Jan. 13, 1953 P. P. BEBRY 2,624,888

LOVE SEAT BED WITH RESILIENT FRONT PANEL

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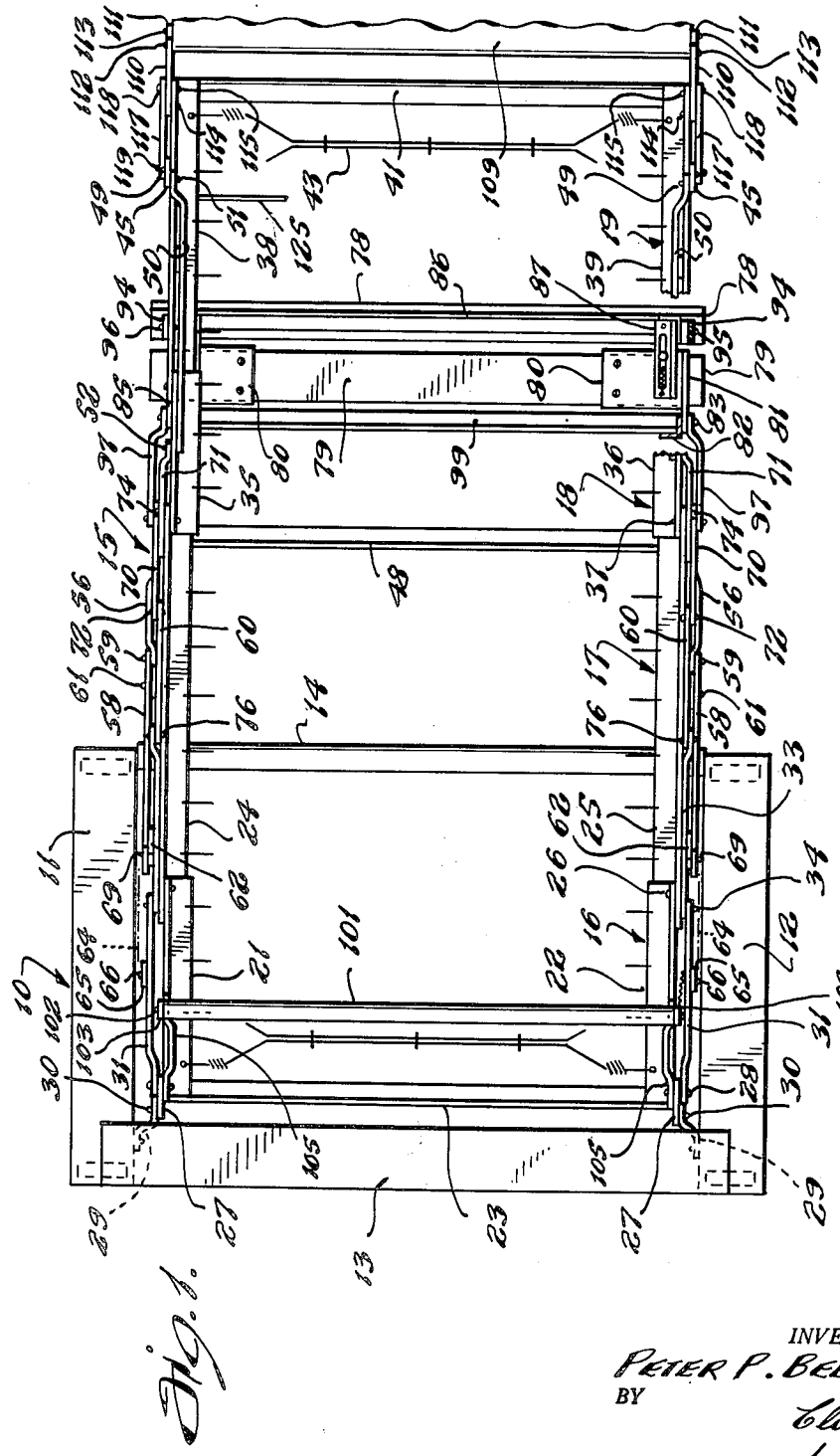


Fig. 1.

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LOVE SEAT BED WITH RESILIENT FRONT PANEL

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Fig. 2.

