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(54) **Seating safety device**

Sitzsicherheitsvorrichtung

Dispositif de sécurité pour siège

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Description

[0001] This invention relates to a safety device for seating and to a chair or the like fitted with a seating safety device. In particular, the invention relates to a safety device for a recline and rise chair.

[0002] In the specification reference is made to a chair, but it should be understood that the reference to chair can also be taken to mean other seating furniture, such as a settee for use by more than one person.

[0003] There is a type of chair known as a rise and recline chair, which is controllable by a user, typically by means of a electric or pneumatic motors, to tilt forwards into a risen position, which assists the user in the standing up from a seated position. In the risen position the seat tilts forwards so that a seat portion moves from a generally horizontal alignment to a forward tipping alignment. This type of chair also will typically recline i.e. tilt backwards to provide a more recumbent position for a user of the chair.

[0004] The rise and recline chair typically has a control panel which may be a unit with a control wire extending from beneath the chair which a user can use to cause the chair to rise or recline.

[0005] An adjustable chair is described in US 2005/0151406 A1.

[0006] Safety issues have been identified with rise and recline chairs, because when in a risen position where the chair is tilted forward an opening is provided beneath a base of the chair and the floor. When the chair returns to the seating configuration the gap between the chair and the floor is closed. Anything caught beneath the chair could be crushed or become trapped. The safety issue that has been identified is particularly worrying, because users of the rise and recline chairs are typically the old and infirm, who may have a higher likelihood of reduced hearing. Thus, if something is trapped under the chair, the user of the chair may not hear noises from an animal or child trapped beneath the chair, thereby exacerbating the safety issue.

[0007] It is an object of the present invention to address the above mentioned disadvantages.

[0008] According to the present invention there is provided an apparatus and method as set forth in the appended claims. Other features of the invention will be apparent from the dependent claims, and the description which follows.

[0009] According to a first aspect of the present invention there is provided a seating safety device comprising at least first and second side barriers, wherein the side barriers are adapted to be received inboard of respective side faces of a chair to which the seating safety device is, in use, to be fitted, wherein the first and second side barriers are adapted to be received in respective openings in arms of a chair to which the seating safety device is, in use, to be fitted.

[0010] The seating safety device preferably incorporates a front barrier.

[0011] The seating safety device preferably incorporates a rear barrier.

[0012] At least one of the first and second side and front barriers is preferably a substantially rigid barrier.

5 [0013] At least one of the front and rear barriers may be a flexible barrier.

[0014] The openings in the arms are preferably slot openings, preferably located in bottom sides of the arms.

10 [0015] Preferably the first and second side barriers are adapted to be secured to a base frame of the chair. The base frame preferably supports a remainder of the chair and preferably, in use, remains in contact with a support surface on which the chair is located.

15 [0016] The front barrier may be adapted to be secured to the base frame.

[0017] An upper region, or edge, of the front barrier may be adapted to be secured to a lower front region, or edge, of the chair.

20 [0018] The rear barrier may be adapted to be secured at a lower region, or edge, thereof to the base frame. An upper region, or edge, of the rear barrier may be adapted to be secured to a lower rear region, or edge, of the chair.

25 [0019] The first and second side barriers may be adapted to be movably supported with respect to the base frame. The first and second side barriers may be adapted to be slidable with respect to the base frame. The first and second side barriers may each include a slot, preferably a slot adapted to receive at least one projection of the base frame. Engagement of the slot and projection preferably allows a sliding movement of the side barriers with respect to the base frame. The sliding movement is preferably, in use, caused by movement of the chair against the side barriers.

30 [0020] The side barriers are preferably shaped to prevent snagging of the chair on the side barriers when the chair moves. A sloping top edge is preferably provided for that purpose.

35 [0021] According to a second aspect of the present invention there is provided a chair comprising a seat portion, first and second arms and a seating safety device comprising at least first and second side barriers, wherein the side barriers are received inboard of respective side faces of the arms of the chair.

40 [0022] The seating safety device preferably incorporates a front barrier. The seating safety device preferably incorporates a rear barrier. At least one of the first and second side and front barriers is preferably a substantially rigid barrier. At least one of the front and rear barriers may be a flexible barrier.

45 [0023] The first and second side barriers are preferably received in respective openings in arms of the chair.

[0024] The openings in the arms are preferably slot openings, preferably located in bottom sides of the arms.

50 [0025] Preferably the first and second side barriers are secured to a base frame of the chair. The base frame preferably supports a remainder of the chair and preferably, in use, remains in contact with a support surface on which the chair is located.

[0026] The front barrier is preferably secured to the base frame.

[0027] An upper region, or edge, of the front barrier may be secured to a lower front region, or edge, of the chair.

[0028] The rear barrier may be secured at a lower region, or edge, thereof to the base frame. An upper region, or edge, of the rear barrier may be secured to a lower rear region, or edge, of the chair.

[0029] The first and second side barriers may be movably supported with respect to the base frame. The first and second side barriers may be slidable with respect to the base frame. The first and second side barriers may each include a slot, in which is received at least one projection of the base frame. Engagement of the slot and projection preferably allows a sliding movement of the side barriers with respect to the base frame. The sliding movement is preferably, in use, caused by movement of the chair against the side barriers.

