

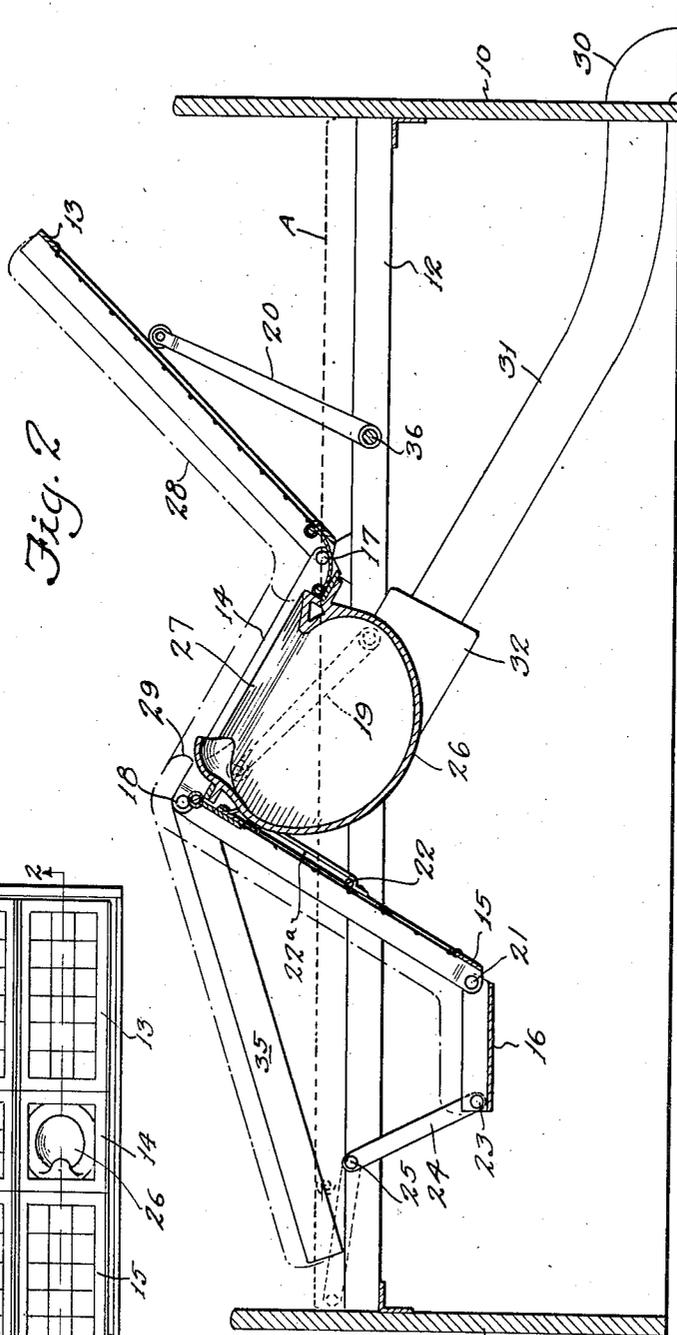
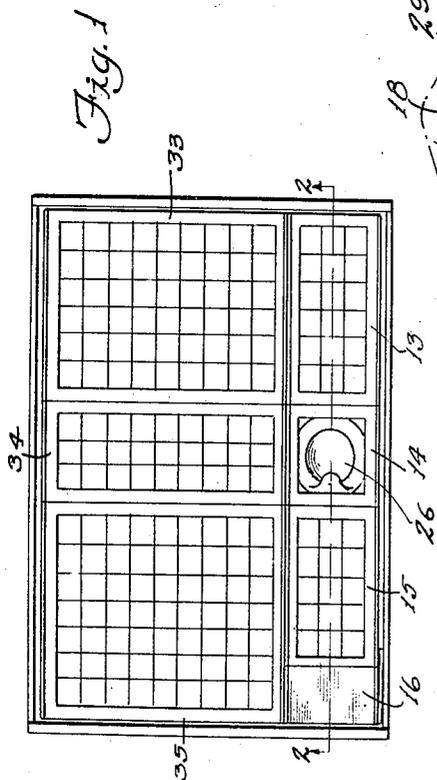
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INVALID'S BED

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## INVALID'S BED

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This invention relates to invalid's beds and has as its general object to provide a bed having a flushable toilet constantly available to the occupant of the bed.

