

Nov. 20, 1923.

T. C. STARR

1,474,947

DAVENPORT

Filed Jan. 23, 1922

3 Sheets-Sheet 1

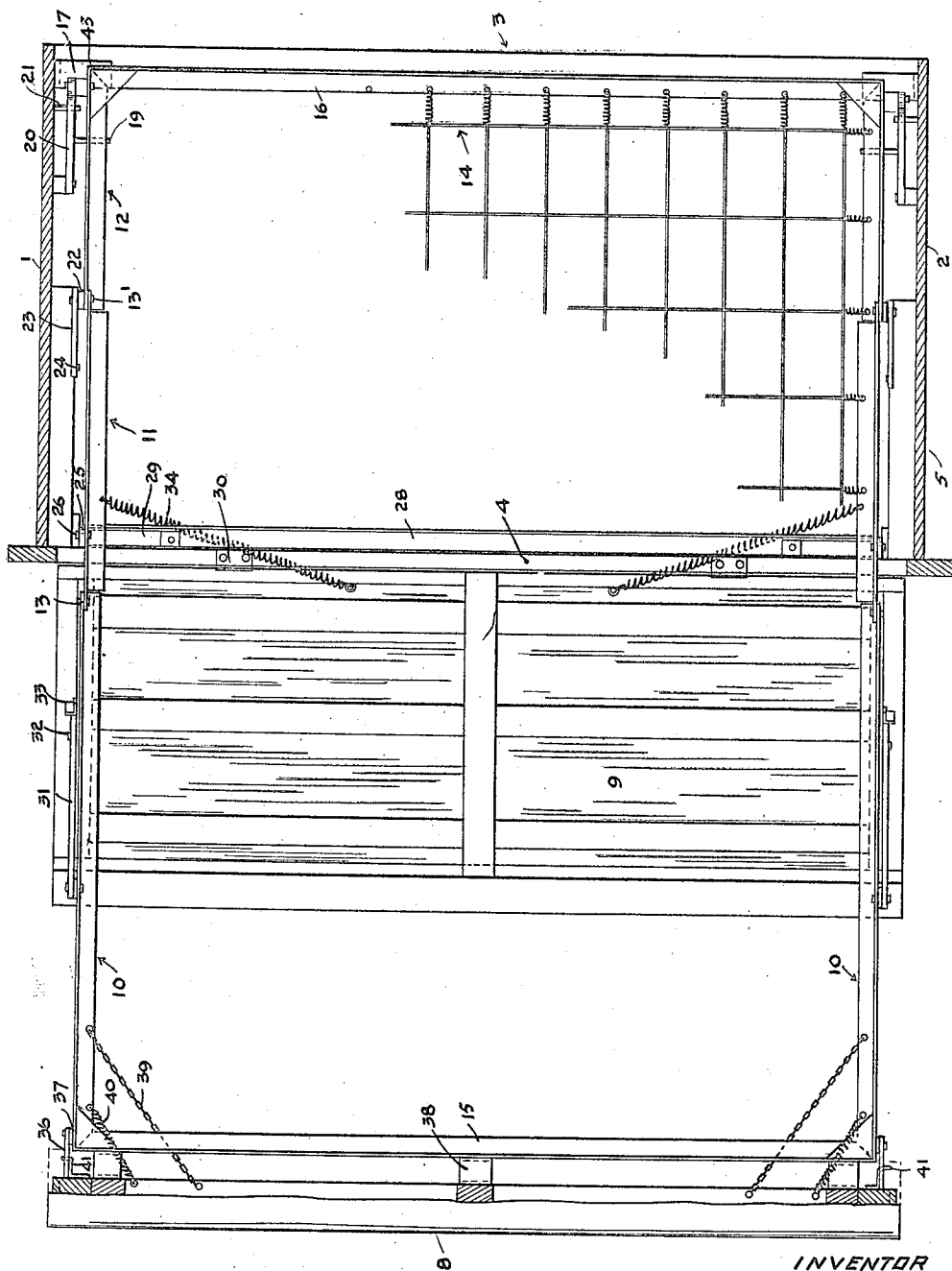


FIG. 1

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Nov. 20, 1923.

