Nov. 10, 1953 D. C. TRAVIS 2,658,210

STOP MECHANISM FOR SECTIONALLY ADJUSTABLE BEDS

Filed March 25, 1949

4 Sheets-Sheet 1

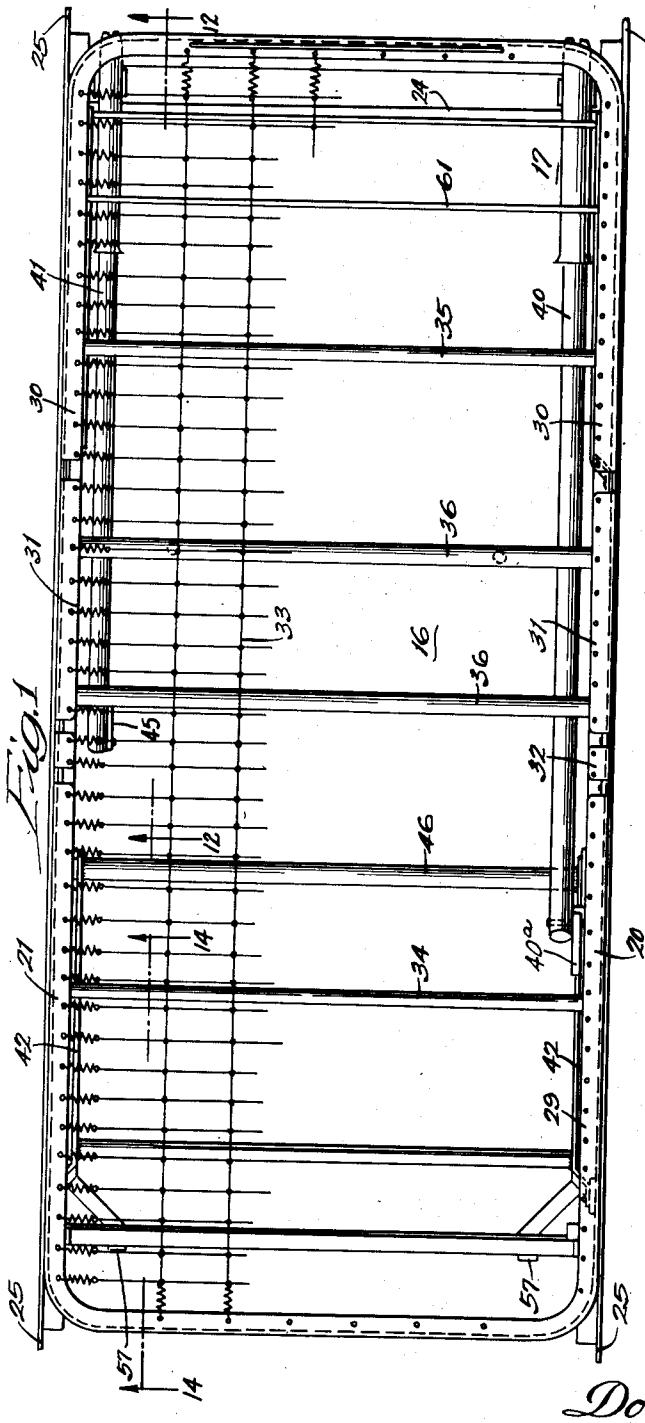


Fig. 1

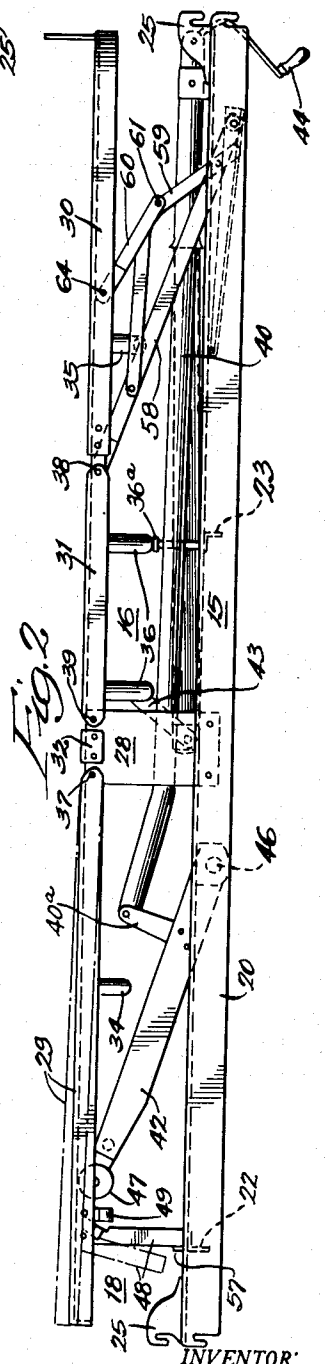


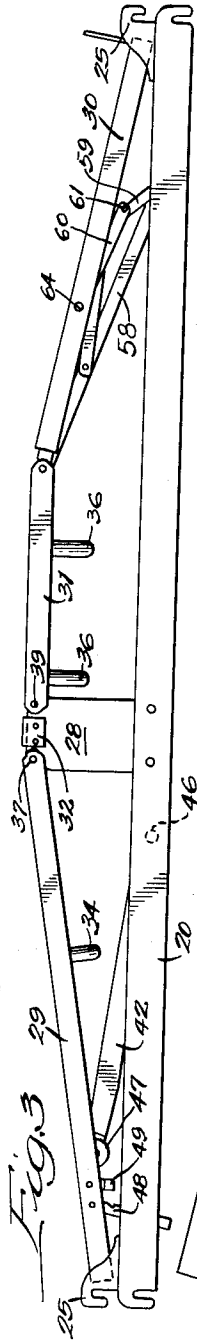
Fig. 2

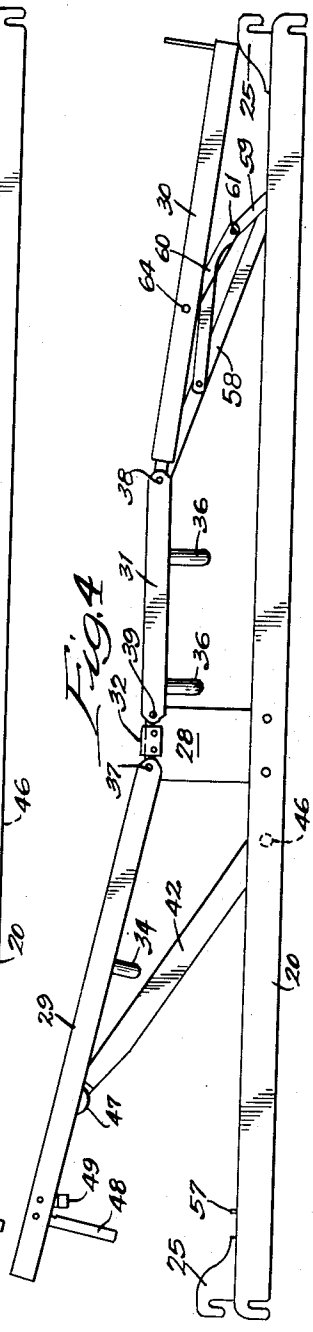
INVENTOR:
Don Carlos Travis,
By Isaac, Pond & Lunderson
Attorneys.

