Aug. 20, 1957 J. PILIERO 2,803,018

SOFA BED CONSTRUCTION

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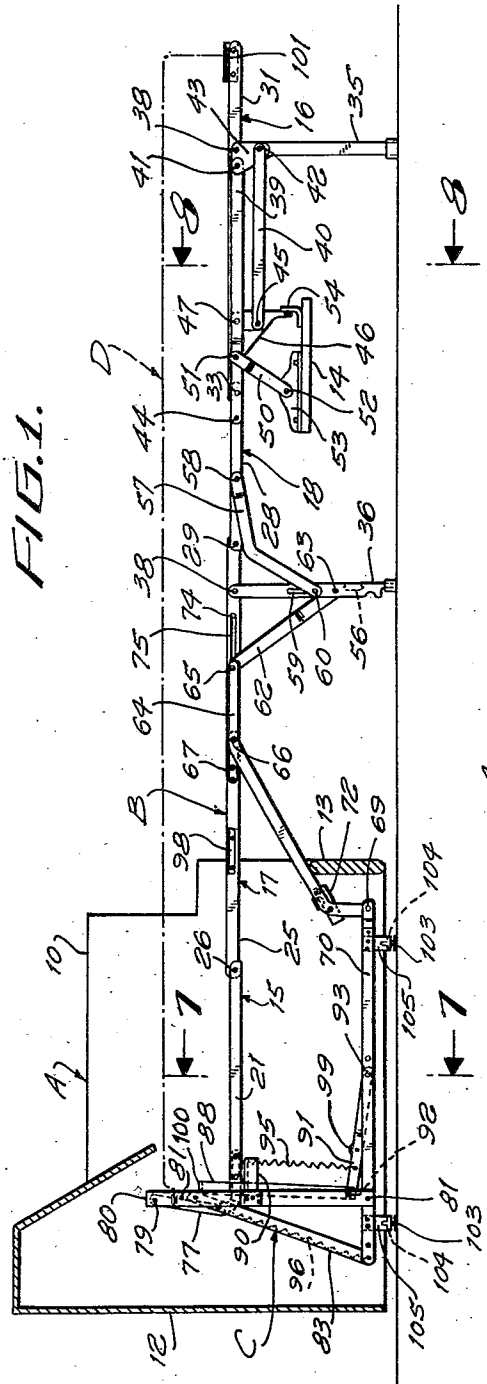


FIG. 1.

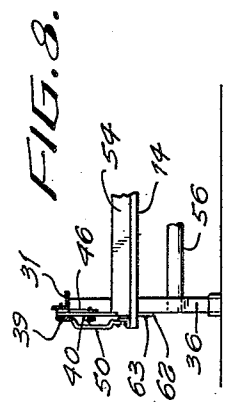


FIG. 8.

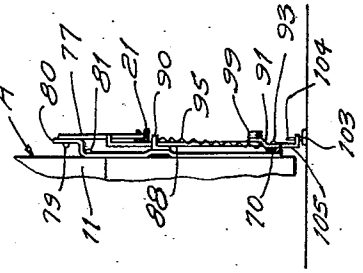


FIG. 7.

