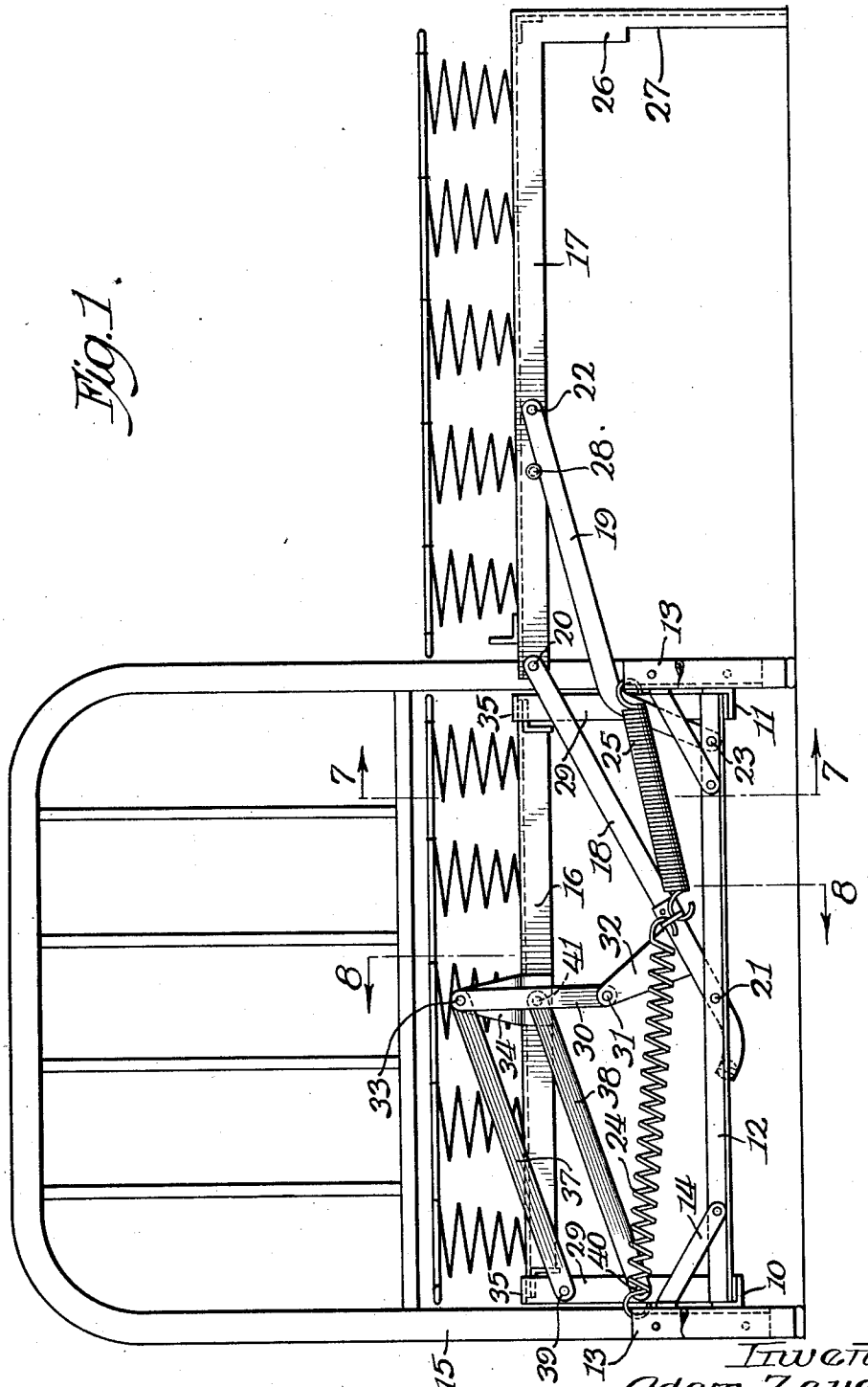
July 5, 1932. A. ZEYEN 1,865,606

FOLDING COUCH

Filed Aug. 12, 1929 4 Sheets-Sheet 1

Fig. 1.