[0030] The side barriers are preferably shaped to prevent snagging of the chair on the side barriers when the chair moves. A sloping top edge is preferably provided for that purpose.

[0031] The invention extends to a kit of parts incorporating a seating safety device as described in the first aspect and fixing means for fixing the seating safety device to a chair.

[0032] The fixing means may include batons adapted to be fixed between parts of the safety device and a chair to which it is to be fitted. The fixing means may include screws and/or bolts for fixing/holding the batons in position.

[0033] For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 is a schematic perspective view showing a prior art rise and recline chair in a risen position.

Figure 1a is a schematic side view of the chair of Figure 1 in a risen position;

Figure 2 is a schematic perspective view of a rise and recline chair incorporating a safety device;

Figure 3 is a schematic partially exploded perspective view of a base frame of a rise and recline chair and parts of the safety device shown in Figure 2;

Figure 4 is a partially exploded schematic perspective view of a second embodiment of safety device showing part of a base frame for a rise and recline chair;

Figure 5 is a schematic side view of a structure of an arm of a chair to which the safety device is fitted;

Figure 6 is a schematic view from below of the arm shown in Figure 5; and

Figure 7 is a schematic view of a rear section of the safety device.

[0034] Figures 1 and 1a show the disadvantages mentioned above in relation to prior art rise and recline chairs. It can clearly be seen that when a chair 10 is in the risen position, as is the case in Figures 1 and 1a, a large gap 12 is revealed beneath the chair. The danger of a pet or child moving into this gap, or an adult having part of their body in the gap gives rise to a potential danger when the chair 10 is moved to its a normal seating position with a seat portion 14 of the chair being in a generally horizontal position.

[0035] A base frame 16 of the chair is clearly visible, the chair 10 sits on the base frame which remains generally stationary with respect to the floor when the chair 10 is being adjusted. The base frame 16 includes a front support bar 18 and a rear support bar 20 with joining support bars 22 extending therebetween.

[0036] Rise and recline chairs of the type shown are typically manufactured by a skilled carpentry firm buying in the base frame 16, upper parts of the frame and control mechanism to which they attach the chair 10. Consequently, the framework of which the base frame 16 forms a part is relatively standard in design, with a variety of different chair models being available from a skilled firm to attach those chairs 10 to an existing framework.

[0037] Figure 2 shows the same type of chair 14 as shown in Figure 1 supported on the same type of base frame 16 as that shown in Figure 1. However, the chair is provided with a safety barrier 24 which is exposed when the chair 10 is tilted forward in the risen position as shown in Figure 2 or is in a reclined position. The safety barrier 24 comprises fabric covered solid side barriers 26a, 26b, a fabric covered solid or fabric front barrier 28 and a fabric rear barrier 30.

[0038] Figure 3 shows more detail of the base frame 16 and parts of the safety barrier 24, together with attachment sections for attaching the safety barrier 24 to the base frame 16.

[0039] As mentioned above, Figure 3 shows a partially exploded view of the safety barrier 24 and base frame 16. Wooden batons 32a, 32b and 32c are attached to the base frame 16 at the positions shown by arrows inside the front bar 18. Although wooden batons are described herein, metal batons or plates could be used instead, in which case they may be attached to the base frame by self drilling metal screws. The batons have lengths of 85mm, 370mm and 85mm respectively, with a thickness of approximately 25mm. The batons 32a, 32b, 32c are screwed to the front bar 18. Fixings that protrude through the batons 32a, 32b, 32c at the openings shown on the batons, through the front bar 18 are used to secure the front barrier 28 in position to the front bar 18. Alternatively, front barrier 28 may be secured to the front bar 18 directly

using self drilling screws. The front barrier 28 is typically made of plywood and is 12mm thick, with a length along its base of 530mm, a full height of 275mm with 40mm steps in at either side at a height of 100mm. A fabric piece may also be stapled to the top of the front barrier 28 and a lower part of the seat portion 14 of the chair.

[0040] Batons 34a and 34b are secured to inside portions of the rear bar 20 of the base frame 16 at the locations shown in Figure 3. Similarly, a baton 36 is secured to an outside portion of the rear bar 20 by tabs. The baton 36 is secured by tabs 39 to trolley wheel carriers 38 that are secured to the rear bar 20. Outer ends of the baton 32a, the baton 34a and the baton 36 are aligned generally flush with ends of the front and rear bars 18 and 20 to which they are attached. Openings are shown in the ends of the batons 32a, 34a and 36, which openings receive fixings for the side barriers 26a and 26b. Corresponding openings are shown in the side barrier 26b. A cutaway 40 is provided in the base of the side barriers 26a, 26b to allow the rear bar 20 to extend therethrough. The baton 36 has a length of 590mm with openings on the tabs 39 at centres spaced 570mm apart and is 25mm square in cross-section. The batons 34a,b measure 85mm by 25mm by 25mm. The side barriers 26a and 26b are typically made of plywood that is 9mm thick. The plywood is covered in upholstery material that matches the remainder of the chair 10.

[0041] Although not shown in Figure 3, the side barrier 26a is secured to the opposite side of the framework 16 to the batons 32c, 34b and 36.