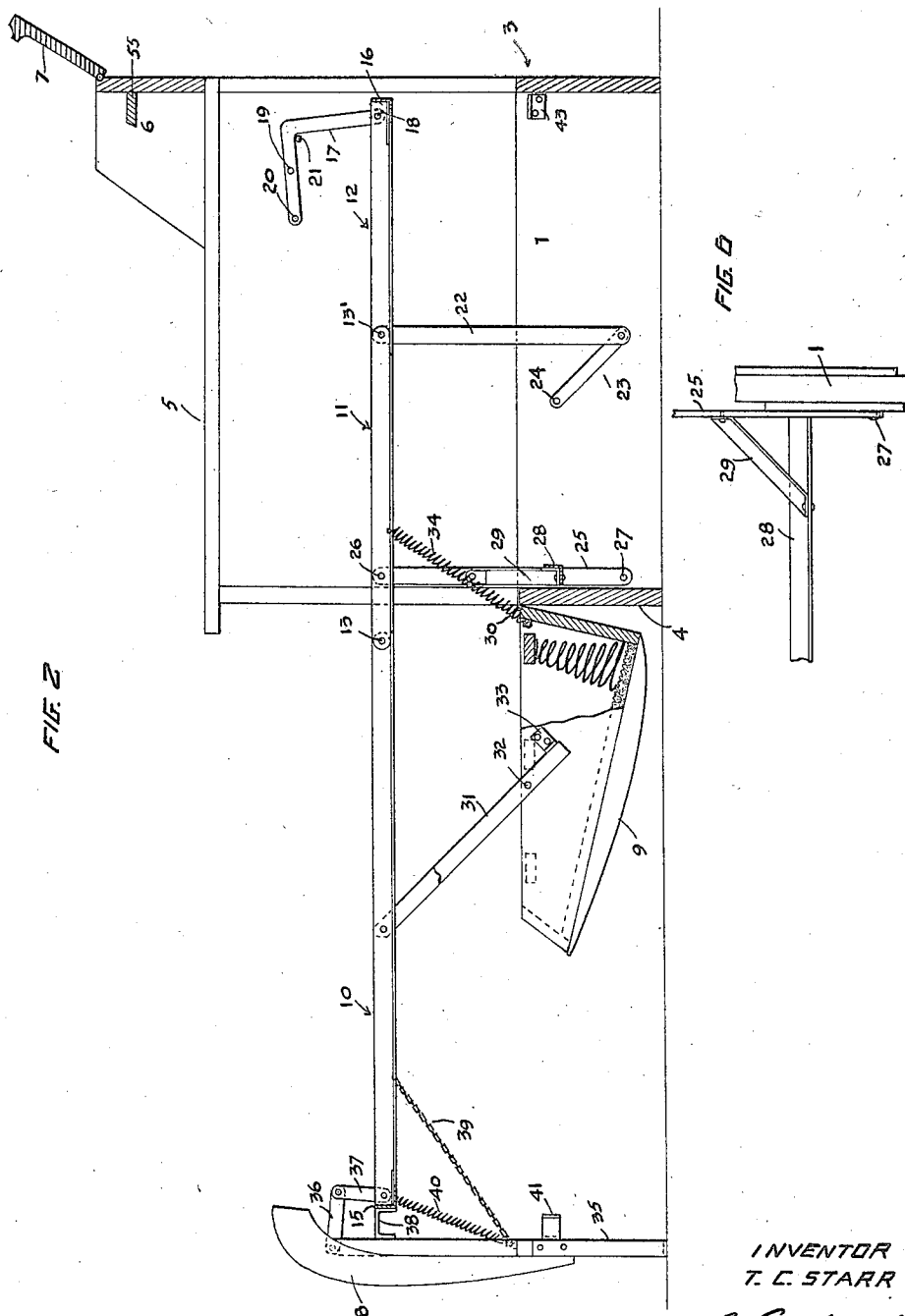
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3 Sheets-Sheet 2



