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(54) **A BUNK BED, A METHOD IN A BUNK BED AND USE OF SAME**

ETAGENBETT, VERFAHREN IN EINEM ETAGENBETT UND SEINE VERWENDUNG

LIT SUPERPOSABLE, PROCEDE CONTENU DANS UN LIT SUPERPOSABLE ET UTILISATION
CORRESPONDANTE

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(56) References cited:
**EP-A2- 0 916 290 DE-C- 882 518
US-A- 1 682 577**

EP 1 545 270 B1

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Description

[0001] The invention relates to a bunk bed and a method in a bunk bed according to the preamble of the independent claims described further below. The invention relates especially to a bunk bed comprising two or more beds, an upper bed of which bunk bed can be moved in a substantially vertical direction in relation to a lower bed. The bunk bed according to the invention is suitable for various uses, for example, to be placed in a ship cabin or the like.

[0002] Bunk beds are used in order to fit several beds in a same floor area. Usually, the bunk bed or at least its upper bed is unused for most of the time. Therefore, there is need to remove the upper bed from occupying space and, thus, to have the lower bed for better use. Making up the upper bed is difficult, sometimes even impossible due to its height. Different kinds of stools can be used to help, but they are awkward and dangerous to use.

[0003] It is previously known, for example from US-patent RE 24,457, to arrange the upper and lower beds to be foldable up against a wall when they are not needed. US 1,945,875, for its part, describes a bunk bed in which the upper bed is hanging from the ceiling of a room and can be lifted up to be hidden into the ceiling constructions, when required. Arrangements to be mounted on a wall or a ceiling require very solid, and thus expensive constructions in the wall and the ceiling. For example, ship cabins are typically built to have thin walls, and so close to each other that additional support constructions placed behind the wall and the ceiling highly hinder other techniques to be built in the same space, such as wiring and piping. Apertures that are made for the support constructions form acoustic and thermal bridges through the walls and the ceiling.

[0004] It is also known to make a bunk bed that stands mainly on its own feet, the upper bed of which can be lowered. US-patent 259,512 describes an upper bed, which is lowered sideward with the aid of hinges attached to the poles of the bed. US 2,733,451, GB 1600866 and US 5,655,234 all describe bunk beds having an upper bed that can be lowered downwards along a substantially linear line. All known alike solutions are cumbersome, awkward and even dangerous to use. Constructions are complicated and they break easily. None of the above solutions has come up with the idea of how to convert a bunk bed easily into a sofa having a suitable sitting height. In the known solutions, there is an empty, unutilised space under the lower bed. When moving upwards or downwards the beds of the known bunk beds, it is necessary to tilt the beds, whereby it is usually impossible to keep objects or bedclothes on the bed when it is moving. It is impossible to sit on the upper bed of the known bunk beds when moving the upper bed in a vertical direction.

[0005] A further bunk bed is disclosed in EP 0 916 290 A.

[0006] The intention is especially to achieve a bunk

bed, which can be adapted as a sofa or the like better than previous solutions in times when it is not needed for sleeping.

[0007] Furthermore, the intention is especially to achieve a bunk bed having an upper bed that is easy, light and safe to move.

[0008] The above disadvantages can be eliminated, or they can be reduced, and the above defined objects can be attained by a bunk bed and a method for a bunk bed according to the invention, which are characterised in what is defined in the characterising parts of the independent claims described further below.

[0009] A typical bunk bed according to the invention comprises a frame that is at least mainly supported to a floor. A lower bed and at least one upper bed are supported to the frame. In addition, a typical bunk bed according to the invention comprises means for moving at least one upper bed and the lower bed in a substantially vertical direction in relation to the frame.

[0010] The fact that the bunk bed is supported at least mainly to the floor, means that extensive support constructions in the walls or the ceiling are not required for the bed. Usually, the floor itself is firm enough. Thus, it is easy to arrange the bed according to the invention to be movable, in contrast to the bunk beds that are attached to the wall or the ceiling. Also, the bed according to the invention can be arranged so that it can be attached to the floor or the wall, for example, detachably, by means of some suitable fastening means. The bunk bed according to the invention can have more than two beds on top of each other. According to a typical embodiment of the invention, at least one, but possibly also all of the upper beds are arranged to be movable in a vertical direction.

