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(54) **Casing of a textile processing machine, such as a carding machine**

Gehäuse einer textilen Verarbeitungsmaschine wie Krempelmaschine

Ensemble d'essieu

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Description

[0001] The present invention relates to a machine on a spinning line for textile processing, such as a carding machine, provided with a casing.

[0002] As is known, textile processing machines are composed of a large number of components, frequently in movement, often at high speed.

[0003] In addition, the machines process fibre in tufts or a fibre web or a roving or a yarn, subject to soiling with dirt or dust.

[0004] For such reasons, the machines need to be fitted with an outer casing able to cover the moving parts, for obvious reasons of safety, or able to protect the material being processed.

[0005] However, the machines are often subject to maintenance operations and the casing forms an obstruction to the free access to the machine components by maintenance workers. An example to simplify access for maintenance operation is disclosed in document DE 7530470U.

[0006] A solution of a carding machine fitted with a casing formed of panels detachable from the support frame is known of. However, such solution has the drawback of requiring transport of the panels, in operations which are often difficult and tiring, and entailing identification of somewhere to put them, creating problems of obstruction to other operators.

[0007] The purpose of the present invention is to make a textile processing machine such as a carding machine, fitted with a casing which satisfies the aforesaid requirements and overcomes the drawbacks mentioned with reference to the prior art.

[0008] Such purpose is achieved by a machine according to claim 1.

[0009] The characteristics and advantages of the machine according to the invention will be evident from the description below, made by way of a non-limiting example, with reference to the appended drawings, wherein:

- figure 1 shows a carding machine fitted with a casing in a fully closed configuration ;
- figure 2 shows a cross-section view of an upper portion of the guide system of the casing, in the configuration in figure 1;
- figure 3 shows a cross-section view of a lower portion of the guide system of the casing, in the configuration in figure 1;
- figure 4 shows the carding machine fitted with the casing in a partially open configuration, with the panel in the limit stop position;
- figure 5 shows a cross-section view of the upper portion of the guide system of the casing, in the configuration in figure 4;
- figure 6 shows a cross-view from above of the guide system in figure 5;
- figure 7 shows a cross-section view of the upper portion of the guide system of the casing, in the partially

open configuration, with the panel in the parked position;

- figure 8 shows the carding machine fitted with the casing in a fully open configuration;
- figure 9 shows a cross-section view of an upper portion of the guide system of the casing, in the configuration in figure 8;
- figure 10 shows a cross-section view from above of the guide system in figure 9;
- figure 11 shows the carding machine according to a further embodiment of the invention, in a fully closed configuration of the casing;
- figure 12 shows the carding machine in figure 11, in a fully open configuration of the casing;
- figure 13 shows the carding machine according to yet a further embodiment of the invention, in a fully closed configuration of the casing and with lower guides open;
- figure 14 shows the carding machine in figure 13, in a fully closed configuration of the casing and with lower guides closed.

[0010] With reference to the attached figures, reference numeral 1 indicates a textile processing machine, and in particular a carding machine, on a spinning line.

[0011] The machine 1 comprises a plurality of functional components, such as a base, cylinders, motors, belts, and a casing which taken as a whole defines a closed box-like structure inside which said components are housed.

[0012] The casing comprises a casing frame composed of a plurality of crosspieces, which extend in a longitudinal direction, pillars or columns, which extend in a vertical direction, and inclined elements, such as to define the corners of an imaginary solid, inside which the components of the machine are housed.

[0013] For example, the casing frame comprises, on one side of the machine, a rear pillar 2, a load-bearing front element consisting of a front column 4, a first inclined element 6 and a second inclined element 8, and an upper crosspiece 10 and a lower crosspiece 12, which join the rear pillar 2 to the load-bearing front element.

[0014] On the other side, distanced in a transversal direction from the first side, the casing frame presents a similar structure.

[0015] Preferably, the casing frame comprises reinforcement elements which join the crosspieces or the pillars to each other; for example a reinforcement element 14 joins the upper cross-piece 10 to the lower cross-piece 12.

[0016] Preferably, in addition, the casing comprises transversal elements, extending in a transversal direction, which join the pillars or load-bearing elements or the crosspieces of one side to those of the other side.

[0017] The casing further comprises a plurality of panels, supported by the casing frame, moving in such a way as to permit, when brought into the open position, access to the inside of the box-like structure, for example so as

to perform maintenance operations of the components.

[0018] For example, the casing comprises at least one swivelling rear panel 20 preferably hinged to the rear pillar 2, so that by swivelling, it provides access to the inside of the box-like structure.

[0019] In one embodiment variation, the swivelling rear panel is divided into several parts swivelling independently of each other.

[0020] In addition, the casing comprises a first sliding panel 30, hanging from the upper crosspiece 10 and/or resting on the lower crosspiece 12, translating longitudinally.

[0021] For example, in the fully closed configuration, in which the swivelling panel 20 is closed, the first sliding panel is alongside the swivelling panel 20; in a partially open configuration, instead the first sliding panel 30 is translated, occupying the area of the casing frame left vacant by the swivelling panel.

[0022] Preferably, in addition, the casing comprises a second sliding panel 40, hanging from the upper crosspiece 10 and/or resting on the lower crosspiece 12, translating longitudinally.

[0023] Preferably, the second sliding panel 40 is shaped along at least one peripheral edge so as to follow with its profile the path of the front load-bearing element, and in particular of the second inclined element 8.

[0024] For example, in the fully closed configuration, in which the swivelling panel 20 is closed and the first sliding panel 30 is alongside the swivelling panel 20, the second sliding panel 40 is alongside the first sliding panel 30; in the partially open configuration, instead, the second sliding panel 40 is translated and at least partially longitudinally overlaps the first sliding panel 30.

[0025] Preferably, in addition, the casing comprises at least one swivelling front panel 50 preferably hinged to the load-bearing element, for example to the column 4.

[0026] Preferably, the front swivelling panel 50 is shaped along its peripheral edge in such a way that the profile follows the path of the first inclined element 6.

[0027] Preferably, in addition, each sliding panel is provided with at least one main wheel to facilitate its longitudinal sliding.

[0028] For example, the first sliding panel 30 is fitted with a main rear wheel 60 and a main front wheel 70, connected so as to support the panel 30 hanging from the upper crosspiece 10.

[0029] Similarly, the second sliding panel 40 is fitted with a main rear wheel 80 and a main front wheel 90, connected so as to support the panel 40 hanging from the upper crosspiece 10.

[0030] To enable the at least partial overlapping of the first sliding panel 30 with the second sliding panel 40, the casing comprises a guide system able to support at least one sliding panel in a longitudinal direction, and preferably transversally, so as to slide.

[0031] In particular the guide system comprises a guide 100, for example in the shape of a profile, attached to the upper crosspiece 10, having a longitudinal exten-

sion, comprising a base 102 on which the wheels of the panels rest, and a lateral shoulder 104, projecting from the base 102, to prevent the wheels of the panels from coming out of the guide 100.

[0032] The guide 100 extends along a sliding axis X which coincides with the direction of the main wheels when rolling.

[0033] In addition, the system comprises at least one parking area 110 suitable for supporting a sliding panel, transversally flanking the sliding axis X, that is alongside the guide 100.

[0034] Preferably, the parking area is formed by an angular element fixed to the upper crosspiece.

[0035] Preferably, the guide system comprises at least two parking areas 110, longitudinally distanced from each other, that is, along a sliding axis X.

[0036] Preferably, in addition, the guide system comprises a transversal stop element suitable for limiting the transversal movement of the sliding panel.

[0037] For example, said stop element is formed of a slot 140 made in the parking area 110, suitable for at least partially housing the parking wheel, to limit its rolling in a transversal direction.

[0038] To allow the passage of the sliding panel to the parking position, the lateral shoulder 104 of the guide 100 has interruptions 120, which allow the passage of the wheels.

[0039] Preferably, in addition, the guide system comprises at least one parking wheel 130, fixed to the first sliding panel 30 so as to swivel, suitable for rolling in a transversal direction, that is mounted with its rotation axis parallel to the longitudinal sliding direction of the panels.

[0040] Preferably, the guide system envisages two parking wheels 130, respectively joined to the two main wheels 60, 70.

[0041] With the sliding of the first sliding panel 30, the main wheels 60, 70 align longitudinally with the interruptions 120, in general when the first sliding panel 30 has reached the limit stop, while the parking wheels 130 overlap the respective parking areas 110.

[0042] By pushing the panel 30 with a transversal action, the main wheels 60, 70 are pushed out of the guide 100, in a parking position.

[0043] In particular the main wheels 60, 70 position themselves next to the sliding axis, while the parking wheels roll on the parking regions 110, supporting the transversal shifting of the panel 30, for example up to engaging with the stop element, that is until they enter their respective slots 140.

[0044] The distance between axles of the main rear wheel and the main front wheel of the first sliding panel is equal to the distance between axles between the interruptions 120, so that, when the sliding panel is in the limit stop position, the main wheels are aligned with the respective interruptions (and the parking wheels overlap the respective parking areas).

[0045] Following the sliding of the second sliding panel 40, this will translate until it longitudinally overlaps, at

least partially, the first panel 30 positioned in the parking area.

[0046] Preferably, the second sliding panel 40 longitudinally overlaps the first panel 30, covering it completely.

[0047] The fully open configuration of the casing is thereby achieved, permitting optimal access to the inner components.