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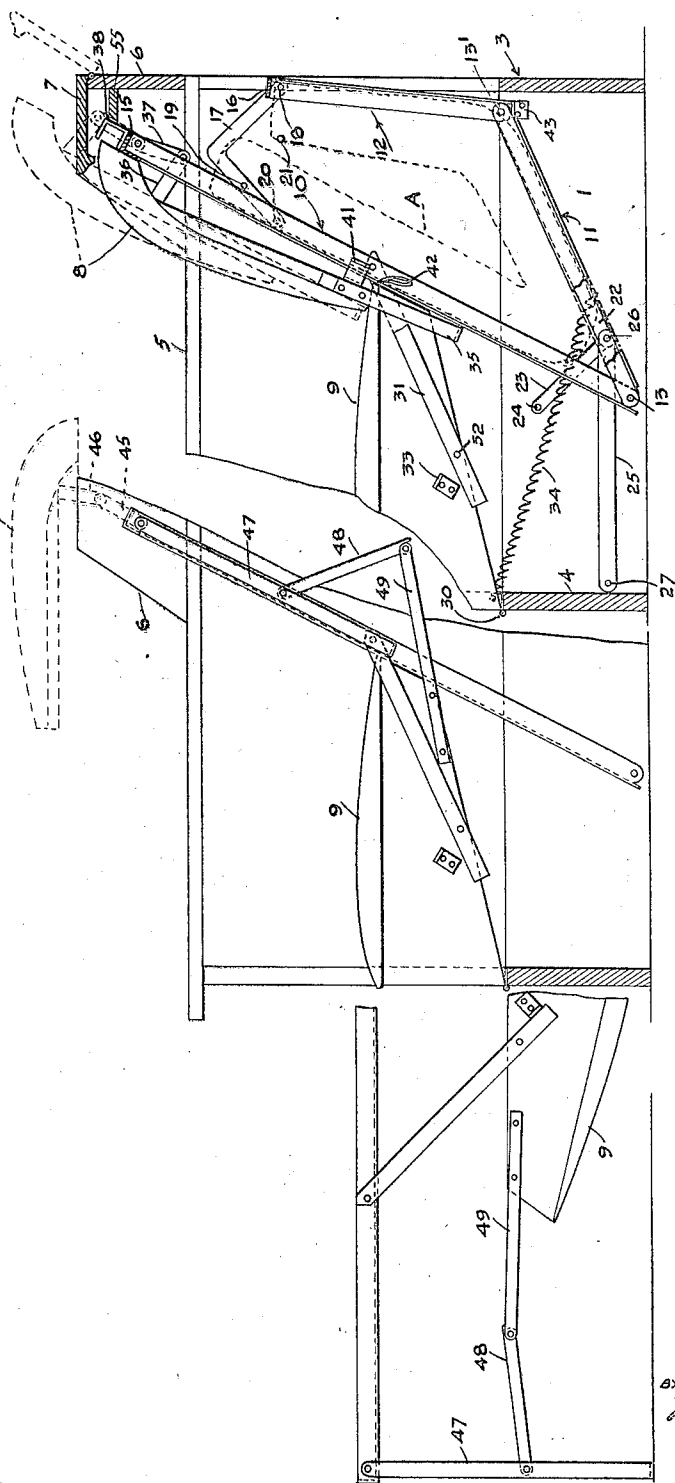
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FIG. 3

FIG. 4

FIG. 5



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UNITED STATES PATENT OFFICE.

THOMAS C. STARR, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO J. PAUL HARTMAN, OF SAN FRANCISCO, CALIFORNIA.

DAVENPORT.

Application filed January 23, 1922. Serial No. 531,115.

To all whom it may concern:

Be it known that I, THOMAS C. STARR, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Davenports, of which the following is a specification.

The present invention relates to improvements in davenports or sofa beds of the type which comprises a sofa or couch and a folding or collapsible bed combined in a compact structural unit.

An object of the invention is to provide a davenport bed of the character described in which the bed structure will be of a much more simple and less expensive construction than the ordinary type of box-folding couch bed and may be folded or collapsed into a more compact but less cramped form, out of the way of the seat and back elements of the davenport, without making a box-like fold of the bed sections and with a shorter swinging or folding movement of said bed sections than is usually required in folding beds, the bed structure being of such an arrangement that it may be easily folded and unfolded and when folded will provide ample bedding space and prevent jamming or squeezing of the bedding.

Another object of the invention is to provide a davenport of the character described in which the sectional collapsible bed frame has a greater clearance when extended for use than the ordinary davenport provides, and all possibility of the spring fabric sagging or stretching so as to touch the front board or other under parts is thereby prevented, this being accomplished without causing a higher disposition of the davenport seat than is usually the case, inasmuch as the sectional frame folds or collapses for the most part behind rather than under the seat.

