March 8, 1966 A. KOCH 3,238,539

ROTATABLE BEDS FOR INVALIDS

Filed Sept. 5, 1963 2 Sheets-Sheet 1

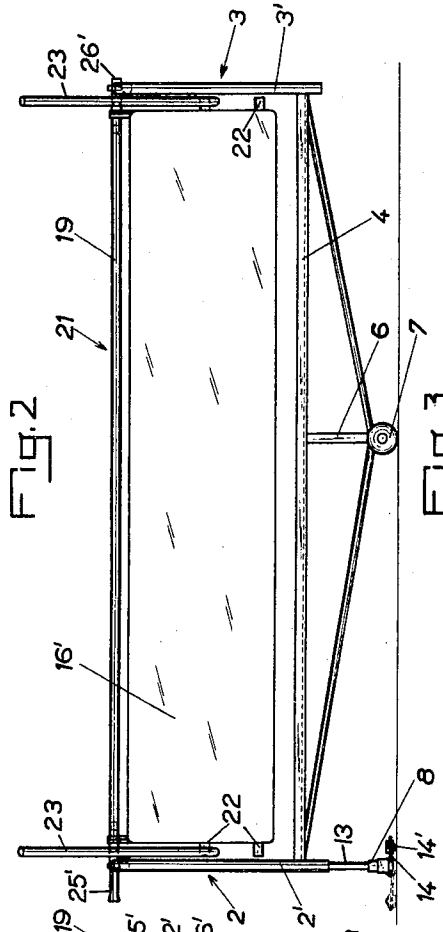


Fig. 2

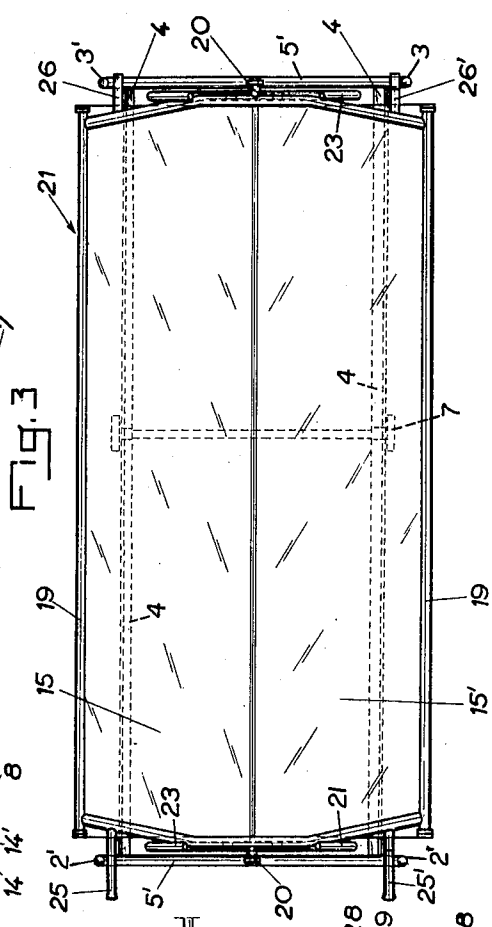


Fig. 3

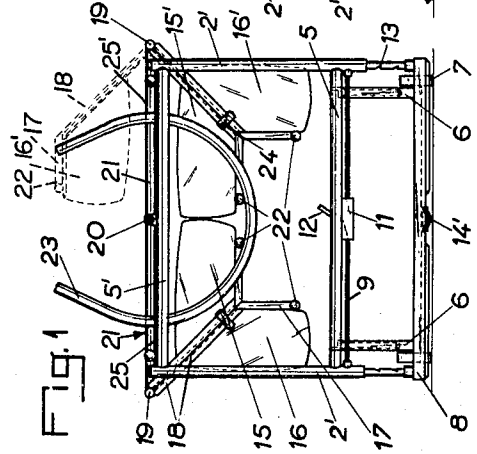


Fig. 1

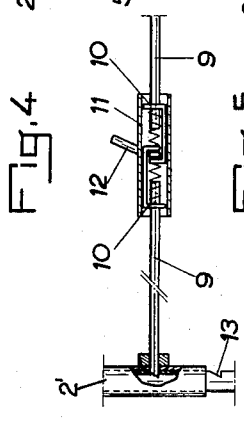


Fig. 4

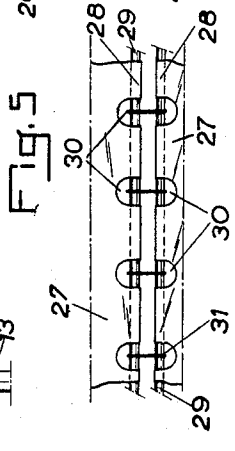


Fig. 5

Inventor
Albert Koch
By Fernand Gheuntaque
Attorney

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FIG. 6.

