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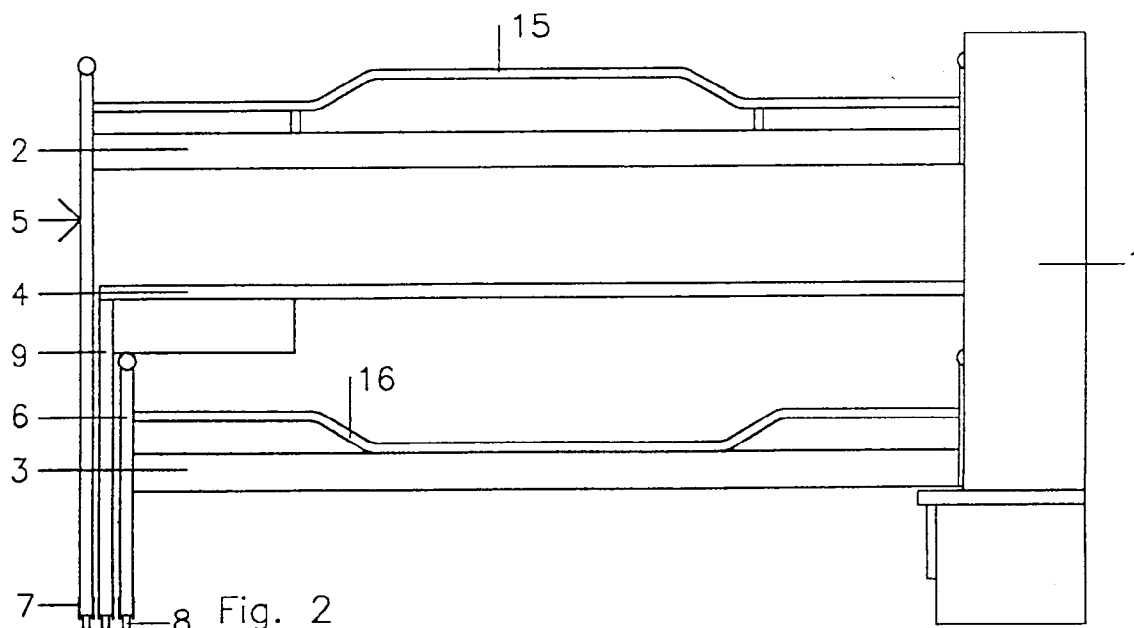
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(54) Improvements in multi-purpose pieces of furniture

(57) The improvements are to be applied to multi-purpose pieces of furniture of the type which comprise a shelving structure (1) and a bed element or other furniture elements (2,3,4) incorporated to the shelving structure (1), forming a straight angle, characterized in that the shelving structure (1) has lengthwise shelves (17,18,19) with guides (25) to receive the horizontal members of the bed elements (2,3) and one table element (4), each constituted by two members arranged at a straight angle, one on which members constitutes the horizontal bed element or table element supported and

guided on the shelves by means of wheels (24), bearing the other, vertically arranged member against the floor also by means of wheels (30). The wheels are located in cavities (28,29) of the moving furniture elements for its protection and to permit the arrangement of a braking mechanism (33,34,35) for the wheels (24) sliding along the shelves, constituted by a swiveling arm rotating on the shaft of one of the wheels and a lengthwise driving bar (35) connected to said swiveling block by means of a link (34).

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Description

This invention refers to improvements in multi-purpose pieces of furniture particularly to pieces of furniture featuring simultaneously a set of shelves and other furniture elements for instance bed elements.

Hitherto, some pieces of furniture have already been known comprising a shelving structure and a bed element arranged at an straight angle, allowing its adaptation respectively to a wall and to the floor of a room, which also form an straight angle. This arrangement is usual in order to have a multi-purpose utilization of the furniture element permitting to obtain better advantage of the space available in the room.

It is an objective of this invention to provide a multi-purpose piece of furniture which not only permits the multiple character provided by the shelves and one bed element, but permitting as well, from one side, the arrangement of multiple furniture elements like a second bed element and a table all of them capable to slide along the shelf elements, and on the other side, to obtain the capability of arranging all of the furniture elements forming a block or single module, permitting in this way an efficient utilization of the volume occupied by a bed element, permitting at the same time multi-purpose capacity by the arrangement of two bed elements to be located in variable positions along the space occupied in the room, and having at the same time a table element capable to slide along the shelving structure as desired without problems for the location of the bed elements.

