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(54) Cot

(57) The present invention relates to a child's bed whose bed or cot bottom is easy to adjust vertically. This is made possible by the manner in which the bed bottom is supported vertically with the aid of supporting means (4). The supporting means (4) comprise elongated support means which are equipped with hand grips and which are throughgoing in relation to the ends (20) of the bed and which are arranged in elongated vertical openings (21), which are provided with engagement side-recesses (22). Catch means secure the engagement between the respective support means and recesses. A special rotation of the support means is required for loosening the engagement.

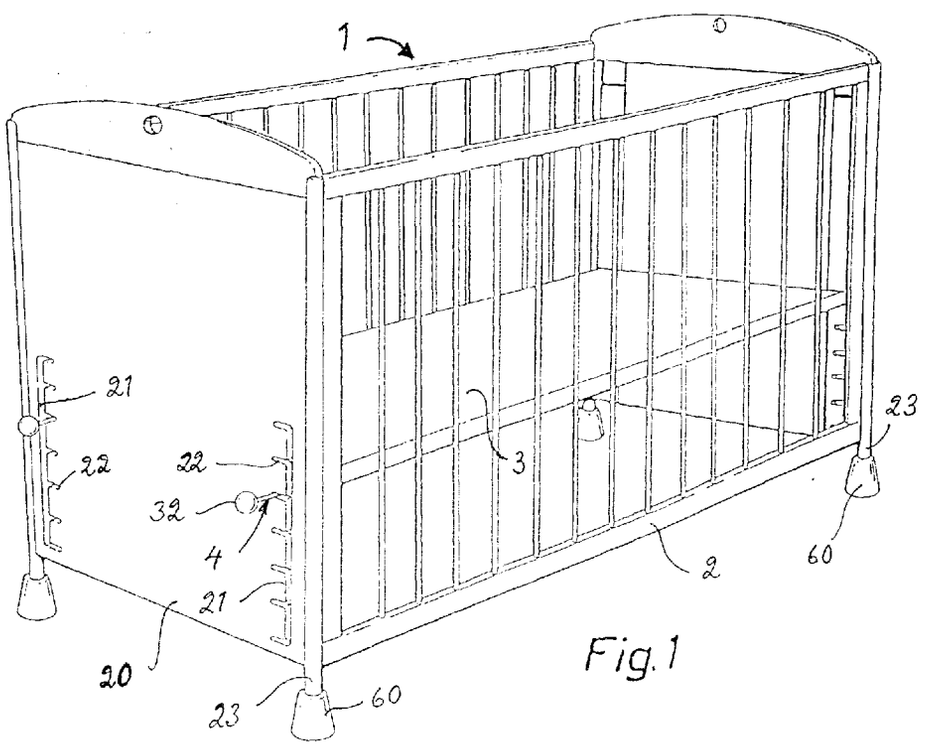

Fig.1

EP 0 826 330 A2

Description

Technical Field

The present invention relates to a child's bed or cot, in particular of the type with bars, whose bottom can be placed in a number of vertical positions.

Field of the Invention

Often, it is possible to place the bottom of the child's beds which are used today in a few different vertical positions. The reason for this is that while, for ergonomic reasons, it is desirable that the child be lying as high up as possible in the bed, the sides of the bed have to project sufficiently high above the bottom of the bed to prevent the child from getting out of the bed on his own.

A common solution is that some type of attachment for the bottom of the bed is provided in the bed posts which define the corners of the bed. When one wants to attach the bottom of the bed at a different height, one first has to remove the bottom, move the attachments, and then finally replace the bottom.

Object of the Invention

The object of the present invention is to provide a child's bed or cot whose bed bottom is easy to adjust vertically while maintaining high child safety.

Summary of the Invention

The object of the present invention is achieved by a child's bed or cot according to the appended claims.

The basic idea of the present invention is to make it possible easily and safely to adjust the bottom of the bed vertically to various positions which may be different for the two ends of the bed, something which is achieved by a special design of controllable means which support the bottom of the bed itself. Said means supporting the bottom of the bed comprise support means which in turn comprise portions which extend in a vertically adjustable manner through the end portions of the bed. Said portions are arranged in associated vertical openings which are fitted with means for engagement with said portions, thereby making it possible to hold the bottom of the bed in place vertically at various, distinct heights.

