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(54) Bed and structure of flat bed-base for use particularly in hospitals.

(57) Bed and structure of flat bed-base (A) for use particularly in hospitals, characterised by a bed-base formed from several solid, essentially flat components (1,1',1'',1'''), all on the same plane and clasped together, and in particular having two corresponding (1,1''') with the respective edges near to the head- and/or foot-board, and two smaller intermediate ones (1',1''). These components are produced by injection-moulding and/or pressing "baydur" plastic; around the edges tubular supporting frames (3) are embedded in the plastic, and there have been included devices (4,5) for aerating and containing the mattress.

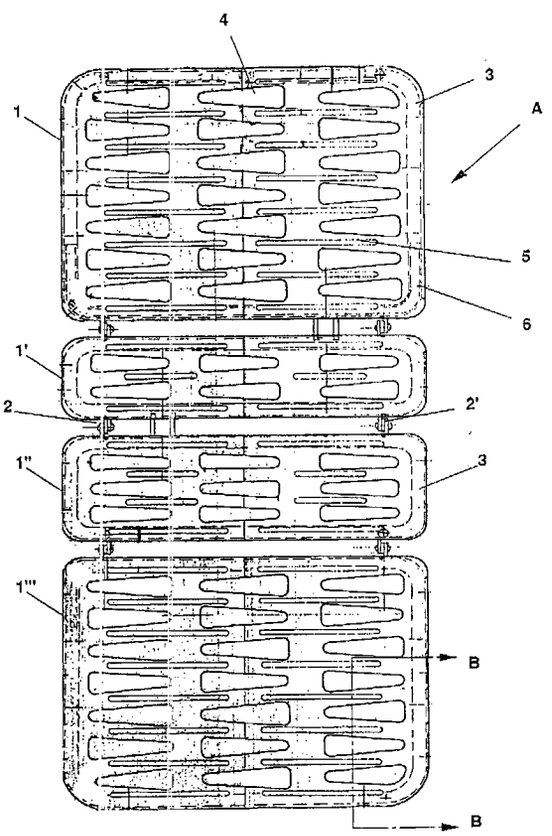

Fig. 1

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This invention concerns a bed and the structure of a flat bed-base for use particularly in hospitals.

The invention is suited particularly, but not exclusively, for use in the technical equipment sector, and more specifically, for use in hospitals.

The current type of bed used in hospitals is the traditional one, that is, composed of a frame which is generally rectangular, on to which are attached a headboard and a footboard. At the base of the frame, feet can be fitted, either of the fixed type or of the type having castors. In addition, a device can be fitted below the spring-base which enables all or part of said base to be lifted. On the internal perimeter of the tubular bed-frame there is a metal mesh, which is generally made up of a 5 mm diameter iron filament. This is interwoven in such a way as to produce a series of square or rectangular links of around 5 cm x 5 cm. In this case the principal function of the metal mesh is to support the mattress and the weight of the body, which it does by adapting itself to the main shape of the body. This last feature however is rather irrelevant in terms of hospital beds, since most of these require a rigid spring-base. Indeed sometimes this is achieved by inserting ordinary pieces of wood between the spring-base and the mattress. In another type of hospital bed, found particularly in intensive therapy wards, reanimation department and in operating theatres, the traditional metal spring-base is composed of a collection of two or more adjacent meshes all on the same plane and hinged in such a way as to allow certain parts of a patient's body to be raised while the others remain flat.

However, there are several problems with the above-cited types of spring-base. Above all there is the consideration that they are not really suited to the highly specialised wards such as intensive care, reanimation or the operating theatre in that they are not easily sterilised.

