

May 25, 1937.

E. S. HALL ET AL

2,081,374

DUO-BED COUCH

Filed Jan. 30, 1935

3 Sheets-Sheet 1

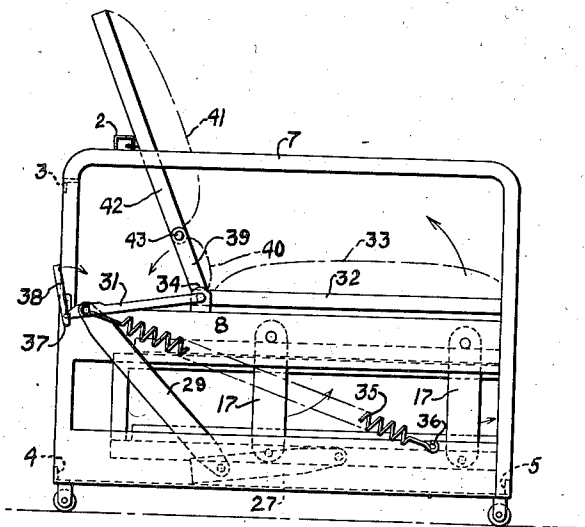


Fig. 1.

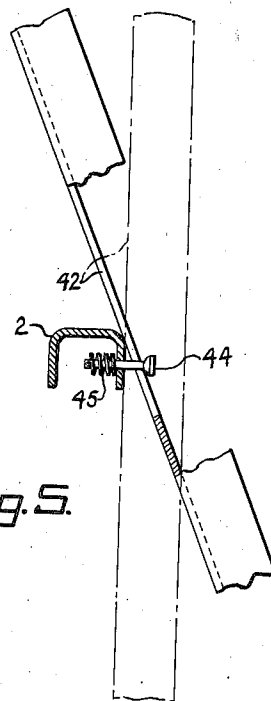


Fig. 5.

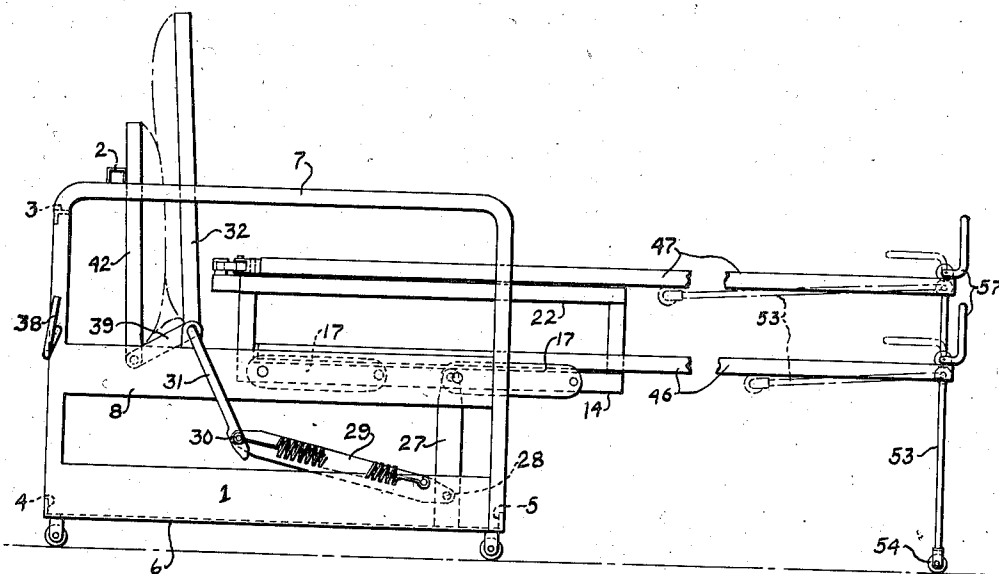


Fig. 3.

