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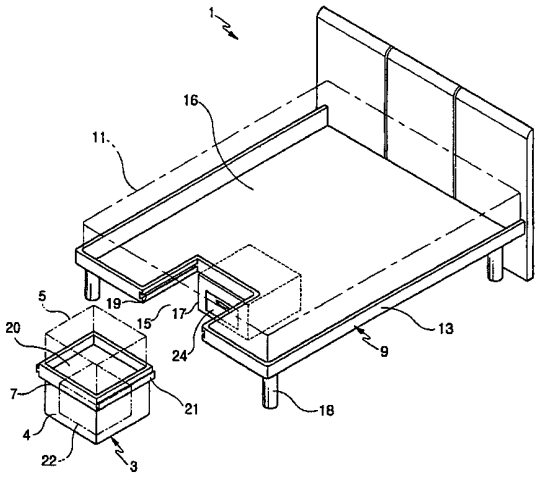
(54) Title: MULTIPURPOSE SEPARABLE BED



(57) Abstract: Disclosed is a multipurpose separable bed comprising: a separable part having a separable mat, a separable frame and a first receipt box disposed at a lower portion of the separable frame; and a fixed part having a fixed mat fit to the separable mat, a fixed frame fit to the separable frame, and a second receipt box disposed at a lower portion of an opening of the fixed frame forced fit with the separable part. The receipt box of the separable part and the receipt box of the fixed part are rotatably mounted. A toilet bowl, on which a cover frame is detachably connected, or a toilet bowl board is disposed on the upper surface of the receipt box of the separable part. The receipt boxes can be rotated manually or automatically, and thereby the receipt boxes are not exposed outside even in the state that the separable part is coupled to the fixed part or separated from the fixed part. The toilet bowl directly formed at the separable part or additionally provided allows patients, who are inconvenient in behavior, to easy nature conveniently.

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MULTIPURPOSE SEPARABLE BED

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a multipurpose separable bed, and more particularly, to a multipurpose separable bed, in which a mat used as a cushiony material of a bed and a frame fixing the mat are divided into a fixed part having a fixed mat and a fixed frame and a separable part having a separable mat and a separable frame respectively, thereby concealing a receipt space formed at a separable part connecting frame portion of the fixed part to which the separable part is coupled and being used as a toilet bowl for patients by mounting additional toilet bowl board on the separable part connecting frame.

2. Description of the Related Art

Recently, as the living standard is gradually improved, the number of households using beds is on the increase. The increasing trend is, of course, resulted from the usefulness of the bed, but the bed has a fundamental problem to occupy a wide installation area due to its bulk in spite of its usefulness. Moreover, the problem in the installation area is remarkably brought out in a small residential area such as a bedroom, in which the bed is mounted, or a living room, and thereby the line of flow cannot be secured or the room cannot be furnished, as a user wants.

To solve the above problems, a separable bed is disclosed in Korean Utility Model Application No. 99-16682 filed on August 13, 1999 and invented by the same inventor as the present invention. The bed, as indicated as reference numeral 101 in Figs. 1 and 2, includes a separable part 103 having a separable mat and a separable frame and a fixed part

105 with which the separable part is coupled. Therefore, the separable part 103 can be used for a chair by separating the separable part 103 from the fixed part 105, and thereby the user can widely use an indoor area in which the bed 101 is mounted. Furthermore, a receipt area of a drawer type is formed at a sidewall portion 109 of an opening 107 of the fixed part 105 coupled with the separable part 103 to store various articles, thereby using a wide indoor space without needing additional furniture for receipt.

The opening 107 makes patients or users, who are inconvenient in behavior, ease nature without feeling of inconvenience about general beds or rejection to medical beds.

However, as the conventional separable bed 101 has the receipt part formed at the side wall of the opening 107, if the separable part 103 is removed from the opening 107 and the bed is used, the front surface of the receipt part is exposed outside, and thereby it is not suitable for storing valuables due to lack of concealing capability.

Moreover, when the patients who are inconvenient in behavior use the bed, the bed only makes the use of the toilet bowl for patients more easily, but does not serve as the toilet bowl, and thereby there is inconvenience in effectively helping the patients' easing nature.

SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide a multipurpose separable bed, which prevents the exposure of a front surface of a receipt structure to increase the security of the receipt structure by rotatably mounting the receipt structure provided in an opening of a fixed part of the bed.

It is another object of the present invention to provide a multipurpose separable bed,

which provides convenience in patients' use by providing toilet bowl in the opening.

It is a further object of the present invention to provide a multipurpose separable bed, which diversifies utilities of the separable part by transforming the form of the separable part and the opening.

To achieve the above objects, the present invention provides a multipurpose separable bed comprising: a separable part having a separable mat, a separable frame and a first receipt box disposed at a lower portion of the separable frame; and a fixed part having a fixed mat fit to the separable mat, a fixed frame fit to the separable frame, and a second receipt box disposed at a lower portion of an opening of the fixed frame forced fit with the separable part.

Furthermore, in the separable bed according to the present invention, the receipt box of the separable part and the receipt box of the fixed part are rotatably mounted. A toilet bowl, which has a cover frame detachably mounted, is mounted on the upper surface of the receipt box of the separable part or a separate toilet bowl board is provided to the upper surface of the receipt box of the separable part.

BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and advantages of the invention can be more fully understood from the following detailed description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a schematically perspective view of a conventional separable bed;

Fig. 2 is a schematically perspective view showing a state that a separable part is separated from the bed of Fig. 1;

Fig. 3 is a schematically perspective view, in partly section, showing a state that a separable part of a multipurpose separable bed according to a preferred embodiment of the present invention is separated;

Fig. 4 is a schematically perspective view, in partly section, of a fixed part and a toilet bowl of the multipurpose separable bed according to the present invention;

Fig. 5 is a schematically perspective view, in partly section, of a receipt box of the fixed part partially shown in Fig. 3;

Fig. 6 is a sectional view along the line of A-A of Fig. 5;

Fig. 7 is a sectional view along the line of B-B of Fig. 6;

Fig. 8 is a sectional view along the line of A-A applying a rolling means according to another preferred embodiment of the present invention;

Fig. 9 is a schematically perspective view, in partly section, of a fixed part and a toilet bowl of the multipurpose separable bed according to a further embodiment of the present invention;

Fig. 10 is a schematically perspective view, in partly section, of the fixed part and the toil bowl of the multipurpose separable bed according to a still further embodiment of the present invention;

Fig. 11 is a schematically plan view showing a state that the fixed part and the separable part are used according to a further embodiment of the present invention;

Fig. 12 is a schematically plan view showing a state that the fixed part and the separable part are used according to a still further embodiment of the present invention;

Fig. 13 is a schematically plan view of the fixed part and the separable part according to a further embodiment of the present invention;

Fig. 14 is a schematically plan view showing a used state of the fixed part and the separable part according to a further embodiment of the present invention; and

Fig. 15 is an enlarged perspective view showing a coupled state of the separable part and the fixed part of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention will now be described in detail in connection with preferred embodiments with reference to the accompanying drawings. For reference, like reference characters designate corresponding parts throughout several views.

In Fig. 3, the reference numeral 1 indicates a multipurpose separable bed. Similarly to conventional separable beds, the separable bed 1 includes a fixed part 9 constituting a body of the bed and a separable part 3, which is separated from the fixed part 9. The fixed part 9 includes a fixed mat 11 having a cushiony function, a mat plate 16 supporting the fixed mat 11 and pedestals 18 disposed at four edges of the mat plate 16. As shown in Fig. 3, a fixed frame 13 may be attached at the border of the mat plate 16 according to kinds of the bed. Especially, as shown in Fig. 3, an opening 15 is formed at one side border portion of the bed 1, for example a lower side, to fit the separable part 3 into the opening 15.