[0011] One of the most important advantages of the invention is that it facilitates making up the bed. The size of the person making up the bed no longer has effect on how well and easily he or she can perform his task. Working height can easily be adjusted to suit everyone. With the help of the invention, back pain and incidents of falling are diminished. This is especially important for ship cleaners, for example, who work in a hurry and in confined work premises.

[0012] Another most important advantage of the invention is that, when not in use, the upper bed can be lowered downwards against the lower bed to a suitable sitting height, for example to the height where the lower bed is when it is used normally for sleeping. Thus, room space can be taken for utilisation.

[0013] Yet another important advantage of the invention is, that by means of it height adjustment of a bed of the bunk bed is made easy and safe.

[0014] Yet another most important advantage of the invention is, that by means of it the installation of the bunk bed into a ship cabin, for example, does not require extensive support constructions in the room structure.

[0015] According to an advantageous application of the invention, the bunk bed can be arranged at least into two different positions, that is

- into an open position, where the lower bed and the upper bed are separated from each other and are available, and
- into a closed position, where the upper bed is lowered down on top of the lower bed, so that normal use of the lower bed is prevented.

In the closed position, the upper bed is typically lowered into contact onto the lower bed, or at least very close, for example, at a distance of 1 - 5 cm from it.

[0016] More advantageously, the lower bed is arranged lower in the closed position than in the open position. If, in the closed position, the lower bed is arranged substantially a distance of its own height lower than in the open position, a very advantageous solution is easily attained, whereby the location of the upper bed in the closed position is approximately the same as the location of the lower bed in the open position. Thus, the sitting height of the bunk bed remains the same in the closed as well as in the open position. The empty, usually unused space under the bunk bed is efficiently utilised with the help of the invention. According to the advantageous example, there is space left under the lower bed also in the closed position. When desired, there can be arranged a rack for life jackets, for example.

[0017] A very advantageous bunk bed according to the invention comprises backrest means arranged on the upper bed, whereby the bunk bed can be arranged into a sofa with a backrest in the closed position. If desired, the backrest means can be detachable, for example. Fixing means, for example sticker tape, can be arranged between the backrest means and the bed in order to achieve a firm backrest.

[0018] In a very advantageous bunk bed and method according to the invention, the means for moving the beds in relation to the frame comprise telescope means. Typically, a power source, such as a spindle motor or another linear motor suitable for the purpose, is attached to the means. Power source can also be some other suitable motor, a pneumatic or hydraulic motor, for example. Telescope means are easily arranged firm and they fit into a small space when the bunk bed is in the closed position. Traditional prior art legs that stand permanently in the corners of the bunk bed are thus avoided.

[0019] In a very advantageous bunk bed and method according to the invention, the power source of the telescope means is controlled by remote control devices. This can be realised for example by mounting in the frame of the bed or in the wall of the room space a remote control unit, by which the lowering and lifting operation of the bunk bed is controlled. The remote control unit can be functionally connected to the power source with a wire or in a wireless manner. Thus, operation of the bunk bed is achieved by pressing a button. The invention thus executed is both effortless and safe. The cleaning staff is saved from backaches and distensions. The use of the power source can be restricted only to certain people, such as ship's crew, e.g. by means of a key arrangement,

code number or the like locking device connected to the control unit. Thus, common nuisance and vandalism are avoided.

[0020] The lifting and lowering operation according to the invention is very advantageously performed in one stage so that the whole lifting and lowering operation can be accomplished by one actuation movement, such as pressing a button or turning a bar or pushing downwards from the bed. Of course, it is possible, and also apparently advantageous, that the movement stops when releasing the button of the remote control unit, for example. However, an application of this kind is easy to use. In the prior art beds it is necessary to carry out several performance stages, for example separately detaching and reattaching the fixing means of every corner of the bed. Of course, the bunk bed according to the invention could have some sort of separate safety device, such as a latch, which has to be opened separately before the lowering operation of the upper bed can be started e.g. with the remote control unit.