The invention contemplates an arrangement embodying an articulated mattress supporting frame having a thigh or seat section and a leg rest and back rest hinged to respective ends of said thigh or seat section, together with mechanism for elevating the sections to form a reclining seat over the toilet bowl. A specific object is to provide, in such an arrangement, a toilet bowl that is always in the proper relation to the thigh section of the mattress supporting frame, irrespective of the degree of inclination.

A further object is to provide an invalid's bed incorporating a toilet bowl that is adapted to assume at all times the angle of inclination of the thigh section of the mattress supporting frame, and that is connected to a fixed sewer outlet by a flexible waste pipe that permits it to assume various angles of inclination.

A further object of the invention is to provide an invalid's bed having means to form a step to assist a patient in ascending on to and descending from the bed. Another object is to provide an invalid's bed incorporating such a step which has the additional function of providing a foot rest for the toilet seat portion of the bed.

Another object of the invention is to provide an invalid's bed incorporating a foot rest which normally forms a part of the horizontal supporting portion of the bed and is automatically lowered to a foot rest or step position when the mattress supporting frame of the bed is elevated to a reclining seat position.

Another object of the invention will appear from a perusal of the ensuing specification when read in connection with the appended drawings, in which:

Fig. 1 is a plan view of a bed embodying the invention; and

Fig. 2 is a longitudinal sectional view of the bed taken on the line 2—2 of Fig. 1.

As an example of one form in which the invention may be embodied, I have shown in the drawings an invalid's bed embodying a head portion 10, a foot portion 11, and longitudinal rails 12 rigidly connecting the head and foot portion 10 and 11 together to form a fixed frame. Above the frame 12 is the mattress supporting frame which includes a back rest 13, a thigh section 14, a leg section 15, a foot rest or step section 16. The back rest 13 and thigh section 14 are hinged to the fixed frame 12 on a horizontal

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transverse hinge 17. The thigh section 14 and leg rest 15 are hinged to each other at 18 to form a knee joint which is adapted to be elevated by suitable elevating mechanism which is indicated in dotted lines at 19. The back rest 13 is adapted to be elevated by elevating mechanism indicated generally at 20. The foot rest or step section 16 is hinged at 21 to the leg rest 15.

The leg rest 15 has a combined pivotal and sliding connection with the fixed frame rails 12, such connection including pins 22 mounted in the rails 12 and guide slots 22a in the side frame members of the leg rest 15, the pins 22 being received in the slots 22a.

The end of the step 16 opposite the hinges 21 is pivoted at 23 to links 24, the other ends of which are pivoted at 25 to the frame rails 12.

The back rest 13, thigh section 14, leg rest 15 and step section 16 cooperate to form a toilet seat unit which is adapted to be moved from a normally horizontal position indicated in dotted lines at A to the seat forming positions shown in full lines in Fig. 2. As the thigh section is raised the leg rest will slide upwardly and tilt about the pivot pins 22, the foot end of the leg rest swinging downwardly so as to move the step section 16 to a plane considerably below the plane of the normal horizontal position A. This lowering movement of the step section 16 is a downward and rearward swinging movement, the links 24 swinging about the pivots 25 and supporting the step section in a horizontal position when the limit of the downward swinging movement is reached.

A toilet bowl 26 is rigidly attached to and suspended beneath the thigh section 14. The thigh section is in the form of an open frame, providing an opening through which the mouth portion 27 of the toilet bowl projects. A mattress, indicated in broken lines at 28, is supported upon the sections 13, 14, 15, and 16 and has an opening 29 that registers with the mouth 27.