[0048] The distance between axles of the main rear wheel and the main front wheel of the second sliding panel is different from the distance between axles of the interruptions (and the distance between axles of the first sliding panel), so that when the second sliding panel is in the limit stop position, its wheels are misaligned with such interruptions, thereby preventing the exit of the second sliding panel from the guide.

[0049] Preferably, in addition, the guide system comprises a lower guide 150, having a longitudinal extension and attached to the lower crosspiece 12, and a guide element 160, attached to the sliding panel, sliding in the lower guide 150, so as to guide the sliding of the panels.

[0050] According to a further embodiment of the invention, the guide system comprises a parking extension 200, positioned as a longitudinal extension of the guide 100 at one end of it, projecting from the casing frame (figure 11).

[0051] In the fully closed configuration, all the moving panels are in the respective closed position, supported by the upper crosspiece while the parking extension 200 is not engaged by any panel.

[0052] To open the casing, the first sliding panel 30 is made to slide longitudinally on the extension 200 and, after reaching the limit stop position, is pushed transversally and brought into the parking position, in the same way as seen above.

[0053] In the same way, a further first sliding panel 30' is made to slide longitudinally on the extension 200 and, after reaching the limit stop position and longitudinally overlapping the first sliding panel 30, is pushed transversally and brought into the respective parking position, in the same way as described above with reference to the first sliding panel 30.

[0054] Lastly, the second sliding panel 40 is made to slide longitudinally on the extension 200 and longitudinally overlaps the other panels (figure 12).

[0055] A fully open configuration is thereby achieved, in which access to the inner components is optimal.

[0056] According to yet a further embodiment, the guide system comprises the parking extension 200, positioned as a longitudinal extension of the guide 100 at one end of it, projecting from the casing frame, and a corresponding lower guide extension 250 positioned as a longitudinal extension of the lower guide 150 attached to the lower crosspiece 12 of the casing frame (figures 13 and 14).

[0057] Preferably, in addition, the lower extension 250 is hinged, for example to the casing frame, so as to swivel between an open position, in which it is aligned with the lower guide 150 of the casing frame (figure 13), and a

closed position, in which it positions itself in the rear part of the machine so as not to cause obstruction (figure 14).

[0058] According to one embodiment variation (not shown), the parking extension 250 is hinged, for example to the casing frame, so as to swivel between an open position, in which it is aligned with the guide 100 of the casing frame, and a closed position, in which it positions itself in the rear part of the machine so as not to cause obstruction.

[0059] Innovatively, the textile processing machine according to the present invention overcomes the drawbacks of the prior art and, in particular permits easy access to the inner components of the machine and avoids the inconvenience of transport and the obstructions caused by the panels, and consequent problems of safety in the workplace.

[0060] It is clear that a person skilled in the art may make modifications to the machine described above so as to satisfy contingent requirements while remaining within the sphere of protection of the following claims.

Claims

1. Machine (1) of a spinning line for textile processing, such as a carding machine, having a first and second side distanced in a transversal direction, provided with a casing comprising:

- a first panel (30) sliding on one of said sides along a longitudinal sliding axis (X);
- a guide system able to support said first sliding panel (30) in a longitudinal direction so as to slide to permit optimal access to the components internal to the casing
- a second panel (40) sliding longitudinally on the same side of the first sliding panel;

characterized in that the guide system is suitable to support said first sliding panel (30) in a longitudinal and transversal direction so as to slide to permit the at least partial longitudinal overlapping of the second panel (40) with the first panel (30).

2. Machine according to claim 1, wherein the first sliding panel (30) is provided with at least one main wheel to facilitate the longitudinal sliding, preferably with a main rear wheel (60) and a main front wheel (70).

3. Machine according to claim 2, wherein, in a parked position, the main wheels (60,70) of the first panel are positioned transversally next to the sliding axis (X).

4. Machine according to claim 3, wherein the guide system comprises a longitudinal guide (100) provided with a base (102) for the sliding of the panels, and a

shoulder (104) provided with interruptions (120) for the exit of the wheels.

5. Machine according to claim 4, wherein the guide system comprises at least one parking area (110) alongside the sliding axis (X), aligned with the respective interruption (120). 5
6. Machine according to claim 5, wherein the sliding panel (30, 40) is provided with at least one parking wheel (130) for transversal sliding on the parking area (110). 10
7. Machine according to claim 6, wherein the guide system comprises a transversal stop element. 15
8. Machine according to claim 7, wherein said transversal stop element is a slot (140) made in said parking area (110). 20
9. Machine according to any of the claims from 4 to 8, wherein the distance between axles of the main rear wheel and the main front wheel of the first sliding panel (30) is different from the distance between axles of the main rear wheel and the main front wheel of the second sliding panel (40), to prevent the exit of the second sliding panel from the guide (100). 25
10. Machine according to any of the previous claims, wherein 30
 - the casing comprises a casing frame which forms the corners of a box-like solid in which the components of the machine are contained, and
 - the guide system comprises a parking extension (200) projecting from the casing frame to support the sliding panel (30) or the sliding panels (30, 30') in the parking position. 35
11. Machine according to claim 10, wherein the guide system comprises a lower guide extension (250), which can be positioned as a longitudinal extension of the lower guide (150). 40
12. Machine according to claim 11, wherein the lower extension (250) is hinged so as to swivel between an open position, in which it is aligned with the lower guide (150) and a closed position. 45
13. Machine according to claim 11 or 12, wherein the parking extension (200) is hinged so as to swivel between an open position, in which it is aligned with the guide (100), and a closed position. 50
14. Machine according to any of the previous claims, wherein the casing comprises swivelling panels (20,50). 55

Patentansprüche

1. Maschine (1) einer Spinnanlage für die textile Verarbeitung, wie etwa einer Kreppelmaschine mit einer ersten und zweiten Seite, die in einer Querrichtung beabstandet sind, welche mit einem Gehäuse versehen ist, das umfasst:
 - eine erste Platte (30), die auf einer der Seiten entlang einer Längsgleitachse (X) gleitet;
 - ein Führungssystem, das fähig ist, die erste Gleitplatte (30) in einer Längsrichtung zu halten, so dass sie gleitet, um den optimalen Zugang zu den Komponenten innerhalb des Gehäuses zuzulassen;
 - eine zweite Platte (40), die in der Längsrichtung auf der gleichen Seite wie die erste Gleitplatte gleitet;
- dadurch gekennzeichnet, dass das Führungssystem geeignet ist, um die erste Gleitplatte (30) in einer Längsrichtung und einer Querrichtung zu halten, so dass sie gleitet, um das wenigstens teilweise Überlappen in der Längsrichtung der zweiten Platte (40) mit der ersten Platte (30) zuzulassen.
2. Maschine nach Anspruch 1, wobei die erste Schiebepplatte (30) mit wenigstens einem Hauptrad, vorzugsweise mit einem Haupthinterrad (60) und einem Hauptvorderrad (70), versehen ist, um das Gleiten in der Längsrichtung zu erleichtern.
3. Maschine nach Anspruch 2, wobei die Haupträder (60, 70) der ersten Platte in einer Parkposition quer neben der Gleitachse (X) positioniert sind.
4. Maschine nach Anspruch 3, wobei das Führungssystem eine Längsführung (100), die mit einer Basis (102) für das Gleiten der Gleitplatten versehen ist, und einen Absatz (104), der mit Unterbrechungen (120) für den Austritt der Räder versehen ist, umfasst.
5. Maschine nach Anspruch 4, wobei das Führungssystem wenigstens einen Parkbereich (110) entlang der Schiebachse (X) umfasst, der mit der jeweiligen Unterbrechung (120) ausgerichtet ist.
6. Maschine nach Anspruch 5, wobei die Schiebepplatte (30, 40) mit wenigstens einem Parkrad (130) für das Gleiten in der Querrichtung auf dem Parkbereich (110) versehen ist.
7. Maschine nach Anspruch 6, wobei das Führungssystem ein Queranschlagelement umfasst.
8. Maschine nach Anspruch 7, wobei das Queranschlagelement ein Schlitz (140) ist, der in dem Park-

bereich (110) gefertigt ist.