[0042] Alternatively, instead of the batons 32a, 34a, 32c, 34c, mounting plates may extend across the ends of the front and rear bars 18 and 20, to which the side barriers 26a,b may be secured with screws along a lower edge thereof.

[0043] Upstanding tabs 42 extend from the joining bars 22. The chair 10 and remainder of the framework and driving mechanism for the chair 10 is secured to the upstanding tabs 42.

[0044] The rear barrier 30 is made of a fabric material that at its lower edge is wrapped around the rear baton 36 and secured with hook and loop fastener arrangement 31a, 31b. The At its upper edge the rear barrier 30 is secured to a baton (not shown) measuring 540mm by 25mm by 25mm attached to a lower rear edge of the chair 10. Alternatively, the top edge of the rear barrier may be held in place with a hook and loop fastener arrangement 33a,33b secured to a cross bar of the chair framework. The rear barrier 30, as shown in Figure 7, incorporates strips of stretch elastic material that is secured at upper sections of the left and right edges of the rear barrier 30 to cause the material to shorten and fold when the chair is in the lowered position, as will be described below. The rear barrier 30 measures 580mm wide by 680mm high. When in position, the front barrier 28 and side barriers 26a, 26b are in the location as shown in Figure 2.

[0045] The shape of the side barriers 26a, 26b has

been chosen carefully so that the side barriers 26a/b do not foul with the chair 10 as it moves. A particular feature of the invention described herein is that the side barriers 26a,b are received within arms 46 of the chair 10, the structure of which is shown in Figures 5 and 6. The arms 46 are made of a framework of wood. A particular feature of the arms 46 is that there is a slot opening 48 (see Figure 6) into which the side barriers 26a,b slide as the chair 10 is moved, as described below. The slot 48 is formed between side sections 50 and 51 of the arms 46. It will be noted that the side barriers 26a,b incorporate a cut-away section 40 at the lower edge thereof to accommodate the rear bar 20 of the base frame 16. Also, there is a sloping top edge 54 and shaped upper corners and right hand edge, the purpose of which will be described below. A guide 53 extends from the side sections 51 to the upper part of the frame. The guide 53 is used to deter fouling of the side barriers 26a/b as they move into the slot 48, as described below.

[0046] In use, and in a seated position with the chair 10 at its lowest point, the side barrier 26b (shown in a dashed line) is in the position shown in Figure 5, stowed within the slots 48 in the arms 46. Side barrier 26a will be in the same position in the other arm 46. In this position, only lower edges of the front and side barriers 28, 26a,b will be seen. Also, the rear barrier 30 will be hanging from a rear edge of the chair 10 and not under tension, slack material folds into the space beneath the chair.

[0047] When the chair 10 is moved to the position shown in Figure 2, in which it is in the risen position, the chair 10 tilts forward and a rear of the chair moves upwards to achieve the risen, forward-tilted position. The shape of the side barriers 26a,b has been made to ensure that a rear edge 49 of the side barriers 26a,b does not foul with a rear section 52 of the arms 46. In the movement to the position shown in Figure 2 the chair moves forwards slightly, hence the need for the shaped profile of the side barriers 26a,b.

[0048] When moving to the reclined position the chair 10 tilts backwards and the arms 46 will be lower at a rear end thereof compared to a front end thereof. This is the reason for the sloped top edge 54 of the side barriers 26a,b which needs to drop away as shown in Figures 3 and 5 to accommodate movement of the chair 10.

[0049] The embodiment shown in Figures 3, 5 and 6 is one that works well with a framework provided by the company Seminar.

[0050] An alternative embodiment of base frame and safety barrier 64 is shown in Figure 4. Many of the parts correspond to the embodiment mentioned above and like numerals have been used for the two embodiments, where appropriate.

[0051] The embodiment shown in Figure 4 has different side barriers 56a,b which have a different profile. The side barriers 56a,b also incorporate a slot 58 through which project sliding bolts 60 that are secured to frame supports 62 that are in turn secured in the positions shown on the side of the joining bars 22 by means of a

bolt on an underside of the frame supports 62.

[0052] An important feature of the profile of the side barriers 56a,b is the cutaway section 64 at the rear lower edge of the side barrier 56a,b. The cutaway section 64 prevents the side barriers 56 fouling with the rear bar 20 when there is lateral movement of the side barriers, 56a, b, as discussed below.

[0053] The front bar 18 of the base frame 16 also incorporates a front projection bar 66, which has a corresponding wooden frame 68 for attachment of the front barrier 57, which in this example is a fabric barrier, similar to that of the rear barrier 30.

[0054] In use, it will be appreciated from the above that lateral movement of the side barriers 56a,b is involved in use of this device. For this particular base frame 16, produced by Legges and Platt, movement between the risen, reclined and seating positions of the chair 10 involves forward/backward translation of the chair. Consequently, forward/backward translation of the side barrier 56a,b, is also required to create a suitable barrier that moves with the chair as it translates. Consequently, when the chair moves forward in order to allow for a reclining chair to be positioned close to a wall, but not hit the wall when reclining, the side barriers 56a,b move forward along the sliding bolts 60, which are then located to the rear of the slot 58. Similarly, when the chair 10 moves to a different position rearward translation of the chair 10 and side barriers 56a,b is caused, at which point the rear translation of the side barriers 56a,b does not foul with the rear bar 20 because of the cutaway section 64. The side barriers 56a,b are held in position by virtue of the sliding engagement with the slide bolts 60 that are secured to the frame joining bars 22 via the frame supports 62.

