May 3, 1932. R. G. YOUNG 1,856,449

BED COUCH

Filed Jan. 12, 1931 2 Sheets-Sheet 1

Fig. 1.

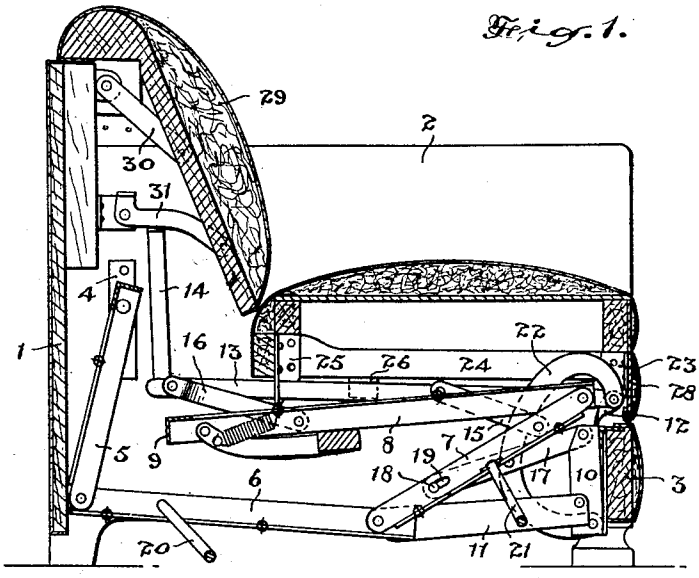
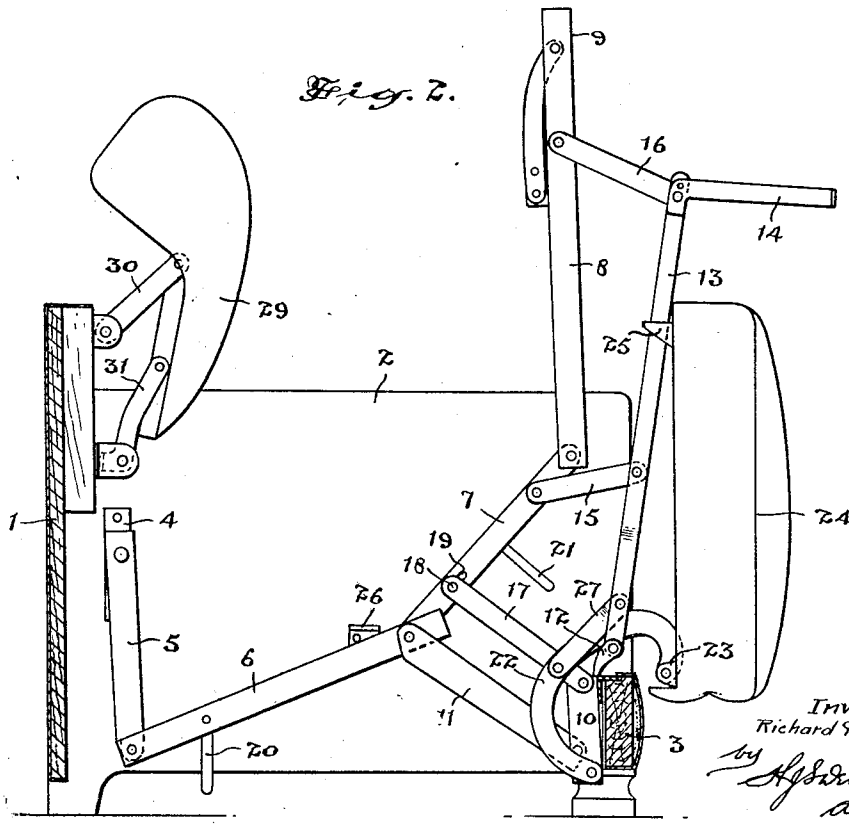


Fig. 2.