9. Maschine nach einem der Ansprüche 4 bis 8, wobei der Abstand zwischen Achsen des Haupthinterrads und des Hauptvorderrads der ersten Gleitplatte (30) verschieden zu dem Abstand zwischen Achsen des Haupthinterrads und des Hauptvorderrads der zweiten Gleitplatte (40) ist, um den Austritt der zweiten Gleitplatte aus der Führung (100) zu verhindern. 5
10. Maschine nach einem der vorhergehenden Ansprüche, wobei 10
 - das Gehäuse einen Gehäuserahmen umfasst, der die Ecken eines kastenartigen Festkörpers bildet, in dem die Bestandteile der Maschine enthalten sind, und
 - das Führungssystem eine Parkerweiterung (200) umfasst, die von dem Gehäuserahmen vorsteht, um die Gleitplatte (30) oder die Gleitplatten (30, 30') in der Parkposition zu halten. 20
11. Maschine nach Anspruch 10, wobei das Führungssystem eine untere Führungserweiterung (250) umfasst, die als eine Längserweiterung der unteren Führung (150) positioniert werden kann. 25
12. Maschine nach Anspruch 11, wobei die untere Erweiterung (250) gelenkig verbunden ist, um zwischen einer offenen Position, in der sie mit der unteren Führung (150) ausgerichtet ist, und einer geschlossenen Position zu schwenken. 30
13. Maschine nach Anspruch 11 oder 12, wobei die Parkerweiterung (200) gelenkig verbunden ist, um zwischen einer offenen Position, in der sie mit der Führung (100) ausgerichtet ist, und einer geschlossenen Position zu schwenken. 35
14. Maschine nach einem der vorhergehenden Ansprüche, wobei das Gehäuse Schwenkplatten (20, 50) umfasst. 40

Revendications 45

1. Machine (1) d'une ligne de filature pour fabriquer des textiles, telle qu'une machine de cardage, ayant un premier et un second côté éloignés dans une direction transversale, prévus avec un carénage 50 comprenant :
 - un premier panneau (30) coulissant sur l'un desdits côtés le long d'un axe de coulisement longitudinal (X) ;
 - un système de guidage pouvant supporter, de manière coulissante, ledit premier panneau coulissant (30) dans une direction longitudinale, afin 55

de permettre un accès optimal aux composants internes du carénage ;

- un second panneau (40) coulissant de manière longitudinale sur le même côté du premier panneau coulissant ;

caractérisée en ce que le système de guidage est adapté pour supporter, de manière coulissante, ledit premier panneau coulissant (30) dans une direction longitudinale et transversale afin de permettre le chevauchement longitudinal au moins partiel du second panneau (40) avec le premier panneau (30).

2. Machine selon la revendication 1, dans laquelle le premier panneau coulissant (30) est prévu avec au moins une roue principale afin de faciliter le coulisement longitudinal, de préférence avec une roue arrière principale (60) et une roue avant principale (70).
3. Machine selon la revendication 2, dans laquelle, dans une position stationnée, les roues principales (60, 70) du premier panneau sont positionnées transversalement au voisinage de l'axe de coulisement (X).
4. Machine selon la revendication 3, dans laquelle le système de guidage comprend un guide longitudinal (100) prévu avec une base (102) pour le coulisement des panneaux, et un épaulement (104) prévu avec des interruptions (120) pour la sortie des roues.
5. Machine selon la revendication 4, dans laquelle le système de guidage comprend au moins une zone de stationnement (110) le long de l'axe de coulisement (X), alignée avec l'interruption (120) respective.
6. Machine selon la revendication 5, dans laquelle le panneau coulissant (30, 40) est prévu avec au moins une roue de stationnement (130) pour le coulisement transversal sur la zone de stationnement (110).
7. Machine selon la revendication 6, dans laquelle le système de guidage comprend un élément de butée transversal.
8. Machine selon la revendication 7, dans laquelle ledit élément de butée transversal est une fente (140) réalisée dans ladite zone de stationnement (110).
9. Machine selon l'une quelconque des revendications 4 à 8, dans laquelle la distance entre les essieux de la roue arrière principale et de la roue avant principale du premier panneau coulissant (30) est différente de la distance entre les essieux de la roue arrière principale et de la roue avant principale du second panneau coulissant (40), pour empêcher la sor-

tie du second panneau coulissant du guide (100).

10. Machine selon l'une quelconque des revendications précédentes, dans laquelle :

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- le carénage comprend un bâti de carénage qui forme les coins d'un solide en forme de boîte dans lequel les composants de la machine sont contenus, et

- le système de guidage comprend une extension de stationnement (200) faisant saillie du bâti de carénage afin de supporter le panneau coulissant (30) ou les panneaux coulissants (30, 30') dans la position de stationnement.

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11. Machine selon la revendication 10, dans laquelle le système de guidage comprend une extension de guidage inférieure (250), qui peut être positionnée comme une extension longitudinale du guide inférieur (150).

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12. Machine selon la revendication 11, dans laquelle l'extension inférieure (250) est articulée afin de pivoter entre une position ouverte dans laquelle elle est alignée avec le guide inférieur (150) et une position fermée.

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13. Machine selon la revendication 11 ou 12, dans laquelle l'extension de stationnement (200) est articulée afin de pivoter entre une position ouverte, dans laquelle elle est alignée avec le guide (100) et une position fermée.

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14. Machine selon l'une quelconque des revendications précédentes, dans laquelle le carénage comprend des panneaux pivotants (20, 50).

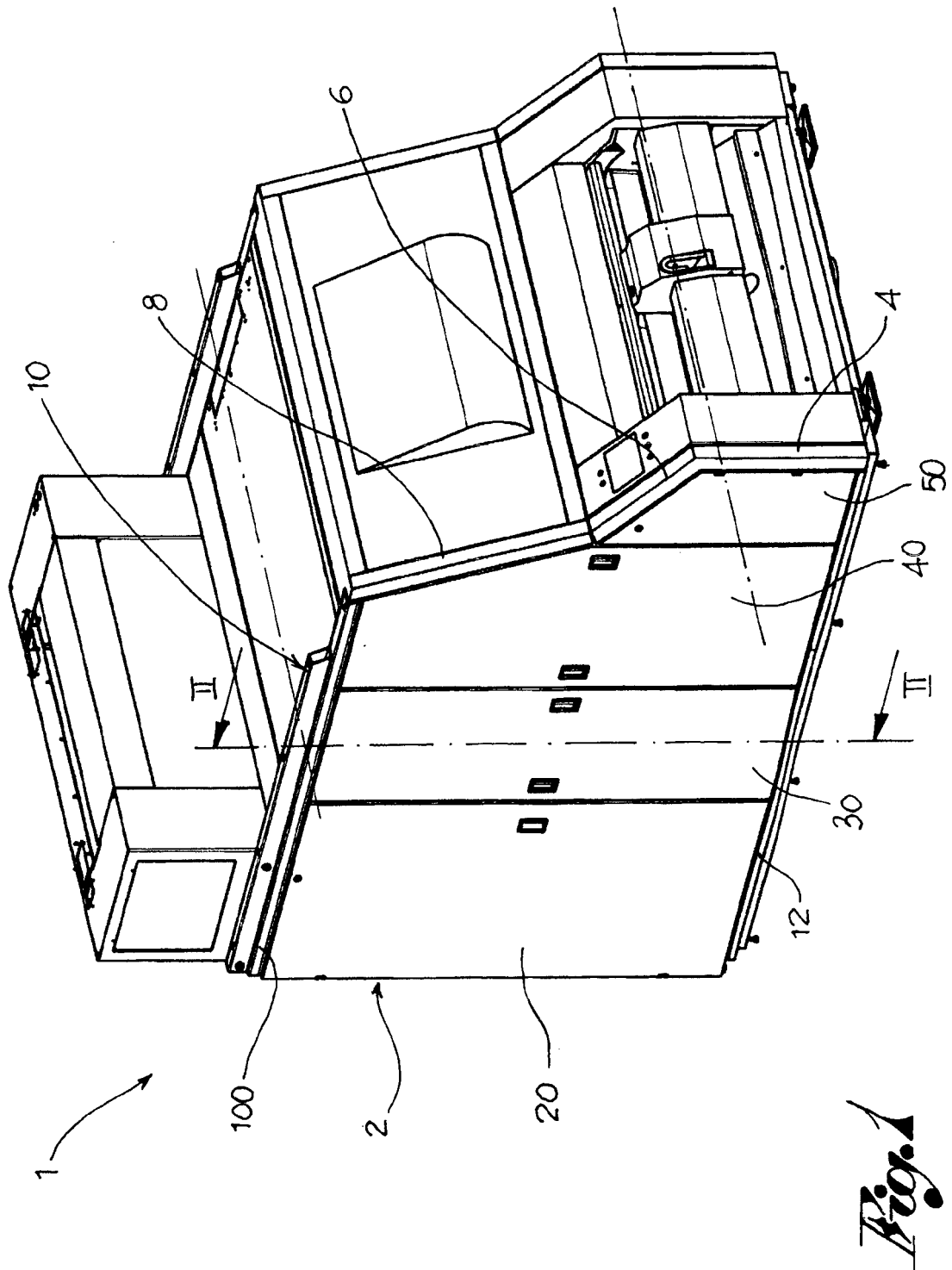
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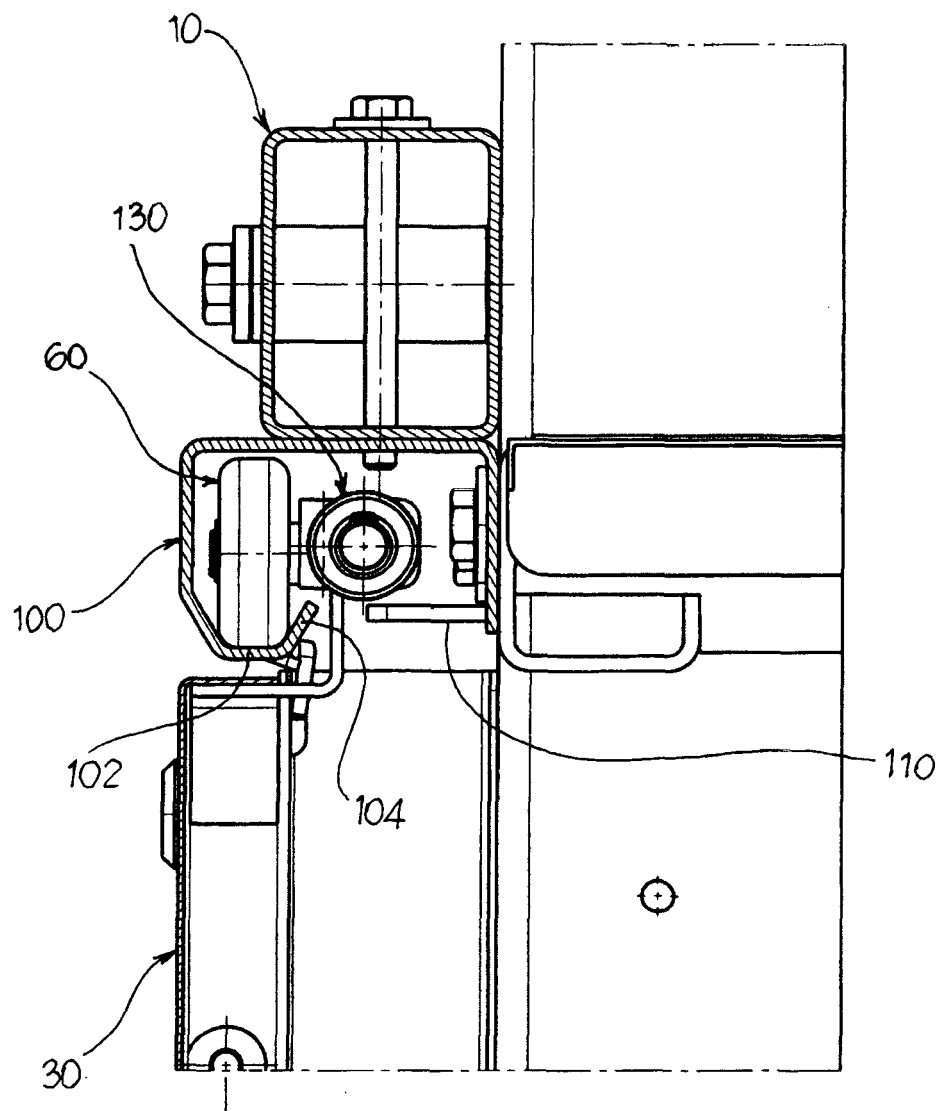


