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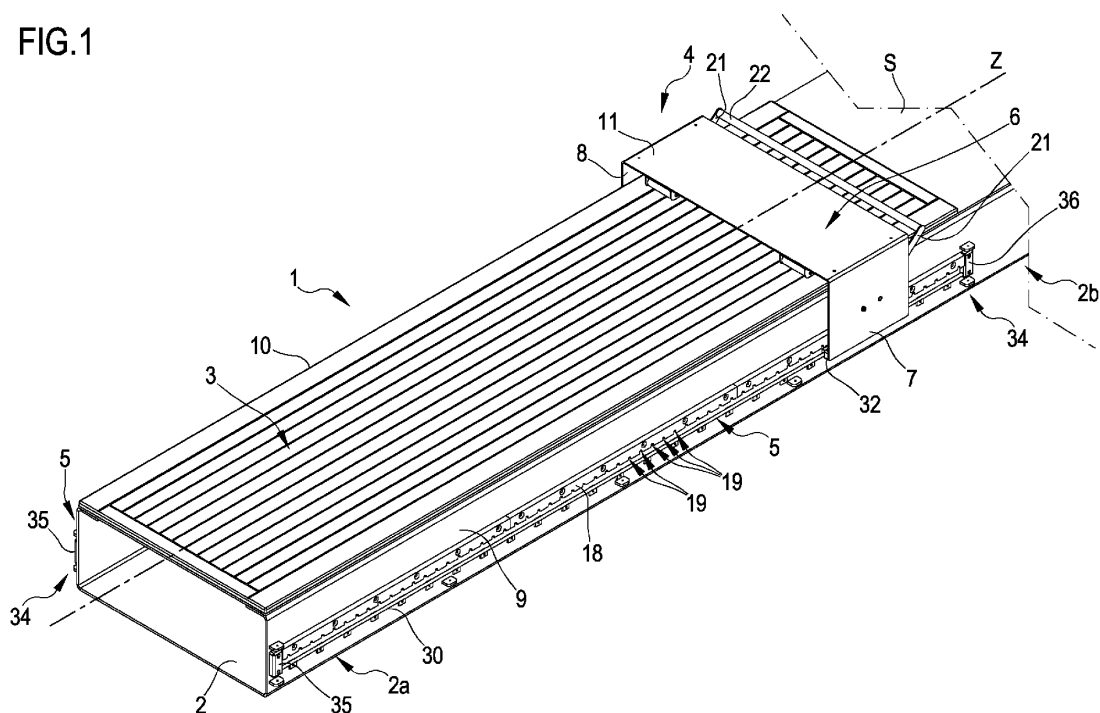
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(54) **GANGWAY FOR EASY TRANSIT FROM AND/OR TO MOORED BOATS**

(57) A gangway (1) for facilitated transit from and/or towards moored boats comprising at least one transit platform (2), which extends prevalently along a longitudinal axis (Z), defines an upper walking surface (3), and is adapted to be stably coupled to a hull (S) of a boat, and an aid step (4), coupled to the transit platform (2) to be arranged above a predefined portion of the respective upper walking surface (3) and adapted to facilitate the passage of a person getting on board the boat or getting

off the boat itself at least by reducing the height difference existing between the upper walking surface (3) of the transit platform (2) and an access plane of the boat. In particular, the gangway (1) includes adjustment means (5), operatively connected to the aid step (4) and supported by the transit platform (2), cooperating with actuation means to vary the position of the aid step (4) along the longitudinal axis (Z) while keeping the aid step (4) above the upper walking surface (3).

FIG.1



Description

[0001] The present invention relates to the field of boating and, specifically, relates to a gangway, possibly telescopic (or otherwise known as "multi-stage," i.e., telescopically coupled gangway platforms), also possibly of the retractable (or even recessed) type, used for the facilitated transit, passage, access, ascent and/or descent of people from/onto moored boats.

[0002] The gangway, preferably automatic, of the present invention is safer for use by people in transit than the equivalent telescopic gangways of the prior art and is adapted to be installed on a boat to remain appropriately and preferably contained in a housing obtained in the hull of the boat itself (thus being almost totally concealed from view) when it assumes the rest condition or when it is not in use, e.g. during navigation.

[0003] It is known that walkable landing structures on boats, commonly known as boarding/descent gangways or walkways, are technical accessories (also of the removable or transportable type) for boating which, in conditions of operation or use, assume a horizontal or slightly inclined position and join two separate locations, allowing people to walk up or down simply to or from the boat or for transporting objects between the boats and the dock.

[0004] In particular, the walkways, to which specific reference is made in the present invention, currently available on the market include a walkable transit platform, generally of the retractable type, and having a rectangular profile, according to a plan view from above.

[0005] More in detail, the walkable transit platform of any gangway, also possibly telescopic, has, as a whole, a width such to allow the passage of a single person and a length that makes it possible to board or disembark from the boat, when it is moored at a given distance from docks, quays or wharves of ports or landing areas, in conditions of great and high comfort and in all cases satisfactory safety for the persons themselves.

[0006] According to a particular embodiment, to which the present invention pertains, a typical gangway of a known type (regardless of whether it is retractable, automatic, or telescopic) comprises, in its essential features, a transit platform, which extends prevalently along a longitudinal axis and defines an upper walking surface, as well as an aid step, coupled with the transit platform to be arranged above a predetermined portion of the upper walking surface.

[0007] This aid step advantageously has the function of facilitating for a person the boarding of the boat or the descent from the boat at least by reducing (if not nearly canceling) the height difference (or elevation) existing between the upper walking surface of the transit platform and an access plane, typically such as the stern platform, of the boat.

[0008] However, the gangways of the prior art, generally but not necessarily of the retractable and automatic type, evidently more evolved from the point of view of safety for the people who use them to board boats and

disembark from them, just summarily described above suffer from some recognized drawbacks, the main one being the fact that the aid step assumes a fixed and unique operating position on the transit platform, distal from the quay or dock at which the boat moors; in other words, in the prior art, the aid step is arranged in close proximity to the access plane (typically, the stern platform as just mentioned) of the boat when the gangway is in use.

[0009] This results in an obvious limitation in application, installation, and use for the gangways of the known type generically defined above, provided, in particular, with an aid step which also greatly complicates their proper placement in use. Furthermore, the constructive design of the gangway of prior art examined here reflects negatively, for example, if it is of the retractable type; indeed, for the aid step to be placed correctly, efficiently, and effectively in the operating position, the boat owner or, more properly, the service personnel on board the boat must, in this case, arrange the gangway totally extracted, even when not necessary, from the compartment (obtained in the boat, usually at the stern) in which it lodges, hidden from view, in the rest position.

[0010] Therefore, the present invention aims to overcome the drawbacks of the prior art highlighted above.

[0011] In particular, primary purpose of the present invention is to provide a gangway for the facilitated transit of people from and/or towards moored boats which expands the possibilities of use compared to the prior art.

[0012] It is a second purpose of the invention to make a gangway for the facilitated transit of people from and/or towards moored boats which can be effectively installed or positioned in use more easily than equivalent gangways of the prior art.

[0013] It is a further purpose of the present invention to devise a gangway for the facilitated transit of from and/or towards moored boats which, in contrast to similar known gangways, allows for the proper and safe use of the aid step even when the transit platform is partially stowed in the compartment made in the hull, if the gangway itself is of the retractable type.

[0014] It is a last but not least purpose of the present invention to create a gangway for the facilitated transit of people from and/or towards moored boats which would allow more opportunities during the docking maneuver for the captain, in particular, to be able to approach the dock or quay with more freedom without having to take into account the position of use that the transit platform of the gangway must assume to allow people to pass over it correctly.

[0015] Said purposes are achieved by means of a gangway for facilitated transit from and/or towards moored boats according to appended claim 1, to which reference is made for the sake of brevity of exposition.

[0016] Further detailed technical features of the gangway of the current invention are contained in the respective dependent claims.

[0017] The aforesaid claims, hereinafter specifically

and concretely defined, are an integral part of the present description.

[0018] Advantageously, the gangway of the present invention intended for the facilitated transit from and/or towards moored boats allows more flexibility of use than the gangways of the prior art.

[0019] This is by virtue of the fact that the gangway of the invention comprises adjustment means, operatively connected to the aid step and supported by the transit platform, cooperating with first actuation means to vary the position of the aid step along said longitudinal axis while keeping the aid step above said upper walking surface.

[0020] More advantageously, the gangway of the present invention can be applied, also in a removable manner, to the boat more easily than in the prior art because it does not include the considerable constraint given by the fixed aid step in a single distal position, typical of similar gangways of the prior art.

[0021] Said objects and advantages, and others which will arise in this patent, will be more apparent in the description which follows, relating to a preferred embodiment of the gangway for the facilitated transit from and/or towards moored boats of the invention, given by way of indicative but non-limiting example, with reference to the accompanying drawings in which:

- figures 1 and 2 are two separate simplified axonometric views of the gangway, generally of the retractable and automatic type, of the invention;
- figure 3 is a side view of figure 1;
- figure 4 is a view of figure 1 taken along a longitudinal section plane;
- figure 5 is a sectioned enlargement of figure 1;
- figure 6 is a sectioned enlargement of figure 2;
- figure 7 is a view of figure 1 along a transverse section plane;
- figure 8 is a simplified view of the enlargement of figure 5;
- figure 9 is a simplified view of the enlargement of figure 6;
- figure 10 is a sectioned enlargement of figure 8;
- figure 11 is a side view of figure 10;
- figure 12 is a view of figure 10 taken along a longitudinal section plane;
- figure 13 is an axonometric view of an assembly of figure 1;
- figure 14 is a second, enlarged axonometric view of the assembly of figure 13. The gangway, preferably retractable and automatic (at least in its essential components) of the invention, used for the facilitated transit of people from/towards moored boats (shown only diagrammatically), such as yachts or pleasure boats, is shown in figures 1 and 2, in which it is indicated will reference number 1 as a whole.

[0022] As noted, the gangway 1 comprises:

- a transit platform 2, which extends prevalently along a longitudinal axis Z, defines an upper walking surface 3 and is adapted to be stably coupled to a hull S of a boat; according to the applications, the transit platform 2 can remain stably fixed in place, protruding from the hull S of the boat, or be retractable, recessed into a compartment obtained in the hull, preferably in the stern zone;
- an aid step 4, coupled to the transit platform 2 so as to be arranged above a predefined portion of the upper walking surface 3; the aid step 4 has the function of facilitating boarding the boat or descending from the boat for a person, at least by reducing the height difference existing between the upper walking surface 3 of the transit platform 2 and an access plane (such as a stern platform) of the boat.