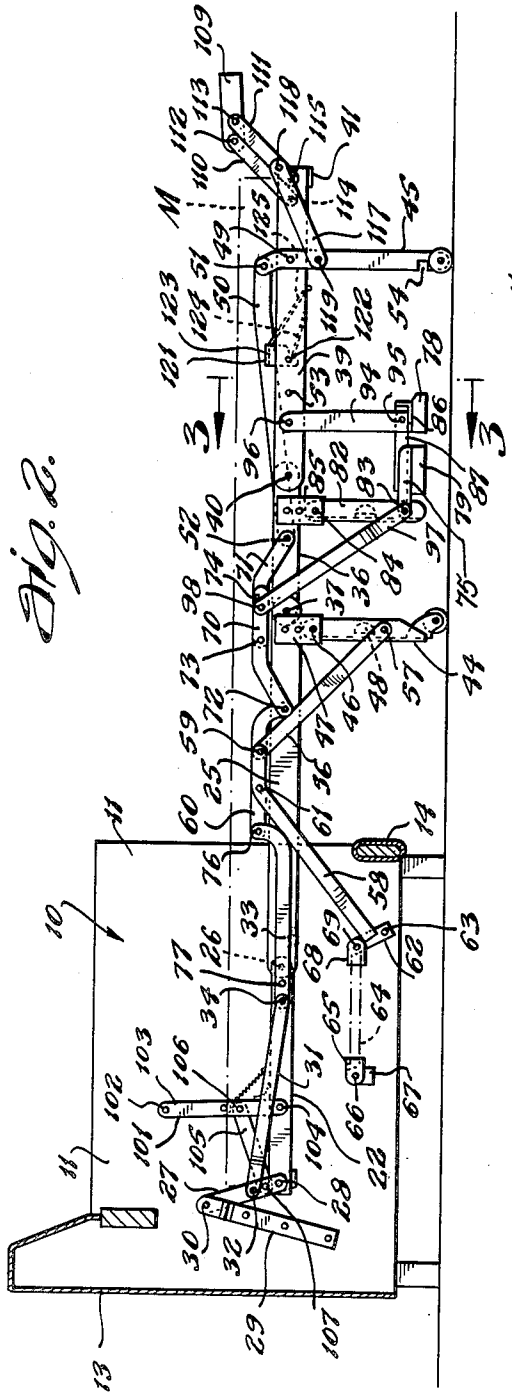
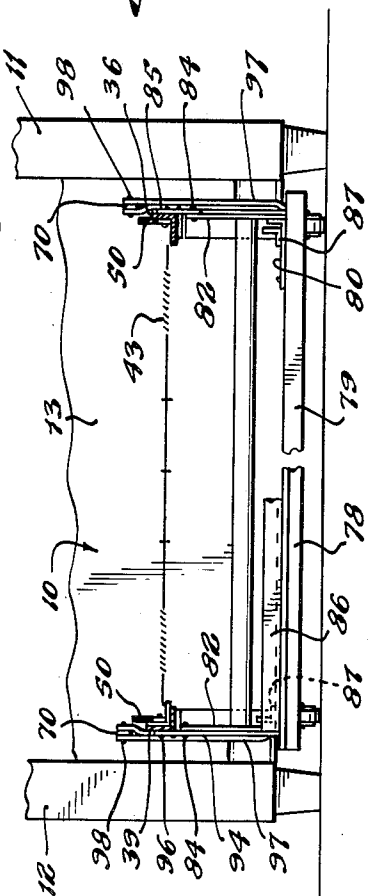


Fig. 3.



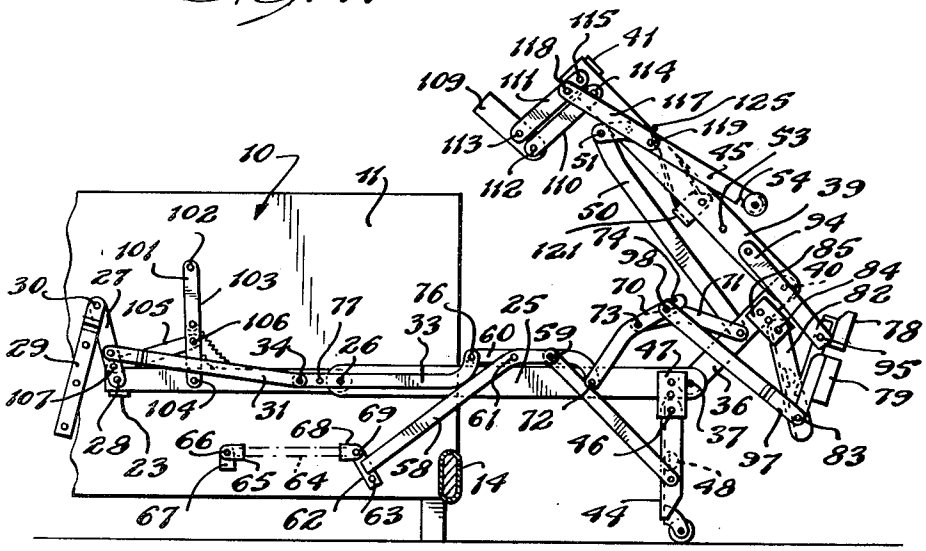
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LOVE SEAT BED WITH RESILIENT FRONT PANEL

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Fig. 4.



