

June 9, 1942.

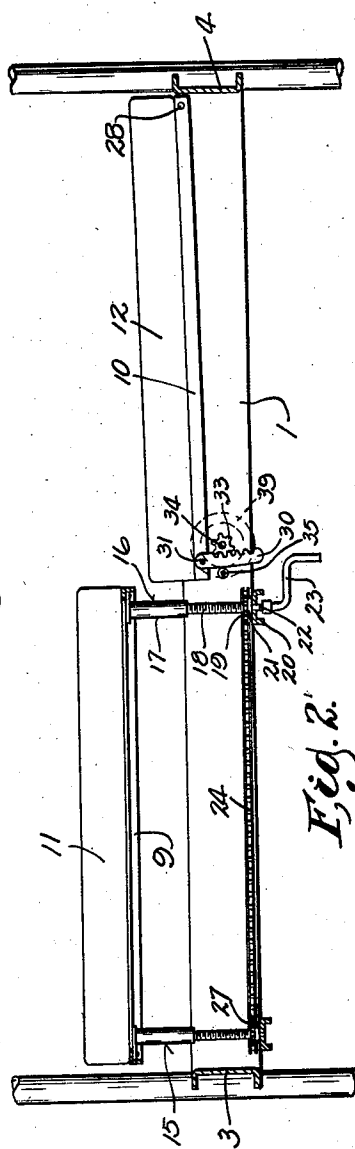
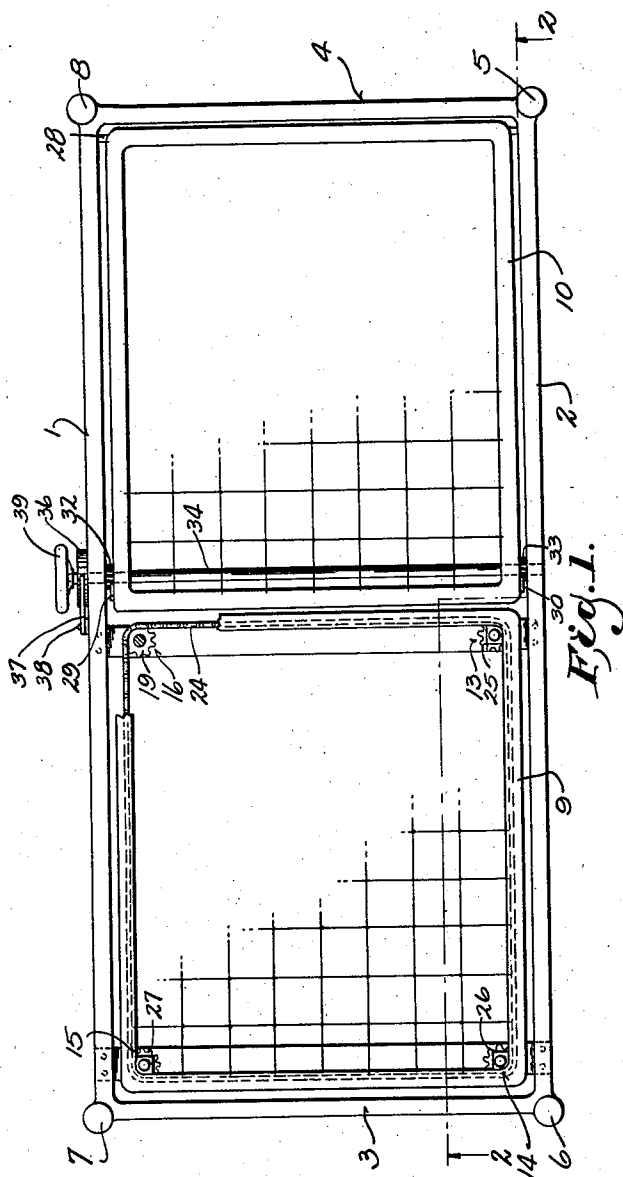
R. W. URIE

2,285,474

BED

Filed Oct. 3, 1938

2 Sheets-Sheet 1



INVENTOR.