Said support means portions are fitted with hand grips outside the end portions of the bed. The engagement of the support means portions with said engagement means is adapted to be adjustable (i.e. to be changed in order to change the vertical position of the associated bed bottom end) only if two special operational measures are taken for the respective support means portions, so that safety against unintentional change is achieved. In the preferred embodiment, a support means portion first has to be rotated around its longitudinal direction and then be displaced laterally in order to be disengaged from the engagement means in question in the associated, vertical, preferably slot-shaped opening in the bed end and then be moved to engagement with another engagement means at another level in the vertical opening.

According to the invention, it is a preferred feature that said vertical openings on the inside of the bed be fitted with protection means, which in a safety-enhancing manner prevent a child who is in the bed from in an undesired way coming into contact with, pinching himself or in some other manner be injured by the special construction for adjustable support of the bottom of the bed.

Such protection means are advantageously arranged on said support means portions and displaceably guided over said vertical openings, so that the parts of the latter which are located above the bottom of the bed are always covered.

The present invention will be described in more detail below together with the description of a preferred embodiment, which should be read in conjunction with the accompanying drawings.

Brief Description of the Drawings

Fig. 1 is a perspective view showing an embodiment of a child's bed according to the present invention.

Fig. 2 is a schematic side view of the bed shown in Fig. 1.

Fig. 3 is an end plan view from the inside of the bed in Fig. 2.

Fig. 4 is a partial side view of the embodiment in Fig. 2.

Fig. 5 is a perspective view of an embodiment of means for supporting the bottom of the bed according to the present invention.

Figs 6A and 6B are schematic partial views, partly in section, of the means in Fig. 5 together with parts of the bed bottom with which they coact.

Fig. 7 is a schematic view illustrating a preferred embodiment of a bed end opening with engagement means according to the present invention.

Fig. 8 is a schematic view illustrating a preferred bed foot for use with the present invention.

Description of a Preferred Embodiment

The Figures show a preferred embodiment of a child's bed or cot 1 according to the present invention, comprising a bed bottom 3, side pieces 2, bed ends 20 and bed bottom supporting means 4.

Said supporting means, which will be described in more detail below, comprise support means in the form of bars 31, which are attached to the bed bottom, and vertical through grooves or slots 21 with associated engagement recesses 22, each connected to the associated vertical groove. The bars 31, which are arranged in pairs at each bed end, are mounted in the bed bottom

3 by their inner ends and extend through their respective bed ends 20 in the vertical grooves 21, so that the bars and thereby the bed bottom 3 can be displaced vertically. The bars can be held in the desired vertical position by being caused to engage with a correspondingly chosen recess 22. In addition, the bars are spring-loaded (see Fig. 5) so that they will be held in said recesses, which minimises the risk of the bars being moved out of engagement by mistake. The recesses 22 should have a height which allows the bars 31 to rest in them even if the bars are tilting, which is the case when the bed bottom is tilted. Since the bed bottom 3 is fixed to the bars 4, it, in turn, will be held in place vertically when the bars 4 are held in place vertically. Said supporting means also comprise manoeuvring handles 32 which are fixed to the projecting end of the respective bars 31.

The ends 33 of the bars 31 are supportingly mounted on the bed bottom 3 so that the bars are both at least to a limited extent rotatable around their axes and at least to a limited extent movable laterally, thereby permitting the movements required, for the change of engagement, of the bar end parts passing through the vertical bed end grooves, as will be seen below.

Fig. 3 shows one of the ends 20 of the child's bed 1 from the inside. At the bottom, the end 1 is provided with two vertical grooves 21 with a suitable number of engagement recesses 22, which are arranged vertically above each other and extend inwards towards each other. The width of the grooves is somewhat larger than the diameter of the bars 31. When the bed 1 is in the working position (i.e. when the bars 31 are locked vertically), the bars are resting in their respective recesses 22 in order to hold the bed bottom ends at the desired height. When one wishes to change the vertical position of the bed bottom 3 at either or both ends of the bed, one first has to move the bars in pairs out of the recesses 22 to the vertical grooves 21 while overcoming the counteracting spring force. When the bars are in their respective vertical grooves 21, one can then raise or lower them according to what is desired. Subsequently, the bars are moved into recesses 22 which are located at the new suitable height, whereby the bed 1 once again is ready for use.

