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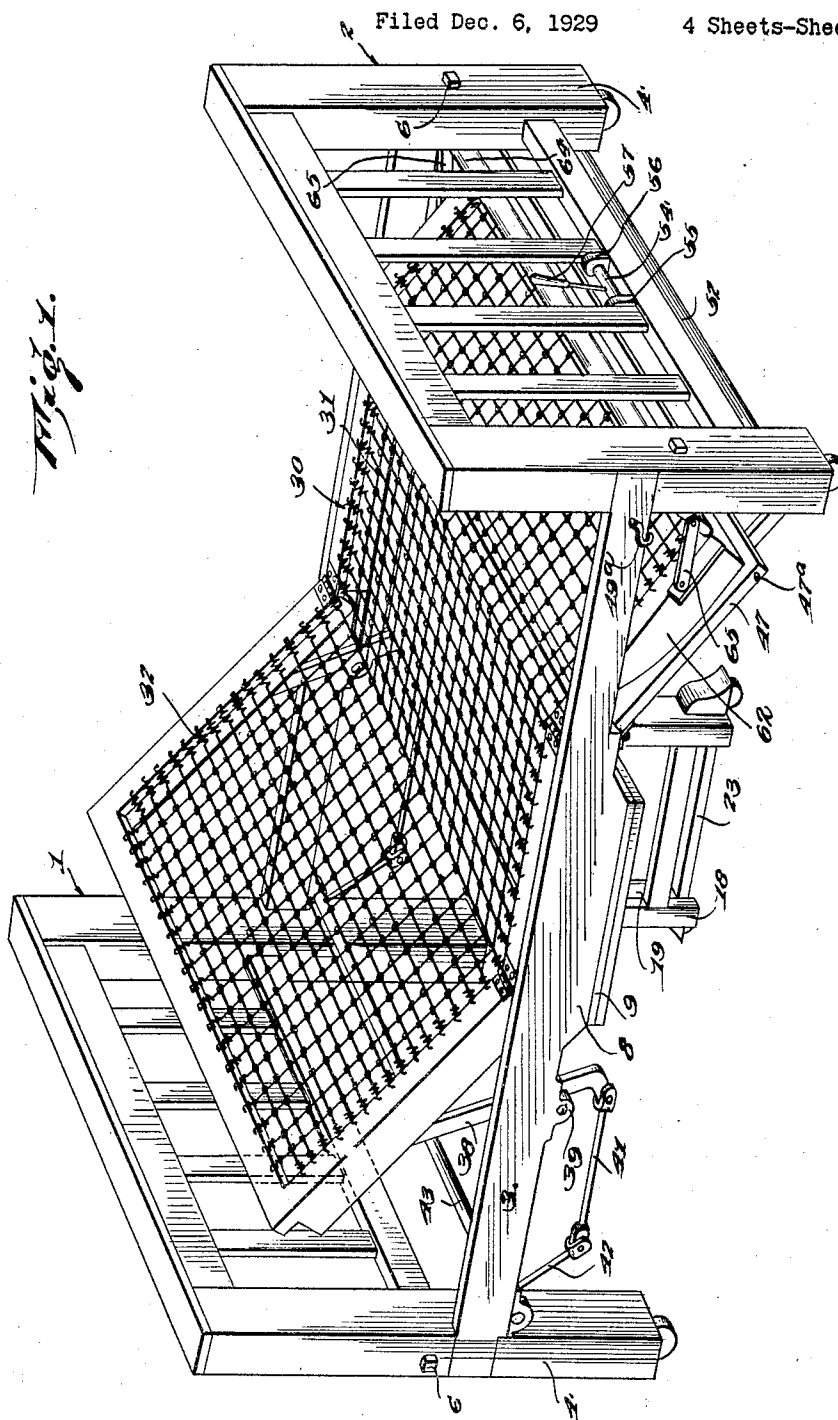
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Filed Dec. 6, 1929

4 Sheets-Sheet 1



WITNESS

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Fig. 2.