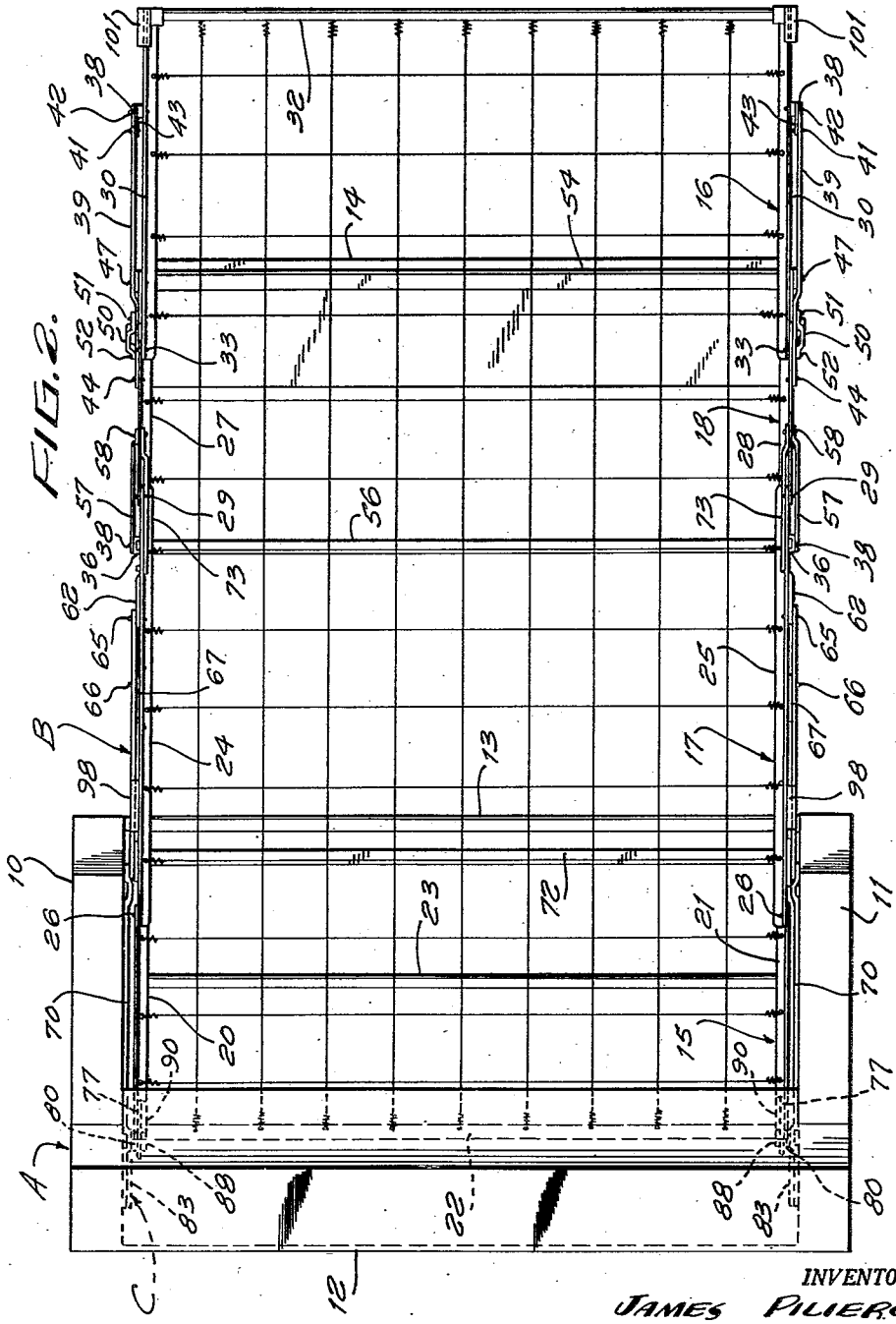
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SOFA BED CONSTRUCTION

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FIG. 2.



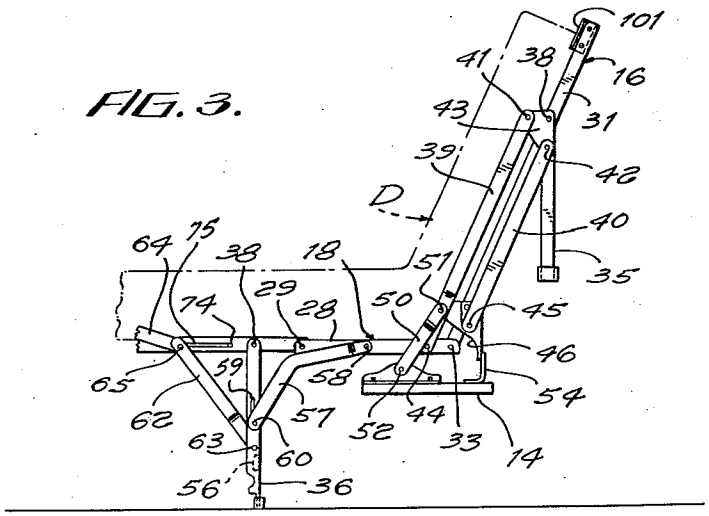
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SOFA BED CONSTRUCTION

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FIG. 3.



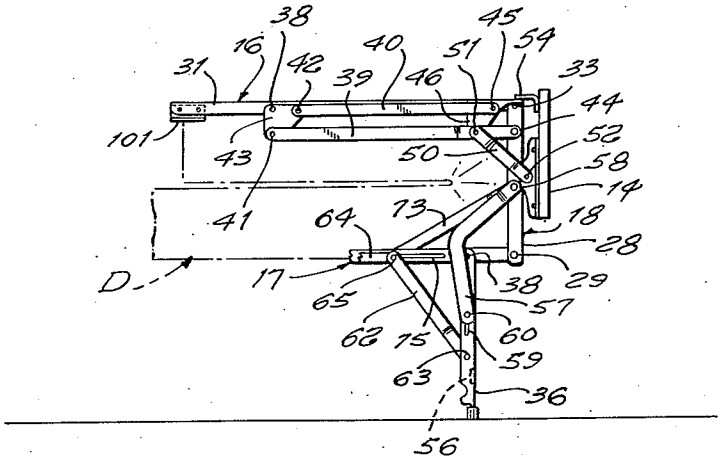


FIG. 4.