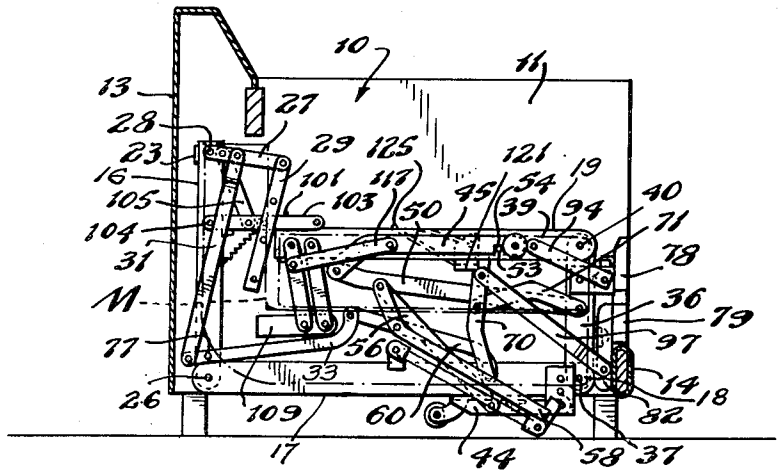


Fig. 5.

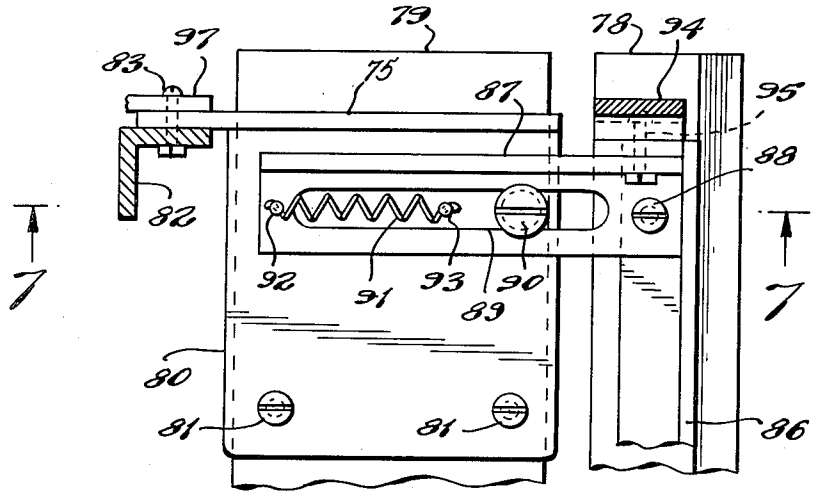
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LOVE SEAT BED WITH RESILIENT FRONT PANEL

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Fig. 6.



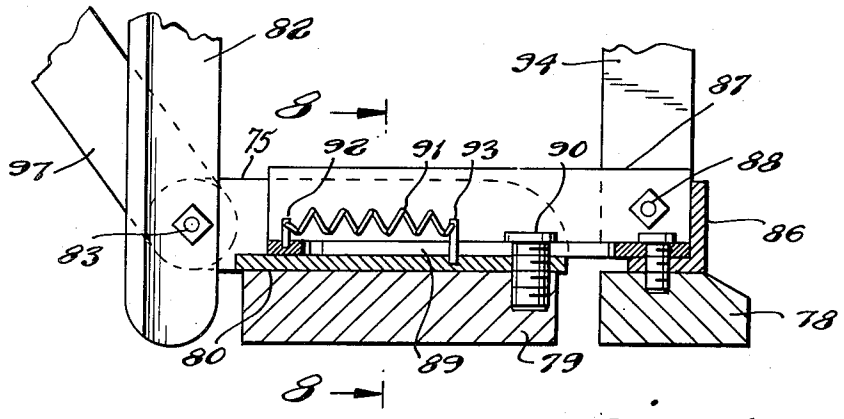


Fig. 7.