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Fig. 2

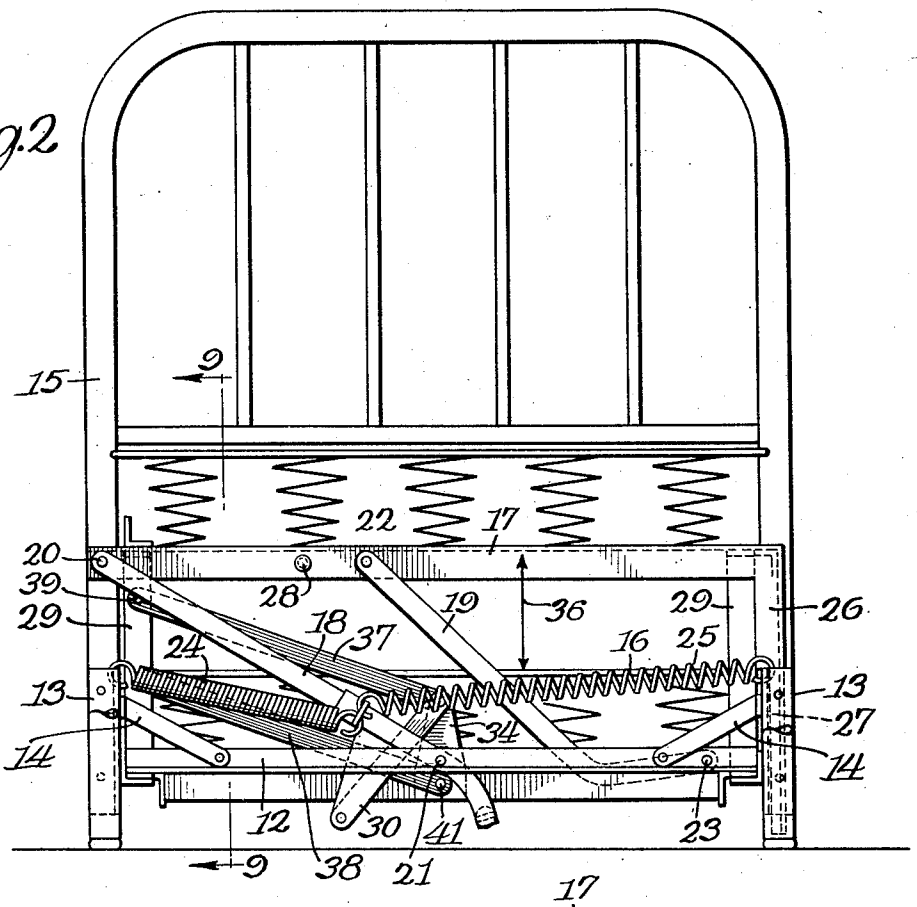
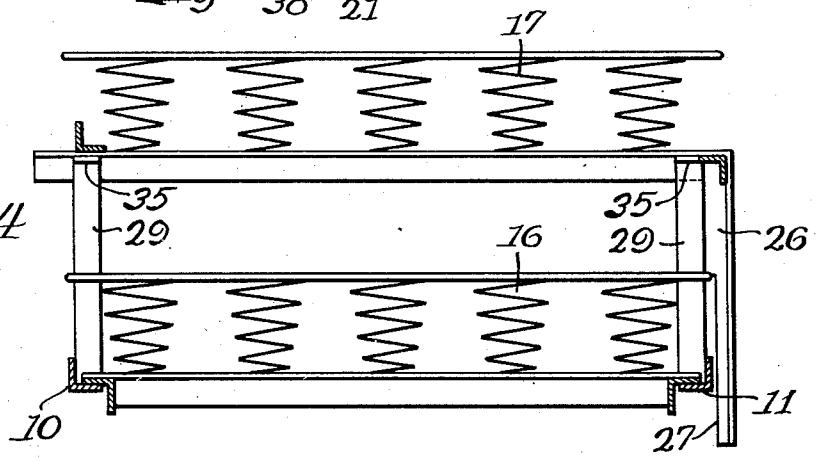