Fig. 2

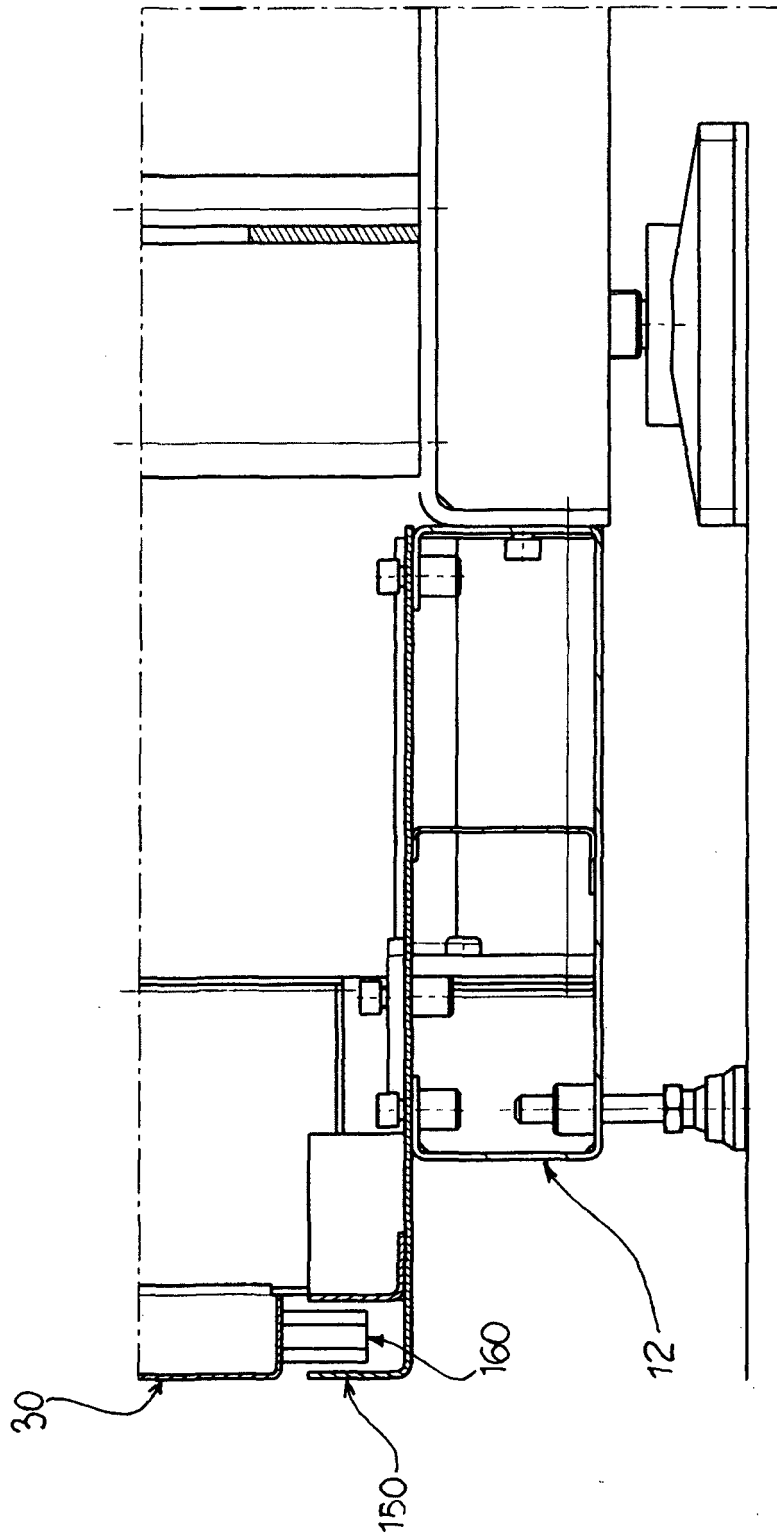


Fig. 3

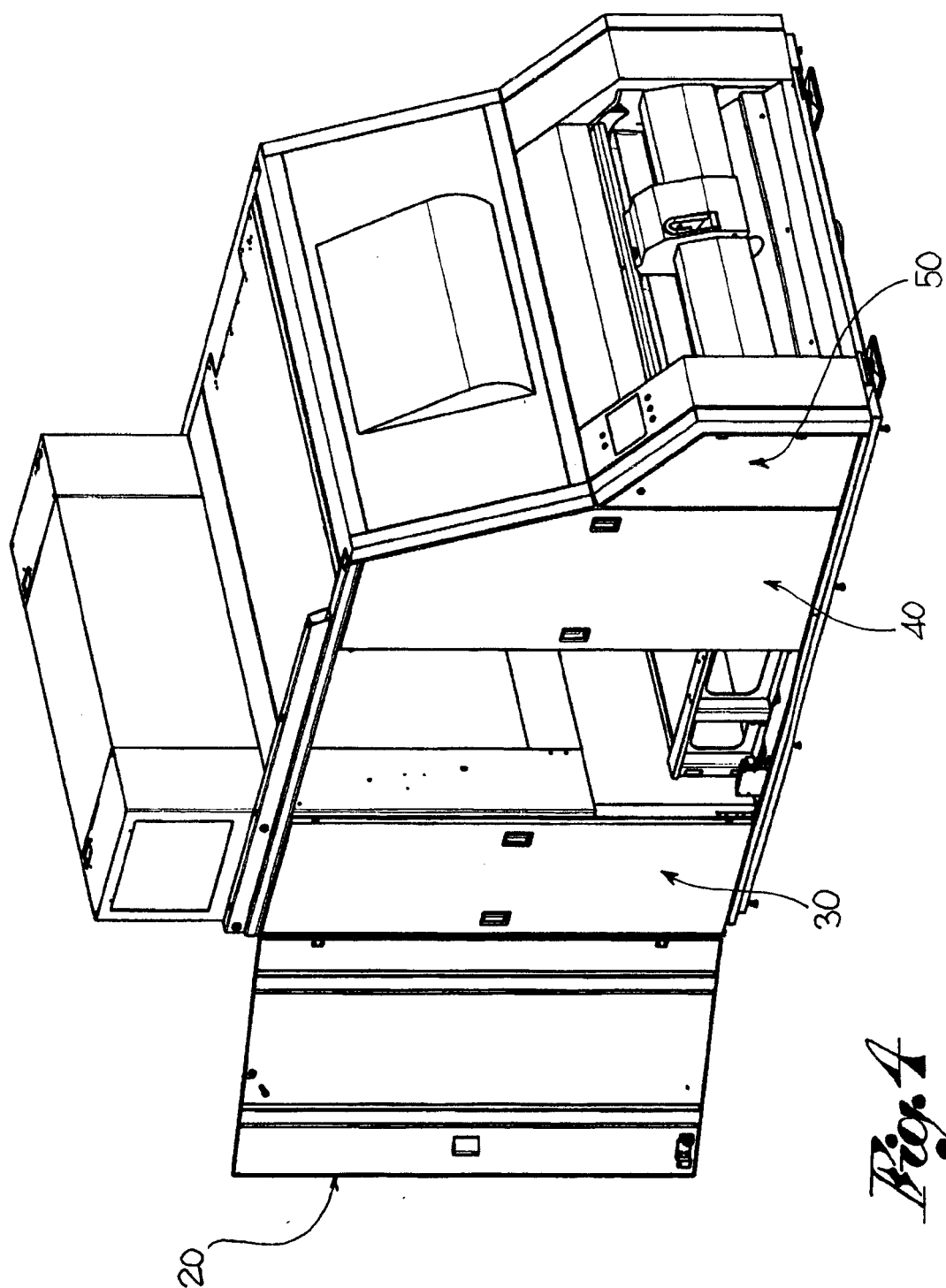


Fig. 4

