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(54) Movable support for an entertainment and/or information device

(57) The invention relates to a movable support (40) for an entertainment and/or information device (50). The movable support is designed to be applied to the underside (310) of a substantially horizontal support surface (31). The movable support comprises:
- a set of linear guides (41) designed to allow the device to be displaced in a substantially horizontal plane n, at least from a rest configuration (R) into a first transition configuration (TI); and
- a set of hinges (42) designed to allow the device to rotate about a substantially horizontal axis of rotation (X) at least from a first transition configuration (T1) into a first operating configuration (U1).

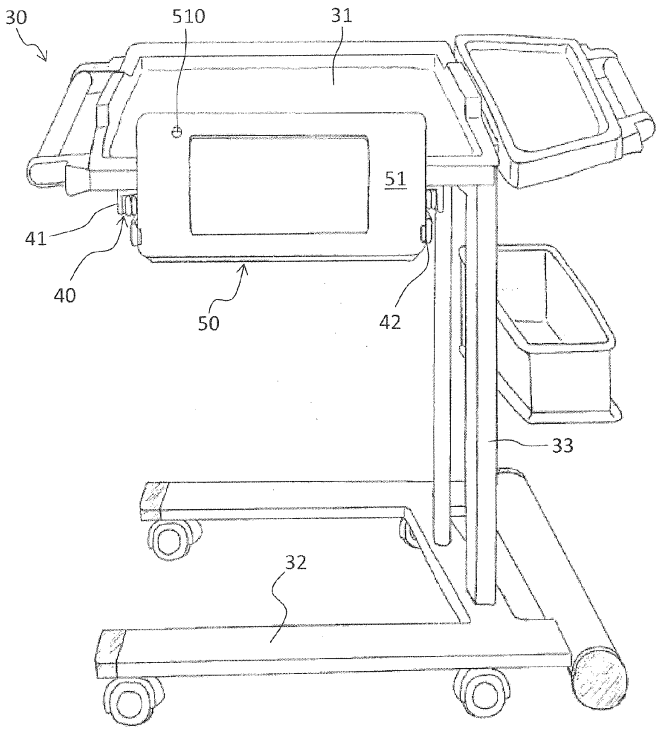

Fig. 3

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Description

DESCRIPTION

[0001] The present invention relates to a movable support for an entertainment and/or information device. In particular a movable support which allows a user to interact in a simple and efficient manner with an entertainment and/or information device.

[0002] In the clinical sector it is known to use entertainment and/or information devices for patients who are undergoing forms of treatment which require a connection to a machine for a long period of time. During such forms of treatment the patient is often unable to use his/her arm which is connected to the machine. Forms of treatment of this type may consist, for example, of apheresis, where the donor may remain connected to the machine for about one hour or more.

[0003] The treatment for which, however, it is possible to obtain more significant advantages is certainly haemodialysis treatment. While apheresis and other similar forms of treatment are repeated by the same donor at monthly intervals, haemodialysis treatment must be repeated by each patient several times per week and each session may last up to three or four hours. In the light of the above it will therefore be clear how useful it may be for the patient to be able to use an entertainment and/or information device in an efficient manner. For this reason reference will be made below to the specific use of the invention in connection with haemodialysis, but such reference must be regarded as being purely exemplary and non-limiting.

[0004] The entertainment and information devices for some time used in dialysis rooms are ordinary television sets, which are often arranged in a raised position so as not to hinder the staff and are intended for communal viewing by all the patients present in the room. This type of solution clearly gives rise to a number of obvious problems. Firstly communal viewing does not allow each person to view programs which most suitably match their tastes, needs or desires. Moreover the programs on the television can only be viewed in a passive manner, i.e. without the possibility of interaction on the part of the patient.

[0005] A more sophisticated solution consists in the provision of an individual screen for each patient location. These screens are usually supported by more or less bulky mechanical arms which may be typically fixed to the ceiling or to a wall. This solution is shown schematically in Figure 1. From this figure it can be seen how the patient is able to use the screen in an individual manner and how this may allow, if permitted by the screen, a greater interaction between the patient and the programs/information available. This type of solution may in fact be adopted not only for conventional televisions, but also for "touch screens" or screens which in any case have controls incorporated in them.

[0006] Despite a number of obvious advantages compared to the communal television, this type of solution also has a number of significant drawbacks. Firstly the support arm and the screen itself constitute both a physical and a visual obstacle which, in addition to occupying the space around the patient, also risks partially hiding the patient from the view of the staff in the room and even hindering any emergency manoeuvres. It should be noted here in fact that the support arm must be sufficiently strong so as to be able to keep the screen firmly in position, since the patient can only operate it with one hand and therefore is unable to hold it in position.

[0007] A further drawback of this solution is of a purely ergonomic nature. The screen is in fact lowered from above onto the patient and requires the latter to raise his/her free arm in order to be able to reach the various controls to be operated. If this operation may be performed without too much effort in the case of brief and occasional interaction, for example in order to change channels or adjust the volume, it is obvious that this becomes problematic in the case of activities which require prolonged interaction over time as for example when playing a game or writing a text.

[0008] A further solution is that shown schematically in Figure 2. In accordance with this solution, an individual screen is mounted, by means of a special support, on the service trolley which is commonly used in dialysis rooms in order to deal with the patient's needs.

[0009] This type of solution partially solves the problem of the space occupied since the trolley may be easily removed without major problems by the staff in the case where it is required to interact with the patient. However, the problem of the visual obstruction created by the screen, which may easily hide the patient from the view of the staff in the room, remains unsolved. Also the ergonomic problem remains unsolved since in this case also the screen is situated in a raised position with respect to the patient and any controls available only on the screen (and therefore not via a remote control) require in fact the same amount of effort as in the case already considered above.

[0010] The object of the present invention is therefore to provide a support able to overcome at least partly the drawbacks mentioned above with reference to the prior art.

[0011] In particular, a task of the present invention is to provide a support for an entertainment and/or information device which allows a user to use the device with one hand only.

[0012] Furthermore, another task of the present invention is to provide a support for an entertainment and/or information device which is easy to use and comfortable from an ergonomic point of view, also for long periods of time.

[0013] Finally, a further task of the present invention is to provide a support for an entertainment and/or information device which allows the room staff to have an unimpeded view of the patient at all times and, if necessary, gain easy access in the event of an emergency.

[0014] This object and these tasks are achieved by means of a movable support according to Claim 1 and by a service trolley according to Claim 15.

[0015] In order to better understand the invention and appreciate its advantages, a non-limiting example of embodiment thereof is described below with reference to the accompanying drawings in which:

[0016] Figure 1 shows a perspective view of a first solution according to the prior art;

[0017] Figure 2 shows a side view of a second solution according to the prior art;

[0018] Figure 3 shows an overall front view of a service trolley comprising a support according to the invention in a first operating configuration;

[0019] Figure 4 shows a front view of the top part of the trolley according to Figure 3 where the support is in a rest configuration;

[0020] Figure 5 shows a view, similar to that of Figure 4, where the support is in a first transition configuration;

[0021] Figure 6 shows a view, similar to that of Figure 4, where the support is in a second transition configuration;

[0022] Figure 7 shows a view, similar to that of Figure 4, where the support is in a second operating configuration;

[0023] Figure 8 shows a side view of an operating situation of the support according to the invention in the first operating configuration;

[0024] Figure 9 shows a side view of an operating situation of the support according to the invention in the second operating configuration;

[0025] Figure 10 shows a side view of an operating situation of the support according to the invention in the third operating configuration;

[0026] Figure 11 shows a side view of the detail of the support according to the invention in the first operating configuration;

[0027] Figure 12 shows a side view of the detail of the support according to the invention in the third operating configuration;

[0028] Figure 13 shows a side view of the detail of the support according to the invention in the second operating configuration;

[0029] Figures 14.a and 14.b show, respectively, a schematic side view and bottom view of the support according to the invention in the rest configuration;

[0030] Figures 15.a and 15.b show, respectively, a schematic side view and bottom view of the support according to the invention in the first transition configuration;

[0031] Figures 16.a and 16.b show, respectively, a schematic side view and bottom view of the support according to the invention in the first operating configuration;

[0032] Figures 17.a and 17.b show, respectively, a schematic side view and bottom view of the support according to the invention in the third operating configuration;

[0033] Figures 18.a and 18.b show, respectively, a schematic side view and bottom view of the support according to the invention in the second transition configuration;

[0034] Figures 19.a and 19.b show, respectively, a schematic side view and bottom view of the support according to the invention in the second operating configuration.