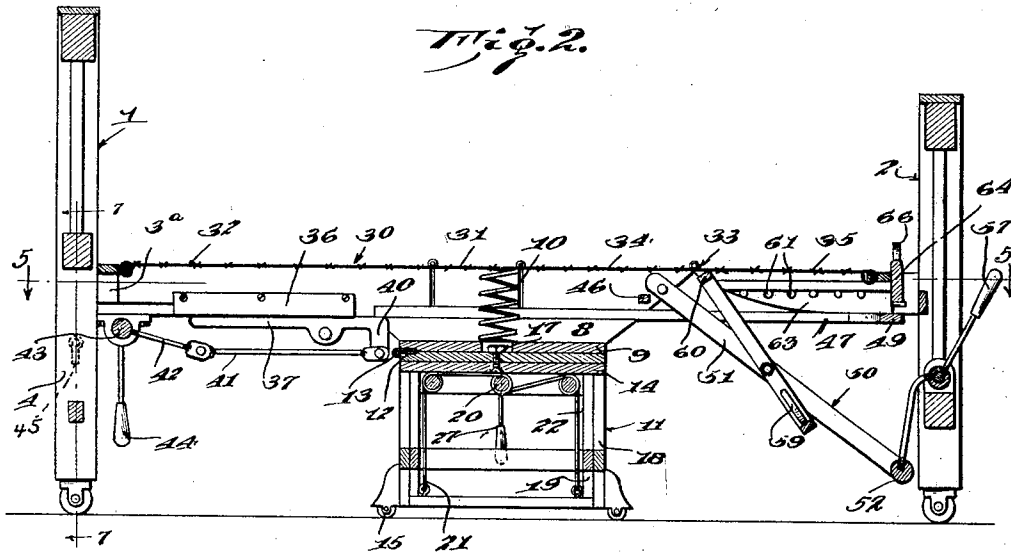
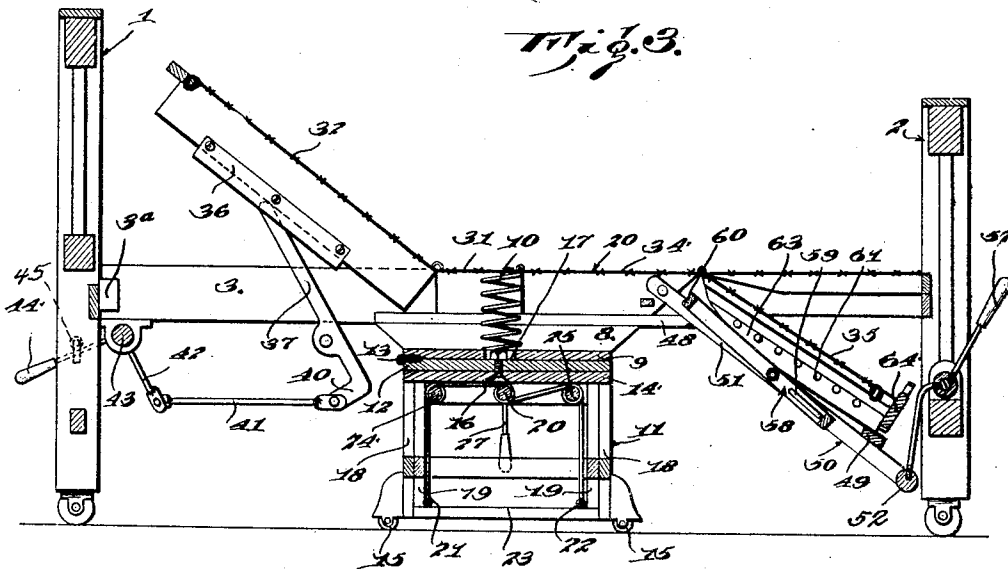


Fig. 3.



