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(54) **SYSTEM FOR ANCHORING A BED**

SYSTEM ZUR VERANKERUNG EINES BETTS

SYSTÈME D'ANCRAGE D'UNE CIVIÈRE

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Description

OBJECT OF THE INVENTION

[0001] The present invention generally belongs to the field of the emergency healthcare.

[0002] The object of the present invention is a new anchoring system for a stretcher which prevents, in a simple and effective manner, the person operating it from having to support a considerable part of its weight during an operation of introducing it into an ambulance.

BACKGROUND OF THE INVENTION

[0003] As is known, stretchers commonly used in emergency healthcare feature retractable legs having two usage positions: an extended position in which the legs are extended so as to allow moving a patient over the surface of the floor or ground; and a compressed position in which the legs are compressed such that the stretcher can be placed on the lower surface of an ambulance patient compartment. The operation of introducing a stretcher into the ambulance involves the stretcher transitioning from the extended position to the compressed position.

[0004] This operation of introducing the stretcher into the ambulance today has a considerable drawback because there is a moment when the person performing said operation, i.e., the paramedic, must almost completely support all the weight of the stretcher and the patient lying on it. In fact, the paramedic first pushes towards the ambulance the stretcher (100) supported on wheels arranged at the lower end of the retractable legs (101) in their extended position. The stretcher (100) furthermore features a pair of auxiliary wheels (102) fixed to a front portion of the structure or frame of the stretcher (100), this pair of auxiliary wheels (102) constituting the first element of the stretcher (100) that enters the ambulance patient compartment. In that moment, the retractable legs (101) start to fold up. The folding up can be done in various ways, for example due to the retractable legs (101) hitting against the lower edge of the ambulance patient compartment. When only the front pair of retractable legs (101) has folded up, the stretcher (100) is supported on the rear pair of retractable legs (101) and on the auxiliary wheels (102), as shown in Figure 1a. Therefore, in this situation the paramedic is still not supporting any weight. However, once the rear pair of retractable legs (101) folds up, the stretcher (100) is supported only on the auxiliary wheels (102), and the paramedic must therefore hold the stretcher (100) at its rear end, supporting virtually all the weight of the stretcher and the patient. This situation is depicted in Figure 1b.

[0005] Therefore, there is a need in the art today for an anchoring system that anchors a stretcher to an ambulance that prevents the need for the paramedic to support all its weight during the operation of introducing it into the ambulance.

[0006] Document EP 2412356 A1 discloses a device for the introduction of stretchers into ambulances, which comprises a movable tray slidably mounted on fixed guides arranged on the inner floor of the ambulance, so that the movable tray can be moved from a retracted position, where the tray is completely withdrawn in the ambulance, and an extended position, where the tray is extended out the of the ambulance to receive the stretcher. Operationally, when the stretcher is loaded on the movable tray in extended position, the center of gravity of the stretcher falls within the tray, so that the stretcher is fully supported on the tray. Then, the paramedic can fold the legs of the stretcher and the movable tray is moved in the retracted position to place the stretcher on the internal floor of the ambulance. This latter known device is, however, particularly complex.

DESCRIPTION OF THE INVENTION

[0007] This patent document solves the aforementioned problem as a result of a novel anchoring system which supports all the weight of the stretcher and the patient at all times during the process of introducing the stretcher into the ambulance, as further disclosed in claim 1. This prevents the paramedic from having to support all the weight of the stretcher and the patient, which thereby prevents the occurrence of the usual injuries caused by handling conventional stretchers used today.

[0008] The anchoring system according to the invention is designed for anchoring a stretcher to an ambulance floor, wherein the stretcher comprises a rectangular frame supporting a surface for bearing the patient and to which there are fixed two pairs of retractable legs equipped with wheels at their free ends. The frame is typically formed by four bars that are parallel to one another in twos, where the two longest bars are referred to as "*side bars*" and the two shortest bars are referred to as "*end bars*". As regards the legs, there are two pairs of conventional retractable legs that can alternate between an extended position, in which they allow moving the stretcher by rolling it over the floor or ground, and a retracted position, designed for when the stretcher is inside the ambulance. The retractable legs have wheels at their lower end that allow moving the stretcher over the floor or ground.

[0009] The term "*front end*" of the stretcher will be interpreted herein according to the direction of movement of said stretcher upon introducing it into the ambulance. In other words, the "*front end*" of the stretcher is that end which is first introduced into the ambulance. Similarly, the term "*rear end*" of the stretcher will be interpreted according to the direction of movement of said stretcher upon introducing it into the ambulance. Therefore, the "*rear end*" of the stretcher is that end which enters the ambulance last. The term "*longitudinal direction*" refers to the natural direction of movement of the stretcher for introducing same into the ambulance, and therefore also to the direction of the rails arranged therein.