Further, the improvements of this invention provide that the uppermost bed element has a vertical side wall comprising two parallel and vertical panels or boards, connected by multiple regularly spaced cross beams, forming a structure which may be used as ladder for the access to the upper bed element.

According to these improvements both the upper bed element as well as the lower bed element and the table element, are constituted by right angle structures having a vertical side wall with wheels incorporated in the lower border of the wall, to permit the displacement of the furniture elements which have as well horizontal wings bearing by its ends by means of wheels, on straight guides incorporated on the shelf elements. In this way the shelving structure has the double role to receive the usual objects to be supported by the shelves like books, decorative elements, etc. as well as the role of supporting and guiding the bed elements and the table elements which are capable to slide along the entirety of the shelves. This arrangement permits that the bed elements or the table element may be arranged in any location as desired along the shelves. Particularly, it will permit an arrangement in which both bed elements may be located at one end of the furniture while the table may be arranged in an intermediate location as desired by the user. In an alternative arrangement the bed elements may be located with a certain spacing to each other and the table element may be arranged as de-

sired, eventually at an end of the furniture, thus constituting an structure permitting the use of both bed elements separately to each other.

The wheels supported on the floor will be assembled, according to these improvements, partially incorporated in cavities of the furniture elements, this reducing the space necessary for the wheels, allowing a better aesthetical appearance and preventing the interference of the wheels with other furniture elements situated at the same level on the floor. At the same time it will reduce the collection of loose fibers, lints, etc. by the wheels. Basically, these improvements provide a U form supporting part receiving the shaft of a wheel between the lower portions of its arms, said supporting part being incorporated in the lower border of each vertical wall of the bed elements and table element, each of the arms of the U being adapted to one of the side surfaces of the vertical wall of the bed element or table element of the multi-purpose piece of furniture.

At the same time, these improvements extend to the guiding means for the wheels of the mobile furniture elements, comprising guides made out of moulded straight elements to receive the wheels incorporated on the lower borders of the furniture elements like bed elements or table elements. The wheels are combined with braking devices comprising a rocking arm associated to the shaft of a wheel, to block the furniture element in the desired location, thus improving the operative capability of the piece of furniture.

In the following, a preferred embodiment of a multi-purpose piece of furniture incorporating the improvements according to the invention will be explained.

The drawings are illustrative but they are not to be taken as limiting the scope of the invention.

Figure 1 shows a top view of a multi-purpose piece of furniture comprising two bed elements and one table element, according to the invention.

Figure 2 shows a front view of the multi-purpose piece of furniture of figure 1.

Figure 3 shows a side view of the multi-purpose piece of furniture of figure 1.

Figure 4 is similar to figure 3 showing a different arrangement of the bed elements and the table element.

Figure 5 shows a cross section of the multi-purpose piece of furniture.

Figure 6 shows a cross section of the guiding means for one of the sliding furniture elements on a shelf.

Figures 7 and 8 show a wheel incorporated to the lower border of a furniture element.

Figure 9 shows a detail of one of the wheels sliding on a shelf.

Figures 10 and 11 are views of the wheels sliding on the shelves, showing a braking mechanism.

The multi-purpose piece of furniture according to these improvements comprises a shelving structure -1- of generally elongated parallelepipedic form, preferably aimed to adapt to a wall of a room and having preferably

two respectively upper and lower bed elements -2- and -3- with capacity to slide along the shelving structure -1- by means of guides incorporated on the same. The piece of furniture has a table element -4- which has also capacity to slide along the shelving structure -1-.

The bed elements -2- and -3- have vertical walls respectively -5- and -6- which have in their lower edges corresponding wheel arrangements -7- and -8-. Similarly, the table element -4- has a vertical wall -9- equipped with a wheel in its lower edge. The upper bed element has its vertical side wall -5- made out by two vertical rectangular boards parallel to each other -10- and -11-, figure 4, connected by multiple crossbeams -12-, -13- and -14- regularly spaced to each other, which may be used as a ladder for having access to said upper bed element which has, as shown in figure 2, longitudinal bars -15- close to its upper borders.