Fig 4 shows a corner portion of the bed seen from the side, from which can be seen more clearly how the supporting bars 31 attached to the end 30 of the bed bottom 3 project through the end of the bed a short distance to allow easy operation without detracting from its appearance and function.

In order to provide a high level of child safety with a suspension and operation mechanism which is intended for the bed bottom and which is hidden from a child who has been placed in the bed, covering protection means are arranged on the inside of the bed ends in connection with the respective grooves 21 for the supporting bars 31. Thus, for each groove, there is a rectangular, upended cover plate 71, which is connected to the associated bar 31 and which is displaceably guidably arranged in a vertically extending undercut bed end recess 73, in whose bottom part the associated through groove 21 has been made. The height of the cover plate 71 and the height and location of the groove 21 are chosen so that when the bed bottom 3 is in its lowest position, the cover plate just covers the whole groove 21 (seen from inside the bed). When, subsequently, the bed bottom is lifted up to a higher position, the cover plate is displaced upwards (together with the bed bottom) in the recess 73.

The coupling of the respective cover plate 71 to the associated bar 31 is illustrated in Fig. 5. The bar 31 is inserted through a transverse slot opening 75 in the lower end part of the cover plate 71, which slot opening 75 allows the bar to move laterally relative to the cover plate in connection with the changing of the vertical position of the bed bottom.

In addition, Fig. 5 schematically illustrates the spring bias of the bars 31 and a locking mechanism for the bars.

Thus, the Figure shows two bars 31, whose ends 33 are rotatably and pivotally attached in an arbitrary suitable manner to the bed bottom and between which is arranged a tension spring 40. In addition, catch lugs 50 are arranged on the bars and coact with the bed bottom as will be described in more detail below in connection with Figs 6A and 6B. The spring 40 acts to pull the bars 31 towards each other so that they will stay in their respective recesses 22 in the bed ends. In order to be able to change the vertical position of the bed bottom, i. e. to be able to move the bars 31 vertically by means of the handles 32, it is necessary to overcome the forces of the tension spring 40 in order to move the respective bars laterally out of their engagement positions in their respective recesses 22. The lugs 50 are arranged so that, first, it is necessary to rotate the bars 31 around their axes by means of the handles 32, before one is able to move the bars out into the grooves 21 by overcoming the spring forces. The spring, and the fact that it is necessary to rotate the bars before it is possible to break the engagement, provide enhanced security, since the risk that this will happen by mistake is reduced. The spring force is adapted to an adult individual.

Figs 6A and 6B illustrate in more detail the arrangement which makes it necessary to rotate the bars 31 before they can be moved out of the engagement position. One of the lugs 50 is shown in Fig. 6A in its locked or blocked position and in Fig. 6B in its free position after the rotating and lateral turning of the associated bar 31.

When the bars 31 are in the locked engagement position, the respective lugs 50 abut against a stop 51, which advantageously is a bed bottom frame part. The normal abutting of the lugs against the respective stops 51 prevents the bars 31 from being moved apart out from the recesses (to the right in the Figure). In order for it to be possible to move the bars apart, they first have to be rotated (clockwise in the Figure) so that the lugs 50 no longer abut against the stops 51. Since the

bars are connected by means of a contracting spring, the lugs 50 will automatically snap into their abutment position against the stops 51 when the bars are moved into the engagement position.

Fig. 7 illustrates a preferred design of end grooves 21 with associated recesses. The latter have a horizontal entry part 25 and a vertical part 27 extending downwards therefrom, which vertical part is adapted to receive a bar 31 independently of its tilting, if any (when the bed bottom is tiltingly arranged).