[0010] Taking this into account, the anchoring system of the invention comprises:

a) A pair of horizontal rails coupleable to an ambulance floor. These rails are usually integrated at the sides of a structure or assembly formed by a rectangular plate designed to be fixed on the floor of an ambulance patient compartment. This structure may further comprise other auxiliary elements of the anchoring system that are not the object of the present invention.

b) A pair of first auxiliary wheels, wherein each first auxiliary wheel is rigidly fixed to a front end portion of a respective side bar of the frame of the stretcher, and wherein the pair of first auxiliary wheels is slidably coupleable in the longitudinal direction to said pair of horizontal rails. Therefore, this pair of first auxiliary wheels essentially constitutes the first element of the stretcher that enters the ambulance patient compartment during an operation of introducing the stretcher, being coupled to the aforementioned rails and thereby providing front support.

[0011] The usual elements in anchoring systems conventionally used today have been described up to this point. However, the anchoring system of the invention differs from them fundamentally in that it further comprises the following features.

c) The anchoring system of the invention further comprises a pair of second auxiliary wheels. Each second auxiliary wheel is rigidly fixed to the respective side bar of the frame of the stretcher in a position longitudinally adjacent to, and aligned with, the first auxiliary wheel fixed to the same side bar. Therefore, the pair of second auxiliary wheels is also slidably coupleable in the longitudinal direction to said pair of horizontal rails. In other words, a forward longitudinal movement of the stretcher causes the successive introduction of the first auxiliary wheels and the second auxiliary wheels into the rails.

The second auxiliary wheels will be located in a longitudinal position located between the attachment of front retractable legs to the frame of the stretcher and the position of the first auxiliary wheels. It is thereby assured that the second auxiliary wheels enter the rails before the retractable legs start to fold up. This is important because once the second auxiliary wheels are inside the rails, the stretcher is completely supported by the anchoring system. After this moment, the retractable legs can be folded up without the paramedic having to support the weight of the stretcher and the patient.

On the other hand, the distance between each second auxiliary wheel and the first auxiliary wheel fixed

to the same side bar is preferably between 10 cm and 100 cm.

d) The horizontal rails of the invention have a profile comprising a lower horizontal segment and an upper horizontal segment separated from one another by a distance essentially equal to the diameter of the auxiliary wheels. So when the auxiliary wheels are introduced into the rails, they are confined between the lower horizontal segment and the upper horizontal segment of said rails, preventing any vertical movement thereof. As a result of the auxiliary wheels not being able to move vertically with respect to the rails, once both pairs of auxiliary wheels are introduced into the rails, the stretcher is completely supported, being borne on said auxiliary wheels.

Preferably, the profile of the rails adopts an essentially C-shape formed by the lower horizontal segment, an intermediate vertical segment, and the upper horizontal segment. The open side of the C leaves room for the connecting element between the auxiliary wheels and the corresponding side bars of the stretcher. The lower and upper horizontal segments prevent any movement of the auxiliary wheels in a direction other than the longitudinal direction of the rails.

[0012] The operation of this novel anchoring system is therefore as follows. The paramedic first pushes the stretcher with its front end towards the ambulance such that the first pair of auxiliary wheels enters the rails. The paramedic then continues pushing until the second pair of auxiliary wheels also enters the rails. Since the profile of the rails has an upper horizontal segment, none of the auxiliary wheels can move vertically upwards, i.e., none of the auxiliary wheels can lift off the ambulance floor. Therefore, the stretcher cannot tip over when the retractable legs fold up, since it is forced to maintain its horizontal position. The paramedic can thereby retract the retractable legs, either by hand or automatically, and then finish completely introducing the stretcher into the ambulance, making the pairs of auxiliary wheels roll forward in the rails. The paramedic does not need to hold the weight of the stretcher and the patient at any time throughout the entire operation.

[0013] In a preferred embodiment of the invention, the system further comprises centering rollers arranged in a position adjacent to each of the auxiliary wheels. For example, they can be rollers having a vertical axis of rotation which are fixed to the connecting element between the auxiliary wheels and the corresponding side bar of the frame of the stretcher. These rollers tend to center the auxiliary wheels with respect to the ends where said rollers enter the rails, thereby making the initial operation of introducing the auxiliary wheels into the rails easier when the stretcher is introduced into the ambulance.

[0014] In another preferred embodiment of the inven-

tion, the anchoring system further comprises locking means which are automatically activated after the second pair of auxiliary wheels enters the rails to prevent any longitudinal movement of the auxiliary wheels along the rails. In other words, these locking means are automatically activated once the stretcher is completely supported by the anchoring system. During the process in which the retractable legs fold up, the locking means prevent an outward longitudinal movement of the stretcher, which causes the second auxiliary wheels to pop out of the rails, with the subsequent risk of the stretcher tipping over, from taking place. For example, this is particularly useful when the ambulance is located on a sloped surface. Therefore, once the locking means are activated, the paramedic can then fold up the retractable legs, by hand or automatically depending on the particular design of the stretcher, without the risk of said stretcher rolling out of the ambulance.

[0015] In another preferred embodiment, the anchoring system further comprises means for unlocking the locking means that can be operated from a rear end of the stretcher. This will allow the paramedic to deactivate the locking means once the retractable legs have been completely folded up, such that said paramedic can then continue pushing the stretcher into the ambulance.