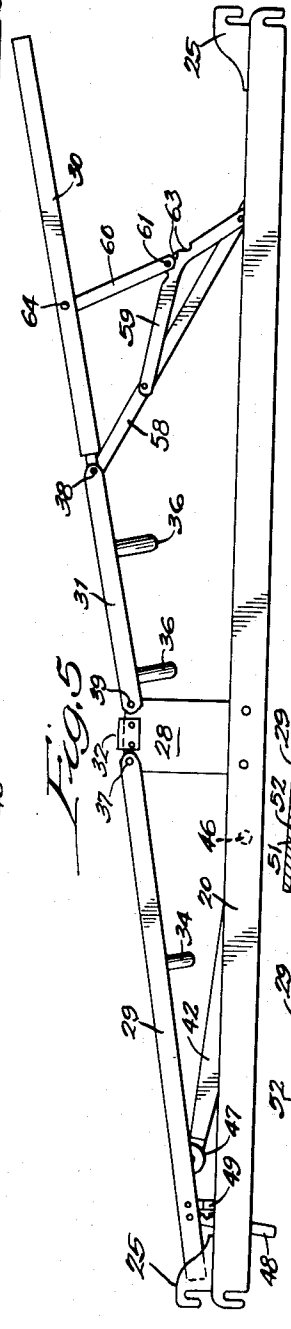
Nov. 10, 1953 D. C. TRAVIS 2,658,210

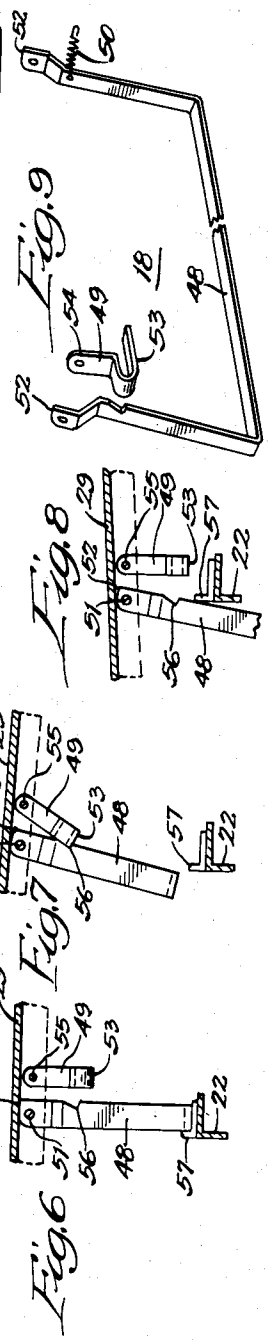
STOP MECHANISM FOR SECTIONALLY ADJUSTABLE BEDS

Filed March 25, 1949 4 Sheets-Sheet 2









INVENTOR:
Don Carlos Travis,
