

Jan. 10, 1956

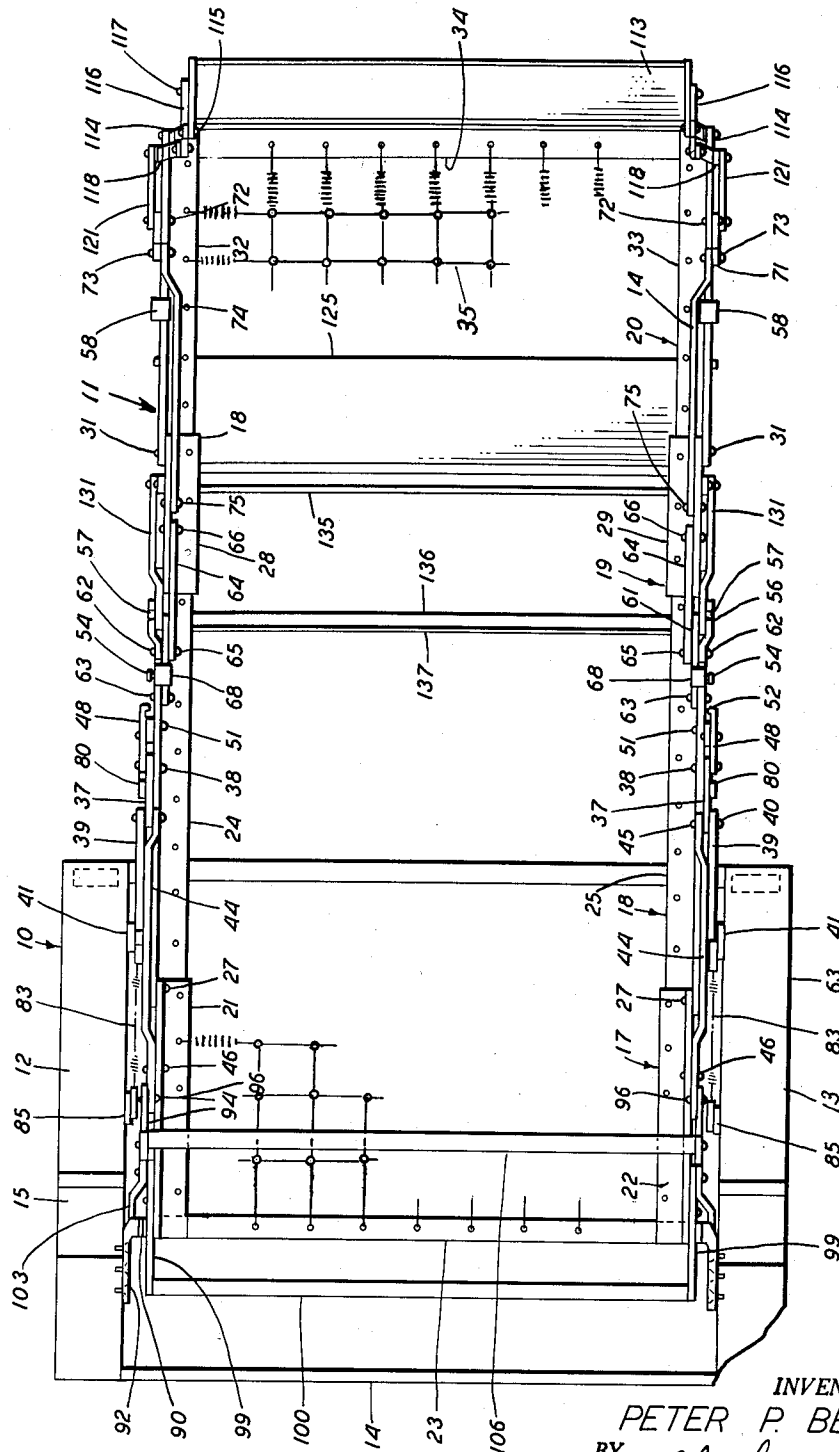
P. P. BEBRY
LOVE SEAT BED WITH AUTOMATIC LATCHING
AND UNLATCHING MEANS

2,729,829

Filed June 18, 1954