Referring to the drawings accompanying and forming a part of the present specification:

Fig. 1 represents a top plan view of my improved davenport as when extended for use as a bed.

Fig. 2 represents a side elevation of the davenport as when extended showing the davenport frame in section and other parts broken and in section.

Fig. 3 is a side elevation of the bed structure as when folded, the main frame being in section and in part broken away.

Fig. 4 is a fragmentary side elevation of a modified form of the invention wherein the back is carried upon the davenport frame instead of the bed structure, the bed and seat being shown in folded position.

Fig. 5 is a fragmentary side elevation of the form of the invention shown in Fig. 4 with the bed structure extended.

Fig. 6 is a fragmentary front elevation of the bed structure showing a bracing detail.

In carrying out my invention I mount upon a davenport frame a sectional bed or mattress frame of such construction and arrangement that it is only necessary to move a front section thereof from its horizontal extended position to an upright position in order to completely fold the mattress frame, cause a front section to extend so that it may be used as a seat and back support entirely clear of the under part of the seat, and dispose the other sections in an out-of-the-way but pocket forming position so that the bedding will be freely folded and held on the frame well clear of the floor behind the seat and back. Preferably said front section is of such length as to extend from a point near the floor to a point near the upper side or edge of the back and may be equal to approximately half the length of the bed so as to reduce the number of sections and insure strength and rigidity in the mattress frame. Due to this arrangement the mattress frame may be of a comparatively simple and inexpensive construction and moved into its extended and collapsed positions with but a slight movement and expenditure of energy.

By having said front section upwardly disposed when folded and lessening the extent of movement and energy required to operate the bed, I may mount the back upon said section so that it will extend in front of the bed when the latter is extended, serve as a foot board and thereby avail more length or foot room.

Referring in detail to the embodiment of my invention illustrated in the accompanying drawings, 1, 2 and 3 respectively designate the two ends and back of a rectangular skeleton davenport frame of the usual type

and 4, 5 and 6 respectively, designate the front board, arm rests and upper frame structure, there being a hinged top board or lid 7 mounted on the structure 6 and adapted to cooperate with the back 8. A seat 9 is supported by the bed mattress frame as will be later described.

The mattress frame comprises a plurality of sections, in this instance three, a front section 10, an intermediate section 11, and a rear section 12, pivoted or hinged to one another as at 12 and 13' and supporting the customary flexible spring fabric 14. Each section is formed of angle iron pieces or bars as is customary in the art, the front and rear sections having end bars 15 and 16 to which the spring fabric is secured.

The rear end of the rear mattress frame section is supported on each side by L shaped links 17 pivoted at certain ends to said sections as at 18 and likewise connected at points above the bed frame by pivot pins 20 to the ends 1 and 2. At a mediate point on each link 17 a pin 19 is disposed so as to serve as a stop, as will be later described. Stop members 21 limit movement of the link when the bed is extended. Stanchions 22 are pivoted to the pivots or hinge pins at 13' and depend to a point near the floor where their lower ends are pivoted to straps 23 extending upwardly and forwardly for a short distance and in turn secured at their respective ends to the ends 1 and 2 by the screws 24.

Similar stanchions 25 are pivoted as at 26 to the sides of the intermediate sections near the forward edge thereof and extend downwardly to the extent of the stanchions 22 but at their lower end are pivoted directly as at 27 to the ends 1 and 2. The stanchions 25 extend close to and behind the front board 4 and are braced by a cross bar 28 and end braces 29.

The seat 9 is hinged as at 30 to the front board 4 and connected by a pair of links 31 with the front section 10. These links are pivoted as at 32 short of certain ends to the ends of the seat and are adapted to engage stops 33 secured to the seat, which stops prevent the seat from swinging into position touching the floor.

Helical retractile springs 34 are connected with the seat and intermediate section so as to assist in the extending of the bed, as will be later described.