Fig. 8 shows a bed foot 60 advantageously used in the bed according to the invention, which foot is hollow and in which it is possible to place a bed leg 23 with a certain amount of play. In the bed foot 60, a spring 61 is arranged, whose spring action is directed essentially vertically. The fact that bed legs 23 are placed in the bed feet 60 with a certain amount of play in such a way that they rest on the springs 61 makes it possible to rock the bed.

The above description of a preferred embodiment has been provided by way of example only and should not be seen as limiting the scope of the present invention, which is limited by the claims only.

There are a number of different embodiments of the present invention, all of which fall within the scope of the inventive idea as it is stated in the appended claims.

For example, the recesses which have been described as horizontal in the description, could just as well be angled in relation to the horizontal plane, so that, in pairs, they form a V-like shape. Instead of having vertical through grooves, which are made in the bed ends, it is possible to have end boards which are not as wide as the space between the bed posts, whereby a vertical opening is formed between the end boards and bed posts. Instead of employing a contracting spring for connecting the bars, it is possible to achieve the same effect by using bars which in themselves are resilient horizontally but not vertically, such as some type of flat bars, whereby, as will be appreciated, the bed bottom ends of the bars only need to be mounted for rotation around the longitudinal axis.

Claims

1. A child's bed or cot (1), preferably of the type with bars, comprising a bed bottom (3), bed ends (20), side pieces (2) and supporting means (4), which are adapted to support the bed bottom vertically in relation to the rest of the bed, said supporting means (4) being designed so that the respective end parts (30) of the bed bottom (3) are adjustable to different heights independently of each other, **characterised** in that said supporting means (4) at each bed end comprise separate support means (31) arranged on the bed bottom (3) on each side and comprising portions, which are movably arranged in and extend through respective essentially vertical slot-shaped openings (21) in the bed ends, and engagement means (22) for coaction with said support means portions in order to create a number of vertically defined engagement positions in connection with said openings (21), and that means (40, 50, 51) are arranged in order to, after achieving engagement between said support means portions and said engagement means, secure the engagement against unintentional loosening.

2. A child's bed according to claim 1, **characterised** in that said securing means are arranged so that the loosening of the engagement between a support means portion and an engagement means requires two consecutive, different operations of the support means portions, preferably an initial rotation of the support means portion around its longitudinal axis and then a lateral displacement of the support means portion.

3. A child's bed according to any one of the preceding claims, **characterised** in that it is provided with protection means (71, 73) for protectingly covering, above the bed bottom, said vertical openings (21), preferably arranged on the inside of the respective bed ends (20).

4. A child's bed according to claim 3, **characterised** in that said protection means adjacent to the respective vertical openings (21) comprise an opening cover plate (71) which is connected to the bed bottom and/or the associated said support means portion and which is displaceable along the bed end over the associated vertical opening, preferably in a groove (73) arranged on the inside of the bed end.

5. A child's bed according to any one of the preceding claims, **characterised** in that said engagement means (22) comprise recesses, which define vertical positions and which are arranged adjacent to and are open to the associated vertical opening (21), and that said recesses are adapted to receive said through support means portions in order to engage therewith.

6. A child's bed according to claim 5, **characterised** in that said recesses comprise a horizontal portion (25) connecting to the associated vertical opening (21) and a vertical portion (27), which is arranged so that said support means portions rest therein in the engagement position.

7. A child's bed according to any one of the preceding claims, **characterised** in that said support means portions are pretensioned to be held in the engagement position.

8. A child's bed according to any one of the preceding

claims,**characterised** in that the respective support means (31) comprise catch means (50), that the respective support means (31) are axially rotatably arranged in the bed bottom (3), and that said catch means (50) are adapted so that the respective support means (31) in the engagement position have to be rotated in order for said catch means to withdraw from a catch position and make it possible to disengage said support means (31).