4 Sheets-Sheet 1

Fig. 1



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Fig. 2

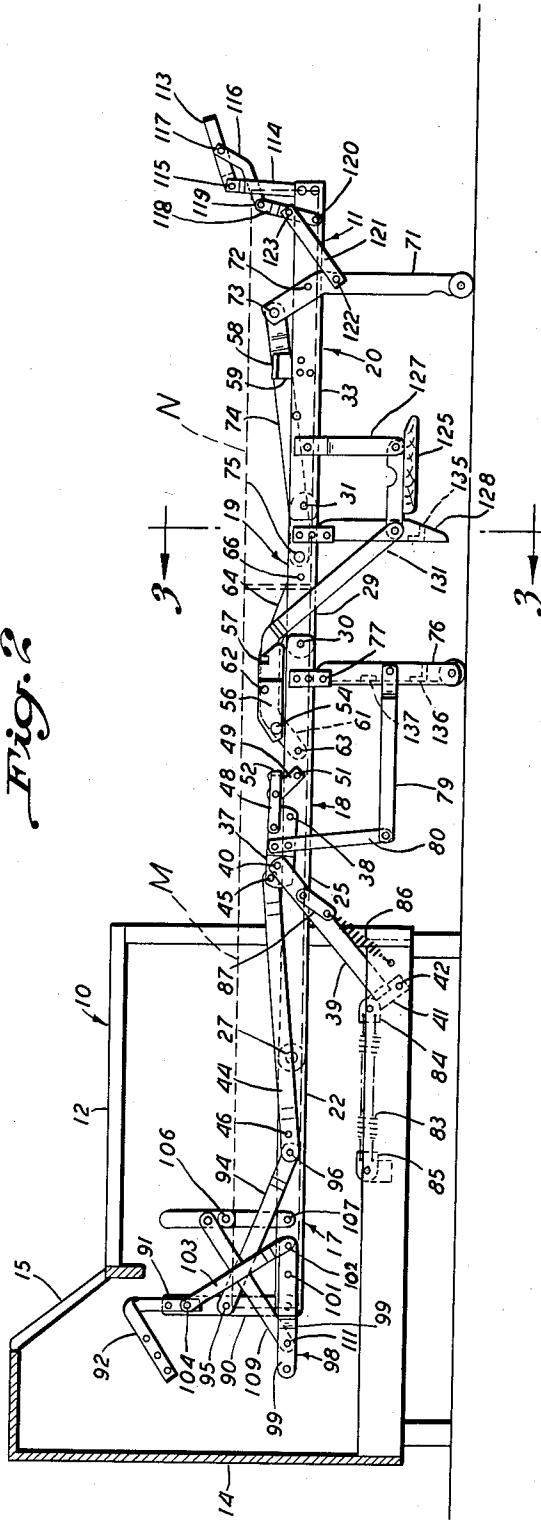
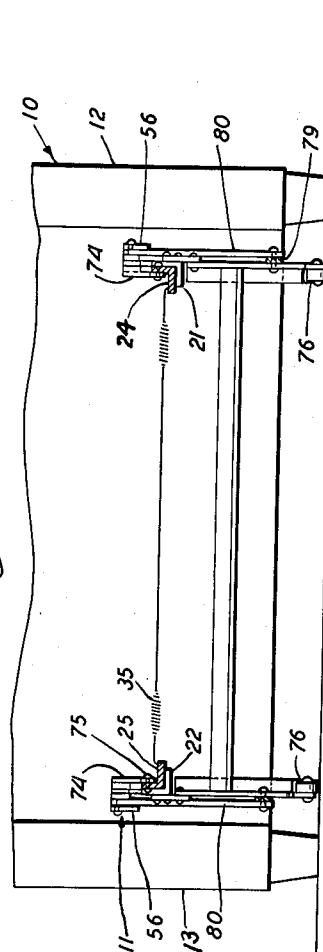