The traditional spring-base is in fact full of inaccessible places such as, for example, the inside of the outer frame which is in contact with the external environment due to the presence of the screw holes necessary for fixing on the metal spring-base. Secondly, the structure itself of the spring-base is unhygienic in that it is made up of many components, the various joints of which constitute a real receptacle for dirt, and thus are potentially dangerous due to the possible development of bacteria therein, which are difficult to remove from such places. In such cases, in order to clean the beds properly, they must be completely dismantled and all their parts cleaned separately. These traditional beds also do not lend themselves to being sterilised, and can only be given a ordinary tunnel-wash using normal disinfectants, the result being an inferior degree of cleanliness. Further problems are caused by the fact that the spring-base is made of metal and thus easily subject to oxidation, and progressive rusting, due on the one hand to the frequent washing of the beds, and on the other to the various uses to which the beds are put. For example if a bed is used by a long-term patient, it can come into contact with liquids which are strongly acidic, such as urine. Also, in cases where the traditional flat spring-base is made rigid by the addition of pieces of wood, there is inadequate aeration, and this is indispensable for the mattress to be able to breathe, and thus for the well-being of the patient. Furthermore, traditional types of spring-bases do not even have any convenient method of containing the mattress, which is just held in place by the footboard and the headboard, leaving the possibility of the mattress sliding off at either side.

Finally, the sometimes elevated cost of production of the spring-bases can have a negative effect on the market for the complete bed.

In order to avoid some of these problems, which are principally concerned with the need to sterilise the various components of hospital technical equipment, such as trolleys, the same applicant, in another industrial patent, describing the construction and relative components for a trolley particularly suitable for carrying medicines and instruments, stated that baydur plastic should be used for pressing the solid components, namely : a part comprising a base, sides, a back and/or upper shelf; drawers with a cavity on the front forming the handle; sliding doors; as well as dividing panels.

The aim of the present invention is to avoid the above mentioned problems.

With this invention, the afore-stated and other aims are achieved, as described in the annexed claims, by resolving the problems described above with a bed and bed-base structure which are particularly suitable for hospitals. The bed-base is formed from several solid, essentially flat components, all on the same plane and clasped together, and in particular there are two corresponding with the respective edges near to the head- and/or footboard, and two smaller intermediate ones. These components are produced by injection-moulding and/or pressing "baydur" plastic; around the edges tubular supporting frames are embedded in the plastic, and there are devices for aerating and containing the mattress.

In this way, as a result of the significant creative contribution involved resulting in an immediate technical achievement, various advantages are to be gained. For example, and most importantly, the bed-base can be effectively sterilised to an extent never before reached, and essentially independently of the temperature, within normal values and times required, obtaining thereby a

maximum degree of hygiene. Secondly, the absence of metal parts, and inaccessible areas such as cracks, lubricated joints, etc., means the elimination of those areas which can form a receptacle for dirt with the consequent growth of bacteria, and thus the level of hygiene is optimised. With regards the functionality of the base, it should be pointed out that the mattress is not placed directly on the bed base, thus allowing a perfect ventilation and aeration of the mattress, with obvious benefits and advantages for the patient. Last but not least, this base represents a structural simplification and entails a substantial reduction in weight of the entire structure.

These and other advantages shall be demonstrated in the subsequent detailed description of the preferred method for the bed-base's construction, with the help of the attached diagrams. The details shown therein are not to be considered restrictive, but just exemplary.

Figure 1 shows a plan view of the structure of the flat bed-base for use in hospitals.

Figure 2 gives a side view and a longitudinal section of the bed-base structure shown in Figure 1.

Figure 3 gives a cross section of the bed-base structure, along the axis B-B shown in Figure 1.

Figure 4 represents a frontal view of an end-piece of the flat bed-base, seen along axis A-A in Figure 2.

Figure 5 is a view of detail C as in Figure 2.