[0055] The embodiment shown in Figure 4 incorporates a front barrier 69 that is made of fabric secured to the wooden frame 68 at its lower edge and to a front lower edge of the chair 10 at its upper edge. The front barrier 69 measures 530mm across by 650mm high. Elastic sections secured to the fabric of the front barrier 69 allow the material to expand or contract as the front of the chair 10 moves up and down with respect to the base frame 16. The embodiment of Figure 4 also incorporates a rear barrier 30 as described in relation to the first embodiment, but measuring 400mm across by 260 mm high.

[0056] Significant advantages are provided by the safety barriers 24 described herein, because the gap beneath a rise and recline chair is covered at all times, even when the chair is raised. The solid nature of the side barriers 26a,b and 56a,b provides additional protection. A significant advantage of the device shown herein is that the side barriers 26a,b and 56a,b are received within slots in arms 46 of the chair 10. This allows the arms 46 of the chairs to remain the outer most side parts of the chair at all times when the chair is raised or lowered, tilted or risen. This has considerable safety advantages over an external rigid barrier which would present at all times

an upward facing gap between the barrier and chair which would be a trapping hazard.

[0057] Attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

[0058] All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

[0059] Each feature disclosed in this specification (including any accompanying claims, abstract and drawings) may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

[0060] The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed, according to the appended claims.

Claims

1. A seating safety device comprises at least first and second side barriers (26a, 26b) wherein the side barriers are adapted to be received inboard of respective side faces of a chair to which the seating safety device is, in use, to be fitted
characterised in that the first and second side barriers (26a, 26b) are adapted to be received in respective openings (48) in arms of a chair to which the seating safety device is, in use, to be fitted.
2. The seating safety device as claimed in claim 1 which incorporates a front barrier.
3. The seating safety device as claimed in claim 1 or claim 2, in which at least one of the first and second side and front barriers is a substantially rigid barrier.
4. The seating safety device as claimed in claim 1, in which the openings in the arms are slot openings.
5. The seating safety device as claimed in any preceding claim, in which the first and second side barriers are adapted to be secured to a base frame of the chair.
6. The seating safety device as claimed in any preceding

ing claim, in which an upper region, or edge, of the front barrier is adapted to be secured to a lower front region, or edge, of the chair.

7. The seating safety device as claimed in claim 5, in which first and second side barriers are adapted to be movably supported with respect to the base frame. 5
8. The seating safety device as claimed in claim 5 or claim 6, in which the first and second side barriers are adapted to be slidable with respect to the base frame. 10
9. The seating safety device as claimed in any preceding claim, in which the side barriers are shaped to prevent snagging of the chair on the side barriers when the chair moves. 15
10. A chair comprises a seat portion, first and second arms and a seating safety device as claimed in any one of claims 1 to 9. 20
11. A kit of parts incorporates a seating safety device as claimed in any one of claims 1 to 9 and fixing means for fixing the seating safety device to a chair. 25
12. A kit of parts as claimed in claim 11, in which the fixing means include batons or bars adapted to be fixed between parts of the safety device and a chair to which it is to be fitted. 30

Patentansprüche

1. Sitzsicherheitsvorrichtung, die wenigstens erste und zweite Seitenbarrieren (26a, 26b) aufweist, wobei die Seitenbarrieren angepasst sind, um nach innen gerichtet auf jeweiligen Seitenflächen eines Sitzes, auf den die Sitzsicherheitsvorrichtung beim Gebrauch zu montieren ist, aufgenommen zu werden, **dadurch gekennzeichnet, dass** die erste und die zweite Seitenbarriere (26a, 26b) angepasst sind, um in jeweiligen Öffnungen (48) in Armen eines Sitzes, auf den die Sicherheitsvorrichtung beim Gebrauch zu montieren ist, aufgenommen zu werden. 35
2. Sitzsicherheitsvorrichtung nach Anspruch 1, die eine vordere Barriere aufweist. 40
3. Sitzsicherheitsvorrichtung nach Anspruch 1 oder Anspruch 2, bei der die erste und/oder die zweite Seitenbarriere und/oder vordere Barriere im Wesentlichen eine starre Barriere ist. 45
4. Sitzsicherheitsvorrichtung nach Anspruch 1, bei der die Öffnungen in den Armen Schlitzöffnungen sind. 50