Moreover, also the separable part 3 includes a separable mat 5 having a cushiony function, a mat plate 20 supporting the separable mat 5 and a receipt box 4 serving as the pedestals for the mat plate 20. According to circumstances, a separable frame 7 may be formed at the border portion of the mat plate 20 to correspond to the fixed frame 13. If the receipt box 4 is small, a supporter similar to the pedestals 18 may be formed at the bottom

of the receipt box 4. Here, the separable bed 1, in case that the separable frame 7 and the fixed frame 13 are not disposed, has a coupling means for coupling the separable part and the fixed part provided on the mat plates 20 and 16. Alternatively, the separable bed 1, in case that the separable frame 7 and the fixed frame 13 are disposed, has separate coupling means provided on the external surface of the frames 7 and 13. It will be appreciated that the separable part 3 and the fixed part 9 may be fixed by fitting of the opening 15 and the separable part 3 without using the coupling means. However, as shown in Fig. 3, to increase the bonding force, a sliding type coupling means is used, and it will be appreciated that various type structures besides the sliding type may be used. The sliding type coupling means shown in Fig. 3 includes a dovetail type rail 21 projected from both sides of the separable frame 7 and a guide hole 19 processed in the form of a dovetail corresponding to both sides inside the opening 15 of the fixed frame 13 to slidably move the fit rail.

As shown in Fig. 4, the separable bed 1 of the present invention has a portable toilet bowl 25 to provide patients or users, who are inconvenient in behavior, with convenience in use. The toilet bowl 25 has a coupling means being in the corresponding form of the guide hole 19 of the opening 15. In Fig. 4, a dovetail type rail 23 projected from both sides of a toilet bowl board 27 having the toilet bowl 25 is used, such that the toilet bowl 25 can be detachably mounted in a sliding manner.

A receipt drawer 22 may be mounted inside the receipt box 4 as indicated by a hidden line. Additionally, another receipt box 17 may be located at an opposite position of the receipt box 4. The receipt box 17 also has a receipt drawer 24. The drawer 24 of the receipt box 17 can be concealed inside the fixed part 9 by manually or automatically

rotating an inlet side of the receipt box 17. A sectional form of the receipt box 4 depends on the form of the separable part 3 and the opening 15, however the receipt box 17 may have various sectional forms such as a square pole, a cylinder, a triangular prism or others as shown in Fig. 4. By a simple structure that a rotary shaft is mounted between the receipt box 17 and the bottom of the mat plate 16 of the fixed part 9, the receipt box 17 can be rotated manually. To rotate the receipt box 17 automatically, a rotational structure shown in Figs. 5 to 8 may be used.

As shown in Figs. 5 and 6, the rotational structure is disposed in a space formed between the upper surface of the receipt box 17 and the mat plate 16. The rotational structure fundamentally includes a rotary shaft 29 rotatably supporting the load applied to the bed 1, a driving motor 37 providing a turning force and a rolling means 39 transmitting the load of the receipt box 17 to the ground 51 in a rotatable state. Here, the rotary shaft 29 not only supports the load of the bed 1 in a rotatable manner but also is maintained integrally with the fixed part 9 when the bed 1 is moved or when the mat plate 16 is raised. For example, as shown in Fig. 5, the rotary shaft 29 may have a head part being in the form of a disk, such that the longitudinal section may be in the form of a T character, and may be fixed by a support casing 38 of a cabinet type. In this case, the support casing 38 is attached at the bottom of the mat plate 16 and has a through hole through which the rotary shaft 29 passes at the center. A bushing 40 is inserted between the through hole and the rotary shaft 29. Additionally, a thrust bearing 31 is mounted between the upper surface of the head part of the rotary shaft 29 and the mat plate 16 to rotatably support the load of the bed. Also, a thrust bearing 42 is mounted between the lower surface of the head part and the bottom surface of the casing 38 to axially support the head part in a sliding manner.

The driving motor 37 used as a driving means for rotating the receipt box 17 is mounted between the receipt box 17 and the mat plate 16, and if necessary, may be mounted outside the receipt box 17. Moreover, electromotive means of various forms for transmitting driving power of the motor 37 may be used. For an example, a ring gear 33 shown in Figs. 6 and 7 is used. As shown in the drawings, the ring gear 33 forms a concentric circle on the rotary shaft 29 and attached on the upper surface of the receipt box 17. The ring gear 33 engages a driving gear 35 mounted on a rotary shaft of the motor 37 and transmits the driving power of the motor 37 to the receipt box 17. Additionally, a rolling means 39 such as a caster is mounted at the bottom of the receipt box 17, thereby minimizing frictional resistance to the ground surface 51 during the rotation of the receipt box 17.

At this time, the caster 39 used as the rolling means may be replaced with one of various rolling means such as a structure 44 shown in Fig. 7. The rolling means 44 shown in Fig. 7 minimizes the frictional resistance between the receipt box 17 and the ground surface 51 and axially supports the rotary shaft 27 and the receipt box 17 up and down, such that the rolling means 44 serves to prevent the oscillation of the receipt box 17, which may be caused by the preponderance of driving portions during the rotation. Therefore, the rolling means 44 includes a frictional board 43 being in contact with the ground surface 51, a thrust bearing 41 attached between the frictional board 43 and the receipt box 17 and an oscillation preventing shaft 47 of a T-shape having a head part 49 with large diameter to prevent the separation of the frictional board 43. The frictional board 43 has a cut hole 45 to securing a space to locate the head part 49 of the oscillation preventing shaft 47, which is inserted and mounted through a through hole. A washer is inserted between the head part

49 and the upper surface of the cut hole 45, and a rotational bushing 52 is inserted in the through hole of the frictional board 43.

Moreover, also the receipt box 4 of the separable part 3 shown in Fig. 3 can rotate manually like the receipt box 17 of the fixed part 9 shown in Figs. 5 to 8 or can rotate automatically by the same rotational structure as Figs. 5 to 8, but it is not illustrated in the drawings.

According to another embodiment of the present invention shown in Fig. 9, a toilet bowl 225 is directly disposed on the upper surface of the separable part 203. A cover board 210 is attached on the rear surface of a cover frame 208 to cover the toilet bowl 225, and thereby the users can use a normal bed at ordinary times. The cover board 210 is detachably mounted in a straight guide hole 219 formed inside a separable frame 207. Here, the separable part 203 does not use additional coupling means but is fit in an opening 215, differently from the above embodiment. It will be appreciated that the cover board 210 may be detachably mounted on the toilet bowl 225 in various ways.

At this time, if the separable frame 207 and the cover frame 208 are constructed like the way shown in Fig. 9, even though the fixed frame of the inside of the opening 215 is removed when the separable part 203 is coupled, a space is formed as much as the thickness of the separable frame 207 (see Fig. 10). To prevent the above, according to a further embodiment of the present invention, as shown in Fig. 10, a cut groove 314 is formed at a lower edge part of the fixed frame 313 and the height of the separable frame 307 is lowered as much as the height of the cut groove 314. Therefore, even in the state that the separable part 303 is inserted in a hole 315, the separable frame 307 is located below the mat plate 316, such that unnecessary space is not made between the separable part 303 and the hole

315 of the fixed part. Furthermore, a projection 316 having the same size as the cut groove 314 is formed at the lower ends of both sides of the cover frame 308, and thereby the cut groove 314 of the fixed frame 313 fills up the space when the separable part and the fixed part are coupled.

Figs. 11 to 14 show various preferred embodiments of the present invention one by one. First, an embodiment shown in Fig. 11 shows the separable part vertically divided into two separable parts 403 and 404. The separable parts 403 and 404 are mounted in contact with the side surface of the fixed part 409 as shown in the drawing, thereby being used as an auxiliary bed or a handy chair.

Another embodiment shown in Fig. 12 shows the separable part diagonally divided into two separable parts 503 and 504. The separable parts 503 and 504 also can be used integrally with the fixed part 509 or separately.

A further embodiment shown in Fig. 13 shows a separable part 603 being in the form of an arc. It shows that the separable part 603 may be made in variously curved shapes if the separable part 603 can be removed from the fixed part 609. Also, in this embodiment, the separable part 603 can be in contact with the side surface of the fixed part 609 or can be used separately (not shown in the drawing).

A still further embodiment shown in Fig. 14 shows a separable part 703 mounted integrally with a fixed part 709 by using a hinge means such as a pivot pin 720. If necessary, the separable part 703 can be coupled with an opening 715 or contacted with one side of the fixed part by rotating on the pivot pin 720.