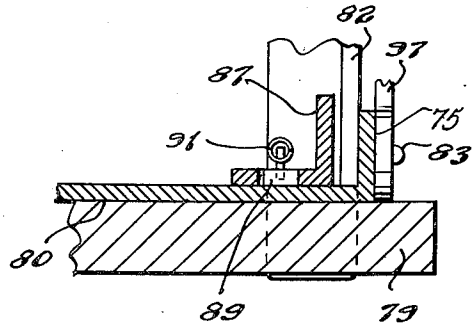


Fig. 8.

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UNITED STATES PATENT OFFICE

2,624,888

LOVE SEAT BED WITH RESILIENT FRONT PANEL

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Application November 3, 1950, Serial No. 193,992

7 Claims. (Cl. 5—13)

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This invention relates to an article of furniture which is adapted for use as a love seat, chair, couch or the like and which may be converted into a bed.

The invention particularly relates to an article of furniture of the type which includes a frame composed of hingedly connected sections adapted to be disposed in alignment to form a bed and which are foldable into collapsed relation within the article of furniture to provide a support for cushions to form a love seat, chair, couch or the like.

An object of the invention is to provide an improved construction of collapsible frame which includes a head board against which pillows are adapted to be positioned when the frame is in bed forming relation and which board is automatically moved to an out-of-the-way position when the frame is collapsed into seat forming condition.

Another object of the invention is to provide a foot board or extension projecting from the end of the frame in prolongation of the top of a bed mattress positioned on the frame to thereby increase the length of the bed and provide a support for the feet beyond the end of the mattrss and which foot board or extension is automatically moved to an out-of-the-way position when the frame is disposed in collapsed condition.

Still another object of the invention is to provide a foldable frame of said character in which the sections are adapted to automatically lock when moved to collapsed relation within the article of furniture.

Still another object of the invention is to provide a front panel connected with the foldable frame for movement therewith from an out-of-the-way position when the frame is in bed forming relation to a position closing the opening in the furniture frame through which the foldable frame is moved to dispose the same in collapsed relation therein, and which front panel is tensioned to provide a resilient front support for seat cushions when the article of furniture is employed as a love seat.

With the foregoing and other objects in view, reference is now made to the following specification and accompanying drawings in which the preferred embodiment of the invention is illustrated.

In the drawings:

Fig. 1 is a top plan view of an article of furniture provided with a foldable frame constructed in accordance with the invention.

Fig. 2 is a side view of the frame with the article of furniture shown in vertical section.

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Fig. 3 is a fragmentary vertical sectional view taken approximately on line 3—3 of Fig. 2.

Fig. 4 is a side view of the foldable frame shown in partially collapsed relation and a fragmentary portion of the furniture frame shown in section.

Fig. 5 is a side view of the foldable frame shown in fully collapsed condition within the article of furniture and which latter is shown in vertical section.

Fig. 6 is an enlarged fragmentary plan view of front panels movable with the foldable frame to close the opening in the front of the furniture frame when the foldable frame is in collapsed relation.

Fig. 7 is a sectional view taken approximately on line 7—7 of Fig. 6.

Fig. 8 is a sectional view taken approximately on line 8—8 of Fig. 7.

Referring to the drawings by characters of reference, the article of furniture is illustrated in the drawings as a love seat but which may be a chair, couch or the like. The article of furniture includes a suitable furniture frame 10 consisting of opposite side panels 11 and 12, a back 13 and a forward panel 14 connected between the side panels 11 and 12.

Pivotally connected to the furniture frame 10 is a foldable metal frame 15 consisting of four sections, namely an inner section 16, an intermediate section 17, a connecting section 18 and an outer section 19 each of which is of angle iron construction. The said sections are adapted to be disposed in aligned relation for supporting a mattress so as to serve as a bed and to be collapsed to a position within the confines of the furniture frame to constitute a support for seat cushions so as to serve as a love seat.