Fig. 3



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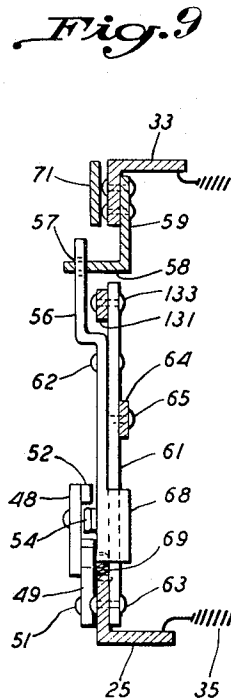
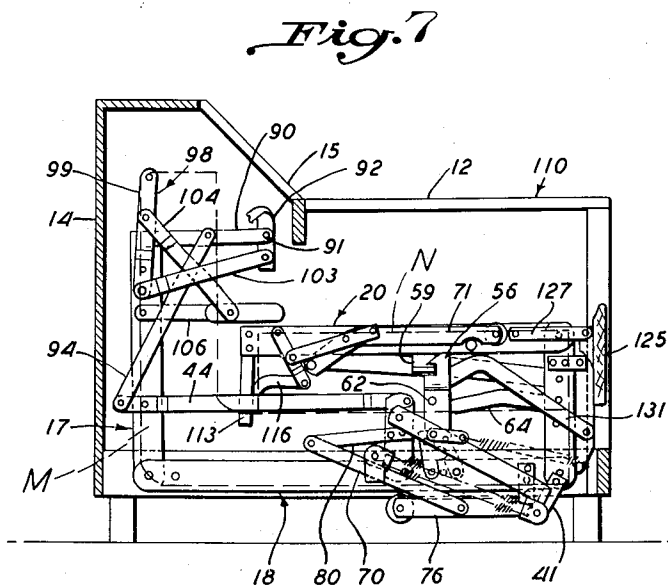
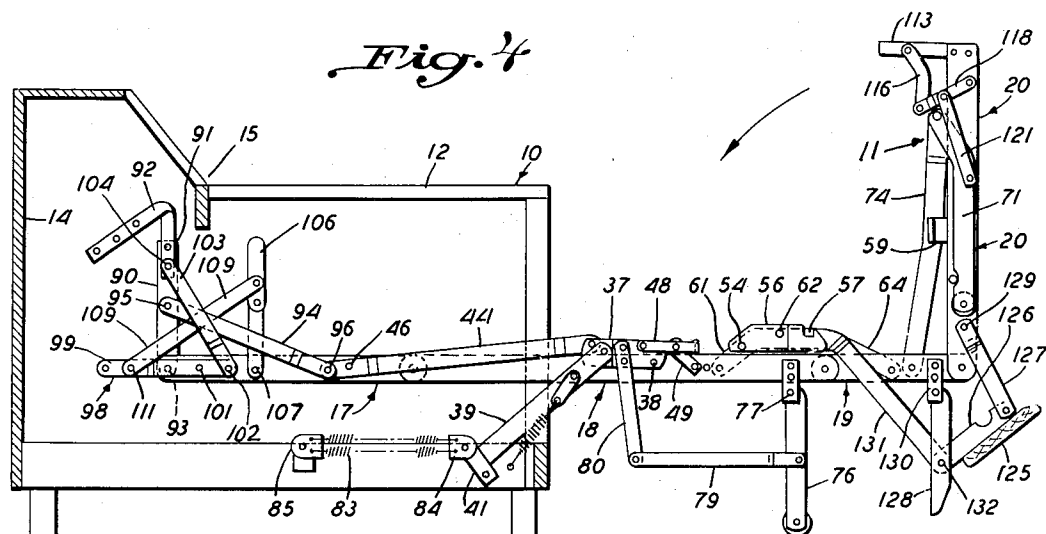
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Fig. 5