[0016] In principle, the locking means can be configured in different ways, depending on each particular application, although in one particularly preferred embodiment of the invention, the locking means comprise a spring-driven projection rigidly fixed to the frame of the stretcher, and a corresponding housing rigidly fixed to the pair of horizontal rails. In this context, it must be understood that the expression "*rigidly fixed*" to the frame of the stretcher or to the horizontal rails includes both a direct fixing to said elements and an indirect fixing through other parts. In any case, the underlying concept is that the projection moves integrally with the stretcher and the housing is in a fixed position like the horizontal rails are. The respective positions of the projection and the housing are conceived so that the projection gradually moves closer to the housing as the first auxiliary wheels longitudinally move along the rails into the ambulance. The projection reaches the position in which the housing is located and is automatically introduced therein once the second auxiliary wheels have entered the rails.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Figures 1a and 1b show two moments of introducing a stretcher into an ambulance with an anchoring system according to the prior art.

Figure 2 shows a perspective view of a stretcher equipped with an anchoring system according to the present invention.

Figure 3 shows a detail view of the front end portion of a stretcher equipped with an anchoring system according to the present invention.

Figure 4 shows a perspective view of a pair of rails of an anchoring system according to the present invention.

Figure 5 shows a cross-section of the rails of an anchoring system according to the present invention.

Figure 6 shows an enlarged cross-section of a rail of an anchoring system according to the present invention.

Figure 7 shows a perspective view of a stretcher at a moment of its coupling to rails in an anchoring system according to the present invention.

Figure 8 shows a detail of the operation of the locking means which prevent any longitudinal movement of the auxiliary wheels along the rails.

Figures 9a and 9b show two moments of introducing a stretcher into an ambulance with an anchoring system according to the present invention.

PREFERRED EMBODIMENT OF THE INVENTION

[0018] The invention is described below in reference to the attached drawings, which show various views of a particular example of an anchoring system according to the present invention. However, the scope of protection of this application is not limited by the details described in these examples, but rather by what is defined by the attached claims.

[0019] Figure 2 shows a perspective view of a stretcher (1) equipped with an anchoring system according to the present invention. The stretcher (1) is fundamentally formed by a frame (11) having a rectangular shape with two lateral sides in the longitudinal direction, and rear and front sides perpendicular to the longitudinal direction. A horizontal surface (12), which is usually cushioned, is fixed to the frame (11) so as to allow the patient to lie or sit down on same. Furthermore, rear retractable legs (13t) and front retractable legs (13d), respectively, are fixed to the frame (11) on the lower part thereof. Retractable legs (13t, 13d) are known in the art and can be implemented in different ways, although as can be seen in Figure 2 they adopt a scissor structure which allows alternating between an extended position and a folded up position. The free ends of the retractable legs (13t, 13d) comprise wheels which allow moving the stretcher (1) over the floor or ground before introducing it into the ambulance.

[0020] This stretcher (1) also includes a pair of first auxiliary wheels (3) fixed to the side bars of the frame (11) in a front portion of said side bars, as can be seen

in further detail in Figure 3. Specifically, in this example the first auxiliary wheels (3) are fixed through a rigid connecting element to the front end of the side bars of the frame (11). A pair of second auxiliary wheels (4) is located a greater distance away from the front end of the side bars of the frame (11) in a fixed manner. As can be seen, the first and second auxiliary wheels (3, 4) are aligned in twos for the purpose of allowing them to be introduced into the rails (2) which will be described below.

[0021] Centering rollers (5), which are fixed to the connecting elements between the auxiliary wheels (3, 4) and the side bars of the frame (11) in this example, are also seen in Figure 3. The centering rollers (5) have a cylindrical shape and are oriented in the vertical direction. Their position, next to the auxiliary wheels (3, 4) and somewhat ahead of them, allow for their guiding function to make it easier to introduce the auxiliary wheels (3, 4) into the rails (2), as will be described in further detail below.

[0022] The locking projection (6a) cooperating with a housing (6b) to lock the position of the stretcher (1) with respect to the rails (2) can also be seen in Figure 3. It must be observed that this configuration of the locking means (6a, 6b) constitutes only one example, and that other types of mechanisms and other locations would be possible. The operation of the locking means (6a, 6b) will also be described herein in further detail below.

[0023] Figures 4 to 6 show a structure which is designed for being fixed to the ambulance floor and includes the rails (2). The rails (2) are separated from one another by a distance equal to the gap between the auxiliary wheels (3, 4), and have an essentially C-shape formed by three segments: a lower horizontal segment (21), an intermediate vertical segment (22), and an upper horizontal segment (23). The distance between the upper surface of the lower horizontal segment (21) and the lower surface of the upper horizontal segment (23) is essentially equal to the diameter of the auxiliary wheels (3, 4). The auxiliary wheels (3, 4) can thereby roll in the longitudinal direction supported on the inner horizontal segment (21), its highest point almost rubbing against the upper horizontal segment (23). Therefore, once an auxiliary wheel (3, 4) is introduced into a corresponding rail, only its forward longitudinal movement (into the ambulance) or backward longitudinal movement (out of the ambulance), is allowed, but any movement in the vertical direction either downward (where it would hit against the lower horizontal segment (21)) or upward (where it would hit against the upper horizontal segment (23)) is prevented.