By Soans, Pond & Anderson
Attorneys.

Nov. 10, 1953 D. C. TRAVIS 2,658,210

STOP MECHANISM FOR SECTIONALLY ADJUSTABLE BEDS

Filed March 25, 1949 4 Sheets-Sheet 3

Fig. 10

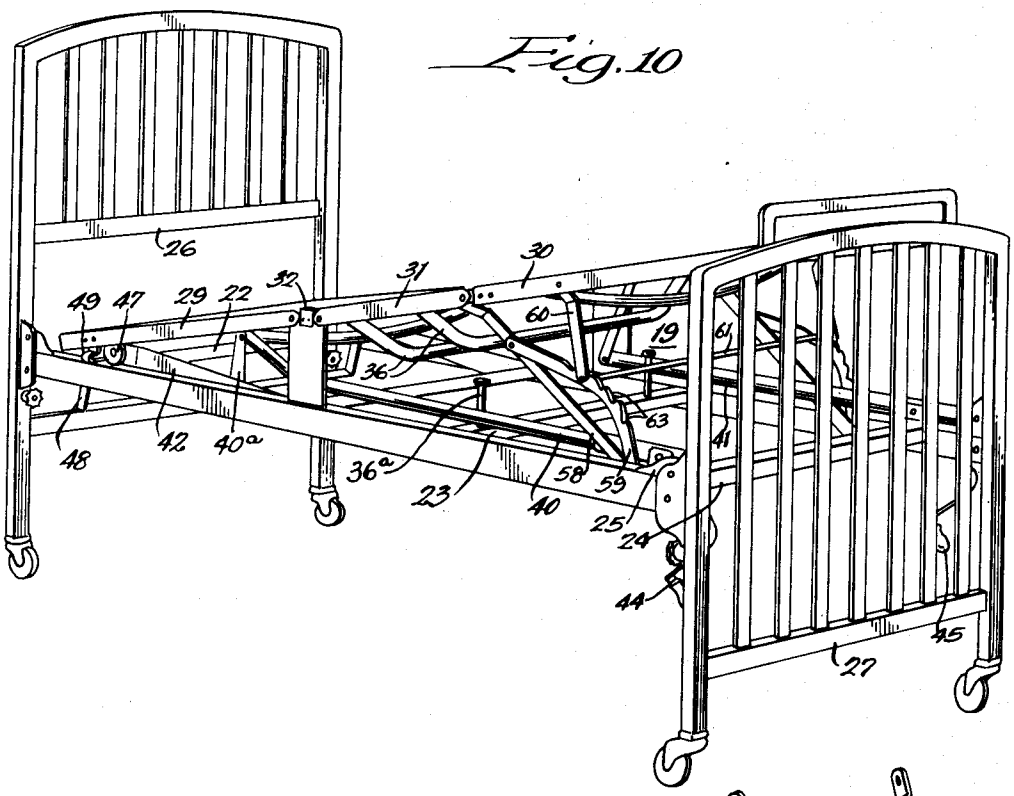
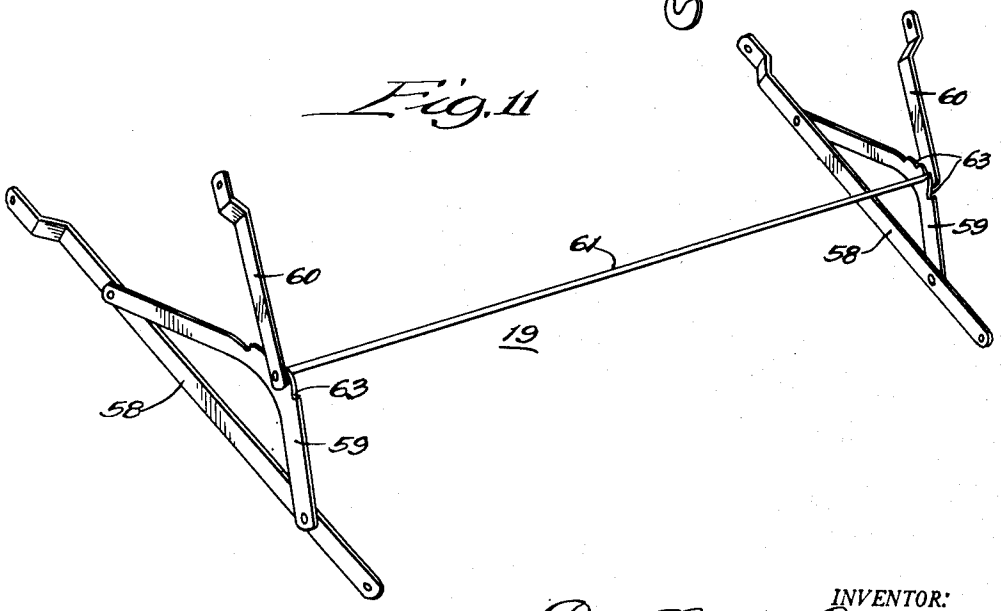