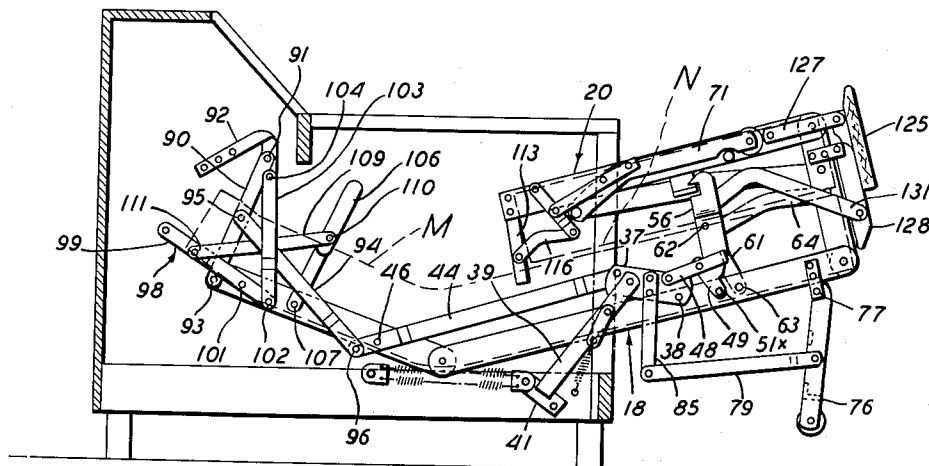


Fig. 6

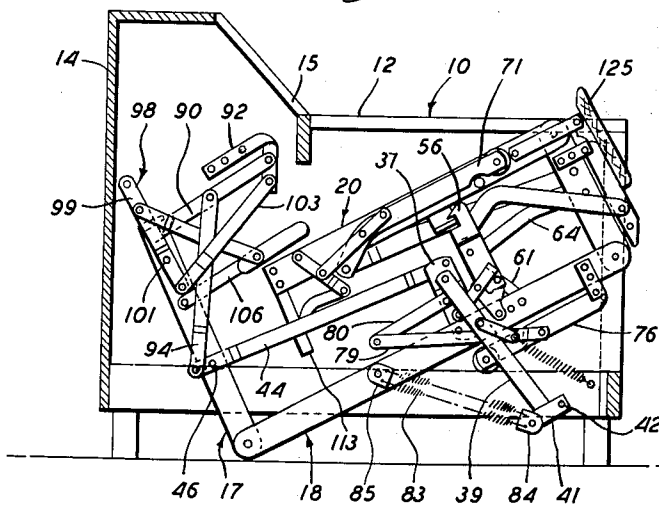
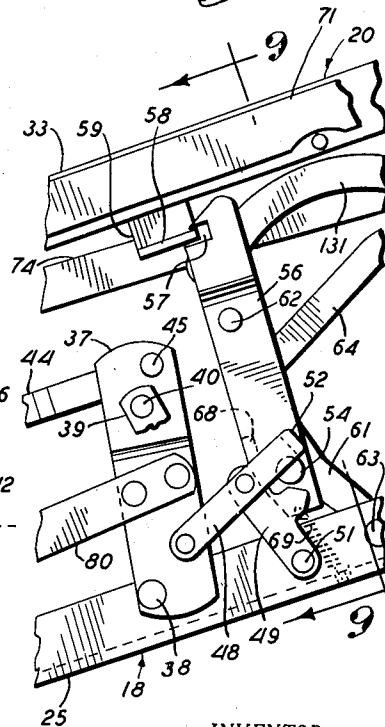


Fig. 8



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2,729,829

LOVE SEAT BED WITH AUTOMATIC LATCHING AND UNLATCHING MEANS

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Application June 18, 1954, Serial No. 437,666

6 Claims. (Cl. 5—13)

This invention relates to an article of furniture which includes a foldable frame comprising a plurality of interconnected hinged sections adapted to be disposed in alignment to form a bed or folded into collapsed relation to provide a seat, chair, couch or the like.

The invention is an improvement of my Reissue Patent No. 23,616 in which the outer section is automatically latched to an intermediate section by a spring latch during the folding of the sections into collapsed relation and which necessitates the manual release of the spring latch when the sections are to be disposed in bed forming relation.

In order to overcome the necessity for manually releasing the outer section from latched relation with the intermediate section when the sections are to be disposed in bed forming relation, the present invention provides a construction by which the outer section is latched to an intermediate section incident to the downward swinging of the outer section and which is automatically released from latched engagement with the intermediate section incident to the upward swinging of the frame from the collapsed relation.

Still another object of the invention is to support the outer section in overlying spaced relation with an intermediate section so as to prevent the weight of the outer section, and the load thereon when serving as a seat, being imposed upon the doubled-over portion of the mattress located between the said sections.

Still another object of the invention is to provide an improved linkage construction for effecting the folding of the sections into collapsed relation together with the leg members and parts carried by the sections.

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 foldable frame with the furniture frame shown in vertical section.

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 with the furniture frame shown in section.

Fig. 5 is a similar view showing the foldable frame with the outer end section swung into overlying spaced relation with an intermediate section and with the outer end of the foldable frame partially elevated for movement to collapsed relation within the furniture frame.

Fig. 6 is a view similar to Fig. 4 but showing the foldable frame swung to almost fully collapsed relation within the furniture frame.

Fig. 7 is a similar view showing the foldable frame in fully collapsed relation within the furniture frame.

Fig. 8 is an enlarged fragmentary view at one side of

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the foldable frame showing the latch release member moving the latch member out of latched engagement with the upward and outward movement of the foldable frame from the collapsed position.

Fig. 9 is a vertical sectional view taken approximately on line 9—9 of Fig. 8.

Referring to the drawings, the article of furniture includes a furniture frame 10 and a foldable frame 11 composed of a plurality of swingably connected sections adapted to support a mattress so as to accommodate the sections are disposed in aligned formation and which are swingable on the pivotal connections of the sections from the aligned relation to a collapsed relation within the furniture frame in which position it is adapted to support one or more seat cushions so as to serve as a couch, sofa, love seat and the like.