[0024] Figures 7 and 8 show a stretcher (1) with an anchoring system according to the invention at an initial moment of introducing it into an ambulance. First, the first auxiliary wheels (3) are introduced through the end of the rails (2). During this operation, the centering rollers (5) help the paramedic to suitably center the first auxiliary wheels (3) with the open end of the rails, thereby making it easier to introduce it into the rails. The paramedic then

pushes the stretcher (1) until also introducing the second auxiliary wheels (4) into the rails (2). Once the second auxiliary wheels (4) are inside the rails (2), the projection (6a) is introduced into the housing (6b) and thereby prevents any longitudinal movement of the stretcher (1). To that end, it can be seen how there is a vertical surface that is sloped with respect to the longitudinal direction arranged right before the housing (6b). As the spring-driven projection (6a) slides along that sloped surface, it is retracted against the force of the spring. As a result, when movement of the stretcher (1) continues and the projection (6a) is arranged opposite the housing (6b), the spring drives the projection (6a) into the housing (6b), the stretcher (1) being locked in place.

[0025] In the locking position, it is possible to completely fold up the retractable legs (13d, 13t) of the stretcher (1) without the paramedic having to support its weight. In fact, although the weight of the stretcher (1) and the patient exerts a downward vertical force on a central portion of the overhanging stretcher (1), and as a result, the stretcher tends to tip over supported on the second auxiliary wheels (4), the upper horizontal segment (23) of said rails (2) prevents the first auxiliary wheels (3) from raising up. The stretcher remains held firmly in the horizontal position, preventing it from tipping over. The locking means (6a, 6b) furthermore prevent the stretcher (1) from sliding backward and causing the second auxiliary wheels (4) to come out of the rails (2).

[0026] Figures 9a and 9b schematically show an actual case in which the stretcher (1) is first introduced into the ambulance according to the process described above until the means (6a, 6b) are activated. First, as shown in Figure 9a, the position of the stretcher (1) is locked with the two pairs of auxiliary wheels (3, 4) introduced into the rails (2). Then, as shown in Figure 9b, the retractable legs (13t, 13d) are folded up. The operation of folding up the retractable legs (13t, 13d) can be carried out by hand or automatically, for example by means of using mechanisms based on springs, hydraulic cylinders, electric motors, or the like. Once the legs (13t, 13d) are completely folded up, the paramedic must simply push the stretcher (1) until completely introducing it into the ambulance.

[0027] As can be seen, this mode of use completely eliminates the need for the paramedic to support the weight of the stretcher (1) and the patient during the operation of introducing the stretcher (1) into the ambulance, thereby resolving the problems that have been described.

Claims

1. A system comprising an anchoring system and a stretcher (1), wherein the stretcher (1) comprises a rectangular frame (11) supporting a surface (12) for bearing the patient and to which there are fixed two pairs of retractable legs (13d, 13t) equipped with

wheels at their free ends, the anchoring system comprising:

- a pair of horizontal rails (2) coupleable to an ambulance floor;
- a structure which is designed for being fixed to an ambulance floor and includes the rails (2);
- rear retractable legs (13t) and front retractable legs (13d) which, respectively, are fixed to the frame (11) on the lower part of the frame (11); wherein the free ends of the retractable legs (13t, 13d) comprise wheels which allow moving the stretcher (1) over the floor or ground before introducing the stretcher (1) into the ambulance;
- a pair of first auxiliary wheels (3), wherein each first auxiliary wheel (3) is rigidly fixed to a front end portion of a respective side bar of the frame (11) of the stretcher (1), and wherein the first auxiliary wheels (3) are slidably coupleable in the longitudinal direction to said pair of horizontal rails (2),

- a pair of second auxiliary wheels (4), wherein each second auxiliary wheel (4) is rigidly fixed to the respective side bar of the frame (11) of the stretcher (1) in a position longitudinally adjacent to, and aligned with, the first auxiliary wheel (3) fixed to the same side bar, such that the pair of second auxiliary wheels (4) is also slidably coupleable in the longitudinal direction to said pair of horizontal rails (2),

the anchoring system being **characterized**

in that the second auxiliary wheels (4) are located in a longitudinal position between the attachment of front retractable legs to the frame (11) of the stretcher (1) and the position of the first auxiliary wheels (3), and

in that the profile of the pair of horizontal rails (2) comprises a lower horizontal segment (21) and an upper horizontal segment (23) separated from one another by a distance essentially equal to the diameter of the auxiliary wheels (3, 4), such that when the auxiliary wheels (3, 4) are introduced into the rails (2), they are confined between the lower horizontal segment (21) and the upper horizontal segment (23) of said rails (2), preventing any vertical movement thereof.

