



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
30.06.2010 Bulletin 2010/26

(51) Int Cl.:
A47B 49/00 (2006.01) A47B 88/06 (2006.01)

(21) Application number: **09014157.3**

(22) Date of filing: **12.11.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

• **Gasperin, Diego**
20039 Varedo (MI) (IT)

(74) Representative: **Lecce, Giovanni**
UFFICIO BREVETTI CALCIATI S.r.l.
Via Fratelli Ruffini, 9
20123 Milano (IT)

(30) Priority: **12.12.2008 IT MI20082202**

(71) Applicant: **G.L. di GASPERIN LORENZO S.n.c.**
20039 Varedo (MI) (IT)

Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(72) Inventors:
• **Gasperin, Bruno**
20039 Varedo (MI) (IT)

(54) **Equipment for the partial and temporary extraction of a corner furniture chariot**

(57) An equipment (10) for the partial and temporary extraction of a corner furniture chariot (32), is especially and not critically suitable for two kitchen corner furniture (50), arranged orthogonally between them and of a parallelepiped shape. Said chariot (32) comprises two or more lower (34) and upper (36) superimposed and par-

allel shelves connected between them by racks (38) or similar and comprises a plate-like element (30) coupled to said lower shelf (34) and connected to a frame (20) with respect to which it is rotatable. Said frame (20) slides along a couple of guides (12) fixed to the internal front of the base (16) of each piece of furniture (50) along which they extend longitudinally in the central zone.

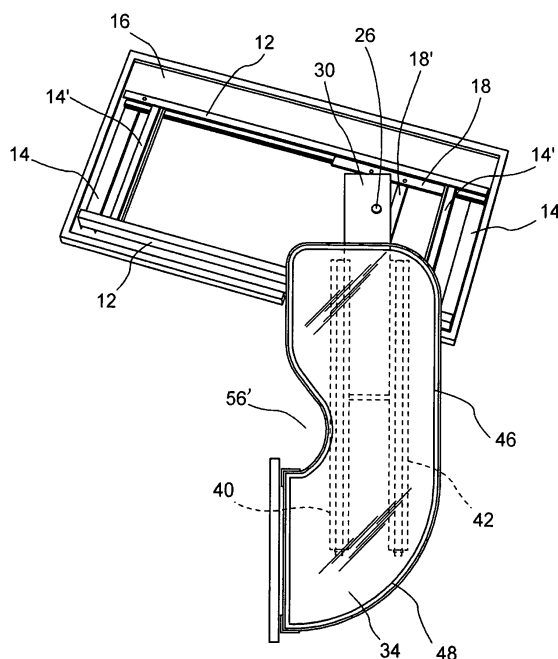


Fig. 5

Description

[0001] The present invention relates to an equipment for the partial and temporary extraction of a corner furniture chariot.

[0002] More in particular, the present invention relates to an equipment for the temporary extraction, with partly projecting exposure, of a chariot provided with one or more shelves or containment spaces from a corner piece of furniture whereto it is movably constrained, by way of an example and not critically, by a kitchen corner piece of furniture.

[0003] As is known, the use of modular furniture that develops along one or more walls is widespread for interior furnishing. With particular but non-exclusive reference to household kitchen rooms, the arrangement of furniture developed along two contiguous walls, orthogonal to one another, either on the floor or suspended, is frequent. In these cases, in order to suitably use the corner zone, special container modules are arranged, with trapezoidal plan, which may be provided with exposed shelves or closing door angularly oriented at 45° relative to those of the adjacent container furniture. Corner modules with closing door are typically arranged on the floor and are sometimes internally provided with superimposed pull-out baskets, individually hinged to one of the walls of the modules themselves.

[0004] This is to facilitate the user when he/she must take or put items in one of the baskets. However, this solution exhibits considerable drawbacks. In the first place, the space capacity is not much used as the deepest part of the furniture is not usable. Moreover, the baskets are constrained and pivoted at one point only inside the furniture, and therefore they can withstand limited loads, considering the projection during the exposure.

[0005] Moreover this solution, which envisages an angular element with door arranged at 45° relative to the others, interrupts the linearity and the orthogonality of the furniture-kitchen as a whole and is not appreciated by everybody under the aesthetical profile. Other known solutions involve the use of two parallelepiped elements, orthogonally arranged relative to each other. In this case, one of the sides of one element is placed in contact with a part of the front zone of the other not occupied by the door, which can therefore be opened like that of the other adjacent element. Respective extractable chariots are arranged inside the two elements or container furniture, generally consisting of two superimposed shelves connected to each other; the lower shelf abuts the inner furniture base through guides. Complex sliding and rotation mechanisms are used to extract the chariots, which are made to rotate and move to orthogonal position relative to the original one partly coming out of the furniture; moreover, such devices require difficult operations inside the furniture to install the multiple components required. In any case, also these solutions do not allow achieving an optimum use of the capacity available in the space and the dynamic projecting capacity that can be withstood by

the shelves of each chariot remains limited.

[0006] The object of the present invention is to obviate the disadvantages mentioned hereinabove.

[0007] More in particular, the object of the present invention is to provide an equipment for the partial and temporary extraction of a corner furniture chariot, formed by the combination of two parallelepiped elements, orthogonal to one another, wherein each element is internally provided with said extractable chariot sized so as to optimize the use of the room available inside the space. A further object of the invention is to provide an equipment as defined above suitable for quickly and easily moving the chariot connected thereto for temporarily extracting it from the space wherein it is arranged and for replacing it into the space itself.

[0008] Last but not least, another object of the invention is to provide an equipment for the partial and temporary extraction of said chariot, which is suitable for withstanding considerable loads also in the condition in which it is projecting relative to the means supporting and guiding it.

[0009] A further object of the invention is to provide the users with an equipment for the partial and temporary extraction of a corner furniture chariot suitable for ensuring a high level of resistance and reliability over time, also such as to be easily and inexpensively constructed.

[0010] These and yet other objects are achieved by the equipment for the partial and temporary extraction of a corner furniture chariot of the present invention, especially and not critically from two kitchen corner furniture, arranged orthogonally between them and of a parallelepiped shape, in which said chariot comprises two or more lower and upper superimposed and parallel shelves connected between them by racks or similar and is essentially **characterized in that** it comprises a plate-like element coupled to said lower shelf and connected to a frame with respect to which it is rotatable, said frame sliding along a couple of guides fixed to the internal front of the base of each piece of furniture along which they extend longitudinally in the central zone.