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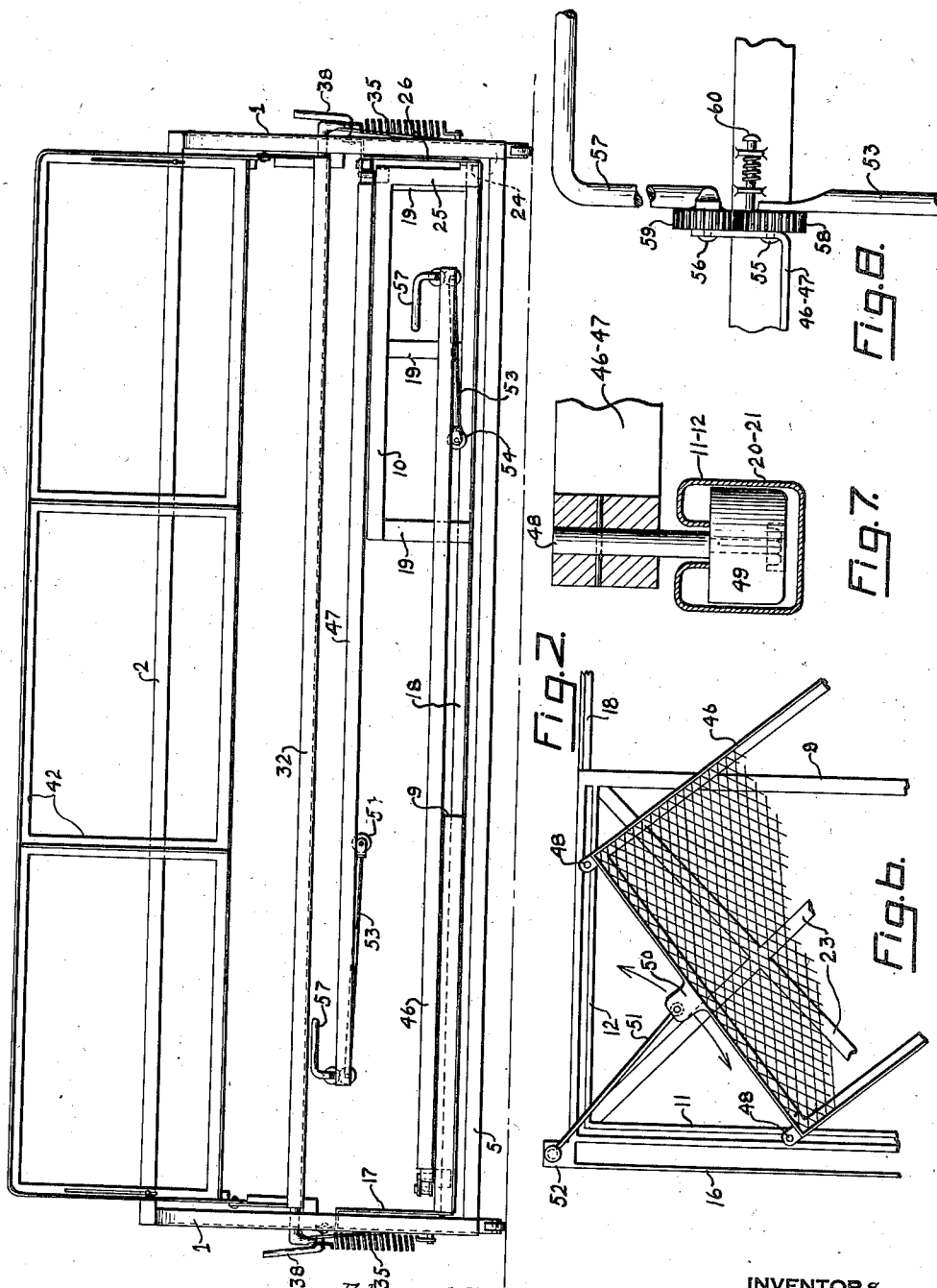
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