2. The system according to claim 1, wherein the profile of the rails (2) adopts an essentially C-shape formed by the lower horizontal segment (21), an intermediate vertical segment (22), and the upper horizontal segment (23).
3. The system according to any of the preceding claims, wherein the distance between each second auxiliary wheel (4) and the first auxiliary wheel (3) fixed to the same side bar of the frame (11) is between 10 cm and 100 cm.

4. The system according to any of the preceding claims, further comprising centering rollers (5) arranged in a position adjacent to each of the auxiliary wheels (3, 4).

5. The system according to claim 4, wherein the centering rollers (5) are rollers having a vertical axis of rotation which are fixed to a connecting element between the auxiliary wheels (3, 4) and the corresponding side bar of the frame (11) of the stretcher (1).

6. The system according to any of the preceding claims, further comprising locking means (6a, 6b) which are automatically activated after the second pair of auxiliary wheels (4) enter the rails (2) to prevent any longitudinal movement of the auxiliary wheels (3, 4) along the rails (2).

7. The system according to claim 6, further comprising means for unlocking the locking means (6a, 6b) that can be operated from a rear end of the stretcher (1).

8. The system according to any of claims 6 to 7, wherein the locking means (6a, 6b) comprise a spring-driven projection (6a) rigidly fixed to the frame (11) of the stretcher (1), and a corresponding housing (6b) rigidly fixed to the pair of horizontal rails (2).

30 Patentansprüche

1. System, umfassend ein Verankerungssystem und eine Trage (1), wobei die Trage (1) einen rechteckigen Rahmen (11) umfasst, der eine Oberfläche (12) zum Tragen des Patienten abstützt und an dem zwei Paar einklappbare Beine (13d, 13t), die an ihren freien Enden mit Rollen ausgestattet sind, befestigt sind, wobei das Verankerungssystem Folgendes umfasst:

- ein Paar horizontaler Schienen (2), die mit einem Krankenwagenboden gekuppelt werden können;

- eine Struktur, die darauf ausgelegt ist, an einem Krankenwagenboden befestigt zu werden und die Schienen (2) einschließt;

- hintere einklappbare Beine (13t) und vordere einklappbare Beine (13d), die jeweils am unteren Teil des Rahmens (11) an dem Rahmen (11) befestigt sind, wobei die freien Enden der einklappbaren Beine (13t, 13d) Räder umfassen, die das Bewegen der Trage (1) über den Fußboden oder Untergrund gestatten, bevor die Trage (1) in den Krankenwagen gebracht wird;

- ein paar erste Hilfsräder (3), wobei jedes erste Hilfsrad (3) steif am vorderen Endabschnitt einer entsprechenden Seitenstrebe des Rahmens (11) der Trage (1) befestigt ist und wobei die

- ersten Hilfsräder (3) in Längsrichtung gleitend mit dem genannten Paar horizontaler Schienen (2) kuppelbar sind,
- ein Paar zweiter Hilfsräder (4), wobei jedes zweite Hilfsrad (4) steif an der entsprechenden Seitenstrebe des Rahmens (11) der Trage (1) in einer längs an das an derselben Seitenstrebe befestigte erste Hilfsrad (3) angrenzenden Position und mit diesem gefluchtet befestigt ist, so dass das Paar zweiter Hilfsräder (4) ebenfalls in Längsrichtung gleitend mit dem genannten Paar horizontaler Schienen (2) kuppelbar ist, wobei das Verankerungssystem **dadurch gekennzeichnet ist, dass** die zweiten Hilfsräder (4) in einer Längsposition zwischen der Anbringung der vorderen einklappbaren Beine am Rahmen (11) der Trage (1) und der Position der ersten Hilfsräder (3) platziert sind, und **dadurch, dass** das Profil des Paares horizontaler Schienen (2) ein unteres horizontales Segment (21) und ein oberes horizontales Segment (23) umfasst, die voneinander in einem im Wesentlichen dem Durchmesser der Hilfsräder (3, 4) entsprechenden Abstand entfernt sind, so dass, wenn die Hilfsräder (3, 4) in die Schienen (2) eingeführt werden, sie zwischen dem unteren horizontalen Segment (21) und dem oberen horizontalen Segment (23) der genannten Schienen (2) eingeschlossen sind und so jede vertikale Bewegung derselben verhindern.
2. System nach Anspruch 1, wobei das Profil der Schienen (2) im Wesentlichen eine C-Form annimmt, die von dem unteren horizontalen Segment (21), einem vertikalen Zwischensegment (22) und dem oberen horizontalen Segment (23) gebildet wird.
 3. System nach einem der vorangegangenen Ansprüche, wobei der Abstand zwischen jedem zweiten Hilfsrad (4) und dem an derselben Seitenstrebe des Rahmens (11) befestigten ersten Hilfsrad (3) zwischen 10 cm und 100 cm beträgt.
 4. System nach einem beliebigen der vorangegangenen Ansprüche, das außerdem in einer an jedes der Hilfsräder (3, 4) angrenzenden Position angeordnete Zentrierwalzen (5) umfasst.
 5. System nach Anspruch 4, wobei die Zentrierwalzen (5) Walzen mit einer vertikalen Drehachse sind, die an einem Verbindungselement zwischen den Hilfsrädern (3, 4) und der entsprechenden Seitenstrebe des Rahmens (11) der Trage (1) befestigt sind.
 6. System nach einem beliebigen der vorangegangenen Ansprüche, das außerdem Verriegelungselemente (6a, 6b) umfasst, die automatisch aktiviert

werden, nachdem das zweite Paar Hilfsräder (4) in die Schienen (2) eintritt, um jegliche Längsbewegung der Hilfsräder (3, 4) entlang der Schienen (2) zu verhindern.