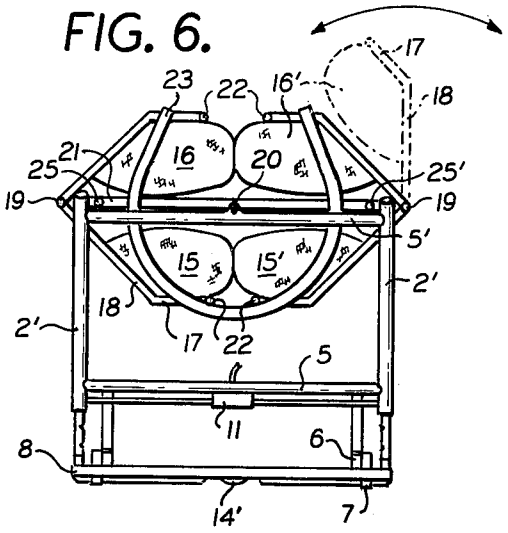
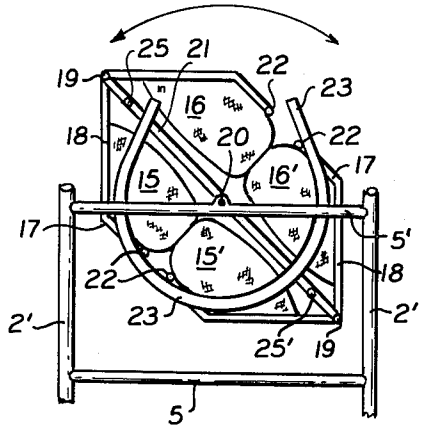


FIG. 7.



INVENTOR
ALBERT KOCH
BY
ATTORNEY.

United States Patent Office

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ROTATABLE BEDS FOR INVALIDS

Albert Koch, 11 Rue d'Orbey, Strasbourg-Neudorf, Bas-Rhin, France

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10 Claims. (Cl. 5—61)

The present invention relates to rotatable beds for invalids, in which the invalid is held fast or blocked in the prone position between two mattresses, which can be rotated together through 180° about a central longitudinal axis, so that the invalid, who is lying with the back downwardly before rotation, lies with his back upwardly after rotation, or the other way around.

Invalid beds which render possible a complete rotation of persons incapable of movement, such as entirely or partially paralyzed persons, seriously burned or injured persons, unconscious persons, etc., are already known in various embodiments.

In these known beds at least the upper of the two mattresses is vertically adjustably arranged, so that in order to render the unimpaired treatment of the invalid possible, it can be brought into such a raised position and held fast therein, that it is outside the range of contact of the person or persons carrying out the treatment. After the treatment the mattress is then lowered again to initial position. This vertically adjustable arrangement of the mattress renders it necessary to provide the bed with a super-structure, which contains the entire lifting mechanism and, therefore, is very complicated. Thus, however, the production costs of the bed are quite considerably increased and furthermore its erection requires a relatively large space and furthermore necessitates great impairing of the visibility of the space.

It is, therefore, one object of the present invention to provide rotatable beds for invalids, wherein each of the two matresses is divided into two halves and each of these halves is articulated unilaterally on a rod disposed laterally above the frame and which can be pivoted about this rod, so that on one occasion together with the other half it forms the lower mattress, and on the other occasion similarly together with the other half it forms the upper mattress of the bed. Means are here provided in order to support the free ends of the two halves forming the lower mattress in such manner that together they function like a firm mattress consisting of one piece, which can reliably withstand the load resting thereon.

Due to this construction and arrangement of the two mattresses, the above-mentioned bed super-structure with a lifting device is entirely omitted and the construction of the bed is greatly simplified and rendered more economical. The same is the case concerning the operation.

With these and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIGURE 1 is an end view of a bed designed in accordance with the present invention.

FIG. 2 is an elevation thereof;

FIG. 3 is a top plan view of the bed;

FIG. 4 is a fragmentary elevation, partly in section, of means for elevating the bed structure;

FIG. 5 is a top plan view of the means for attaching the replaceable mattress cover;

FIG. 6 is an end view of the bed shown in FIG. 1, yet the matress halves being shown in a different operative positions; and

FIG. 7 is an end view of the bed similar to that of FIG. 6, but the mattresses being shown in a partly turned position.