The furniture frame 10 includes opposite side walls 12 and 13, a rear wall 14 and a back rest 15 which is spaced from the rear wall so as to accommodate the inner end of the foldable frame 11 and the mattress when collapsed within the furniture frame. The foldable frame 11 is composed of an inner section 17, an intermediate section 18, a connecting section 19 and an outer section 20. The sections are swingably connected together to dispose the inner section in upright relation within the furniture frame adjacent the rear thereof with the intermediate section 18 lowered and arranged wholly within the furniture frame and with the outer section 20 disposed in overlying relation with the intermediate section 18 and spaced therefrom when the said sections are moved to collapsed relation within the furniture frame, as shown in Fig. 7 of the drawings, for supporting one or more seat cushions thereon.

The sections are preferably of angle iron construction, the inner section including spaced side rails 21 and 22 which are connected together at their inner ends by a cross bar 23. The intermediate section 18 similarly consists of spaced side rails 24 and 25 which are pivotally connected to the side rails 21 and 22 by pivot pins 27 extending through the vertical flanges of said side rails. The connecting section 19 includes short side rails 28 and 29 which are pivotally connected with the side rails 24 and 25 of the intermediate section 18 on the pivot pins 30 and are also pivotally connected with the outer section 20 on pivot pins 31 which extend through the vertical flanges of said side rails. The outer section 20 includes opposite side rails 32 and 33 which are connected together at their outer ends by a cross bar 34. The foldable frame is provided with a wire mesh spring 35 which is connected with the side rails and cross bars at the ends thereof for supporting the sections of a mattress indicated in broken lines in Figs. 4 and 7 of the drawings.

A feature of the invention is the provision of automatic means for latching the outer section in overlying relation with the intermediate section with the downward swinging movement thereof and for automatically releasing the outer section from latched relation with the intermediate section with the upward movement of the section from the collapsed relation within the furniture frame. This is effected by means of a plate 37 pivoted to each of the vertical flanges of the side rails 24 and 25 respectively of the intermediate section 18 on pivot pins 38. The plates 37 are pivoted to links 39 on pivot pins 40 which links are affixed to short bars 41 which are pivoted on pivot pins 42 to the inner faces of the side walls 12 and 13 respectively of the furniture frame 10. The said plates are also pivotally connected to links 44 respectively on pivot pins 45 and at their inner ends the said links are pivotally connected to the vertical flanges of the side rails 21 and 22 respectively of the inner section on pivot pins 46. Also pivoted to the side plates 37 are latch release members 48 which are

pivoted intermediate their ends to links 49 respectively. The links 49 are pivoted to the vertical flanges of the side rails 24 and 25 of the intermediate section 18 on pivot pins 51.

The latch release members 48 have hooked free ends 52 which are adapted to engage headed studs 54 extending outwardly from latch members 56 for releasing the said latch members from latched engagement with the outer section 20 incident to the upward and outward swinging movement of the foldable section from the collapsed position within the furniture frame. The latch members 56 are provided with slots 57 in the free ends thereof which are adapted to engage the outwardly projecting flanges 58 of brackets 59 secured to the inside faces of the vertical flanges of the side rails 32 and 33 of the outer section 20 for latching the said section in overlying relation with the intermediate section 18 as shown in Fig. 5 of the drawings.

The latching of the brackets 59 with the latch members 56 takes place with the downward swinging of the outer section 20 from the vertical position shown in Fig. 4 of the drawings to the overlying position with the intermediate section 18 as shown in Fig. 5 thereof. For this purpose, the latch members 56 are pivoted to links 61 on pivot pins 62 which links are pivoted at their lower ends to the inside faces of the vertical flanges of the side rails 24 and 25 of the intermediate section 18 on pivot pins 63. At their upper ends the said links are pivoted to links 64 on pivot pins 65, the links 64 being pivoted at their outer ends to the inside faces of the vertical flanges of the side rails 28 and 29 of the connecting section 19 on pivot pins 66. The latch members 56 are formed with short inwardly directed flanges 68 at the inner ends thereof which engage the upper edges of the links 61 to limit the rocking movement of the latch members. Coil springs 69 are affixed at their upper ends to the latch members 56 adjacent the flanges 68 and at their lower ends the said springs are affixed to the horizontal flanges of the side rails 24 and 25 of the intermediate section 18 to thereby urge the latch members into position with the flanges 68 against the links 61. The latch release members 48 engage the headed studs 54 with the upward and outward swinging of the foldable frame from the collapsed position to thereby rock the latch members 56 on their pivotal connections 62 against the tension of the springs 69 so as to swing the upper ends thereof out of latched engagement with the brackets 59, as shown in Fig. 8 of the drawings and to free the outer section 20 from latched overlying relation with the intermediate section 18.