5. Sitzsicherheitsvorrichtung nach einem der vorhergehenden Ansprüche, bei der die erste und die zweite Seitenbarriere angepasst sind, um an einem Basisrahmen des Sitzes gesichert zu werden.
6. Sitzsicherheitsvorrichtung nach einem der vorhergehenden Ansprüche, bei der ein oberer Bereich oder eine Kante der vorderen Barriere angepasst ist, um an einem unteren vorderen Bereich oder einer Kante des Sitzes gesichert zu werden.
7. Sitzsicherheitsvorrichtung nach Anspruch 5, bei der eine erste und eine zweite Seitenbarriere angepasst sind, um beweglich in Bezug zu dem Basisrahmen getragen zu werden.
8. Sitzsicherheitsvorrichtung nach Anspruch 5 oder Anspruch 6, bei der die erste und die zweite Seitenbarriere angepasst sind, um in Bezug zu dem Basisrahmen gleitbar zu sein.
9. Sitzsicherheitsvorrichtung nach einem der vorhergehenden Ansprüche, bei der die Seitenbarrieren geformt sind, um das Hängenbleiben des Sitzes an den Seitenbarrieren zu verhindern, wenn sich der Sitz bewegt.
10. Sitz, der einen Sitzteil, erste und zweite Arme und eine Sitzsicherheitsvorrichtung nach einem der Ansprüche 1 bis 9 aufweist.
11. Teilebausatz, der eine Sitzsicherheitsvorrichtung nach einem der Ansprüche 1 bis 9 und Befestigungsmittel zum Befestigen der Sitzsicherheitsvorrichtung an einem Sitz enthält. 35
12. Teilebausatz nach Anspruch 11, bei dem die Befestigungsmittel Stäbe oder Leisten aufweisen, die angepasst sind, um zwischen Teilen der Sicherheitsvorrichtung und einem Sitz, an dem diese zu montieren ist, zu befestigen. 40

Revendications

1. Dispositif de sécurité pour siège comprenant au moins des première et seconde barrières latérales (26a, 26b), dans lequel les barrières latérales sont adaptées pour être reçues à l'intérieur des faces latérales respectives d'une chaise à laquelle le dispositif de sécurité pour siège doit être ajusté, en fonctionnement, **caractérisé en ce que** les première et seconde barrières latérales (26a, 26b) sont adaptées pour être reçues dans des ouvertures (48) respectives prévues dans les accoudoirs d'une chaise à laquelle le dispositif de sécurité pour siège doit être ajusté, en fonctionnement. 50

2. Dispositif de sécurité pour siège selon la revendication 1, intégrant une barrière avant.
3. Dispositif de sécurité pour siège selon la revendication 1 ou 2, dans lequel au moins une barrière parmi les première et seconde barrières latérales et la barrière avant est une barrière sensiblement rigide. 5
4. Dispositif de sécurité pour siège selon la revendication 1, dans lequel les ouvertures pratiquées dans les accoudoirs sont des ouvertures fendues. 10
5. Dispositif de sécurité pour siège selon l'une quelconque des revendications précédentes, dans lequel les première et seconde barrières latérales sont adaptées pour être fixées à un cadre de base de la chaise. 15
6. Dispositif de sécurité pour siège selon l'une quelconque des revendications précédentes, dans lequel une région supérieure, ou une tranche, de la barrière avant est conçue pour être fixée à une région avant inférieure, ou une tranche, de la chaise. 20
7. Dispositif de sécurité pour siège selon la revendication 5, dans lequel des première et seconde barrières latérales sont adaptées pour être maintenues de façon mobile par rapport au cadre de base. 25
8. Dispositif de sécurité pour siège selon les revendications 5 ou 6, dans lequel les première et seconde barrières latérales sont adaptées pour pouvoir coulisser par rapport au cadre de base. 30
9. Dispositif de sécurité pour siège selon l'une quelconque des revendications précédentes, dans lequel les barrières latérales sont formées de façon à empêcher le coincement de la chaise sur les barrières latérales lorsque la chaise est déplacée. 35
10. Chaise comprenant une partie de siège, des premier et second accoudoirs et un dispositif de sécurité pour siège selon l'une quelconque des revendications 1 à 9. 40
11. Ensemble de pièces intégrant un dispositif de sécurité pour siège selon l'une quelconque des revendications 1 à 9 et des moyens de fixation servant à fixer le dispositif de sécurité pour siège à une chaise. 45
12. Ensemble de pièces selon la revendication 11, dans lequel les moyens de fixation comprennent des bâtons ou des barres adaptés pour être fixés entre les pièces du dispositif de sécurité et une chaise à laquelle il doit être fixé. 50