Fig. 11



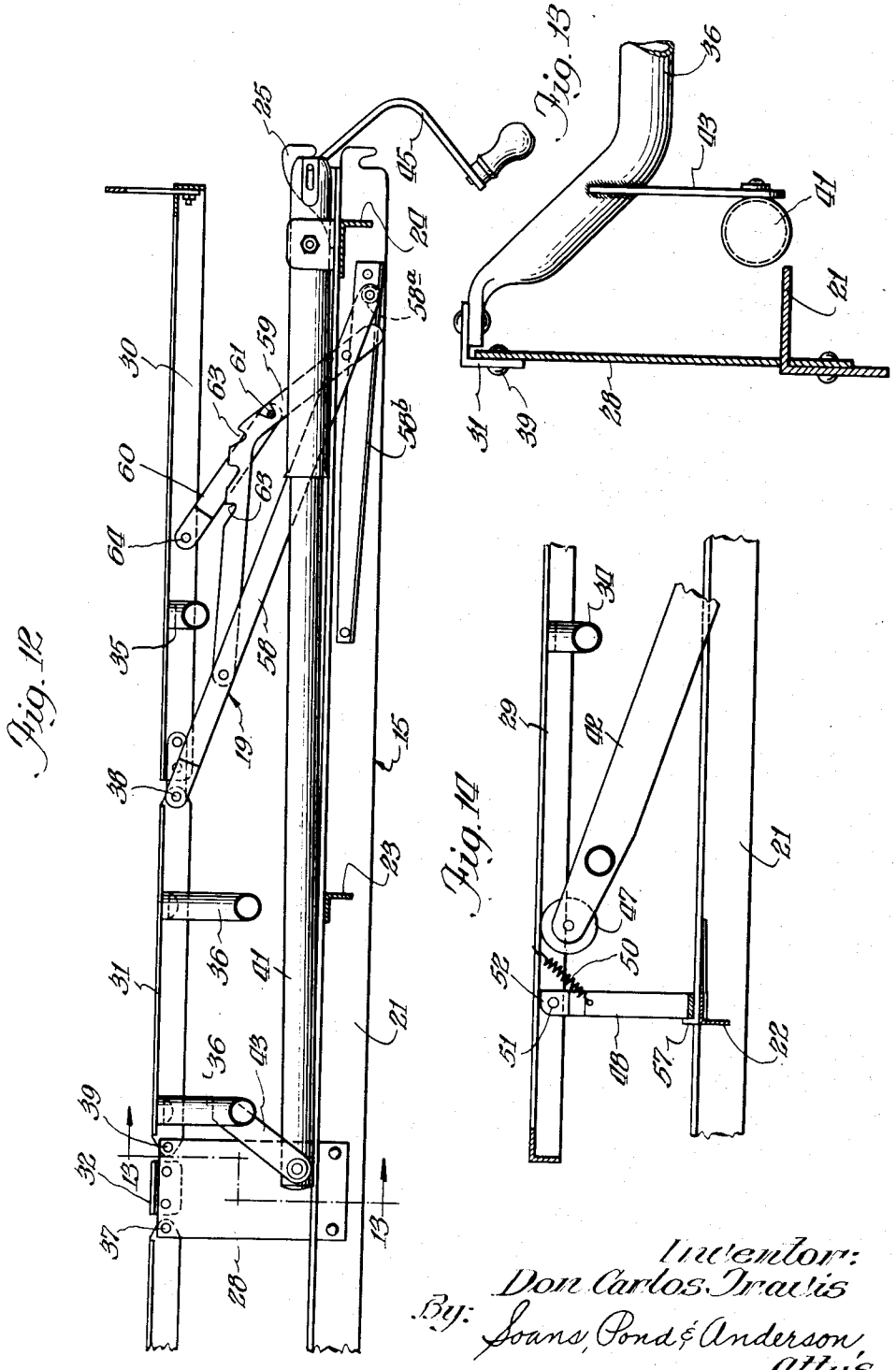
INVENTOR:
Don Carlos Travis,
By Isaac, Ford & Anderson
Attorneys.