The outer section 20 and the intermediate section 18 are supported by leg members 71 and 76 respectively which have collapsing movement with the movement of the foldable frame from the extended bed forming position shown in Fig. 2 of the drawings to the collapsed position shown in Fig. 7 thereof. The legs 71 are pivoted to the vertical flanges of the side rails 32 and 33 of the outer section 20 on pivot pins 72 and at their upper ends the said legs are pivoted on pivot pins 73 to links 74 which are pivoted to the inside faces of the vertical flanges of the side rails 28 and 29 of the connecting section 19 on pivot pins 75. By this arrangement, the legs 71 are swung into parallel relation with the side rails 32 and 33 with the upward swinging of the outer section 20. The legs 76 are pivoted on pivot pins 77 to depending plates affixed to the vertical flanges of the side rails 24 and 25 of the intermediate section 18 and pivoted to said legs are links 79 which are pivoted to links 80 affixed to the outer faces of the plates 37. The plates 37 have swinging movement about their pivotal connections 38 with the side rails 24 and 25 with the upward movement of the foldable frame, as shown in Fig. 5 of the drawings, and also with the inward and downward swinging movements thereof to the collapsed position shown in Fig. 7. This movement of the plates 37 swings the legs 72 from

the supporting position to the collapsed substantially parallel relation with the intermediate section 18. With this movement also, the hooked ends of the latch release members 48 ride over the top of the headed studs 54 to dispose the hooked ends above the studs and in position for engagement therewith with the upward and outward swinging of the foldable frame from the collapsed position to thereby release the latch members as hereinbefore described.

The swinging movement of the plates 37 is effected by the swinging movement of the links 39 and 44 which are swung about their pivotal connections 42 and 46 respectively as shown in Fig. 6 of the drawings. In order to assist the initial swinging movement thereof both with the collapsing of the foldable frame and with the movement thereof from the collapsed position, coil springs 83 are fastened at their outer ends to members 84 pivoted to the free ends of the short bars 41 and at their inner ends the said springs are fastened to members 85 pivoted to the inside faces of the side walls 12 and 13 of the furniture frame 10. Coil springs 86 fastened at their lower ends to the side walls 12 and 13 of the furniture frame and at their upper ends to the links 39 by short links 87 are also under tension when the foldable frame is in collapsed relation and function to assist in the initial upward swinging of the foldable frame from the collapsed position as well as tensioning the intermediate section 18 against upward movement when the foldable frame is in the bed forming position shown in Fig. 2 of the drawings.

Another feature of the invention is an improved construction providing a support for the inner end of the mattress beyond the inner section with the movement thereof to collapsed relation. A pillow support is also provided against which the pillow is positioned when the foldable section is in bed forming relation and which is swingable to an out-of-the-way position with the movement of the foldable frame to the collapsed position. The inner section 17 is swingably connected with the furniture frame for movement thereof from the horizontal bed forming position shown in Fig. 1 of the drawings to the collapsed upright position shown in Fig. 7 thereof. For this purpose, links 90 are provided which are pivoted at their upper ends on pivot pins 91 to brackets 92 affixed to the inside faces of the said side walls of the furniture frame. At their lower ends the said links are pivoted on pivot pins 93 to the vertical flanges of the side rails 21 and 22 of said inner section. Links 94 are pivoted on pivot pins 95 to the links 90 intermediate the ends thereof and at their outer ends the links 94 are pivoted to the ends of the links 44 respectively on pivot pins 96.

The mattress as indicated in broken lines in Figs. 2, 5 and 7 of the drawings consists of an outer section N and an inner section M, the outer section N being folded upon the inner section M with the folding of the outer section 20 of the foldable frame into overlying relation with the intermediate section 18. The inner section M bends with the movement of the inner section 17 of the foldable frame into upright relation and in so doing, the inner end of the inner section M is shifted beyond the inner section 17 of the foldable frame. In order to support the inner end of the mattress section M with the movement thereof to the collapsed position, an auxiliary frame section 98 is provided which consists of side members 99 and a cross member 100 connected between the said side members. The side members 99 are pivoted on pivot pins 101 to the vertical faces of the side rails 21 and 22 and pivoted to the inner ends of said side members on pivot pins 102 are links 103 which are pivoted at their upper ends to the brackets 92 on pivot pins 104.