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BED COUCH

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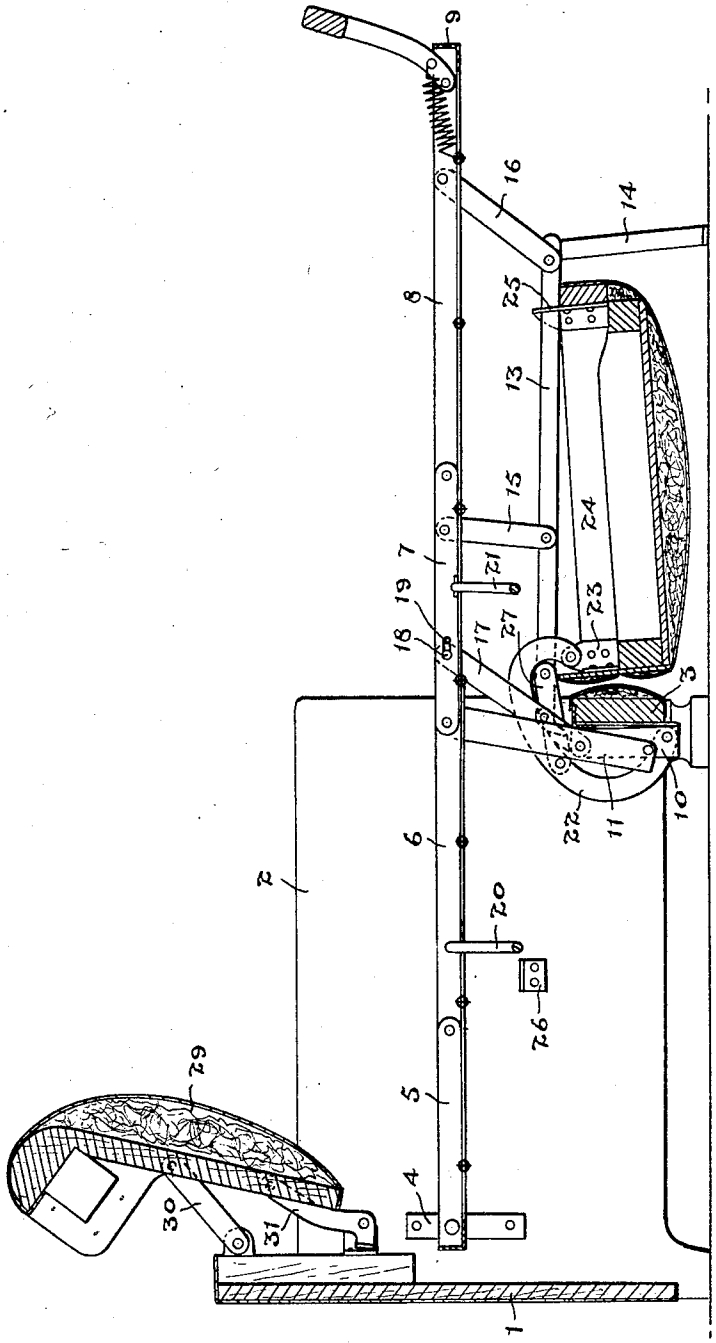

Fig. 3.

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UNITED STATES PATENT OFFICE

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BED COUCH

Application filed January 12, 1931. Serial No. 508,274.

The principal objects of the invention are, to provide a folding couch bed in which the folding frame mechanism operates in extending it into bed form or folding it into couch form with a smooth, easy action and is extremely simple to manipulate, the frame when extended presenting a strong and comfortable bed structure.

A further object of the invention is to provide a floating seat member supported entirely by the folding frame and which may be upholstered in a serviceable and attractive manner.

The principal features of the invention consist in the novel construction and arrangement of the members of the folding frame, the inner section of which is pivotally connected to the couch frame and of the means for supporting said frame in an extended position, whereby the pivotal joints of the intermediate sections of the frame are supported by struts pivotally mounted on the couch frame and the outer members are supported from a bar pivotally supported at one end on the couch frame and the other end resting upon the floor.

A further feature of the invention consists in the novel manner of supporting the seat from the pivotal extension rod and from the couch frame whereby said seat swings entirely free from the couch in the extension of the bed.

In the drawings, Figure 1 is a cross sectional view through the couch showing the arrangement of the frame structure in the folded position.

Figure 2 is an elevational view showing the bed frame in a partly extended position, one end of the couch frame being removed.