7. System nach Anspruch 6, das außerdem Elemente zum Entriegeln der Verriegelungselemente (6a, 6b) umfasst, die von einem hinteren Ende der Trage (1) aus betätigt werden können.
8. System nach einem beliebigen der Ansprüche 6 bis 7, wobei die Verriegelungselemente (6a, 6b) einen Vorsprung (6a) mit Federantrieb, der steif am Rahmen (11) der Trage (1) befestigt ist, und ein entsprechendes Gehäuse (6b), das steif an dem Paar horizontaler Schienen (2) befestigt ist, umfassen.

Revendications

1. Système comprenant un système d'ancrage et une civière (1), dans lequel la civière (1) comprend un cadre rectangulaire (11) supportant une surface (12) pour transporter le patient et auquel deux paires de pieds rétractables (13d, 13t) sont fixés, équipés de roues aux extrémités libres de ceux-ci, le système d'ancrage comprenant:

- une paire de rails horizontaux (2) pouvant être couplés à un plancher d'ambulance;
- une structure qui est conçue pour être fixée à un plancher d'ambulance et comprenant les rails (2);
- des pieds rétractables arrière (13t) et des pieds rétractables avant (13d) qui, respectivement, sont fixés au cadre (11) sur la partie inférieure du cadre (11) ; dans lequel les extrémités libres des pieds rétractables (13t, 13d) comprennent des roues qui permettent le mouvement de la civière (1) sur le plancher ou sol avant l'introduction de la civière (1) dans l'ambulance;
- une paire de premières roues auxiliaires (3), dans lequel chaque première roue auxiliaire (3) est fixée de façon rigide à une portion d'extrémité avant d'une barre latérale respective du cadre (11) de la civière (1), et dans lequel les premières roues auxiliaires (3) peuvent être couplées de façon coulissante dans la direction longitudinale à ladite paire de rails horizontaux (2),
- une paire de secondes roues auxiliaires (4), dans lequel chaque seconde roue auxiliaire (4) est fixée de façon rigide à la barre latérale respective du cadre (11) de la civière (1) dans une position longitudinalement adjacente à, et alignée avec, la première roue auxiliaire (3) fixée à la même barre latérale, de sorte que la paire de secondes roues auxiliaires (4) puisse également être couplée de façon coulissante dans la

- direction longitudinale à ladite paire de rails horizontaux (2),
le système d'ancrage étant **caractérisé**
en ce que les secondes roues auxiliaires (4)
sont placées dans une position longitudinale entre l'attache des pieds rétractables avant au cadre (11) de la civière (1) et la position des premières roues auxiliaires (3), et
en ce que le profil de la paire de rails horizontaux (2) comprend un segment horizontal inférieur (21) et un segment horizontal supérieur (23) séparés l'un de l'autre par une distance essentiellement égale au diamètre des roues auxiliaires (3, 4), de façon à ce que, lorsque les roues auxiliaires (3, 4) sont introduites dans les rails (2), elles soient confinées entre le segment horizontal inférieur (21) et le segment horizontal supérieur (23) desdits rails (2), empêchant tout mouvement vertical de celles-ci.
2. Système selon la revendication 1, dans lequel le profil des rails (2) est essentiellement en forme de C formé par le segment horizontal inférieur (21), un segment vertical intermédiaire (22), et le segment horizontal supérieur (23).
3. Système selon l'une quelconque des revendications précédentes, dans lequel la distance entre chaque seconde roue auxiliaire (4) et la première roue auxiliaire (3) fixée à la même barre latérale du cadre (11) est comprise entre 10 cm et 100 cm.
4. Système selon l'une quelconque des revendications précédentes, comprenant en outre des rouleaux de centrage (5) agencés dans une position adjacente à chacune des roues auxiliaires (3, 4).
5. Système selon la revendication 4, dans lequel les rouleaux de centrage (5) sont des rouleaux ayant un axe de rotation vertical qui sont fixés à un élément de connexion entre les roues auxiliaires (3, 4) et la barre latérale correspondante du cadre (11) de la civière (1).
6. Système selon l'une quelconque des revendications précédentes, comprenant en outre des moyens de verrouillage (6a, 6b) qui sont activés automatiquement après que la seconde paire de roues auxiliaires (4) est entrée dans les rails (2) pour empêcher tout mouvement longitudinal des roues auxiliaires (3, 4) le long des rails (2).
7. Système selon la revendication 6, comprenant en outre des moyens pour le déverrouillage des moyens de verrouillage (6a, 6b) qui peuvent être actionnés à partir d'une extrémité arrière de la civière (1).
8. Système selon l'une quelconque des revendications

6 à 7, dans lequel les moyens de verrouillage (6a, 6b) comprennent une projection entraînée (6a) par ressort fixée de façon rigide au cadre (11) de la civière (1), et un logement correspondant (6b) fixé de façon rigide à la paire de rails horizontaux (2).