Referring now to the drawings, and in particular to FIGS. 1 to 7, the bed comprising a stationary bed frame, preferably made of metal tubes, consisting of a head part 2 and a foot part 3, which parts 2 and 3 are connected together by two longitudinal tubes 4. The head part 2 and the foot part 3 form a quadrilateral frame which comprises two upright tubes 2' and 3', respectively, serving at the same time as feet, and two transverse tubes 5 and 5', respectively, connecting the upright tubes 2' and 3' at the top and the bottom. The stationary bed frame is also provided with an intermediate vertical support 6 having two small wheels 7. The intermediate vertical support 6 is more remote from the head part 2 than from the foot part 3. Thus, for example, its distance from the head part 2 can amount to about two-thirds of the total length of the bed frame, and from the foot part 3, to about one-third of the entire length.

In this connection there is also provided on the head part 3 a stirrup-shaped foot 8, which can be extended and secured in any adjusted position. Thus, it is possible to impart any desired or necessary lengthwise tilted position to the bed, and then to secure this position by the extra load present at the head part 2, as will be explained below. The locking of the extensible foot 8 in an extended position is effected, by example, by means of a device disclosed in FIG. 4, which, in the style of known window catches, consists of two small rods 9 with U-shaped spring-biased sliding members 10 secured at the ends of the two rods 9 facing each other. The sliding members 10 are mounted in a housing 11 and can be shifted in known manner by means of a cam handle 12, so that they move away from each other, and the free ends of the rods 9 secured to the sliding members 10 engage in one of several teeth 13 disposed, on both sides, on the extensible foot 8. The load of the head part of the bed aids in the engagement of the rod 9 in the respective teeth 13. A plate 14 is rotatably secured to the foot 8; the plate 14 includes ball 14.' This device operates such that, if necessary, the bed may be moved more easily from its place without changing its previously set oblique or tilted position.

FIG. 1 discloses clearly both the construction and the arrangement of the two mattresses 15 and 15', each of which consists, as already stated, of two similar halves of a total mattress. The two mattresses 15 and 15' together form a lower total mattress and the two matresses 16 and 16' together form the upper total mattress. Each mattress half is articulated unilaterally to a rod 19 by means of two arms 17 and 18, each pair of the arms 17 and 18 defining an obtuse angle. On the respective sides, the rods 19 form the longitudinal sides of a frame 21, mounted rotatably in bearings 20 secured centrally on the transverse tubes 5' of the head part 2 and the foot part 3, respectively.

The free end of each of the mattresses 15 and 15' is provided at both ends with at least one roller 22 which, in the case of the lower mattress, rests on the inner track of a stationary rail 23 secured to both ends of the bed frame, whereby the pivoting movement which the mattresses can perform about the respective rods 19 is limited downwards. The rail 23 forms a semicircle in its lower portion while in its upper portion it is formed by two substantially straight portions which continue from the ends of the semicircle approximately tangentially. These straight portions terminate at a certain distance from each other, so that the rail 23 has an opening at the top through which the mattresses can be pivoted with their rollers 22 protruding at both ends into the inner region of the rails 23 and out of it again.

FIG. 1 shows all the mattress halves in their normal initial position in solid lines. In this position the two mattresses 15 and 15' of the lower total mattress are disposed horizontally aligned and rest with their respective

rollers 22 on the inner tracks of the rails 23. Thus, the mattresses 15 and 15' form one unitary total mattress upon which an invalid can be put to bed. The two mattresses 16 and 16' of the upper total mattress, on the other hand, hang freely downwardly from their respective frame rods 19 and are easily connectable to, but detachable from the lower mattress halves disposed adjacent thereto, by means of clips 24 or the like, in order to prevent their outward swinging.

After the invalid has been put to bed on the lower mattresses 15 and 15', the mattresses 16 and 16' are pivoted upwardly, until they come to lie loosely on the invalid (see the position of the right mattress 16' indicated in dotted lines in FIG. 1). The invalid is now lightly clamped in between the two total mattresses 15 and 15', 16 and 16' and can now be turned completely over by rotation of the pivoting frame 21 through 180°, together with both total mattresses, and with respect to the stationary bed frame 2 to 5, including the rails 23, without activity on the part of the patient, and without being directly handled.