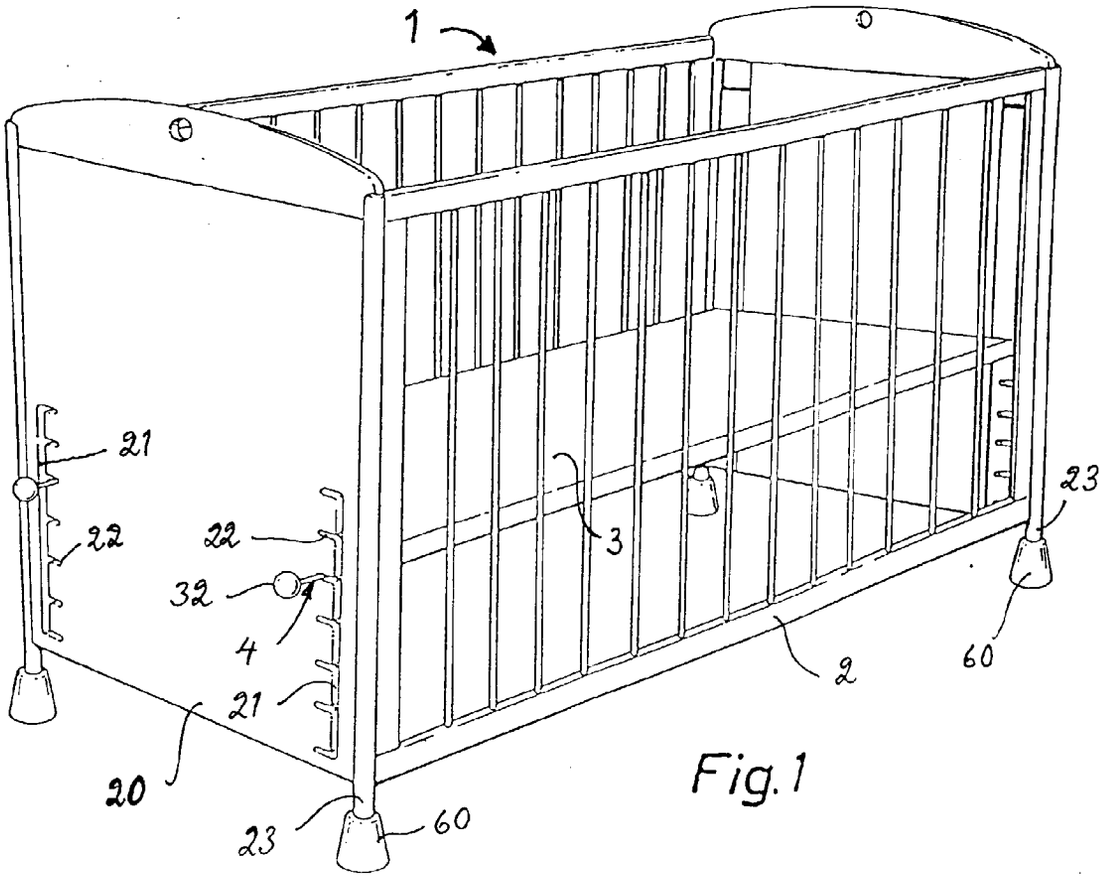

Fig. 1

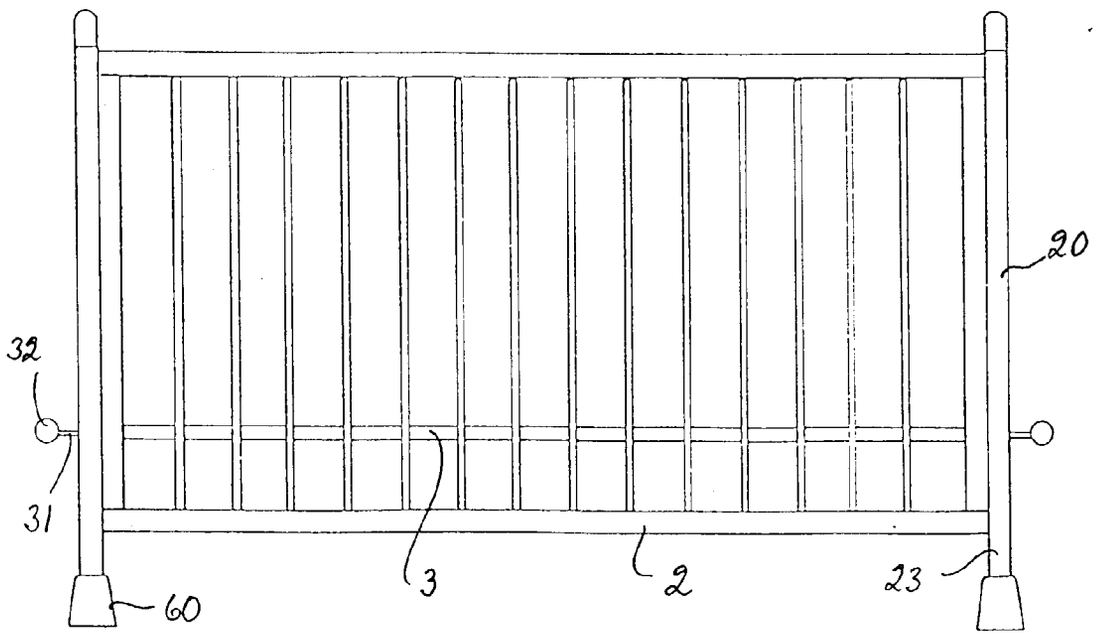

Fig. 2

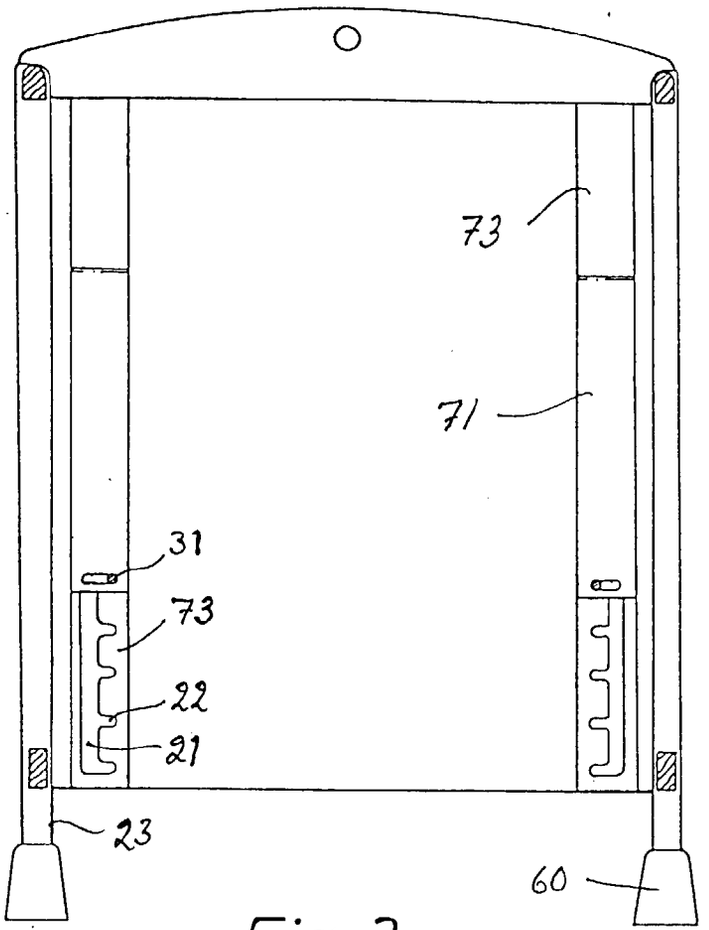