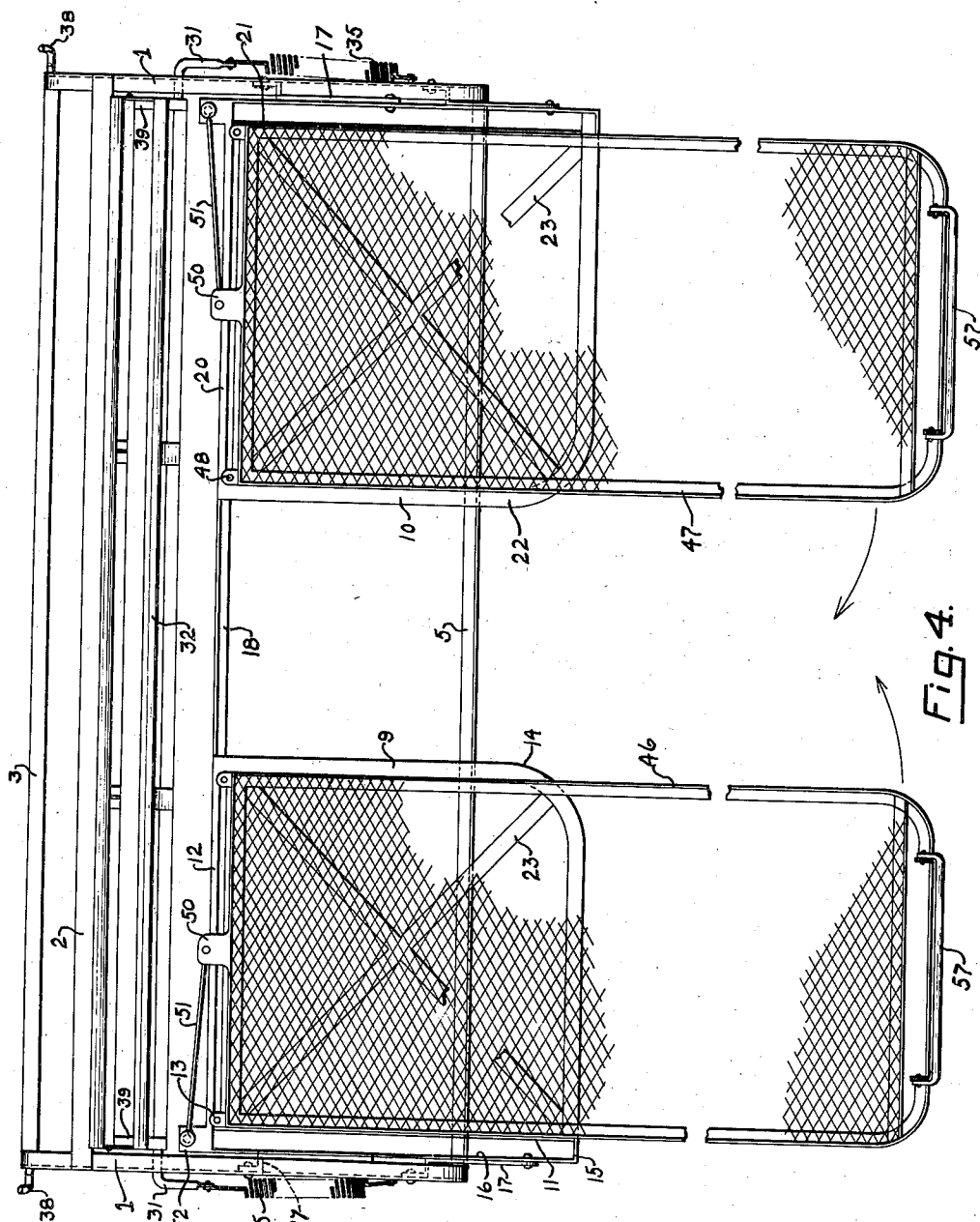


Fig. 4.

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## UNITED STATES PATENT OFFICE

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## DUO-BED COUCH

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Application January 30, 1935, Serial No. 4,034

8 Claims. (Cl. 5-8)

The object of the invention is to provide improvements in folding beds broadly, but more particularly in that type which when folded also serves the function of a seat, couch, or so-called davenport.

Another object is to provide a device of this character, which when folded for use as a couch having the same general dimensions of frame as that of an ordinary couch, also contains two separate and distinct beds, either of which may be extended into operative position independently of the other.

A further object is to provide a structure in which each of the beds, instead of being connected by a fixed pivot to the couch frame, and as a result extending substantially entirely beyond the limits of said frame when in use, is connected to said frame by means of a link and angularly disposed guides of any suitable cross section, with which spaced portions of the bed are connected by any suitable means, such as anti-friction rollers engaging retaining flanges, or the like.

Still another object is to provide in such a device means whereby each bed is so connected to the supporting frame, that when not in use both of the beds are nested beneath the usual level of a couch seat, but when moving into operative positions are swung or otherwise shifted into more elevated positions, so as to be in less of an otherwise relatively close proximity to the floor adjacent to the couch.

And a still further object is to provide in such a device a seat and back construction, whereby the seat from a normal horizontal position and the back from a normally rearwardly tilted position are angularly shifted in close substantially vertical parallel relationship, when the seat-supporting auxiliary frame is shifted into elevated position.