[0021] In the advantageous embodiment example of the invention, the lowering and lifting movements of the beds are executed by using substantially or absolutely vertical paths. Hence, the operation of the bed requires a minimum of space in its surroundings. Advantageously, the beds remain at least mainly, advantageously completely in level, during the lifting and lowering. Then, the structure of the bed can be arranged simple and the objects on the bed will stay on the bed when moving. For example, the prior art beds that can be turned against the wall have a problem with bedclothes slipping in the lower edge of the bed in an upright position.

[0022] The invention is now described in more detail with reference to the accompanying schematic drawings, in which:

Figure 1 shows schematically one example of a bunk bed according to the invention illustrated from an end in the closed position,

Figure 2 shows the bunk bed of figure 1 illustrated from an end in the open position,

Figure 3 shows the bunk bed of figure 1 illustrated from a side in the closed position,

Figure 4 shows the bunk bed of figure 1 illustrated from a side in the open position.

[0023] In figures 1, 2, 3 and 4 the advantageous bunk bed 10 according to the invention is shown schematically. The bed has load-bearing ends 12 and 14 and, attached between them, the lower bed 16 and the upper bed 18. On the lower surface of the ends there are legs 20 and 22 that are intended to be against the floor. Adjustable posts 24 are on the lower edge of the legs. They could also be replaced with wheels. Rails 26 and 28 are on the upper edge of the ends 12 and 14. Telescope means 30 and 32 are arranged inside the cover of the ends 12 and 14, which telescope means both consist of three parts 30a, 30b, 30c and 32a, 32b, 32c that are arranged inside

each other in a telescopic manner. In order to keep the figures clear, the telescope means 30 and 32 are not shown in figures 1 and 3 illustrating the closed position. Spindle motors 34 arranged inside the ends 12 and 14 function as the power source of the telescope means, and they are shown in figures 1 and 2 in dashed line. In order to keep the figures clear, the spindle motors are not shown in figures 3 and 4, but both ends have advantageously at least one similar spindle motor. Operation of the spindle motors 34, and thus the operation of the telescope means 30 and 32, is controlled with the remote control unit 36, which in the example of the figure is attached to the end 12 of the bunk bed and connected to both spindle motors 34 with an electronic wire 38 for transmitting a control signal. Arrow buttons 40 and a key-hole 42 arranged in the remote control are seen in figure 2. If the security locking has been unlocked by a key that is placed in the hole 42, the movement of the bunk bed can be controlled by the arrow buttons 40. Arranging the structure of the telescopes and that of the power source or arranging the details of the control system in the manner according to the invention is not an object of the invention as such, and therefore, the details of the structure itself are not dealt with in large detail in this text for the sake of clarity.

[0024] The bunk bed 10 according to the invention shown in figures 1 - 4 operates as follows. When it is wished to move from the closed position shown in the figures 1 and 3 to the open position shown in figures 2 and 4, first, a key is pushed into the lock 42 whereby the security locking of the device is unlocked. Then, by pressing the upwards pointing arrow button 40 the spindle motors 34 begin to push the telescopes 30 and 32 open. The lower bed 16 is attached to the lower movable parts 30c and 32c of the telescope structure, in such a way that the lower bed 16 is lifted only a part of the whole distance that the parts 30c and 32c are lifted. The lower bed 16 is arranged to ascend upwards approximately the distance of its own thickness. The upper bed 18 is attached to the innermost and thus to the highest ascending parts 30a and 32a of the telescope structures. The rails 26 and 28 are also attached to the parts 30a and 30b, whereby they ascend to the highest and form the end rails of the upper bed 18.

[0025] When moving from the open position to the closed position, the downwards pointing arrow button 40 is pressed, whereby the spindle motors 34 begin to pull the telescope means 30 and 32 together. At the same time the beds 16 and 18 attached to them move downwards until the bunk bed 10 is in the closed position again, as illustrated in figures 1 and 3.

