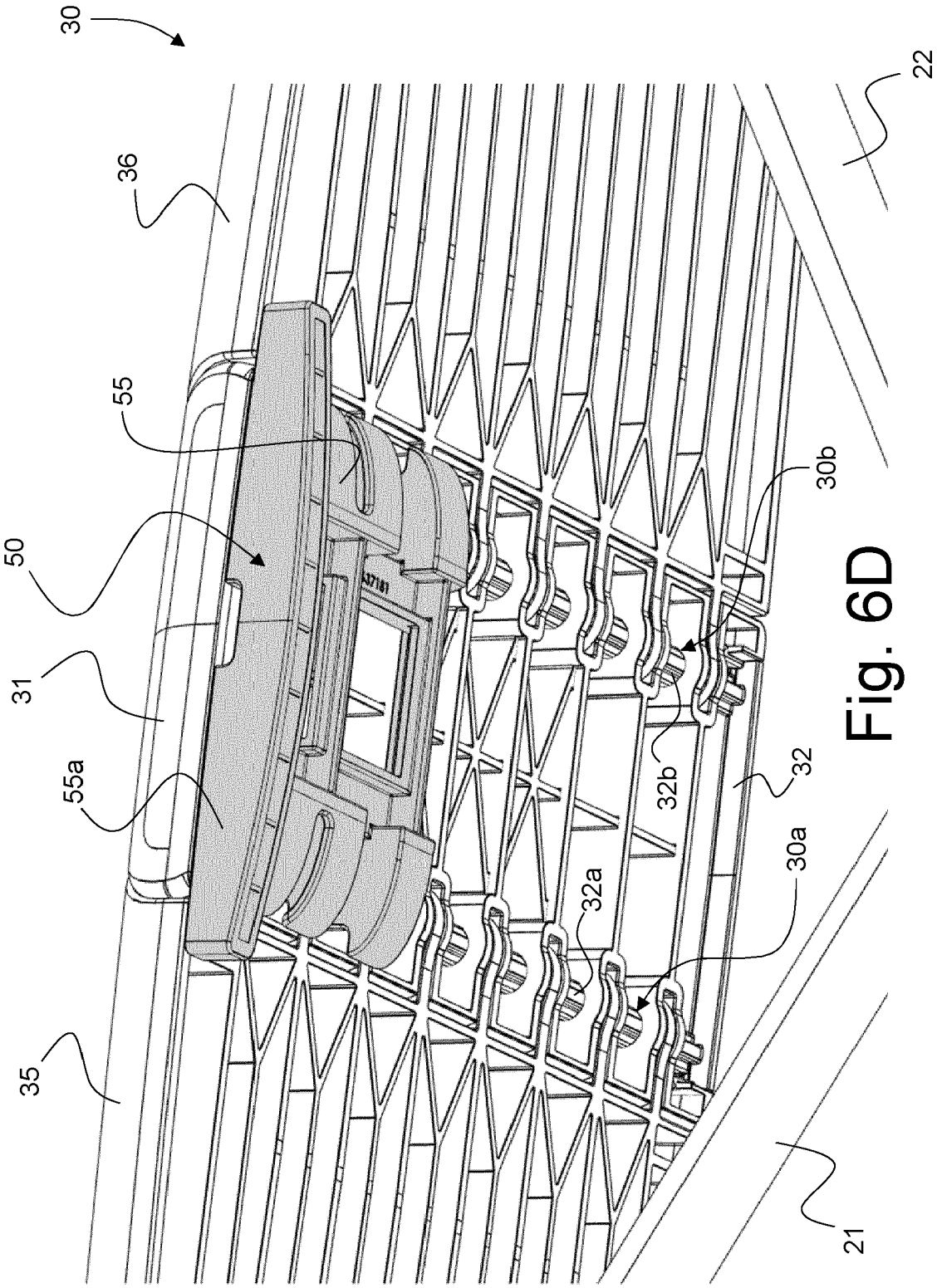