In the initial position, the pivoting frame 21 rests by means of pegs 25, 25', 26 and 26', disposed at both ends thereof, upon the other transverse members 5' of the stationary bed frame. Of these pegs those at the head part 2, namely 25 and 25', are formed as handles by means of which the rotation of the pivoting frame 21 is effected. Before the rotation of the pivoting frame 21 one of its two pegs arranged on each side must be shortened to such extent, that it no longer rests on the corresponding transverse member 5' of the bed frame. In the embodiment shown by example, it is the pegs 25' and 26' which are shortenable. The pegs 25 and 25' formed as handles are noticeably longer than the corresponding pegs on the opposite side. This is provided for the purpose that the operation of the pivoting frame can always be performed from the head part 2 of the bed.

Finally it should also be observed that each mattress half is provided with a covering 27, the two longitudinal edges of which are formed into a tube-like cavity 28 for the pushing through of a rod 29, and these edges are provided with cut-outs or openings 30. In the covering of each mattress half, these edges are disposed opposite each other, and the covering can thus be secured in a simple manner by connecting the rods 29, which are exposed at the cut-away edge parts 30, with one another by means of clips 31 or the like.

While I have disclosed one embodiment of the present invention, it is to be understood that this embodiment is given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. A rotatable bed for invalids, comprising

a stationary bed frame having a head part and a foot part,

a rotatable frame journaled in said stationary bed frame for at least 180° rotational movement about an axis, disposed longiutdinally relative to said bed frame,

two mattresses secured to said rotatable frame,

each of said mattresses consisting of two substantially equal halves to form jointly a complete mattress,

said rotatable frame including two rods disposed laterally and longitudinally above each side of said bed frame,

one half of each of said mattresses being pivotally mounted on one of said rods, whereby each of said mattresses is capable of assuming the positions as a lower mattress and as an upper mattress, respectively,

so that the invalid may be put to bed in a prone position between said lower and said upper mattresses and be turned upside down upon rotating said rotatable frame for an angle of 180° jointly with said two mattresses, whereupon the halves of the upper

of said mattresses may be turned down to assume an inoperative position.

2. The rotatable bed, as claimed in claim 1, wherein

said rotatable frame includes two pairs of angle arms pivotally secured to said rods and disposed at each end of said bed, as well as supporting the corresponding halves of said mattresses, and

one pair of said angle arms defining an obtuse angle open to the exterior, and the other pair of said angle arms defining an obtuse angle open to the interior of said bed.

3. The rotatable bed, as set forth in claim 2, which includes

a rail provided at both ends of said bed frame, and

at least one roller attached to at least two of said halves of said mattresses and rolling along the inner track of said rail for supporting the free ends of the respective mattress halves at said ends of said bed frame.

4. The rotatable bed, as set forth in claim 3, wherein

said inner track substantially forms a semicircular track which is open for a distance at its top.

5. The rotatable bed, as set forth in claim 4, wherein

said stationary bed frame includes upper transverse members, and

bearings secured at about the center of said transverse members for mounting said rotatable frame thereon for rotation.

6. The rotatable bed, as set forth in claim 5, which includes

at least two pegs associated at both ends with said rotatable frame for supporting the latter firmly on said upper transverse members in the initial position of said rotatable frame.

7. The rotatable bed, as set forth in claim 6, wherein

said pegs at said head part of the bed are formed as handles for the operation of said rotatable frame, and are considerably longer than said pegs at said foot part of the bed.

8. The rotatable bed, as set forth in claim 7, which includes

a stirrup-shaped and adjustable foot member at said head part of the bed and means for vertical adjustment of said foot member.

9. The rotatable bed, as set forth in claim 8, which includes

an intermediate support connect to said bed frame closer to said foot part than to said head part of the bed,

so as to allow lengthwise tilting of the bed independently from said pivotal movement of said mattress halves and said rotational movement of said rotatable frame.

10. The rotatable bed, as set forth in claim 9, which includes

a replaceable cover for at least some of said halves of said mattresses.

References Cited by the Examiner

UNITED STATES PATENTS

1,860,103	5/1932	Kusterle	5—11
2,113,286	4/1938	White	5—61
2,188,592	1/1940	Cunningham	5—61
2,239,821	4/1941	Knox	5—61
2,522,018	9/1950	Blackman	5—61
2,613,371	10/1952	Keyes	5—61
2,979,738	4/1961	Goldberg	5—100

FOREIGN PATENTS

364,397	5/1906	France.

FRANK B. SHERRY, *Primary Examiner.*

C. A. NUNBERG, *Assistant Examiner.*