[0026] In the advantageous example of the figures the sitting height H of the bed 10 is arranged to be the same in the closed and in the open position by moving the upper bed 16. It is thus made possible to use the bunk bed 10 as a sofa-like comfortable device for sitting when the bed is in the closed position. The ends 12 and 14, the beds 16 and 18, the rails 26 and 28 and the legs 20 and 22

are easily arranged by fastening bolts or some quick fasteners according to the technique, for example, to be attached detachably to each other, so that the parts can be detached from each other easily and quickly, if necessary. For example, if the spindle motor 34 of the end 12 breaks down, the end part 12 that comprises the spindle motor and the telescope structure can easily be detached from the rest of the bed for maintenance, and immediately be replaced with another undamaged end from a stock. Figures 3 and 4 show also the rack 46, for example for life jackets, which is arranged on the lower surface 44 of the lower bed 16.

Figures do not illustrate backrest means that could be arranged on either of the beds for arranging a sofa. Neither do the figures illustrate any mechanical additional safety device for ensuring unintended lowering of the upper bed 18. Of course, such, for example a latch, could be arranged to the bunk bed according to the invention. Advantage of the spindle motor shown in the example, as well as that of any other power source suitable for the purpose, is that they can be arranged easily so that safety is ensured also without separate latches or the like. Also other safety devices can be mounted on the bunk bed, for example different detectors, such as weight, heat or movement detectors, which would give a warning about an object on the lower bed or otherwise too close to the bunk bed or which would even hinder the beds from moving. It should be noted, that the movement of the bunk bed between the closed and open positions can be arranged either so that the movement is always performed thoroughly from one position to another or so that the user can choose the position of the beds suitable for him.

[0027] In one of the embodiments of the invention the movement of the bunk bed according to the invention between the closed and open positions is controlled by someone other than the user of the bed. The opening can be done for example from a hotel or ship reception. In a ship cabin or a hotel room the default value for the bunk bed could be closed. The bed is opened only in case that the client who has rented the cabin or the room pays for the lower and the upper bed. Typically, the client is not able to control the operation of the bed himself in that case. In this way, it is ensured that the client cannot use a bed he is not paying for. In an unopened bunk bed the bedclothes on the lower bed remain clean. The cleaner of the room or the cabin can thus have possession of the key that enables the operation of the bed.

[0028] It is also possible to manufacture a bunk bed like described above, but in which bunk bed, however, the lower bed would not be movable. Also such bed would be very advantageous and most of the advantages mentioned in this text could be connected to it.

[0029] Only one advantageous embodiment of the invention is shown in the figures. Facts of secondary importance regarding the main idea of the invention, facts known as such or apparent for a man skilled in the art, such as support constructions possibly required by the invention, are not separately shown in the figures. It is

obvious for a man skilled in the art that the invention is not limited in the above examples but the invention may vary within the limits of the appended claims.

Claims

1. A bunk bed (10) without extensive support constructions in the walls or the ceiling, comprising

- a frame (12, 14, 20, 22) that supports the bunk bed (10) at least mainly on a floor,
- a lower bed (16) and at least one upper bed (18) supported by the said frame (12, 14, 20, 22), and
- means (30, 32, 34) for moving the at least one upper bed (18) in a substantially vertical direction in relation to the said frame (12, 14, 20, 22),

characterised in that the bunk bed further comprises means (30, 32, 34) for moving the lower bed (16) in a substantially vertical direction in relation to the frame (12, 14, 20, 22) and that the means for moving the beds in relation to the said frame comprise telescope means.

2. A bunk bed according to claim 1, **characterised in that** it can be arranged at least into two positions, that is

- into an open position, where the lower bed (16) and the upper bed (18) are separated from each other and are available, and
- into a closed position, where the upper bed (18) is lowered down on top of the lower bed (16) so that normal use of the lower bed (16) is prevented.

3. A bunk bed according to claim 2, **characterised in that** in the closed position the lower bed (16) is arranged lower than in the open position.

4. A bunk bed according to claim 3, **characterised in that** in the closed position the lower bed (16) is arranged substantially a distance of its own height lower than in the open position.

5. A bunk bed according to claim 4, **characterised in that** in the closed position the uppermost bed (18) of the bunk bed is arranged substantially on the same height (H) from the floor as the lower bed in the open position.

6. A bunk bed according to any previous claim 2 - 4, **characterised in that** it comprises backrest means arranged on the upper bed (18), whereby in the closed position the bunk bed (10) is arranged to be a sofa with a backrest.

7. A bunk bed according to any previous claim, **characterised in that** a rack (46) for life jackets is arranged on the lower surface (44) of the lower bed.