[0035] In the accompanying Figure 3, the reference number 30 denotes overall a service trolley. The invention relates to a movable support 40 for an entertainment and/or information device 50 designed to be mounted on the underside 310 of a substantially horizontal support surface 31. The service trolley 30 represents an example of this support surface 31.

[0036] The movable support 40 according to the invention comprises:

- a set of linear guides 41 designed to allow the device 50 to be displaced in a substantially horizontal plane n, at least from a rest configuration R into a first transition configuration T1;
- a set of hinges 42 designed to allow the device 50 to rotate about a substantially horizontal axis of rotation *X* at least from a first transition configuration T1 into a first operating configuration U1.

[0037] In the description which follows reference will be made to the support surface 31 (for example included in the service trolley 30) and to the movable support 40 which are correctly mounted and used in the correct manner, for example as shown in Figures 8 to 10. In this connection, the term "forward", "front", "forwards" and the like refer to a position relatively close to the actual location of a potential user. On the other hand, the terms "rear", "back", "backwards" and the like refer to a position relatively distant from the actual location of a potential user. As the person skilled in the art may easily understand these definitions are conventional and a different (for example opposite) convention could have been chosen without thereby preventing correct description of the invention.

[0038] For example, in Figures 8 to 10, the device 50 projects from the support surface 31 defined by the service trolley 30 forwards (i.e. towards the user). On the other hand, in Figure 9, the device 50 projects from the support surface 31 defined by the service trolley 30 backwards (i.e. away from the user).

[0039] The entertainment and/or information device 50 may take different forms. The device 50 may be an electronic device such as a conventional flat-screen television, a games console, an electronic book reader, a so-called tablet PC or the like. In accordance with other simpler embodiments, the device may also be a book holder suitable for supporting a book to be read and/or a notebook for writing. Preferably, the book holder is also designed to keep the pages of the book and/or the notebook open and to hold a writing implement such as a pen or a

pencil.

[0040] In any case, whatever the type of entertainment and/or information device 50, it will have a substantially flat form so that it can be arranged mainly in the plane n and be easily housed underneath the support surface 31. Moreover, an active surface 51 and a passive surface 52 may be easily defined on the device 50.

[0041] The active surface 51 is that surface by means of which the device 50 is able to provide the user with entertainment and/or information. Typically, therefore, the active surface 51 comprises the screen, any controls or the surface of the book holder intended to support the book.

[0042] The passive surface 52 is opposite to the active surface 51 and typically does not have any function. In some cases the passive surface 52 may comprise power supply and/or data connection sockets or cooling slits or the like, but in general it will not comprise elements with which the user has to interact in a continuous manner. Preferably, moreover, the passive surface 52 of the device 50 does not comprise any openings so as to prevent any liquids from infiltrating inside and damaging the device 50.

[0043] In accordance with the embodiments shown in the accompanying figures (see for example Figures 4, 14.a and 14.b), in the rest configuration R both the movable support 40 and the device 50 are completely housed underneath the support surface 31.

[0044] Moreover, in these embodiments, both in the rest configuration R and in the first transition configuration T1 (see for example Figures 5, 15.a and 15.b), the device 50 is directed with the active surface 51 downwards and with the passive surface 52 upwards. In this way the possibility of dirt being deposited on the active surface 51 is minimized.

[0045] In accordance with the embodiments shown in the accompanying figures (see for example Figures 3, 8, 11, 16.a and 16.b), in the first operating configuration U1, the active surface 51 of the device 50 is directed upwards and forwards, towards the user. As can be clearly seen in Figure 8, this position is particularly convenient from an ergonomic point of view for the user sat in a chair. The convenience may be appreciated both during simple viewing of information and in the case of prolonged interaction on the part of the user, as for example when playing a game or writing a text.

[0046] Moreover, in the first operating configuration U1, the device 50 is also arranged so that its passive surface 52 rests on the front edge of the support surface 31. In this way the device 50 assumes a stable position and may be handled by the user (as can be seen for example in Figure 8) without moving or changing its orientation.

[0047] In accordance with certain embodiments of the movable support 40, the set of linear guides 41 is designed to allow the device 50 to be displaced in the plane π, also from the rest configuration R into a second transition configuration T2. In these embodiments it is also preferable that the set of hinges 42 is suitably designed to allow the device 50 to rotate about the axis *X* also from the second transition configuration T2 into a second operating configuration U2.

[0048] The linear guides may be of different types known per se. They may comprise, for example, sliders provided with rolling bearings by means of which they are displaced with minimum friction along the respective rails. Alternatively, the sliders may also be made of material with a low coefficient of sliding friction and may simply slide along the respective rails. This second solution may be preferable owing to the lower costs and the low loads acting on the linear guides in this specific case.

[0049] In accordance with these embodiments, in the second transition configuration T2 (see for example Figures 6, 18.a and 18.b), the device projects backwards from the support surface 31, with the active surface 51 directed downwards and with the passive surface 52 directed upwards.

[0050] Moreover, in the second operating configuration U2 (see for example Figures 7, 9, 13, 19.a and 19.b) the active surface 51 of the device 50 is directed upwards and forwards, towards the user. As can be clearly seen in Figure 9, this position is particularly convenient from an ergonomic point of view for a user sat in a chair and using the support surface 31 for other activities, for example for eating or drinking.

[0051] The rotation about the axis *X* which moves the device 50 from the second transition configuration T2 into the second operating configuration U2 is practically the same rotation which moves the same device 50 from the first transition configuration T1 into the first operating configuration U1.

[0052] In accordance with certain embodiments of the movable device 40, the set of hinges 40 is designed to allow the device 50 to rotate about the axis *X* also from the first transition configuration T1 into a third operating configuration U3.

[0053] In the third operating configuration U3 (see for example Figures 10, 12, 17.a and 17.b) the active surface 51 of the device 50 is directed downwards and forwards, towards the user. As can be clearly seen in Figure 10, this position is particularly convenient from an ergonomic point of view for a user lying in bed.

[0054] It should be noted that the position of the device 50 shown in Figure 10 could require raising of the support surface 31 of the service trolley 30. This possibility is usually ensured, in the trolleys of the known type, by the telescopic structure of the uprights 33.

[0055] The rotation about the axis *X* which moves the device 50 from the first transition configuration T1 into the third operating configuration U3 is a part of the rotation which moves the same device from the first transition configuration T1 into the first operating configuration U1.

[0056] In order to enable the device 50 to remain in the third operating configuration U3, the set of hinges 42 may comprise means which define at least one stable equilibrium position, intermediate between the first transition

configuration T1 and the first operating configuration U1. These means are called below snap-engaging means, but they could likewise be friction or magnetic means.