The lower bed element -3- has also bars -16- parallel to the borders of its lengthwise beams, close to the same in a part of its length.

The shelving structure -1- has longitudinal shelves such as -17-, -18- and -19- and multiple open departments -20-, -21- and -22-. The shelves -17-, -18- and -19- have additionally the role of supporting the ends of the bed elements and the table element, having guides on which said furniture element are capable of sliding.

Figure 6 shows an example of the arrangement of the guides for the table element and the bed elements which slide along said guides by means of small wheels such as -23- and -23'. Figure 6 shows in detail one of said wheels -24- sliding on the guide -25- arranged on the shelf -19-, all of it having only the character of an example. The guide -25- may be constituted in multiple forms, for instance: by means of successive protruding lugs rounded in their upper ends, a bar like slider with rounded upper border, a U cross section slider or any other suitable guiding element. Alternatively, said guide could be instead of a protruding guide a recessed guide incorporated on the shelf -19-. In all cases it is essential that the wheels -24- have a profile matching with the profile of the guides -25-.

In the embodiment as shown in figure 6 the wheels -24- which form part of the assembly -23-, figure 5, are incorporated into cavities -29- of the table element or bed element while the wheels -30 of the assembly -23'- are arranged on a supporting part which has to side plates -26- and -27-, the wheel being located inside of the cavity or recess -28- of the lower part of the vertical wall of the furniture -1- the plates -26- and -27- being adapted to the external surfaces of said vertical wall and carrying at the same time the shaft for the rotation of the wheel -24-. By this arrangement, the wheels are better protected, being less prone to collecting dirtiness, fibers, lints, etc. and at the same time the assembly of the wheels to the moving furniture elements is substantially reinforced.

An assembly of wheels -23- for the guiding and sliding along the shelving structure has been shown in figure 9 in which a wheel -24- is to be observed which slides on the guide -25- and being located inside a cavity or recess -29- of the bed element or similar furniture element. The guide -25- will be constituted preferably by means of a moulded synthetic element having protrusions in its lower surface for its incorporation in recesses of the shelving structure as shown in figure 9. In this way the bed element or table element are capable of sliding along the horizontal wall -31- of the shelving structure with the lower border -32- of the moving furniture elements at a certain high in respect to said horizontal wall. The wheel -24- is well protected inside the cavity of the moving furniture element. These improvements extend as well, see figures 10 and 11, to the arrangement of a braking mechanism for the wheels, adopting the form of a rocking arm -33- which is capable to rotate on the shaft of the wheel -24-. Said rocking arm is connected by means of the link -34- to the bar -35- activating the braking action. The arrangement is shown in figure 11 in which it is to be observed that upon pulling the bar -35- the arm -33- will swivel on its center line, engaging the lower furniture surface -32-, this action producing a braking effect.

Accordingly these improvements will permit the manufacture of a simple and efficient multi-purpose piece of furniture, permitting to reunite the constituting furniture elements, for instance two bed elements and one table element, in only one block or module, as partially shown in figure 4, that is, all furniture elements may be engaged one inside the other after sliding along the guides occupying a external volume determined by the upper bed element -2- with its two vertical side wall elements -10- and -11-, leaving the rest of the space free. One of the conditions to be met is that the widths of the various furniture elements be conveniently matched in order to permit its engagement forming a single module. In the embodiment shown, the greatest width corresponds to the upper bed element -2- and the shortest width corresponds to the lowermost bed element -3-, while the table element -4- has an intermediate width with the capacity of being introduced between both bed elements when inter-engaged. The same condition is to be met by the heights of the various furniture elements.

Claims

Claims

- Improvements in multi-purpose pieces of furniture of the type which comprise a shelving structure and a bed element or other furniture elements incorporated to the shelving structure, forming an straight angle, characterized in that the shelving structure has lengthwise shelves with guides to receive the horizontal members of the bed elements and one table element, each constituted by two members arranged at an straight angle, one on which members constitutes the horizontal bed element or table element supported and guided on the shelves by

means of wheels, bearing the other, vertically arranged member against the floor also by means of wheels.