Nov. 10, 1953 D. C. TRAVIS 2,658,210

STOP MECHANISM FOR SECTIONALLY ADJUSTABLE BEDS

Filed March 25, 1949

4 Sheets-Sheet 4



Inventor:
Don Carlos Travis
By: Evans, Pond & Anderson,
Atty's.

Patented Nov. 10, 1953

2,658,210

UNITED STATES PATENT OFFICE

2,658,210

STOP MECHANISM FOR SECTIONALLY ADJUSTABLE BEDS

Don Carlos Travis, Kenosha, Wis., assignor to Simmons Company, Kenosha, Wis., a corporation of Delaware

Application March 25, 1949, Serial No. 83,475

3 Claims. (Cl. 5—68)

1

This invention relates to a bed of the type wherein the bed bottom comprises several articulated sections which are adapted to be shifted into relatively different angular positions in order to attain varying postures of a body reposed on said bed bottom.

In beds of this type the swinging of certain of the sections is attained by a well-known form of crank-operated extension means. For the head-end section one of the positions particularly desired is downwardly disposed with respect to the horizontal. However, in certain cases it is important that the head-end section be never disposed downwardly with respect to the horizontal except intentionally.

For the foot-end section it is desired to secure as strong a brace as possible for the section in any of its positions.

The main objects of this invention, therefore, are to provide a multi-section posture-spring bed with improved means for effecting certain angular dispositions of the head-end and foot-end sections; to provide an improved form of stop mechanism for regulating the below-the-horizontal angular-disposition of one of the end sections of a multi-section articulated bed bottom; to provide an improved stop mechanism of this kind which normally limits the downward swinging of said one end section to a horizontal position but which stop mechanism may be manually retracted to permit said one end section to be swung intentionally into a below-the-horizontal inclined position; to provide an improved stop mechanism for this kind which can be manually retracted and latched in a retracted position so as to permit the cranking of said end section to a below-the-horizontal inclined position; to provide improved means for automatically releasing said stop mechanism from its latch-retracted position when said bed bottom section has been moved to a below-the-horizontal position whereby, following the return of said bed bottom section to a horizontal position, said stop mechanism will normally prevent said bed-bottom section from again being shifted to a below-the-horizontal position until said stop mechanism has again been manually shifted to and latched in its retracted position; to provide an improved form of brace means for positioning and rigidly maintaining a foot-end section at an angular position relative to the other bed-bottom sections and the main supporting frame; and to provide angular-disposing means of this kind which are inexpensive to manufacture, capable of easy installation on beds of previous construction, and positive in operation.

