June 23, 1942. J. D. DRY 2,287,552

HOSPITAL BED AND THE LIKE

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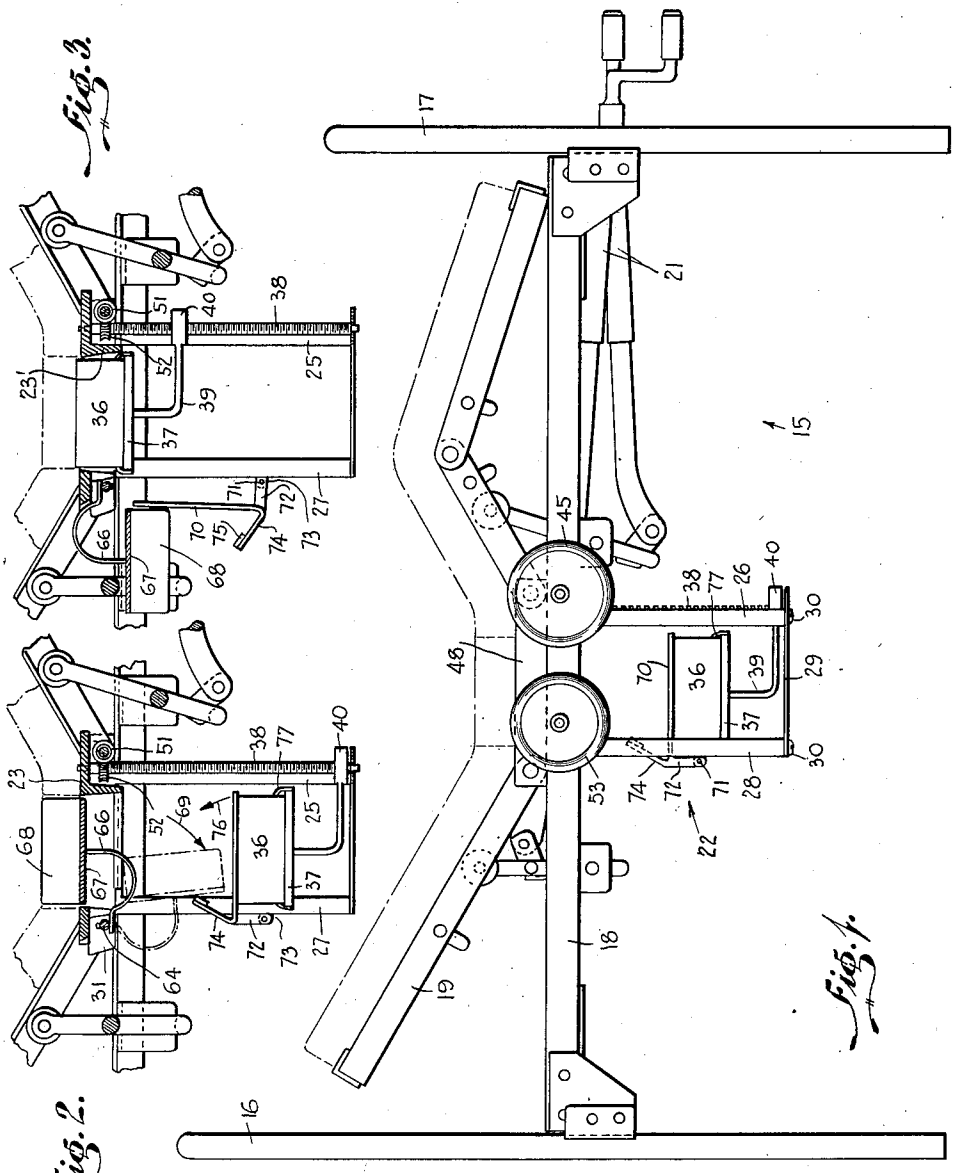


Fig. 3.

Fig. 2.

Fig. 1.