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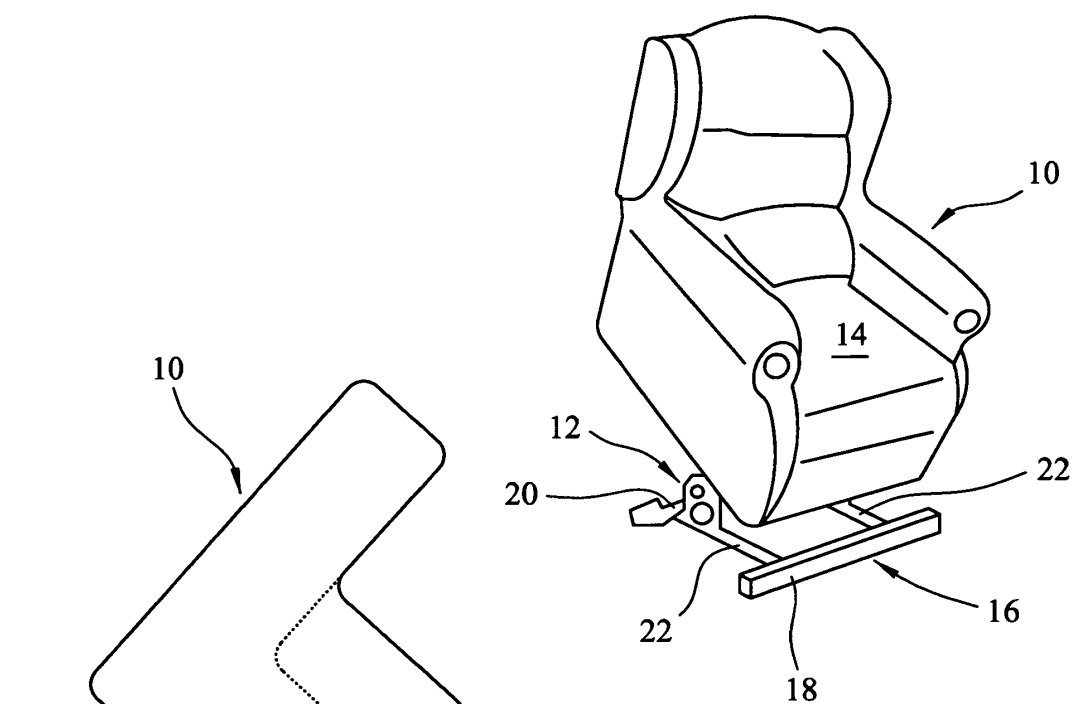