Fig. 4



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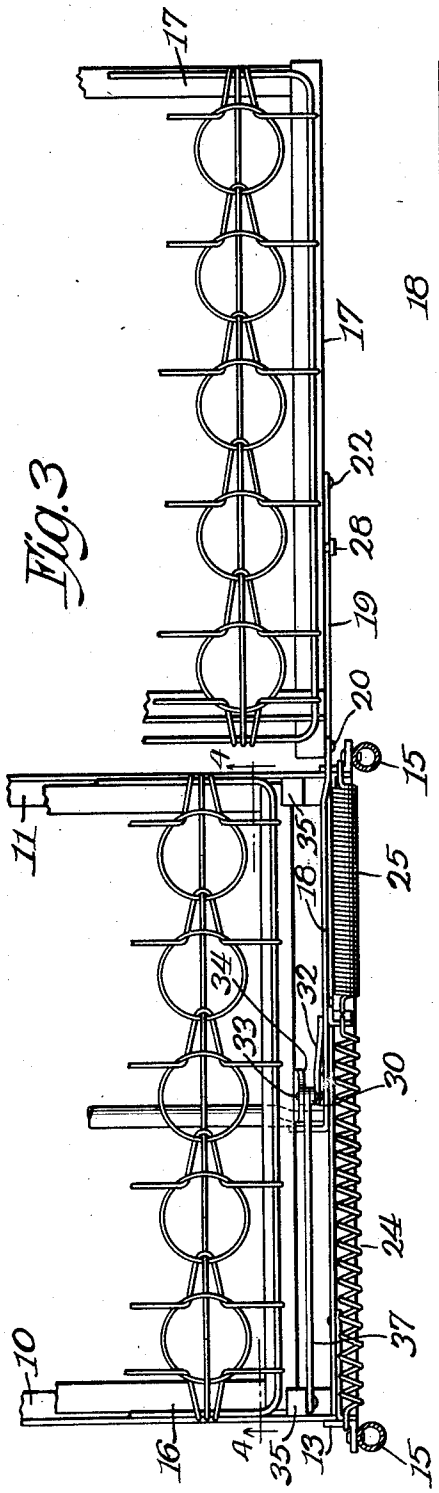