Fig. 6D

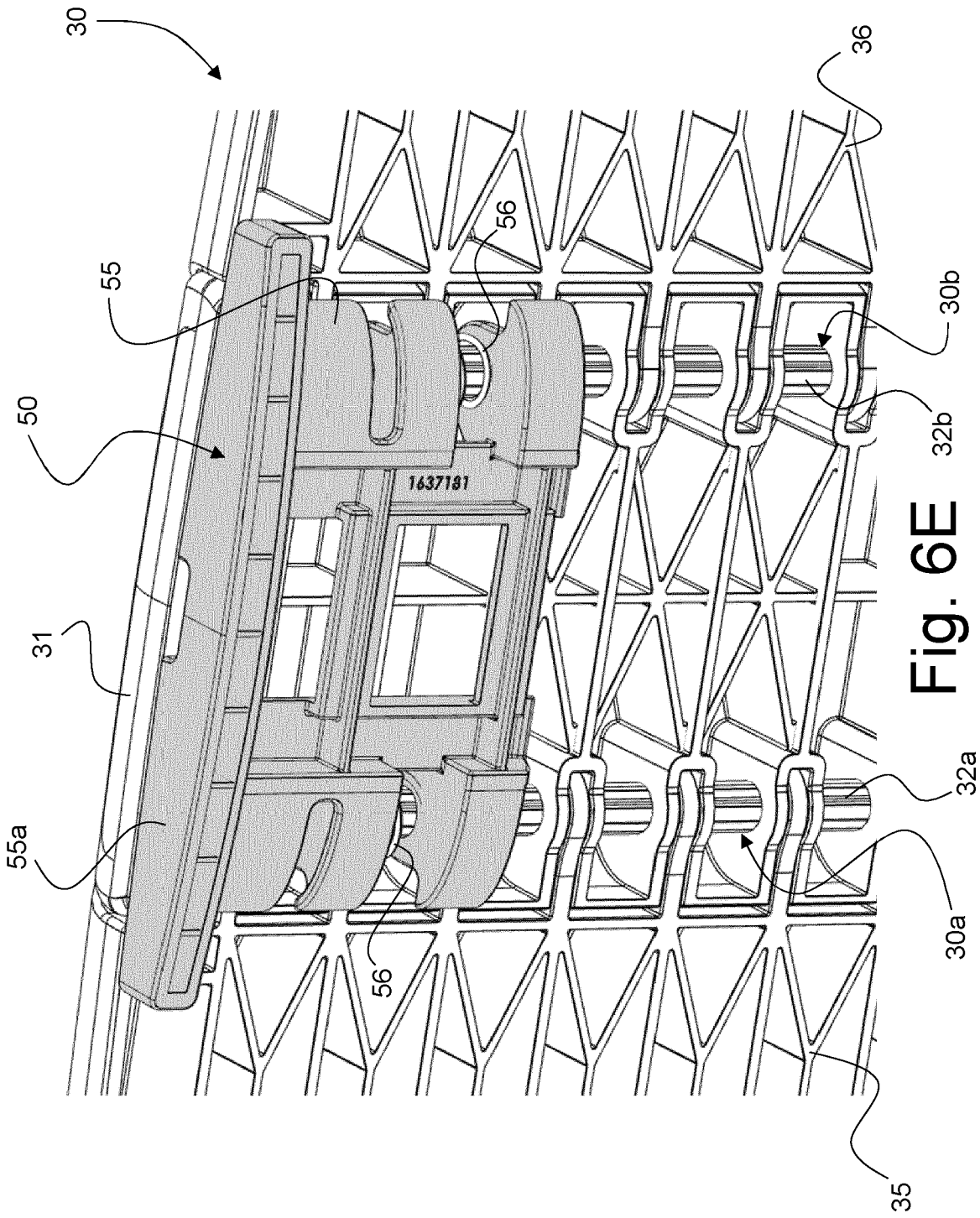