The inner section 16 consists of spaced side rails 21 and 22 which are connected together at their inner ends by an angle bar 23. The said side rails are pivotally connected at their outer ends to oppositely disposed side rails 24 and 25 of the intermediate section 17 by pivot pins 26 extending through the vertical flanges thereof and with the vertical flanges of the side rails 21 and 22 of the inner section 16 arranged within the vertical flanges of the side rails 24 and 25 of the intermediate section 17. The inner end section 16 is supported by the furniture frame for pivotal swinging movement by means of upwardly extending arms 27 pivoted at their lower ends to the vertical flanges of the side rails 21 and 22 on pivot pins 28 and pivoted at their upper ends to the upper ends of flat bars 29 on pivot pins 30 which bars are bolted or otherwise secured to

the inner faces of the side panels 11 and 12 of the furniture frame 10. Lniks 31 are pivoted at their inner ends to the arms 27 on pivot pins 32 and at their outer ends the said links are pivoted to the inner ends of angulated links 33 on pivot pins 34 which angulated links are pivotally connected to the collapsible frame and to a system of linkage to be described more fully hereinafter.

The side rails 24 and 25 of the intermediate section 17 are pivotally connected at their outer ends to the vertical flanges of the side rails 35 and 36 of the connecting section 18 on pivot pins 37 with the vertical flanges of the intermediate section disposed outwardly of the vertical flanges of the side rails 35 and 36 of the connecting section 18. The outer ends of the side rails 35 and 36 of said connecting section are pivotally connected to the side rails 38 and 39 of the outer end section 19 on pivot pins 40 and which sections are arranged with the vertical flanges of the side rails 38 and 39 of the outer end section 19 disposed outwardly of the vertical flanges of the side rails 35 and 36 of the connecting section 18. The side rails 38 and 39 of said outer end section are connected together at the outer end thereof by a suitable cross bar 41.

A wire mesh spring 43 of any desired construction is connected with and stretched between the inwardly directed flanges of the side rails and end bars of the foldable frame 15 for supporting a mattress M when in extended bed forming relation and which spring is adapted to fold with the folding of the sections into collapsed condition within the furniture frame and to retain the mattress M in folded relation between the sections with the inner end of the mattress extending upwardly in parallel relation with the collapsed condition of the inner end section 16.

In order to rigidly support the foldable frame when in extended bed forming relation, two pairs of legs 44 and 45 are provided which are respectively connected with the intermediate section 17 and the outer end section 19 adjacent the outer ends thereof. The upper ends of the legs 44 are pivoted on pivot pins 46 to lugs 47 rigidly secured to and depending from the side rails 24 and 25 of the intermediate section 17. A cross bar 48 extends between the legs 44 and is secured to the inwardly directed flanges thereof. The legs 45 consist of flat bars which are pivoted to the side rails 38 and 39 of the outer end section 19 on pivot pins 49 extending through the vertical flanges thereof. The said legs project above the outer end section 19 and are pivotally connected to links 50 on pivot pins 51 with the inner ends of the links pivotally connected on pivot pins 52 with the side rails 35 and 36 of the connecting section 18. The side rails 38 and 39 of the outer end section 19 are provided with outwardly projecting pins 53 adapted to engage in notches 54 in the inner longitudinal edges of the legs 45 when the legs are in collapsed relation with the frame for limiting the collapsing movement of said legs into parallel relation with the end section.

The legs 44 are braced by diagonally extending bars 56 which are pivotally connected thereto slightly below the medial point thereof on pivot pins 57 and at their upper ends the said bars are pivotally connected to the outer ends of bent bars 58 on pivot pins 59. The said bent bars are pivotally connected to the outer faces of angulated links 60 on pivot pins 31 and which bars 56 have their inner ends projecting into the furniture frame and rigidly affixed in angular relation to short bars 62. The said short bars are pivoted to the inner faces of the side panels 11 and 12 of the furniture frame on pivot pins 63 and the same are tensioned by coiled contractile springs 64 secured at their inner ends to lugs 65 pivoted on pivot pins 66 to brackets 67 secured to the inside faces of the said panels respectively. The outer ends of the spring 64 are secured to lugs 68 which are pivoted on pivot pins 69 to the free ends of the short bars 62.

In order to connect the sections together for effecting collapsing thereof within the confines of the furniture frame by upward swinging movement of the outer end section 19, a pair of angulated links 70 and 71 is arranged at each side of the foldable frame, the links 70 being pivoted against the outer faces of the vertical flanges of the side rails 24 and 25 respectively of the intermediate section 17 on pivot pins 72, while the links 71 are pivoted against the outer faces of the vertical flanges of the side rails 35 and 36 respectively of the connecting section 18 on the pivot pins 52. The links 71 are pivotally connected at their inner ends with the links 70 on pivot pins 73 and the said links 70 are formed with rectangular notches 74 in the upper edges thereof adjacent their outer ends which are adapted to be engaged by latches for securing the sections in folded relation within the furniture frame. The downwardly directed outer ends of the angulated links 60 are pivotally connected to the side rails 24 and 25 respectively on the said pivot pins 72 and at their inner ends the said angulated links are pivotally connected against the inner faces of the upwardly projecting ends of the angulated links 33 on pivot pins 76, the links 33 being pivotally connected to the side rails 21 and 22 of the inner section 16 on pivot pins 77 to complete the linkage system hereinbefore referred to.