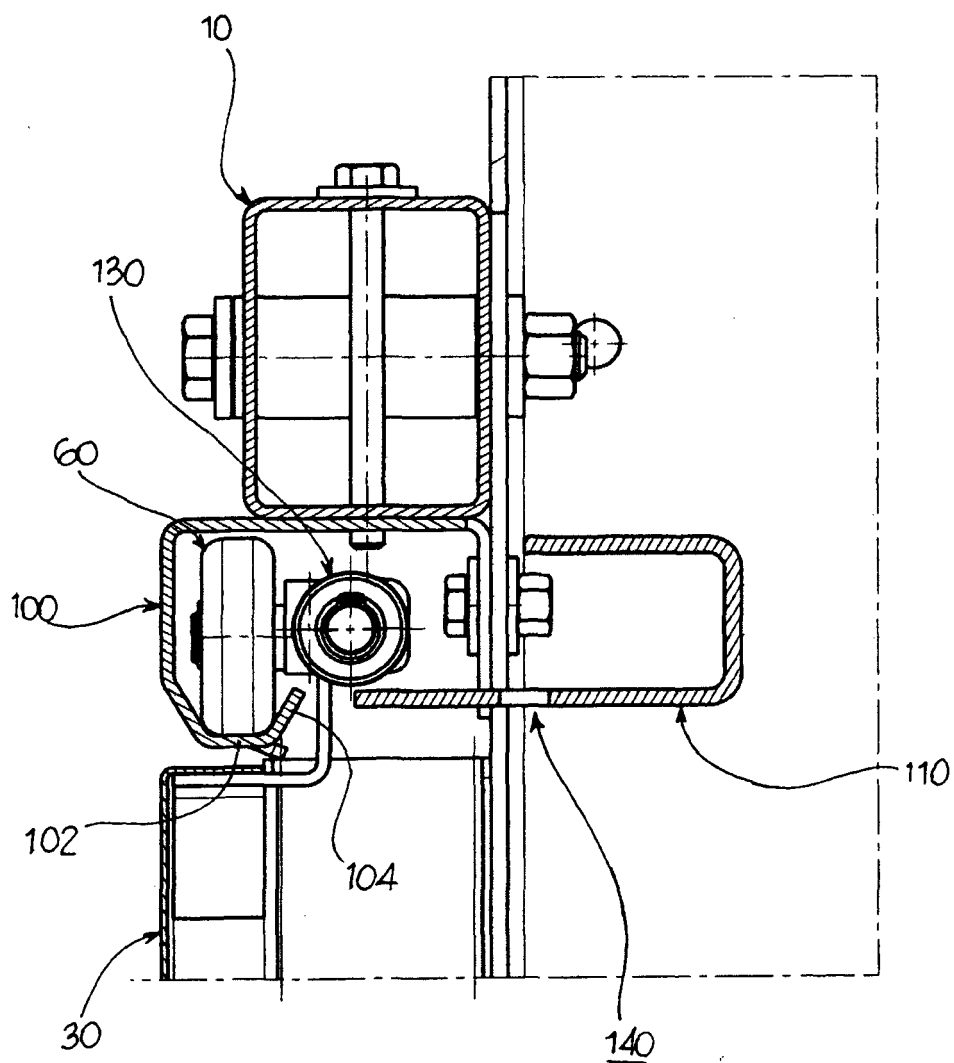


Fig. 5

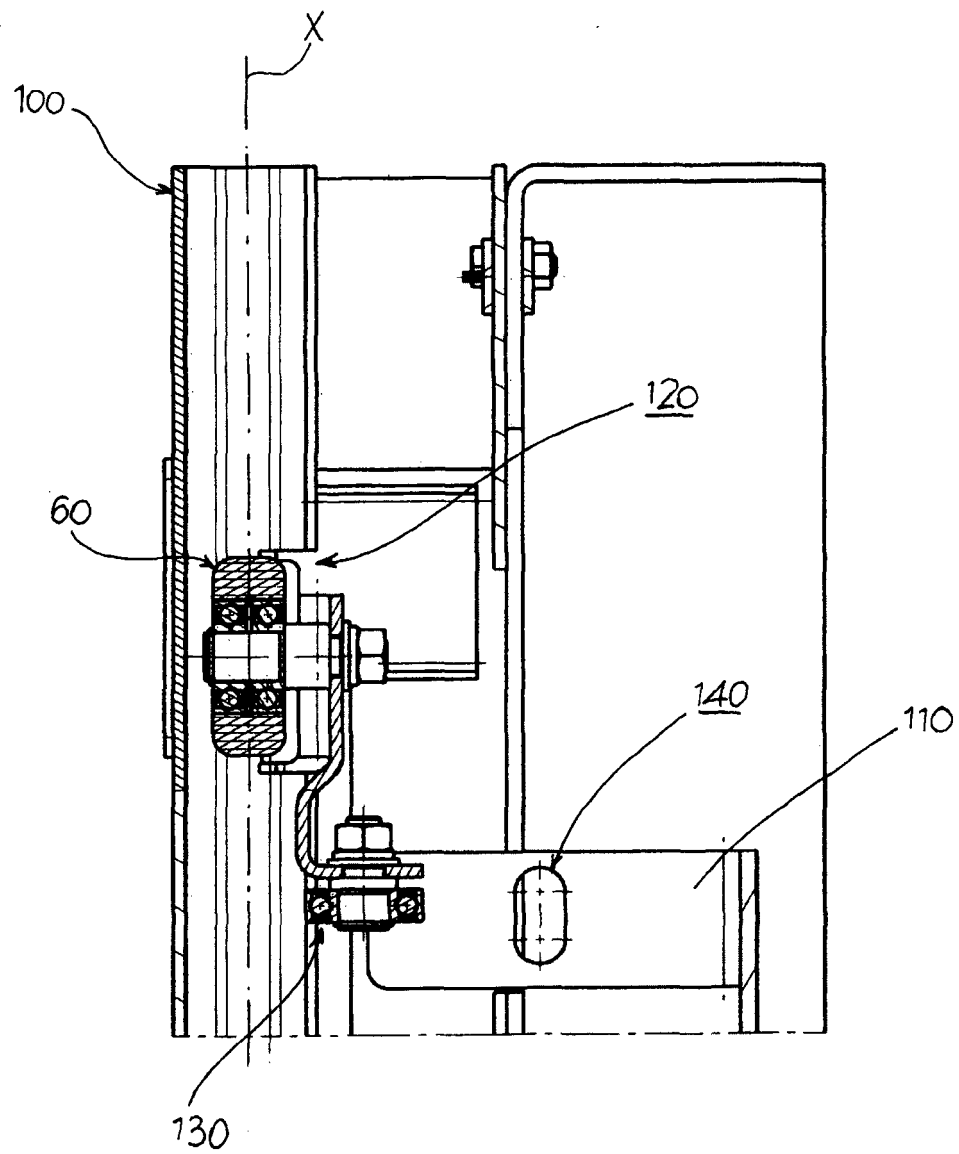


Fig. 6