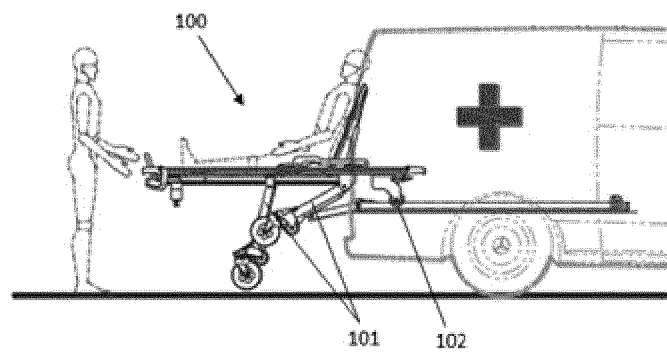


FIG. 1a
PRIOR ART

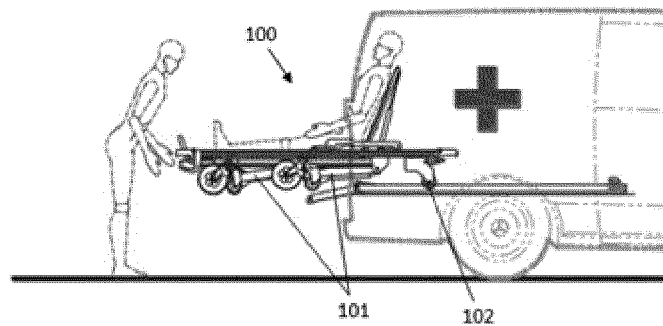


FIG. 1b
PRIOR ART

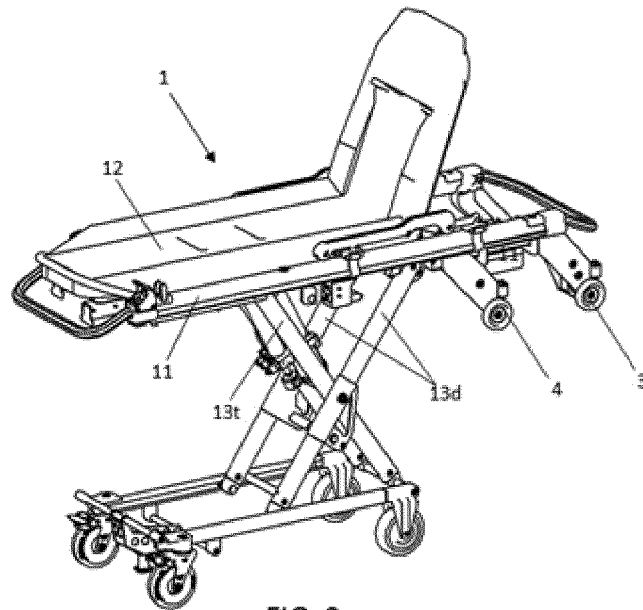


FIG. 2

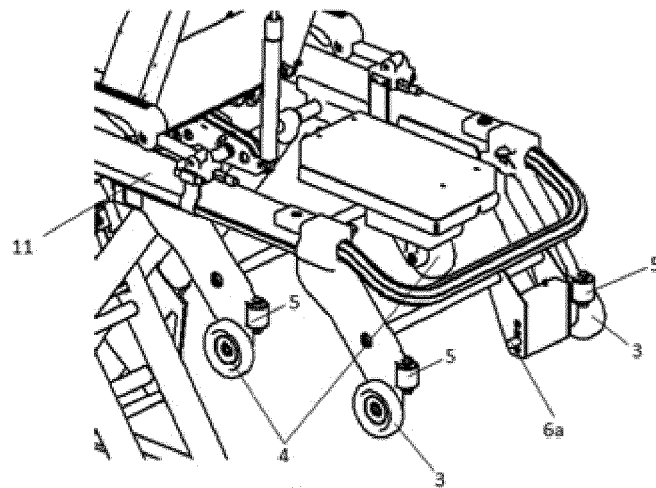


FIG. 3

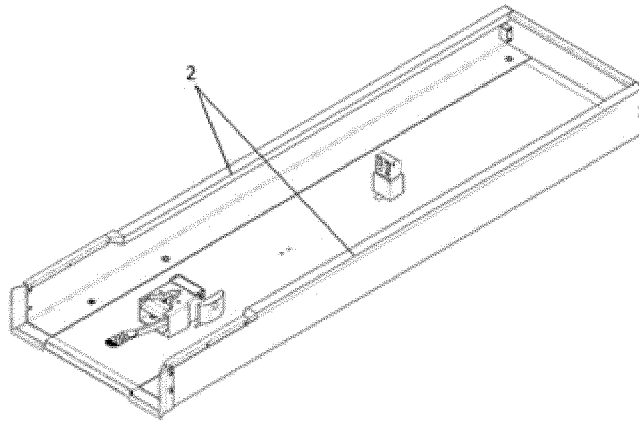


FIG. 4

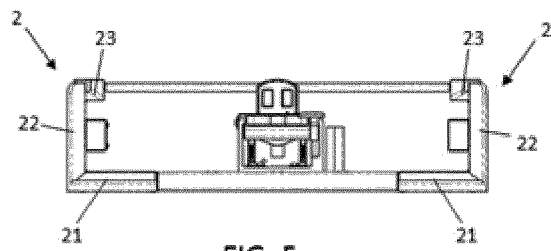


FIG. 5