2. Improvements in multi-purpose pieces of furniture, according to claim 1, characterized in that the vertical member of the upper bed element, bearing against the floor, is made out of two boards parallel to each other and connected with multiple cross-beams at regular spacings forming an access ladder. 5
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3. Improvements in multi-purpose pieces of furniture, according to claim 1, characterized in that the width of the table has an intermediate value between the widths of the uppermost bed element which is the longest and the width of the lowermost bed element, which is the shortest, permitting the introduction within each other of the bed elements and the table element constituting a single module. 15
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4. Improvements in multi-purpose pieces of furniture, according to claim 1, characterized in that the wheels which bear on the floor and on the shelves are located in cavities of the moving furniture elements for its protection and to permit the arrangement of a braking mechanism for the wheels sliding along the shelves, constituted by a swiveling arm rotating on the shaft of one of the wheels and a lengthwise driving bar connected to said swiveling block by means of a link. 25
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5. Improvements in multi-purpose pieces of furniture, according to claims 1 and 4, characterized in that the wheels which bear on the floor are assembled on supporting U form parts which arms are adapted to the side external faces of the vertical wall of each of the sliding furniture elements, carrying in this lower part a shaft for the rotation of the wheel, which is partially hidden inside a cavity of the vertical wall element. 35
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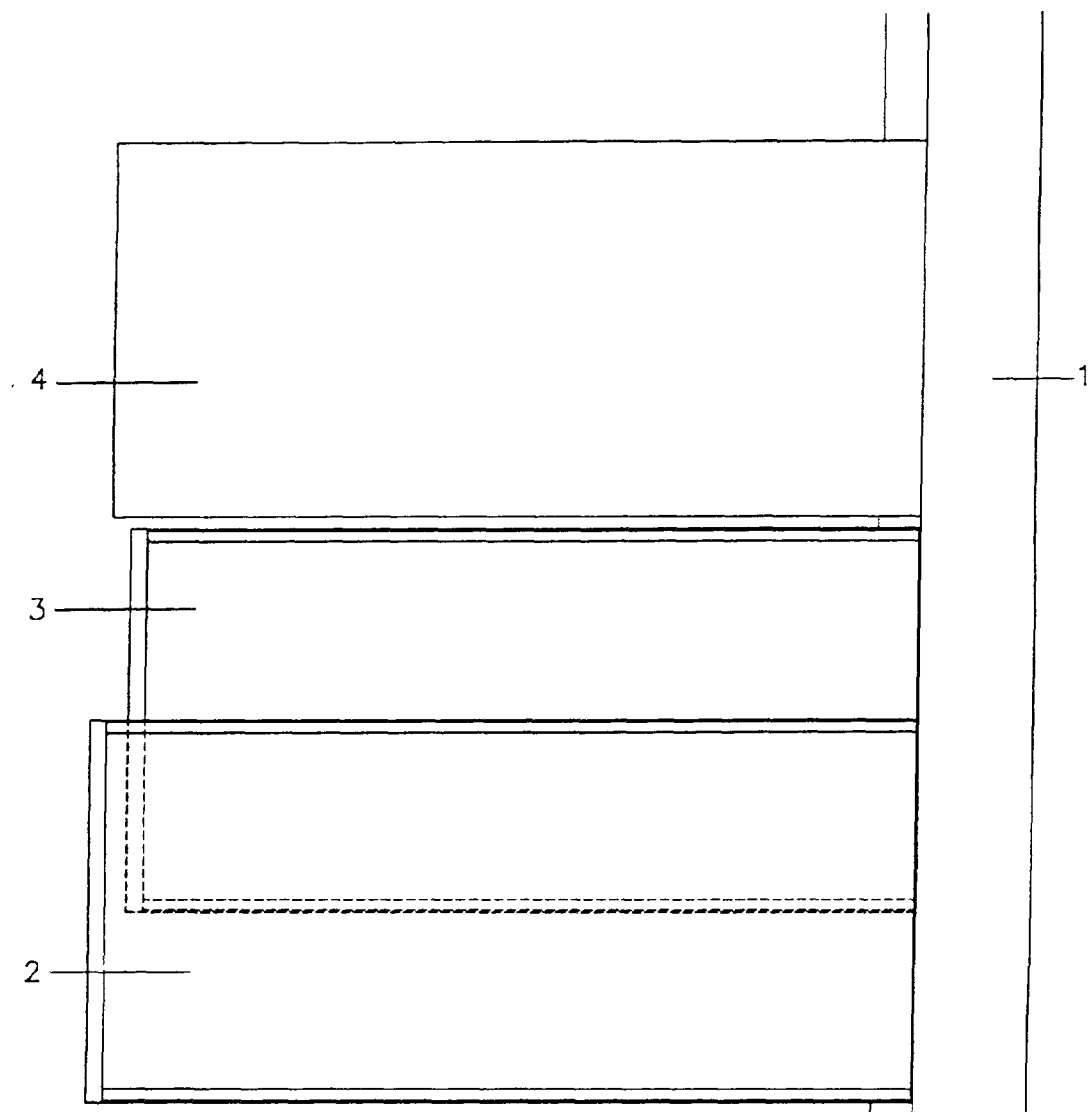


