May 23, 1939. O. C. CALDWELL 2,159,883

ADJUSTABLE BED

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Fig. 1.

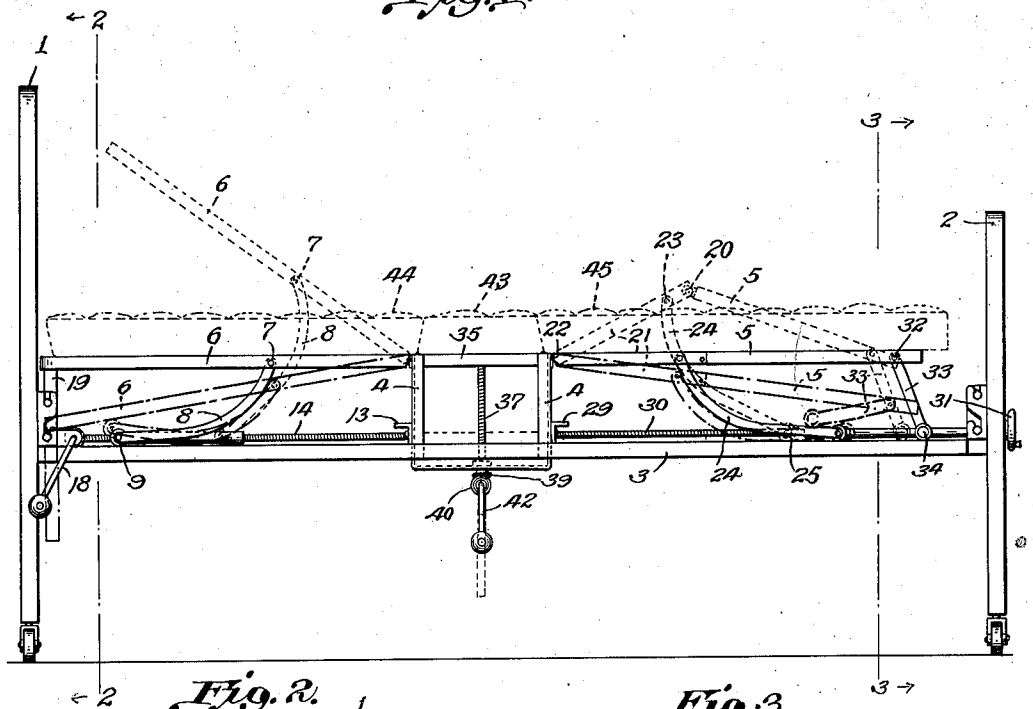

Fig. 2.

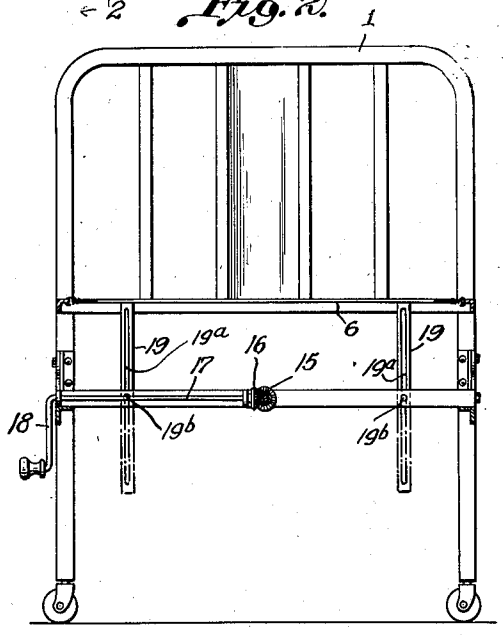

Fig. 3.