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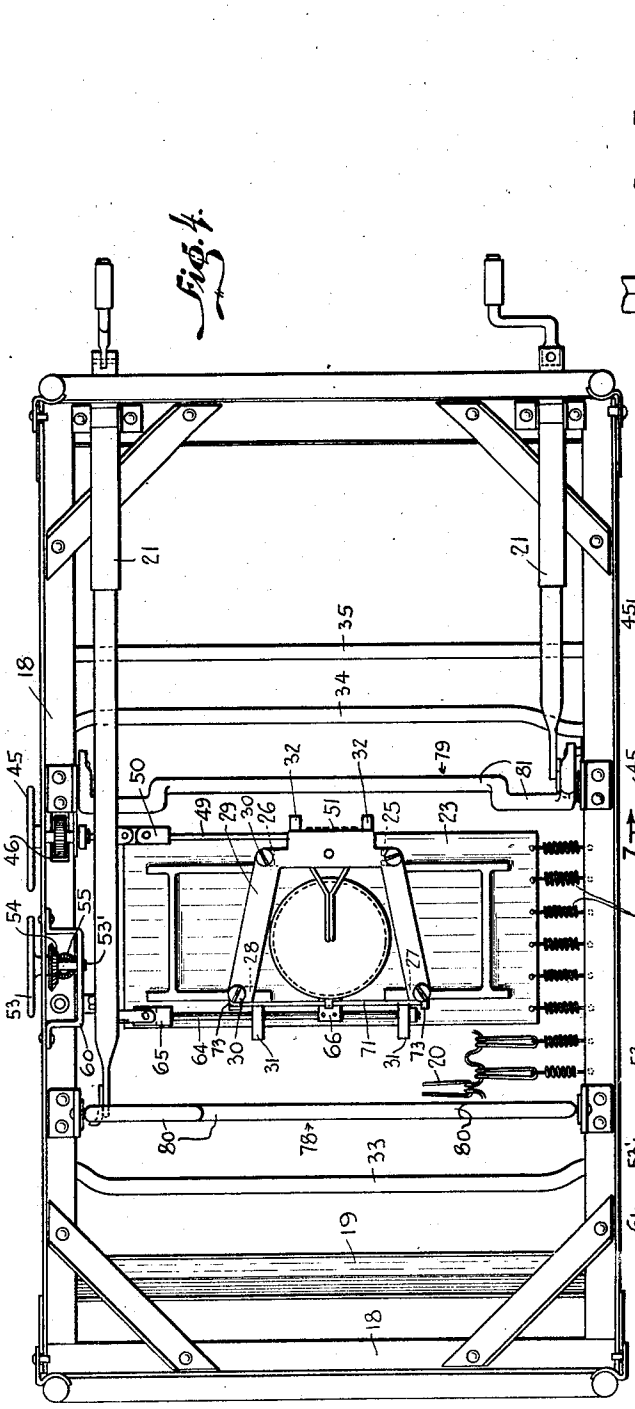


Fig. 4.

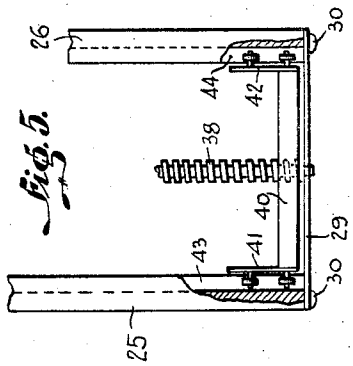


Fig. 5.

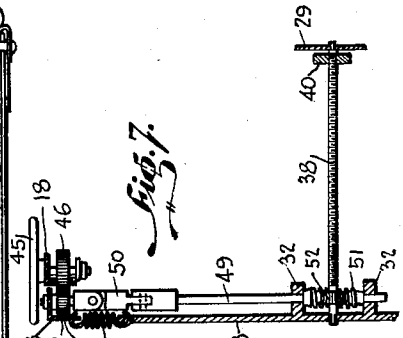


Fig. 7.

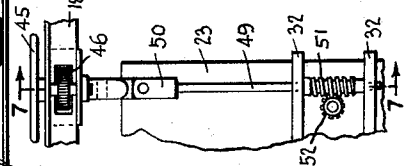


Fig. 6.

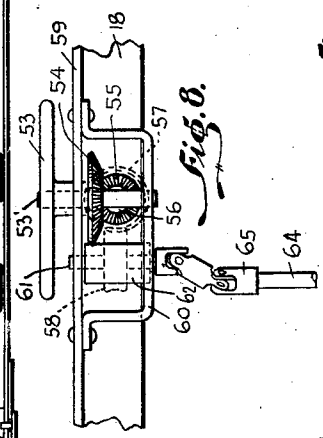


Fig. 8.

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Fig. 9.