ROLLAND W. URIE

BY

Emerson B. Donnell
ATTORNEY.

June 9, 1942.

R. W. URIE

2,285,474

BED

Filed Oct. 3, 1938

2 Sheets-Sheet 2

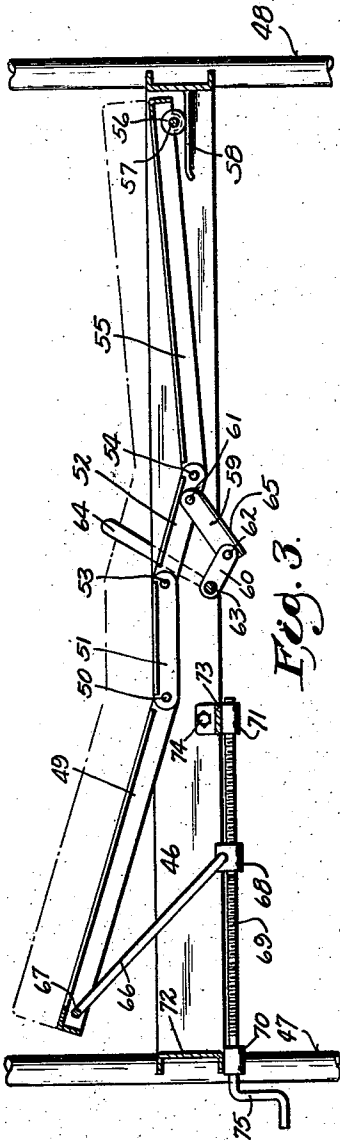


Fig. 3.

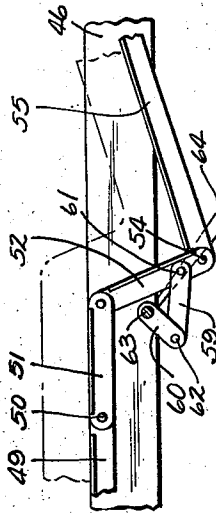


Fig. 5.

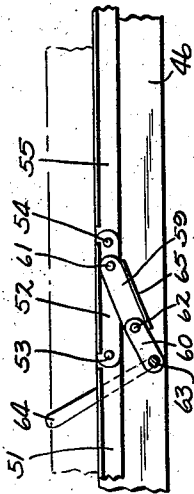


Fig. 4.

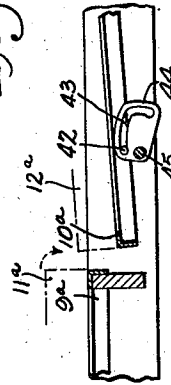


Fig. 7.

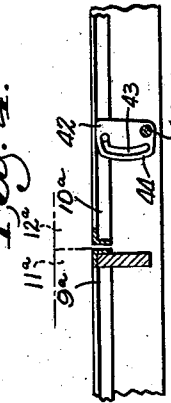


Fig. 6.

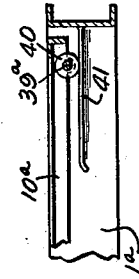


Fig. 8.

INVENTOR.

ROLLAND W. URIE.

BY

Emerson B. Donnell
ATTORNEY.

UNITED STATES PATENT OFFICE

2,285,474

BED

Rolland W. Urie, Parsons, Kans.

Application October 3, 1938, Serial No. 233,039

4 Claims. (Cl. 5-69)

The present invention relates to beds, and particularly to such as are intended for use in hospitals and the like, and an object of the invention is to generally improve the construction and operation of devices of this class.

More specifically, an object of the invention is to provide a bed adapted to facilitate the use of the bed-pan.

Other objects are to provide for the use of the pan with the least possible discomfort to the patient; to give the patient a sense of security during the use of the pan, thereby encouraging this function; to minimize the accidental soiling of the bed linen, and to lessen the work connected with tending the patient.