Fig. 3

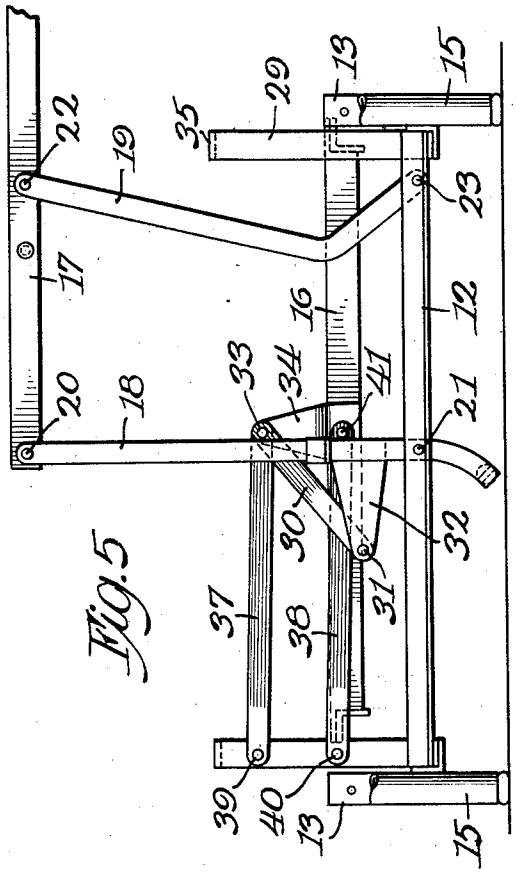


Fig. 5

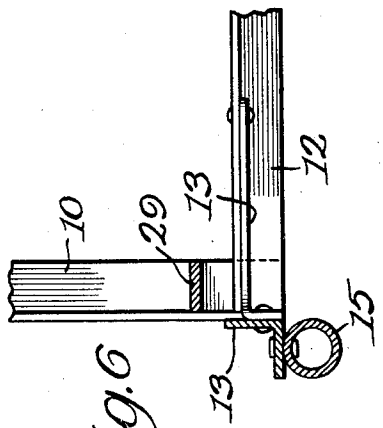


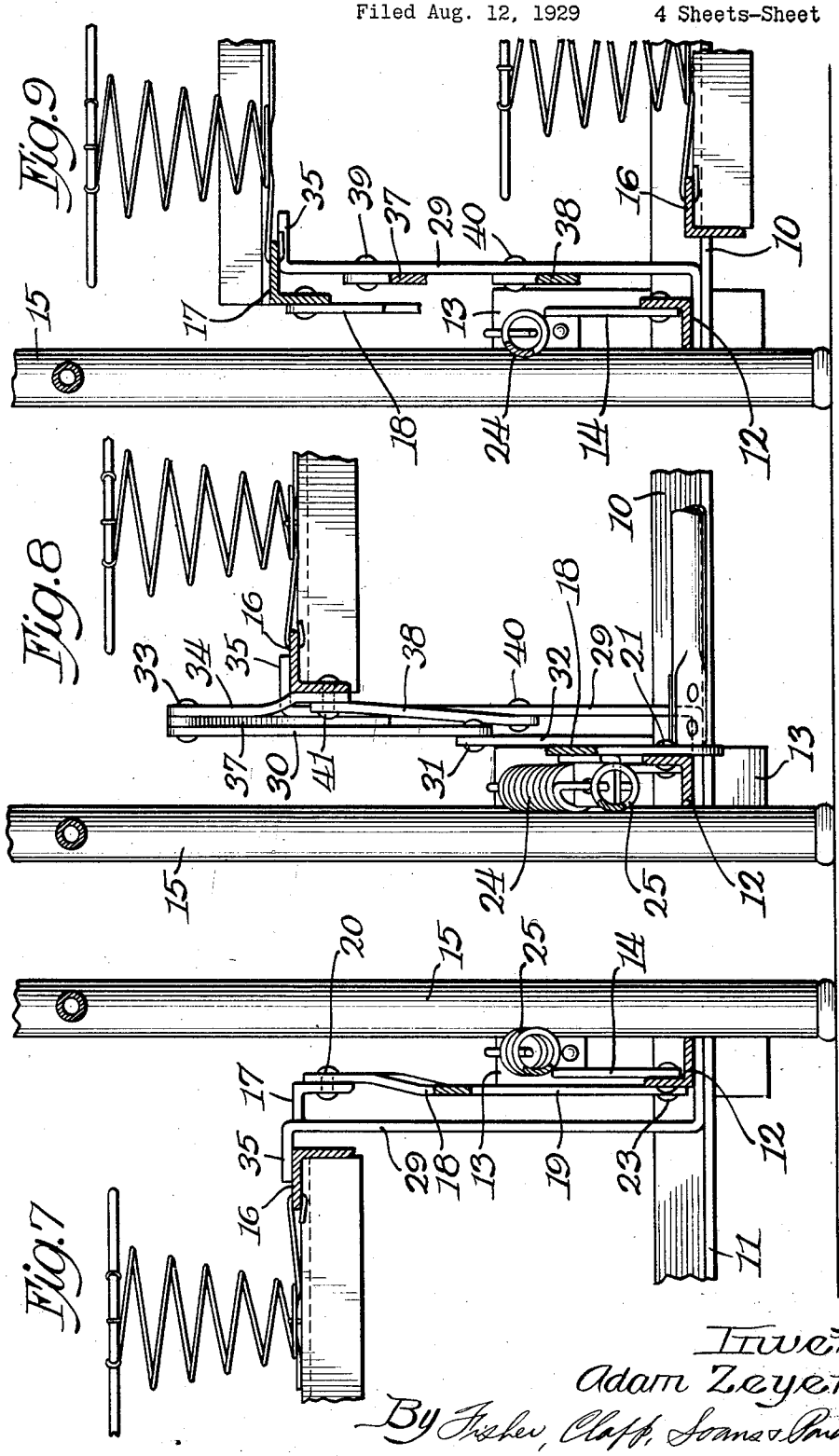
Fig. 6

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FOLDING COUCH

Filed Aug. 12, 1929 4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

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FOLDING COUCH

Application filed August 12, 1929. Serial No. 385,100.

This invention relates to folding couches of the type described in the pending application of Matthew F. Bayer, Serial No. 269,647, which is owned by Simmons Company, the assignee of my present invention. The present invention relates to improvements on the folding couch structure referred to in said application Serial No. 269,647, the principal objects of the present invention being to simplify the construction of the folding couch and to provide improved means for elevating and guiding the lower or floating bed-bottom section into elevated or bed position; to provide an improved structure for maintaining the floating bed bottom substantially horizontal when in bed position, and, in general, the object of my invention is to provide an improved folding couch structure of the type referred to.

Other objects and advantages of my invention will be understood by reference to the following specification and accompanying four sheets of drawings in which I have illustrated a folding couch embodying a selected form of the invention.

In the drawings:

Figure 1 is an end elevation showing the couch extended to serve as a bed of superior width.

Figure 2 is an end elevation showing the couch folded.