FIG. 1

FIG. 1a

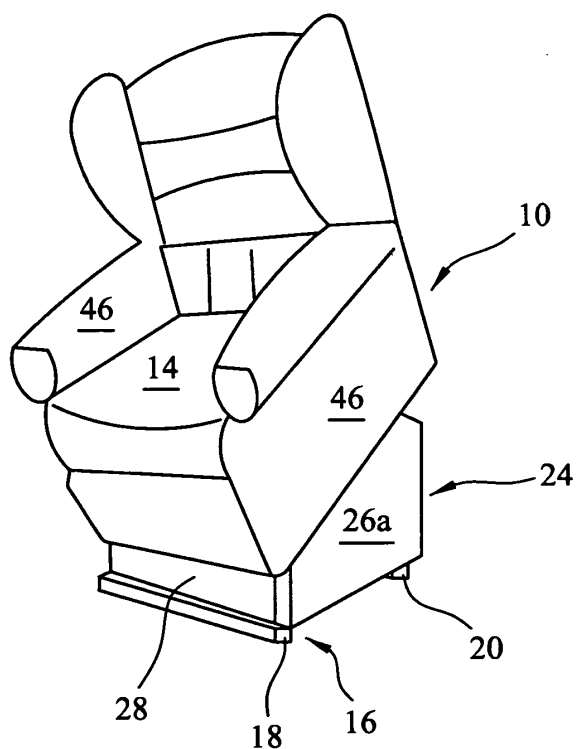


FIG. 2

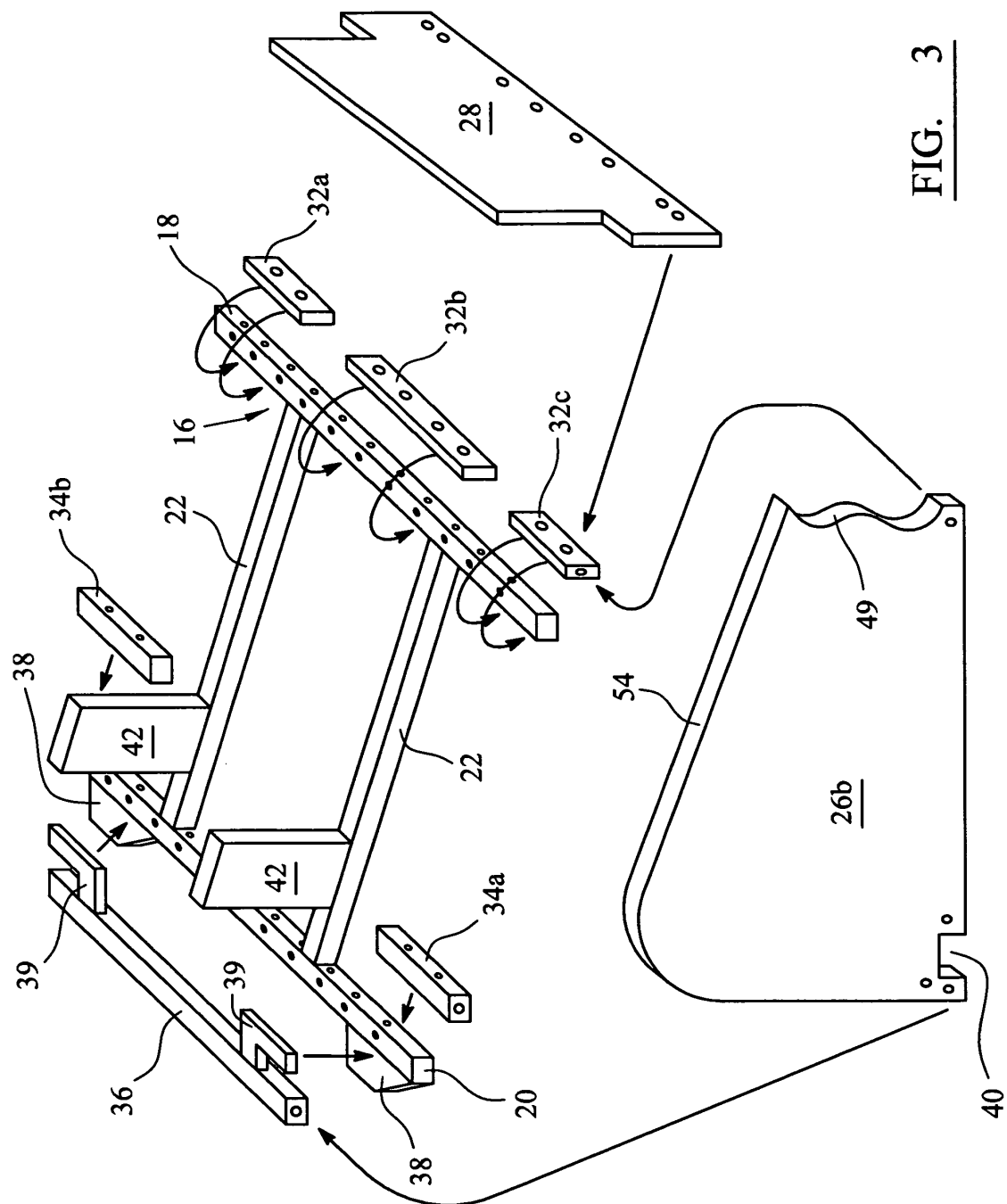


FIG. 3

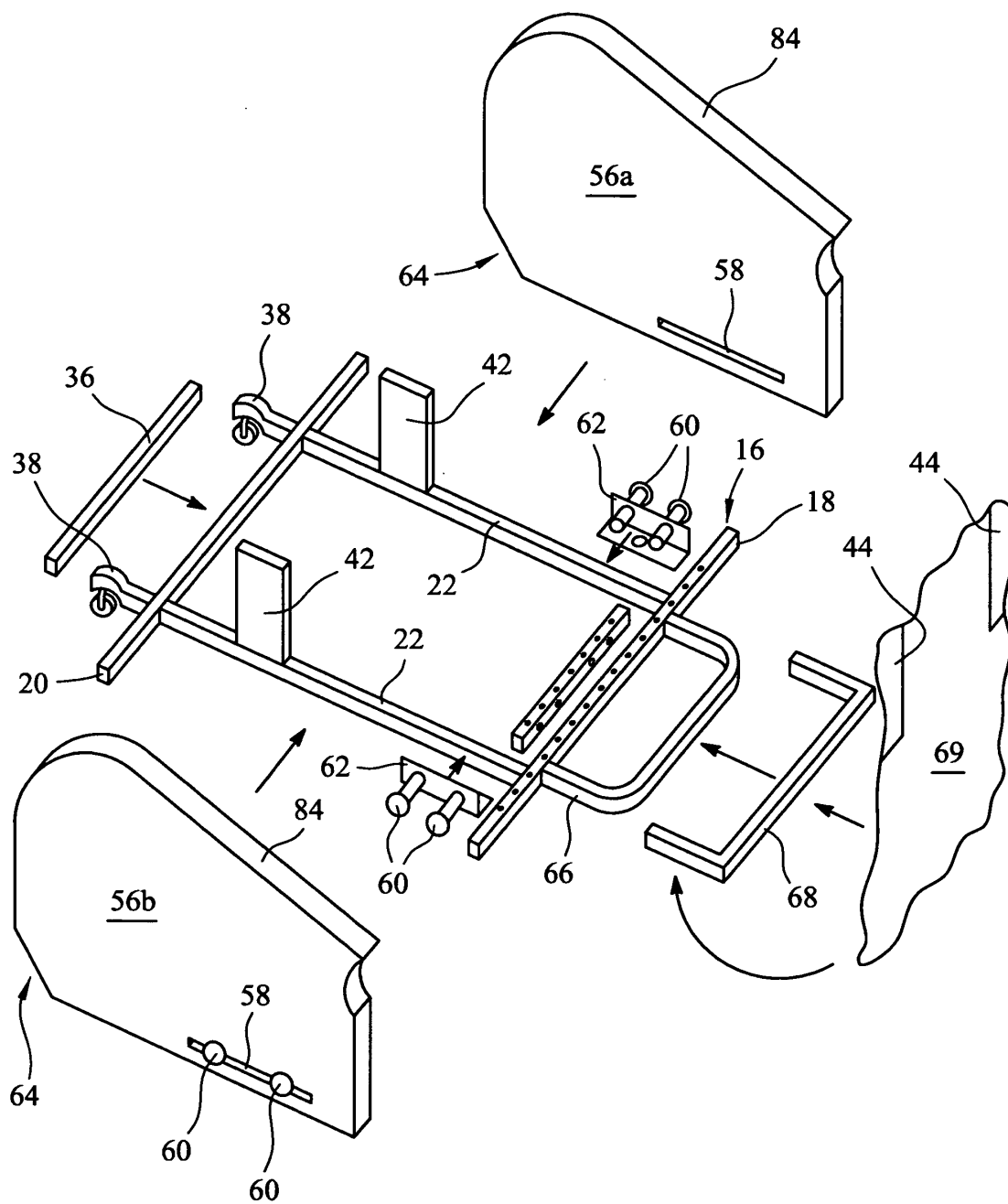
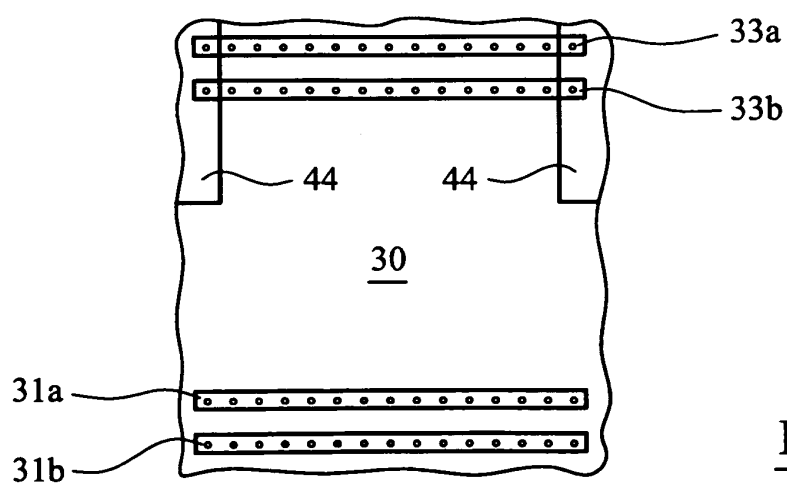