[0011] The construction and functional features of the equipment for the partial and temporary extraction of a corner furniture chariot of the present invention will be better shown in the following detailed description, wherein reference is made to the annexed drawing tables showing a preferred and non-limiting embodiment thereof, wherein:

figure 1 schematically shows a perspective view of a portion of a corner piece of furniture wherein a chariot is arranged, for example with two superimposed shelves, provided with the equipment for its partial and temporary extraction according to the invention; figure 2 schematically shows a perspective view of the same portion of corner piece of furniture wherein the chariot, moved by means of the equipment of the present invention, is in partial exposure condition; figure 3 schematically shows a perspective view,

from the internal front, of the base of said portion of corner piece of furniture, provided with the equipment of the invention combined with the lower shelf of the chariot in hidden position;

figure 4 schematically shows a perspective top view of the same base of corner piece of furniture and said lower shelf of the chariot moved and integral to the equipment of the invention and in not completely exposed position;

figure 5 schematically shows the same components as figure 4 with lower shelf of the chariot totally exposed;

figure 6 schematically shows the equipment of the present invention arranged and oriented in the condition illustrated in figure 4;

figure 7 schematically shows a perspective view of a portion of the equipment of the present invention suitable for being fixed to the internal front of the furniture base;

figure 8 schematically shows a perspective view of a portion of the equipment of the present invention, wherein the upper plate-like element is suitable for being connected to the lower shelf of the chariot;

figures 9 and 10 show a device suitable for guiding the chariot movement during the step of extraction and return into the furniture.

[0012] With reference to the above figures, the equipment for the partial and temporary extraction of a corner furniture chariot of the present invention is indicated with reference numeral 10 in figure 7, which shows a portion thereof suitable for being fixed to the internal front of the base of the same corner furniture, having a parallelepiped shape. Said portion of equipment 10 comprises two opposite and parallel sliding guides, for example consisting of respective "C" sections 12 and connected to each other cross-wise, by known means, by two or more crossbeams 14 placed underneath the sections themselves. The assembly consisting of the pair of sections 12 and of the connecting crossbeams 14 defines a framework that is fixed to the internal front of the rectangular base 16 of the furniture by screws or equivalent retain members; sections 12 extend parallel to the longer sides of base 16. A frame, globally indicated with reference numeral 20 in figure 7, is slidingly arranged along said framework, consisting of a pair of longitudinal beams 18 provided with rollers or bearings 22 sliding in the seats defined by sections 12. Further crossbeams 14' connect sections 12 and form as many stop barriers to the extension range of frame 20.

[0013] The longitudinal beams are connected by a pair of cross beams 18', wherein between a hub 24 is arranged and stabilized. Hub 24 is positioned at the centre of frame 20, trapped between crossbeams 18' along the longitudinal axis of the frame itself and in general, of equipment 10. Hub 24 may also be fixed by screws that allow the movement thereof and a different positioning between cross beams 18' according to the specific re-

quirements. An idle rotation spindle 26, which develops in orthogonal direction relative to cross beams 18', protrudes from the upper front of said 24 hub. The rotation of spindle 26 in hub 24 may be facilitated by the presence of one or more conical ball, roller or equivalent bearings 28 in the hub itself.

[0014] A plate-like element 30, for example consisting of a box with rectangular section and development, open or closed along the opposite heads, is fitted on the idle rotation spindle 26 that protrudes from hub 24; the plate-like element 30 is fitted on spindle 26 in the proximity of one of the ends thereof and in off-centre position relative to its longitudinal axis, so as to rotate and move to a condition almost orthogonal relative to sections 12.

[0015] The plate-like element 30 constitutes the support whereto a chariot, globally indicated with reference numeral 32 in figures 1 and 2, is connected; said chariot, by way of an example, consists of two lower or base 34 and upper 36 superimposed and parallel shelves, connected between them by two or more racks 38 with vertical development. The base shelf 34 of chariot 32 is provided, on the lower side facing base 16 of the furniture, with a pair of parallel guides 40, 42 extending longitudinally in the central portion of the shelf itself. Guides 40, 42, preferably consisting of "C" sections, are opposite each other and spaced by a distance compatible with the width of the rectangular plate-like element 30, which along the longer sides is provided with rollers or bearings 44 suitable for sliding along the seats defined by said guides. Said latter are provided with conventional anti-extraction stops (not shown) of shelf 34, thus of chariot 32 as a whole, from the plate-like element 30. Chariot 32 can therefore slide relative to the plate-like element 30 thanks to the pair of guides 40, 42, fixed to the lower front of the base shelf 34, while the same plate-like element can slide along sections 12 thanks to frame 20 whereto it is connected by spindle 26; moreover, said plate-like element 30 can freely rotate on the same spindle 26, thus moving chariot 32 angularly.

[0016] The upper 36 and/or lower 34 shelves, preferably at least the latter, are delimited by a perimeter frame 46 defined for example by a shaped strap, protruding upwards and of small height; the rear portion of said frame close to the open zone or to the opening of the corner furniture space, indicated with reference numeral 50 in figures 1, 2 and 6, consists of an arch circle band 48. The perimeter frame 46, at least in the zone defined by the arch circle 48, is guided, during the movement of chariot 32 during the extraction step of furniture 50, by two near-by rollers 52 fixed to an oscillating head 56 arranged at the end of one of sections 12; head 56 is further provided with one or more rollers 58 that support the perimeter frame 46 during the extraction of chariot 32.

[0017] In fact, said frame 46 is constantly delimited by the two rollers 52 that cause the angular movement of chariot 32 in cooperation with the perimeter frame 46.

[0018] In order to pull chariot 32 out of furniture 50, the open or openable portion whereof is defined by the low-

ered zone 54 according to figures 1, 3, 4 and 6, it is sufficient to exert a pulling force outwards starting from one of shelves 34 or 36; such force determines the advance of chariot 20 along sections 12 at the same time as the rotation of the plate-like element 30 on spindle 26 of hub 24, a forced rotation due to the path of the shape of frame 46 guided between the two rollers 52. Once chariot 32 has partly been pulled out of furniture 50, the plate-like element 30 slides forward on guides 40, 42 and thus moves the chariot itself to the maximum exposure position.

[0019] On the contrary, pushing the exposed chariot 32, positioned according to what shown in figure 5, inside furniture 50, there will be the preliminary retraction of guides 40, 42 along the plate-like element 30, the subsequent rotation of the latter that progressively returns in a position parallel to sections 12 and the concurrent retraction of frame 20 along the sections themselves.

[0020] The extraction operation and the opposite one, of return, of chariot 32 are facilitated by the presence of an exchange device, suitable for preventing the two movements relating to the rotation of the chariot itself and the advance thereof from being concurrent. Such exchange device, globally indicated with reference numeral 60 in figures 9 and 10, comprises a horizontally pivoted disk 62 fixed to a support 64 in turn constrained to the external side of guide 42. Disk 62 interacts with an adjustable plate 66, fixed through runners 68 in a slit 70 obtained along the upper front of crossbeam 14'.

[0021] Plate 66 is equipped by a passing opening 72 of rectangular shape, wherein a lower portion of disk 62 inserts when the disk itself pivots and lowers; this occurs by the effect of the movement imposed by a fixed end stop 74, constrained to the same guide 42. When disk 62 is engaged in opening 72, guides 40 and 42 can only advance in rectilinear direction; the second extraction step of chariot 32 is thus carried out in this way and accurately, whereas the first rotation step is carried out with as much accuracy thanks to the guide of rollers 52.