8. A bunk bed according to any previous claim, **characterised in that** the said means for moving the beds in relation to the frame comprise at least telescope means (30, 32) arranged in the frame and a power source (34) connected to the telescope means (30, 32) for using them.

9. A bunk bed according to claim 8, **characterised in that** the means for moving the beds in relation to the frame further comprise remote control devices (36, 38, 40, 42) for the power source (34) of the telescope means for facilitating use of the bunk bed (10).

10. A bunk bed according to any previous claim, **characterised in that** the means (30, 32, 34) for moving the at least one upper bed (18) and the means moving the lower bed (16) in substantially vertical direction in relation to the frame (12, 14, 20, 22) are functionally connected to each other so that the beds (16, 18) are arranged to move mainly simultaneously.

11. A method in a bunk bed (10) that is at least mainly supported to a floor by a frame, in which method an upper bed (18) of the bunk bed (10) is lifted or lowered by means (30, 32, 34) for moving the upper bed (18) along an at least substantially vertical line in relation to the said frame (12, 14, 20, 22), **characterised in that**, additionally, a lower bed (16) of the bunk bed is lifted or lowered along a substantially vertical line in relation to the said frame (12, 14, 20, 22) and that the means for moving the beds in relation to the frame comprise telescope means, which arrange inside each other in a telescopic manner.

12. A method according to claim 11, **characterised in that** the upper bed (18) is lowered at the lowest to a height (H), at which height (H) the lower bed (16) was at the highest before it was lowered.

13. A method according to claim 11 or 12, **characterised in that** the lowering and the lifting of the beds (16, 18) are performed at least mainly simultaneously.

14. A method according to claim 11, 12 or 13, **characterised in that** the lowerings or the liftings of the beds (16, 18) are performed along an at least substantially vertical line.