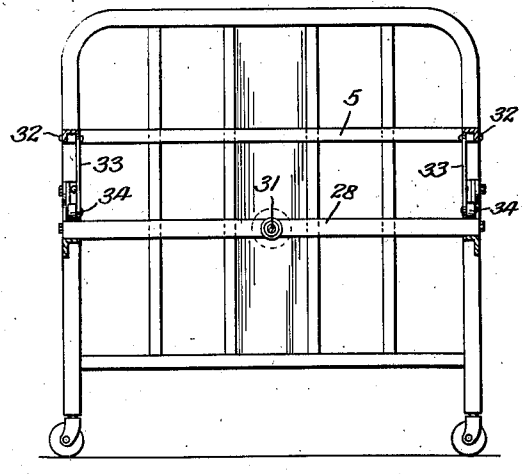

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Fig. 4.

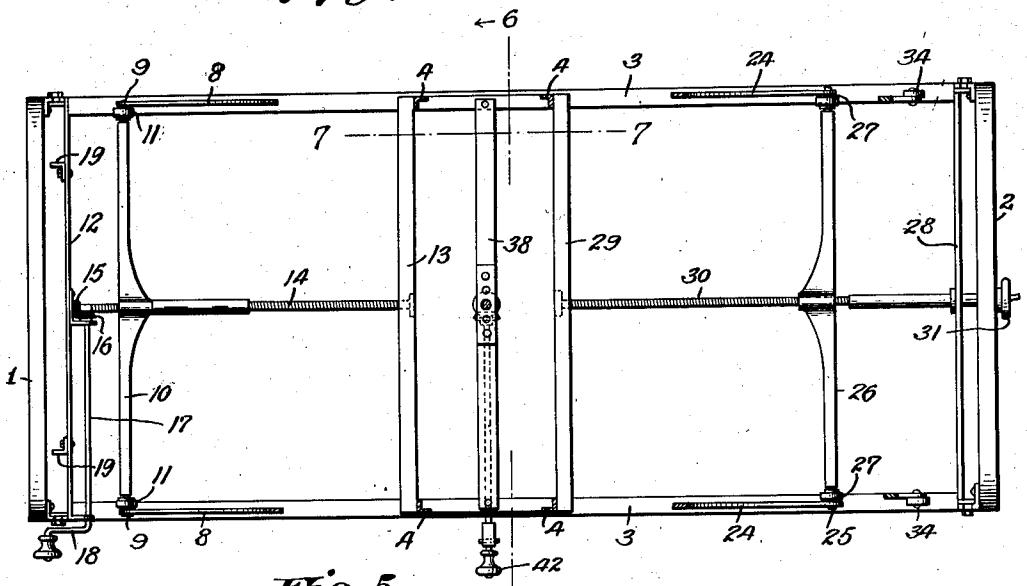

Fig. 5.

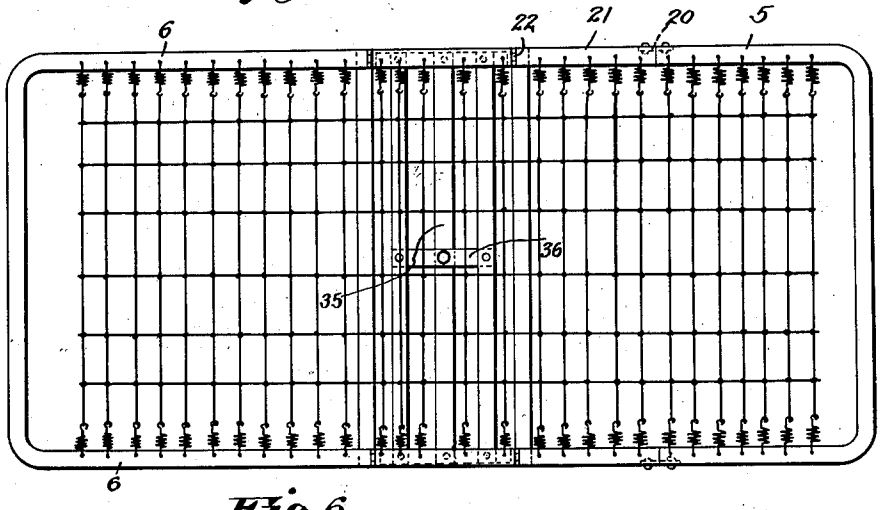

Fig. 6.