[0023] According to the invention, the gangway 1 comprises adjustment means, collectively numbered by reference numeral 5, operatively connected to the aid step 4 and stably supported by the transit platform 2, cooperating with first actuation means (not shown in the accompanying figures) to vary the position of the aid step 4 along the aforementioned longitudinal axis Z while keeping the aid step 4 itself above the upper walking surface 3, ready to support the resting of at least one foot of the person.

[0024] The first actuation means are either of the manual type when they are associated with a limb (hand or foot) of an operator on duty aboard the boat when it is moored, or of the automatic type (e.g., such as electric actuators, pneumatic actuators and/or hydraulic actuators) when electrically connected to a central processing and control unit which manages their activation.

[0025] Preferably but not necessarily, as already mentioned, the transit platform 2 is operationally connected to second actuation means, not shown in the accompanying drawings, adapted to arrange it, automatically and selectively, between a rest position, in which the transit platform 2 is contained in a room (not visible) made in the hull S of the boat at the access plane, and an operating position in which the transit platform 2 protrudes at least partially and longitudinally from the hull S of the boat and is accessible by the person.

[0026] Preferably, the second actuation means are electrically connected to a central processing and control unit, not shown in the accompanying figures, which manages their activation.

[0027] In this case, the aid step 4 has an appropriate, albeit non-limiting, substantially C-shaped profile, as can be seen from the aforementioned figures 1 and 2; indeed, the aid step 4 comprises a central walkable portion, generally indicated by reference numeral 6, which defines a substantially horizontal plane, and a pair of mutually opposite side shoulders 7, 8 symmetrically arranged relative to the longitudinal axis Z.

[0028] Each of the side shoulders 7, 8 defines a substantially vertical plane, clearly perpendicular to the hor-

horizontal plane of the central walkable portion 6, and faces a respective side flank 9, 10 of the transit platform 2, which supports it.

[0029] In a preferred but not binding manner, the central walkable portion 6 of the aid step 4 is formed by:

- a laminar support body 11 integral with the side shoulders 7, 8;
- a walkable finishing floor, not shown for the sake of simplicity in the accompanying drawings, and preferably made by means of the same finishing material (such as teak wood) as the upper walking surface 3 of the transit platform 2; the walkable finishing surface is removably coupled on top of the laminar support body 11.

[0030] Additionally, the aid step 4 comprises, in a preferable but non-limiting manner, two sliding plates 12, 13, shown in greater detail in figures 5, 7, 8, 13, and 14, each of which is coupled to a lower wall 6a (facing the upper walking surface 3 of the transit platform 2) of the central walkable portion 6 of the aid step 4; the sliding plates 12, 13 have the function of advantageously relieving the weight bearing on the aid step 4 onto the underlying upper walking surface 3 to avoid damage to the walkable finishing surface of the aid step 4 itself, or at least limit damage over time.

[0031] Preferably but not exclusively, each sliding plate 12, 13 consists of:

- a reinforced protection casing 14, e.g., made of metal material and coupled to the lower wall 6a of the central walkable portion 6 of the aid step 4;
- a plurality of transversal rotating rollers 15, e.g., made of plastic material with high mechanical resistance (such as POM or the like) and arranged mutually parallel, side-by-side, and spaced apart each other, each of which defines a rotation axis X orthogonal to said longitudinal axis Z of the transit platform 2, is arranged close to said upper walking surface 3 of said transit platform 2 on which it slides when the first actuation means are actuated (either manually or automatically) to vary the position of the aid step 4 and is almost entirely contained in the reinforced protection casing 14 to whose mutually opposite side edges 16, 17 it's coupled through hinge means, not described in detail.

[0032] It is understood that in further embodiments of the gangway the invention, not shown below, the support step could include a number of sliding plates different from that just described and indicated in the accompanying figures, this number being allowed to vary according to design choices, starting from one.

[0033] Figures 1-4 (and figure 7, in particular) show that in a preferred, but non-binding manner, the adjustment means 5 are arranged at both side flanks 9, 10 opposite each other (symmetrically arranged relative to

the longitudinal axis Z) of the transit platform 2 to which they are stably fixed.

[0034] According to the preferred embodiment described herein of the invention, as shown in all the figures thereto and in greater detail in figures 8-12, the adjustment means 5 comprise, for each of the side flanks 9, 10 of the transit platform 2:

- a gear track 18 (a sort of rack) fixed to each of the side flanks 9, 10 of the transit platform 2 and having a plurality of mutually consecutive transverse seats 19, mutually side-by-side and spaced apart, which extend along mutually parallel linear axes and orthogonal to the longitudinal axis Z of the transit platform 2;
- a movable pin 20, shown in greater detail in figures 9, 10, 13, and 14 arranged at a free end 21a of an articulation lever 21 integral with a transversal handle 22 with which the first actuation means cooperate.

[0035] Based on these aspects of construction, the movable pin 20 (which protrudes from the inner side wall 21b of the articulation lever 21 orthogonally to the plane defined thereby) engages by snapping into one of the transverse seats 19 of the gear track 18 to define each specific position of the aid step 4 along the longitudinal axis Z, a position which, by operating the first actuation means (e.g., by pressing the transversal handle 22 downward - either manually, by means of an operator's hand or foot, or automatically by linear actuators of the type known in themselves to the person skilled in the art - thus making the articulation lever 21 tilt), varies from time to time along the longitudinal axis Z by effect of the engagement of the movable pin 20 in a different transverse seat 19.

[0036] Advantageously and preferably, the gear track 18 extends substantially along the entire length of the side flanks 9, 10 of the transit platform 2, as figures 1-4 show. In the accompanying figures, in particular, in figures 9, 10, 11, and 12, it can be seen that each of the transverse seats 19 has a concave open profile and the movable pin 20 has a traditional circular profile which combines with the aforementioned concave open profile of the transverse seats 19.

[0037] Furthermore, in particular, the transverse seats 19 are obtained in a lower edge 18a of the gear track 18 where they are mutually separated in pairs by a lower flat surface 23 along which the movable pin 20 slides, in a precise and effective manner, to pass from one of the transverse seats 19 to the adjacent one and thus vary the position of the aid step 4 along the longitudinal axis Z.

[0038] Figures 1-7 show that the transversal handle 22 is, both at rest and when operated, arranged in front of the aid step 4, while the articulation lever 21 is arranged by the side of the aid step 4, interposed between each of the side walls 9, 10 of the transit platform 2 and the aid step 4, in whose bulk the transversal handle 22 re-

mains contained, observing it from a lateral position in which it is internally frontal to the respective side shoulder 7, 8 of the aid step 4.

[0039] Preferably, but not necessarily, the articulation lever 21 has a rotation fulcrum F arranged near the free end 21a of the articulation lever 21 and is made integral with each of the side flanks 9, 10 of the transit platform 2 by means of a support group, indicated by reference numeral 24 as a whole, interposed between the free end 21a and the rotation fulcrum F.

[0040] As figures 9-12 show in greater detail, the support group 24 preferably comprises:

- a first hooking pin 25 fixed, for instance by means of welding, to an inner surface 4b of the aid step 4 (more precisely by its side shoulders 7, 8) from which it protrudes along a first direction X_1 orthogonal to both the plane defined by each of these lateral flanks 9, 10 of the transit platform 2 and the longitudinal axis Z for adjustment of the position of the aid step 4 (consequently, the first direction X_1 is parallel to the linear axis defined by each transverse seat 19);
- a second abutment pin 26 fixed to an inner side wall 21b of the articulation lever 21 from which it protrudes along a second direction X_2 orthogonal to the plane defined by the inner side wall 21b of the articulation lever 21 and parallel to the first direction X_1 ;
- elastic return means, indicated as a whole by reference numeral 27, coupled to the first pin 25 and the second pin 26, adapted to keep the movable pin 20 in each of the transverse seats 19 and facilitate the sliding of the movable pin 20 itself along the lower flat surface 23 of the gear track 18 interposed between each pair of the transverse seats 19 when the first actuating means operate the transversal handle 22 to vary the axial position of the aid step 4 relative to the transit platform 2 underneath.

[0041] In a preferred but non-binding manner, the elastic return means 27 comprise, in this case, a helical spring 28 which acts according to a third spatial direction Y orthogonal to the first direction X_1 and the second direction X_2 and intersecting a fourth direction K along which the articulation lever 21 diagonally extends, forming with the latter an inner angle the value of which varies from acute to obtuse according to the position taken by the aid step 4.

[0042] In an advantageous but not limiting manner, the adjustment means 5 cooperate with guide means, indicated by reference numeral 29 as a whole and clearly shown in figures 9-12, integral with the transit platform 2.

[0043] More specifically, the guide means 29 comprise in this preferred example of embodiment:

- a sliding bar 30 fixed to each of the side flanks 9, 10 of the transit platform 2;
- a support block 31 which the aid step 4 is stably coupled to;
- a series of sliding shoes 32 (three, in this case), each

fixed to the support block 31 and operatively connected to the sliding bar 30 relative to which it slides along a longitudinal direction Z' parallel to the longitudinal axis Z when the aid step 4 varies its position as a result of the actuation of the first actuation means on the adjustment means 5.

[0044] In particular, the sliding bar 30 preferably has a circular profile (or cross-section), is a solid body (substantially a longitudinal rod), is arranged underneath the gear track 18, and also runs substantially along the entire length of said side flanks 9, 10 of the transit platform 2.

[0045] Figures 1-6 and 8-12 show that each of the side shoulders 7, 8 of the aid step 4 is externally fixed to the aforesaid support block 31 at a free lower edge 4a and at an inner surface 4b of the aid step 4.

[0046] Like the support step 4, notably its side shoulders 7, 8, the support block 31 also appropriately extends for a length (measured according to the longitudinal axis Z) somewhat shorter than the length of the entire transit platform 2.

[0047] For their part, each of the sliding shoes 32 has, preferably, an open-profile axial recess 33 in which the sliding bar 30 is partially accommodated or is partially contained; therefore, operationally, the sliding shoes 32 (and with them the aid step 4) can move relatively to the sliding bar 30, sliding on it, when the adjustment means 5 are actuated by the first actuation means to vary the position of the aid step 4 along the longitudinal axis Z and above the upper walking surface 3 of the transit platform 2.