2

In the accompanying drawings:

Fig. 1 is a plan view of a multi-section, articulated bed bottom and supporting frame embodying this invention;

Fig. 2 is a side elevation of the same, the bed bottom sections being shown in full line in their coplanar relationship but with the head-end section shown in dotted outline in its slightly elevated position, which permits a retraction of the motion limiting mechanism for the head-end section;

Figs. 3, 4, and 5 show the several bed-bottom sections in relatively different angular positions generally designated as the "hyper-extension" position, the "Fowler" position, and the "shock or Trendelenburg" position, respectively;

Figs. 6, 7, and 8 illustrate the normal, retracted, and cam-releasing positions respectively of the motion-limiting mechanism for the head-end section;

Fig. 9 is a perspective view of the aforesaid mechanism;

Fig. 10 is a perspective view of the construction shown in Figs. 1 and 2 but mounted on head and foot ends and with the bed-bottom sections in the angular positions shown in Fig. 5;

Fig. 11 is an enlarged perspective view of the improved adjustable support means whereby the foot-end section is disposed in the positions shown in the several figures.

Figure 12 is an enlarged sectional elevational view taken along the line 12—12 of Fig. 1, illustrating particularly the actuating mechanism for adjusting the intermediate section of the bed-bottom, and the adjustable support means for the foot-end section.

Figure 13 is an enlarged sectional elevational view taken along the line 13—13 of Fig. 12, and

Figure 14 is an enlarged sectional elevational view of the head end of the bed-bottom, taken along the line 14—14 of Fig. 1, further illustrating the relation of the motion-limiting mechanism to the head end section and to the supporting frame.

An improved, angularly adjustable bed embodying the invention in preferred form comprises a frame 15 upon which is mounted a multi-section, articulated bed bottom 16, operable by conventional screw-jack actuating mechanisms 17, and equipped with a head-end section motion-limiting means 18 and a foot-end section adjustable support means 19.

The bed frame 15 comprises the conventional side rails 20 and 21 between which extend the cross-braces 22, 23 and 24, and which mount end-locks 25 of the type shown in copending

application Ser. No. 3,891, filed January 23, 1948, now Patent No. 2,566,541, whereby the frame may be secured to head and foot ends 26 and 27, respectively (Fig. 10). The side rails 20 and 21 and the cross braces 22, 23 and 24 are preferably of angle iron construction. Intermediate the ends of the side rails 20 and 21 standards or brackets 28 are secured whereon is swingably mounted the bed bottom 16.

The bed bottom 16 as herein shown, comprises a head-end section 29, a foot-end section 30, and a pair of intermediate sections 31 and 32, whereto is attached the conventional mattress supporting fabric 33. These bed-bottom sections are of the usual angle iron construction. Between the lateral side of sections 29, 30 and 31 respectively, extend braces or spreader bars 34, 35 and 36.

The head-end section 29 is pivoted at 37 to the standards 28 so that it may be swung above and below a horizontal position parallel with the frame 15. The foot-end section 30 is pivoted at 38 to the intermediate section 31 which, in turn, is pivoted at 39 to the standards 28 and said sections may be shifted into various angular relationships with respect to each other and with respect to the supporting frame 15. The intermediate section 31, however, is prevented from being lowered below the horizontal by a pair of upwardly extending pedestals 36*a* which are secured to the frame cross-bar 23 and which engage one of the spreader bars 36 when the intermediate section is horizontal.

The bed-bottom section 32 is a short one rigidly secured to the upper ends of the standards 28 between the pivots 37 and 39.

The extension mechanisms 17 comprise conventional screw jacks 40 and 41 connected respectively to an arm 40*a* secured to one of a pair of rocker arms 42 and to an arm 43 and operated by folding, non-detachable cranks 44 and 45 (see Figs. 2 and 10). The rocker arms 42 are supported on a jack shaft 46 on the frame 15 and each arm has a roller 47 at its upper end which travels on the underside of one of the lateral angle-bar sides of the head-end section 29. The arm 43 is rigidly secured to one of the spreader bars 36 for the intermediate bed-bottom section 31 (Figs. 12 and 13).

The head-end section angular-positioning means 18 comprises a U-shaped stop member 48, a latch 49, and a tension spring 50 (Fig. 9).