With reference to the Figures it will be seen that the bed and bed-base (A) for particular use in hospitals, is composed of a headboard and a corresponding footboard which are fixed perpendicularly to the said base (A) mounted on a lower frame (supported using the usual methods), by a series of small rotating wheels. The bed-base structure (A) is formed of tilting planes (1, 1', 1'', 1''') which are attached in the middle to the lower-lying support frame. There are four components of the bed-base, which are essentially solid planes (1, 1', 1'', 1''') as they are each made from one piece of material, that is, they are each moulded from "baydur" plastic. These components are fixed together and thus each has at least one pair of clasps (2, 2') which are attached to the side of the component which is facing the adjoining component. The arrangement of the solid components (1, 1', 1'', 1''') of the bed-base (A) is such that the first two (1, 1''') which are in an end position, are larger than the other two in the middle position (1', 1''). It will also be noted that these two middle position components (1', 1'') are of different sizes. Each component of baydur plastic (1, 1', 1'', 1'''), has a tubular frame (3) embedded within its structure around the perimeter, which serves to support and strengthen it. The structure of each component (1, 1', 1'', 1''') has a particular form, in that each has a series of openings or holes, formed by extracting material. These openings are like round-ended triangles (4), and are found on both the vertical and horizontal sides of each component (A). The function of said openings (4) is in practice to allow a better aeration of the mattress which is placed on the surface of the bed-base (A). Furthermore, the components have transversal ridges (5) which allow the mattress to be slightly raised above the surface of the bed-base, thus leaving a space below the mattress which also aids ventilation. Finally, near the edge of each component (1, 1', 1'', 1''') of the bed-base (A), a boundary (6) which in practice is nothing more than a border to each component, and is slightly raised in comparison to the rest of the component, and delimits the position in which to place the mattress. On at least one of the ends of the bed-base (A) there is a edge for restraining the mattress (7), which is essentially an upturned "U" structure partially incorporated into component (1) and/or (1''').

Claims

1. Bed and structure of flat bed-base for use particularly in hospitals, characterised by a bed-base formed from several solid, essentially flat components, all on the same plane and clasped together, and in particular having two corresponding with the respective edges near to the head- and/or foot-board, and two smaller intermediate ones. These components are produced by injection-moulding and/or pressing "baydur" plastic; around the edges tubular supporting frames are embedded in the plastic, and there have been included devices for aerating and containing the mattress.

2. Structure according to claim 1. characterised by the fact that it is attached in the middle to the lower-lying support frame, and it is composed of four essentially solid planes (1, 1', 1'', 1''') which are all fixed together and thus each has at least one pair of clasps (2, 2') which are attached to the side of the component which is facing the adjoining component.

3. Structure according to claims 1. and 2., characterised by the fact that the bed-base (A) has end components (1, 1''') which are larger than the middle ones (1', 1''), and these middle two are themselves of different sizes.

4. Structure according to the previous claims, characterised by the fact that each component of baydur plastic (1, 1', 1'', 1'''), has a tubular frame (3) embedded within its structure around

the perimeter, which serves to support and strengthen it.

5. Structure according to the previous claims, characterised by the fact that on the surface of each component (1, 1', 1'', 1''') there is a series of openings or holes. These openings are like round-ended triangles (4), and are found on both the vertical and horizontal sides of each component (A).

6. Structure according to the previous claims, characterised by the fact that on the surface of each component (1, 1', 1'', 1''') there are transversal ridges (5) on which the mattress is placed.

7. Structure according to the previous claims, characterised by the fact that near the edge of each component (1, 1', 1'', 1'''), there is a boundary (6) which comprises a border to each component, and which is slightly raised in comparison to the rest of the component, and delimits the position in which to place the mattress.