Patentansprüche

1. Etagenbett (10) ohne großflächige Unterstützungsstrukturen in den Wänden oder in der Decke,

umfassend

- einen Rahmen (12, 14, 20, 22), der das Etagenbett (10) zumindest hauptsächlich gegen einen Boden abstützt; 5
 - ein unteres Bett (16) und mindestens ein an den Rahmen (12, 14, 20, 22) gestütztes oberes Bett (18) und 10
 - eine Einrichtung (30, 32, 34) zum Verschieben des mindestens einen oberen Bettes (18) in einer im Wesentlichen vertikalen Richtung in Bezug zum Rahmen (12, 14, 20, 22), **dadurch gekennzeichnet, dass** das Etagenbett weiterhin eine Einrichtung (30, 32, 34) zum Verschieben des unteren Bettes (16) in einer im Wesentlichen vertikalen Richtung in Bezug zum Rahmen (12, 14, 20, 22) umfasst, und dass die Einrichtung zum Verschieben der Betten relativ zum Rahmen eine Teleskopeinrichtung umfasst. 15
2. Etagenbett gemäß Anspruch 1, **dadurch gekennzeichnet, dass** es in mindestens zwei Positionen angeordnet werden kann, das bedeutet 20
- in einer geöffneten Position, bei der das untere Bett (16) und das obere Bett (18) voneinander getrennt und benutzbar sind, und 25
 - in einer geschlossenen Position, bei der das obere Bett (18) bis zur Oberseite des unteren Bettes (16) abgesenkt ist, so dass ein normaler Gebrauch des unteren Bettes (16) verhindert wird. 30
3. Etagenbett gemäß Anspruch 2, **dadurch gekennzeichnet, dass** in der geschlossenen Position das untere Bett (16) tiefer als in der geöffneten Position angeordnet ist. 35
4. Etagenbett gemäß Anspruch 3, **dadurch gekennzeichnet, dass** in der geschlossenen Position das untere Bett (16) im Wesentlichen um einen Abstand, der im Wesentlichen der eigenen Höhe entspricht, tiefer als in der geöffneten Position angeordnet ist. 40
5. Etagenbett gemäß Anspruch 4, **dadurch gekennzeichnet, dass** in der geschlossenen Position das oberste Bett (18) des Etagenbettes im Wesentlichen auf der gleichen Höhe (H) vom Boden wie das untere Bett in der geöffneten Position angeordnet ist. 45
6. Etagenbett gemäß einem der vorhergehenden Ansprüche 2 bis 4, **dadurch gekennzeichnet, dass** es eine Rückenlehnen-Vorrichtung, angeordnet auf dem oberen Bett (18), umfasst, wobei in der geschlossenen Position das Etagenbett (10) derart angeordnet ist, dass es ein Sofa mit einer Rückenlehne ist. 50
7. Etagenbett gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** eine Ablage (46) für Schwimmwesten auf der Unterseite (44) des unteren Bettes angeordnet ist. 5
8. Etagenbett gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Einrichtung zum Verschieben der Betten in Bezug zum Rahmen mindestens Teleskopvorrichtungen (30, 32) umfasst, die in dem Rahmen angeordnet sind und eine Energiequelle (34) mit der Teleskopvorrichtung (30, 32) verbunden ist, um sie zu verwenden. 10
9. Etagenbett gemäß Anspruch 8, **dadurch gekennzeichnet, dass** die Einrichtung zum Verschieben der Betten in Bezug zum Rahmen weiter Fernbediengeräte (36, 38, 40, 42) für die Energiequelle (34) der Teleskopvorrichtungen aufweist, um den Gebrauch des Etagenbettes (10) zu erleichtern. 15
10. Etagenbett gemäß einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Einrichtungen (30, 32, 34) zum Verschieben des mindestens eines oberen Bettes (18) und die Einrichtung zum Verschieben des unteren Bettes (16) in im Wesentlichen vertikaler Richtung in Bezug zum Rahmen (12, 14, 20, 22) derart funktionsgemäß miteinander verbunden werden, dass die Betten (16, 18) so angeordnet sind, dass sie sich hauptsächlich gleichzeitig bewegen. 20
11. Verfahren in einem Etagenbett (10), das mindestens hauptsächlich durch einen Rahmen an einem Boden abgestützt ist, wobei mit dem Verfahren ein oberes Bett (18) des Etagenbettes (10) durch eine Einrichtung (30, 32, 34) zum Verschieben des oberen Bettes (18) entlang einer mindestens im Wesentlichen vertikalen Linie in Bezug zum Rahmen (12, 14, 20, 22) angehoben oder abgesenkt wird, **dadurch gekennzeichnet, dass** zusätzlich ein unteres Bett (16) des Etagenbettes entlang einer im Wesentlichen vertikalen Linie in Bezug zum Rahmen (12, 14, 20, 22) angehoben oder abgesenkt wird und dass die Einrichtung zum Verschieben der Betten in Bezug zum Rahmen eine Teleskopeinrichtung umfasst, die sich in einer teleskopartigen Weise ineinander anordnet. 35
12. Verfahren gemäß Anspruch 11, **dadurch gekennzeichnet, dass** die niedrigste Höhe (H), auf die das obere Bett (18) abgesenkt wird, der Höhe (H) entspricht, die die höchste Höhe (H) des unteren Bettes war, bevor es abgesenkt wurde. 40
13. Verfahren gemäß Anspruch 11 oder 12, **dadurch gekennzeichnet, dass** das Absenken und das Anheben der Betten (16, 18) zumindest hauptsächlich gleichzeitig durchgeführt werden. 45

14. Verfahren gemäß Anspruch 11, 12 oder 13, **dadurch gekennzeichnet, dass** das Absenken und das Anheben der Betten (16, 18) entlang einer mindestens im Wesentlichen vertikalen Linie durchgeführt werden.

Revendications

1. Lit superposable (10) sans aucun élément de support s'étendant dans les murs ou dans le plafond, comprenant ;

- un bâti (12, 14, 20, 22) qui supporte le lit superposable (10) principalement au moins sur un sol,
- un lit inférieur (16) et au moins un lit supérieur (18) supporté par ledit bâti (12, 14, 20, 22), et
- des moyens (30, 32, 34) destinés à déplacer ledit au moins un lit supérieur (18) suivant une direction essentiellement verticale par rapport audit bâti (12, 14, 20, 22),

caractérisé en ce que le lit superposable comprend, de plus, des moyens (30, 32, 34) pour déplacer le lit inférieur (16) dans une direction essentiellement verticale par rapport au bâti (12, 14, 20, 22) et **en ce que** les moyens pour déplacer les lits par rapport audit bâti comportent des moyens télescopiques.