However, most of the separable parts described in the above embodiments are used in separation from the fixed part, which is the bed body. However, if the separable parts

are used only in the state that the separable parts are contacted to the fixed part as shown in Figs. 11 and 12, the separable parts may be pushed during the use and separated from the home position. To prevent the above, as shown in Fig. 15, the separable part can be fixed on the external circumference of the fixed part with a proper fixing means. For an example, as shown in the drawing, a dovetail type sliding hole 430 is formed at the whole of the separable frame 407 of the separable part 403 or at one side, which is convenient to use, and a dovetail type sliding rail 432, which corresponds to the sliding hole 430, is mounted at a side to couple the separable part 403. In this case, to fit the sliding hole 430 with the rail 432, an edge portion 434 of the rail 432 is cut to open or an interval (d) having the width wider than the sliding hole 430 is made and maintained at the center of the fixed frame 413.

According to the multipurpose separable bed of the present invention, as shown in Fig. 3, detachable coupling means 19 and 21 are provided to a portion where the opening 15 of the fixed part and the separable part 3 are in contact with each other. Therefore, compared with the conventional methods that the separable part 3 is coupled to the fixed part 9 by a form coupling, the present invention can obtain more secure coupling.

Moreover, in the receipt spaces provided to the separable part 3 and the fixed part 9, the present invention breaks from the conventional methods that have a simple receipt space. Especially, the receipt box 17 located at the lower end adjacent to the hole 15 of the fixed part 9 is rotated manually or electrically, thereby concealing the drawer 24 to maintain the security of the receipt box 17. For this, as shown in Figs. 5 to 8, the driving means is used. When the driving motor 37 is driven according to the user's order of rotation, the driving gear 35 shown in Fig. 7 is rotated. Therefore, the ring gear 33

engaging the gear 35 is rotated and also the receipt box 17 is rotated on the rotary shaft 29. At this time, as the rotary shaft 29 supports the load of the bed 1 through the thrust bearing 31, the receipt box 17 can be rotated even in the loaded state. Additionally, the frictional resistance between the receipt box 17 and the ground surface 51 is minimized by the caster 39. Meanwhile, even in the case that the bed 1 is moved, the bed 1 can be moved safely as the head portion of the rotary shaft 29 is supported by the support casing 33 through the bearing 42.

However, since the driven portions is concentrated on the upper end of the receipt box 17 and the rotary shaft 29 which is the fixed part is also located at the upper end, the receipt box 17 may be oscillated during the rotation. The oscillation is prevented by the rolling means 44 shown in Fig. 8. That is, when the rotary power is transmitted, the receipt box 17 is axially supported and rotated by the rotary shaft 29 and the oscillation preventing shaft 47, such that the rotary power can be transmitted safely. For this, the oscillation preventing shaft 47 is rotatably fixed on the center of the frictional board 43. Since the frictional force to the ground surface 51 is maintained maximally, the frictional board 43 is not moved in contact with the ground surface 51. However, the receipt box 17 can be rotated by the thrust bearing 41 interposed between the receipt box 17 and the frictional board 43 without being influenced by the resistance.

As shown in Figs. 4 and 9, as having the toilet bowl coupled with the bed 1, the bed 1 of the present invention can provide convenience to the patients or the users who are inconvenient in behavior. That is, in Fig. 4, the toilet bowl board 27 having the toilet bowl 25 is provided and is detachably mounted in the opening 15 of the fixed part 9. In Fig. 9, the toilet bowl 219 is directed disposed on the upper end of the receipt box 204 of the

separable part 203, and thereby the users can use the toilet bowl 225 more conveniently. When being used as the normal bed, the cover board 210 is inserted inside the separable frame 207, the mat is put on the cover board 210 and the separable part 203 is inserted in the opening 215, thereby coupling the separable part 203 and the fixed part 209.

As described above, according to the multipurpose separable bed of the present invention, the bed is divided into the fixed part, which is the body, and the separable part, which is the movable member. More secure coupling can be obtained not by the form coupling but by providing various detachable coupling means to the contacted portion of the opening of the fixed part and the separable part.

Moreover, in providing the receipt space at the lower portion of the separable part or the fixed part to store various articles, the inlet of the receipt space, i.e., the inlet of the drawer of the receipt box can be rotated in a desired direction manually or automatically. Therefore, not only when the separable part is coupled with the opening of the fixed part but also when the separable part is separately used, the inlet of the receipt box provided at the fixed part is not exposed outside, thereby increasing the security of the receipt box.

Furthermore, by providing separate toilet bowl inserted in the opening of the fixed part or directly formed on the fixed part, the patients who are inconvenient in behavior can ease nature conveniently using the toilet bowl directly fixed at the bed, not simply using the empty space formed in the opening of the fixed part.

Additionally, since the bed may be changed in various forms by varying the shape and the number of the separable part, the users can sleep tightly. Furthermore, when the bed is used in the state that the separable part is separated, as not performing a relative motion to the fixed part, the separable part can serve as an auxiliary bed more safely.

While the present invention has been described with reference to the particular illustrative embodiments, it is not to be restricted by the embodiments but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiments without departing from the scope and spirit of the present invention.

WHAT IS CLAIMED IS:

1. A multipurpose separable bed comprising:

a separable part having a separable mat, a separable frame and a first receipt box disposed at a lower portion of the separable frame; and

a fixed part having a fixed mat fit to the separable mat, a fixed frame fit to the separable frame, and a second receipt box disposed at a lower portion of an opening of the fixed frame forced fit with the separable part.

2. The separable bed as claimed in claim 1, wherein the first receipt box is rotatably mounted.

3. The separable bed as claimed in claim 1, wherein the second receipt box is rotatably mounted.

4. The separable bed as claimed in claim 1, wherein the fixed frame of the opening portion of the fixed part and the separable frame of the separable part have coupling means respectively, which are coupled to each other.

5. The separable bed as claimed in claim 1, wherein the coupling means are fitting parts of male and female dovetail types, which are formed at side wall surfaces of the fixed frame and the separable frame adjacent to the opening portion respectively.

6. The separable bed as claimed in claim 1, wherein a toilet bowl board having a portable toilet bowl is detachably mounted inside the opening by the coupling means, the coupling means being coupled to each other by form coupling.

7. The separable bed as claimed in one of claims 2 or 3, wherein the receipt box includes a rotary shaft mounted at the upper surface of the receipt box to rotatably support the load of the fixed part through a thrust bearing, a ring gear concentrically mounted outside the rotary shaft, a driving gear coupled with the ring gear, a driving motor mounted at the bottom of the fixed frame to rotatably drive the driving gear, and a rolling means mounted at the bottom of the receipt box, the receipt box being rotatably mounted at the position adjacent to the opening and under the fixed frame.

8. The separable bed as claimed in claim 7, wherein the rolling means includes a frictional board mounted at the bottom of the receipt box to prevent the rotation by frictional force from the ground surface, a thrust bearing mounted between the frictional board and the receipt box to rotatably support the receipt box, and an oscillation preventing shaft 47 mounted at the lower center of the receipt box to be inserted through the center of the frictional board, the oscillation preventing board having a head part located in a cut groove formed in a lower portion of the frictional board.

9. The separable bed as claimed in claim 1, wherein the separable part has a toilet bowl formed on the upper surface of the receipt box and a cover frame detachably mounted at the separable frame, the cover frame having a cover board for concealing the toilet bowl.

10. The separable bed as claimed in claim 9, wherein the fixed frame has a cut groove formed at the lower portion of a mat plate located at both edges of an inlet part of the opening, the cut groove having the same size as the thickness of the separable frame, the separable frame coupled with the cut groove has the same height as the cut groove and the cover frame has a projection formed at the lower end of both sides thereof, the projection being matched with the cut groove.

11. The separable bed as claimed in claim 1, wherein the separable part is divided in plural.

12. The separable bed as claimed in claim 11, wherein the separable part is divided into equal parts along a central line.

13. The separable bed as claimed in claim 11, wherein the separable part is divided into equal parts along a diagonal line.

14. The separable bed as claimed in claim 1, wherein the separable part is in the form of an arc.

15. The separable bed as claimed in claim 1, wherein the separable part is rotatably connected to the fixed part by a pivot pin mounted on a central axis line of curvature of an arc-shaped opening.

16. The separable bed as claimed in one of claims 1 to 6, 9 and 11 to 14, wherein the separable part is fixed in a fixed position when rearranged after separated from the fixed part, to prevent the change of the relative position to the fixed part.