[0048] It is understood that in other embodiments of the gangway of the invention, not accompanied by reference figures hereafter, guide means may comprise a different number of sliding shoes from that described hereto and shown in the accompanying figures, being possible to vary this number according to requirements or construction choices, starting from one.

[0049] The aforementioned figures also illustrate that the guide means 29 are made integral to the transit platform 2 by cooperating, preferably but not exclusively, with end-of-stroke means, indicated by reference numeral 34 as a whole and arranged at two opposing ends 2a, 2b of the transit platform 2.

[0050] The end-of-stroke means 34 have the function of stopping the possibility of sliding of the aid step 4 along the longitudinal axis Z, delimiting the adjustment range of the position of the aid step 4 along the longitudinal axis Z.

[0051] In more detail, the end-of-stroke means 34 comprise a front stop block 35 and a rear stop block 36 opposite each other, fixed to both side flanks 9, 10 of the transit platform 2; the sliding block 30 contrasts against the stop blocks 35, 36 in the distal position and in the proximal position (relative to the reference point represented, for example, by the quay).

[0052] By virtue of the aforesaid description, it is thus apparent that the gangway for the facilitated transit from

and/or towards moored boats, object of the present invention, achieves the purposes and reaches the advantages previously mentioned.

[0053] Upon execution or implementation, changes could be made to the gangway, in general of the retractable and automatic type, for the facilitated transit of people to/from moored boats, object of the invention, e.g., consisting of adjustment means for the axial position of the aid step in relation to the transit platform different from those described above and illustrated in the accompanying drawings. Furthermore, there may be further executive solutions of the gangway claimed herein in an exclusive manner, not shown in the accompanying drawings, in which a plurality of transit platforms is envisaged to be telescopically coupled to each other, one of which - the one closest to the boat access plane - provided with the supporting step and its position adjustment system.

[0054] Finally, it is apparent that many other variants may be made to the gangway described herein comprised within the scope of the appended claims, just as it is apparent that in the practical implementation of the invention, the materials, shapes, and sizes of the details shown may be any, according to the requirements, and may be replaced by other technically equivalent elements. Where the constructive features and techniques mentioned in the successive claims are followed by reference signs or numerals, such reference signs were introduced for the sole purpose of increasing the intelligibility of the claims themselves, and consequently, such reference signs have no limiting effect on the interpretation of each element identified, by way of example only, by such reference signs.

Claims

1. Gangway (1) for facilitated transit from and/or towards moored boats including:

- at least one transit platform (2) which develops mainly along a longitudinal axis (Z), defines an upper walking surface (3) and is suitable to be stably coupled to a hull (S) of a boat;
- an aid step (4), coupled to said transit platform (2) in such a way as to be arranged above a predefined portion of said upper walking surface (3) and suitable to ease a person getting on board said boat or getting off from said boat at least by reducing the height difference existing between said upper walking surface (3) of said transit platform (2) and an access plane of said boat,

characterized in that it comprises adjustment means (5), operatively connected to said aid step (4) and supported by said transit platform (2), cooperating with first actuation means to vary the position of said aid step (4) along said longitudinal axis (Z)

keeping said aid step (4) above said upper walking surface (3).

2. Gangway (1) according to claim 1), **characterized in that** said transit platform (2) is operatively connected to second actuation means suitable to arrange it automatically and selectively between a rest position, wherein said transit platform (2) is contained in a room made in said hull (S) of said boat at said access plane, and an operating position in which said transit platform (2) protrudes at least partly from said hull (S) of said boat and is accessible to said person.

3. Gangway (1) according to any of the preceding claims, **characterized in that** said aid step (4) has a substantially C-shaped profile comprising a walkable central portion (6), which defines a substantially horizontal plane, and a pair of side shoulders (7, 8) opposite each other and symmetrically arranged with respect to said longitudinal axis (Z), each of which defines a substantially vertical plane and faces a respective side flank (9, 10) of said transit platform (2) supporting it.

4. Gangway (1) according to claim 3), **characterized in that** said walkable central portion (6) of said aid step (4) is formed by:

- a laminar support body (11) integral with said side shoulders (7, 8);
- a walkable finishing surface superiorly and removably coupled to said laminar support body (11).

5. Gangway (1) according to claim 3) or 4), **characterized in that** said aid step (4) comprises at least one sliding plate (12, 13) coupled to a lower wall (6a), facing said walking surface (3) of said transit platform (2), of said walkable central portion (6) of said aid step (4).

6. Gangway (1) according to claim 5), **characterized in that** said sliding plate (12, 13) is composed of:

- a reinforced protection casing (14) coupled to said lower wall (6a) of said walkable central portion (6) of said aid step (4);
- a plurality of transversal rotating rollers (15) arranged parallel, side-by-side and spaced apart each other, each of which defines a rotation axis (X) orthogonal to said longitudinal axis (Z) of said transit platform (2), is arranged close to said upper walking surface (3) of said transit platform (2) on which it slides when said first actuation means are operated to vary said position of said aid step (4) and is almost entirely contained in said reinforced protection casing

- (14) to whose mutually opposite side edges (16, 17) is coupled through hinge means.
7. Gangway (1) according to claim 1, **characterized in that** said adjustment means (5) are arranged at both mutually opposite side flanks (9, 10) of said transit platform (2) to which they are permanently fixed.
8. Gangway (1) according to claim 7, **characterized in that** said adjustment means (5) comprise, for each of said side flanks (9, 10) of said transit platform (2):
- a gear track (18) fixed to each of said side flanks (9, 10) of said transit platform (2) and having a plurality of transverse seats (19) consecutive, side-by-side and spaced apart each other which develop along linear axes parallel to each other and orthogonal to said longitudinal axis (Z) of said transit platform (2);
 - a movable pin (20) arranged at a free end (21a) of an articulation lever (21) integral with a transversal handle (22) with which said first actuation means cooperate,
- said movable pin (20) snapping into one of said transverse seats (19) of said gear track (18) to identify said position of said aid step (4) along said longitudinal axis (Z) which, by activating said first actuation means, varies from time to time along said longitudinal axis (Z) through the engagement of said movable pin (20) in a different one of said transverse seats (19).
9. Gangway (1) according to claim 8, **characterized in that** said gear track (18) extends substantially along the entire length of said side flanks (9, 10) of said transit platform (2).
10. Gangway (1) according to claim 8) or 9), **characterized in that** each of said transverse seats (19) has a concave open profile and said movable pin (20) has a circular profile which combines with said concave open profile.
11. Gangway (1) according to claim 8), 9) or 10), **characterized in that** said transverse seats (19) are made in a lower edge (18a) of said gear track (18) where they are in pairs separated from each other by a lower flat surface (23) along which said movable pin (20) slides to pass from one of said transverse seats (19) to the adjacent one and vary said position of said aid step (4) along said longitudinal axis (Z).
12. Gangway (1) according to any of the claims 8) to 11), **characterized in that** said transversal handle (22) is arranged in front of said aid step (4) and said articulation lever (21) is disposed laterally to said aid step (4), interposed between each of said side flanks (9, 10) of said transit platform (2) and said aid step (4) in whose bulk it remains laterally contained.
13. Gangway (1) according to claim 8), **characterized in that** said articulation lever (21) has a rotation fulcrum (F) arranged near said free end (21a) of said articulation lever (21) and is made integral with each of said side flanks (9, 10) of said transit platform (2) through a support group (24) interposed between said free end (21a) and said rotation fulcrum (F).
14. Gangway (1) according to claim 13), **characterized in that** said support group (24) comprises:
- a first hooking pin (25) fixed to an inner surface (4b) of said aid step (2) from which it protrudes along a first direction (X_1) orthogonal to the plane defined by each of said side flanks (9, 10) of said transit platform (2);
 - a second abutment pin (26) fixed to an inner side wall (21b) of said articulation lever (21) from which it protrudes along a second direction (X_2) orthogonal to the plane defined by said inner side wall (21b) of said articulation lever (21) and parallel to said first direction (X_1);
 - elastic return means (27) coupled to said first pin (25) and said second pin (26), suitable to keep said movable pin (20) in each of said transverse seats (19) and to favor the sliding of said movable pin (20) along a lower flat surface (23) of said gear track (18) interposed between each pair of said transverse seats (19).
15. Gangway (1) according to claim 14), **characterized in that** said elastic means (27) comprise a helical spring (28) which acts according to a third spatial direction (Y) orthogonal to said first direction (X_1) and said second direction (X_2) and intersecting a fourth direction (K) along which said articulation lever (21) extends, forming an acute inner angle.
16. Gangway (1) according to any of the preceding claims, **characterized in that** said adjustment means (5) cooperate with guide means (29) integral with said transit platform (2).
17. Gangway (1) according to claim 16), **characterized in that** said guide means (29) comprise:
- a sliding bar (30) fixed to each of the side flanks (9, 10) of said transit platform (2);
 - a support block (31) which said aid step (4) is stably coupled to;
 - at least one sliding shoe (32), fixed to said support block (31) and operatively connected to said sliding bar (30) with respect to which it slides along a longitudinal direction (Z') parallel to said longitudinal axis (Z) when said aid step (4) varies

said position.