The back 8 may be carried by the front section and when so arranged supports the front legs 35, which latter extend along the back of the seat and may be suitably braced thereon. Links 36 are pivotally connected on the upper ends of the legs so as to be substantially horizontally disposed above the upper side of the bed frame when the latter is extended, and are pivoted to upright links 37 in turn pivoted to opposite sides of the

front section. Channel iron members 38 are secured to the end bar 15 and lie between said end bar and the rear of the back so as to engage the rear side of the back. Chains or cables 39 are secured to the front section and back to limit the swinging of the legs and back to a proper supporting position. Retractable springs 40 are also secured in a like manner to the back and front sections so as to cause the back to extend upwardly upon the under side of the front section when the latter is lifted and the frame is folded. The legs 35 carry guide members 41 which when the bed frame is collapsed and extended, engage on opposite sides of the front section 10 and steady the movement of the seat and legs, preventing side swinging and subsequent strains on the pivots.

To unfold or extend the mattress frame from the position shown in Fig. 3, to that shown in Figs. 1 and 2, the back 8 is grasped along the upper edge and lifted upwardly so that the springs 40 will move it into position shown in dotted lines in Fig. 3, and its lower edge is disposed well above the seat, the links 36 and 37 moving past center whereby the springs 40 will act to raise and hold the back in raised position. The operator next grasps a flexible handle member 42 attached to the rear edge of the seat 9 and lifts the seat upwardly. The seat swings on its hinges 30 and clears the lower end of the back communicating a pull while being so swung, thru the links 31 to the front section 10. The front section 10 then begins to swing from its upwardly and rearwardly extended position, carrying with it the back 8, and after being so moved may be grasped at some forward portion thereof so as to complete the unfolding or extending operation. As the front section 10 is swung into position the stanchions 22 and 25 are moved so as to effect a raising of the bed sections, as well as a straightening out action, so that finally the bed will be disposed in position shown in Fig. 2. As the front section moves into extended position the back 8 and legs 35 will swing into substantially upright position and the seat will swing into a position such as shown in Fig. 2, well beneath the front section. Thus, it will be seen that it is only necessary to effect a slight movement of the front section in order that the entire bed frame will be extended and assume the horizontal position shown in Fig. 2.

To fold or collapse the bed frame, the back 8 is grasped and lifted upwardly so that the front section 10 will swing at the pivots 13. After the upward movement of the back and front section to a slight extent sufficient to lift the legs 35 clear of the floor, the seat and front section are pushed away from the operator so that the stanchions 25 and 22 will swing downwardly and rear-

wardly and the intermediate and rear sections will likewise swing downwardly and rearwardly and collapse at the pivots 13'. A further pushing and swinging movement of the front section causes the back and legs to swing into a position against the under side of the section 10 and the guide members 41 will engage opposite sides of said section to prevent the side swinging of the back 8 and legs 35. The seat 9 will be lifted by the links 31. The swinging movement of the front section 10 is continued until the side bars of said front section come to rest against the projecting stop pins 19 and a stop 55 on the davenport frame as shown in Fig. 3, and the forward end of the rear section 12 will engage stops or rests 43 secured to the rear ends 1 and 2, as shown in Figs. 2 and 3. The stanchions 22 will lie parallel with the sides of the intermediate section 11 and the stanchions 25, which have been moved thru 90° of arc, will lie horizontally, as shown in Fig. 3. The spring 34 is placed under tension by movement of the intermediate section into its collapsed position so that upon unfolding or extending the bed, said spring will assist in straightening out or lifting up the intermediate and associate bed sections. When the front section 10 comes to rest against the pins 19, it is in upright position, inclined rearwardly and the rear edge of the seat 9 rests thereon, as shown in Fig. 3, thereby supporting the seat and relieving the pivots for the links 31 of supporting strains. The engagement of the seat with the front section takes place at a point substantially centrally of the front and rear edges of said front section, so that the portion of the front section which extends downwardly from the plane of the seat is disposed in such position that it is barely beneath the rear portion of the seat. The intermediate section extends upwardly and rearwardly from the lower end of the front section so that the two sections form a substantial V arrangement and the rear section 12 extends vertically from the intermediate section close to the open back 3. Thus a pocket is formed in which the folded bedding, shown in dotted lines at A in Fig. 3, will be accommodated in such manner that such bedding will not be jammed or squeezed and cause any ill effects on the structure or itself become injured. The bedding as will be seen, is disposed rearwardly of the seat, well upwardly spaced from the floor and is folded substantially in the middle instead of being given a box-like fold, as is the case in certain types of davenports. Thus, it will be seen that when the sections come to rest after being folded, they form a rigid supporting structure for the seat and are substantially entirely rearwardly of the seat, all of said sections being disposed in upright position. When the folding or