The mattress extends under the pillow support which consists of side members 106 pivoted on pivot pins 107 to the vertical flanges of the side rails 21 and 22 of the inner section 17 of the foldable frame and secured to the upper ends of the side members 106 is a panel 108 extending laterally across the mattress and which panel is

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in substantially upright relation when the foldable frame is in bed forming relation and against which a pillow is adapted to be positioned to prevent the same falling off the inner end of the mattress. The side members 106 are swung to substantially horizontal relation as shown in Fig. 7 of the drawings with the movement of the foldable frame to collapsed relation within the furniture frame and for this purpose, links 109 are pivoted to the side members 106 on pivot pins 110 and to the side members 99 on pivot pins 111.

A foot extension is also provided which consists of a cross panel 113 located beyond and extending transversely of the outer section 20 when the foldable frame is in bed forming relation. The cross panel 113 is pivoted to rigid upright members 114 on pivot pins 115, the upright members 114 being riveted or otherwise affixed to the inside faces of the vertical flanges of the side rails 32 and 33 of the outer section 20. Links 116 are pivoted to the ends respectively of the cross panel 113 on pivot pins 117 which links are also pivoted to the ends of links 118 on pivot pins 119, the latter links 118 being pivoted to the inside faces of the vertical flanges of the side rails 32 and 33 of the end section 20 on pivot pins 120. For moving the cross panel 113 with the folding of the end section 20, links 121 are pivoted at their lower ends to the legs 71 thereof on pivot pins 122 and at their upper ends the said links are pivoted to the links 118 respectively on pivot pins 123. The cross panel 113 is disposed in inclined relation when the foldable frame is in bed forming relation and with the movement of the outer section 20 to the overlying relation with the intermediate section 18, the cross panel 113 is swung from the inclined relation to the upright relation against the outer end of the mattress section N as shown in Figs. 5 and 7 of the drawings.

The movement of the side plates 37 during the folding of the foldable frame also effects swinging movement of a front panel 125 from a substantially horizontal position beneath the outer section 20 of the furniture frame to a vertical position closing the front of the furniture frame so as to conceal the collapsed foldable frame. The panel 125 is affixed at its ends to links 126 which are pivoted at their opposite ends to links 127 and 128. The links 127 are pivoted to the outer faces of the vertical flanges of the side rails 32 and 33 respectively of the outer section 20 on pivot pins 129, while the links 128 are pivoted to depending lugs 130 affixed to the outer faces of the side rails 28 and 29 of the connecting section 19. Links 131 at each side of the frame are pivoted to the links 126 and 128 on a common pivot 132 and at their upper ends the said links 131 are pivoted to the upper ends of the links 61 respectively on pivot pins 133, as shown in Fig. 9 of the drawings. The links 128 are connected by a cross bar 135 extending transversely beneath the foldable frame and the legs 76 are connected by upper and lower cross bars 136 and 137, which cross bars function to retain the intermediate and connecting section against inward bending when a weight is imposed upon the mattress.

While the preferred embodiment of the invention has been described and illustrated, it is to be understood that the invention is not so limited and shall cover and include variations and modifications thereof which fall within the purview of the invention.

What is claimed is:

1. In an article of furniture of the class described, a furniture frame, a foldable frame composed of an inner section, an intermediate section, a connecting section and an outer section, said inner section being swingably connected with the furniture frame and said sections being pivotally connected together in end to end relation for movement thereof from aligned bed forming relation to a folded relation within the furniture frame and with the outer section disposed in overlying spaced relation with the intermediate section, two links pivotally connected

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together and pivotally connected to the intermediate and connecting sections respectively, a latch member pivotally connected to one of said links and movable with the folding of the outer section to latch and retain said outer and intermediate sections against unfolding, two members pivotally connected to said intermediate section, a latch release member pivotally connected to said last mentioned members, and a link pivotally connected to the furniture frame and with one of said last mentioned members for swinging said last mentioned members with the movement of the foldable frame from said collapsed relation toward the bed forming relation to thereby swing said latch release member to engage and move said latch member out of latched engagement to permit of the unfolding of said outer and intermediate sections.