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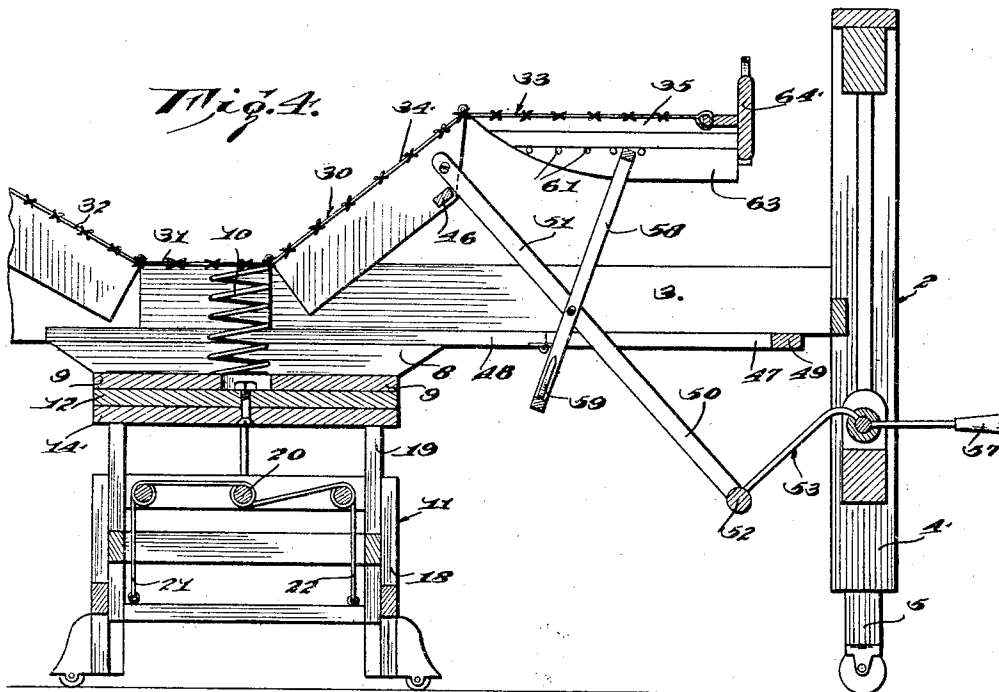
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WITNESSES

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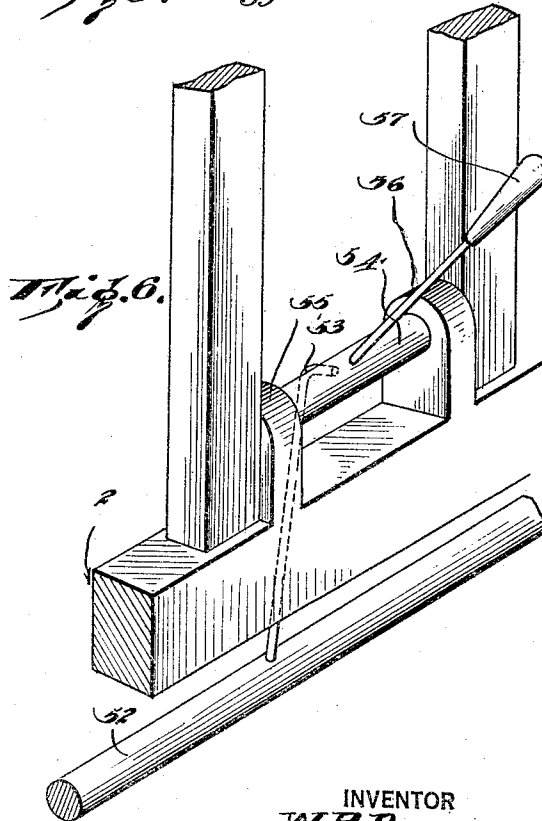
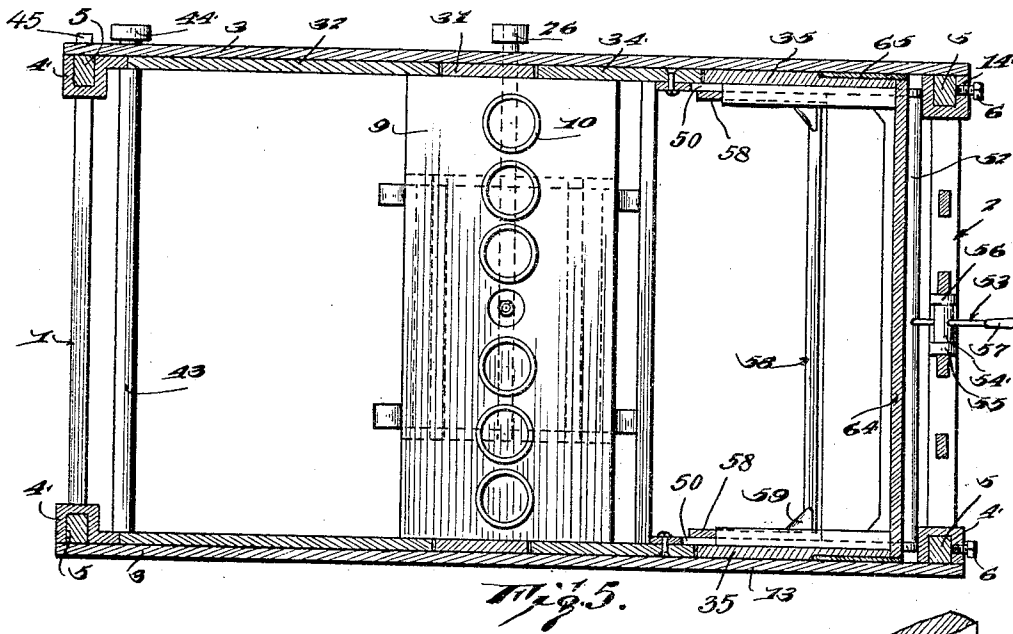
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WITNESSES