[0022] On the contrary, the release of the horizontally pivoted disk 62 from opening 72 is obtained in the step of retraction of chariot 32, for example when the same disk meets the rear end of the rectangular opening 72. Elastic means may be provided, of the type with helical springs and the like, for facilitating the movements of the horizontally pivoted disk 62.

[0023] Chariot 32, in particular shelves 34 and 36 that make it up, are considerably extended compared to the capacity of the space of furniture 50, as they are considerably rounded only at two vertices, especially along the rear portion intended for exposing; another zone not usable of said shelves is equally little extended and corresponds to a front recess 56' suitable for facilitating the rotation of said chariot 32 along the shoulder of zone 54 that forms the stop in alignment of the door of furniture 50. Said door, indicated with reference numeral 60 in figures 2 and 4, can be directly constrained to chariot 32. According to the invention, therefore, two pieces of fur-

niture 50 arranged at an angle relative to each other may advantageously be provided with internal chariots alternately extractable in an easy and almost complete manner; the extension of the shelves of said chariots, moreover, is such as to guarantee the optimum use of the capacity of the spaces of the same furniture 50, whereas the structure of the chariots themselves is such as to allow loading said shelves without problems.

[0024] Even if the invention has been described hereinbefore with particular reference to an embodiment thereof made by way of a non-limiting example, several changes and variations will appear clearly to a man skilled in the art in the light of the above description. This invention therefore is intended to include any changes and variations thereof falling within the spirit and the scope of protection of the following claims. In particular, the equipment of the present invention may also be used for wall cupboards or columns, as well as wardrobes installed in rooms other than kitchens.

Claims

1. An equipment (10) for the partial and temporary extraction of a corner furniture chariot (32), especially and not critically from two kitchen corner furniture (50), arranged orthogonally between them and of a parallelepiped shape, in which said chariot (32) comprises two or more lower (34) and upper (36) superimposed and parallel shelves connected between them by racks (38) or similar, **characterised in that** it comprises a plate-like element (30) coupled to said lower shelf (34) and connected to a frame (20) with respect to which it is rotatable, said frame (20) sliding along a couple of guides (12) fixed to the internal front of the base (16) of each piece of furniture (50) along which they extend longitudinally in the central zone.
2. The equipment according to claim 1, **characterised in that** the plate-like element (30) is slidably connected by means of rollers (44) or equivalent, to a couple of guides (40-42) fixed to the lower front of said lower shelf (34).
3. The equipment according to the previous claims, **characterised in that** the guides (12) and (40-42) are constituted by "C" sections, said guides (12) being connected by crossbeams (14) and (14'), the said latter forming opposed stop barriers to the frame extension range 20.
4. The equipment according to claim 1, **characterised in that** the frame (20) comprises opposed longitudinal beams (18), equipped with rollers or bearings (22) sliding along the sections (12), connected by cross beam (18').

5. The equipment according to claims 1, 2 and 4, **characterised in that** the plate-like element (30) is fitted on an idle spindle (26) protruding from a hub (24) fixed centrally between the cross beams (18'), said spindle (26) being coupled to one or more conical ball bearings (28) or equivalent. 5
6. The equipment according to claims 1 and 2, **characterised in that** at least the lower shelf (34) of the chariot (32) is delimited by a perimeter frame or shaped strap (46) which protrudes towards the top for a limited height and presents, in its rear part near the open area or at the opening of the corner furniture space (50), an arch circle structure (48). 10
7. The equipment according to claim 6, **characterised in that** at least in the area defined by the arch circle (48) said perimeter frame (46) is delimited and guided, during the chariot extraction phase (32), by one or more couple of rollers (52) fixed to an oscillating head (56) arranged at the end of one of the sections (12), said head being equipped by one or more supporting rollers (58) for the perimeter frame (46). 15 20
8. The equipment according to claim 6, **characterised in that** the lower (34) and upper (36) shelves are equipped, along the front side, by a curvature (56'). 25
9. The equipment according to claim 5, **characterised in that** the plate-like element (30) is engaged on the spindle (26) of the hub (24) in proximity of one of its ends and in an off-set position. 30
10. The equipment according to claims from 1 to 3, **characterised in that** it comprises an exchange device (60) with a horizontally pivoted disk (62), fixed to a support (64) constrained at the external side by the guide (42), interacting with an adjustable plate (66) fixed through runners (68) in a slot (70) of the cross-beam (14'), said plate (66) being equipped by a passing opening (72) which receives temporarily the lower part or a lower part of the horizontally pivoted disk (62) moved by a fixed end stop (74). 35 40
11. The equipment according to claim 10, **characterised in that** the horizontally pivoted disk (62) is connected to elastic means for its movement. 45

Amended claims in accordance with Rule 137(2) EPC. 50

1. An equipment (10) for the partial and temporary extraction of a corner furniture chariot (32) comprising two or more superimposed and parallel shelves (34, 36) connected between them by racks (38), from one of two kitchen corner furniture (50) of a parallelepiped shape and arranged orthogonally, each of 55

said corner furniture (50) comprising a base (16) and an open area,
 said equipment (10) comprising a plate-like element (30) coupled to the lower one (34) of said shelves and rotatably connected to a frame (20) slidable along a pair of first guides (12) fixed to, and longitudinally extending in, the central zone of said base (16),
 said plate-like element (30) being further slidably connected by means of rollers (44) to a pair of second guides (40-42) fixed to the lower surface of said lower shelf (34),
 at least said lower shelf (34) of said chariot (32) being delimited by an upwardly protruding perimeter strap (46) shaped like an arch circle structure (48) near said open area of said corner furniture (50),
characterised in that
 one or more couple of rollers (52) are fixed to an oscillating head (56) at the end of one of said first guides (12) for delimiting and guiding said perimeter frame (46) at least in the area defined by said arch circle structure (48) during the extraction of said chariot (32), and **in that** said oscillating head (56) is equipped with one or more rollers (58) for supporting said perimeter frame (46).

2. The equipment according to claim 1, **characterised in that** said first (12) and second (40-42) guides are constituted by "C" sections, said first guides (12) being connected by crossbeams (14) and (14'), said second (40-42) guides forming opposed stop barriers to the motion of said frame (20).

3. The equipment according to claim 1, **characterised in that** said frame (20) comprises opposed longitudinal beams (18) connected by cross beam (18') and equipped with rollers or bearings (22) sliding along said first guides (12).

4. The equipment according to claim 3, **characterised in that** said plate-like element (30) is fitted on an idle spindle (26) protruding from a hub (24) fixed centrally between the said cross beams (18'), said spindle (26) being coupled to one or more conical ball bearings (28).

5. The equipment according to claim 4, **characterised in that** said shelves (34, 36) are equipped with a curvature (56').