More particularly, an object of the invention is to provide a bed structure which is in effect divided transversely near the middle so that a difference in the level, or "stepped" configuration may be established whereby the bed-pan may be readily inserted in the space beneath the patient, and with the least possible inconvenience and discomfort to him.

Certain other adjustments may be made to increase the comfort of the patient during normal occupancy of the bed or when the bed-pan is not being used.

Further objects and advantages of the invention will be apparent from the following specification and accompanying drawings, in which:

Figure 1 is a top plan view of an illustrative embodiment of the invention with parts broken away to show the construction.

Fig. 2 is a vertical sectional view taken on the line 2-2 of Fig. 1.

Fig. 3 is a vertical longitudinal sectional view of a bed embodying a modified form of the invention.

Fig. 4 is a detail of certain mechanism indicated in Fig. 3, showing the parts in another position.

Fig. 5 is a similar view showing the parts in still another position.

Fig. 6 is a view similar to Fig. 5 showing a modification of certain mechanism indicated in Fig. 2.

Fig. 7 is a similar view showing the parts in a different position.

Fig. 8 is a detail of a modified pivot construction applicable to the embodiments of Figs. 6, 7, and 3.

Similar reference characters have been applied to the same parts throughout the drawings and specification.

In the embodiment of Fig. 1, the bed includes a bedstead or outer portion including rails 1 and 2, 55

connected by a head board 3 and a foot board 4, the whole being supported on posts 5, 6, 7 and 8, and serving to support the spring frames. In this embodiment there are two independent frame sections or portions, generally designated as 9 and 10, on which may be supported mattress portions 11 and 12, respectively (Fig. 2), the parts being movable from a contiguous position, forming the usual flat surface, to a relatively displaced position giving a stepped arrangement or configuration, as shown in Fig. 2.

Various arrangements are contemplated for obtaining this movement and relation of parts, and nothing in this specification is to be taken as limiting the invention to the construction illustrated or in fact in any manner except as defined in the claims.

For moving section 9 it is supported, in the present instance, through a plurality of jack elements generally designated as 13, 14, 15, and 16. These units being alike, it will be necessary to describe only one. A sleeve 17 is fixed in a substantially vertical position in a corner of frame portion 9, depending therefrom and interiorly threaded to receive a screw 18. The screw has fixed therewith a sprocket 19 and projects downwardly through a strap or cross-member 20 carried by side rails 1 and 2, a suitable thrust washer or bearing 21 being interposed. Screw 18 may have a square or other suitable shank portion 22 depending below cross-member 20 on which may be engaged a crank or other control means 23. Sprocket 19 is connected by a chain 24 with similar sprockets 25, 26, 27 associated respectively with jacks 13, 14 and 15. Rotation of screw 18 as by crank 23 will accordingly cause simultaneous operation of all four jacks and bodily raising or lowering of frame section 9. In like manner crank 23 may be applied to any of the other jacks that may be more conveniently accessible.

Raising of section 9 (which is the head section) relatively to section 10 raises the patient bodily with the exception of the feet, leaving a space beneath the legs into which the bed-pan may be readily inserted. The patient may then be shifted slightly toward the foot of the bed onto the pan with very little effort or inconvenience. When the patient is in position it will be noted that the hips are not elevated with respect to the rest of the body, thus giving a feeling of security and also minimizing the danger of accidents and soiled linen, a very common occurrence in the ordinary use of the pan, since with the hips elevated there is danger of urine running up the patient's back.

Obviously the operation may be reversed when the pan is to be removed, and the bed restored to normal condition by lowering section 9 to the level of section 10.

Section 10, if desired, may be lowered to give a still further relative displacement between the sections, being hinged, for example, on a rod 28 extending across from rail 1 to rail 2 at the foot of the bed.