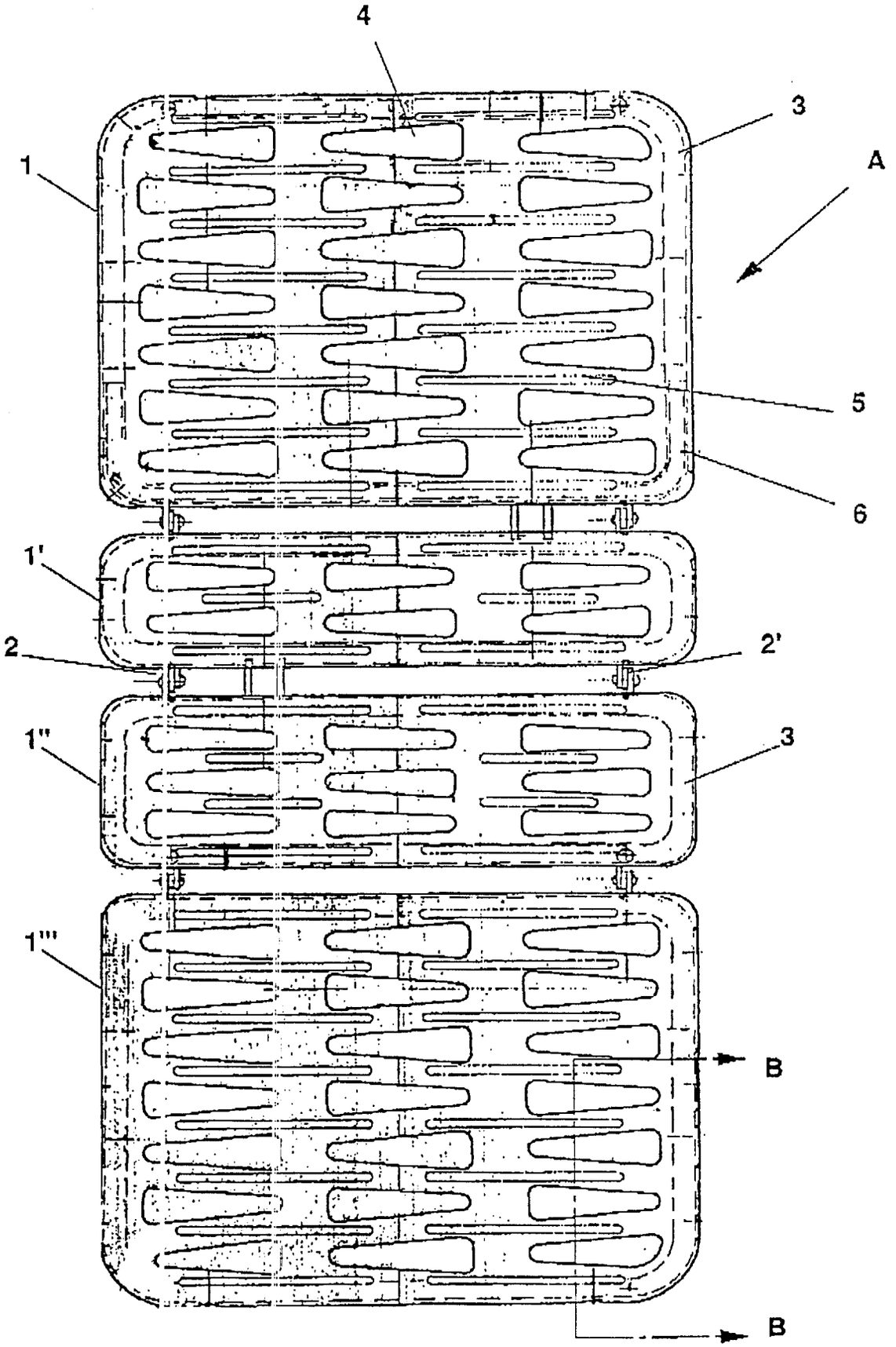


Fig. 1

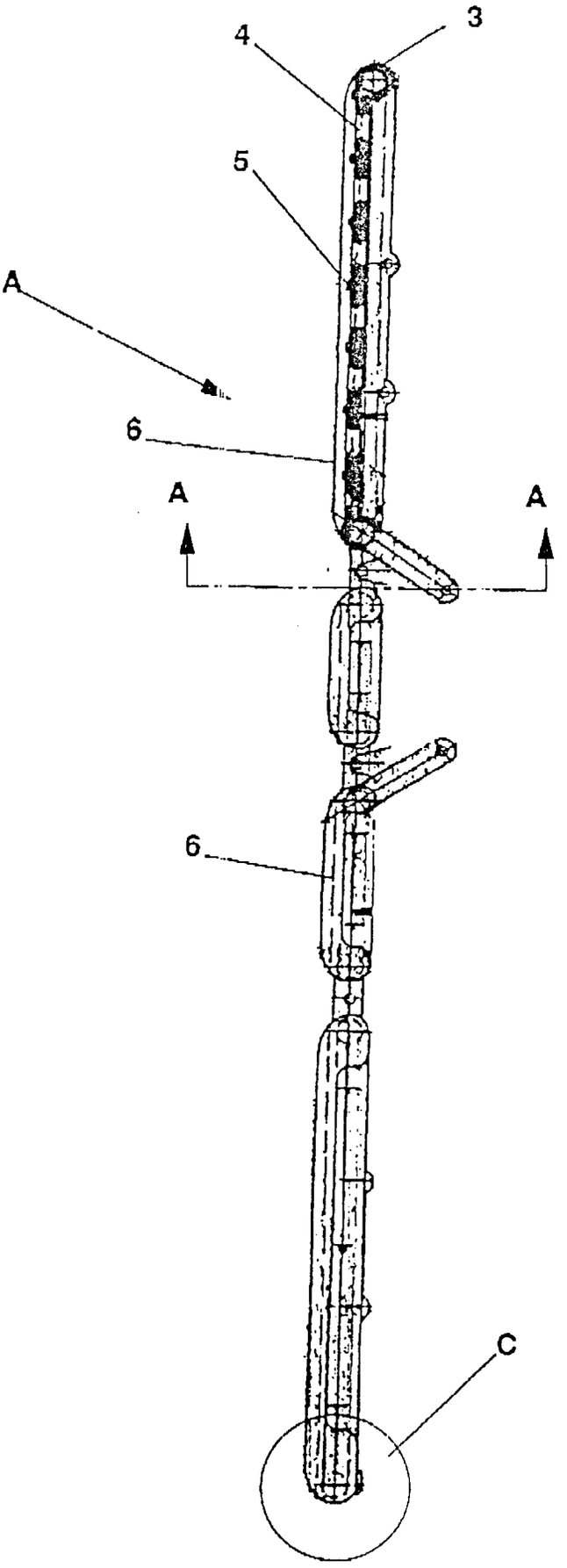