As one of the features of the invention, upper and lower transversely extending panels 78 and 79 are provided which are carried by the foldable frame and adapted to be disposed between the side panels 11 and 12 of the furniture frame and above the fixed panel 14 to thereby close the opening in the front of the furniture frame when the sections of the foldable frame are in collapsed relation within the furniture frame. The upper panel 78 is resiliently supported in spaced relation from the lower panel 79 and the same provides a resilient forward edge for seat cushions when the article of furniture is in use as a love seat. When, however, the foldable frame is in bed forming relation the said panels are disposed in out-of-the-way horizontal position below the said frame. The panel 79 is rigidly affixed to an angle bracket 80 at each end thereof by bolts 81 or equivalent fastening means with the panel disposed against the underside thereof when the foldable frame is in bed forming condition. The vertically disposed flanges 75 of the brackets project inwardly therefrom and are pivoted to the lower ends of links 82 respectively on pivot pins 83, the said links being pivoted at their upper ends on pivot pins 84 to lugs 85 rigidly secured to and depending from the side rails 35 and 36 of the connecting section 18. The panel 78 is rigidly affixed to an angle bar 86 extending longitudinally thereof and to an angle bar 87 at each end thereof by bolts 88 or equivalent fastening means to dispose the said panel in alignment with the panel 79.

The angle bars 87 have their inner ends mounted upon the upper faces of the brackets 80 for

sliding movement with reference thereto to permit of reciprocatory movement of the panel 78 toward and away from the panel 79. For this purpose the angle bars 87 are longitudinally slotted as at 89 in the horizontal flanges thereof through which studs 90 extend with the inner ends of the studs anchored in the brackets 80 and the heads of the studs extending outwardly beyond said slots and overlying the horizontal flanges for guidedly mounting the said angle bars. Coil springs 91 are provided which are secured at their ends to lugs 92 and 93 secured respectively to the angle bars 87 and brackets 80 with the lugs 93 extending freely through said slots 89. Constructed in this manner, the springs 91 tension the angle bars 87 to maintain the panel 78 in spaced relation from the panel 79 and when the foldable frame is in seat forming relation the panel 78 forms a resilient support at the forward edge of the furniture frame.

The angle bars 87 are pivotally connected at their outer ends to links 94 on pivot pins 95 and which links are pivotally connected at their upper ends on pivot pins 96 against the outer faces of the vertical flanges of the side rails 38 and 39 of the outer end section 19. Diagonally extending links 97 are pivoted at their lower ends against the outer faces of the links 82 respectively on the pivot pins 83 and at their upper ends the said links 97 are pivoted against the outer faces of the links 70 respectively on pivot pins 98. The links 82 are of angle iron formation in cross section and have a tubular cross bar 99 connected therebetween with the outer ends of the cross bar flattened and riveted or otherwise secured to the inwardly directed flanges thereof.

As another feature of the invention, the foldable frame is provided with a head board 101 against which pillows are adapted to be positioned when the foldable frame is in bed forming relation. The said head board extends transversely of the foldable frame and is secured by screws 102 or equivalent fastening means to end bars 103 which are pivoted at their lower ends on pivot pins 104 to the vertical flanges of the side rails 21 and 22 of the inner end section 16. Links 105 are pivotally connected at their outer ends to said end bars 103 on pivot pins 106 and at their inner ends the said links are pivotally connected to the links 27 on pivot pins 107. This positions the head board 101 in slightly inclined relation when the foldable frame is in bed forming condition and when the foldable frame is collapsed within the furniture frame, the head board is disposed in a substantially horizontal out-of-the-way position.