18. Gangway (1) according to claim 17) when claim 16) depends on claim 8), **characterized in that** said sliding bar (30) is arranged below said gear track (18) and extends substantially for the entire length of said side flanks (9, 10) of said transit platform (2). 5
19. Gangway (1) according to claim 17) when claim 16) depends on claim 3), **characterized in that** each of said side shoulders (7, 8) of said aid step (4) is externally fixed to said support block (31) at a free lower edge (4a) and at an inner surface (4b) of said aid step (4). 10
20. Gangway (1) according to claim 17), **characterized in that** said sliding shoe (32) has an open profile axial recess (33) in which said sliding bar (30) is partly contained. 15
21. Gangway (1) according to claim 16), **characterized in that** said guide means (29) are made integral with said transit platform (2) by cooperating with end-of-stroke means (34) arranged at two opposite ends (2a, 2b) of said transit platform (2) and suitable to stop the sliding of said aid step (4) along said longitudinal axis (Z), delimiting the adjustment range of said position of said aid step (4) along said longitudinal axis (Z). 20
22. Gangway (1) according to claim 21) when claim 16) depends on claim 8), **characterized in that** said end-of-stroke means (34) comprise a front stop block (35) and a rear stop block (36) opposite each other, fixed to said side flanks (9, 10) of said transit platform (2), said sliding block (30) contrasting against said stop blocks (35, 36). 25

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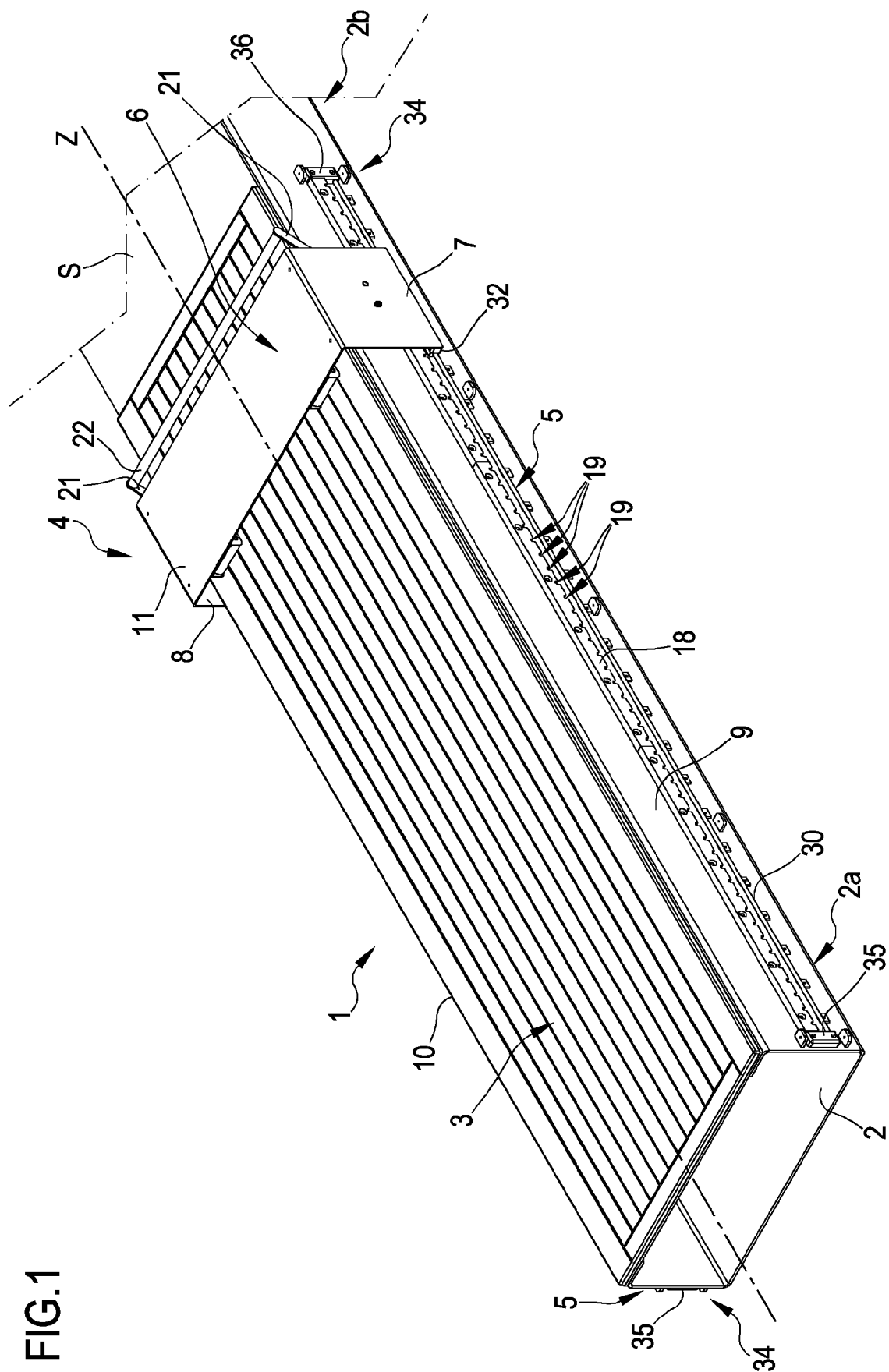
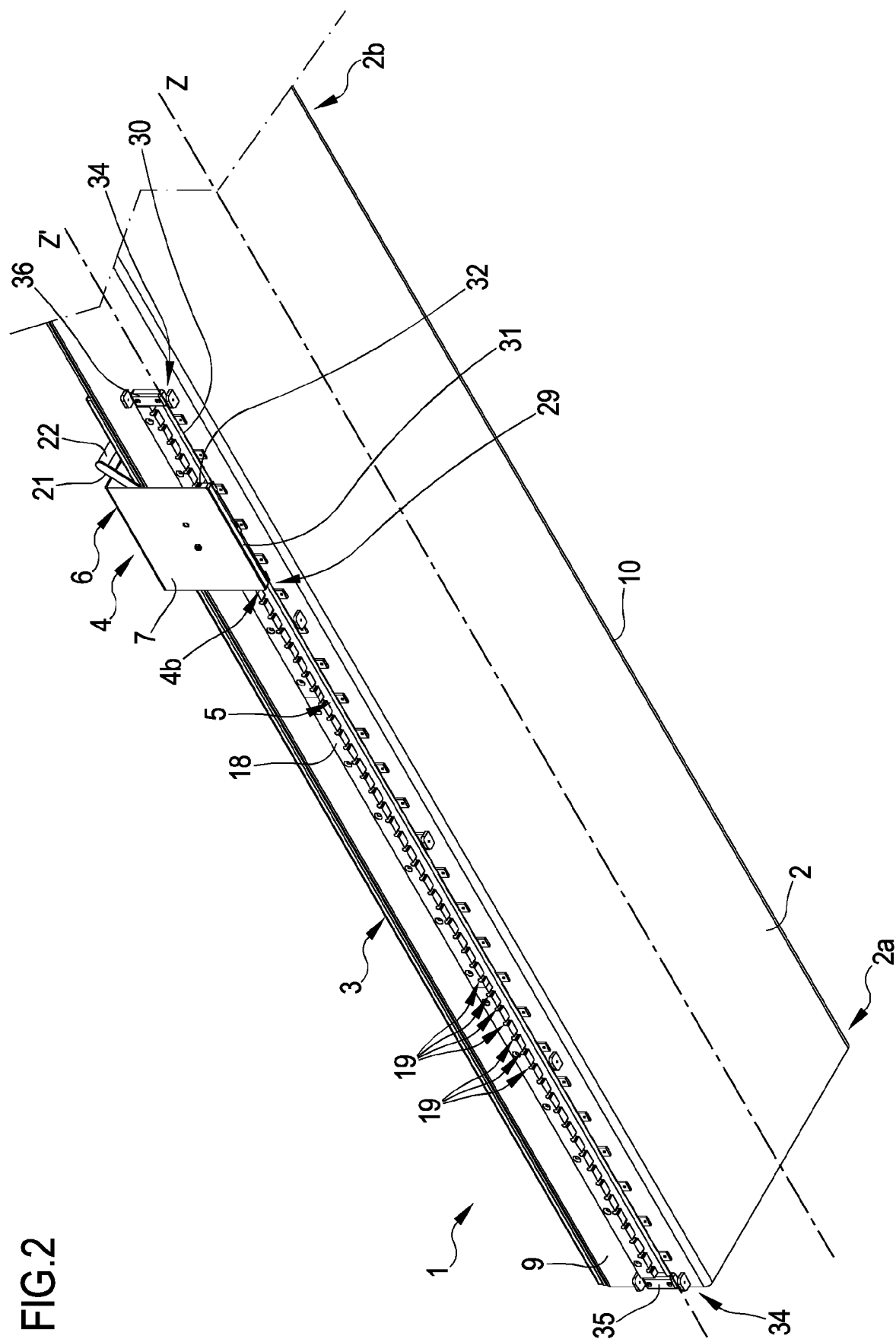