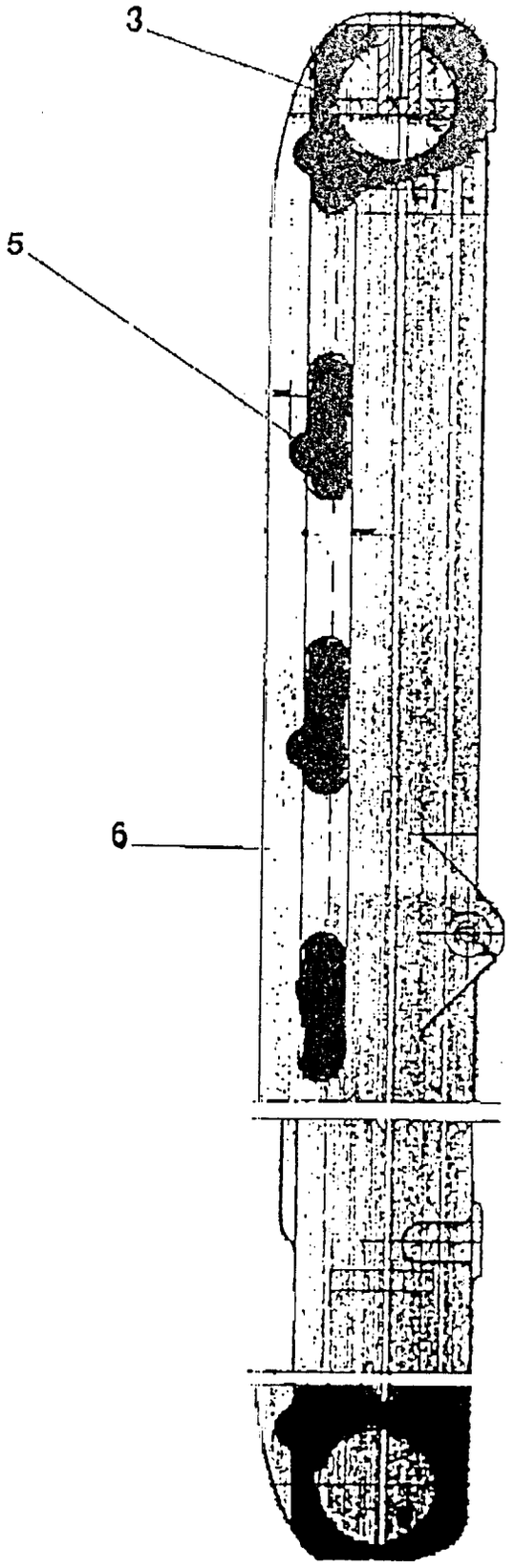
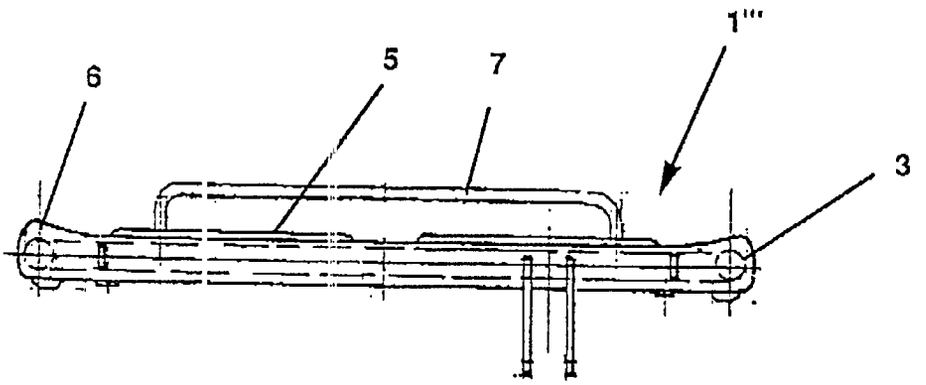