2. Lit superposable selon la revendication 1, **caractérisé en ce qu'il** peut être disposé au moins dans deux positions, à savoir :

- dans une position ouverte, si le lit inférieur (16) et le lit supérieur (18) sont séparés l'un de l'autre et sont disponibles, et
- dans une position fermée, si le lit supérieur (18) est descendu sur le dessus du lit inférieur (16) de sorte qu'une utilisation normale du lit inférieur (16) est rendue impossible.

3. Lit superposable selon la revendication 2, **caractérisé en ce que** dans la position fermée, le lit inférieur (16) est disposé plus bas que dans la position ouverte.

4. Lit superposable selon la revendication 3, **caractérisé en ce que**, dans la position fermée, le lit inférieur (16) est disposé, essentiellement, à une distance correspondant à sa propre hauteur, plus bas que dans la position ouverte.

5. Lit superposable selon la revendication 4, **caractérisé en ce que** dans la position fermée, le lit le plus haut (18) du lit superposable est disposé essentiellement à la même hauteur (H) du sol que le lit infé-

rieur dans la position ouverte.

6. Lit superposable selon l'une quelconque des revendications précédentes 2-4, **caractérisé en ce qu'il** comporte des moyens de dossier disposés sur le lit supérieur (18), de façon que dans la position fermée, le lit superposable (10) soit agencé pour être un canapé doté d'un dossier.

7. Lit superposable selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'une** étagère (46) pour des gilets de sauvetage est disposée sur la surface inférieure (44) du lit inférieur.

8. Lit superposable selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens destinés à déplacer les lits par rapport au bâti comprennent au moins des moyens télescopiques (30, 32) disposés dans le bâti et une source d'énergie (34) connectée aux moyens télescopiques (30, 32) en vue de les utiliser.

9. Lit superposable selon la revendication 8, **caractérisé en ce que** les moyens destinés à déplacer les lits par rapport au bâti comportent, de plus, des dispositifs de commande à distance (36, 38, 40, 42) pour la source d'énergie (34) des moyens télescopiques destinés à faciliter l'utilisation du lit télescopique (10).

10. Lit superposable selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens (30, 32, 34) servant à déplacer ledit au moins un lit supérieur (18) et les moyens destinés à déplacer le lit inférieur (16) dans une direction essentiellement verticale par rapport au bâti (12, 14, 20, 22) sont connectés fonctionnellement les uns aux autres de sorte que les lits (16, 18) sont agencés pour se déplacer principalement de façon simultanée.

11. Procédé contenu dans un lit superposable (10) qui est, du moins principalement, supporté sur le sol par un bâti, procédé dans lequel un lit supérieur (18) du lit superposable (10) est levé ou abaissé par des moyens (30, 32, 34) destinés à déplacer le lit supérieur (18) le long d'au moins une ligne essentiellement verticale par rapport audit bâti (12, 14, 20, 22), **caractérisé en ce que**, de plus, un lit inférieur (16) du lit superposable est levé ou abaissé le long d'une ligne essentiellement verticale par rapport audit bâti (12, 14, 20, 22) et **en ce que** les moyens servant à déplacer les lits par rapport au bâti comportent des moyens télescopiques, lesquels sont disposés à l'intérieur l'un de l'autre de façon télescopique.

12. Procédé selon la revendication 11, **caractérisé en ce que** le lit supérieur (18) est abaissé au plus bas

à une hauteur (H), hauteur (H) au niveau de laquelle le lit inférieur (16) se trouvait lorsqu'il était à sa hauteur maximale avant qu'il soit abaissé.

- 13.** Procédé selon la revendication 11 ou 12, **caracté-** 5
risé en ce que l'abaissement et l'élévation des lits (16, 18) sont exécutés au moins principalement de façon simultanée.
- 14.** Procédé selon la revendication 11, 12, ou 13, **ca-** 10
ractérisé en ce que les abaissements et les élévations des lits (16, 18) sont exécutés le long d'au moins une ligne essentiellement verticale.

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