6. The equipment according to claim 5, **characterised in that** said plate-like element (30) is engaged on said spindle (26) of the hub (24) near one of its ends and in an off-set position.

7. The equipment according to claims 1 or 2, **characterised in that** it comprises an exchange device (60) with a horizontally pivoted disk (62), fixed to a

support (64) constrained at the external side by said first guide (42), interacting with an adjustable plate (66) fixed through runners (68) in a slot (70) of said crossbeam (14'), said plate (66) being equipped by an opening (72) which receives temporarily the lower part or a lower part of the horizontally pivoted disk (62) moved by a fixed end stop (74). 5

8. The equipment according to claim 7, **characterised in that** said horizontally pivoted disk (62) is connected to elastic means for its movement. 10

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Fig. 1

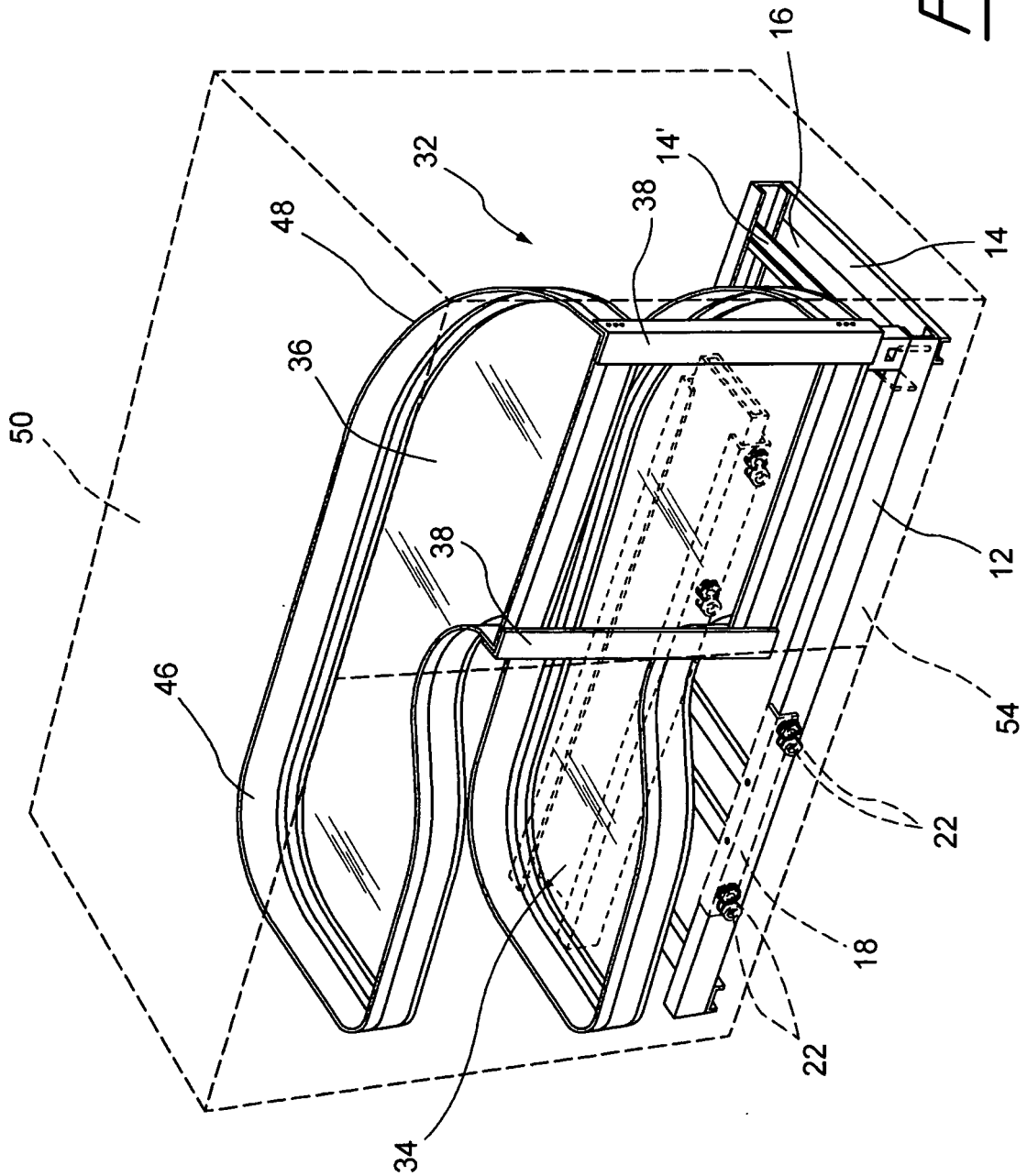


Fig. 2

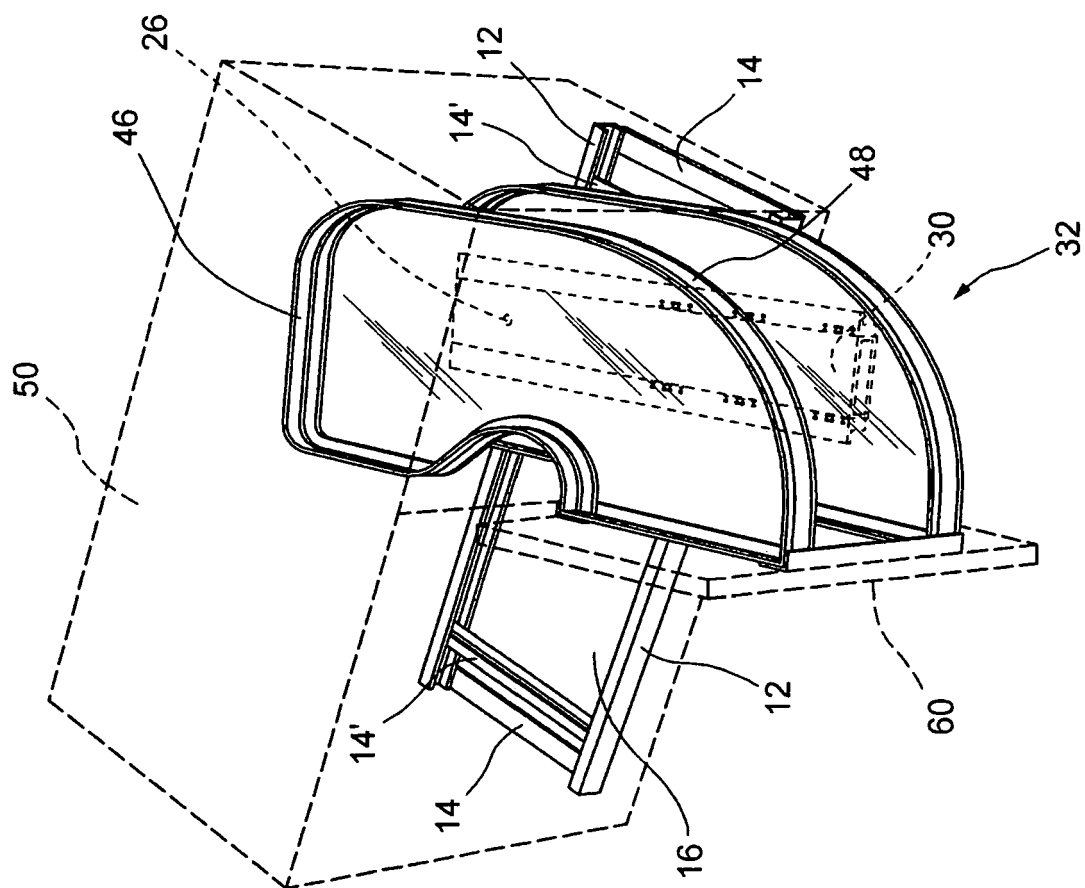
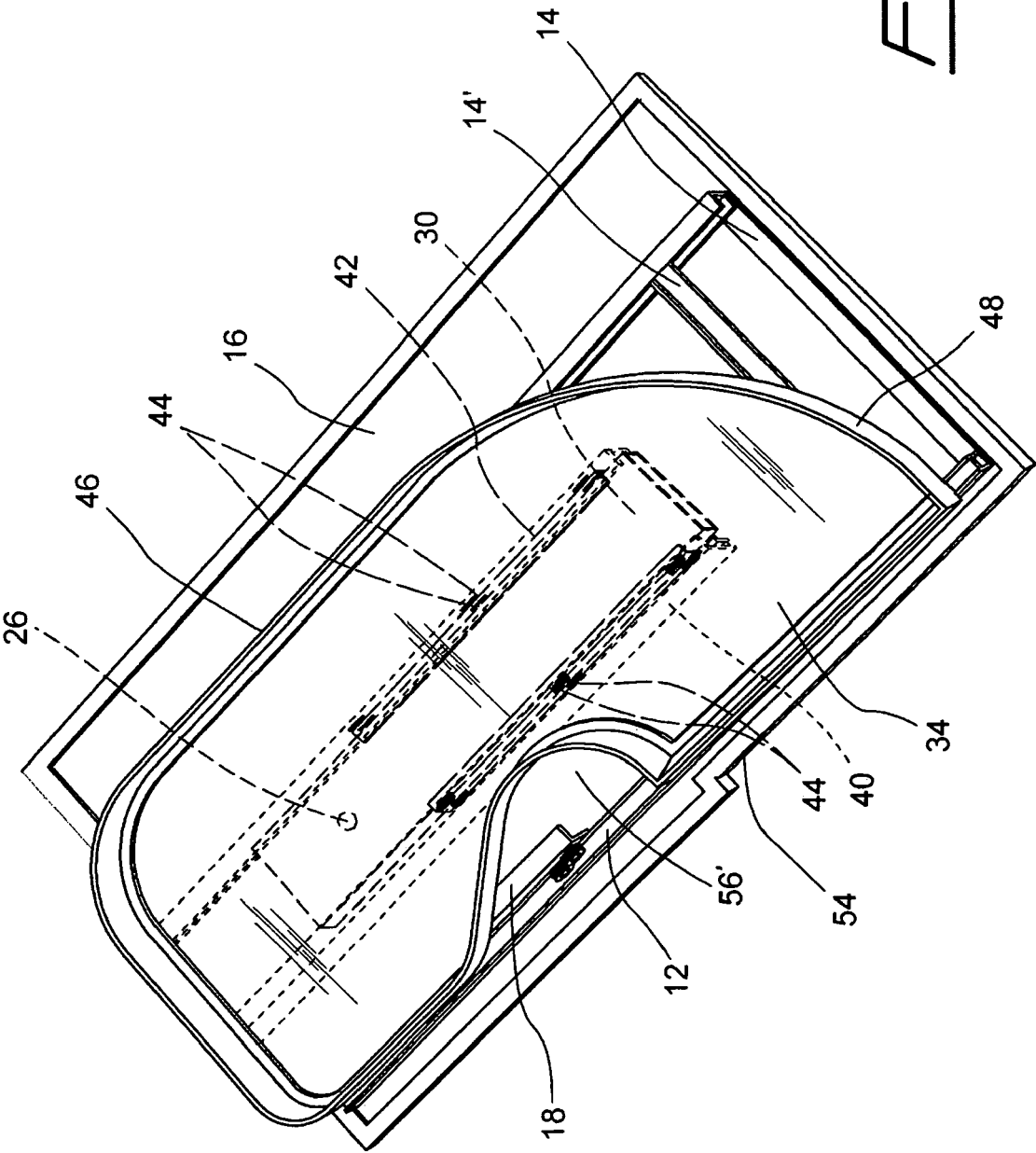