[0057] Since the third operating configuration U3 is not ergonomically suitable for prolonged interaction on the part of the user, it will be used exclusively to view information and/or for reading texts. It is therefore not necessary for the snap-engaging means of the set of hinges 42 to exert a high torque in order to retain the device 50 in the third operating configuration U3. The snap-engaging means in fact must not overcome the torques originating from the forces of the manual action of the user, but only those of the weight force of the device 50 itself.

[0058] Preferably the snap-engaging means are the only brake which opposes the rotation of the device 50 about the axis *X*. In this way the set of hinges 42 ensures preferably ease of movement such as to allow easy operation with only one hand by the user.

[0059] According to another aspect thereof, the invention comprises a so-called service trolley 30 comprising a movable support 40 in accordance with one of the embodiments described above. The service trolley 30 may also be said bed serving tray or side table (occasional table) and is commonly used, for example, to serve dinner to patients who are sat in a chair or lying in bed.

[0060] The service trolley 30, in a manner known per se, comprises a base 32, preferably provided with wheels, from which laterally extend one or more uprights 33 which support a surface 31. The surface 31 projects cantilevered on the base 32. The structure as a whole is therefore formed with a C shape and may not only be arranged alongside the user in the manner of a normal table, but also, by inserting the base 32 underneath the chair or the bed, the surface 31 may be positioned over the user's legs, as shown in Figures 8 and 9.

[0061] The service trolley 30 of the known type is usually symmetrical and may therefore be arranged over the bed or chair equally well on the right-hand side or left-hand side. The service trolley 30 according to the invention instead has a right-hand or left-hand orientation, since the set of linear guides 41 of the movable support 40 is formed so as to define different forwards and backwards displacement strokes. The accompanying Figures 3 to 13 show right-hand trolleys, i.e. trolleys which are intended to be arranged next to the user on his/her right-hand side.

[0062] According to one embodiment, auxiliary systems for the device 50 may also be provided on-board the service trolley 30. If, for example, the device 50 should require an electric power supply and is intended for prolonged use over time, the service trolley 30 may comprise an electric power supply, for example a battery or a low-voltage system connected to the mains. Furthermore, the service trolley 30 may for example comprise one or more antennae for capturing signals emitted in the environment and for relaying them to the device 50. According to one embodiment, one or more antennae may have a flat form and be mounted or embedded in the support surface 31, thus overcoming the space-related problems which would arise with other types of known antennae.

[0063] In the case where the device 50 and/or the service trolley 30 are connected to a network (be it a power supply network or data supply network) via cables, preferably the connectors of these cables must be able to ensure the necessary safety in the event of pulling and electrical insulation in the case where liquids are present. These measures are moreover widely known in the sector of electrical equipment approved for use in clinics.

[0064] The accompanying Figures 14 to 19 show a specific embodiment of the set of linear guides 41. According to this embodiment, the set of linear guides 41 comprises a first pair of guides 411 on which the device 50 is slidably mounted, preferably via the set of hinges 42. The first pair of guides 411 is in turn slidably mounted on a second pair of guides 412. As can be seen from a comparison between Figure 14.b and Figure 15.b, the interaction between the first pair of guides 411 and the second pair of guides 412 allows the displacement of the device from the rest configuration R (Figure 14.b) into the first transition configuration T1 (Figure 15.b). The need to mount the first guides 411 slidably on the second guides 412 arises, in a manner known per se, from the need to obtain a telescopic effect so as to be able to displace the axis of rotation *X* beyond the edge of the support surface 31.

[0065] As can be noted from Figure 15.b, in the first transition configuration T1, the device 50 is situated at its front end-of-travel stop relative to the first pair of guides 411, and the first pair of guides 411 is located at its front end-of-travel stop relative to the second pair of guides 412. In this configuration the distance between the axis *X* and the front end of the second pair of guides 412 is smaller than the extension of the device 50 in the direction of displacement. This feature results in further stabilization of the first operating configuration U1. In fact, the front end of the second pair of guides 412 is preferably mounted in the vicinity of the front edge of the support surface 31 so as not to project with respect thereto. For this reason, rotation of the device 50 about the axis *X* into the first operating configuration U1 causes the device 50 to rest stably with its passive surface 52 on the front edge of the support surface 31. If the axis *X* were to be displaced further forwards, the device 50 could slide on the edge of the support surface 31 and rotate downwards in an undesirable manner.

[0066] As the person skilled in the art may easily understand from the above description, the first pair of linear guides 411 and the second pair of linear guides 412 are designed to ensure displacement of the device 50 from the rest configuration R into the first transition configuration T1. The set of hinges 42 then allows rotation of the device 50 from the first transition configuration T1 into the first operating configuration U1 or the third operating configuration U3.

[0067] The need to provide the second operating configuration U2 (and therefore the second transition con-

figuration T2) requires that the second pair of guides 412 be in turn slidably mounted on a third pair of guides 413. The third pair of guides 413 is preferably firmly fixed to the support surface 31, for example fastened to its underside 310.

[0068] According to the embodiments shown in Figure 14 to 19, the second pair of guides 412 advantageously forms a kind of drawer owing to the provision of a crosspiece 414. The crosspiece 414, in addition to joining together the two guides of the second pair 412 so that they move substantially together, also defines an aesthetic and functional finish for the support surface 31. In fact, in a view from the rear, the crosspiece 414 covers the set of linear guides 41 and therefore provides the support surface 31 with an appearance which is aesthetically more pleasing but in particular easier to clean.

[0069] The crosspiece 414 and the second pair of guides 412 are preferably kept in the position shown in Figures 14 to 17 by releasable locking means. The releasable locking means may be for example magnets or other similar means, known for example from the technical sector of furniture drawers. In this way all the movements of the device 50 which involve only displacement of the first pair of guides 411 with respect to the second set of guides 412 do not risk displacing unnecessarily the latter with respect to the third pair of guides 413.

[0070] The sliding smoothness of the set of guides 41 as a whole and of the first and second pair of guides 411 and 412 in particular, will be preferably such as to allow easy operation with one hand only by the user. This technical feature therefore allows the patient sufficient autonomy so that he/she does not have to ask for help from the nursing or paramedical staff.

[0071] The presence of the releasable locking means creates instead an obstacle for initial sliding of the second pair of guides 412 on the third pair of guides 413. This obstacle moreover renders even more difficult a movement which is already per se difficult to perform for the patient, since this movement occurs in the direction of the opposite side of support surface 31.

[0072] It should be noted, however, that the displacement of the device 50 from the rest configuration R into the second transition configuration T2 (and therefore into the second operating configuration U2) is an operation typically associated with the need to be able to use the support surface 31 for other uses, for example for eating and/or drinking. For this reason, therefore, sliding of the second pair of guides 412 on the third pair of guides 413 occurs usually in the presence of an assisting person, for example the person responsible for bringing food and/or beverages to the patient. It will therefore be clear that the assisting person, unlike the patient on his/her own, will have no problem either overcoming the action of the releasable locking means or displacing the second pair of guides 42 backwards, away from the patient.

[0073] A particular advantage of the invention, arising from the use of certain particular types of devices 50, is that of being able to ensure the so-called connectivity of the user, also in an environment, such as the dialysis room, where the use of mobile phones is normally not permitted. The absence of electromagnetic fields in the environment around the patient avoids the problem which is known in the sector as "microshock". This problem may arise when a patient whose skin is pierced by a needle is surrounded by a variable electromagnetic field. In this case the tip of the needle may release micro currents which, in the absence of the isolating protection provided by the skin, may have extremely serious or even lethal consequences.

[0074] Connectivity, as well as the possibility of working on a computer, reading and writing e- mail messages, word processing, etc., obviously represent opportunities of great interest for patients who, although being of working age, on a number of days each week must spend several hours in a dialysis room.