Figure 3 is a plan of one end portion of the couch when extended as in Figure 1.

Figure 4 is a section on the line 4—4 of Figure 3, but showing the parts as they appear when the couch is folded, as in Figure 2.

Figure 5 is an end elevation, certain parts being broken away or omitted to facilitate illustration, the parts being shown as they appear when intermediate their folded and unfolded positions.

Figure 6 is a plan section showing the construction of one corner of the main supporting frame.

Figures 7 and 8 are sections on the lines 7—7 and 8—8, respectively, on Figure 1.

Figure 9 is a section on the line 9—9 of Figure 2.

Referring now to the drawings, my improved folding couch includes a main supporting frame, which is preferably formed of angle iron members, there being side rail members 10 and 11 and end rail members such as 12, which are united adjacent their ends to form a rigid substantially rectangular frame. The vertically extending angle iron or like brackets 13 are secured to the main frame adjacent its corners by being riveted to the vertical flange of the respective side rails, and also by means of braces such as 14 which extend between an upper portion of each bracket 13 and a part of the adjacent end rail spaced inwardly from the adjacent end of the latter. The brackets 13 may be secured to corner posts or lugs, which are preferably formed as parts of end frames such as 15, the connections between the brackets 13 and corner posts being either permanent or detachable, as desired.

Associated with the main frame structure above described are two-bed-bottom sections 16 and 17. The section 16 may conveniently be referred to as the lower floating section, the same being mounted so as to remain within the area of the supporting frame while being vertically adjustable therein from its normal lowered position to elevated bed position. The bed section 17 may conveniently be termed the upper folding section, the same being mounted on the main frame so as to be movable from its normal folded or couch position within the area of the main frame and over the lower section, as shown in Figure 2, to extended or bed position, as shown in Figure 1.

The means for mounting the upper section 17 consists of a parallel link arrangement comprising the links or arms 18 and 19, the arm 18 being pivoted as shown at 20 and 21 to the upper bed section 17 and main supporting frame, and the link 19 being pivoted at its ends as shown at 22 and 23 to the upper bed section and main frame, respectively. The arm 19 is preferably bent or offset, as shown, so that the same will clear the adjacent corner bracket 13. Obviously, the bed section 17 is movable with the links 18 and 19 from extended position to folded position, the parallel arms serving to maintain the fold-

ing section in substantially horizontal position in its movement from one position to the other. For counterbalancing the weight of the folding section when the latter approaches either its folded or bed position, springs 24 and 25 are provided, the same being connected between the arm 18 and opposite sides of the main frame, substantially as shown.

For supporting the upper section 17 in extended position, the same is provided with lugs, such as 26, which depend from the outer side of the section at each end, these lugs being recessed as indicated at 27 so as to fit over the adjacent corner bracket 13 when the couch is in folded position. (See Figures 2 and 4.) For supporting the inner side of the folding section when in extended position, pins or stop members such as shown at 28 are secured to the respective end frame members of the folding section, the said stop members being adapted to engage the respective arms 19 to limit their unfolding movement between the folding bed section 17 and arm 19.

For supporting the folding section 17 when in folded position, I provide frame members such as shown at 29 which extend upwardly from the respective side rail members 10 and 11 adjacent the ends of the latter, the upper ends of the members 29 being so spaced that they are adapted to serve as seats for the respective end frame members of the folding section. (See Figure 9.)

The lower bed section 16 is adapted to be elevated from its lower position to its elevated or bed position automatically as an incident to movement of the upper section 17 from normal folded position to extended position, this being accomplished by means of a link 30 which is pivotally connected at one end, as shown at 31, to the arm 18 through the agency of a bracket 32, and at its other end, as shown at 33, to the frame of the lower section 16 through the agency of a bracket 34. By providing the bracket member 34, I am enabled to connect the link 30 to the lower section 16 at a point spaced upwardly from the bottom of the bed section and preferably more closely adjacent the top thereof, as clearly shown. This arrangement is particularly desirable in couch structures embodying the deep coiled spring bed-bottom sections, as shown, for the reason that sufficient vertical movement may be imparted to the section 16 to afford a sufficient amount of storage space between the upper and lower sections when in folded position, this storage space being indicated at 36 in Figure 2.