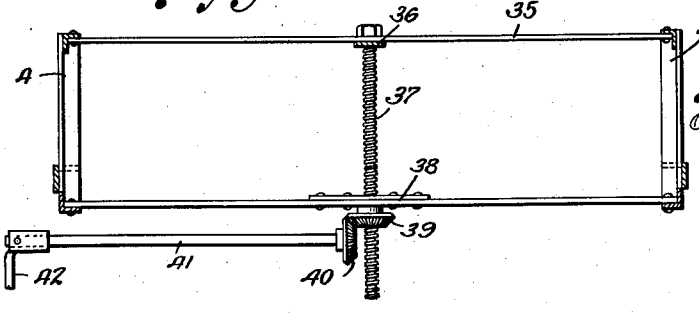

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Fig. 7.

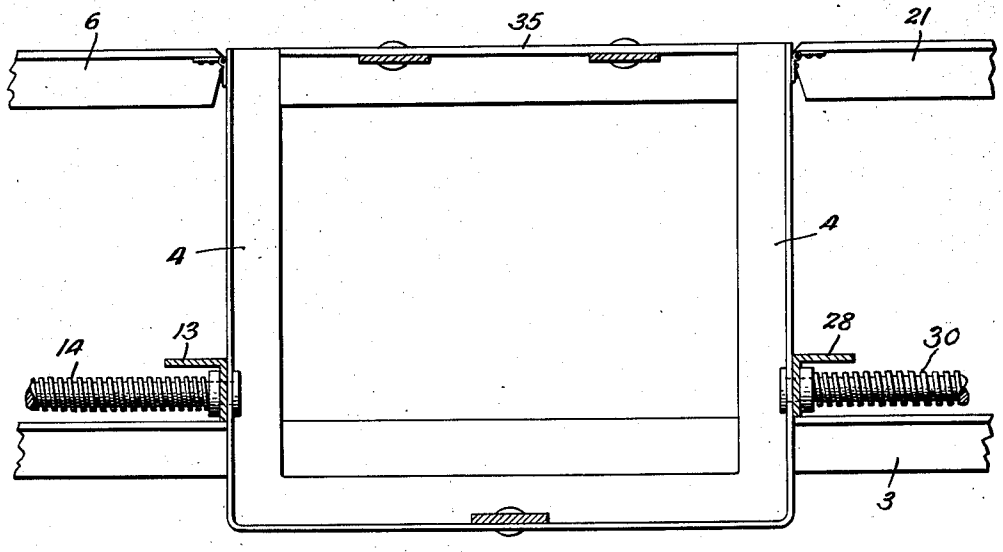


Fig. 8.

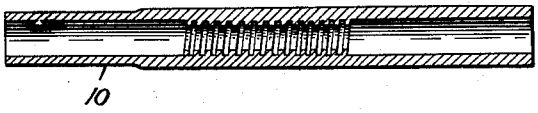


Fig. 9.

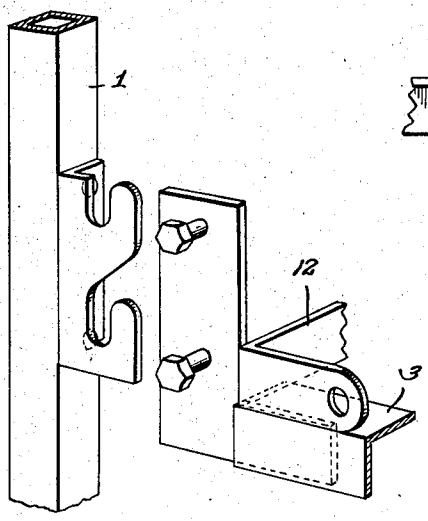
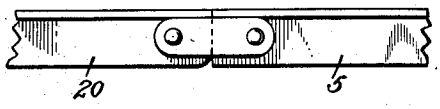


Fig. 10.