[0075] Moreover the presence of a video camera 510 on the device 50 results in a further advantage of even greater importance. The video camera 510 may in fact be used for remote video surveillance of the patients. In many cases in fact the presence of medical staff is not required in the dialysis room, since the presence of nursing or paramedical staff is considered to be sufficient. In the case of a possible emergency, however, such as sudden illness of suspect or uncertain nature, the video camera 510 already directed towards the patient may allow the medical staff to carry out rapidly a first visual assessment of the situation already from a remote location and thus speed up any request for the intervention of other specialized personnel.

[0076] The device 50 may also allow the patient to access a network for communication with other users. For example, it may allow the possibility of interaction with other patients which are present in the same room, but who are too far away in order to be able to speak with them normally.

[0077] The device 50 may also allow the sanitary organization which manages the dialysis room to provide the patient with important information, for example regarding the behaviour suggested for the type of illness which has been diagnosed.

[0078] Finally, as will be immediately evident from Figures 8 and 9, the presence of the device 50 and the movable support 40 according to the invention does not block in the slightest manner the view which the staff in the room has of the patient. At the same time, where necessary, removal of the device 50 may be performed more or less immediately since it is mounted on the service trolley 30 which may be easily moved. The presence of any cables connecting the device 50 does not constitute a problem because, as already mentioned above, they may be easily disconnected by pulling.

[0079] Obviously the application in a dialysis room involving a patient who is able to use only one arm is a limited and very specific use of the invention. Another area of application which is less specific and less complex, but which may also benefit from the invention is for

example that involving service tables provided alongside a swimming pool. In this case also, the user may be sat on a chair or lying on a sunbed and may wish to access quickly and easily a device 50, possibly also while eating or drinking.

[0080] In the light of the above description it will be clear to the person skilled in the art how the movable support 40 according to the invention is able to overcome at least partly the drawbacks mentioned initially with reference to the prior art.

[0081] In particular, it will be clear how the movable support 40 according to the invention allows the user to operate easily the entertainment and/or information device 50 using only one hand.

[0082] Moreover it will be clear how the movable support 40 according to the invention allows the user to operate the device 50 easily and comfortably from an ergonomic point of view also for long periods of time.

[0083] Finally, it will be clear how the movable support 40 according to the present invention allows the room staff to have an unimpeded view of the patient at all times and, if necessary, gain easy access in the event of an emergency.

[0084] Obviously, a person skilled in the art, in order to satisfy any specific requirements which arise, may make to the movable support 40 and the service trolley 30 according to the present invention further modifications and variations, all of which being moreover contained within the scope of protection of the invention, as defined by the following claims.

Claims

1. Movable support (40) for an entertainment and/or information device (50), the movable support (40) being designed to be applied to the underside (310) of a substantially horizontal support surface (50), the movable support (40) comprising:

   - a set of linear guides (41) designed to allow the device (50) to be displaced in a substantially horizontal plane n, at least from a rest configuration (R) into a first transition configuration (T1);
   - a set of hinges (42) designed to allow the device (50) to rotate about a substantially horizontal axis of rotation (*X*) at least from a first transition configuration (T1) into a first operating configuration (U1).

2. Movable support (40) according to Claim 1, wherein displacement from the rest configuration (R) into the first transition configuration (T1) takes place in a first direction forwards and wherein the set of linear guides (41) is designed to allow the device (50) to be displaced in the plane n also in a second direction backwards, from the rest configuration (R) into a second transition configuration (T2).

3. Movable support (40) according to Claim 2, wherein the set of hinges (42) is designed to allow the device (50) to rotate about the axis *X* also from the second transition configuration (T2) into a second operating configuration (U2).

4. Movable support (40) according to any one of the preceding claims, wherein the set of hinges (42) is designed to allow the device (50) to rotate about the axis *X* also from the first transition configuration (T1) into a third operating configuration (U3) intermediate between the first transition condition (T1) and the first operating configuration (U1).

5. Movable support (40) according to the preceding claim, wherein the set of hinges (42) comprises means which define at least one stable equilibrium condition corresponding to the third operating configuration (U3) so as to allow the device (5) to remain in the third operating configuration (U3).

6. Movable support (40) according to any one of the preceding claims, wherein the set of linear guides (41) comprises a first pair of guides (411) on which the device (50) may be slidably mounted, via the set of hinges (42), and wherein the first pair of guides (411) is in turn slidably mounted on a second pair of guides (412) so as to obtain a telescopic effect.

7. Movable support (40) according to the preceding claim, wherein the second pair of guides (412) is in turn slidably mounted on a third pair of guides (413) so as to obtain a telescopic effect.

8. Assembly comprising a movable support (40) according to any one of the preceding claims and an entertainment and/or information device (50).

9. Assembly according to the preceding claim, wherein the entertainment and/or information device (50) is chosen from the group comprising a conventional flat-screen television, a games console, an electronic book reader, a tablet PC or a book holder suitable for holding a book to be read and/or a notebook for writing.

10. Assembly according to Claim 8 or 9, wherein the entertainment and/or information device (50) comprises an active surface (51) via which the device (50) is able to provide the user with entertainment and/or information and a passive surface (52) opposite to the active surface (51).

11. Support surface (31) comprising, mounted on its underside (310), a movable support (40) according to any one of Claims 1 to 7.

12. Support surface (31) comprising, mounted on its un-

derside (310), an assembly (40) according to any one of Claims 8 to 10.

13. Support surface (31) according to the preceding claim, wherein, in the first operating configuration (U1) of the movable support (40), the device (50) is arranged so that its passive surface (52) rests on the front edge of the support surface (31).

14. Support surface (31) according to any one of Claims 11 to 13, further comprising auxiliary systems for a device (50) chosen from a power supply battery, a low-voltage system connected to the mains, or one or more antennae for capturing signals emitted in the environment and for relaying them to the device (50).