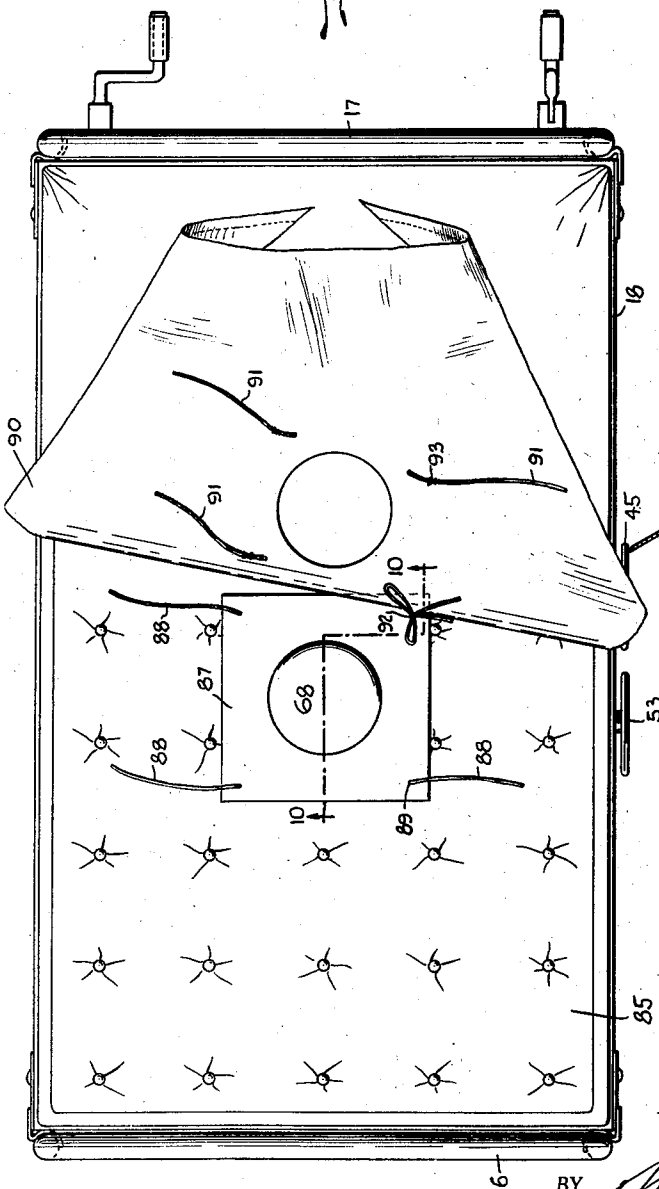
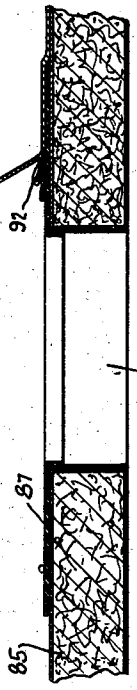


Fig. 10.



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Patented June 23, 1942 2,287,552

UNITED STATES PATENT OFFICE

2,287,552

HOSPITAL BED AND THE LIKE

John D. Dry, New York, N. Y.

Application December 28, 1938, Serial No. 248,055

3 Claims. (Cl. 5—90)

This invention relates to improvements in invalid and hospital beds.

It is an object of the present invention to provide a simple, practical and efficient invalid or hospital bed incorporating means whereby the patient may perform his eliminations without disturbing his comforts or his resting position.

A still further object of the present invention resides in the provision of a hospital bed incorporating mechanical features for sanitarily introducing into the bed mattress a bed pan for use by the patient when desired.

It is a further object of the present invention to provide in combination with a hospital bed having a mattress with a central opening; a mattress section or cushion to fill said opening, and a bed pan movable to a position within the central opening, the cushion being swingable out of the way to make room for the bed pan.

A still further object of this invention resides in the provision of means whereby the cover of the bed pan is automatically removed by the said cushion during its swinging movement into inoperative position and replaced during its return movement.

Another object of the present invention resides in the provision of a bed comprising a bed spring or frame section, the latter having a plate or like member resiliently carried or supported by the frame section, a mattress disposed over the frame section, both the mattress and plate having registering openings, a mattress section or cushion plug fittable in the said openings and swingably connected to the plate, mechanism including a rotatable flexible connection between the plate and the frame section for swingably operating the mattress section, a support vertically movable relatively to the plate, the support being adapted to carry a bed pan or the like into the mattress opening, and mechanism including a rotatable flexible or yieldable connection between the plate and the frame section for moving said support toward said mattress.

Still another object resides in providing in a hospital bed a frame, a member resiliently supported relatively to said frame, shafts supported by both the frame and the member, each of the shafts including flexible portions between the frame and the member to follow relative movement between the frame and the member.

Another object of the present invention is to provide flexible rotative means to operate the said cushion and the said bed pan.