FIG. 1



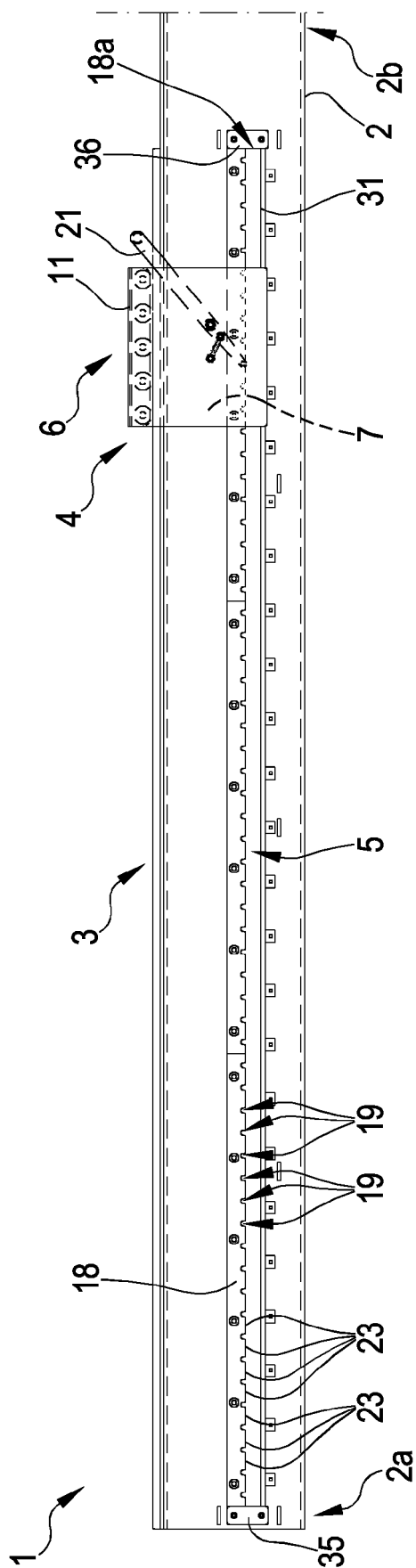


FIG. 3

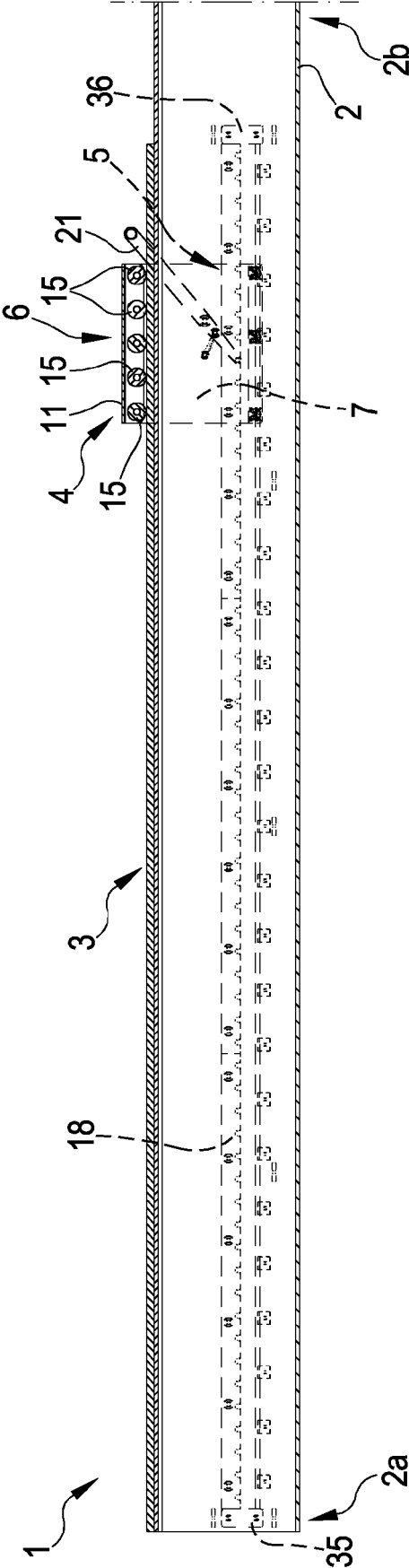


FIG.4

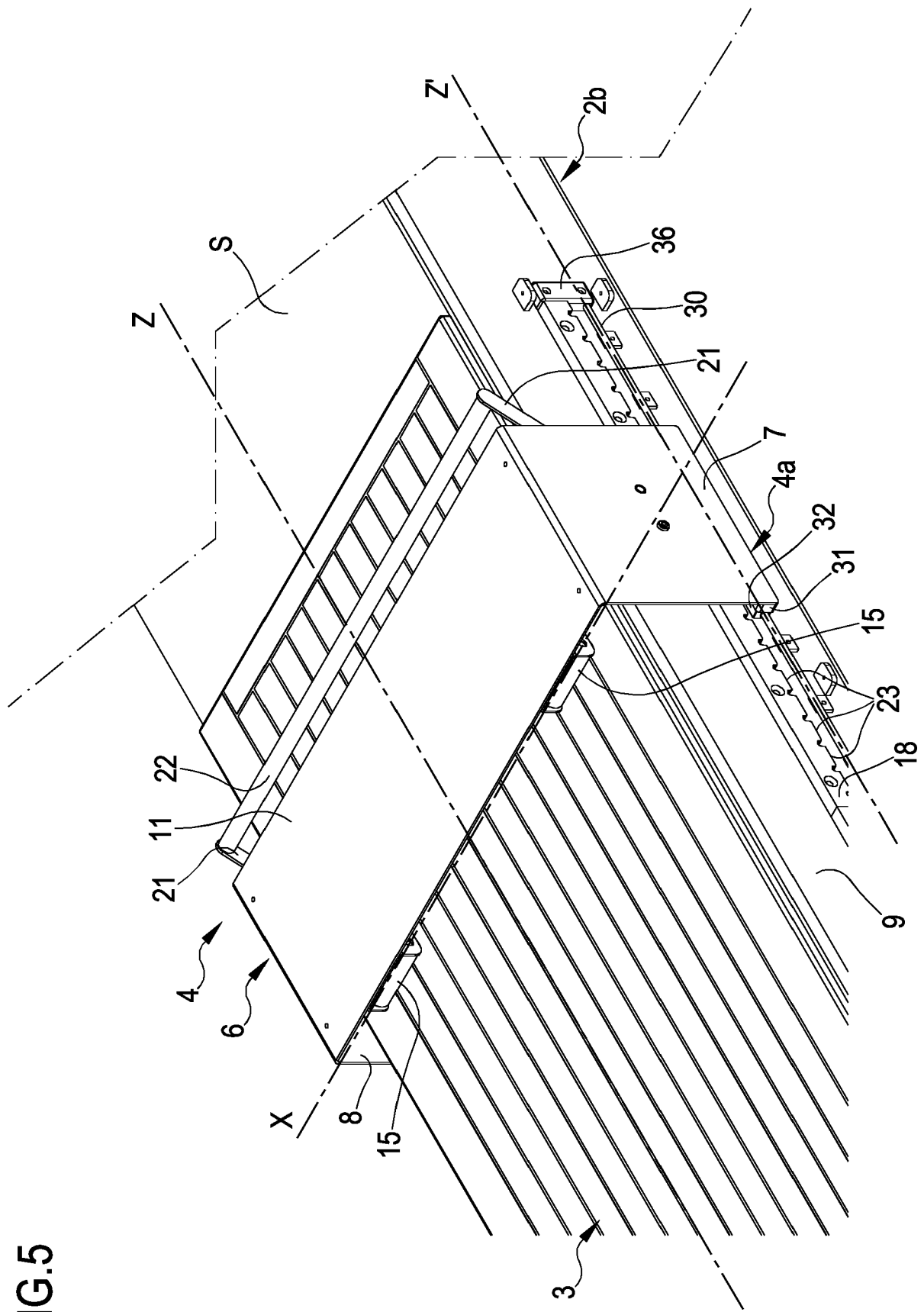
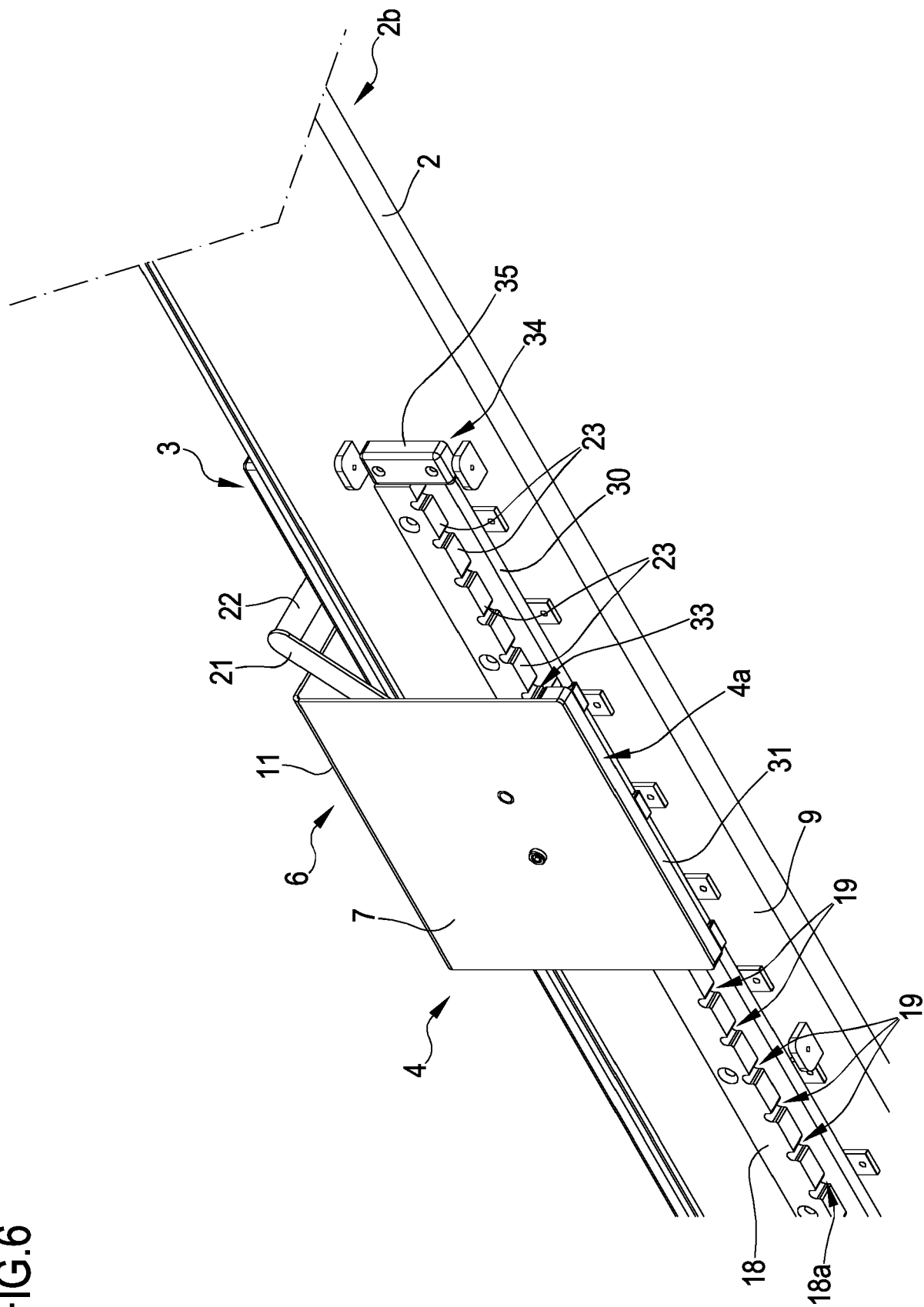