15. Service trolley (30) comprising a support surface (31) according to any one of Claims 11 to 14.

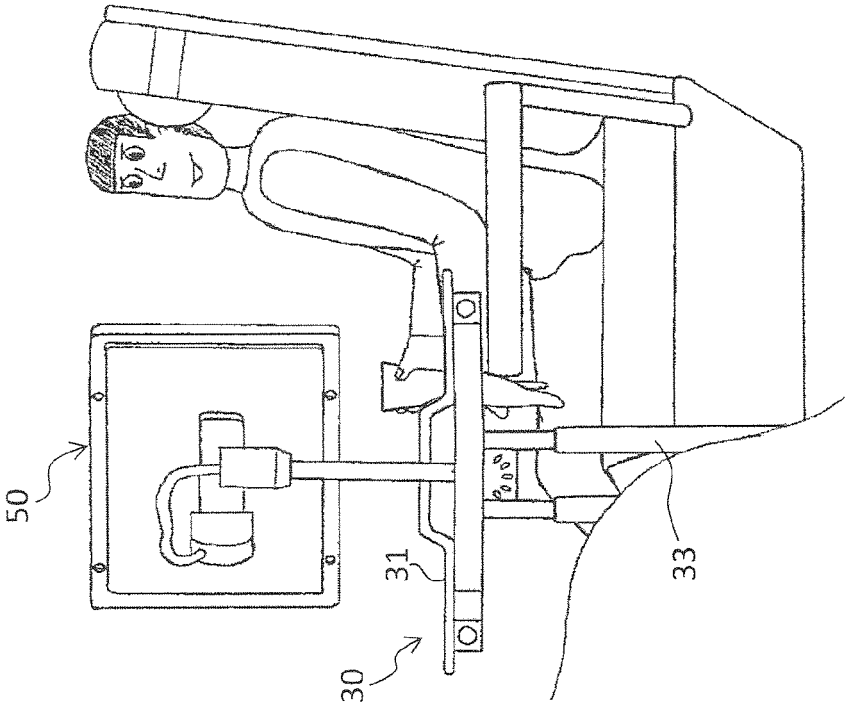

Fig. 2
PRIOR ART

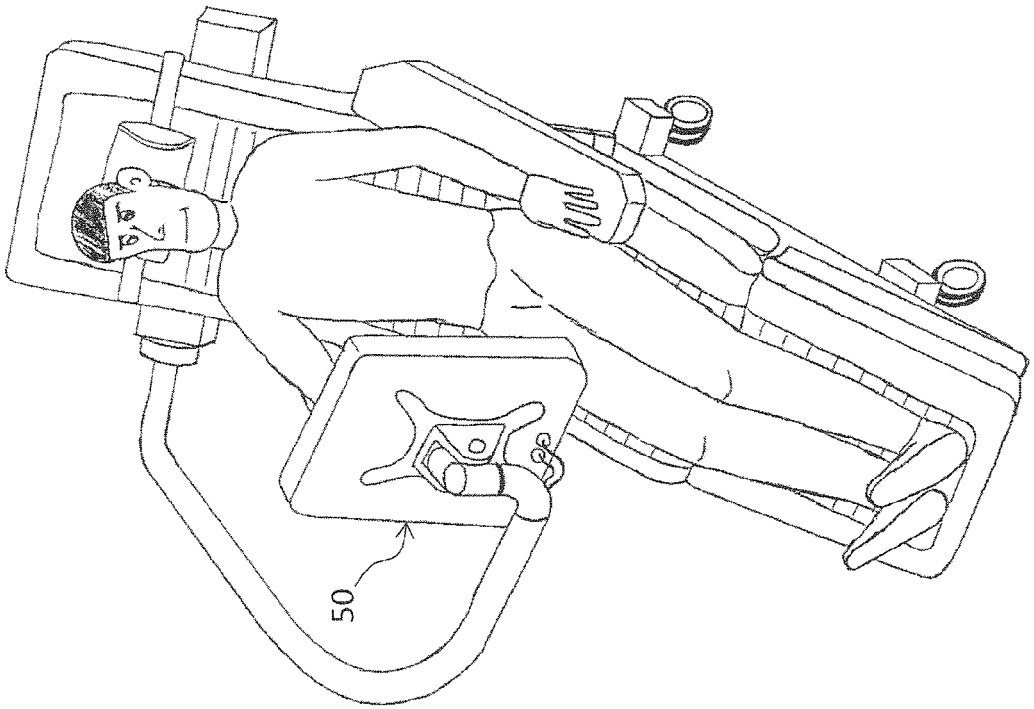

Fig. 1
PRIOR ART

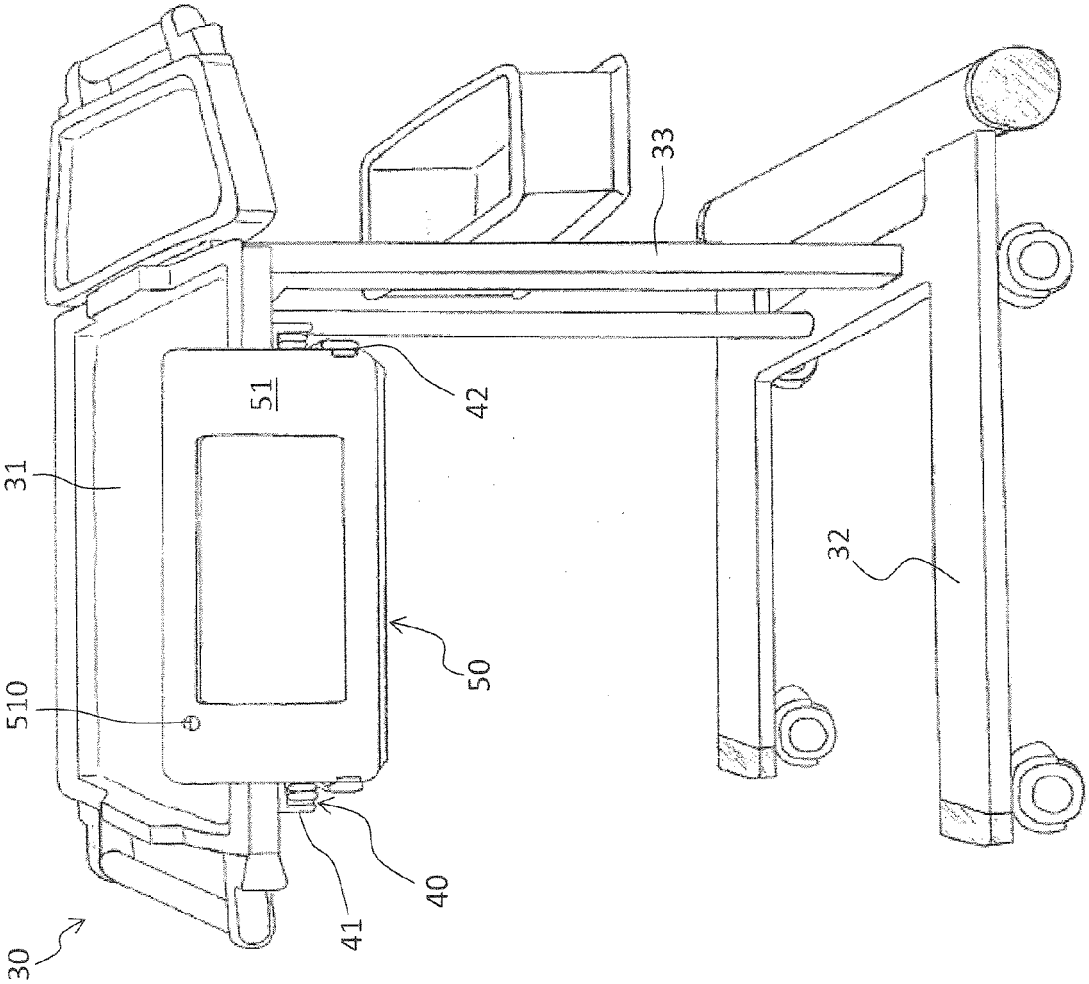

Fig. 3

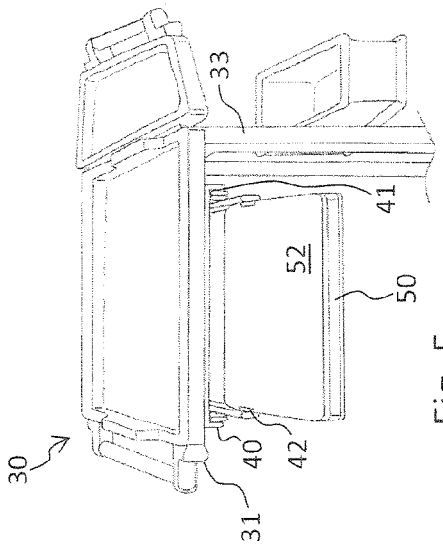

Fig. 5

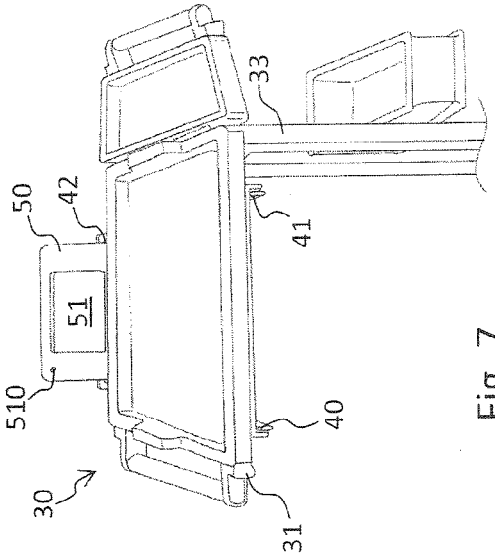

Fig. 7

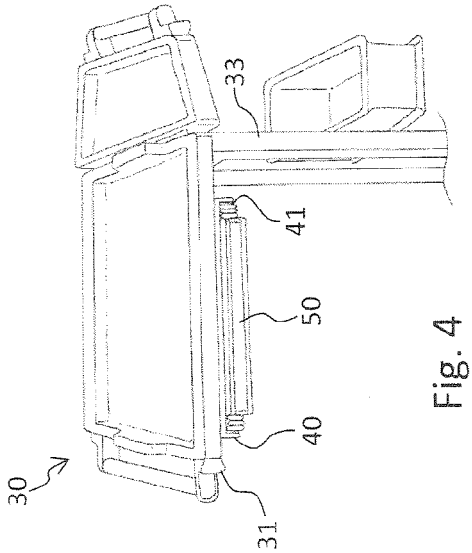

Fig. 4

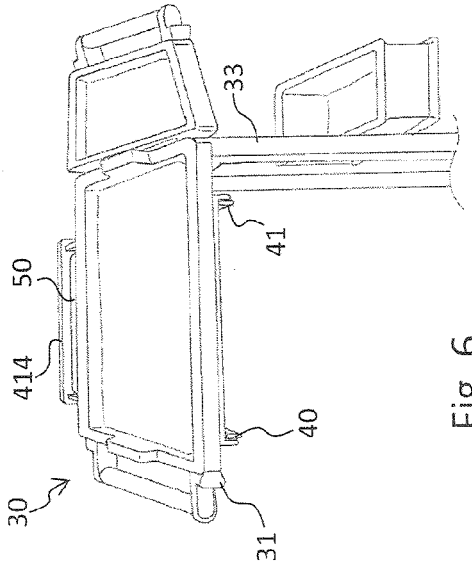

Fig. 6

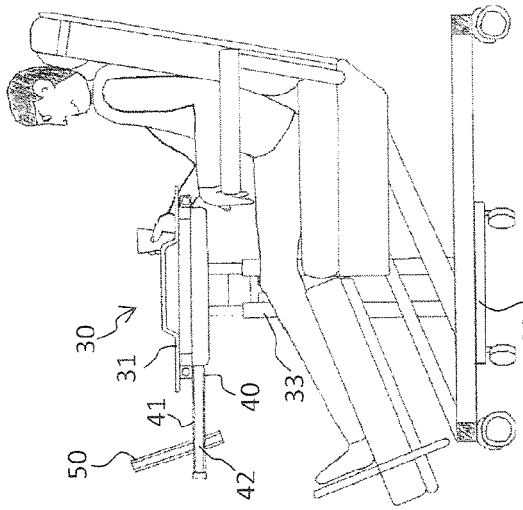

Fig. 9

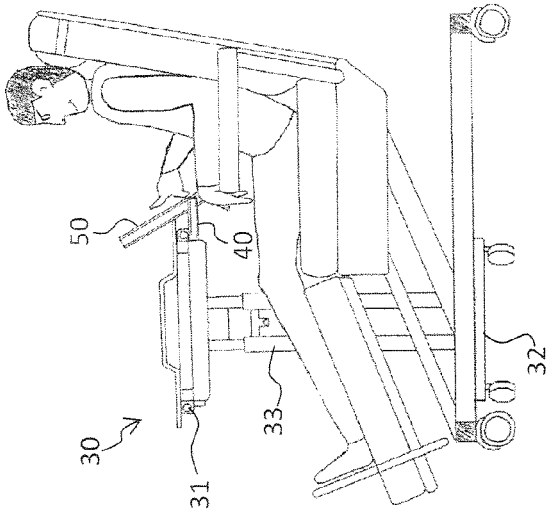

Fig. 8

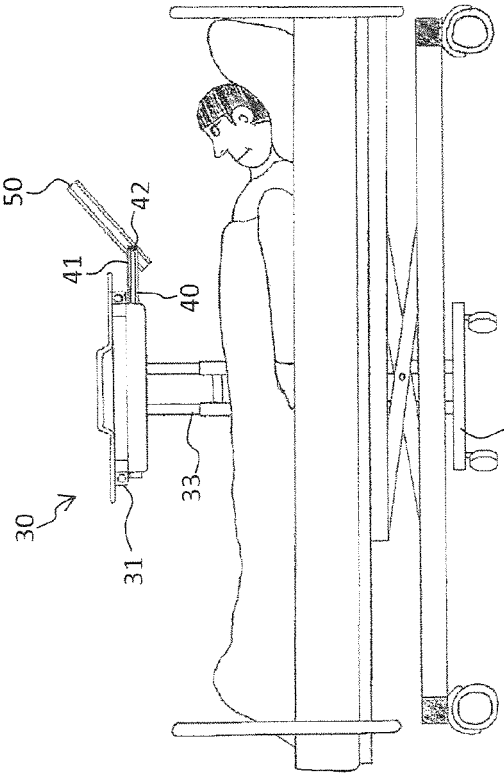