Fig. 2



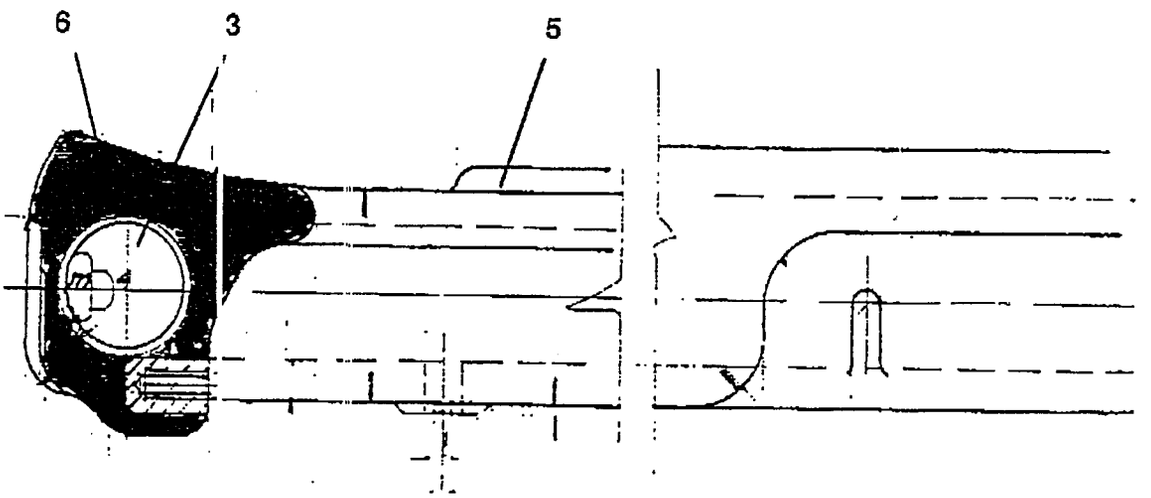
sez. B-B

Fig. 3



sez. A-A

Fig. 4



DETAIL (C)

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 93 10 0932

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.5)
A	US-A-3 188 660 (GUTTMAN) * column 1, line 50 - line 63; claim 1; figures 1-3 *	1-3	A61G7/00 A61G7/05 A47C23/06
A	WO-A-9 101 099 (NORMA BOXMEER B.V.) * claims 1,6; figures 1,4 *	1-3	
A	GB-A-2 154 445 (PRESSURE SEALED PLASTICS LTD.) * page 1, line 71 - line 79; claims 1,2,5 *	1,7	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

A61G
A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	23 APRIL 1993	MICHELS N.

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
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E : earlier patent document, but published on, or after the filing date
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