Inventor:

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Patented May 23, 1939

2,159,883

UNITED STATES PATENT OFFICE

2,159,883

ADJUSTABLE BED

Ollie C. Caldwell, Lisbon, Ohio

Application February 19, 1936, Serial No. 64,683

1 Claim. (Cl. 5—66)

This invention relates to adjustable beds and has for its objectives a bed that is simply constructed, easily operated, widely useful, and efficient.

The specific objectives of the bed are:

1. To provide an adjustable bed for the ordinary hospital patient in any stage of illness.

2. To provide a middle or toilet section for the fracture patient, or any patient who is difficult or hazardous to move. It also provides that various sections of the bed may be raised or lowered or otherwise positioned to accommodate the position of the patient as demanded by special treatment of the body and limbs.

3. To provide an adjustable bed with a hyperextension adjustment for the spinal fracture or the pelvic fracture patient without removing any of the component parts of the bed or adding special attachments.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the detailed construction hereinafter described and claimed; it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention. In the accompanying drawings the preferred form of the invention has been shown.

In said drawings, Fig. 1 is a side elevation showing various positions in which sections of the bed may be put to meet the requirements of the patient;

Fig. 2 is a transverse section taken on line 2—2 of Fig. 1;

Fig. 3 is a transverse section taken on line 3—3 of Fig. 1;

Fig. 4 is a plan view of the bed without the spring section;

Fig. 5 is a plan view of the spring section apart from the remainder of the bed;

Fig. 6 is a transverse section taken on line 6—6 of Fig. 4;

Fig. 7 is a longitudinal view of the toilet section taken on line 7—7 of Fig. 4;

Fig. 8 is a longitudinal section of the T cross arm showing the female thread;

Fig. 9 shows the method of fastening the side rails to the head and foot rest;

Fig. 10 shows the pivotal joint in the foot rest.

In carrying out my invention, I employ a head section 1, a foot section 2, and side bars 3 connected and secured to said head and foot sections in any well known manner. The side bars are constructed of angle iron and near the middle the upper inwardly projecting web of the side bars is cut away as shown clearly in Fig. 7. In the angles thus produced is brazed vertically a U shaped angle iron 4. Hinged to the upper ends of the U is a foot rest 5 and a head rest 6. Said head rest is also U-shaped and spans the side bars 3. Pivoted at points 7 to each side of the head rest 6 is a pair of links 8. The opposite end of each link 8 is pivoted at 9 to cross head 10 spanning the side bars 3 transversely and moving therealong. Cross head 10 is provided at each end with a roller 11 which rolls upon the frame to reduce friction. Cross head 10 shown clearly in Fig. 4 is T shaped, the stem of the T being parallel with the side bars 3. Said stem is drilled throughout its entire length and is provided with a female thread near the middle as shown in Fig. 8. This is to prevent cramping of thread in case of a side thrust. Extending from cross frame 12 to cross frame 13 membering with the female thread in stem of the T is a screw 14 pivoted at each end so it will rotate. Screw 14 is fitted with gear 15 and gear 15 meshes with gear 16; gear 16 is keyed to crank shaft 17 and crank shaft 17 is adapted to be turned by means of crank 18 whenever it is desired to elevate and lower head rest 6. Head rest 6 is supported at the free end by a pair of posts 19 which can be adjusted out of position as shown in Fig. 2. The object of this will be shown later.

The posts 19 are provided with slots 19*a* engaged by the bolts 19*b* which extend through the cross frame 12 for clamping the posts 19 in any adjusted position.

Foot rest 5, U shaped like the head rest, is pivoted at its ends 20 to a pair of arms 21 which latter are in turn hinged to 4 at 22. Pivoted to the arms 21 at 23 is a pair of links 24. The opposite ends of links 24 are pivoted at 25 to a cross head 26 spanning the frame transversely and moving therealong. Cross head 26 is provided at each end with a roller 27 which rolls upon frame 3 to reduce friction. Cross head 26, as will be seen from Fig. 4, is T shaped, the stem of the T being parallel with the side bars 3. Said stem is drilled througout its entire length and is provided with a female thread as shown in Fig. 8. Extending from cross frame 28 to cross frame 29, membering with female thread in cross head 26 is a screw 30, pivoted in cross frame 29 so it will rotate. At the farthest extension of screw 30 wheel 31 is provided and keyed thereto. Thus by turning wheel 31 foot rest 5 is elevated and lowered as desired. Joined to 5 at 32 is a pair of legs 33,

reaching obliquely to frame 3. Said legs are provided with rollers 34 which roll on frame 3 when foot rest is elevated and lowered. Legs 33 are so joined to foot rest 5 that they may be adjusted out of position as shown in Fig. 1. The object of this will be shown later.