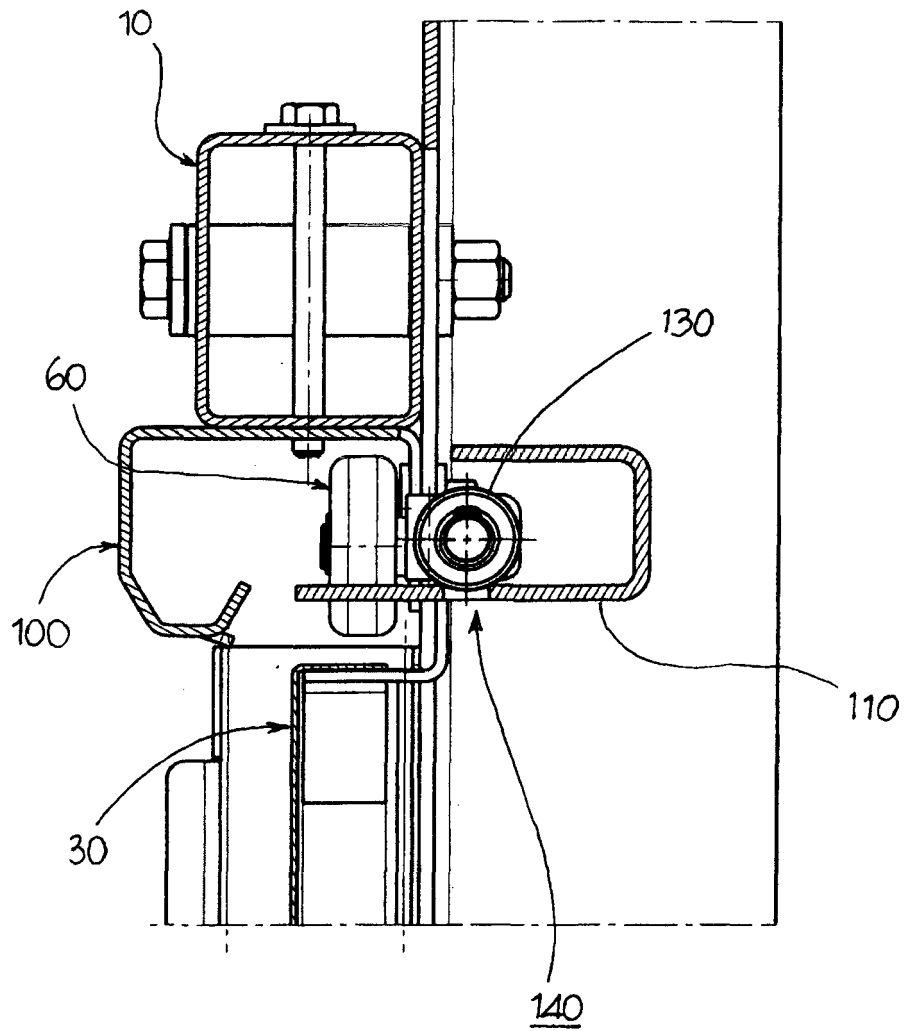


Fig. 7

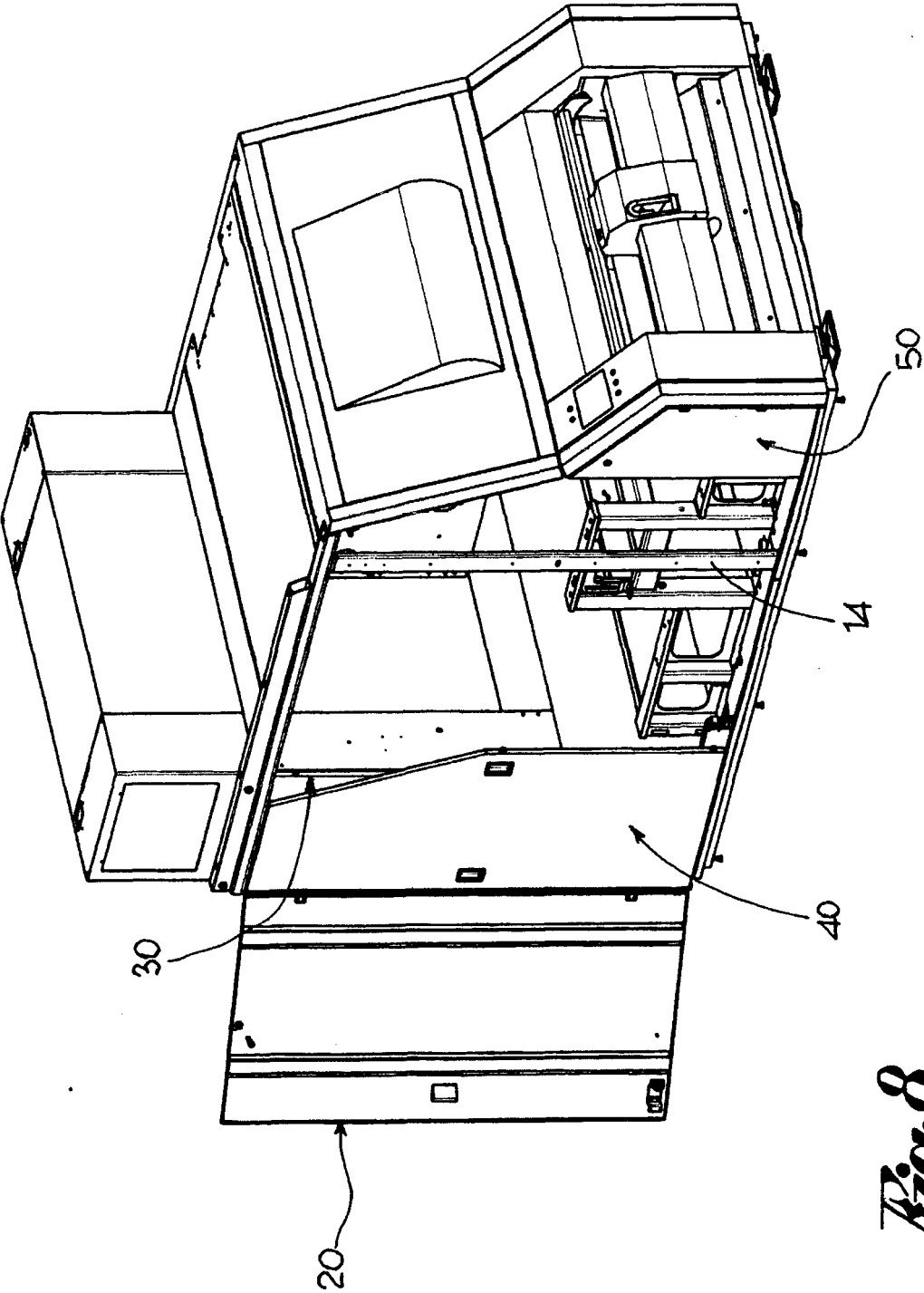


Fig. 8

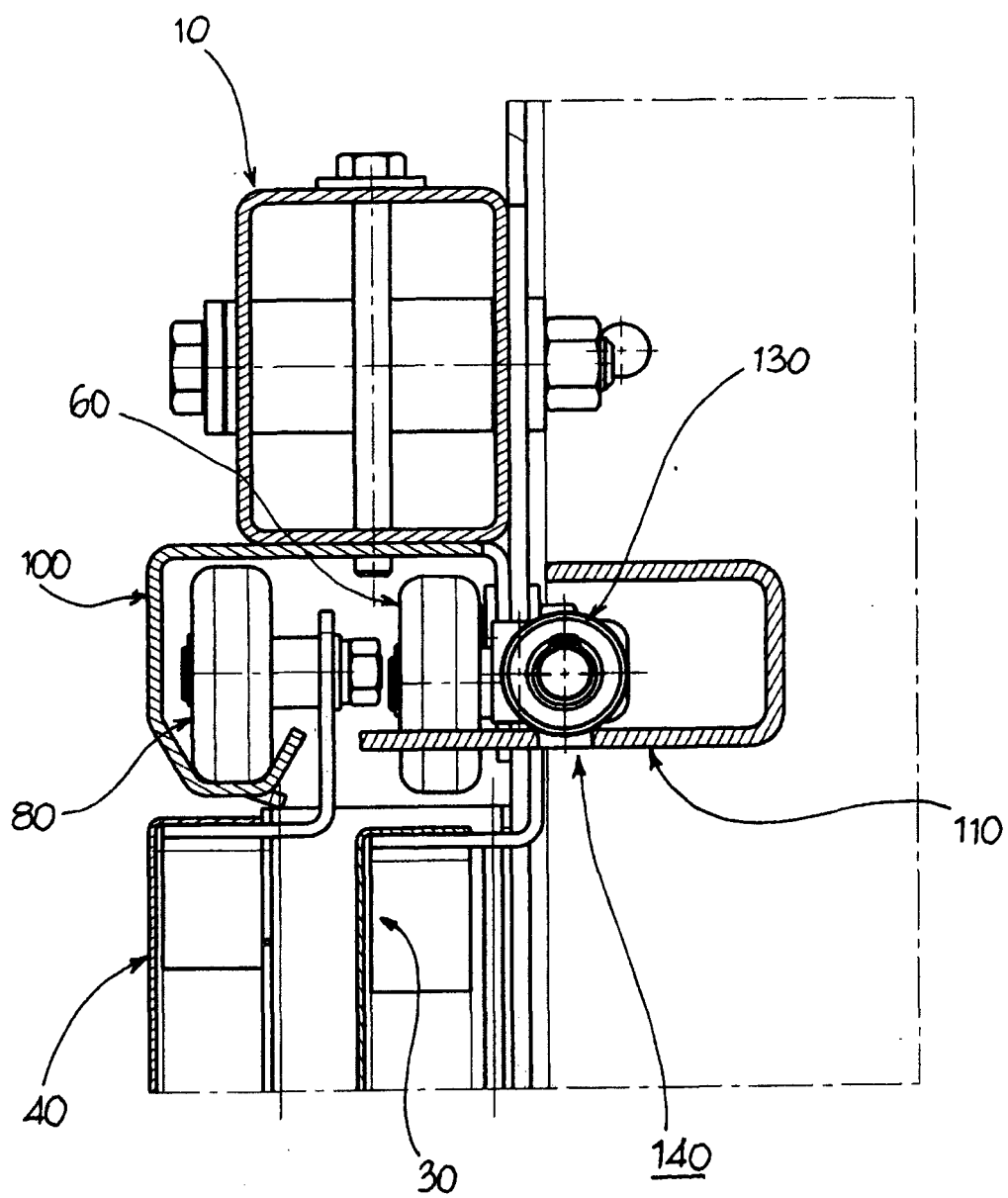