This invention accordingly consists in the features of construction, combination of parts and in the unique relations of the members and in the relative proportioning and disposition thereof; all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, drawings depicting a certain form of the invention have been annexed as a part of this disclosure, and in which drawings, like characters of reference denote corresponding parts throughout all the views, of which:

Fig. 1 is a front elevational view of a bed incorporating the invention;

Fig. 2 is a partial sectional view of the bed pan operating mechanism, the bed being shown in normal position;

Fig. 3 is a partial sectional view of the bed pan operating mechanism, the bed being shown with the bed pan in operative position;

Fig. 4 is a bottom plan view of the bed with its operating mechanism in normal position;

Fig. 5 is a detail view showing rollers in the track for the pan lift mechanism;

Fig. 6 is a detail bottom plan view of the pan lift mechanism;

Fig. 7 is a detail side view in section, taken along line 7—7 of Fig. 6;

Fig. 8 is a detail plan view (enlarged) of the cushion operating mechanism;

Fig. 9 is a top plan view of the bed with mattress, the bed sheet partly turned back;

Fig. 10 is a sectional view taken along line 10—10 of Fig. 9, without the cushion.

The drawings disclose an example of a bed incorporating the invention.

This bed 15 consists of the two end members 16, 17, the customary frame members 18, the spring frame member 19 having a wire spring 20 disposed therewithin in the conventional manner. There are three principal operating mechanisms shown, namely, mechanism 21 which operates the spring frame sections in the conventional manner to increase the resting comforts of the patient, the cushion plug or mattress section operating mechanism and the bed pan operating mechanism 22. The bed pan mechanism is suspended from a plate 23 which may be resiliently supported at the center section or portion of the spring frame 19 by coil springs 24. Four post members 25, 26, 27, 28 depend from plate 23 and are connected at or near their bottoms by the tie member 29 which is held in place by the bolts 30. The plate 23 has also two pairs of projecting lugs

31, 32 for a purpose later described. 33, 34 and 35 are frame stiffening members conventional with this type of hospital bed. The pan 36 rests on a lift support 37 which is raised or lowered by means of the screw spindle 38, which may be secured at its upper end to plate 23 and at its lower end to member 29. The leg 39 of the lift support 37 is secured to the nut member 40 having at its two ends roller brackets 41 and 42 which engage in the tracks 43 and 44 of the upright post members 25, 26. Turning with the hand wheel 45 secured to the frame member 18 is a gear 46 which is in mesh with the pinion 47 secured within the stationary portion 48 of the spring frame 19. The pinion is connected to the shaft 49 by means of a universal joint 50. The shaft 49 is guided by the lugs 32 and carries within the space between these two lugs a worm 51 which engages with the worm wheel 52 at the top of the spindle 38. The shaft 49 and universal joint 50 provides a flexible or yieldable connection between pinion 47 and worm 51.

The hand wheel 53 operates two bevel gears 54 and 55. Connected to the shaft 56 is a worm 57 which engages a worm wheel 58. The shaft 53' of the hand wheel 53 and bevel gear 54 is mounted within the depending leg 59 of the frame member 18 and a bracket 60 secured to the frame member 18. The shaft 61 of the worm wheel 58 is mounted within a bracket 62 and the horizontal leg 63 of the stationary spring frame member 48. The shaft 61 connects with a shaft 64 by means of a universal joint 65, the whole constituting a flexible or yieldable connection. Lugs 31 support the shaft 64. Secured to the shaft 64 is an arcuate bracket 66 to which is substantially centrally fastened the support 67 carrying the mattress section or cushion plug 68. Turning of the shaft 64 by means of the hand wheel 53 will cause the cushion plug to swing downwardly in the direction of the arrow 69 (Fig. 2), and then upwardly.

When the bed pan 36 is in its lowered position as seen in Fig. 1, it is desirable to close the same automatically with the cover 70. This cover 70 is secured to a shaft 71 by means of a bracket 72. The shaft 71 is rotatably mounted on lugs 73 of the upright legs 27 and 28. An arm 74 with a counterweight 75 keeps the cover 70 either in closed or open position. This cover is opened by the cushion support 67 in its downward travel striking the arm 74 and pushing the same over, thereby raising the cover in the direction of the arrow 76 (Fig. 2). The bed pan 36 is held in place by properly spaced lugs 77. The spring frame raising and lowering members 78 and 79 are provided with U bends 80 and 81 to clear the bed pan operating mechanism.

The mattress 85 (Figs. 9, 10) is provided with a central opening 86, the walls of which are lined preferably with waterproof and easily cleaned material such as rubber, but a metal ring may be substituted. A square pad or rubber 87 is placed above the opening. Four strings 88 are secured to the mattress and pass through openings 89 in the rubber mat 87. The bed sheet 90 has also four corresponding strings 91 which are tied as shown at 92 to the mattress strings 88. The strings 91 are secured to the bed sheet 90 as at 93. It is understood that in lieu of the shafts 49, 64 and their respective universal joints 50, 65, other flexible or yieldable shafts or connections or any other suitable means may be employed.