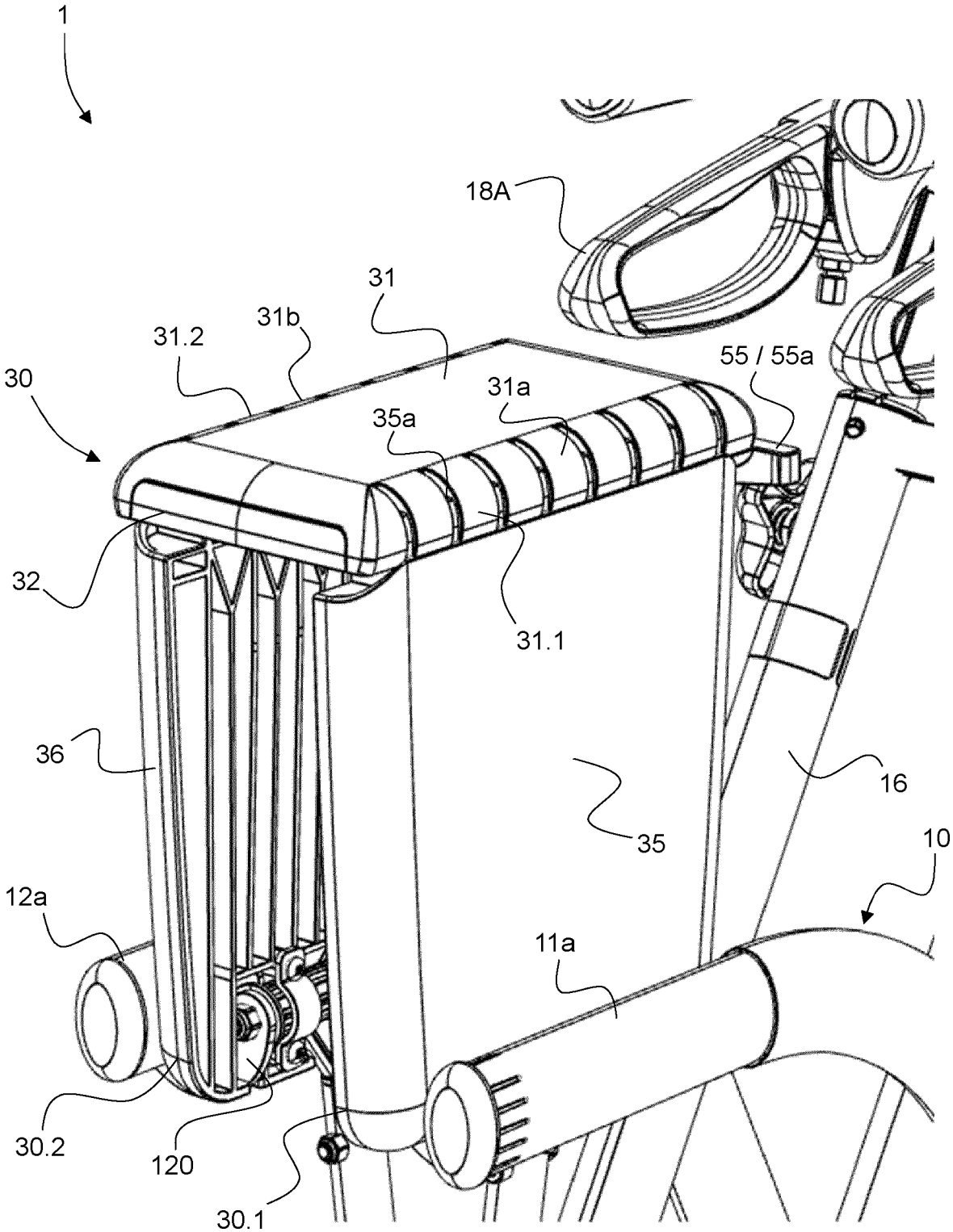