Figure 3 is a cross sectional view of the couch showing the bed frame in its extended position.

Numerous forms of bed couches provided with folding metal frames to be enclosed within the couch frame and to be extended to form a bed frame have been proposed and the present invention has been devised to provide a structure of this type which will be capable of easy manipulation and will facilitate manufacture and also obviate many objectionable features.

The construction as herein shown comprises a couch frame formed of a back 1, end panels 2 which are suitably upholstered and a rigid cross member 3 connecting the front ends of the panels 2 and being suitably upholstered.

A pair of brackets 4 are rigidly mounted on the inner sides of the end panels 2 close to the back and about midway of their height and upon these brackets is pivotally mounted the inner section 5 of the bed frame.

To the end of each of the side bars of the inner section 5 is pivotally connected an inner intermediate bar 6 and to the outer end of each of the bars 6 is pivotally connected an outer intermediate bar 7 and the side bars 8 of the outer bed frame section 9 are pivotally secured to the outer ends of the bars 7.

A rigid vertical bracket 10 is secured at the inner side of the cross member 3 adjacent to each of the end panels 2, said brackets each having an inwardly extending vertical flange.

A rigid strut 11 is pivotally secured to the flange of each of said brackets on the inward side and the free end of each strut is pivotally connected to the pivotal connection between the frame section 6 and bars 7.

Rigid with each of the brackets 10 are lugs 12 which extend forwardly therefrom above the cross member 3 and to each of these lugs is pivotally secured a bar 13 which is adapted to extend forward from the couch frame and is provided with a leg extension 14 at the outer end adapted to rest upon the floor when the bed is in the extended position.

A strut 15 is pivotally secured to each bar 13 intermediate of its length and the other end thereof is pivotally connected to the adjacent outer intermediate bar 7 near its outer end.

A strut 16 is pivotally connected to the outer end of each of the bars 13 and the other end thereof is pivotally connected to the adjacent side bar 8 of the outer section 9 of the bed frame near the outer end thereof.

The struts 11, 15 and 16 thus form with the other members described a rigid support

for the bed frame in which a suitable spring support for the mattress is mounted.

A link strut 17 is pivotally secured to the upper end of each of the brackets 10 and the other end thereof is pivotally connected to the outer intermediate side bars 7 of the frame adjacent to their inner ends by means of a bolt or rivet 18 extending through a short slot 19 in the frame member.

The link struts 17 assist materially in supporting the weight carried by the bed frame when in use and perform an important function in the folding and unfolding of the bed.

Spreader bars 20 and 21 extend across the bed frame between the inner and outer intermediate sections of the frame. These are bent downwardly to permit free flexing of the mattress supporting springs.

A pair of bars 22 bent into substantially C shape have one end thereof pivotally secured to the lower end of the flange of the bracket 10. These bars are adapted to extend upwardly and outwardly over the cross member 3 so that when the bed frame is extended the upper ends of said bars extend forward of the cross member and to these upper ends are pivotally secured brackets 23 secured within the frame structure of the seat member 24 at the forward side.

Brackets 25 rigidly secured within the frame of the seat member at the rear thereof are slotted and embrace the bar 13 in sliding engagement.

Brackets 26 are rigidly secured on the inner sides of the end panels 2 intermediate of their depth and are adapted to engage and support the side members of the frame of the seat 24 as is shown particularly in Figure 1.

The movement of the C bars 22 supporting the front of the seat member is controlled by a pair of link members 27 which are pivotally connected to the bars 22 intermediate of their length and to the bar 13.

When the seat is in the closed position shown in Figure 1 the frame thereof rests upon the brackets 26 and the forward end is supported by the C bars 22 so that the upholstered cross bar 28 below the seat frame will be relieved of any stress through the load placed upon the seat.

The back 29 is supported upon link members 30 and 31 connected with the rigid back 1 of the couch frame in such a manner that it can be raised to the position shown in Figures 2 and 3 to be clear of the bed.

When the bed is to be extended the upholstered back 29 is first raised, then the back of the seat 24 is lifted and swung upwardly and forwardly and as the lifting occurs the bars 13 are swung upwardly on their pivots through the connection of slotted brackets 25.