The U-shaped member 48 is suspended on pivots 51 from the headward underside of the head-end section 29. The member 48 is normally urged by the spring 50 which is connected at one of its ends to a side of the member 48 below the pivot 51, and at its other end to the head end section 29 (Fig. 14) so that the abutment of the shoulder 52 (see Fig. 6) against the horizontal flange of the side member of the head-end section 29 disposes the member in a vertical position directly over the brace 22 of the frame 15 (Fig. 2). In this position the member 48 abuts the brace 22 and prevents the head-end bed-bottom section 29 from being inadvertently shifted into a position below the horizontal.

The latch 49, as most clearly shown in Fig. 9, is in the form of a U 53 depending from a stem 54. The latch 49 is pivoted at 55 on the bed bottom 29 so as to be normally urged by gravity to occupy a position parallel to the member 48. When the member 48 is retracted against the action of the spring 50 the latch 49 may be shifted so that the U-shaped part 53 will engage a shoulder 56 on the adjacent side of the member 48.

Shoulders 57 on the cross brace 22 prevent displacement of the member 48, headwardly of the bed, out of its vertical position when it is resting on the brace 22. The head-end section would have to be elevated slightly to permit the member 48 to be shifted deliberately or accidentally.

The pivots 51 and 55 of the stop member 48 and latch 49 are so positioned on the side rail of the head-end section 29 with respect to the cross brace 22 of the frame 15, that when the member 48 is held in its retracted position by the latch 49, as shown in Fig. 7, and the head-end section 29 is swung below the horizontal, the cross brace 22 will engage and cam the stop member 48 headwardly of the frame 15 and disengage the shoulder 56 from the latch 49, whereupon the latch 49 returns by gravity to a vertically depending position (Fig. 8). Thus, when the head-end section 29 is restored to a position slightly above the horizontal, the spring 50 will dispose the member 48 so that upon a subsequent lowering of the head-end section 29, said head-end section cannot be accidentally lowered below the horizontal.

The adjustable support means 19 for the foot-end section 30 comprises a pair of links 58, a pair of struts 59, and a pair of arms 60 connected by a rod 61.

Each link 58 is hinged to the intermediate bed-bottom section 31 on a pivot 38 which connects the foot-end section 30 and the intermediate section 31. The lower end of each link 58 is provided with a roller 58*a* which rests upon the inwardly extending flange 58*b* of a short length of angle iron secured to the inner face of the side wall 20 or 21 (Fig. 12).

The struts 59 are of arcuate form and at their ends are riveted or otherwise bonded one to each of the links 58 intermediate the ends of the respective link. Notches 63 are formed on the upper edge of each of the struts 59.

The arms 60 are pivoted at 64 to the foot-end section 30 so that the rod 61 connecting these arms may engage one or another of the notches 63 on the struts 59 and determine the angularity of the foot-end section 30 with respect to the intermediate section 31, and consequently with respect to the frame 15.

Such an arrangement of the struts 59 obviates the necessity of notches in the links 58, as heretofore have been employed, and provides a much stronger support for the foot-end section 30, even though the links 58 may be made of lighter weight material than heretofore was possible.

The operation of the head-end section angular-positioning mechanism 18 is as follows:

Normally, the stop member 48 is disposed at right angles to the plane of the head-end bed-bottom section 29, being held in that position by the co-action of the spring 50 which urges the shoulder 52 into abument with the underside of the head-end section 29. In such position the member 48 is disposed over the cross brace 22 of the frame 15. Thus, whenever the head-end section 29 is lowered it will not be permitted to go below its horizontal position with respect to the frame 15. If, when occasion requires, it is desired to dispose the head-end section 29 at an angle below the horizontal, as shown in Figs. 3, 5 and 10, it will first be necessary for the attendant to operate the crank 44 to slightly elevate the head-end bed-bottom section 29, to the position shown in dotted outline in Fig. 2. This will raise the stop member 48 clear of the shoulders 57 and permit the attendant to swing the

member 48 headwardly of the head-end section 29 against the action of the spring 50 and at the same time shift the latch 49 so as to bring the U-shaped part 53 into contact with the shoulder 56. The spring 50 maintains the U-shaped part 53 and the shoulder 56 in frictional engagement, as shown in Fig. 7. Thereupon the attendant may resume the cranking of the extension element 44 so as to move the bed-bottom section 29 into the position shown in Figs. 3, 5 and 10.