FIG. 5

FIG. 6



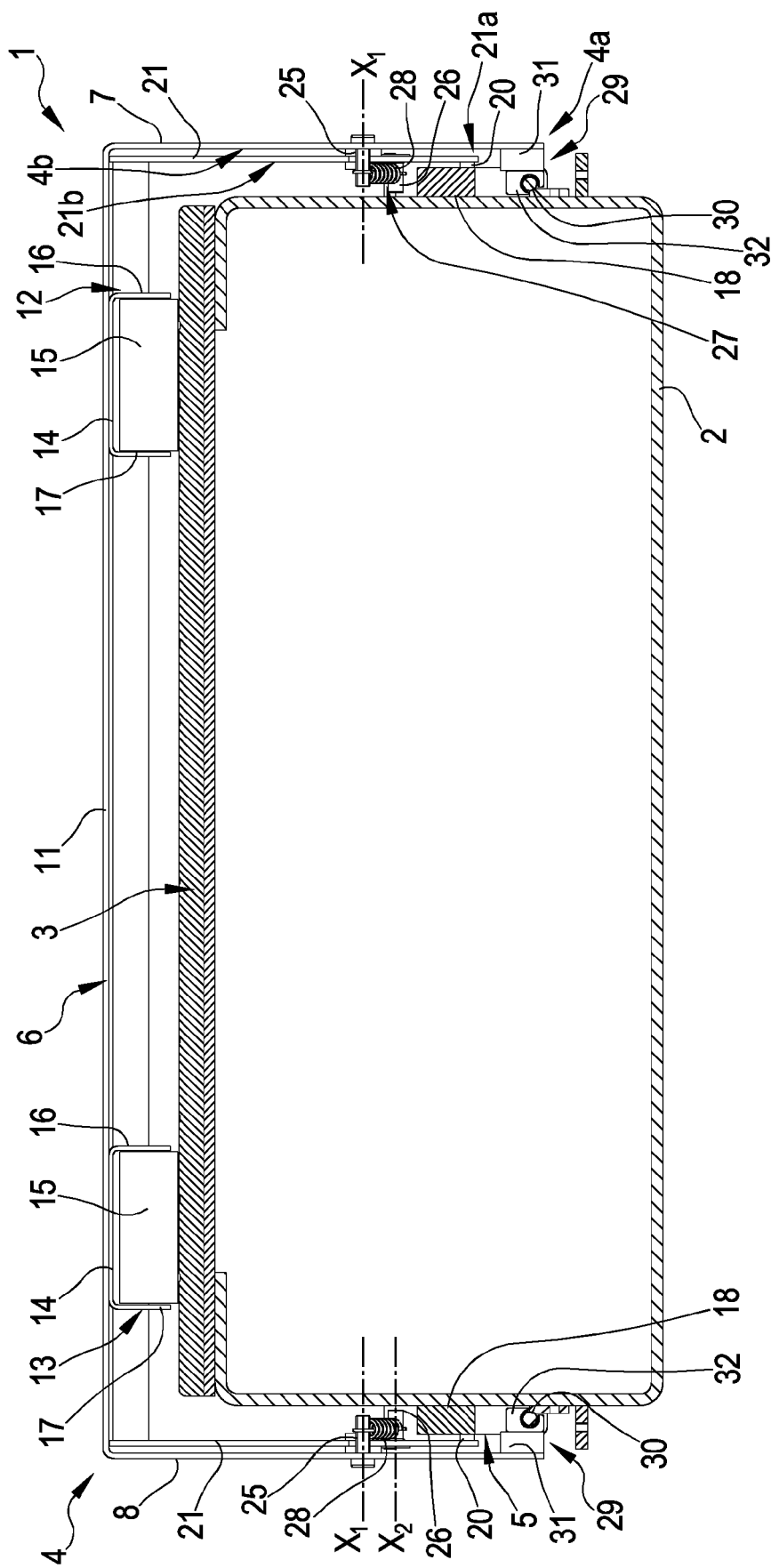


FIG. 7

FIG. 8.

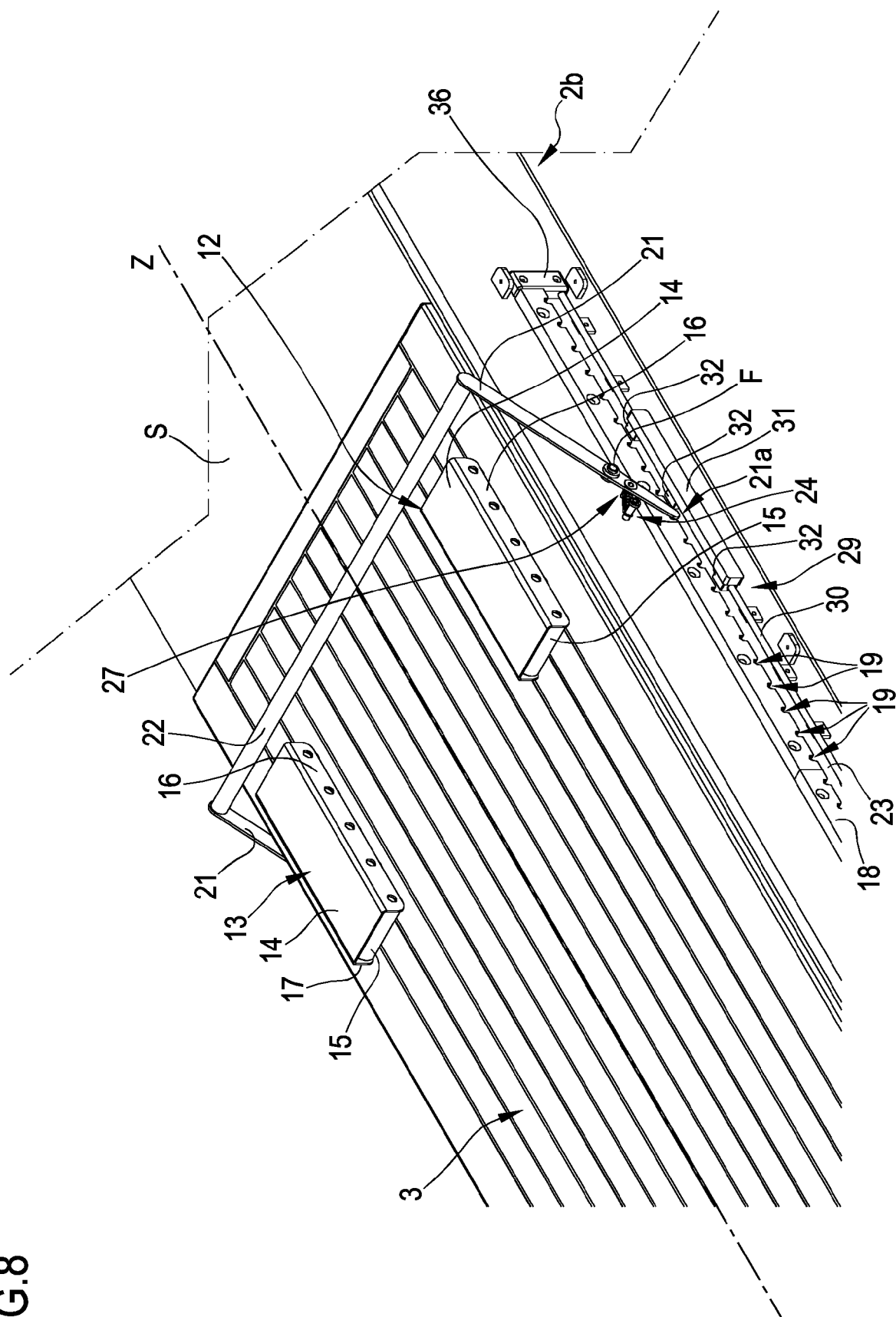
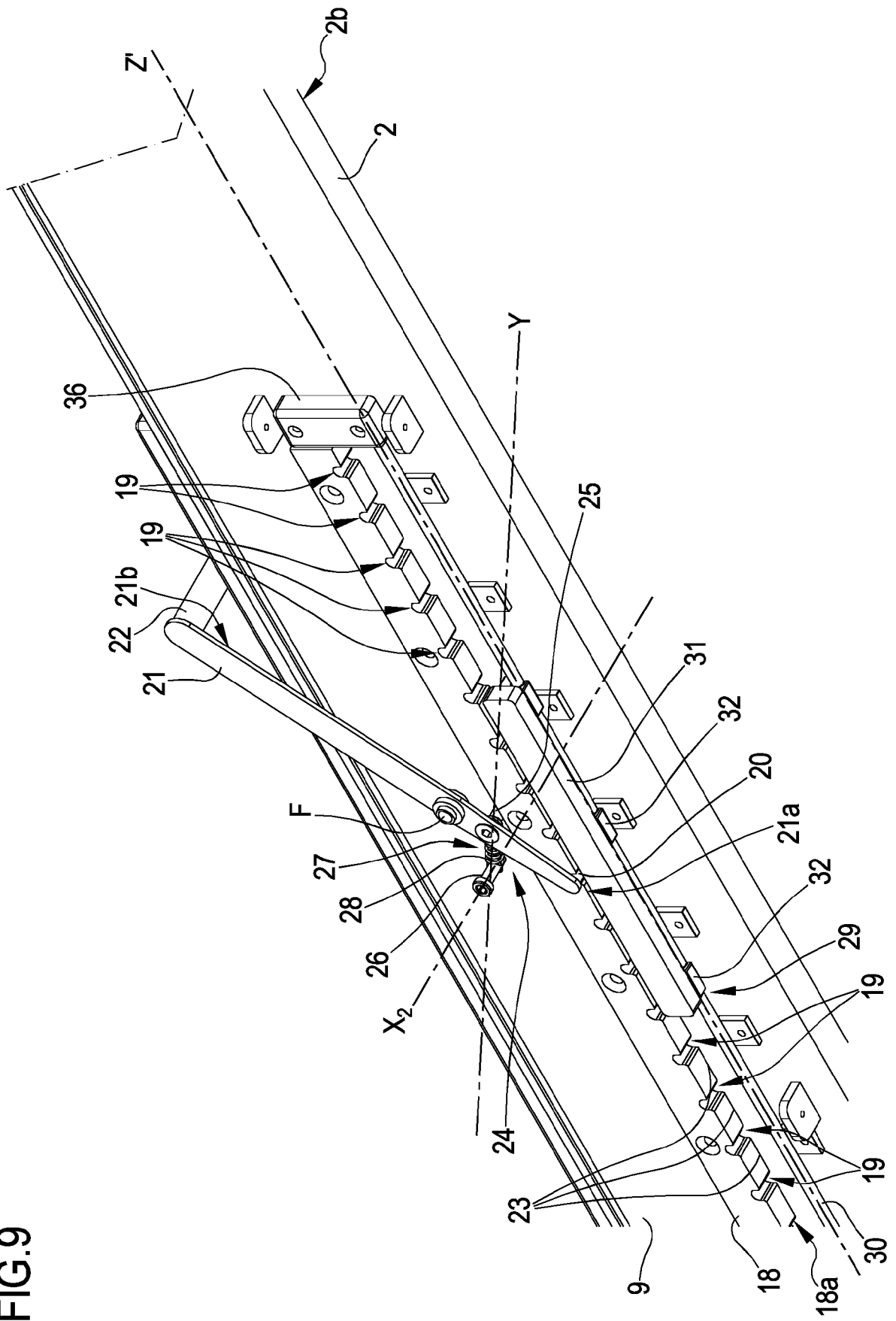