Pedestal frame 35, as shown in Fig. 6 is adaped to be suitably mounted on the bed so it will slide between angles 4. Fastened solidly to frame 35 at 36 is a screw 37 extending through frame 38 engaging with gear 39 which is provided with a female thread. Gear 39 is adapted to rotate and to mesh with gear 40. Gear 40 is keyed to a crank shaft 41. Crank shaft 41 is fitted with crank 42, the means used to elevate and lower pedestal 35. It will be noted from Fig. 1 that pedestal 35 is provided with a bevel edged mattress 43 which fits with bevel edged mattresses 44 and 45. Mattresses being thus beveled together, the instant the toilet sections begins to move downward the mattresses loosen. This toilet section is elevated and lowered without friction and with no danger of catching anywhere. This toilet operation is performed quickly, smoothly, and easily.

This toilet section of the bed when at its lowest point is 8 inches below the level of the bed. This gives ample room for any purpose. The bed pan may be placed in this opening and moved up as tightly against the patient as comfort demands; or, this section may be lowered slightly to ease the tender and aching hips of the patient. It will remain solidly wherever put. This simple and practical device will be a great boon to fracture patients.

Further purposes that my invention may be put to is shown by explanation of other adjustable parts. It will be noted in Fig. 1 that head rest 6 and foot rest 5 are hinged to angles 4. This is at a point at right angles 8 inches above the level of side bars 3. Thus when legs 33 and posts 19 are adjusted out of position the extreme ends of head rest 6 and foot rest 5 rests upon frame 3 producing what is known as a hyperextension frame employed in case of fracture of the pelvic bone or of the spine. Frame 35 of the toilet section may also be adjusted above the level of the bed thus adding more tension to the body if need be. Said toilet section may be used in bed pan service for the pelvic fracture and spinal fracture patient without change of position. This invention provides a device for handling patients in a practically painless manner without injuring vital structures by the roughened ends of broken bone. This is of frequent occurrence when patients are lifted by one or more individuals squeezing the broken ends of the pelvic bones in such a manner that the bladder and other important structures are perforated resulting in excruciating pain to the patient and often death. This invention also provides means for giving the nurse an opportunity to bathe and massage the back. This is necessary for the fracture patient. It will permit a change in the position of the patient and will relieve the terrible monotony of one continuous position. A change of position, no matter how slight, is appreciated by such patients.

It must be noted that the bed is long enough that should pressure be required on the spine the patient can be shifted so that pressure will come at the proper place. In case pressure should be required in the upper part of the spinal column the patient may be reversed in bed and the operation of the foot rest will accomplish the desired end.

The toilet section and the adjustment of the head and foot rests are all part of the same invention and are adjusted together to make the ideal fracture bed.

Having described my invention what I claim is:

An adjustable bed including a rectangular frame, a U-shaped frame member mounted upon the rectangular frame intermediate the ends thereof and extending upward therefrom, a head rest hinged at one end to the upper end of one leg of the U-shaped frame member, slotted posts carried by the rectangular frame for supporting the free end of the head rest, bolts located through the slots for clamping the posts in adjusted position to the rectangular frame, a foot rest hinged at one end to the upper end of the other leg of the U-shaped member, means for independently swinging the head rest and the foot rest above and below the horizontal, a vertically movable pedestal frame within the U-shaped frame member, and means for adjusting the pedestal frame above and below the top of the U-shaped frame member.

OLLIE C. CALDWELL.