Near the middle of the bed racks 29 and 30 may be pivoted or otherwise suitably connected with the sides of section 10 as at 31, and may engage pinions 32 and 33 fixed on a shaft 34 journaled in rails 1 and 2, guides or the like as 35 being arranged to maintain the racks in mesh with the pinions. Shaft 34 may have a ratchet wheel 36 thereon controlled by a pawl 37 pivoted at 38 to rail 1, and a hand wheel 39 or other suitable means may be provided for turning the shaft to raise and lower the racks and accordingly section 10, the adjustment being maintained by engagement of pawl 37 with ratchet wheel 36.

Other means is contemplated for controlling section 10. For this purpose as seen in Fig. 8 section 10^a has a rod 39^a carrying rollers as 40 resting on ribs or runways as 41 carried on side rails 1^a whereby to provide for longitudinal displacement of the section as well as pivotal movement about rod 39^a. The inner end of section 10^a as seen in Fig. 6 is provided with pins or the like as 42 engaged in the slots 43 of cams such as 44 fixed on a cross shaft 45, the slots being so shaped (for example L-shaped) as to tend to support section 10^a in its "up" position without any appreciable tendency to rotate shaft 45. Initial clockwise rotation of shaft 45 causes bodily movement of section 10^a away from section 9^a, whereby to materially separate the abutting surfaces of mattress sections 11^a and 12^a, after which continued rotation causes a dropping movement similar to that caused by the above described racks 29 and 30, and as indicated in Fig. 7. In the reverse movement of the shaft, section 10^a is first raised, continued rotation of the shaft forcing section 10^a toward section 9^a and pressing the sections of the mattress firmly together. In this manner the separable sections of the bed are tightly joined for normal use and there is no suggestion of a crack between the sections to annoy the patient.

Suitable or well-known means such for example as above described hand wheel 39 and ratchet 36 may be applied to shaft 45 for turning and controlling it.

A variation of the basic idea is shown in Fig. 3, in which a bedstead, having side rails such as 46, and head and foot boards 47 and 48, respectively, has a spring frame including a head section 49 which may be pivoted to the side rails as at 50, a stationary section 51 being fixed to the rails and having a movable intermediate section 52 pivoted thereto at 53.

It is contemplated that sections 49 and 51 may be combined in a single immovable section, if desired.

Section 52 has pivoted thereto at 54 a foot section 55 which is carried at the foot of the bed by rollers as 56 carried on a rod or the like 57, the rollers running on ribs or the like 58 carried on the side rails, all as in the manner described in connection with Fig. 8. It will be understood that the frame portions shown in section are rectangular and that the pivots etc. are duplicated on the side of the bed that has been removed in the sectional view.

A flexible mattress is contemplated for use on this bed construction, although there is nothing to prevent the use of a mattress of two or more pieces, which would be conveniently divided at one or more of the pivotal points.

In this arrangement the several pivoted sections of the frame may be disposed in a common plane for the ordinary uses of the bed, but, for the use of the bed-pan, movable section 52 may be dropped about pivot point 53, carrying foot section 55 downwardly into a slanting position as shown in Fig. 5, thus providing the stepped configuration in the middle of the bed common to the other embodiments for accommodating the receptacle.

Various mechanisms are contemplated for controlling this movement, in the present illustrative embodiment a plurality of members 59 and 60 being arranged to form a toggle, member 59 being pivoted to section 52 at 61 and to member 60 at 62, member 60 being fixed with a cross shaft 63 extended through the side rails and having a lever 64 or other suitable control element within convenient reach of an attendant. In Fig. 3 the toggle is shown as broken, and section 52 as part way down. Continued clockwise movement of shaft 63 will continue the downward movement of the section to the position shown in Fig. 5, as will be understood.