As another feature of the invention, the foldable frame is provided with a foot board 109 which is connected with the outer section 19 by links 110 and 111 arranged at each side of the frame and which are pivotally connected at their upper ends with the foot board 109 on pivot pins 112 and 113 respectively and at their lower ends with the side rails 38 and 39 on pivot pins 114 and 115. This disposes the foot board 109 in outwardly projecting relation from the outer section 19 and with the upper surface of the foot board disposed substantially in prolongation of the upper surface of the mattress M when the foldable frame 15 is in bed forming relation. In order to dispose the foot board 109 in an out-of-the-way position when the foldable frame 15 is in collapsed relation within the article of furniture 11, as illustrated in Fig. 5 of the drawings, a link 117 is provided at each side of the foldable

frame which links are pivotally connected at their upper ends with the links 111 on pivot pins 118 and at their lower ends the said links are pivotally connected to the legs 45 on pivot pins 119 whereby the foot board 109 moves to the out-of-the-way position shown in Fig. 5 of the drawings with the movement of the legs 45 to collapsed position.

The foldable frame is latched in collapsed folded relation within the furniture frame as shown in Fig. 5 of the drawings, by means of latch elements 121 pivoted against the inside faces of the side rails 38 and 39 of the outer section 19 on pivot pins 122 which latch elements depend below the side rails when the sections are in collapsed relation and are provided with horizontal flanges 123 adapted to automatically engage in the notches 74 in the links 70 when the outer section 19 is moved to substantially horizontal relation in the furniture frame. The latch elements 121 are engaged by leaf springs 124 secured to the horizontal flanges of the side rails 38 and 39 for swinging the latch elements on the pivot pins 122 to tension the same into engagement in the notches 74. In order to release the latch elements from latched engagement a cord 125 extends across the wire mesh spring 43 with the opposite ends thereof secured to the latch elements respectively and by an upright pull on the cord, the latch elements are rocked out of engagement with the notches 74.

In moving the foldable frame 15 from an extended bed forming relation to a collapsed condition within the furniture frame 10, the outer section 19 is swung upwardly on its pivotal connection with the connecting section 18. This causes the legs 45 to swing upwardly about their pivotal connections with said section so that the legs are swung into substantially parallel relation therewith to dispose the notches 74 in engagement with the pins 53 to thereby prevent further collapsing movement of the legs. The outer section 19 is then moved inwardly to rock the connecting section 18 on its pivotal connection with the intermediate section 17. The intermediate section 17 is then tilted into inclined relation and swung inwardly and downwardly about its pivotal connection with the inner section 16 to thereby dispose the inner section 16 in vertical relation, as illustrated in Fig. 5 of the drawings. This movement positions the intermediate section within the furniture frame at the rear of the panel 14 and with the panels 78 and 79 closing the opening above the panel 14 and hiding the upper portion of the foldable frame. The mattress M folds with the foldable frame 15 to dispose the outer section of the mattress in doubled relation and with the inner end of the inner section moved to an upwardly extending position. Swinging of the intermediate section 17 about its pivotal connection with the inner section lowers the three outer sections to the position shown in Fig. 5 whereby the outer section 19 is in proper elevation for receiving seat cushions for use of the article of furniture as a love seat or the like. When in this position, the upper front panel 78 provides a resilient support for the forward end of the seat cushions. The said panels may be provided with a covering as desired to overlie the space therebetween.

What is claimed is:

1. In an article of furniture of the character described, a furniture frame, a foldable seat and bed forming frame composed of a plurality of sections pivotally connected together in end to

end relation and to the furniture frame for movement from a collapsed folded condition within the furniture frame to an extended condition in which the sections are arranged in longitudinal alignment, upper and lower transversely extending front panels, links pivotally connecting said front panels with said foldable frame for movement from an out-of-the-way position below said foldable frame when the same is in said extended relation to a vertical position closing a front opening in said furniture frame when the foldable frame is in collapsed condition therein, and spring means connected with the lower panel and arranged to resiliently support the upper panel in spaced relation from the lower panel and tensioning the upper panel against downward movement when in said vertical position in the furniture frame to thereby provide a resilient support for a seat cushion.

2. In an article of furniture of the character described, a furniture frame, a foldable seat and bed forming frame composed of a plurality of sections pivotally connected together in end to end relation and to the furniture frame for movement from a collapsed folded condition within the furniture frame to an extended condition in which the sections are arranged in longitudinal alignment, upper and lower transversely extending front panels, links pivotally connecting said front panels with said foldable frame for movement from an out-of-the-way position below said foldable frame when the same is in said extended relation to a vertical position closing a front opening in said furniture frame when the foldable frame is in collapsed condition therein, said panels being normally disposed in spaced relation, slide bars rigidly affixed to said upper panel and connected with said lower panel for guided sliding movement of the upper panel with reference to the lower panel, and spring means connected with the lower panel and arranged to resiliently support the upper panel in spaced relation from the lower panel and tensioning the upper panel against downward movement when in said vertical position in the furniture frame to thereby provide a resilient support for a seat cushion.