collapsing operation is completed the back will, because of the movement past center of the links 36 and 37, be moved by the springs 40 into up position shown in dotted lines in Fig. 3, the hinged lid 7 being thrown back as shown in dotted lines in said figure. Thus, to complete the operation of converting the bed into a sofa or settee, the back 8 is pushed downwardly and when the pivotal connections between the links 36 and 37 again move past center, the back is disposed and held by the springs 40 in proper position engaging the upper side of the seat at the rear edge thereof and the lid 7 is then closed as shown in Fig. 3, so as to conceal the upper end of the back and mechanism supported thereby.

In Figs. 4 and 5, the davenport is of the same construction as shown in Figs. 1 to 3 inclusive, except that the front section 10 does not support the back 44, said back being connected by links 45 and 46 to the upper structure 6 after the manner well known in the art. This together with the connections of the legs 47 to the seat 9 is the only change in the construction of my invention. The legs 47 are connected by links 48 and 49 with the seat so that said legs will automatically move into supporting and folded position upon operation of the bed. The purpose of Figs. 4 and 5 is to illustrate the manner in which the bed of my invention may be used without utilizing a bed section as a support for the back.

One of the essential features of the invention is that I provide sufficient clearance between the spring fabric and front board or other parts which lie beneath the fabric when the bed is extended, to positively prevent the fabric when the bed is in use, from touching said front board or said other parts. This is provided for by the fact that the bed frame folds so that it does not lie beneath the seat in the same manner as is the case in the ordinary box-like type of folding bed but extends only in part beneath the seat, sufficiently tho, to support the seat at the desired height. In the ordinary type of davenport bed wherein certain sections lie entirely beneath the seat when the frame is folded, if the sections are arranged so as to be spaced well above the front board and other under parts, the seat will be supported in too high a position when the frame is folded and for this reason, in beds of the box-like folding type, it has not been possible to completely overcome the objection of the sagging or stretching of the fabric so as to touch the front board or other parts lying beneath the bed frame.

I do not limit myself to the forms of the invention shown and described herein since the invention as expressed in the claims may be embodied in a plurality of forms.

I claim:

1. A davenport embodying in its construction a davenport frame, a sectional collapsible bed frame comprising a front section,
5 an intermediate section and a rear section all pivotally connected with one another, a link pivotally connected with the davenport frame at a point above a position which the rear section will assume when the bed frame
10 is extended and pivotally connected with the rear portion of the rear section, stanchions pivotally connected with the bed frame substantially at the point of connection of the rear and intermediate sections and depending
15 therefrom, means for pivotally connecting the stanchions with the davenport frame, another stanchion pivoted at respective ends to the intermediate section and davenport frame, a seat member hinged to the davenport frame, means of connection between the
20 eat member and the front section, legs operatively connected with the front section, said front section being arranged so as to engage and support the seat when the bed frame is
25 collapsed.
2. A davenport embodying in its construction a davenport frame, a sectional collapsible bed frame comprising a front section, an intermediate section and a rear section all
30 pivotally connected with one another, a link pivotally connected with the davenport frame at a point above a position which the rear section will assume when the bed frame is extended and pivotally connected with the
35 rear portion of the rear section, stanchions

pivotally connected with the bed frame at the point of connection of the rear and intermediate sections and depending therefrom, means for pivotally connecting the stanchions to the davenport frame, other stanchions pivoted at respective ends to the intermediate section and davenport frame adjacent the forward end of the intermediate section and arranged to stand in upright position when the bed frame is extended, a
40 seat member hinged to the davenport frame, means of connection between the seat member and the front section, legs operatively connected with the front section and a back supported by the forward portion of the front
50 section.

3. A davenport embodying in its construction a davenport frame, a sectional collapsible bed frame, means of connection between said frames providing for extension
55 of the bed frame into position for use and collapsing of the bed frame into the davenport frame, a seat operatively associated with said frame, a back, links pivoted to one another and to the back and bed frame respectively and a spring connected with the
60 bed frame and back and arranged to lift the back into a position spaced above the seat when the bed is collapsed and to hold the back in place when the back is moved from
65 its lifted position downwardly into engagement with the seat and said links move past center.

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