The outlet 32 of the toilet bowl 26 is connected through a flexible drain pipe 31 to a fixed sewer outlet forming part of the plumbing of the hospital in which the bed is installed. The flexible pipe 31 forms a flushing outlet for the toilet bowl and permits the bowl to freely follow the movements of the thigh section 14.

Being rigidly attached to the thigh section 14, the bowl 26 is constantly in the proper position for use, irrespective of the elevation of the thigh section. The mouth 27 projects upwardly to a plane intermediate the top and bottom of the

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mattress 28. The position of this plane is selected so that the yielding of the mattress under the weight of the patient, will permit the body of the patient to come into full contact with the mouth 27. The mattress is preferably of sponge rubber, in order to bend freely at the hinges of the supporting frame.

The toilet seat unit of the bed is a narrow section, as shown in Fig. 1, and is disposed at one side of the bed, the remaining area of the bed being covered by main mattress supporting frame which includes a back rest 33, a thigh section 34, and a leg rest 35. These three sections are hinged to each other and to the fixed frame structure of the bed in the same manner as the sections of the toilet seat unit. The lift mechanism operates against the main section in the same manner as it operates the toilet seat unit. This lift mechanism may comprise a series of arms mounted on shafts 36 journaled in the fixed frame rails 12 and extending transversely of the bed. Thus the main mattress supporting frame and toilet seat unit are elevated simultaneously.

The step section 16 functions as a foot rest for the toilet seat unit and at the same time also functions as a step to facilitate descending from or ascending on to the bed or onto the toilet seat. Thus an ambulatory patient may step up on to the toilet seat from the floor by using the foot rest 16 as a step. A bed-ridden patient will of course slide laterally from the main portion of the bed on to the toilet seat.

The invention has the advantage of providing for constant association of the toilet bowl with the thigh section of the toilet seat in the proper position for use. It is contemplated that a suitable cover for the opening 29 in the mattress 28, will be provided, so that when the toilet is not in action the top of the toilet seat unit may present an unbroken appearance. Any suitable cover mechanism may be embodied for this purpose.

I claim as my invention:

1. In a bed, in combination with a fixed frame structure, a mattress frame comprising a back rest and a thigh section conjointly hinged to said fixed frame structure, a leg rest hinged at one end to said thigh section to form a knee joint, and a step section hinged at one end to the other end of said leg rest, a combined sliding and hinging connection between said leg rest and said fixed frame structure adapted, in response to upward swinging movement of said knee joint from a lowered to a raised position, to guide said leg rest in a combined pivotal and translational movement in which its end adjacent said knee joint moves upwardly and its opposite end moves downwardly, moving said step section to a posi-

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tion below the normal plane of said mattress frame, and means linking the other end of said step section to the fixed frame structure and cooperating with said other end of the leg rest to guide said step section to a lowered position in which it is substantially horizontal.

2. A bed as defined in claim 1, wherein said linking means is pivoted at one end to said other end of the step section and at its other end to the fixed frame on an axis disposed headward from the position of said other end of the step section in the normal horizontal position of the mattress frame.

3. In a bed, in combination with a fixed frame structure, a mattress frame comprising a relatively wide main bed portion and a relatively narrow toilet seat portion, said toilet seat portion including a back rest and a thigh section conjointly hinged to said fixed frame structure, a leg rest hinged at one end to said thigh section to form a knee joint that may be elevated, a step section hinged at one end to the other end of said leg rest, a combined sliding and hinging connection between an intermediate portion of said leg rest and said fixed frame structure adapted, in response to elevating movement of said knee joint, to guide said leg rest in a combined pivotal and translational movement in which its end adjacent said knee joint swings upwardly and its other end moves downwardly so as to shift said step section downwardly, and means linking the other end of said step section to said fixed frame structure to guide said step section downwardly to a lowered position in which it is substantially horizontal, said step section in its lowered position functioning as a foot rest for said toilet seat portion and also as a step to facilitate a patient's ascent into or descent from the bed.

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