3. In an article of furniture of the character described, a furniture frame, a foldable seat and bed forming frame composed of an inner section, an intermediate section, a connecting section and an outer section, said sections being pivotally connected together in end to end relation and to the furniture frame for movement thereof from collapsed folded condition within the furniture frame to an extended condition in which the sections are arranged in longitudinal alignment, upper and lower transversely extending front panels, links pivotally connected with said connecting and outer sections respectively and with said panels for movement of said panels from an out-of-the-way position below said foldable frame when the same is in said extended relation to a vertical position closing a front opening in said furniture frame when the foldable frame is in collapsed condition therein, and spring means connected with the lower panel and arranged to resiliently support the upper panel in spaced relation from the lower panel and tensioning the upper panel against downward movement when in said vertical position in the furniture frame to thereby provide a resilient support for a seat cushion.

4. In an article of furniture of the character described, a furniture frame, a foldable seat and bed forming frame composed of an inner section, an intermediate section, a connecting section and an outer section, said sections being pivotally connected together in end to end relation and to the furniture frame for movement thereof from collapsed folded condition within the furniture frame to an extended condition in which the sections are arranged in longitudinal alignment, upper and lower transversely extending front panels, links pivotally connected with said connecting and outer sections respectively and with said panels for movement of said panels from an out-of-the-way position below said foldable frame when the same is in said extended relation to a vertical position closing a front opening in said furniture frame when the foldable frame is in collapsed condition therein, said panels being normally disposed in spaced relation, slide bars rigidly affixed to said upper panel and connected with said lower panel for guided sliding movement of the upper panel with reference to the lower panel, and spring means connected with the lower panel and arranged to resiliently support the upper panel in spaced relation from the lower panel and tensioning the upper panel against downward movement when in said vertical position in the furniture frame to thereby provide a resilient support for a seat cushion.

5. In an article of furniture of the character described, a furniture frame, a foldable seat and bed forming frame composed of a plurality of sections pivotally connected together and to the furniture frame for movement from collapsed folded condition within the furniture frame to an extended condition in which the sections are arranged in alignment, a transversely extending front panel, means connecting said front panel with said foldable frame for movement from an out-of-the-way position when the foldable frame is in said extended relation to a position closing a front opening in said furniture frame when the foldable frame is in collapsed condition therein, and spring means connected with the aforesaid means and arranged to resiliently support the front panel and tensioning the front panel against downward movement when in said position in the front opening to thereby provide a resilient front support for a seat cushion.

6. In an article of furniture of the class described, a furniture frame, a foldable seat and bed forming frame composed of an inner section, an intermediate body section, a connecting section and an outer end section, said sections being pivotally connected together and to the furniture frame for movement from collapsed folded condition within the furniture frame to an extended condition in which the sections are arranged in alignment, a transversely extending front panel, links pivotally connected to said connecting and outer sections at each side and to said front panel, a pair of pivotally connected links at each side of said foldable frame, one of the links of each pair being pivotally connected to the connecting section and the other link of each pair being pivotally connected to the intermediate section, and a link at each side pivotally connected to one of the links of each of said pairs of links and to one of the first mentioned links for movement of said panel from an out-of-the-way position below the foldable frame when the same is in said extended relation to a vertical position at the front of said furniture frame when the foldable frame is in collapsed condition therein.

7. In an article of furniture of the class described, a furniture frame, a foldable seat and

bed forming frame composed of an inner section, an intermediate body section, a connecting section and an outer end section, said sections being pivotally connected together and to the furniture frame for movement from collapsed folded condition within the furniture frame to an extended condition in which the sections are arranged in alignment, a transversely extending front panel, links pivotally connected to said connecting and outer sections at each side and to said front panel, a pair of pivotally connected links at each side of said foldable frame, one of the links of each pair being pivotally connected to the connecting section and the other link of each pair being pivotally connected to the intermediate section, a link at each side pivotally connected to one of the links of each of said pairs of links and to one of the first mentioned links for movement of said panel from an out-of-the-way position below the foldable frame when the same is in said extended relation to a vertical position at the front of said furniture frame when the foldable frame is in collapsed condition therein, and spring means arranged to resiliently support said front panel and tensioning the same against downward movement when the panel is in said vertical position at the front of the furniture frame to thereby provide a resilient front support for a seat cushion.

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