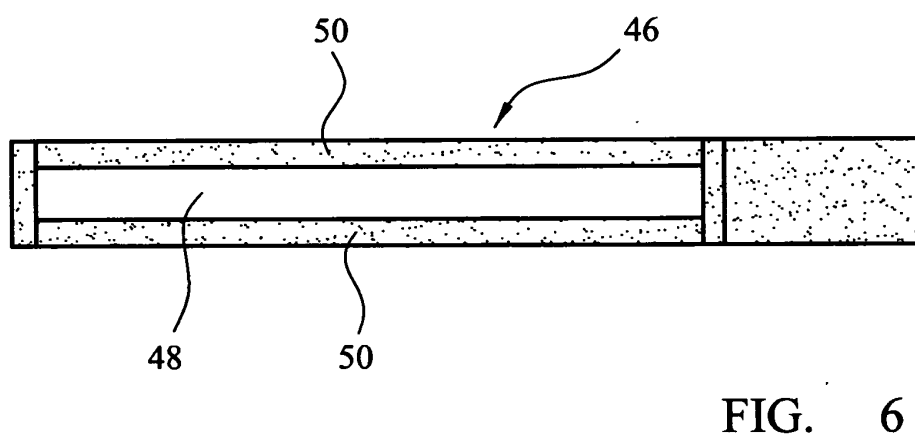
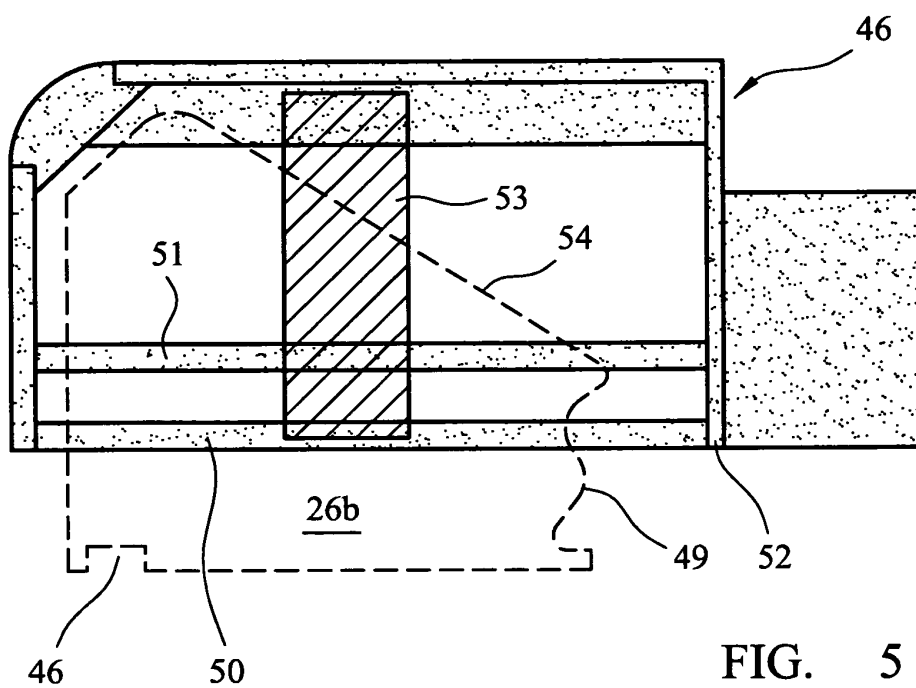


FIG. 4



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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