Fig. 3



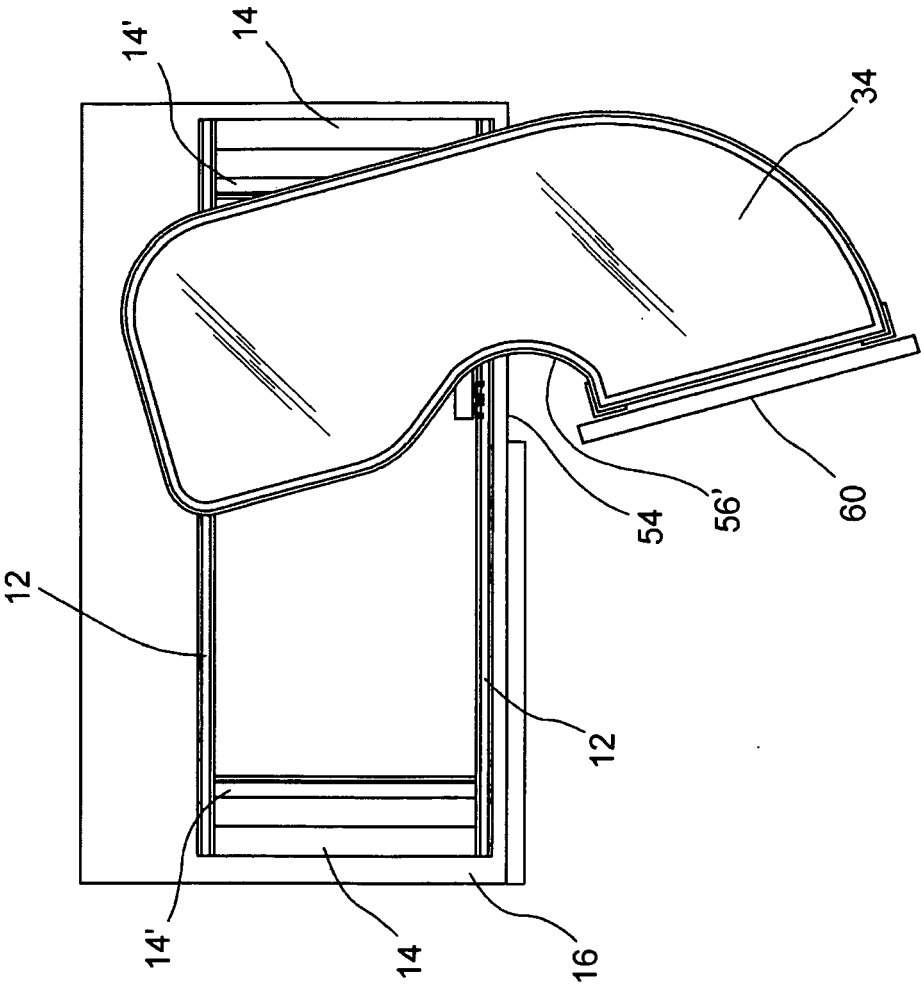


Fig. 4

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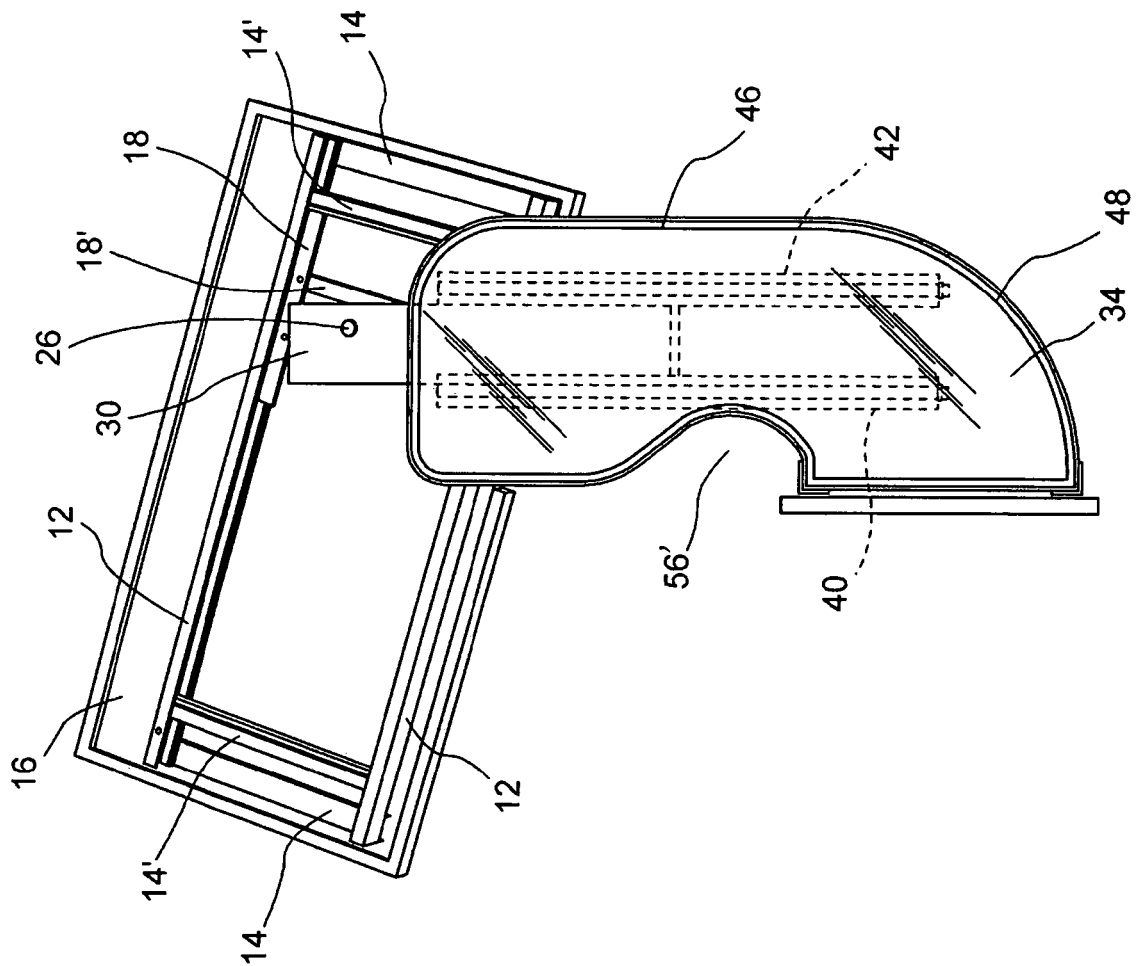