Fig. 10

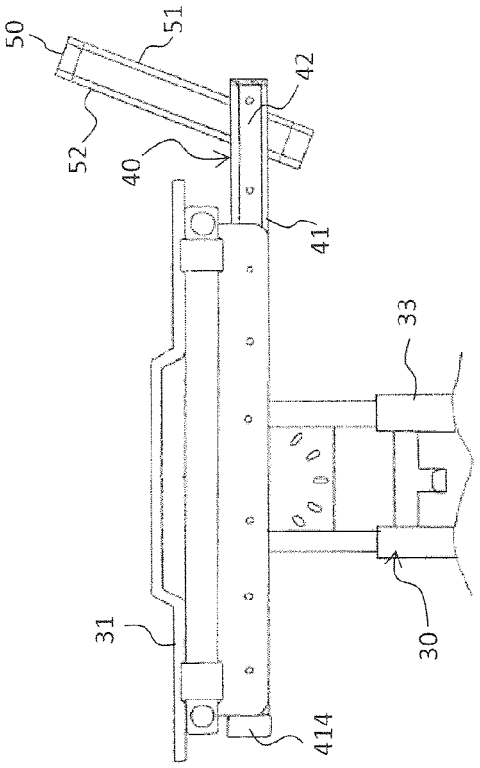

Fig. 12

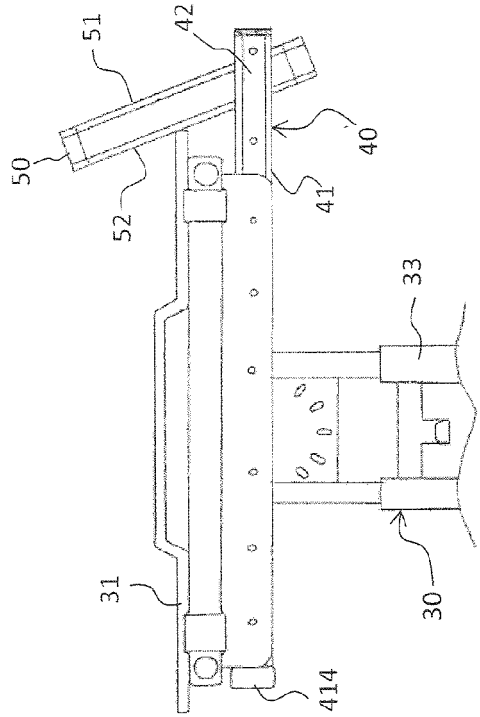

Fig. 11

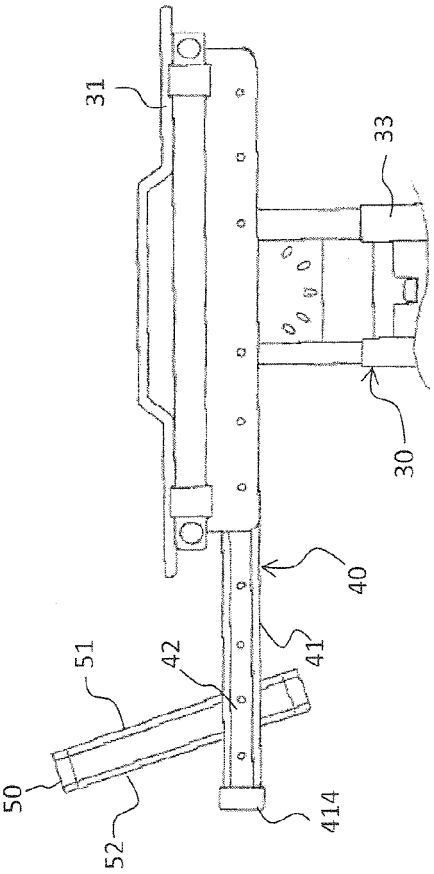

Fig. 13

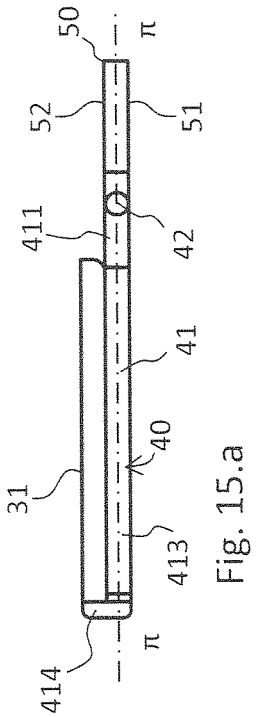

Fig. 15.a

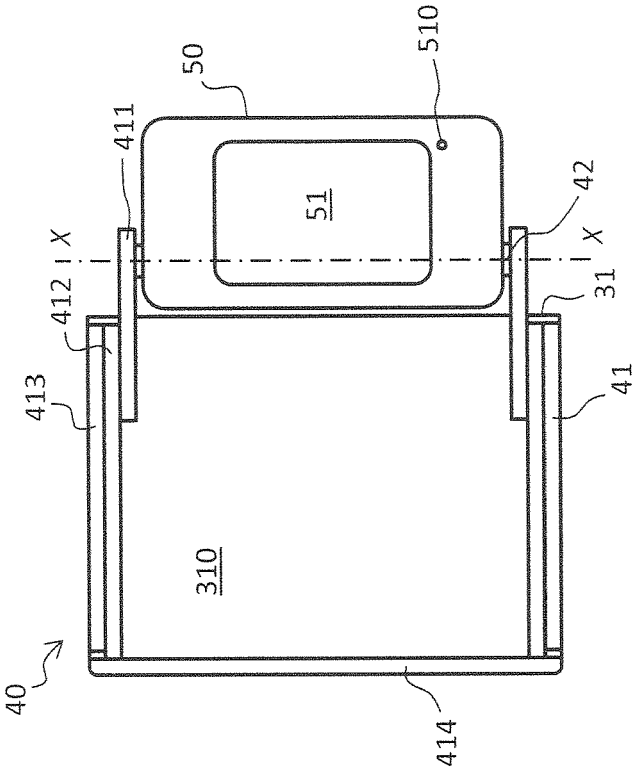

Fig. 15.b

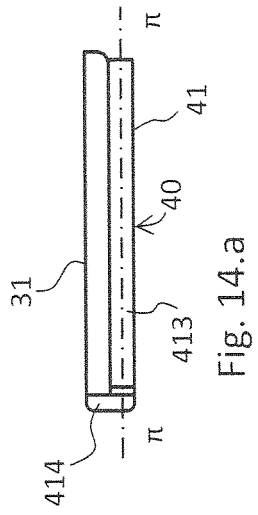

Fig. 14.a

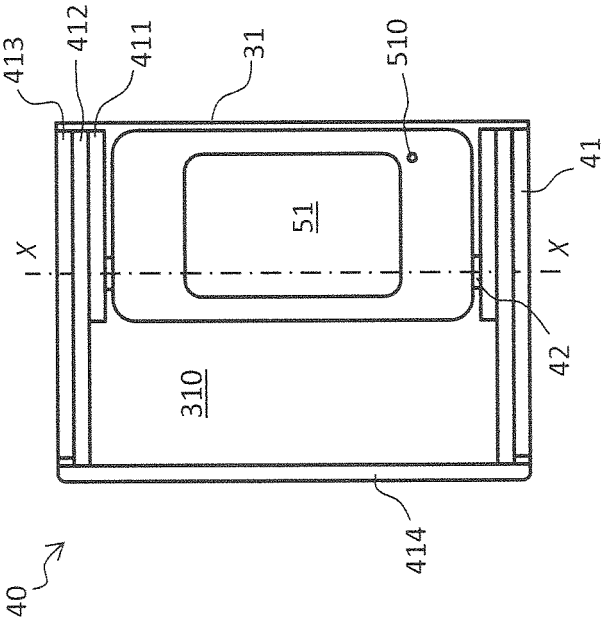

Fig. 14.b

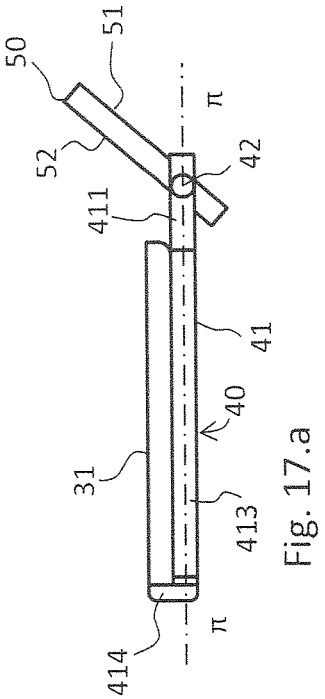

Fig. 17.a

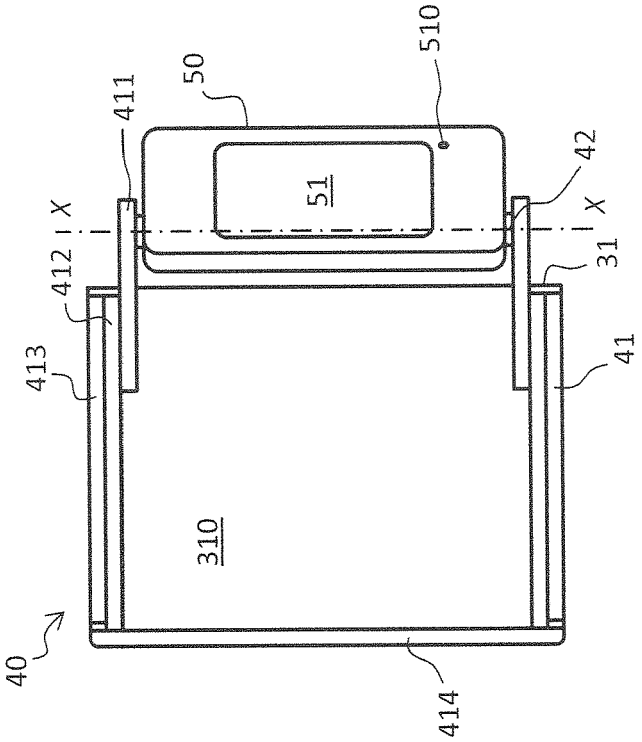

Fig. 17.b

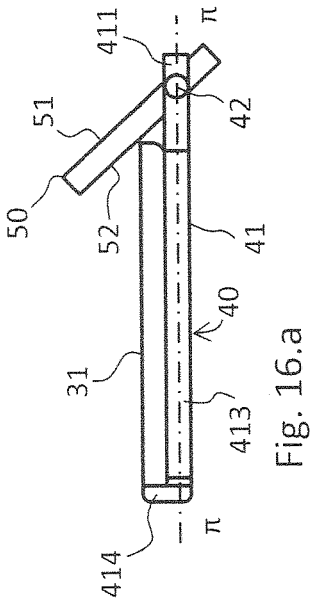

Fig. 16.a

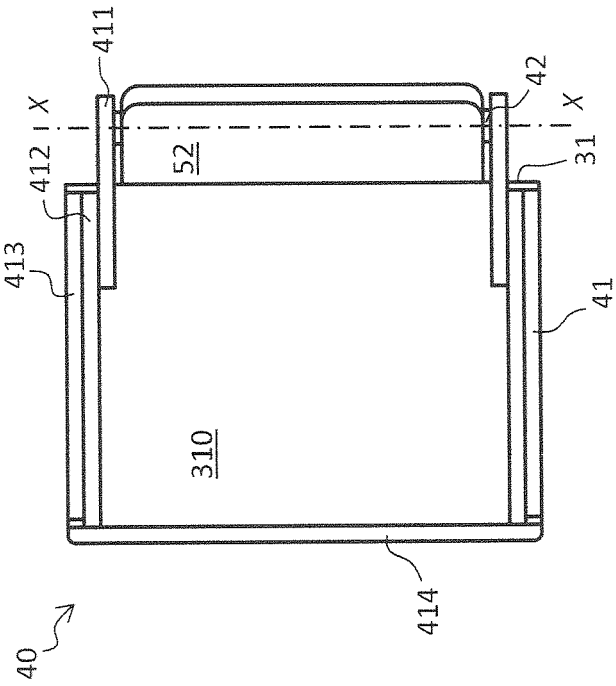

Fig. 16.b

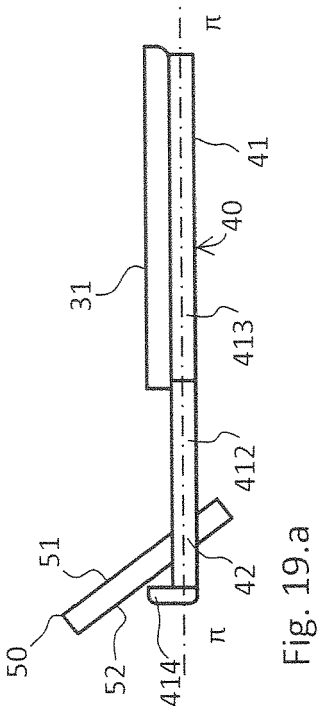