When the couch is to be extended from folded position as shown in Figure 2 to bed position as shown in Figure 1, the upper section 17 is pulled upwardly and outwardly, so as to swing the same on the arms 18 and 19, the lower section 16 being then incidentally elevated by reason of its connection with the arm 18 through the link 30. Unfolding movement of the upper section 17 is limited by the leg 26 and stop 28, as above explained, and upward movement of the lower section is accordingly limited. It will be seen that the lower section is in effect supported on pivots at its opposite ends, which pivots are located intermediate, approximately midway between, its sides, and that in the absence of the provision of means for preventing it, the lower section may tend to rock on such pivots. For preventing such rocking, I provide the upright frame members 29 with laterally extending tongues or flanges 35, which overlie the corner portions of the rigid frame of the lower section. (See Figure 7.) The tongues or flanges 35, being disposed at spaced points and on opposite sides of the intermediate pivots 33, serve to prevent rocking of the lower bed section when in bed position, it being understood, of course, that the said tongues are located at a proper height to engage the frame of the bed section when in bed position.

For guiding the lower section during its movement from normal folded position to elevated bed position, I provide a parallel link arrangement which is effective to maintain the lower section in a substantially horizontal position during its movement and also to cause the lower section to move upwardly or downwardly in a substantially vertical path. The parallel link arrangement includes a pair of links 37 and 38 which extend generally horizontal and have their outer ends respectively pivoted to one of the upright frame members 29, as indicated at 39 and 40, and their opposite or inner ends pivoted to the lower section. Preferably, the links 37 and 38 are of such length that they will reach approximately to the middle of the lower section, the link 37 being conveniently pivoted to the lower section on the pivot 33, and the link 38 being pivoted to the lower section, as indicated at 41. It will be readily understood that the parallel link arrangement just described will serve to maintain the section 16 in substantially horizontal position during its movement from one position to another. Also, because of the length of the links, the bed section will move up or down in a substantially vertical path. Of course, this vertical path is slightly arcuate, since the bed section swings about the pivots 39 and 40; but for practical purposes, the path of movement may be said to be substantially vertical since the deviation from the vertical is only slight.

The bed sections 16 and 17 may be of any desirable construction, and in the present instance, I have shown the same more or less schematically as including angle iron end rails which are connected at or adjacent their ends by means of longitudinally extending angle iron side rails. A plurality of axially

vertically disposed coil springs are supported by suitable means carried by the respective angle iron frames, the upper ends or top coils of the coil springs being connected in any approved manner, for instance, as illustrated in Figure 3.

I am aware that changes may be made in the above-described construction without departing from the spirit of my invention, the scope of which should be determined by reference to the following claims, construing the same as broadly as possible consistent with the state of the art.

I claim as my invention:

1. In a folding couch, the combination of a stationary main frame, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower floating bed bottom section located under the folding section when the latter is in normal position, means operative as an incident to the unfolding movement of said folding section for automatically elevating the lower section into bed position substantially co-planar with the folding section when the latter is in bed position, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, and a link having its ends pivoted respectively to said arm and said lower section, and means for maintaining said lower section in substantially horizontal position during its upward movement, said means comprising a parallel link arrangement in which the links are pivoted at their respective ends on the main frame and lower section.

2. In a folding couch, the combination of a stationary main frame, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower floating bed-bottom section located under the folding section when the latter is in normal position, means operative as an incident to the unfolding movement of said folding section for automatically elevating the lower section in bed position substantially co-planar with the folding section when the latter is in bed position, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, and a link having its ends pivoted respectively to said arm and said lower section, and means for maintaining said lower section in substantially horizontal position during its upward movement, said means comprising a parallel link arrangement in which the links are pivoted at their respective ends on the main frame at one side of the lower bed section and on the lower section intermediate its width.

3. In a folding couch, the combination of a stationary main frame, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower floating bed-bottom section located under the folding section when the latter is in normal position, means operative as an incident to the unfolding movement of said folding section for automatically elevating the lower section into bed position substantially co-planar with the folding section when the latter is in bed position, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, and a link having its ends pivoted respectively to said arm and said lower section, and means for maintaining said lower section in substantially horizontal position during its upward movement, said means comprising a parallel link arrangement in which the links are pivoted at their respective ends on the main frame at one side of the lower bed section and on the lower section intermediate its width, said parallel links being of such length that the lower bed section is caused to move upwardly in a substantially vertical path.