As the head-end section 29 moves into the below-the-horizontal position, the brace 22 engages the member 48, as shown in Fig. 8, and cams the stop member 48 out of contact with the latch 49, permitting the latch members to return by gravity to a vertically depending position. Thus, when the bed-bottom section 29 is restored to a position slightly above the horizontal, the spring 50 will shift the member 48 into the position shown in Figs. 2 and 6 so that it will be impossible for an attendant to inadvertently or carelessly lower the head-end section 29 below the horizontal until the member 48 again has been shifted into its retracted position.

The operation of the adjustable foot section supporting means 19 is believed to be apparent from the drawings and may be described briefly as follows: When the intermediate section 31 is swung upwardly about the pivots 39 by means of the screw-jack 41, the end of the link 58 which is attached to the intermediate section 31 at the pivot 38 is raised and the roller 58*a* at the footward end of the link 58 moves along the track or flange 58*b* toward the head of the bed. The effect of this movement is a partial rotation of the foot section 30 and its support 19 in a clockwise direction, as viewed in Fig. 2, the end of the foot section which is attached to the intermediate section being elevated, and the free end of the foot section, partially overhanging the footward end of the link 58, being slightly lowered. The foot section 30 may also be adjusted independently of the intermediate section 31 by manually lifting the foot section and engaging the bar 61 with a different one of the notches 63 in the strut 59. It will be understood, however, that irrespective of the position of the foot section 30 relative to its support 19, any adjustment of the intermediate section 31 will be accompanied by a corresponding movement of the foot section 30 and its support 19, as a unit, relative to the frame 15.

Variations and modifications in the details of structure and arrangement of the parts may be resorted to within the spirit and coverage of the appended claims.

I claim:

1. In a bed of the class described, the combination of a supporting frame, a bed bottom section hinged on said frame for swinging movement relative thereto, a stop member hingedly depending from said section and urged to a position thereon to normally abut said frame when said bed bottom section occupies a predetermined position relative to said frame, thereby to prevent downward movement of said bed bottom section below said predetermined position, said stop member being shiftable to a non-abutting position to permit said bed bottom section to be moved below said predetermined position, a shoulder formed on said stop member, a normally retracted latch member pivotally mounted on said section adjacent said stop member and adapted to be manually shifted to engage said shoulder to hold said stop member in said non-abutting position, said stop member in said non-abutting position being cammingly engageable with said frame by movement of said section below said predetermined position thereby to disengage said stop member from said latch member and to permit said stop member to resume said abutting position when said bed bottom section is subsequently raised above said predetermined position.

2. In a bed of the class described, the combination of a support structure, a bed bottom structure hinged on said support structure for swinging movement relative thereto, stop means movably connected to one of said structures and urged to a position thereon to abut the other of said structures when said bed bottom structure occupies a predetermined position relative to said support structure, thereby to prevent downward movement of said bed bottom structure below said predetermined position, said stop means being manually shiftable to a non-abutting position to permit said bed bottom structure to be lowered below said predetermined position, latch means interposable between said one structure and said stop means and being connected to at least one of them, said latch means when so interposed serving to hold said stop means in said non-abutting position, one of said means being engageable by said other structure to disable said latch means when said bed bottom structure is moved below said predetermined position, thereby to permit said stop means to resume said abutting position when said bed bottom structure is subsequently raised above said predetermined position.

3. In a bed of the class described, the combination of a supporting frame, a bed bottom section hinged on said frame for swinging movement relative thereto, a stop member pivoted on said bed bottom section and urged to a position thereon to abut said frame when said bed bottom section occupies a predetermined position relative to said frame thereby to prevent downward movement of said bed botttom section below said predetermined position, said stop member being manually shiftable to a non-abutting position to permit said section to be lowered below said predetermined position, a latch member interposable between said stop member and said bed bottom section and being movably connected to at least one of them, said latch member when so interposed being effective to hold said stop member in said non-abutting position, one of said members being engageable with said frame to disable said latch member when said bed bottom section is moved below said predetermined position, thereby to permit said stop member to resume said abutting position when said bed bottom section is subsequently raised above said predetermined position.

DON CARLOS TRAVIS.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,567	Wooley	Apr. 16, 1842
597,480	Fellows	Jan. 18, 1898
1,573,530	Weaver	Feb. 16, 1926
1,790,435	Muller	Jan. 27, 1931
2,026,153	Wright et al.	Dec. 31, 1935
2,215,636	Comper	Sept. 24, 1940