FIG.9



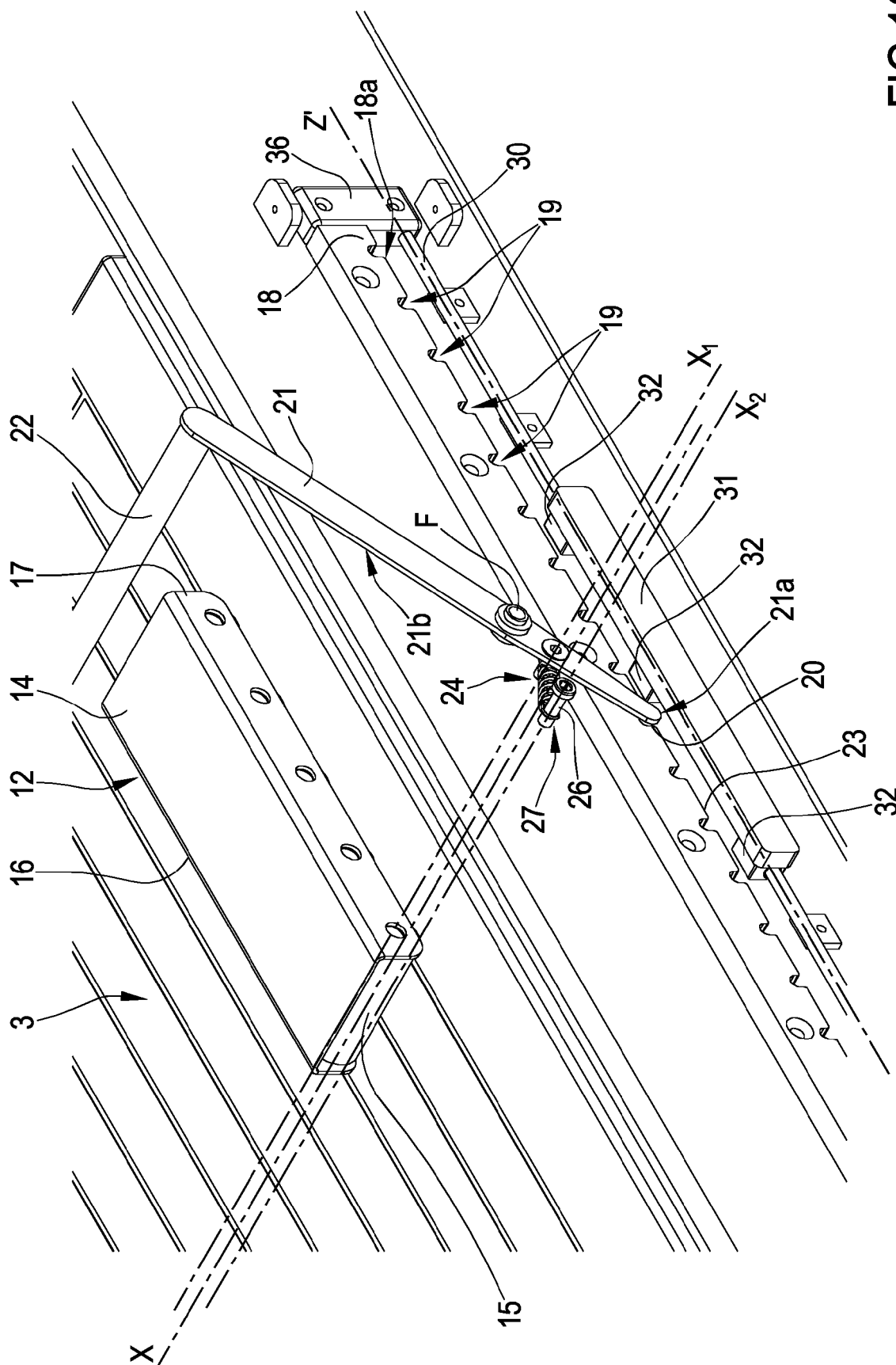


FIG. 10

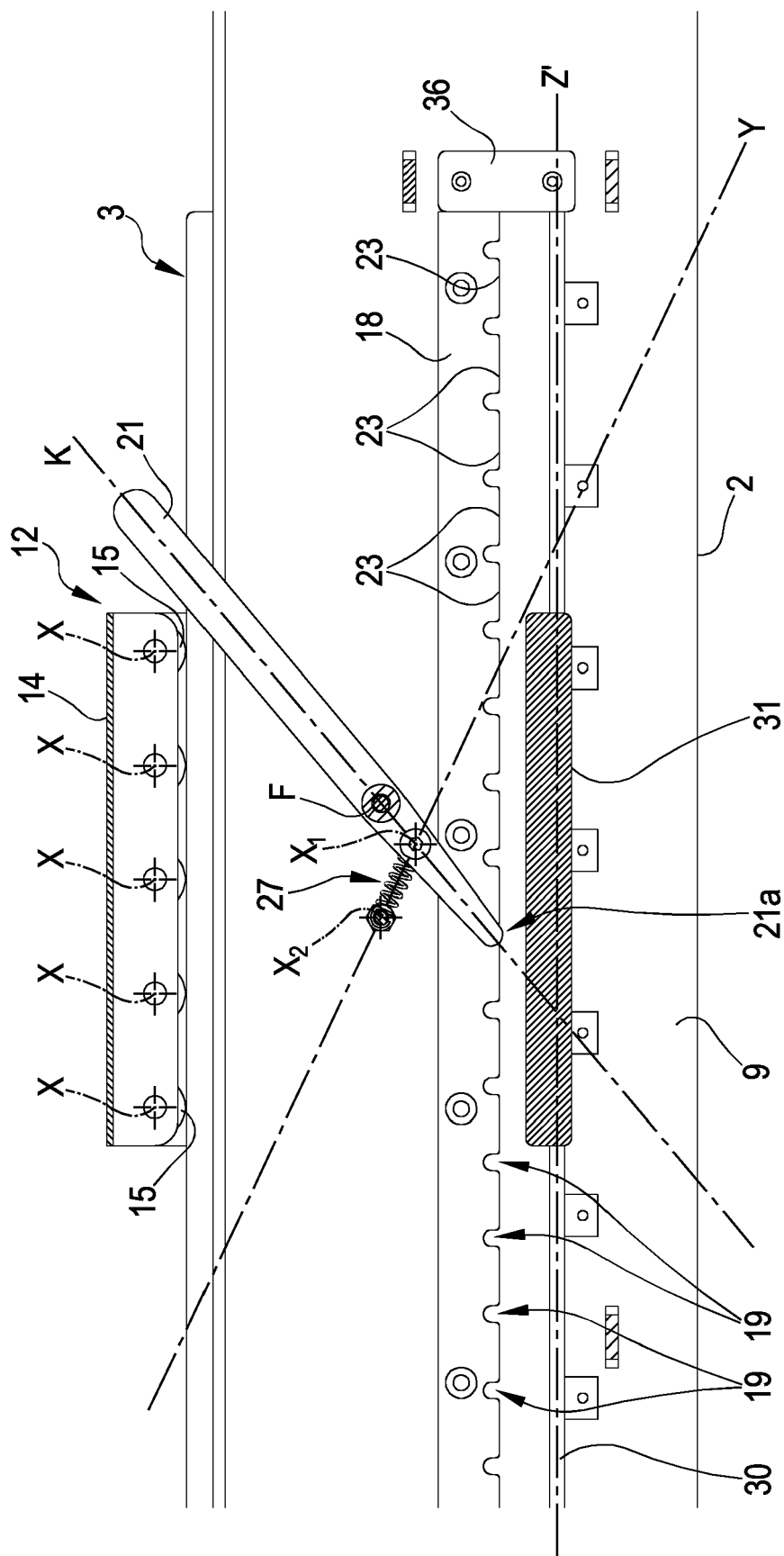


FIG. 11

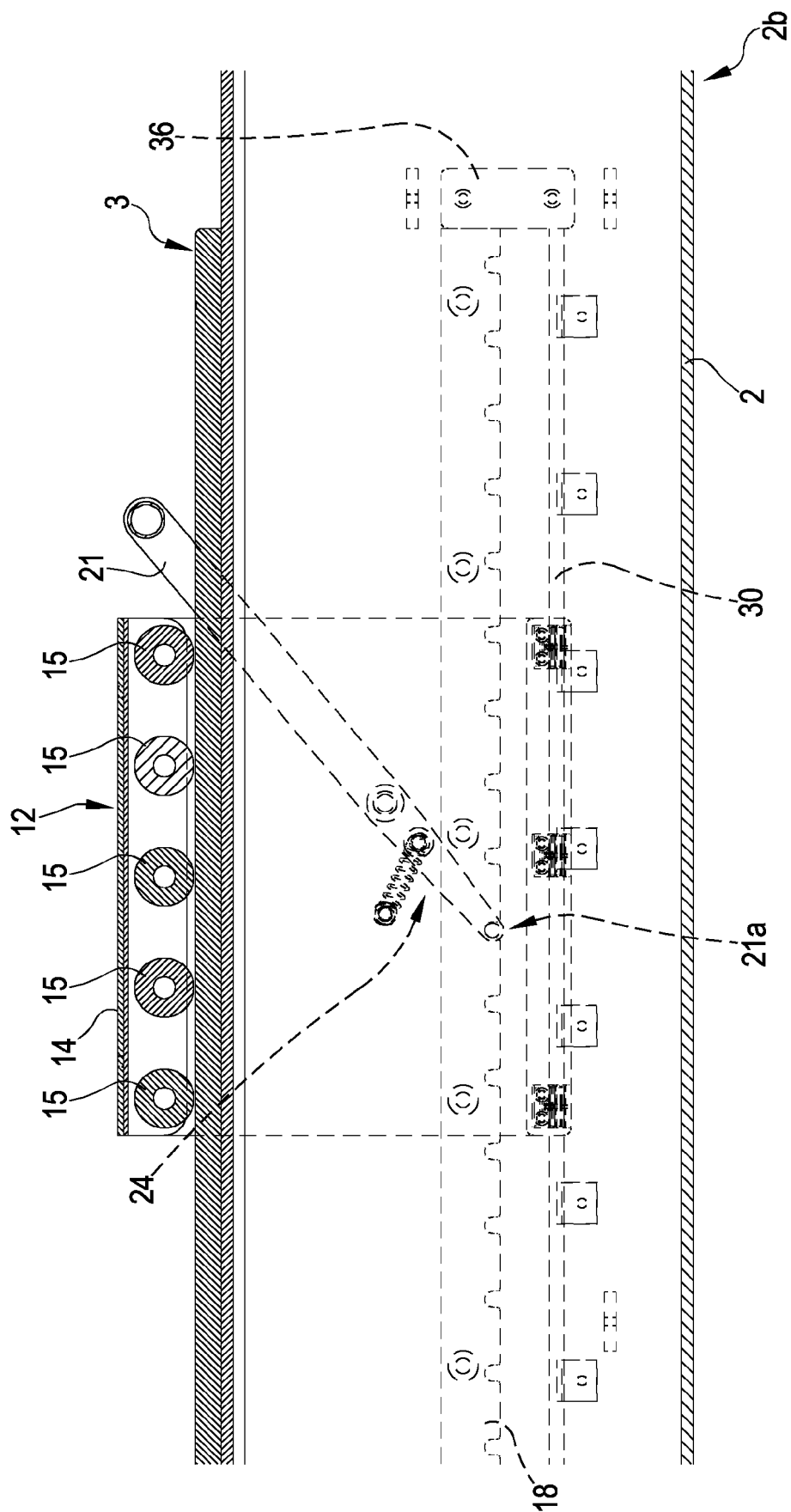
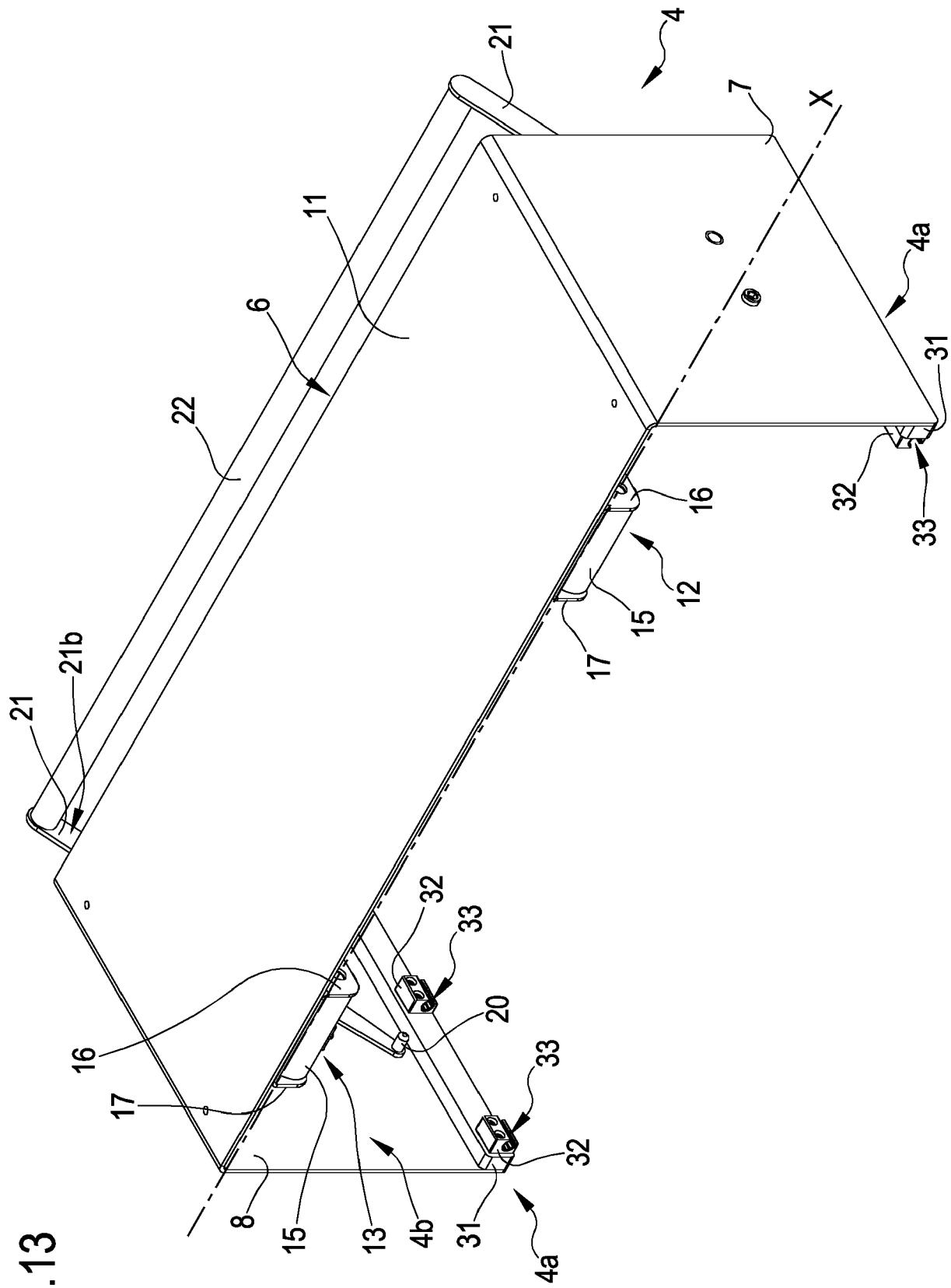
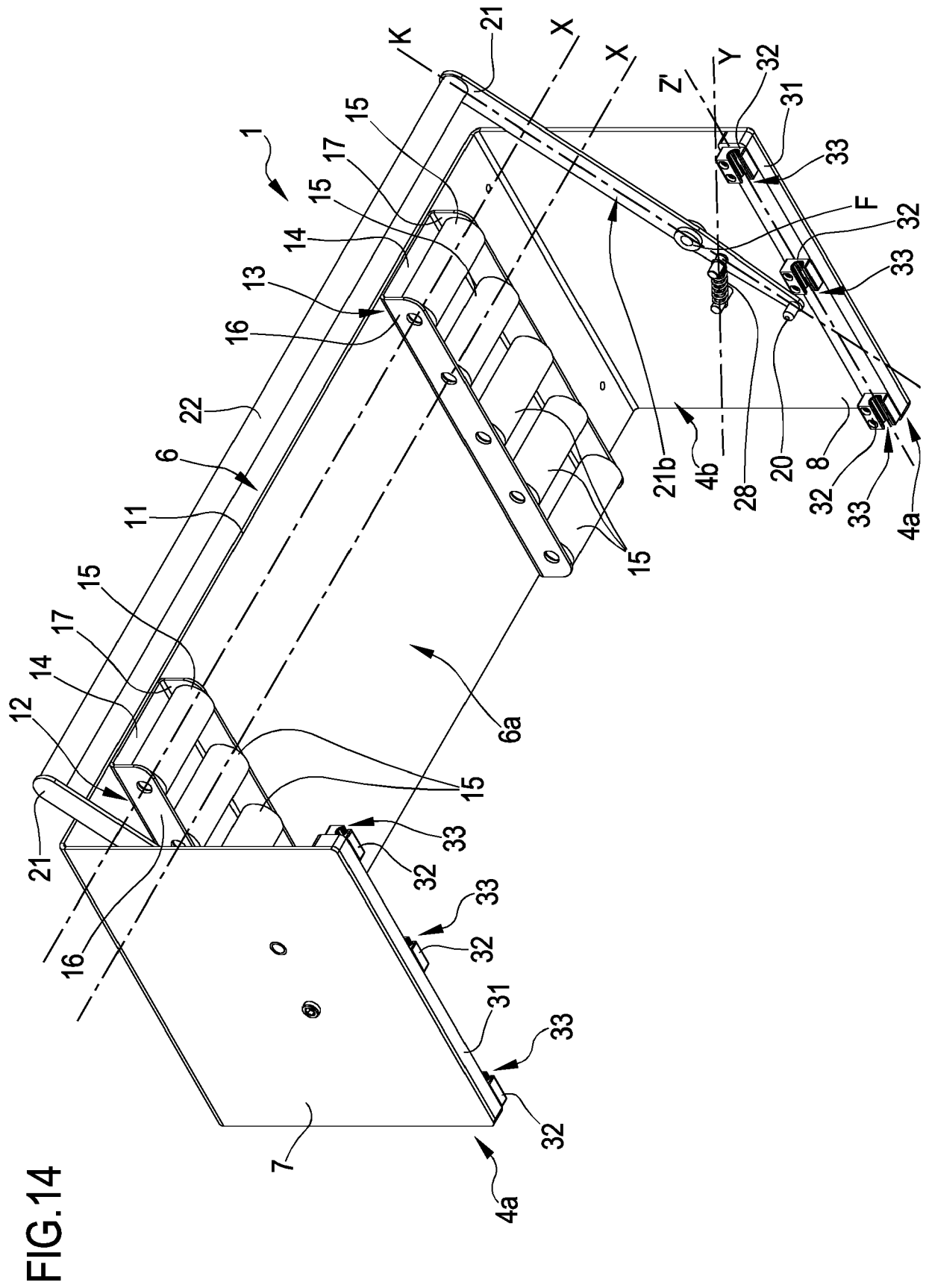


FIG.12

FIG.13







EUROPEAN SEARCH REPORT

Application Number

EP 24 16 9791

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 3 771 631 A1 (B FINANCIAL S R L [IT]) 3 February 2021 (2021-02-03)	1-5,7, 16,21	INV. B63B27/14
A	* paragraphs [0041] - [0047] * * figures *	6,8-15, 17-20,22	

A	WO 2021/015612 A1 (AMPELMANN HOLDING B V [NL]) 28 January 2021 (2021-01-28)	1-22	
	* abstract * * figures *		

A	EP 1 854 715 A1 (BESENZONI S P A [IT]) 14 November 2007 (2007-11-14)	1-22	
	* paragraphs [0029] - [0031] *		

A	EP 1 291 278 A2 (BESENZONI S R L [IT]) 12 March 2003 (2003-03-12)	1-22	
	* abstract * * figures *		

			TECHNICAL FIELDS SEARCHED (IPC)
			B63B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		18 June 2024	Gardel, Antony
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ON EUROPEAN PATENT APPLICATION NO.

EP 24 16 9791

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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18-06-2024

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	EP 3771631 A1	03-02-2021	NONE	

15	WO 2021015612 A1	28-01-2021	EP 3999410 A1	25-05-2022
			WO 2021015612 A1	28-01-2021

	EP 1854715 A1	14-11-2007	AT E483625 T1	15-10-2010
			EP 1854715 A1	14-11-2007
			ES 2353858 T3	07-03-2011
20	-----			
	EP 1291278 A2	12-03-2003	AT E350272 T1	15-01-2007
			EP 1291278 A2	12-03-2003
			ES 2279786 T3	01-09-2007
			US 2003041792 A1	06-03-2003
25	-----			
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