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INVALID'S BED

Application filed December 6, 1929. Serial No. 412,179.

This invention relates to beds and more particularly to beds for invalids.

A primary object of the invention is to so construct a bed of this character that the bedstead itself and all parts carried thereby may be bodily raised and lowered and revolved and which may have the head or foot elevated one in relation to the other and supported in such position.

Another object of the invention is to provide such a bed so constructed as to be adjustable to support the occupant in various positions without the necessity of disturbing him or removing him from the bed.

Another object of the invention is to so construct such a bed that the sections may be easily and quickly changed in their relation to each other by simple and efficient means without inconvenience to the patient and with little effort on the part of the operator.

Another object is to provide a bed spring having an adjustable end section with counter-balanced locking means for holding it in adjusted position and so arranged that when the section is raised the locking means will automatically follow it and drop into locking engagement therewith when the section has reached its desired position.

Another object of the invention is to construct a sectional bedspring having a fixed central portion with sections hingedly connected therewith and provided with lever controlled mechanism for raising and lowering the individual sections and provided with means for locking them in adjusted position.

In carrying out these objects, the invention is susceptible of a wide range of modification without departing from the spirit or sacrificing any of the advantages of the claimed invention; there being shown in the drawings for illustrative purposes a preferred and practical form, in which:

Figure 1 represents a perspective view of a bedstead constructed in accordance with this invention and having the end members of the spring one in raised and the other in lowered position;

Fig. 2 is a longitudinal section with the spring sections in alinement in the position

assumed when the patient is to assume a recumbent position;

Fig. 3 is a similar view with the parts in the position shown in Fig. 1;

Fig. 4 is an enlarged longitudinal section taken through the central front portion of the bed and showing the foot section of the spring adjusted to support the legs of the patient below the knee and in raised position;

Fig. 5 is a horizontal section taken on the line 5—5 of Fig. 2.

Fig. 6 is an enlarged detail perspective view with parts broken off showing the lever for raising the foot section and parts connected therewith.

In the embodiment illustrated the bedstead constituting this invention comprises a head board 1 and a foot board 2 connected by side bars 3 in the usual manner.

The head and foot board have corner posts 4 the lower portions of which, below the side bars 3, constitute the bed legs and these posts are equipped with longitudinally adjustable extensions held in adjusted position by set screws 6 so that when it is desired to lengthen the legs at one end or the other of the bed, or both, the extensions 5 are projected and secured in position by the screws 6.

By providing these leg extensions it will be obvious that either end of the bedstead may be bodily raised when desired so that it may be tilted to suit the convenience of the operator.

As shown the side bars 3 are provided about midway their length with depending bracket-like portions 8 to the lower edge of which is secured a cross board or platform 9. This cross board 9 constitutes a thick slat-like member which supports between it and the spring 30, presently to be described, a plurality of coil springs 10.

Located beneath the cross plate or slat 9 and connected therewith is a stand 11 here shown of a length corresponding to the width of the bedstead or the length of the slat and which has the top 12 thereof hingedly connected along one edge as shown at 13 to one edge of the board 9. This stand 11 is preferably mounted on casters 15 and the plate or top 12 is arranged between the top 14 proper of the stand and the slat 9 and has a bolt 16

carried by top 14 extending loosely through top 12 into an opening 17 in the slat 9 so that the bedstead may be revolved on the stand. The hinged connection of the plates 9 and 12 permit one end of the bed to be tilted in relation to the stand.