Fig. 6

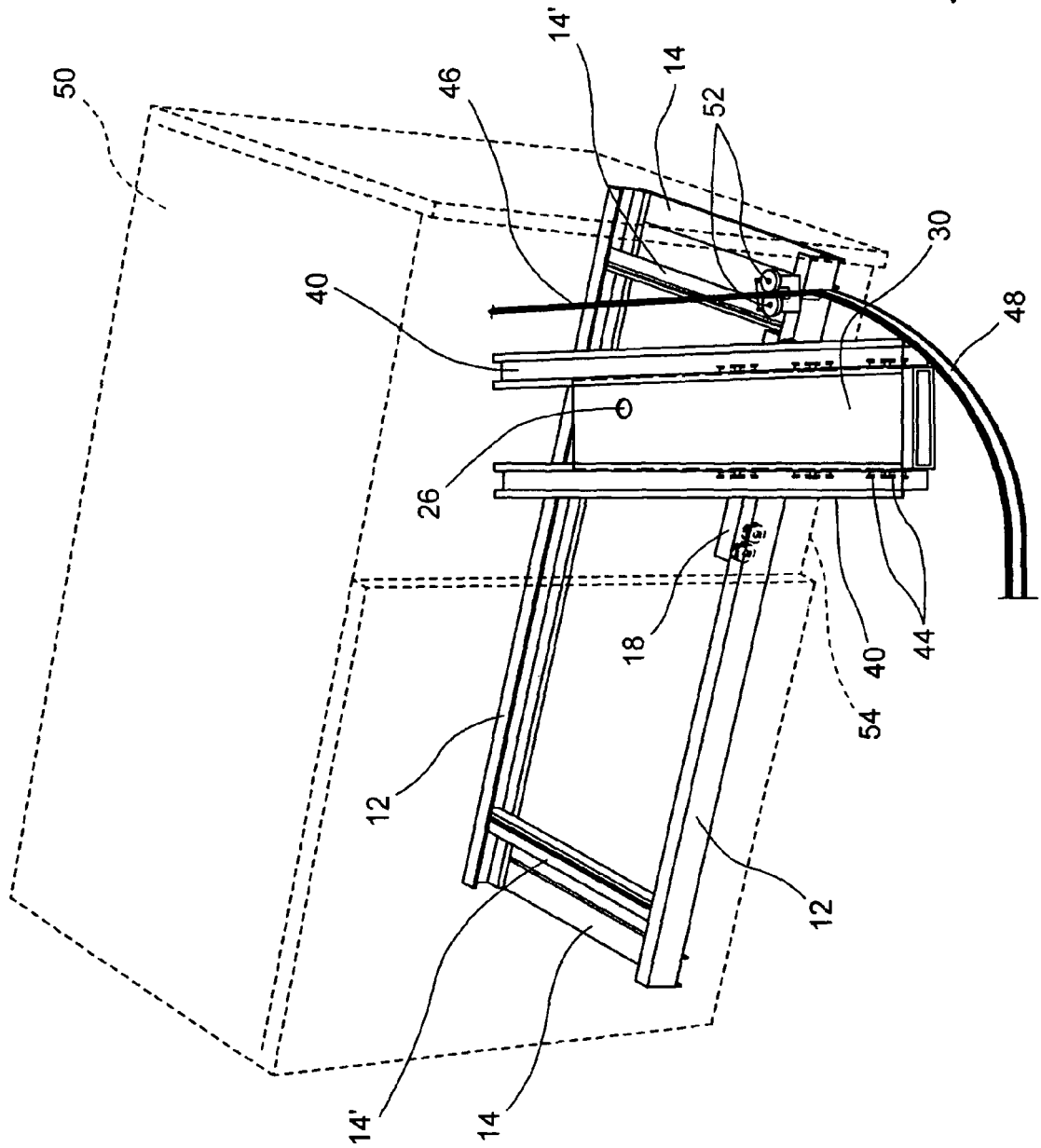
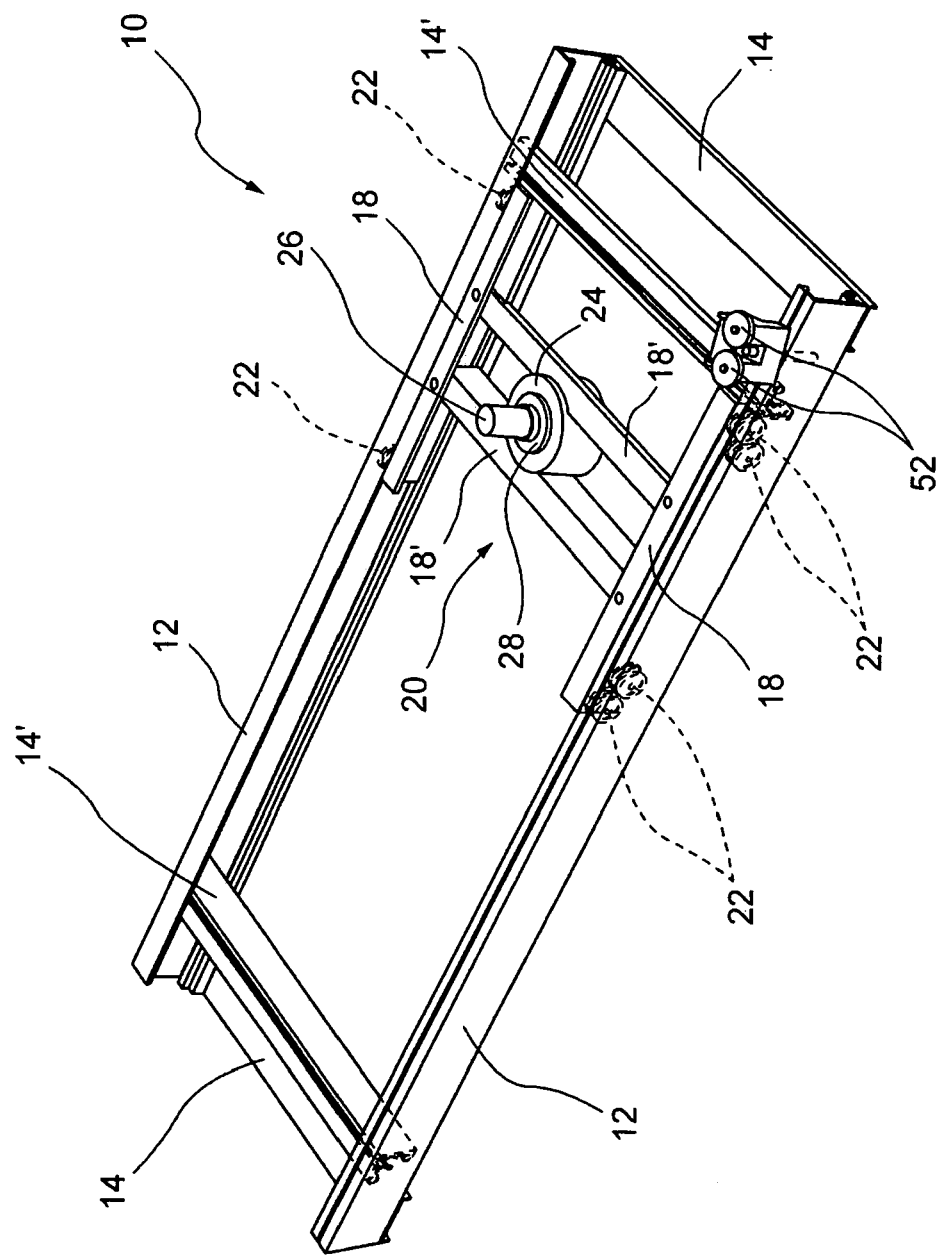