4. In a folding couch, the combination of a stationary main frame, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower floating bed-bottom section located under the folding section when the latter is in normal position, means operative as an incident to the unfolding movement of the folding section for automatically elevating the lower section into bed position substantially co-planar with the folding section when the latter is in bed position, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, and a link having its ends pivoted respectively to said arm and said lower section, whereby the lower section is pivotally supported by said link, and means for maintaining said lower section in substantially horizontal position during its upward movement, said means comprising a pair of vertically spaced, generally horizontally-extending links pivoted at their outer ends to said main frame and at their inner ends to said lower bed section approximately midway of its sides, the length of said links serving to prevent material deviation of said lower section from a vertical path of movement from one position to the other, and said parallel links serving to maintain said lower section substantially horizontal during movement thereof.

5. In a folding couch, the combination of a stationary main frame including corner

posts, side and end rail members connecting said corner posts and rigidly maintaining the same in operative position, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower bed bottom section located under the folding section when the latter is in normal position, means operative as an incident to the unfolding movement of said folding section for automatically elevating the lower section into bed position substantially co-planar with the folding section when the latter is extended, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, a link having its ends pivoted respectively on said arm and said lower section, said lower section being thereby pivotally supported by said link, means for preventing horizontal shifting of said lower section when in said bed position, and means for preventing rocking of said lower section on said pivot when in bed position comprising fixed frame members extending upwardly from said side rails and located adjacent the corners of the lower bed bottom, said members having laterally projecting stop portions overlying said lower section and adapted to be engaged thereby when the lower section is in bed position, said members also serving to receive and support said folding section when in folded position.

6. In a folding couch, the combination of a stationary main frame, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower floating bed bottom section located under the folding section when the latter is in normal position, means operative as an incident to the unfolding movement of the folding section for automatically elevating the lower section into bed position substantially co-planar with the folding section when the latter is in bed position, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, and a link having its ends pivoted respectively to said arm and said lower section, whereby the lower section is pivotally supported by said link, and means independent of said folding section, tying said floating section to said frame so as to permit limited horizontal shifting movement of the section relative to the frame as an incident to vertical movement and operative to maintain the section in substantially horizontal position during such movement.

7. In a folding couch, the combination of a stationary main frame, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower floating bed-bottom section located under the folding section when the latter is in normal position, said lower section including a frame and a bracket secured to said frame and extending upwardly therefrom, means operative as an incident to the unfolding movement of said folding section for automatically elevating the lower section into bed position substantially co-planar with the folding section when the latter is extended, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, and a link pivoted at one end to said arm and at its other end to the upper end of said bracket, the arrangement being such that the pivotal connection beween said arm and link is disposed, when the couch is folded, adjacent to the bottom of the lower bed section, said upwardly extending bracket serving to cause the link to extend in a materially upwardly inclined direction to its pivotal connection with the bracket.

8. In a folding couch, the combination of a stationary main frame, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower floating bed-bottom section located under the folding section when the latter is in normal position, said lower section being of the axially vertical coil spring type having a material thickness, means operative as an incident to the unfolding movement of said folding section for automatically elevating the lower section into bed position substantially co-planar with the folding section when the latter is extended, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, and a link pivotally connected at one end to said arm and at its other end to said lower section intermediate its top and bottom and at a point so located that, when the couch is in folded condition, the link is disposed in an upwardly directed position facilitating lifting of the lower section as an incident to unfolding movement of said folding bed section, the top surface of said lower section being thereby spaced downwardly from the bottom of said upper bed section to provide storage space for bedding or the like between said sections.

9. In a folding couch, the combination of a stationary main frame, an upper folding bed-bottom section, means connecting said folding section to said frame for movement from normal position over the area of the frame to extended bed position adjacent one side of the frame, a lower floating bed-bottom section located under the folding section when the latter is in normal position, said

lower section including a frame and a bracket secured to said frame and extending upwardly therefrom, means operative as an incident to the unfolding movement of said folding section for automatically elevating the lower section into bed position substantially co-planar with the folding section when the latter is extended, said means comprising an arm pivoted on the frame and connected to said folding section so as to move therewith, and a link pivoted at one end to said arm and at its other end to the upper end of said bracket, and means for guiding said lower section during its movement comprising a link pivoted at one end to said main frame and at its other end to said bracket adjacent its upper end and a second link disposed substantially parallel to said last-mentioned link and pivoted at one end to said main frame and at its other end to said lower bed section frame.

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