Fig. 3

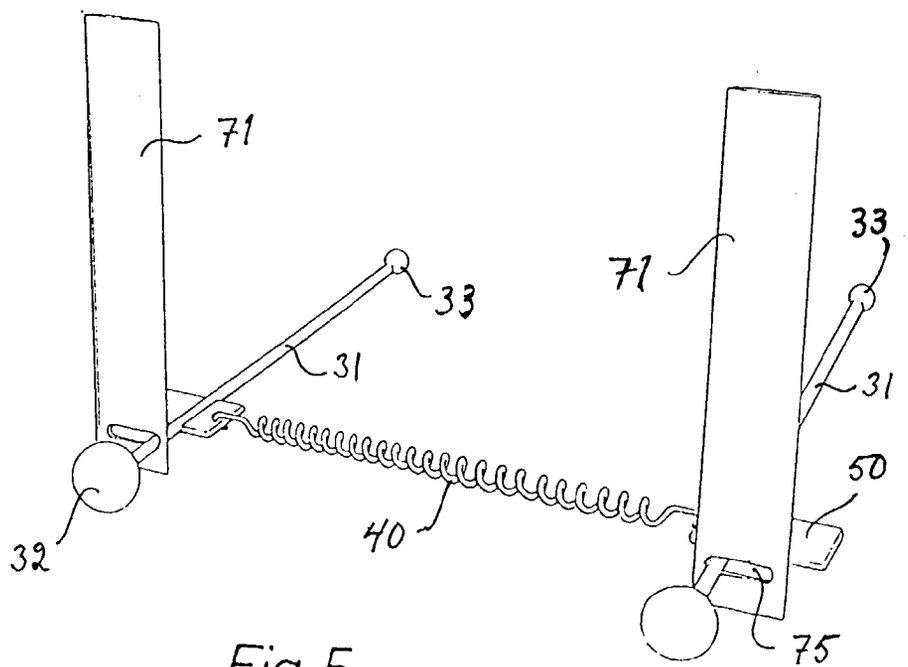

Fig. 5

Fig.6 A

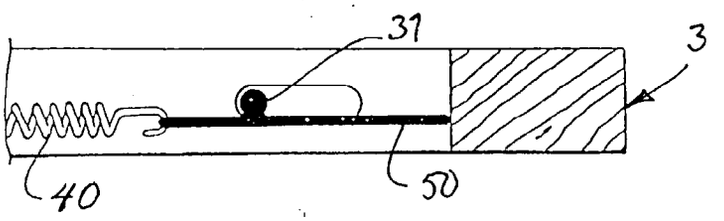

Fig.6 B