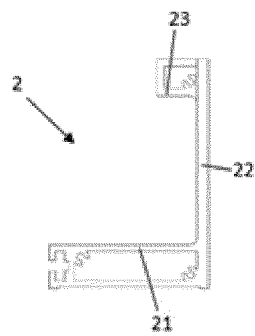


FIG. 6

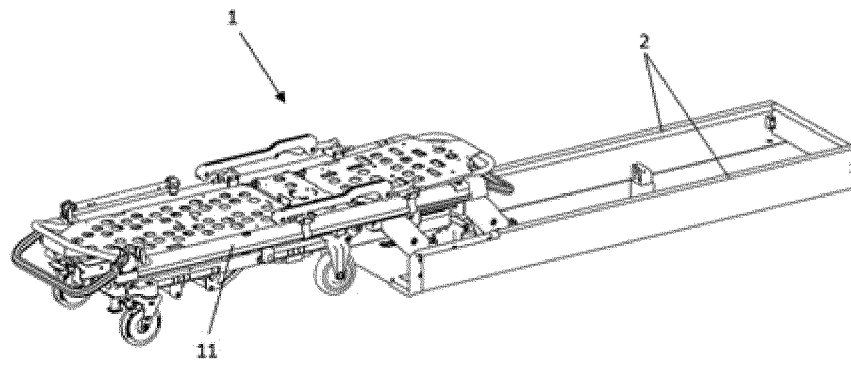


FIG. 7

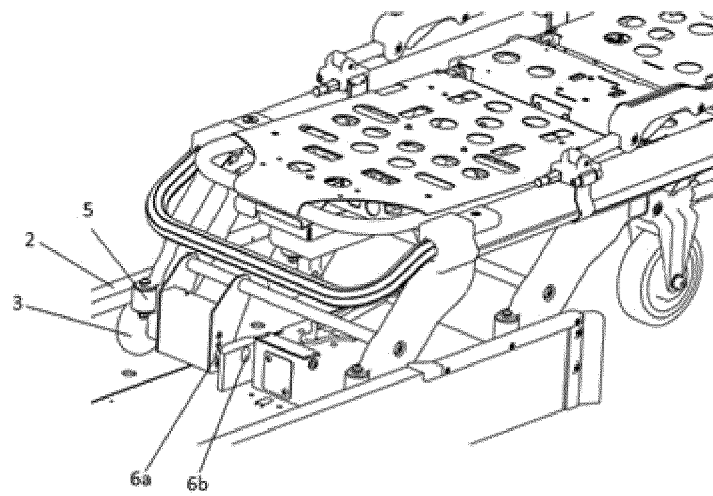


FIG. 8

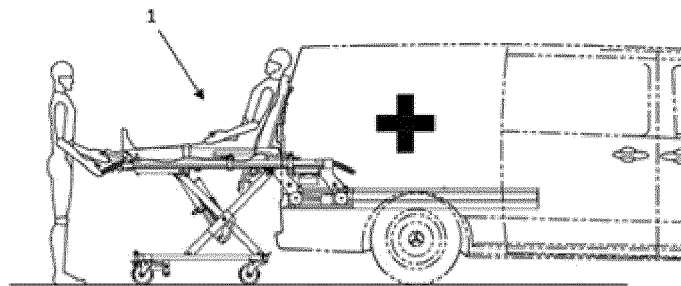


FIG. 9a

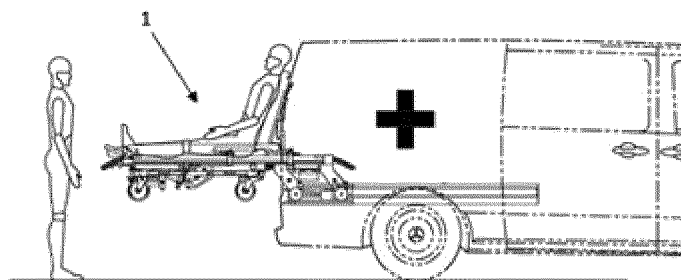


FIG. 9b

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2412356 A1 [0006]