17. The separable bed as claimed in claim 16, wherein the separable part has a dovetail type sliding hole formed at one side of the separable frame, the dovetail type sliding hole being slidingly coupled with a dovetail type sliding rail, which is outstandingly mounted at an interval length longer than the sliding hole, to prevent the change of the relative position to the fixed part.

Fig.1

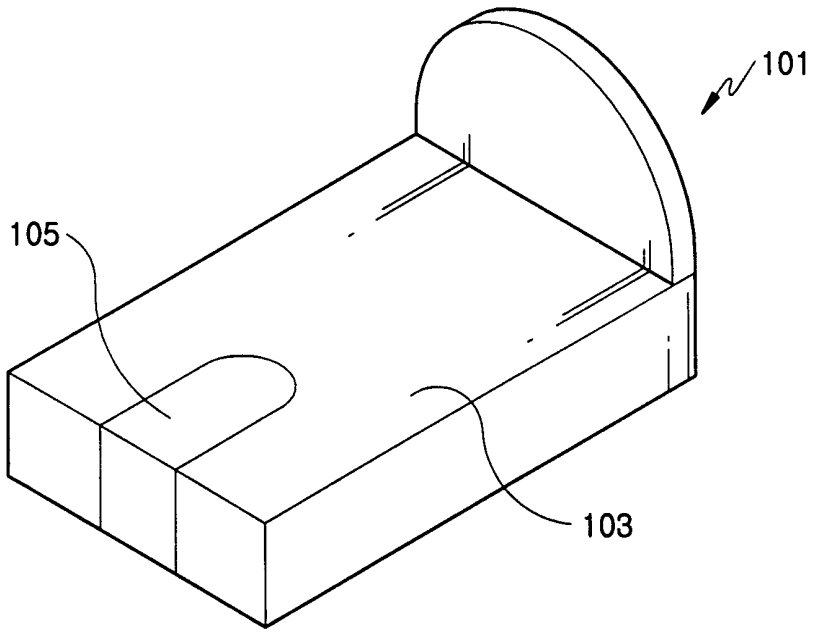


Fig.2

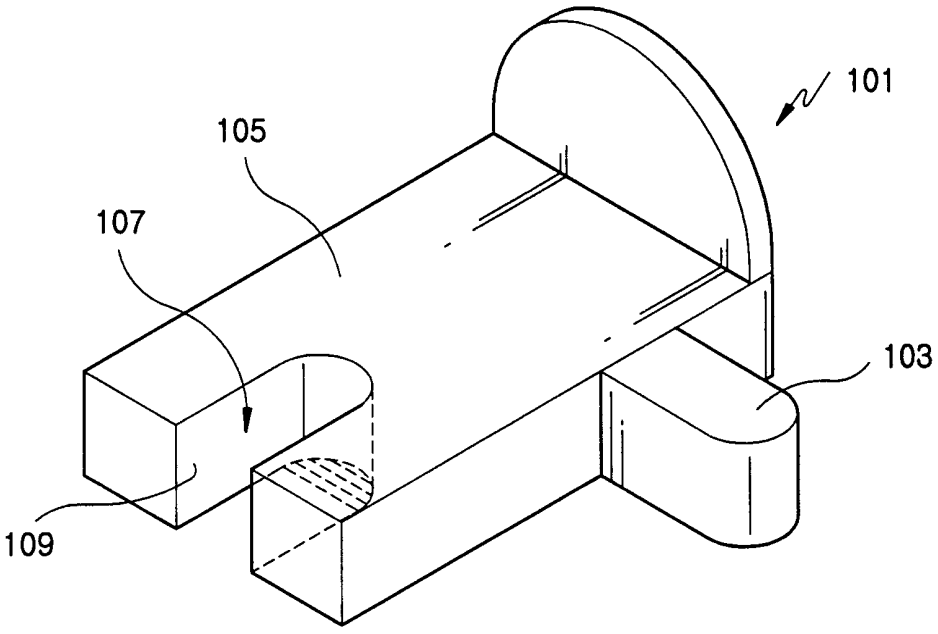


Fig.3

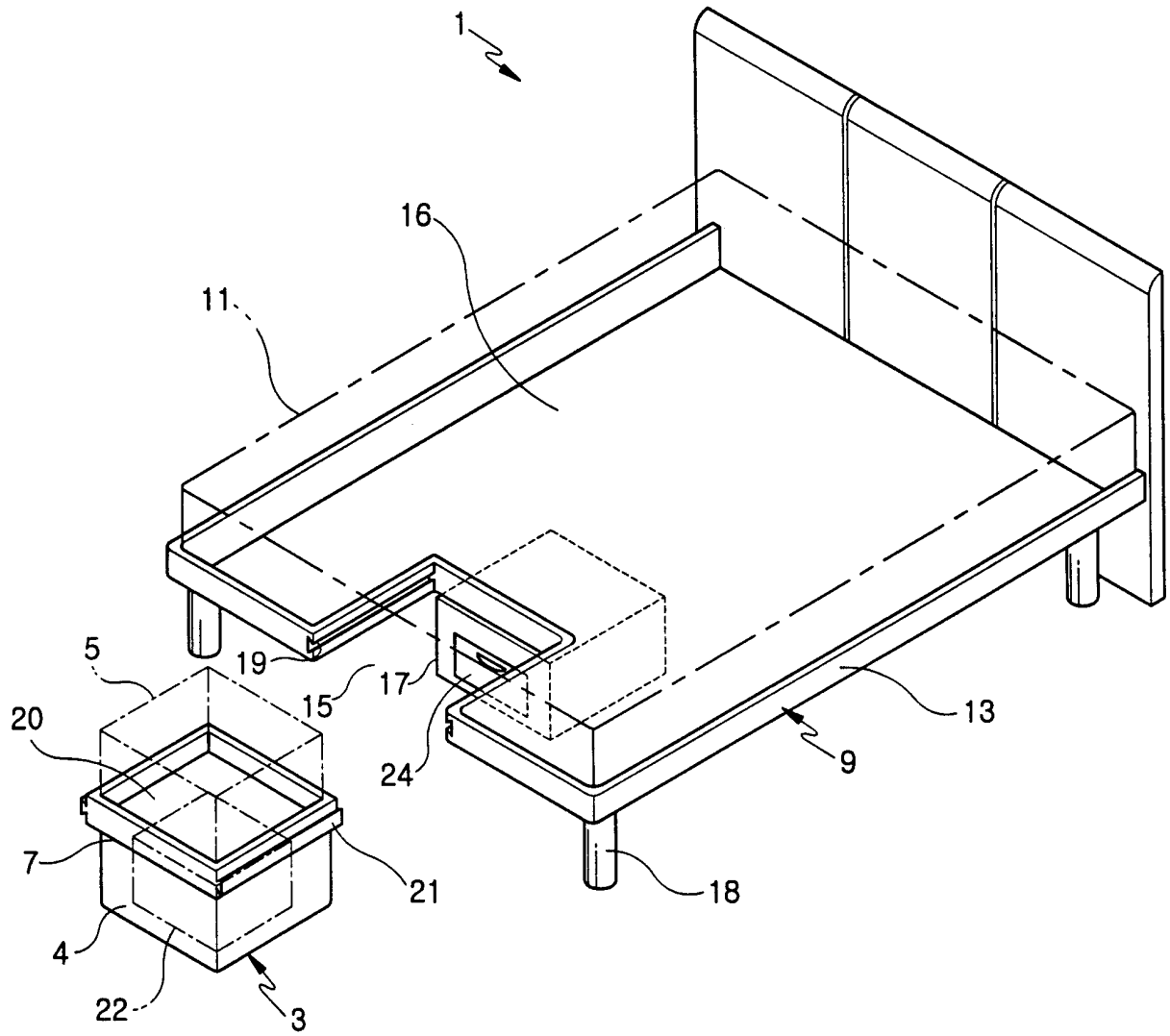


Fig.4

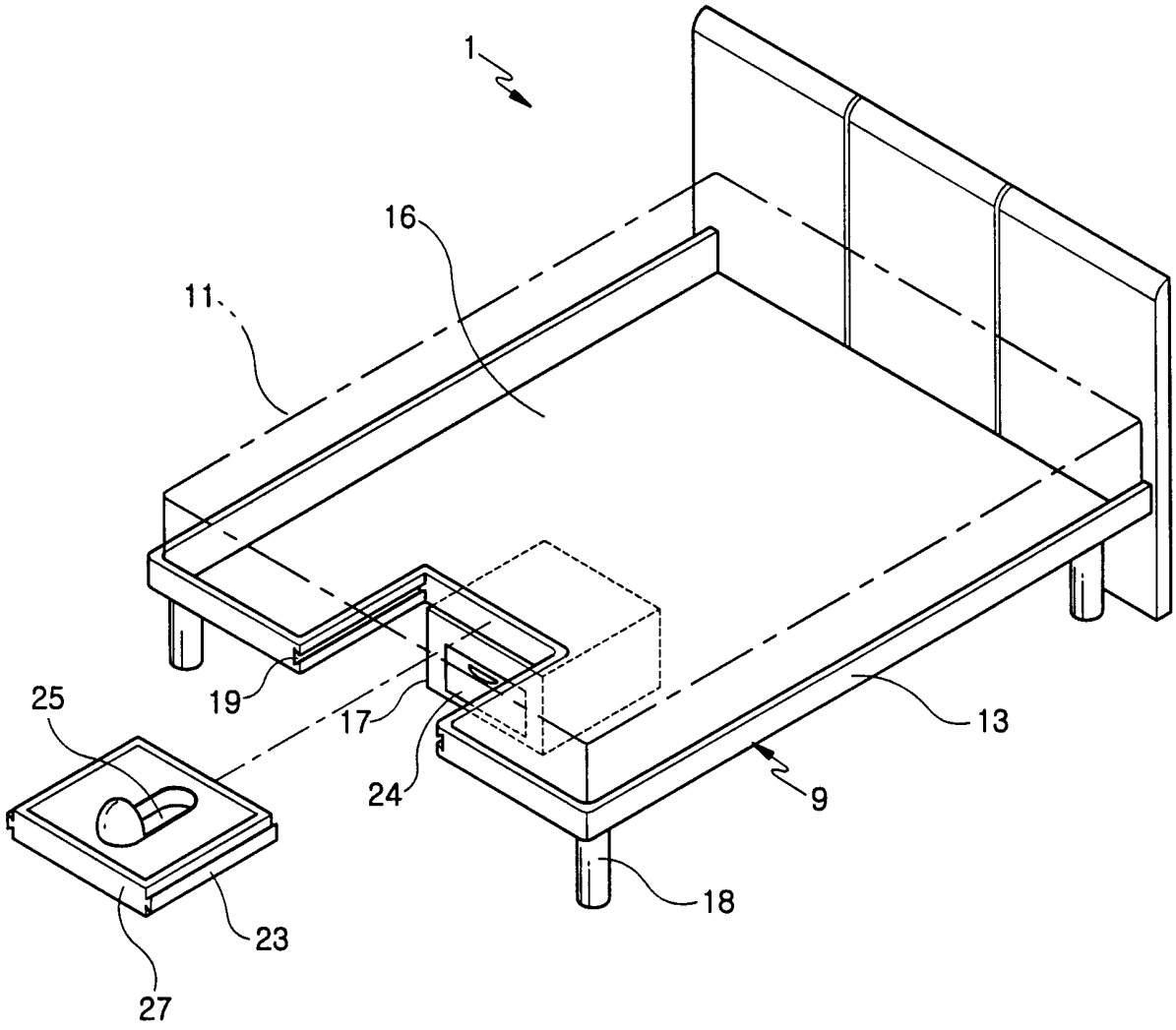


Fig.5

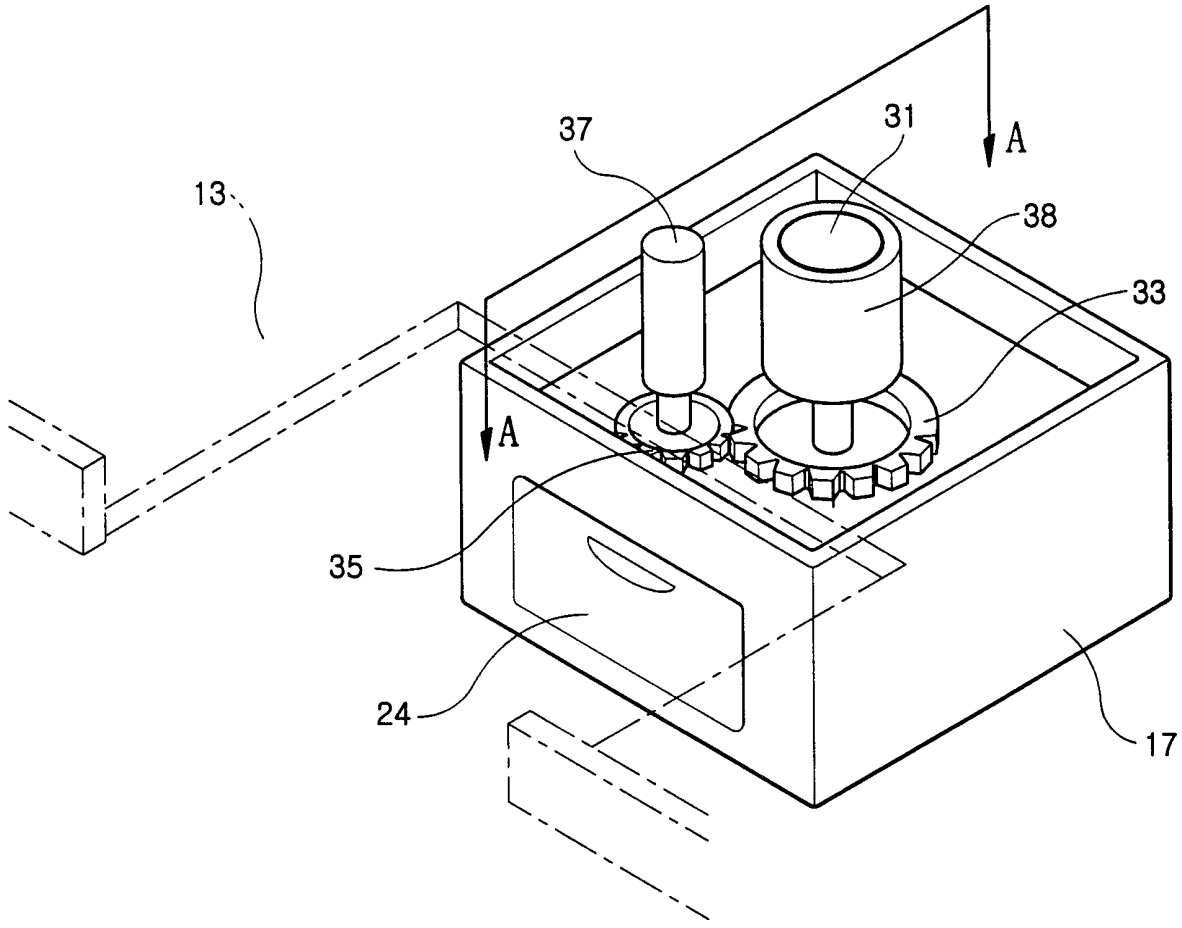


Fig.6

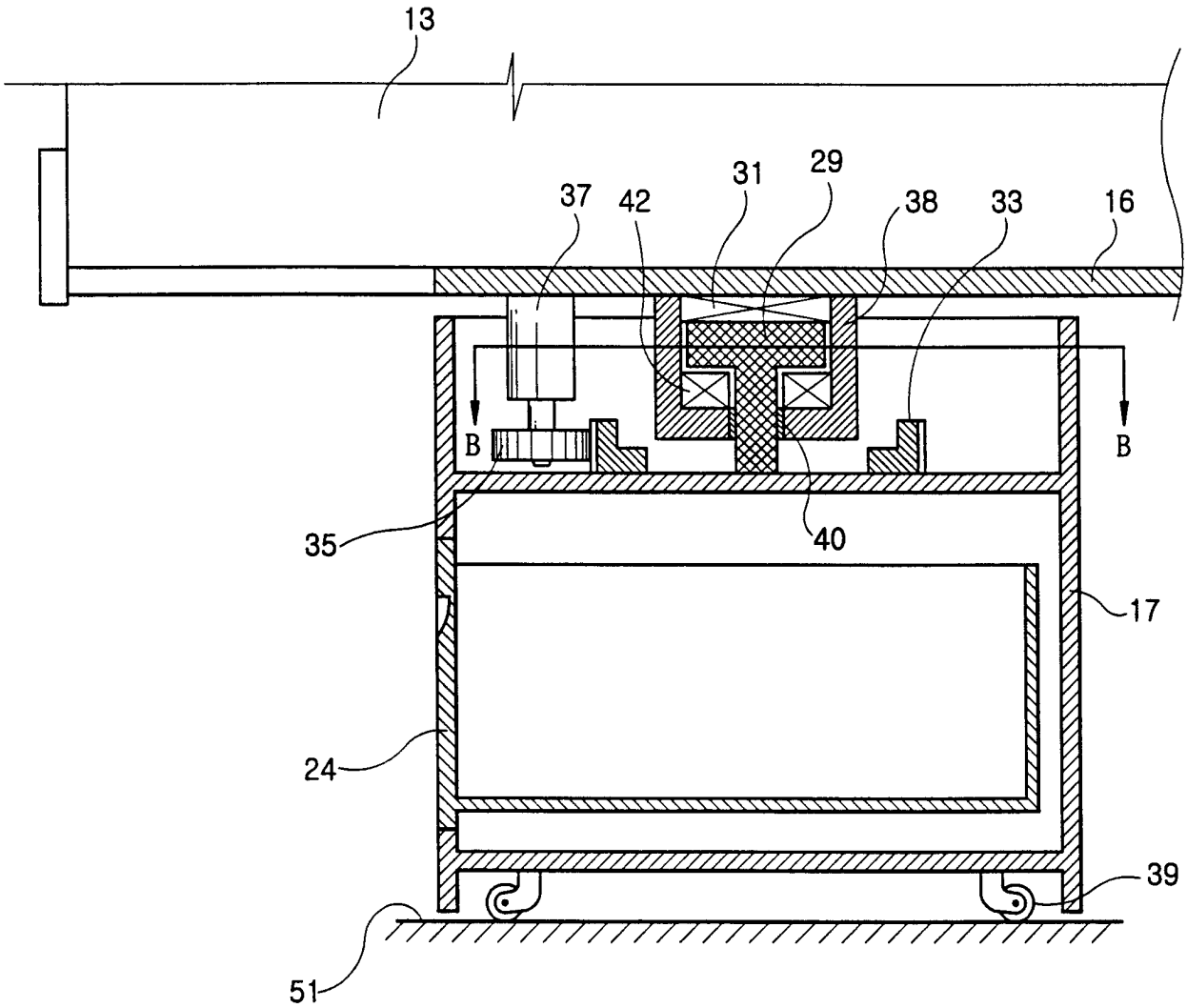


Fig.7

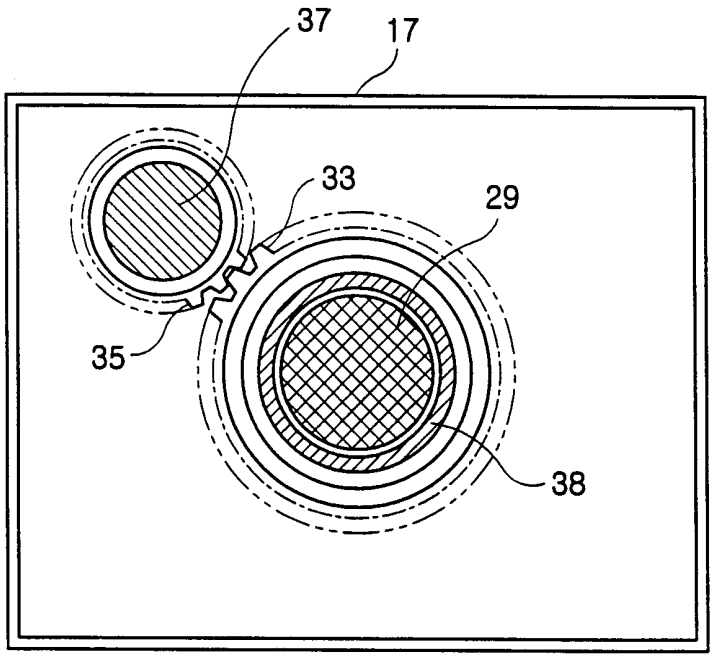


Fig.8

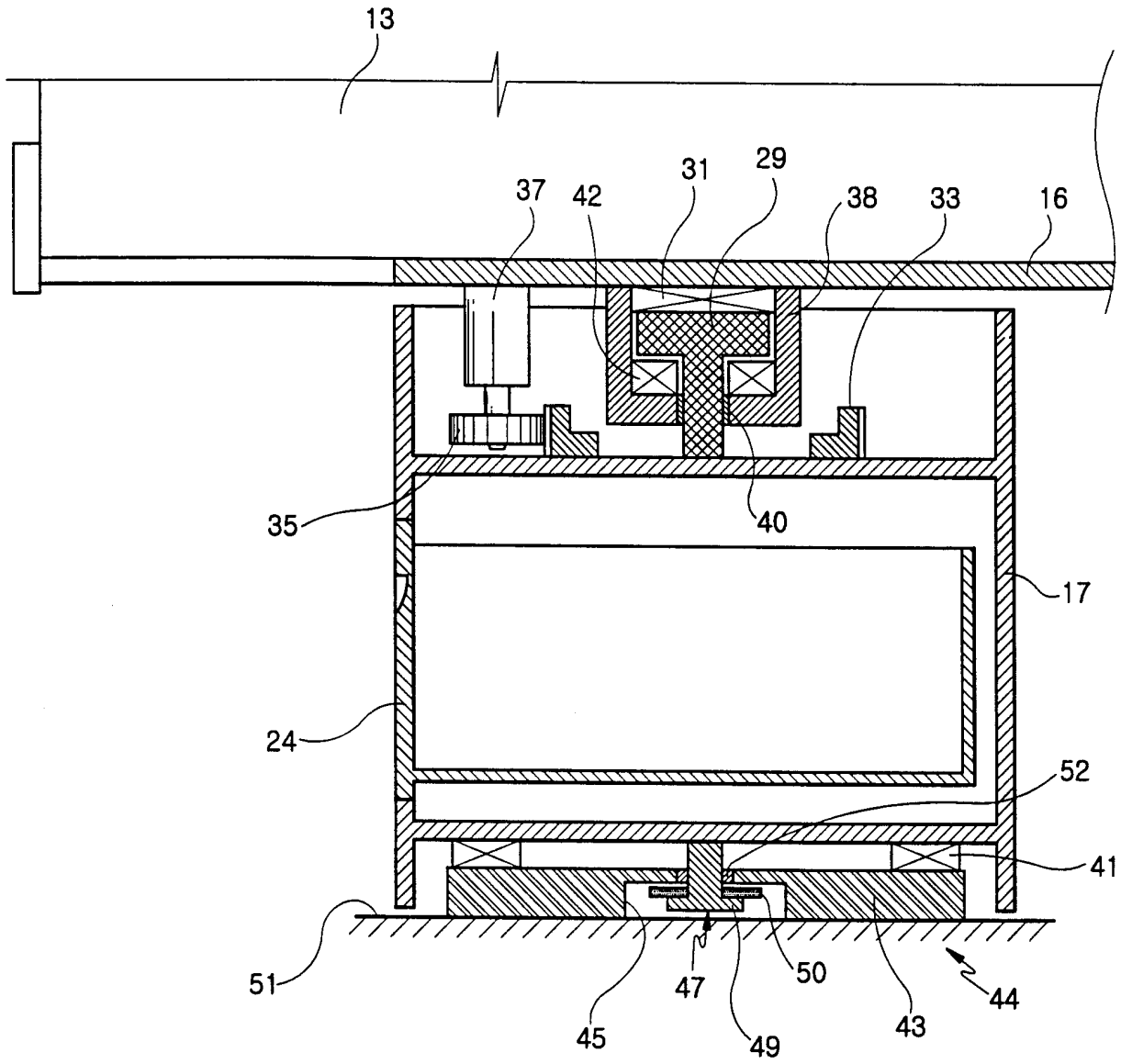


Fig.9

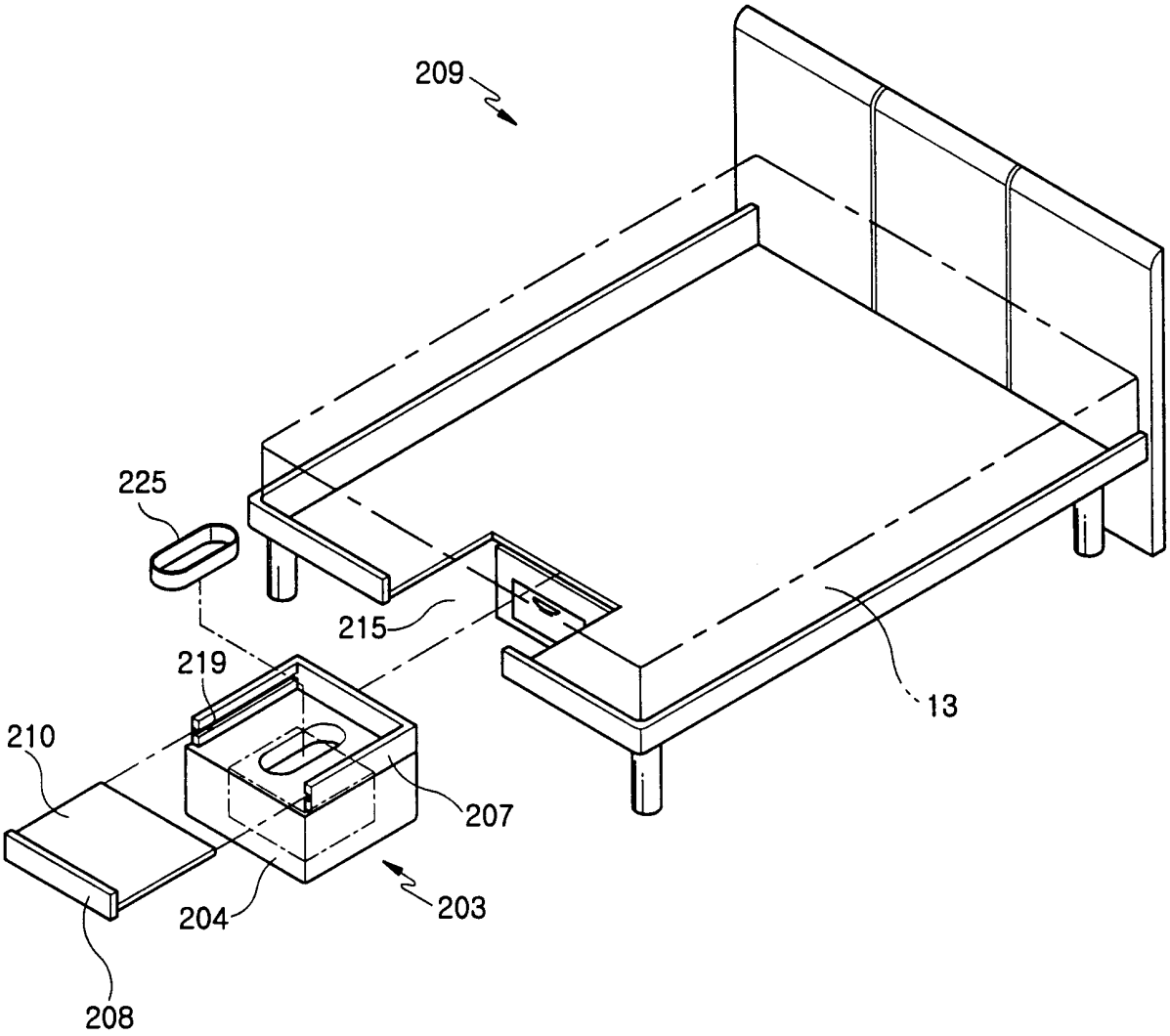