With these objects in mind, in addition to others including foldability of the foot rails and the legs for the free and otherwise unsupported ends of the beds; the latch means for maintaining the several elements in inoperative relation; and the counter-balancing of the weight of the couch seat; additional details of the construction and operation of the invention are fully brought out in the following description, when read in conjunction with the accompanying drawings, in which

Fig. 1 is a side elevation of one embodiment of the invention, without indicating any upholstery other than that of the seat and back of the couch, it being understood that the type and arrangement of the upholstery do not enter into the invention;

Fig. 2 is a front elevation of the device without any upholstery being indicated;

Fig. 3 is a side elevation of the same device,

with the two beds in their operative or extended positions;

Fig. 4 is a top plan view of the device extended as indicated in Fig. 3;

Fig. 5 is an enlarged fragmentary, partially sectional view of one of the slidable connections between the angularly shiftable back and the frame of the device;

Fig. 6 is a fragmentary view of the connected portions of one of the bed elements and that portion of the frame by which it is directly supported at one end;

Fig. 7 is an enlarged fragmentary sectional view of one of the anti-friction or equivalent connections between a bed corner and the adjacent supporting portion of the frame; and

Fig. 8 is an enlarged fragmentary elevational view of the gear connection between the foot rails and legs of the bed elements, as representative of any suitable link or other connection for the purpose involved.

Referring to the drawings, the basic or primary frame of the improved couch comprises end pieces 1, connected together by longitudinally extending angle bars 2, 3, 4 and 5. Each of the end pieces comprises a preferably metallic unit, embodying a base portion 6, a similarly extending arm rail or rest 7, and an intervening horizontally extending rib 8. Of the longitudinal bars, the two last-named bars 4 and 5 rigidly connect the lower rear and forward corner portions of the said end pieces, while the longitudinal bar 3 connects the upper rear portions of said end pieces, and the bar 2 extends between the rear portions of the arm rests 7, for a purpose hereinafter described.

An auxiliary frame is carried by the basic frame structure just described, and in turn comprises two substantially rectangular bed-supporting sections 9 and 10, which are positioned adjacent to the opposite ends of the couch and are of different elevations, the latter being substantially higher than the former.

The rectangular frame 9 comprises angularly related channel bars 11 and 12, secured together at 13, and having their free ends connected by any suitably shaped rigid brace 14. Said section 9 is also provided at one side with an integral extension 15, comprising a rod 16, which is preferably arranged in slight spaced relation and parallel with the channel bar 11, and is connected by spaced parallel links 17 to the horizontal rib 8 of one of the end pieces, so that said section 9, whether in its lowermost retracted position (Fig. 1) or in its extended elevated and operative position (Fig. 3), may at all times be horizontal and maintained parallel with respect to the supporting rib 8.

From the rear channel bar 12 of the section 9, a rod 18 extends in alignment therewith and to-

wards the opposite end of the frame, and is provided with two or more upwardly extending and integrally connected supporting bars 19, which at their upper ends unite in supporting the rear channel bar 20 of the second section 10, the other bar 21 of which section is integrally secured to said first channel bar 20, and extends parallel with the opposite end piece 1 and parallel also with the corresponding bar 11 of the section 9. The more elevated section 10 is completed by means of a preferable angularly shaped brace member 22, which corresponds to the similarly shaped member 14, said brace members being joined to the channel bars 11 and 12 on the one hand, and 20 and 21 on the other hand, by any suitable criss-cross bracing ribs 23 as may be desired.

With respect to the second section 10, the same is positioned above and in spaced relation with a rod 24, which extends forwardly from the adjacent end of the rod 18 and is both united with said last-named rod and at its forward end is rigidly spaced with respect to the section 10 by means of an upwardly extending rod 25. This forwardly extending rod 24 is connected by means of parallel links 26, similar to the links 17 hereinbefore described, with the horizontal rib in the opposite end piece 1, corresponding with the rib 8 in Figs. 1 and 2, it being understood that the oppositely positioned end pieces are duplicates of each other, and in view of which fact they have not been separately illustrated in side elevation.