Fig. 7



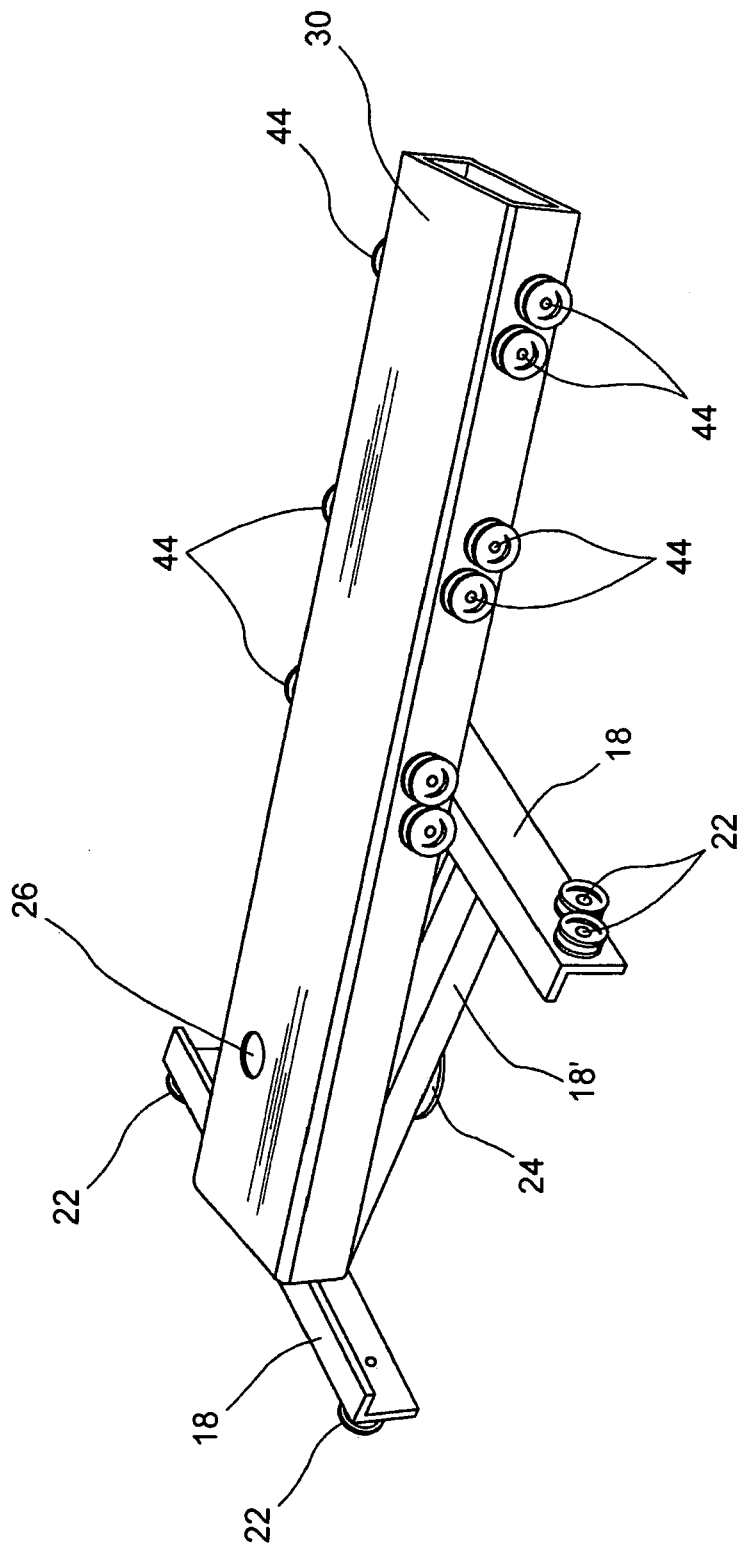


Fig. 8

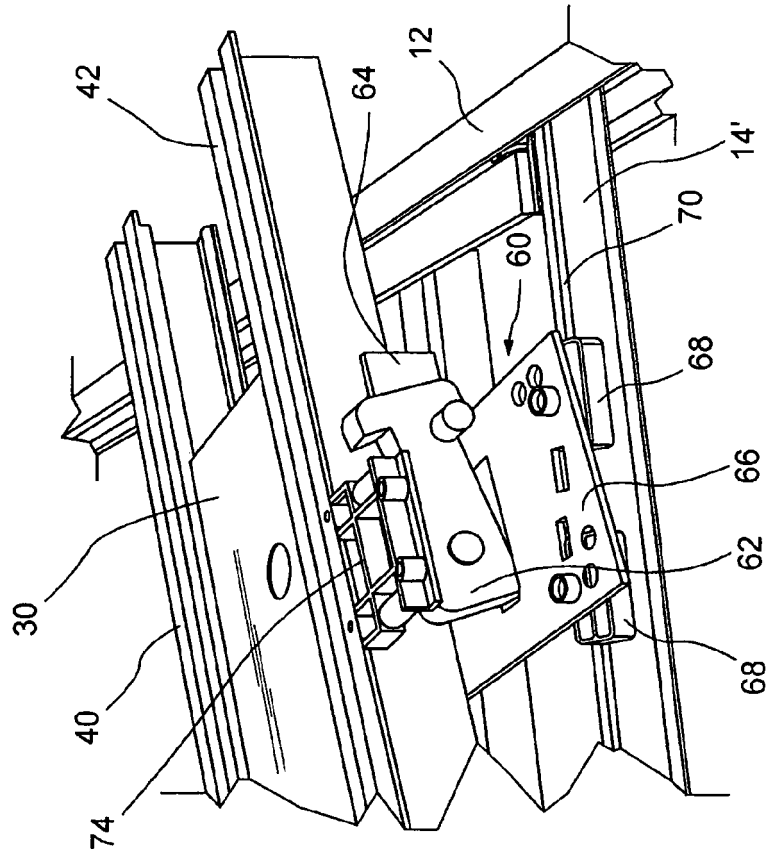


Fig. 10

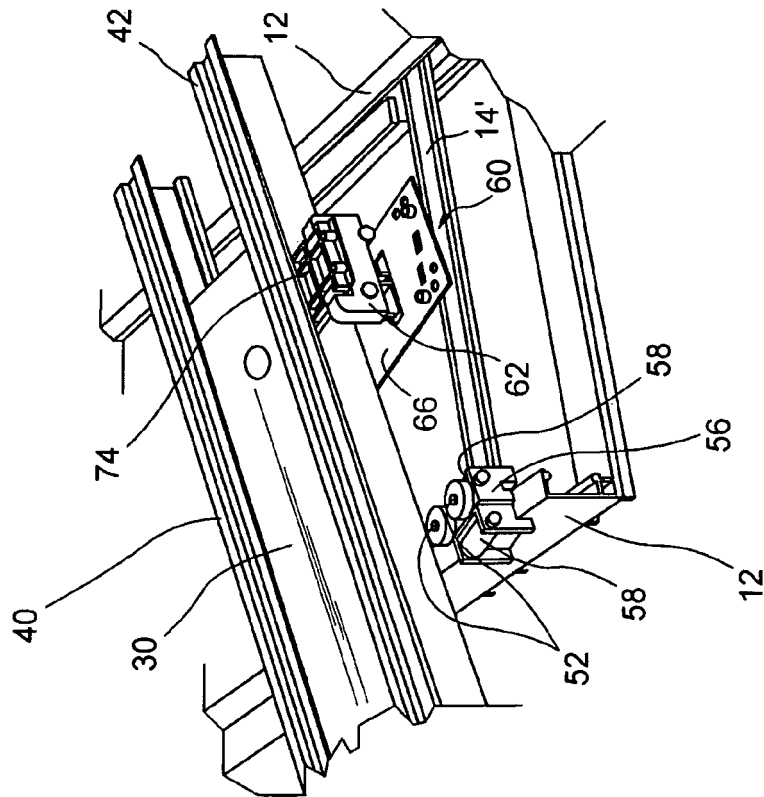


Fig. 9



EUROPEAN SEARCH REPORT

Application Number
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A	* paragraphs [0005], [0016], [0018], [0024], [0025], [0029], [0030]; figures 1,2,7,8 *	5	
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 15 March 2010	Examiner Jacquemin, Martin
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 09 01 4157

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Place of search		Date of completion of the search	Examiner
The Hague		15 March 2010	Jacquemin, Martin
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03/82 (P04C01)

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

EP 09 01 4157

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