Fig. 19.a

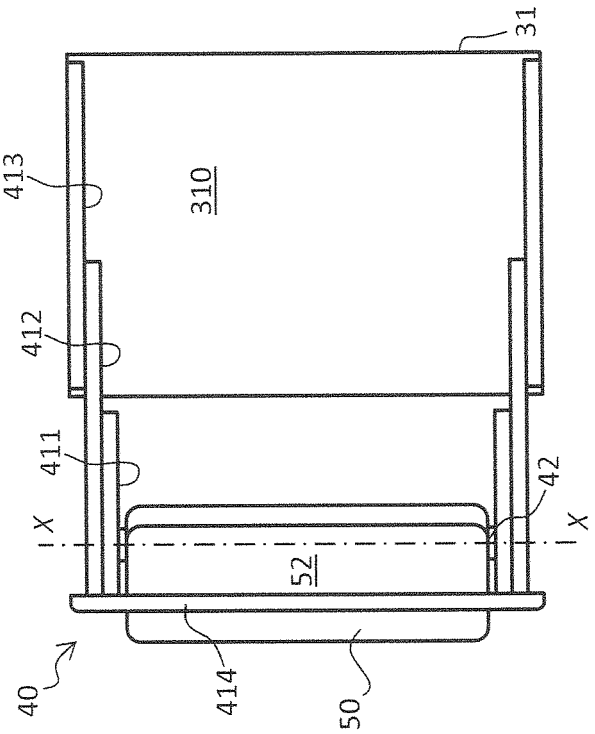

Fig. 19.b

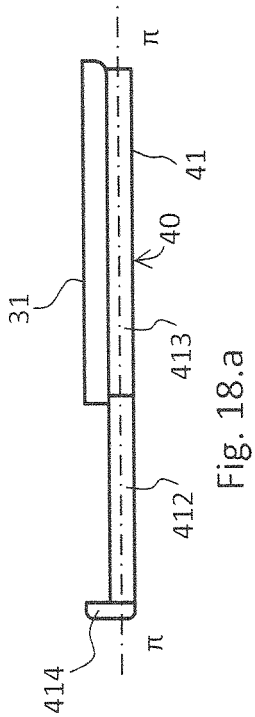

Fig. 18.a

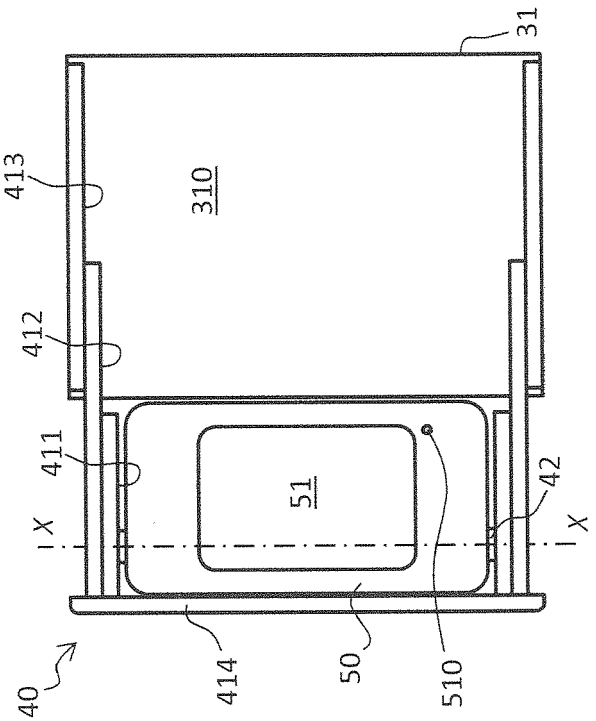

Fig. 18.b

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European Patent Office
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EUROPEAN SEARCH REPORT

Application Number
EP 12 16 3592

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 03/013307 A1 (HILL ROM SERVICES INC [US]) 20 February 2003 (2003-02-20) * page 10, line 16 - page 14, line 32; figures 2-6,11 * -----	1-5,8-15	INV. A61G12/00
X	US 6 269 753 B1 (RODDAN ALLISON C [US]) 7 August 2001 (2001-08-07) * column 5, line 8 - column 6, line 15; figure 2a * -----	1,2,4,5, 8-12,14, 15	

TECHNICAL FIELDS SEARCHED (IPC)

A61G
A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	5 September 2012	Kroeders, Marleen

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1

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05-09-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 03013307 A1	20-02-2003	CA 2452091 A1	20-02-2003
		EP 1411799 A1	28-04-2004
		WO 03013307 A1	20-02-2003
US 6269753 B1	07-08-2001	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82