Referring to Figs. 1 and 3, it will be noted that the auxiliary frame, which comprises the sections 9 and 10 and interconnecting framework, is provided at its opposite ends with elevating and lowering structures which are duplicates of each other, and each of which comprises a link 27 which is secured at one end to the auxiliary framework, and its other end is pivotally connected at 28 to a second link 29, the opposite end of said second link being connected pivotally at 30 to a lever 31, the opposite end of which lever is in turn rigidly connected to the frame 32 which supports the seat cushions or other form of upholstery, shown by the dot-and-dash lines 33. Each of the levers 31 is trunnioned in an extension 34, carried by the horizontal rib 8 so that a forward pull upon the free end of said lever by means of the spring 35, secured at its opposite end to the forward lower portion 36 of the adjacent end piece, serves to angularly elevate the said frame 22 into an upright position, such as is shown in Fig. 3. When the seat 32 is raised into inoperative vertical position, and the normally slanting back 42 is thereby depressed thru the connecting link 39 into its inoperative lower position (Fig. 3), the lever 31 rigidly connected to the seat forces the link 29 forwardly from the position shown in Fig. 1, aided by the tension upon the spring 35, thereby also forcing forwardly the link 27, which at its forward and upper end is pivotally connected with the auxiliary frame 14, and thereby operates to shift said auxiliary frame forwardly and upwardly by reason of its pivotal connection with the main frame of the device, thru the medium of the parallel links 17, which are pivotally connected at their respectively opposite ends to the two frames in question.

Said seat frame is normally maintained in lowered operative position, as shown in Fig. 1 by the extreme free end portion of the lever 31, engaging any suitable form of latch mechanism 37,

which is released in the form shown by moving forwardly the upwardly extending arm 38, which may be duplicated upon opposite ends of the couch if desired, and which may be normally retained in rearmost position by any suitable and well known type of resilient means (not shown). It will also be noted that the rearmost portion of the seat frame 32 is provided with a normally upwardly and rearwardly extending link 39, which may if desired carry suitable upholstery 40 to bridge the gap between the rear portion of the seat 32 and the lowermost portion of the back upholstery 41, shown in dot-and-dash lines as being carried by the back frame 42, which in turn is pivotally connected at 43 to the free end of the links 39. Said back may rest slidably against the longitudinally extending rod 2 (Fig. 5) being maintained thereagainst by any suitable means such as a resiliently positioned guiding member 44, slidably engaging said back frame 42 and maintained thus by means of a spring 45.

With this construction it will be noted that release of the latch 37, by forward movement of either of the levers 38, permits the spring 35 to pull downwardly upon the lever 31, thereby simultaneously raising the seat frame 32 and depressing the back frame 42 into parallel relation with each other, and at the same time oscillating the auxiliary frame comprising principally the sections 9 and 10 into forwardly extended and relatively elevated position, as indicated in Figs. 3 and 4. With the auxiliary frame structure in such forward and elevated position, the beds 46 and 47 may be oscillated into their outwardly extending parallel position shown in Fig. 4. Each of said beds comprises an integral preferably rectangular framework, provided at its normally inward or rearward and relatively fixed end with pins 48, which depend and are provided with rollers or other suitably anti-friction means 49, which are positioned within and lightly engage the inner surfaces of the respective channel bars (Fig. 7).

The central portion of the adjacent end rail of the bed is also provided preferably with a suitable shoulder 50, which is pivotally connected to a link 51, the free end portion of which latter is pivotally secured to an integral extension 52 of the said auxiliary frame, as shown in Figs. 4 and 6. The result of this form of pivotal connection, between each bed and its supporting frame section, is that as the bed is swung from retracted into its extended position, its rear or inner end moves from close parallel relation with the end rods 11 or 21, as the case may be, into correspondingly close parallel relation with the other rods 12 or 20 of such pair, as hereinbefore described. In this manner, instead of each bed being merely pivotally connected at one corner to the auxiliary supporting frame, so that substantially the entire length of such bed extends freely outwardly from said auxiliary frame when in operative position, by this link motion the relatively fixed end of the bed is drawn rearwardly into and across the supporting auxiliary frame, which thereafter continues to support such adjacent end of the bed, and prevents the latter from being easily toppled or tilted either longitudinally or transversely of its major axis.

The outer free end of each of the beds illustrated may be supported when in normally operative position (Fig. 3) by any suitable means, such for instance as legs 53 carrying casters 54 or the like upon their lower free ends, and at their upper ends being pivotally mounted at 55 upon

the bed frame 46 or 47. Pivotaly mounted at 56 also upon said bed frame is a suitably shaped foot rail 57, and these legs and foot rail may then be interconnected by any suitable means (Fig. 8), such as the gears 58 and 59 shown as interlocking, or a suitable series of links or other well known structure, operatively connecting said legs and foot rails in such manner that by lifting the rails from the dot-and-dash positions shown in Fig. 3, the legs are simultaneously moved from their dot-and-dash positions, into the oppositely extending upright positions shown in that figure, where both rails and legs may be maintained substantially rigidly by any suitable form of spring-actuated latch 60 (Fig. 8).