2. In an article of furniture of the class described, a furniture frame, a foldable frame composed of a plurality of sections, said foldable frame being swingably connected with the furniture frame and said sections being pivotally connected together in end to end relation for movement thereof from aligned bed forming relation to a folded relation within the furniture frame and with two sections disposed in spaced substantially parallel relation, two links pivotally connected together and pivotally connected with adjacent sections, a latch member pivotally connected to one of said links and movable with the folding of said two sections to latch said two sections against unfolding, two members pivotally connected to one of said two sections, a latch release member pivotally connected to said last mentioned members, and a link pivotally connected to the furniture frame and with one of said last mentioned members for swinging said last mentioned members with the movement of the foldable frame from said collapsed relation toward the bed forming relation to thereby swing said latch release member to engage and move said latch member out of latched engagement to permit of the unfolding of said two sections.

3. In an article of furniture of the class described, a furniture frame, a foldable frame composed of an inner section, an intermediate section, a connecting section and an outer section, said inner section being swingably connected with the furniture frame and said sections being pivotally connected together in end to end relation for movement thereof from aligned bed forming relation to a folded relation within the furniture frame and with the outer section disposed in overlying spaced relation with the intermediate section, two links pivotally connected together and pivotally connected to the intermediate and connecting sections respectively, a latch member pivotally connected to one of said links and movable with the movement of said outer section into said overlying relation with the intermediate section to latch and retain said outer and intermediate sections against unfolding, a lug affixed to said latch member, two members pivotally connected to said intermediate section, a latch release member pivotally connected to said last mentioned members and having a hooked free end, and a link pivotally connected to the furniture frame and with one of said last mentioned members for swinging said last mentioned members with the movement of the foldable frame from said collapsed relation to thereby move said latch release member into engagement with said lug to swing said latch member out of latched engagement to permit unfolding of said outer and intermediate members.

4. In an article of furniture of the class described, a furniture frame, a foldable frame composed of an inner section, an intermediate section, a connecting section and an outer section, said inner section being swingably connected with the furniture frame and said sections being pivotally connected together in end to end relation for movement thereof from aligned bed forming relation to a folded relation within the furniture frame and with the outer section disposed in overlying spaced relation with the intermediate section, two links pivotally connected together and pivotally connected to the intermediate and

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connecting sections respectively, a latch member pivotally connected to one of said links and movable with the folding of the outer section to latch and retain said outer and intermediate sections against unfolding, a latch release member, means swingably connecting said latch release member with said intermediate section, and a link pivotally connected to said furniture frame and with said means for swinging said latch release member to engage and move said latch member out of latched engagement to permit of the unfolding of said outer and intermediate sections.

5. In an article of furniture of the class described, a furniture frame, a foldable frame composed of a plurality of sections, said foldable frame being swingably connected with the furniture frame and said sections being pivotally connected together in end to end relation for movement thereof from aligned bed forming relation to a folded relation within the furniture frame and with two sections disposed in spaced substantially parallel relation, two links pivotally connected together and pivotally connected with adjacent sections, a latch member, means pivotally connecting said latch member with one of said two sections and movable with the folding of said two sections to latch said two sections against unfolding, a latch release member, means swingably connecting said latch release member with one of said two sections, and a link pivotally connected to the furniture frame and with said last named means for swinging said latch release member with the movement of the foldable frame from folded relation to engage and move said latch member out of latched engagement to permit of the unfolding of said two sections.

6. In an article of furniture of the class described, a furniture frame, a foldable frame composed of an inner

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section, an intermediate section, a connecting section and an outer section, said inner section being swingably connected with the furniture frame and said sections being pivotally connected together in end to end relation for movement thereof from aligned bed forming relation to a folded relation within the furniture frame and with the outer section disposed in overlying spaced relation with the intermediate section, two links pivotally connected together and pivotally connected to the intermediate and connecting sections respectively, a latch member pivotally connected to one of said links and movable with the movement of said outer section into said overlying relation with the intermediate section to latch and retain said outer and intermediate sections against unfolding, spring means urging said latch member into latched engagement, a lug affixed to said latch member, two members pivotally connected to said intermediate section, a latch release member pivotally connected to said last mentioned members and having a hooked free end, and a link pivotally connected to the furniture frame and with one of said last mentioned members for swinging said last mentioned members with the movement of the foldable frame from said collapsed relation to thereby move said latch release member into engagement with said lug to swing said latch member against the tension of said spring means out of latched engagement to permit unfolding of said outer and intermediate members.

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