Movement of lever 64 in a counterclockwise direction will obviously cause a straightening of the toggle, raising section 52 into line with section 51, the parts finally taking the position shown in Fig. 4, with section 52 in the plane of sections 51 and 55. It will be noted that the toggle parts 59 and 60 have passed slightly beyond the position wherein pivots 61 and 62 and shaft 63 are in alignment, so that the weight on the bed will tend to cause further upward movement of pivot 62, and this is prevented by a stop portion 65, in the present instance contacting the under side of member 60, although other dispositions of the stop means are contemplated as within the scope of the invention. The linkage is accordingly self-locking, and constitutes a very simple and positive means of holding the bed parts in normal position.

Head section 49 may be raised about pivot 50 if desired, a bail, link, or similar element 66 being pivoted to the section at 67 and having its lower portion pivoted to a nut 68 engaged on a screw 69 journaled in suitable bearings 70 and 71, bearing 70 being carried by a cross member 72, forming, conveniently, part of head board 47, and bearing 71 being fixed with a cross member 73 fixed with the rails as at 74. A crank or the like 75 may be formed or fixed on the screw 69 for turning it, whereupon the head will be raised or lowered as desired. This adjustment may give a degree of comfort to the patient in connection with the use of the bed-pan, or it may obviously be used alone when the other parts of the bed frame are in a single plane, as shown in Fig. 4.

The above being a complete description of illustrative embodiments of the invention, what is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In a hospital bed a bedstead including side rails and cross members, a frame including a stationary head section, a foot section, and an intermediate section, hinged together and supported from said rails and cross members, said stationary section including a portion fixed with said bedstead, said intermediate section being ar-

ranged to swing from a substantially horizontal position in line with the other sections to a depending position defining, with said stationary and foot sections, a step-like configuration, means for so moving said intermediate section and holding it in adjusted positions, and means for supporting the end of said foot section remote from said movable intermediate section from the bedstead for pivotal and longitudinal movement.

2. In a hospital bed a bedstead, a frame including a head section pivoted to the bedstead, a stationary intermediate section fixed with the bedstead, a movable intermediate section pivoted to the stationary intermediate section, and a foot section hinged to the movable intermediate section, means supporting the end of the foot section remote from said movable intermediate section from the bedstead for pivotal and longitudinal movement, said movable intermediate section being arranged to swing from a substantially horizontal position in line with the other sections to a substantially vertical depending position defining with said head and foot sections a step-like configuration, and said head section being arranged to be raised about its pivot to provide a sitting position for an occupant of the bed, means for so moving the movable intermediate section and holding it in adjusted positions, and means for moving the head section and holding it in adjusted positions.

3. In a hospital bed a bedstead, a frame including a head section pivoted to the bedstead, a stationary intermediate section fixed with the bedstead, a movable intermediate section pivoted to the stationary intermediate section, and a foot section hinged to the movable intermediate section, means supporting the end of the foot

section remote from said movable intermediate section from the bedstead for pivotal and longitudinal movement, said movable intermediate section being arranged to swing from a substantially horizontal position in line with the other sections to an inclined position depending from said stationary intermediate section defining with said head and foot sections a step-like configuration, and said head section being arranged to be raised about its pivot to provide a sitting position for an occupant of the bed, means for so moving the movable intermediate section and holding it in adjusted positions, and means for moving the head section and holding it in adjusted positions.

4. In a hospital bed including a bedstead, a sectional bed bottom including a substantially horizontal section supported on the bedstead, a movable intermediate section hinged to said substantially horizontal section, a foot section hinged to said movable intermediate section, said movable intermediate section being arranged to swing from a substantially horizontal position to a depending position defining with said horizontal and foot sections a step-like configuration, and means including a toggle having one end carried by the bedstead and the other end connected to the movable end of the intermediate section, means controlling the toggle for permitting the intermediate section to drop and for straightening the toggle for raising and supporting said intermediate section, said toggle being proportioned to take an over-center position when said intermediate section is raised, and stop means positioned to prevent the toggle from passing substantially beyond said over-center position.

ROLLAND W. URIE.