The operation of the device follows:

Normally the cushion 68 on its support 67 fills the opening 86 of the mattress 85; and the bed sheet 90 may be tied to the mat 87 having the central opening registering with mattress opening 86. The sheet has an opening registering with the opening in the mattress. Hand wheel 53 is then turned and through the instrumentality of the intermediate shaft and gear mechanism causes cushion 68 and support 67 to swing downwardly and then upwardly as seen in Figs. 2 and 3. In its swinging movement support 67 engages the arm 74 of cover 70 and thus swings the latter about its hinge or pivot formed by the lugs 73 to substantially a vertical position, the counterweight 75 maintaining the cover in this position. Hand wheel 45 is now turned and by means of the intermediate shaft gear and screw spindle mechanism, causes the bed pan 36 to rise vertically through the guides 23' in plate 23 and then to a position within mattress opening 86. After the bed pan has been used by the patient, it is lowered by wheel 45.

Then wheel 53 is turned to swing cushion 68 back to its initial position within opening 86. In its swinging movement cushion 68 will push against bed pan cover 70 thus flipping it into its operative position against the top of the bed pan closing the same.

The mattress section (cushion 68 and support 67) is preferably substantially supported by the member or bracket 66. The mattress section swinging mechanism is adapted to swing the same about a horizontal axis to a position parallel with and lateral to the position assumed by said mattress section when in opening 86.

It is to be noted that the device is so constructed and arranged that its operation is not interfered with by the bed raising and lowering mechanism 21.

From the foregoing description taken in connection with the accompanying drawings, it is apparent that an improved simple, practical and inexpensive device for the purpose intended is provided. It is apparent, however, that immaterial changes and modifications may be made by skilled persons without departing from the true spirit and scope of the invention as outlined in the appended claims. Hence, the interpretation of said claims should not be based on the present specific disclosure but rather on the pertinent prior art.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a bed having a frame; a mattress positioned on said frame and provided with an opening, a separate mattress section fittable in said opening, a member supporting said mattress section and swingably connected to said frame, a first mechanism for moving said swingable member with said mattress section into and out of said opening, a support, means mounting said support on said frame for vertical movement, a bed pan on said support and adapted to be moved thereby into and out of said opening, a cover for said bed pan swingably supported on said frame, said cover being substantially V-shaped providing two legs, one of said legs projecting in the path of movement of said swingable member and engaging the same when said member is moved out of said opening, the other of said legs being engaged by said swingable member when it is moved into said opening, and a second mechanism mounted on said frame for moving said pan support, said second mechanism being adapted upon operation thereof to move said support towards and from said opening

when said swingable member is moved out of said opening and said cover has been swung to one of its extreme positions.

2. In a bed having a frame; a mattress positioned on said frame and provided with an opening, a separate mattress section fittable in said opening, a member supporting said mattress section, said member being swingably connected to said frame and laterally of said opening, a first mechanism for moving said swingable member with said mattress section thereon into and out of said opening, a support, means mounting said support on said frame for vertical movement, a bed pan on said support and adapted to be moved thereby into and out of said opening, a second mechanism mounted on said frame and operable to cause the vertical movement of said support, and a cover for said pan swingably supported on said frame and laterally of said pan, said cover including one portion projecting in the path of movement of said swingable member and being engaged by the latter when said member is moved out of said opening, whereby said cover is swung out of the reach of said pan so that the latter may be moved with its support by said second mechanism into said opening.

3. In a bed having a frame; a mattress positioned on said frame and provided with an opening, a separate mattress section fittable in said opening, a member supporting said mattress section, said member being swingably connected to said frame and laterally of said opening, a first mechanism for moving said swingable member with said mattress section thereon into and out of said opening, a support, means mounting said support on said frame for vertical movement, a bed pan on said support and adapted to be moved thereby into and out of said opening, a second mechanism mounted on said frame and operable to cause the vertical movement of said support, and a cover for said pan swingably supported on said frame and laterally of said pan, said cover including one portion projecting in the path of movement of said swingable member and being engaged by the latter when said member is moved out of said opening, whereby said cover is swung out of the reach of said pan so that the latter may be moved with its support by said second mechanism into said opening, said cover having another portion engageable by said swingable member when the same is moved by said first mechanism into said opening after downward movement of said support with its pan substantially to a position below said cover.

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