When it is desired to collapse and retract the two beds, and during the day when they are not in use, the foot rails 57 are angularly shifted into the dot-and-dash positions shown, the legs there- by being forced into the dot-and dash positions as also indicated in Fig. 3. The beds are thereupon independently oscillated angularly into retracted parallel relation one above the other, as shown in Fig. 2, and the auxiliary supporting frame and beds depressed into the position shown in Fig. 1, whereupon the back frame 42 and the seat frame 32 move from their inoperative respective positions, shown in Fig. 3, into their operative positions as shown in Fig. 1.

Having thus described our invention what we claim as new and desire to secure by Letters Patent, is:—

1. A device of the character described, comprising a supporting frame, a normally inclined back, a normally lowered seat both carried by said frame, means connecting said back and said seat, whereby they may be moved simultaneously into upwardly extending substantially parallel relation, an auxiliary frame also carried by said supporting frame, a bed pivotally carried by said auxiliary frame normally beneath and movable in a plane parallel with the normal level of said seat, and connecting means whereby movement of said back and seat into substantial parallelism operates to elevate said auxiliary frame and said bed.

2. A device of the character described, comprising a supporting frame, a normally lowered seat carried by said frame, means to angularly elevate said seat, an auxiliary frame also carried by said supporting frame, a bed pivotally carried by said auxiliary frame, normally beneath and movable in a plane parallel with the normal level of said seat, and connecting means whereby elevation of said seat operates to elevate said auxiliary frame and said bed.

3. A device of the character described, comprising a supporting frame, an auxiliary frame, a bed pivotally connected to and at one end supported by said auxiliary frame when in extended position, said bed being movable about its pivotal connection in a substantially horizontal plane, means to support the free end portion of said bed when in operative position, a movable seat also carried by said first frame, normally in substantially horizontal position, and pivotal connecting means comprising a plurality of parallel links pivotally connected to and extending between said first frame and said auxiliary frame, to permit said auxiliary frame to move into a higher elevation upon the shifting of said seat, and con-

stantly in parallel relation with its inoperative position beneath said seat.

4. In a device of the character described, the combination of a frame, a bed angularly adjustable with respect thereto, and a link pivotally attached to a point fixed with respect to said frame, and at its opposite end pivotally connected to a substantially central point upon the end of said bed, said link being adapted to extend substantially parallel with the end of said bed upon one side of its connection therewith when said bed is in inoperative position, and upon the opposite side of said connection when said bed is in operative position.

5. In a device of the character described, the combination of a frame, comprising angularly related elements of hollow cross section having slots opening into their interiors, a bed having one end portion resting upon said frame, means extending from spaced portions of that end of said bed adjacent to said elements and slidably engaging the interiors of said elements to prevent tilting or raising of said bed with respect to said frame, and means pivotally connected at one end to a point fixed with relation to the adjacent ends of said elements, and at its opposite end being pivotally connected to a substantially central portion of the adjacent end of the bed.

6. In a device of the character described, the combination of a supporting frame, an angularly movable seat pivotally supported on said frame, an auxiliary frame means operatively connecting said auxiliary frame with said seat whereby elevation of said seat causes said auxiliary frame to be shifted into elevated position, a set of parallel links connecting said supporting frame to said auxiliary frame, and a pair of beds pivotally carried by said auxiliary frame independently of each other.

7. In a device of the character described, the combination of a supporting frame, an angularly movable seat pivotally supported on said frame, an auxiliary frame means operatively connecting said auxiliary frame with said seat whereby elevation of said seat causes said auxiliary frame to be shifted into elevated position, a set of parallel links connecting said supporting frame to said auxiliary frame, a pair of beds pivotally carried by said auxiliary frame independently of each other, and foldable means carried by said beds to support their outer free end portions independently of each other and of said auxiliary frame.

8. In a device of the character described, the combination of a frame defined by rear, front and end limits, a bed carried by said frame and angularly shiftable from retracted position into extended operative position, when in retracted position said bed nesting substantially close to and parallel with the rear limit and the end of said bed being substantially close to an end limit of said frame, and when in extended operative position said bed having its end substantially close to the rear limit and a portion of its side similarly close to the said end limit, and means to pivotally connect said bed to said frame, said means comprising a link pivotally secured at one of its ends to said frame adjacent to the angle formed by said end and rear limits, and at its other end being pivotally secured to substantially the central portion of the end of said bed.

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