Fig. 1

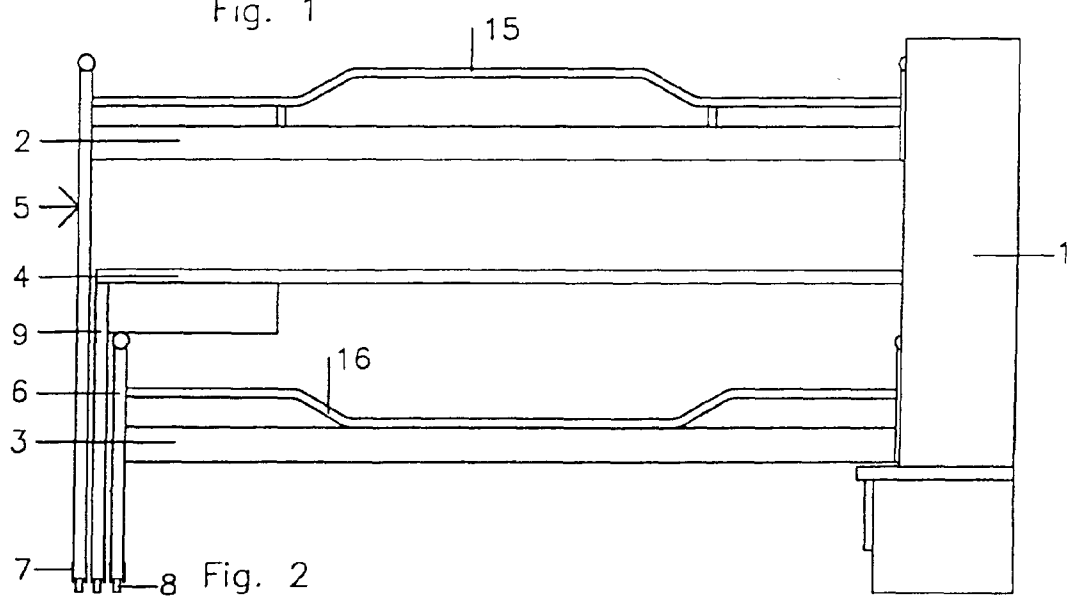


Fig. 2

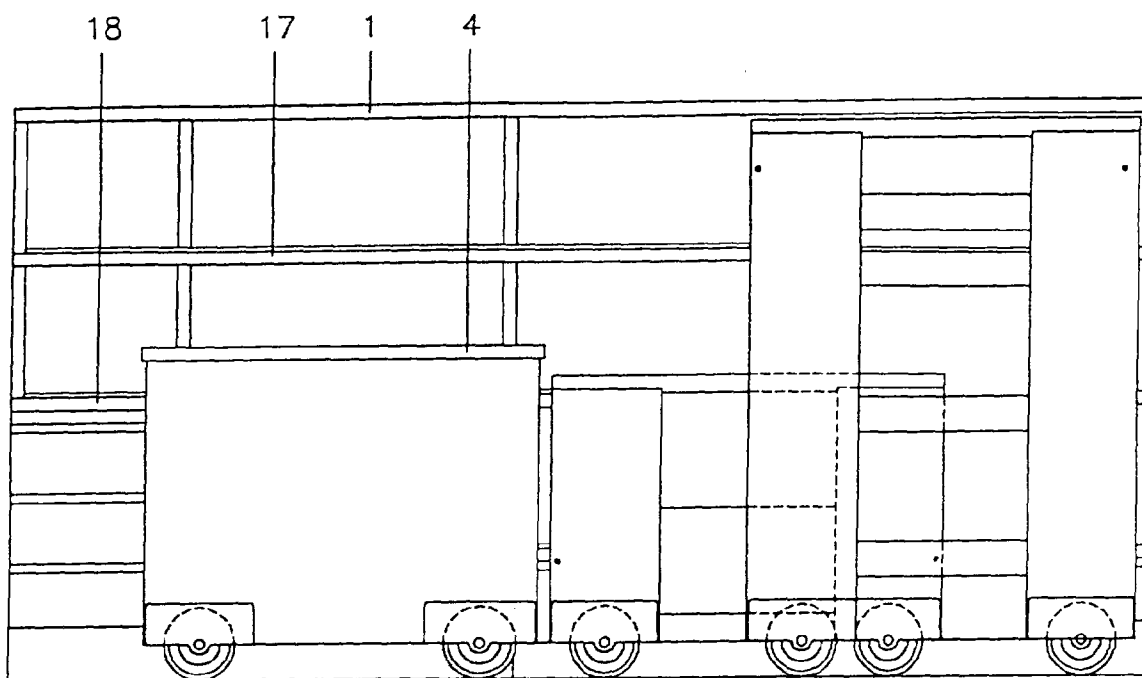


Fig. 3

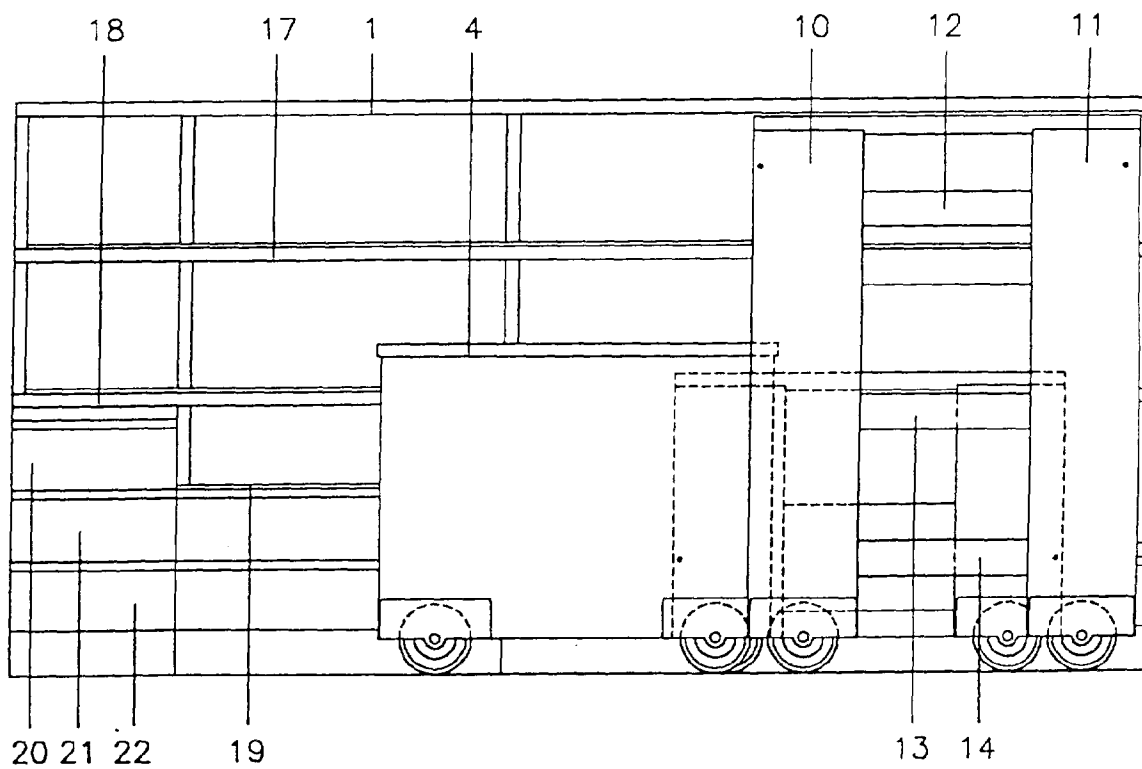


Fig. 4

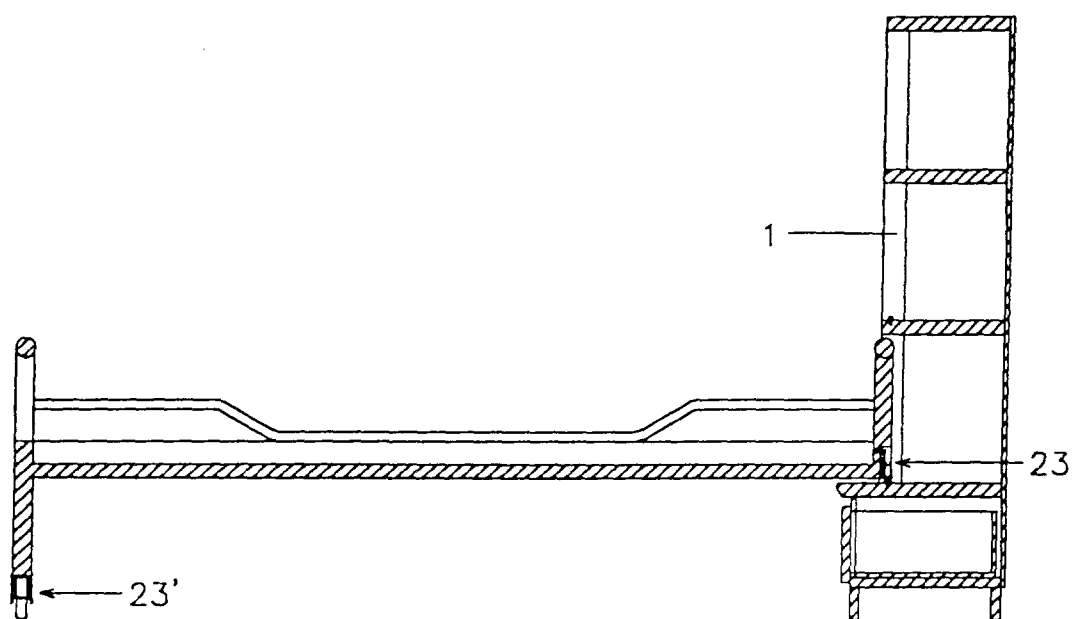


Fig. 5

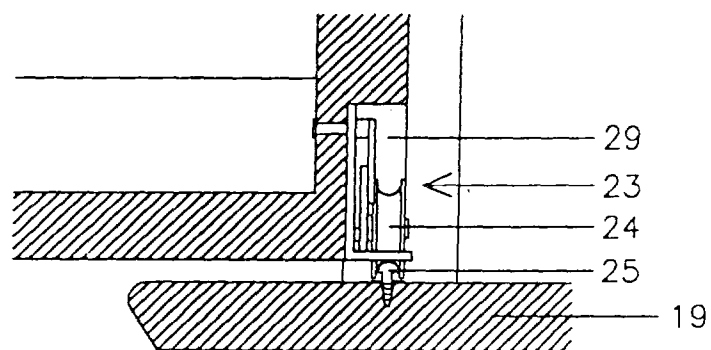