Fig.10

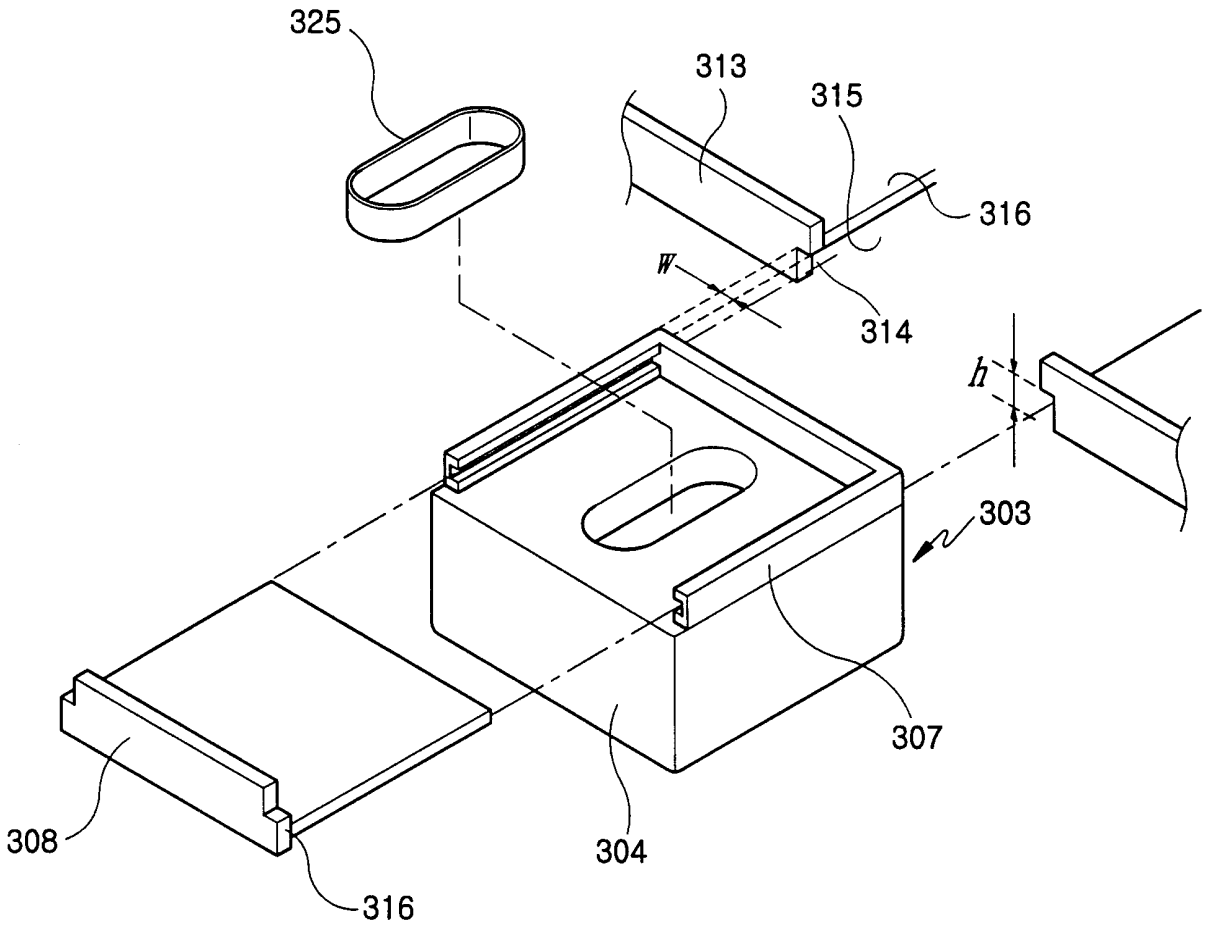


Fig.11

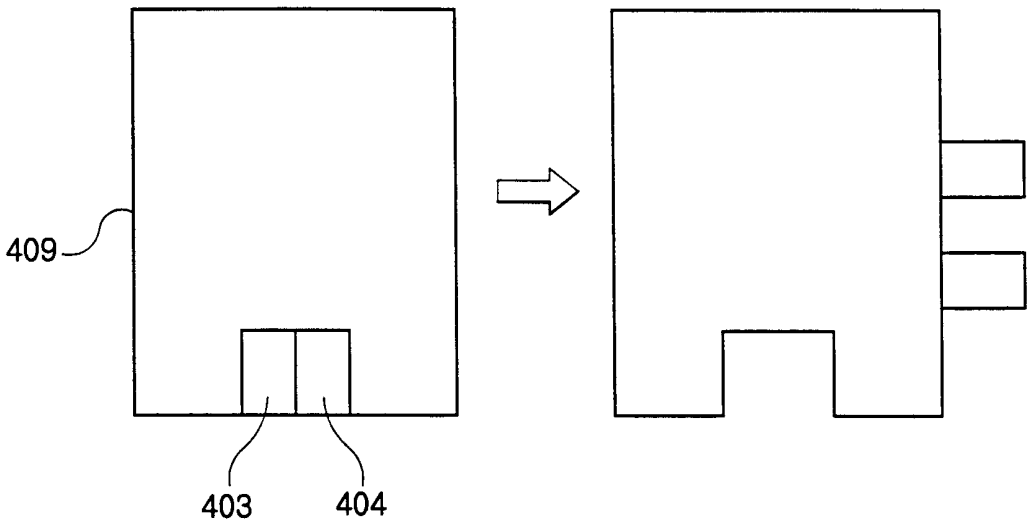


Fig.12

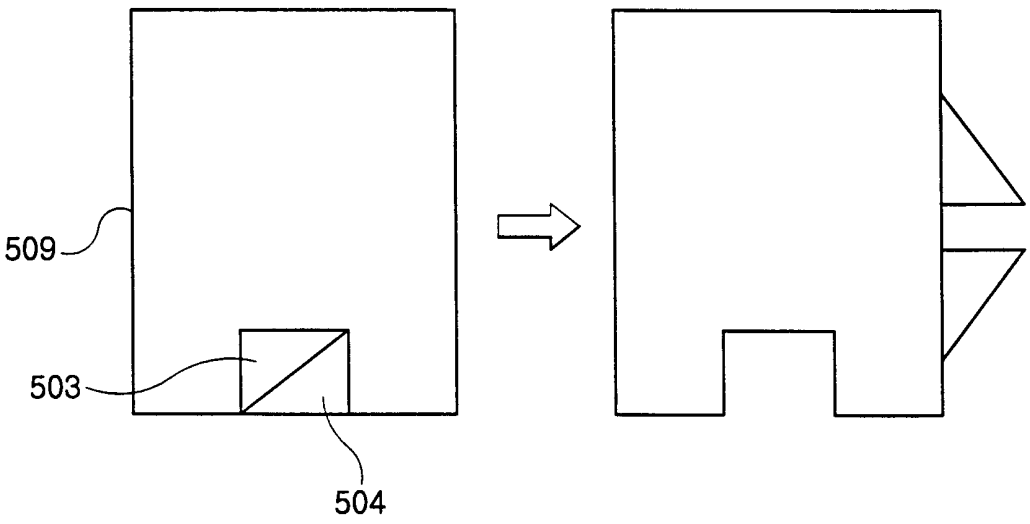


Fig.13

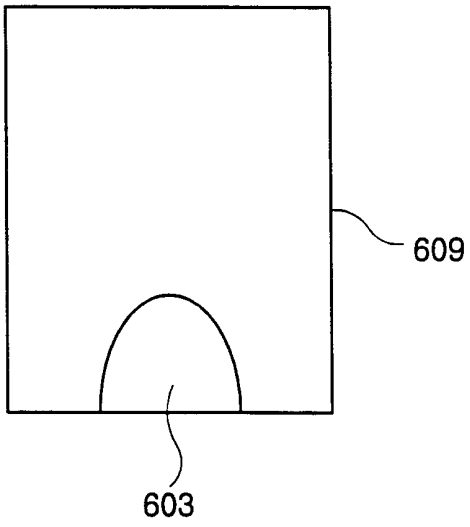


Fig.14

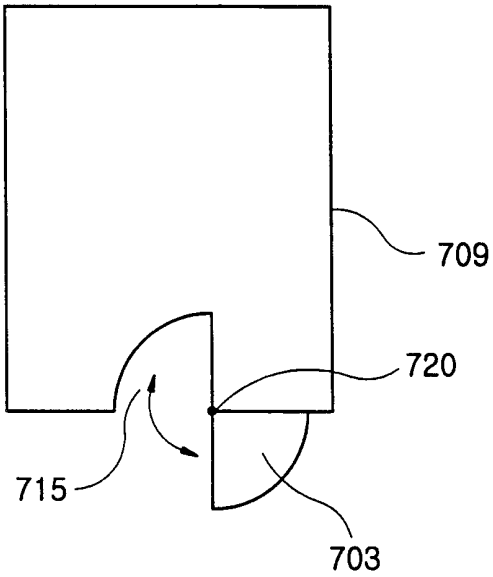
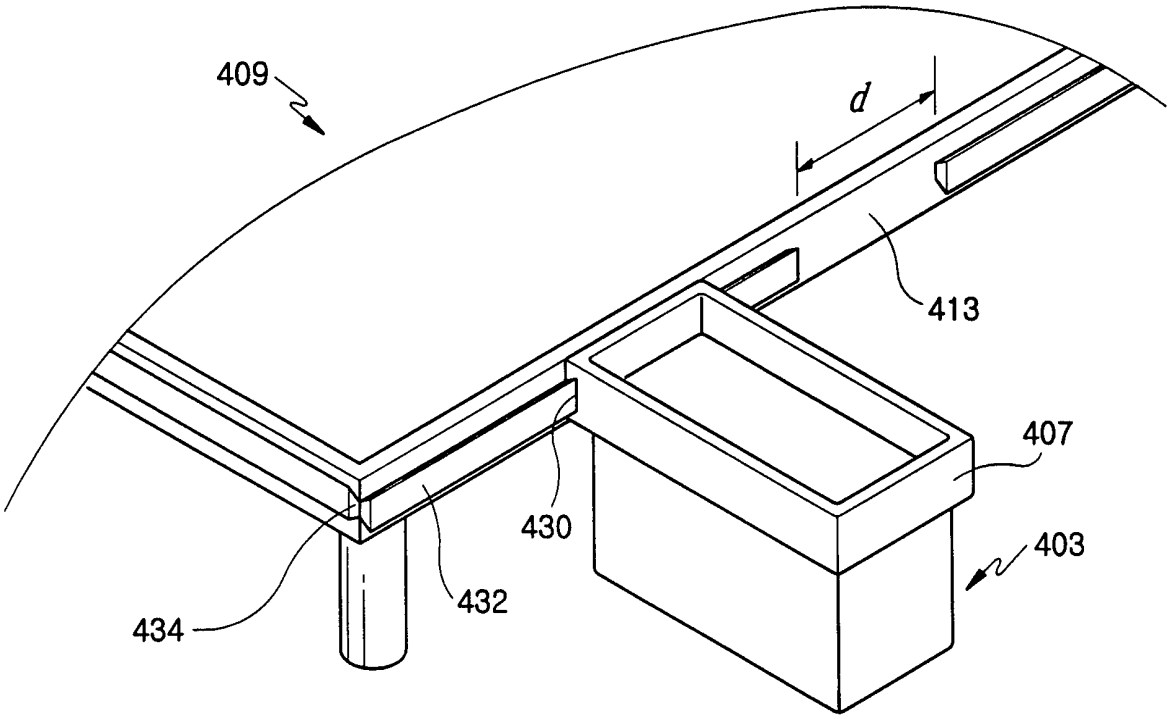


Fig.15



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR00/00894

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 A47C 17/13

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimun documentation searched (classification system followed by classification symbols)

Documentation searched other than minimun documentation to the extent that such documents are included in the fileds searched

KR, JP : A47C 17/00-17/13, 19/00-19/22, 23/00-23/34

Electronic data base consulted during the intertnational search (name of data base and, where practicable, search trerms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4290155 A (PAUL B. HANSON)22 SEP 1981	1
A	JP 3-4809 A (BARAMAUNDOBEDO)10 JAN 1991	1

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevence; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
05 DECEMBER 2000 (05.12.2000)	05 DECEMBER 2000 (05.12.2000)

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