The forward edge of the seat pivots upon the C bar supports 22 which swing outwardly on their lower pivots carrying the seat front clear of the cross member 3. The action of the C bars is controlled by the links 27 connecting the bars 13 therewith.

In the upward and outward swinging of the bars 13 the struts 15 and 16 lift upwardly upon and swing the outer sections of the bed frame upwardly and outwardly and the outer and inner intermediate sections swing upwardly and outwardly pivoting upon the struts 11 and 17. This movement with the continued outward and downward swinging of the bar 13 carries the bed frame sections forwardly, swinging the inner section 5 of the bed frame to the horizontal position shown in Figure 3 and as the outer leg support of the bars 13 rest upon the floor all of the members of the bed frame are brought to a horizontal position with the pivot connection of the two intermediate bed frame sections supported upon the main struts 11 and the outer end of the outer intermediate section and the outer end of the outer section of the frame are rigidly supported by the struts 15 and 16.

It will be noted that the link strut 17 is slidably connected with the outer intermediate section of the frame. It is found that this is necessary in order to eliminate the binding and consequent locking of the parts due to variation in the punching of the holes and setting up of the structure.

The outer end of the bars 6 extend beyond the pivot connections with the bars 7 so that when the sections are in their extended position as shown in Figure 3 the extending lower flanges of the bars 6 extend under and engage the underside of the lower flanges of the bars 7 thus supporting the inner end of the bars 6 and the bars 5 connected therewith against sagging.

The strut 17 operates in unison with the main strut 11 to effect the breaking of the joint between the intermediate sections in folding of the frame and also to support the sections in their outward positions.

It will be seen that as the C bars supporting the seat swing outwardly the slotted brackets extending from the rear portion of the seat slide freely upon the side bars 13. The seat is thus operated from one position to the other entirely clear of the couch structure.

The seat is not hinged or otherwise connected to the front cross bar of the couch frame and when it swings outwardly it clears the front cross bar with sufficient clearance to not interfere in any way so that the front of the seat may be upholstered in the usual manner and the cross member 3 of the couch frame may also be upholstered in the usual manner and such upholstery will not be compressed or squeezed out of shape or present a detrimental appearance.

In closing the bed structure the outer section 9 of the bed frame is lifted swinging the bars 13 upwardly on their pivotal supports.

The joint between the inner and inner intermediate section first breaks as shown in Figure 2 and the C bars 22 are swung upon their pivots on the main brackets through the connection of the links 27 to the bars 13.

The movement of the frame sections is governed by the pivotal movement of the link struts 17 and the main strut 11 and as the main strut which is pivoted at the bottom of the bracket 10 swings away from the lower pivot of the link strut to the bracket, the joints between the intermediate sections of the frame are broken.

The downward movement caused by the upward swinging of the outer end of the frame is first transmitted to the joint between the inner frame section 5 and the inner intermediate section 6 so that the inner frame section swings downwardly to a substantially vertical position within the couch frame.

A bed structure such as described presents a very excellent appearance and because of the free swinging movement of the seat a "swell" front effect can be produced and the upholstered surfaces will not be marred.

The arrangement of the various break joint members renders the whole structure very smoothly operating and the simplicity of the structure enables it to be manufactured at a very moderate cost.

The spreader bar 21 is rigidly connected to the side bars to prevent interference with the other operating members.

What I claim as my invention is:—

1. A folding bed couch having in combination, a rigid frame, a sectional frame formed of four horizontal alignable sections comprising inner and outer sections pivotally connected respectively to inner-intermediate and outer-intermediate sections, said intermediate sections having a pivot connection therebetween and said first mentioned inner section being pivotally connected to said rigid frame, supporting strut members pivotally connected at one end to said rigid frame and having their outer end pivotally mounted directly on the said pivotal connection of said intermediate sections to support the same and form a pivotal mounting on which the inner-intermediate sections and outer intermediate sections respectively are adapted to pivot individually and collectively, and means pivotally connected to said rigid frame co-operating with said supporting strut members to impart a delayed breaking action to the joint between the said intermediate sections and an advanced breaking of the joint between said inner and inner-intermediate sections whereby a smooth consecutive folding of the respective sections is ensured.

2. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and having the inner sections pivotally connected with the couch-frame and means for supporting the outer and outer intermediate sections in their extended position, of supporting link members pivotally connected with the couch frame and with the outer of said intermediate bed-frame sections, and struts pivotally connecting the bed and couch frames and co-operating with said link members to effect the breaking of the pivotal joints between the inner and adjacent intermediate frame sections prior to the breaking of the joint between the respective pivoted intermediate frame sections on the folding of said bed frame.

3. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and having the inner section pivotally connected directly with the couch-frame and means for supporting the outer and the outer intermediate sections in their extended position, of supporting link members each pivotally connected at one end directly with the couch frame and at the other end connected directly with the outer of said intermediate bed frame sections, and struts pivotally attached to the couch frame and pivotally attached to the pivotal connections of said intermediate pivoted frame sections, said struts and supporting link members co-operating with said inner and outer intermediate sections to cause a delayed breaking of the intermediate joint relative to the inner joint in closing said bed frame.

4. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and having the inner section pivotally connected directly with the couch-frame, of strut members directly pivoted at one end to the rigid couch-frame and having their other ends pivotally connected with the pivotal connections of said intermediate frame sections and forming supports on which each of said intermediate frame sections are adapted to pivot, and means for supporting the outer and outer intermediate frame sections, including link members each pivoted at one end directly to the couch frame and at the other end having a pivotal and sliding connection with the outer of said intermediate sections said struts and supporting link members co-operating with said inner and outer intermediate sections to cause a delayed breaking of the intermediate joint relative to the inner joint in closing said bed frame.

5. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and having the

inner section pivotally connected with the couch-frame, of strut members directly pivoted at one end to the rigid couch-frame and having their other ends pivotally connected with the pivotal connections of said intermediate frame sections and forming supports on which each of said intermediate frame sections are adapted to pivot, pivotal links supporting the outer of said intermediate frame sections comprising in part link members each directly pivoted at one end to said couch frame and at the other end directly to the inner end of the outer of said intermediate sections, and means for supporting said outer section, said struts and supporting link members co-operating with said inner and outer intermediate sections to cause a delayed breaking of the intermediate joint relative to the inner joint in closing said bed frame.

6. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and having the inner section pivotally connected with the couch-frame, of strut members directly pivoted at one end to the rigid couch-frame and having their other ends pivotally connected with the pivotal connections of said intermediate frame sections and forming supports on which each of said intermediate frame sections are adapted to pivot, supporting links pivotally secured directly to the inner end of the outer of said intermediate frame sections adjacent the pivotal connections of said struts with the intermediate frame sections, and means including links pivotally connected respectively to the outer ends of the outer and outer intermediate sections and with the couch frame for supporting said latter sections in their extended position said struts and supporting link members co-operating with said inner and outer intermediate sections to cause a delayed breaking of the intermediate joint relative to the inner joint in closing said bed frame.

7. A bed couch as claimed in claim 2 in which the struts and link members are arranged in co-operative pairs the members of each pair being pivotally secured to a bracket member mounted at the forward side of the couch frame.

8. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and sections having the inner section pivotally connected with the couch-frame, of strut members pivotally connected with the couch-frame and with the pivotal connection of said intermediate pivoted sections, means co-operating with said strut members to effect the breaking of the inner joint prior to the breaking of the intermediate joint on the folding of the frame, a seat structure hingedly connected with said rigid couch-frame, and means for operating and supporting the outer sections of the extended bed-frame, said supporting means being independent of the seat structure whereby the latter is relieved of strain.

9. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and sections having the inner section pivotally connected with the couch-frame, means for supporting the adjacent pivoted ends of the intermediate frame sections, and a seat structure hingedly connected with the couch-frame, of bar members connected with said couch-frame and movable relative to the seat structure adapted to extend from the couch-frame and having foot portions at their outer ends to rest upon the floor, and link members pivotally connected to the outer and outer intermediate sections and to said bars at spaced points in the length thereof whereby said outer and outer intermediate sections will be operated and supported from said bars, said support being free of the seat structure relieving the latter of strain.

10. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and sections having the inner section pivotally connected with the couch-frame, means for supporting the adjacent pivoted ends of said intermediate frame sections, and a seat structure hingedly connected with said couch-frame, of bar members, pivotally connected at one end to the couch-frame and arranged at the sides of the bed-frame, said bars having foot supports adapted to engage the floor when extended, and link members pivotally connected with said bars and with the outer and outer intermediate bed sections and supporting the same clear of the seat structure relieving the latter of strain, said seat structure being operatively connected with said bars to effect its positioning.

11. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and sections having the inner section pivotally connected with the couch-frame, and means for supporting the adjacent pivoted ends of said intermediate frame sections, of bar members supported at one end in the couch frame adapted to extend substantially horizontally from the couch-frame when the bed-frame is extended and having floor-engaging leg portions at their outer ends, link members pivotally connected to said bars and to the outer

and outer intermediate frame sections for supporting the latter in their extended position, and a seat structure hingedly connected at one side to the couch-frame and slidably supported at the other side on said bars.

12. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and sections having the inner section pivotally connected with the couch-frame, and means for supporting the adjacent pivoted ends of said intermediate frame sections, of bar members supported at one end in the couch frame adapted to extend substantially horizontally from the couch-frame when the bed frame is extended and having floor-engaging leg portions at their outer ends, link members pivotally connected to said bars and to the outer and outer intermediate frame sections for supporting the latter in their extended position, a seat structure slidably supported at one side on said bars, link members pivotally connecting the other side of said seat structure with the couch-frame, and means operatively connecting said bar members with said latter link members for operating the latter to position said seat structure on the opening or closing of said bed frame sections.

13. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and sections having the inner section pivotally connected with the couch-frame, and means for supporting the adjacent pivoted ends of said intermediate frame sections, of bar members pivotally connected at one end to the couch-frame and disposed at either side of the bed frame, said bars having foot supports at the other end for engagement with the floor, link members pivotally connected to said bars for supporting the outer and outer intermediate bed sections therefrom, a seat structure slidably supported at one side on said bars, link members pivotally connecting the other side of said seat structure with said couch-frame, and links pivotally connecting said latter link members with said bars and forming an operative connection therebetween whereby on the opening and closing of said bed sections the positioning of said seat structure will be effected.

14. A bed couch as claimed in claim 13 in which said links connecting the seat with the couch frame are of substantially C-shaped formation, and are connected with the couch-frame on the inward side adjacent the bottom thereof.

15. In a bed couch, the combination with a rigid couch-frame and a folding bed-frame formed of inner and outer sections pivotally connected respectively to inner and outer intermediate pivoted sections and sections having the inner section pivotally connected with the couch-frame, of strut members pivotally connected with the couch-frame and with the pivotal connection of said intermediate sections, means co-operating with said strut members to effect the breaking of the joint between the inner and inner intermediate sections prior to the breaking of the joint between the respective inner and outer intermediate sections on the folding of the frame, bars pivotally connected to the couch-frame and adapted to extend from the frame when the latter is extended, said bars having floor-engaging extensions, links pivotally secured to the outer ends of said bars and to the outward end of said outer bed sections, links pivotally connected to said bars at a point intermediate of their length and to the outer ends of the outer of the intermediate sections, and a seat structure flexibly connected with said bars and couch frame.

16. A bed couch comprising, a rigid rectangular frame, pivot brackets mounted on the sides of said frame adjacent to the back thereof and intermediate of their height, a rectangular frame pivotally mounted on said brackets, a pair of side bars pivotally connected to the ends of the side members of the pivotal frame, struts pivotally mounted at the forward side of the couch frame and pivotally connected to the free ends of said side bars, a pair of side bars pivotally connected to said struts and to the free ends of the former side bars, links pivotally connected to the latter side bars adjacent their inner end and pivotally supported from the couch-frame, seat supporting members pivotally connected with the couch-frame, a seat flexibly supported by said latter members, links pivotally connected to certain of said seat supporting members and pivotally connected to the latter side bars adjacent to their outer free ends, a rectangular frame pivotally connected to the free ends of the latter side bars, and means for supporting the free end of said latter frame.

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