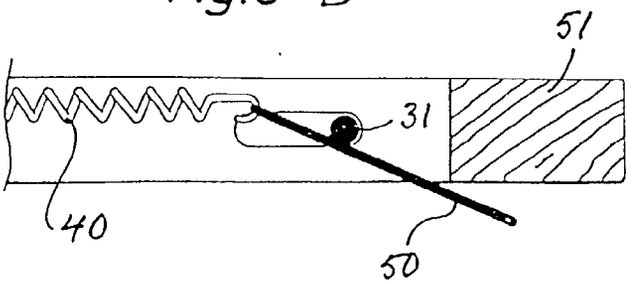

Fig. 4

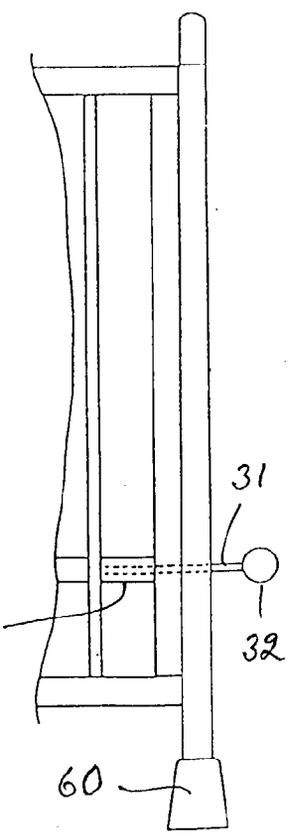

Fig.8

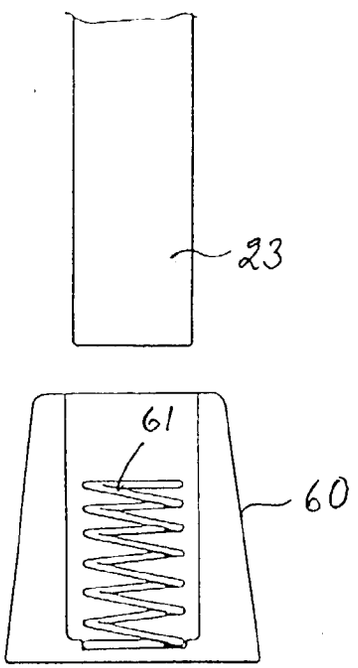

Fig.7