The top 14 of the stand is adjustable vertically on the body portion or post 18 thereof by means of corner posts 19. It will thus be seen that by raising or lowering the top or platform 14 of the stand 11 the bedstead may be bodily raised and lowered.

Extending longitudinally of the stand and transversely of the bedstead is a roller or drum 20 around which is designed to be wound two cables 21 and 22 which are secured at one end to the cross bars 23 of the supporting frame of the platform 14. These cables pass over guide rollers 24 and 25 mounted in the stand 11 in the same plane with the roller 20 and spaced laterally therefrom. The cables then extend one over the roller 20 and the other under it and are secured thereto so that when said roller is rotated the platform 14 will be raised or lowered according to the direction in which the roller is turned. The roller or drum 20 is manipulated by a handle 27 as shown in Figs. 2 and 3.

The spring 30 constituting a part of this invention is composed of a plurality of sections hingedly connected. The central section 31 is fixedly connected with the side members 3 of the bedstead and is arranged directly over the plate or slat 9 and between which section and the slat are arranged the coiled springs 10.

What we will term the "head" section 32 of the spring is substantially of the same length as the foot section 33 which latter is composed of two hingedly connected members 34 and 35, the member 34 termed the "thigh" section being hinged to the fixed section 31 as is shown clearly in Fig. 4 while member 35 termed the "leg" section is hinged to 34.

The free end of the head section 32 is supported when in lowered position on corner blocks 3a arranged at the head of the bedstead as is shown clearly in Figs. 2 and 3. Guide plates 36 are secured to the side bars of the spring section 32 as shown clearly in Figs. 2 and 3 and operate to prevent side-wise movement of elevating levers 37 and 38 which are fulcrumed in depending lugs 39 carried by the side bars 3 of the bedstead. The free ends of said levers 37 and 38 are rounded and designed to engage the lower edges of the side bars of section 32 so that when the levers are swung into the position shown in Figs. 1 and 3 they will raise the section and it may be held in raised position by means presently to be described. The outer ends of these levers are provided with laterally extending arms 40 to which are pivoted rods 41 the outer ends of which are connected by rods 42 with a rotary shaft 43 journaled

in suitable depending bearings carried by the side bars of the bedstead as is shown clearly in Figs. 2 and 3. A handle 44 is fixed to one end of the shaft 43 beyond the side of bedstead for rotating the shaft 43 and through the connecting rods 41 and 42 swings the levers 37 and 38 to raise the head section 32 of the spring at any desired inclination. Any suitable means may be provided for holding the handle or lever 44 in position to maintain the section 32 raised, a catch 45 located on one of the bed posts being here shown for this purpose.

The meeting ends of the side bars of the sections 34 and 35 are cut away or bevelled to permit said sections to fold upwardly in relation to each other. (See Fig. 4.) A cross bar 46 connects the side members of the section 34 near its outer end and operates as a brace for the section. When the section 34 is raised into the position shown in Fig. 4 the member 35 has a tendency to drop by gravity and is limited in its downward movement by the elevating frame of section 34 as will be presently described.

A U-shaped spring supporting frame member 47 is hingedly connected at the ends thereof to strips or blocks 48 secured to the lower edges of the side bars 3 on opposite sides of the platform or slat member 9. The cross bar 49 of this frame 47 extends transversely of the bedstead below the side bars 3 thereof and spaced inwardly from the foot board as is shown clearly in Fig. 2. This is the position assumed by said member when the spring is to be mounted in horizontal position or when the foot portion thereof is to be so mounted and it operates to support the section 35 which would otherwise drop by gravity down. To support this frame 47 in position to hold the spring end or section 35 heavy studs 47a project laterally from the free end of the frame as is shown clearly in Fig. 1 and these studs are engaged by hooks 49a mounted on the outer faces of the side bars 3 as shown in Fig. 1.

When the foot section 33 is to be swung down into the position shown in Figs. 1 and 3 the hooks 49a are disengaged from the studs 47a which permits the frame 47 to drop down by gravity out of the way of said section. This frame 47 when in lowered position is engaged with and supported by the frame 50 which controls the raising and lowering of the foot sections 34 and 35.