Fig. 6

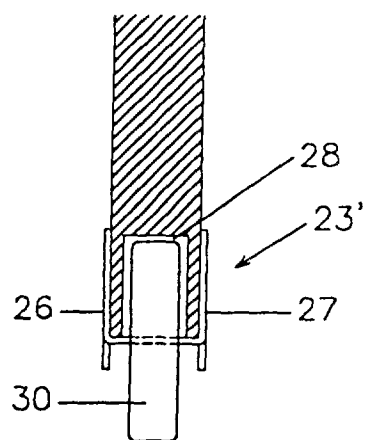


Fig. 7

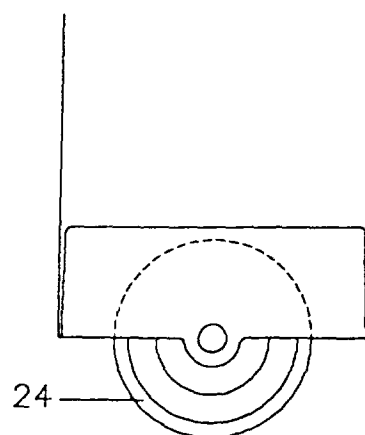
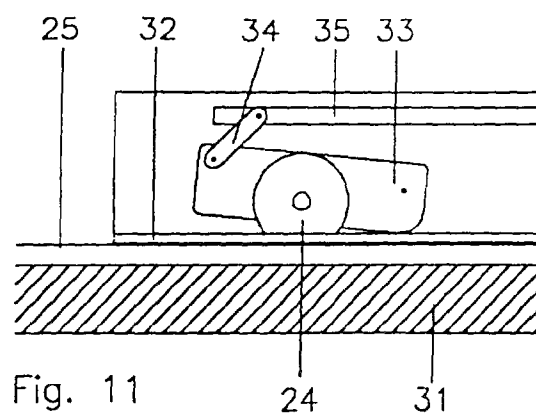
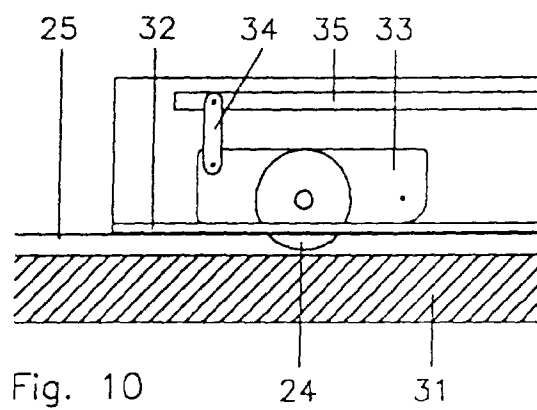
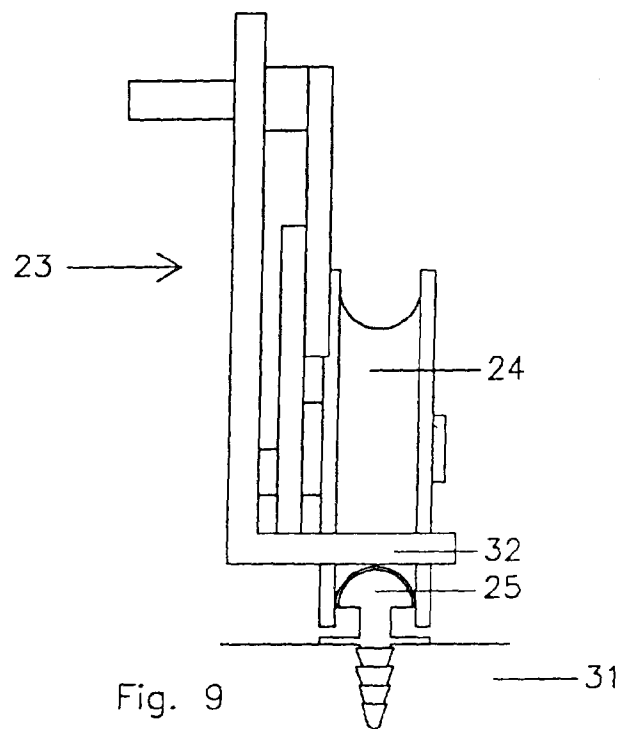


Fig. 8





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EUROPEAN SEARCH REPORT

Application Number
EP 95 50 0138

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	WO-A-91 19442 (GALIMBERTI) * claims; figures * ---	1,2	A47C17/52 A47C19/22 A47C19/20 A47B83/04
A	AT-B-394 486 (CASTAGNA) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47C A47B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 January 1996	Examiner VandeVondele, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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