Fig. 9

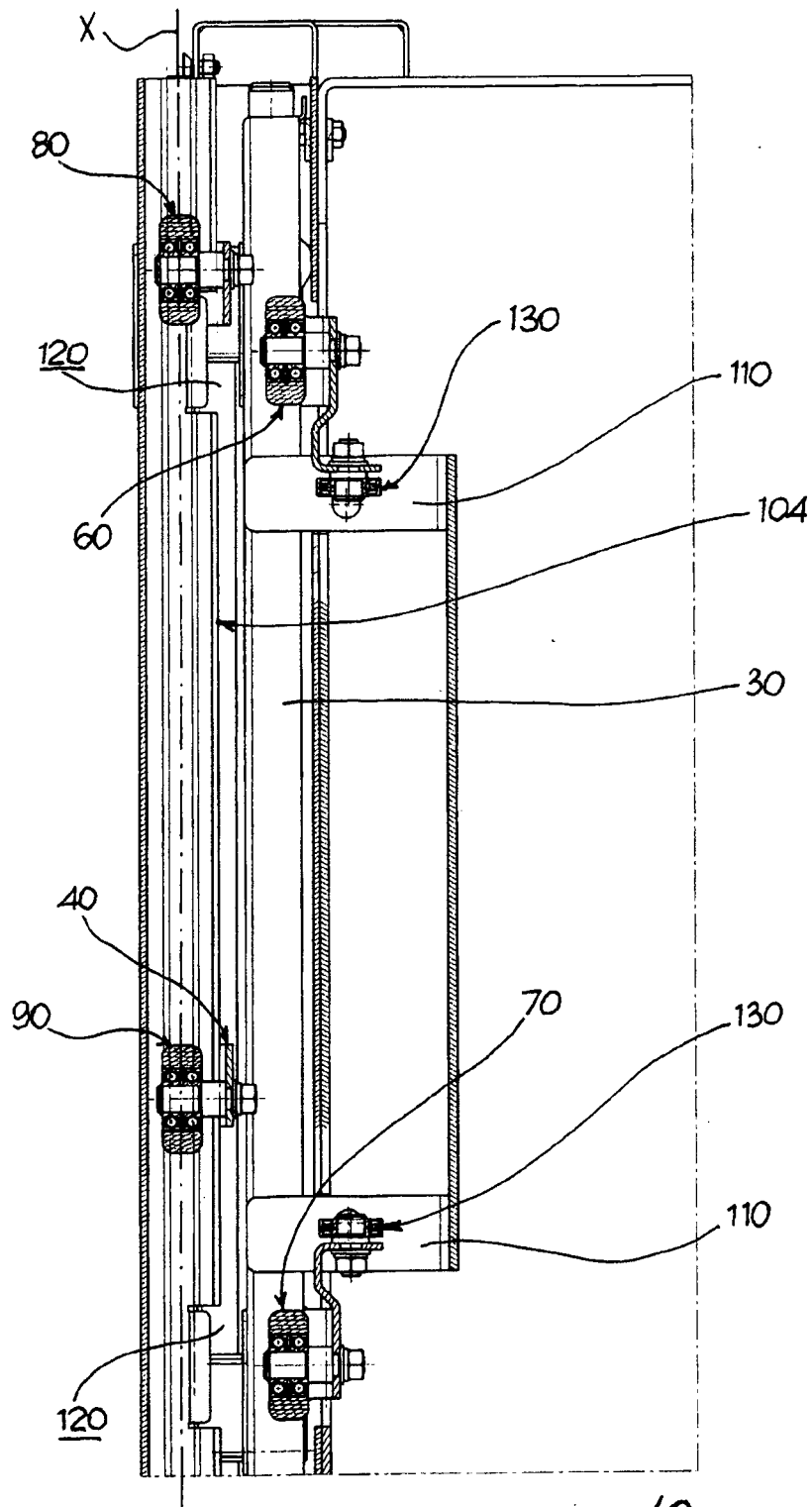
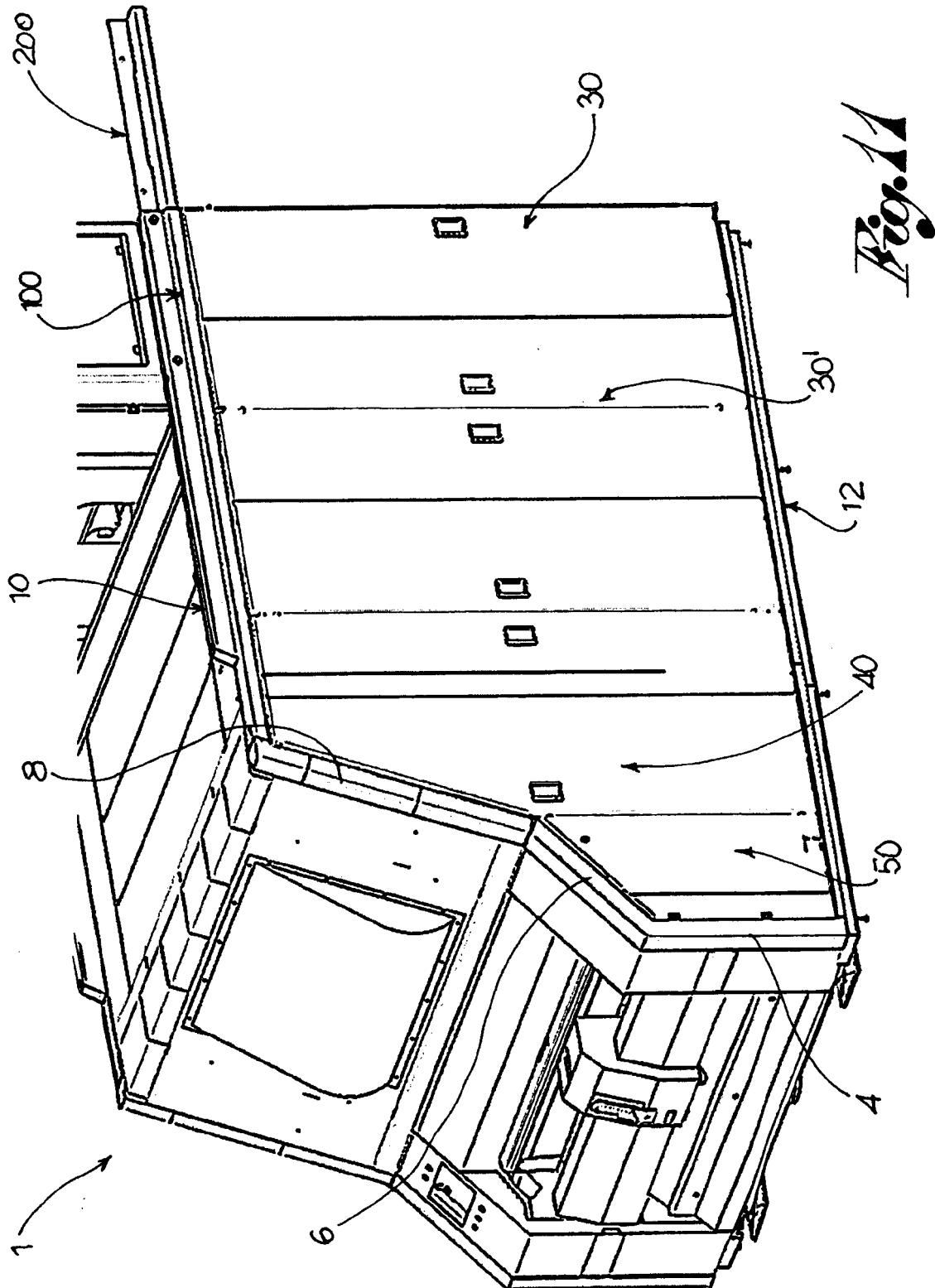