The operating frame 50 is also made U-shaped in form and the free ends of the legs 51 thereof are pivotally connected to the outer or hinged ends of the side members of the section 34 adjacent its hinged connection with section 35 (see Fig. 4). The cross bar 52 of this frame which is here shown in the form of a rod is pivotally connected with the arms or legs 51 and a lever 53 fulcrumed intermediate its ends on the foot board 2 is

fixedly connected with said cross bar 52 intermediate the ends thereof so that when the outer end of the lever is swung downwardly its inner end will be swung upwardly carrying with it the U-shaped frame 50 and the hingedly connected sections 34 and 35 of the foot section 33 of the spring. The upward movement of the frame 50 also carries with it the frame 47 the cross bar 49 of which overlies and rests on the lever 53 and hence is limited in its downward movement by said lever. The lever 53 is offset intermediate its ends where it is fulcrumed, being fixedly secured at this offset portion to a shaft or rod 54 journaled in two upstanding bearings 55 and 56 carried by the lower portions of the foot board 2 as is shown clearly in Fig. 6. The outer end of the lever 53 is preferably provided with a hand grip 57 to facilitate the manipulation thereof.

It will thus be seen that when the frame 50 is manipulated by means of the lever 53 to swing said frame upwardly as shown in Fig. 4 it will carry with it the hingedly connected spring foot sections 34 and 35 and when they reach their extreme upward movement the lever will be past its dead center and will hold them in this position although obviously auxiliary means may be employed for holding the lever to prevent accidental dropping of the spring section. Normally when the frame 50 is swung upward the hinged section or member 35 of the foot portion of the spring will lie down in contact with the legs 51 of frame 50 and form a V-shaped configuration in combination with the section 34.

Pivotally mounted on the legs 51 preferably about midway the length thereof is a rectangular frame 58 the lower portion of which is preferably weighted as shown at 59 to normally hold the cross bar 60 thereof in upright position. This cross bar 60 is designed to perform the function of a ratchet for engaging teeth or cleats 61 carried by two strips 62 and 63 on the inner faces of the side bars of the section 35, and by means of which the section 35 may be held at any desired position in relation to section 34. As shown in Fig. 4 the section 35 is supported in horizontal position so that a patient lying on the bed may have his leg below the knee extended outwardly while the thigh portion will be raised at an incline supported by the section 34.

It will be obvious that the weighting of the lower end of the frame 58 will cause the cross bar 60 thereof to swing automatically into engagement with the teeth or cleats on the section 35 when said section is raised and when the bar is disengaged from the teeth and the section 35 swung downward into the position shown in Fig. 3 the frame 48 will lie flat against the frame 50 as shown in this figure.

A pivoted foot board 64 is connected by means of links 65 to the side bars of the foot sections 35 of the spring and is provided with a hand grip 66 to facilitate its adjustment. This foot board 64 may be swung down flat against the outer face of the end member of the spring section 35 as shown in Fig. 4 or it may be raised and its lower end supported on the spring as shown in Fig. 1. When swung into the position shown in Fig. 1 and the foot section of the spring is dropped down this board 64 operates as a foot rest for the patient who will occupy the position as in a reclining chair when the bed is as shown in Fig. 1.

From the above description it will be seen that the hingedly connected sections of the bedspring 30 may be variously positioned to meet the convenience or requirements of the patient without necessitating removal of the patient from the bed. It is of course understood that a mattress, not shown, is to be used in connection with this bed and that it will be preferably made sectional to conform to the sectional construction of the spring.

While this bed is primarily intended as a hospital bed adjustable to vary the position of the patient according to his comfort, it may be also used as an ordinary bed when the parts are positioned as shown in Fig. 2.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will, of course, be understood that changes in the form, proportion and minor details of construction will be resorted to, without departing from the spirit of the invention or its scope as claimed.

I claim:

A bed spring having a foot section composed of a plurality of hingedly connected members, one of the members having one end pivotally connected to a fixed part of the bed spring, a frame having one end pivotally connected with the other end of the last-mentioned member of the foot section, a lever pivotally mounted on the foot of the bed below the bed spring and having one end connected with the other end of the frame, a second frame pivoted adjacent the lower end thereof on the first-mentioned frame and having the upper free end adapted to engage in supporting relation the other member of the foot section when said members have been moved relative to each other for holding the last-mentioned member of the foot section in a predetermined position.

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