Fig. 6E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35a
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35
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12a
11a
30.2
120
30.1

Fig. 7A

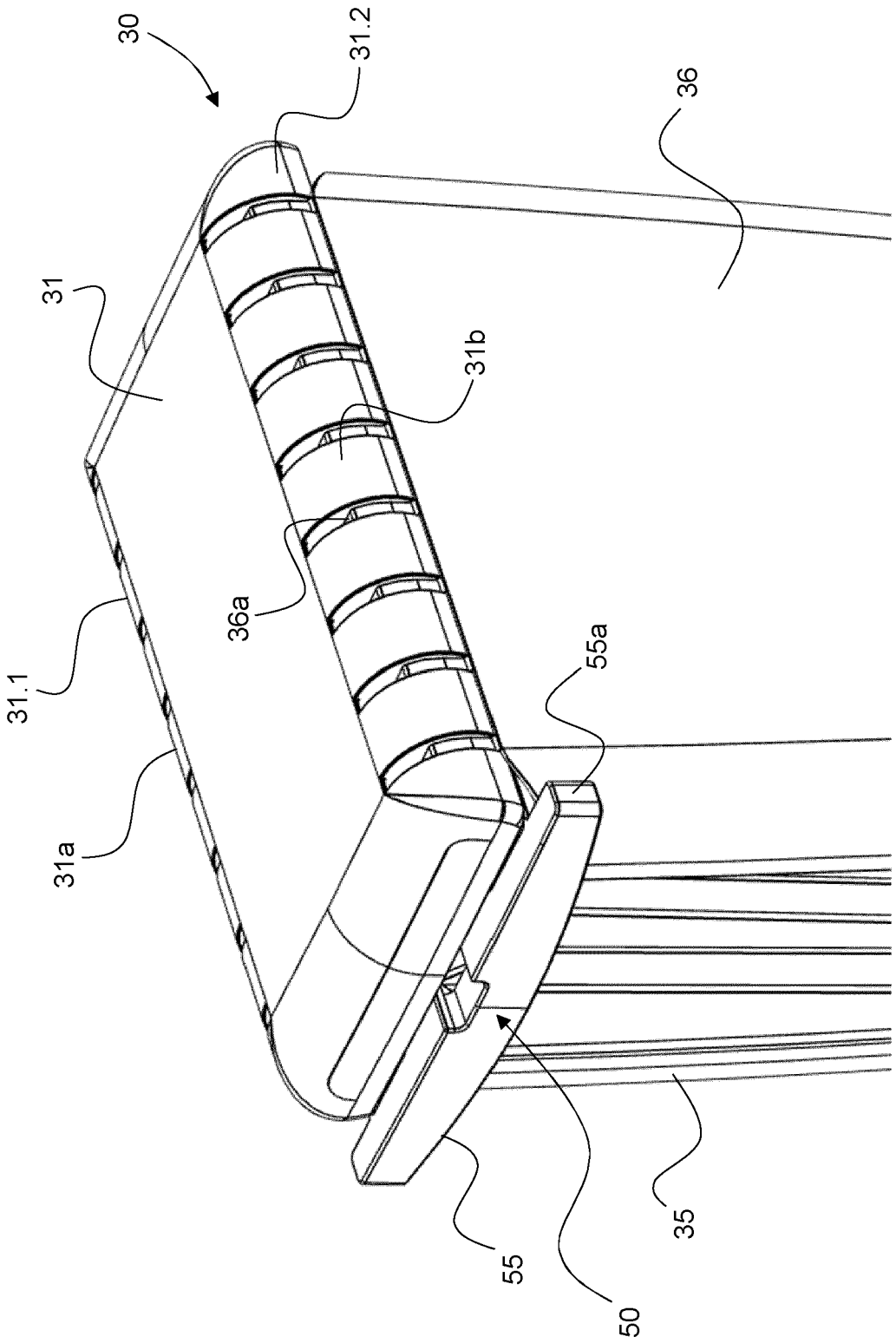

Fig. 7B

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EUROPEAN SEARCH REPORT

Application Number
EP 20 17 6072

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A61H
A61G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	5 November 2020	Teissier, Sara

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