Fig. 10



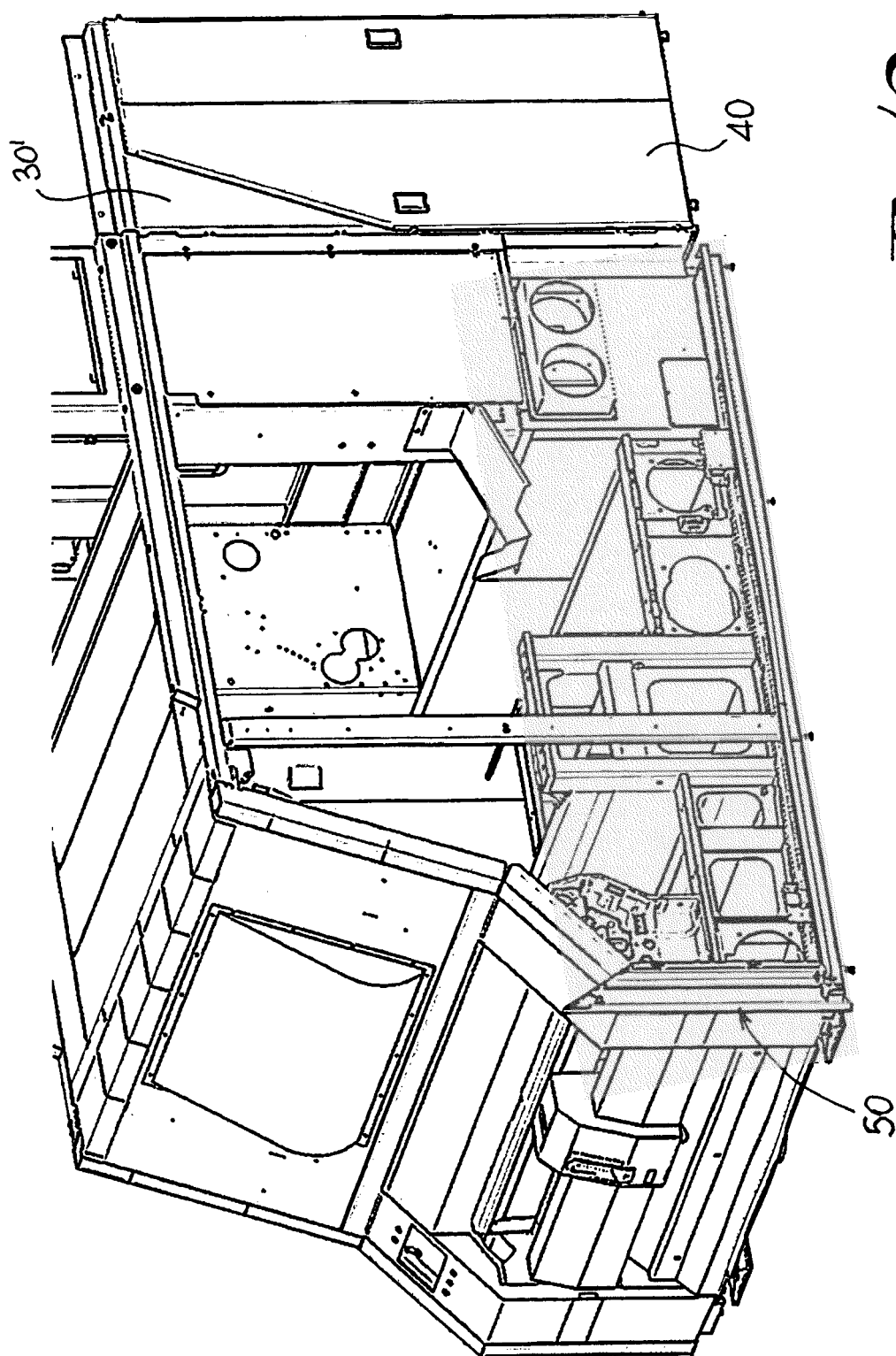
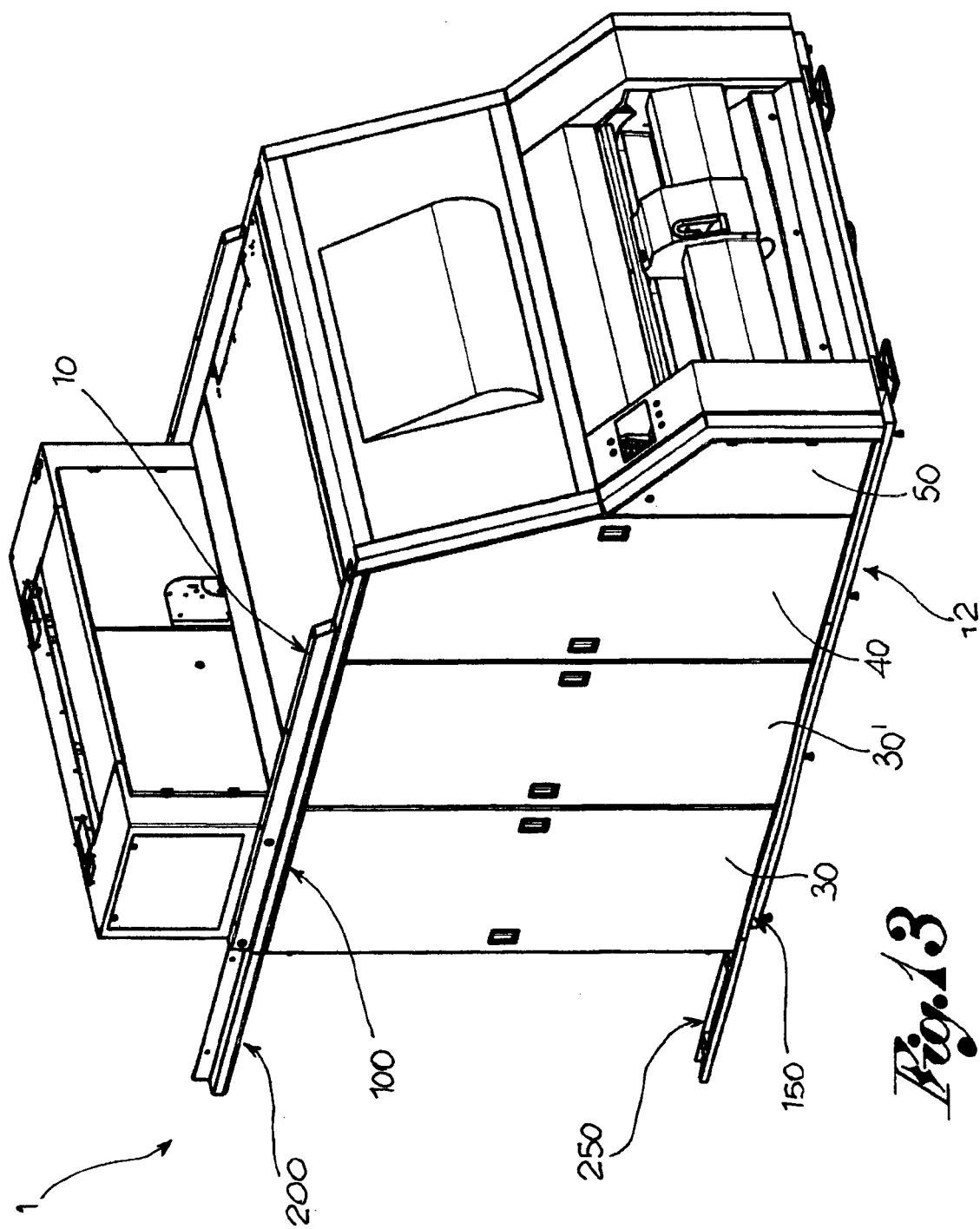
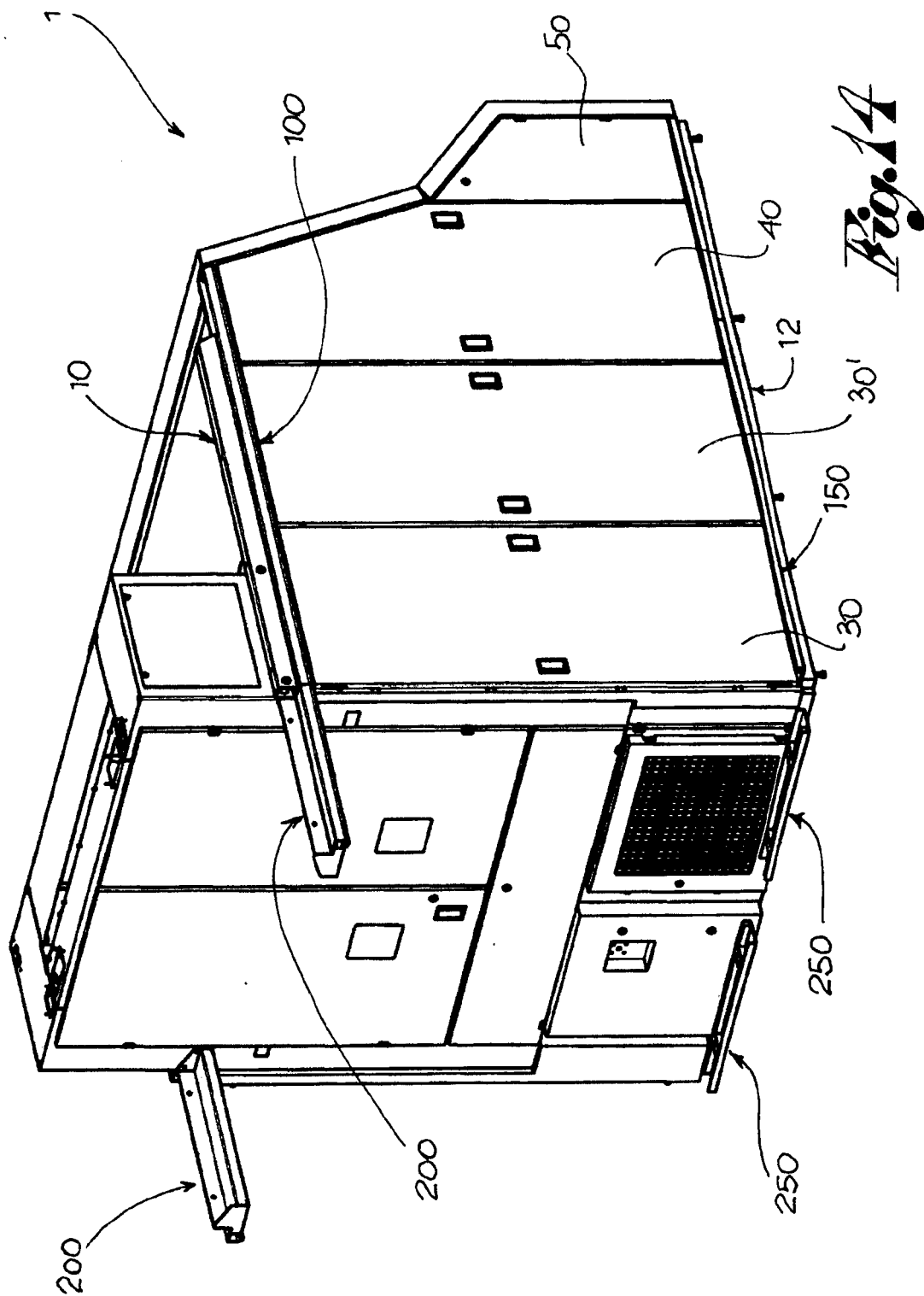


Fig. 12





REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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