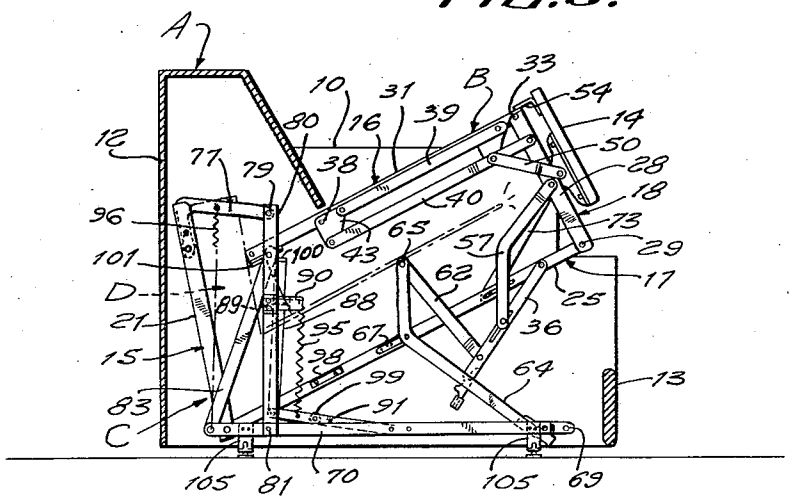
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SOFA BED CONSTRUCTION

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FIG. 5.



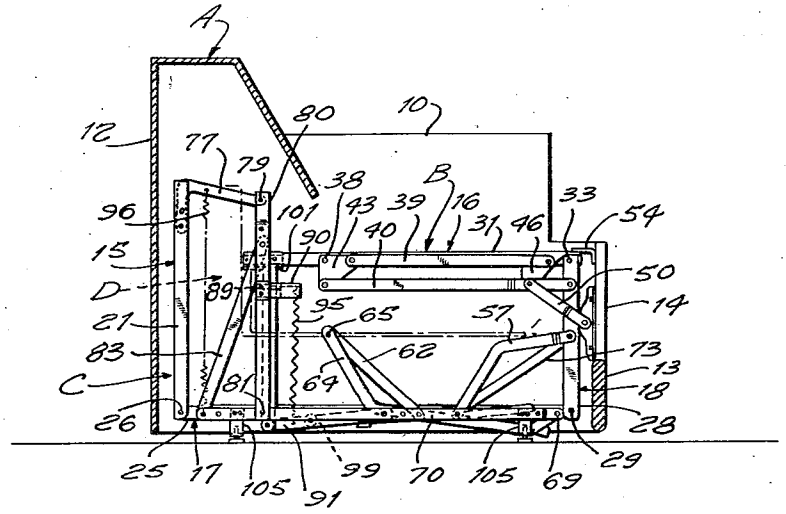


FIG. 6.

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United States Patent Office 2,803,018 Patented Aug. 20, 1957

2,803,018

SOFA BED CONSTRUCTION

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Application February 11, 1954, Serial No. 409,563

5 Claims. (Cl. 5—13)

This invention relates to furniture of the type which is useful both as a couch or seat, and as a bed.

An object of the invention is to provide an article of furniture including a furniture frame and a sectional structure which is foldable into couch or seat position within the furniture frame and when in such position is retained against unfolding.

Another object of the invention is to provide means adapted to engage the sectional structure and move one of the sections thereof downwardly into fully collapsed relation within the furniture frame and to retain the same against independent upward movement.

Still another object of the invention is to provide retaining tensioned means carried by the furniture frame which has downward movement with the collapsing of the sectional structure to move the outer section thereof downwardly against the folded end portion of the mattress located within the folded sectional structure and to retain the outer section against independent upward movement.

Still another object of the invention is to provide an article of furniture of said character in which the furniture frame is supported by the sectional structure whereby the weight on the sectional structure is transmitted to the floor or supporting surface.

Still another object of the invention is to provide a sectional structure of the character described having leg members for supporting the same when in extended relation and which leg members and the sections are connected together by an improved linkage system for effecting swinging of the sections together with the leg members into folded relation within the article of furniture.

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 view in side elevation of an article of furniture constructed in accordance with the invention with the sectional structure shown in extended relation and the furniture frame in vertical section.

Fig. 2 is a top plan view thereof.

Fig. 3 is a fragmentary side view of the outer section of the sectional structure in partially folded relation.

Fig. 4 is a similar view showing two of the outer sections in folded relation.

Fig. 5 is a similar view showing the sectional structure in partially collapsed relation within the furniture frame and in position for engagement by the retaining means.

Fig. 6 is a view similar to Fig. 5 in which the outer section of the sectional structure is shown in its downward position confining the folded mattress therein.

Fig. 7 is a fragmentary vertical sectional view taken approximately on line 7—7 of Fig. 1.

Fig. 8 is a fragmentary vertical sectional view taken approximately on line 8—8 of Fig. 1.

The article of furniture includes a furniture frame A, a sectional structure B constituting a seat and bed forming frame, and a retaining means indicated generally by the reference character C for retaining the sectional structure B in folded seat forming relation within the furniture frame A.

The furniture frame A consists of opposite side walls 10 and 11, a rear wall 12, a rigid front panel 13 connected between the side walls 10 and 11 and a movable front wall 14 carried by the sectional structure B and which is moved with the sectional structure to a position above the front panel 13 when the sectional structure is in collapsed relation within the furniture frame as indicated in Fig. 6 of the drawings.

The sectional structure B consists of a plurality of hingedly connected sections and as illustrated, the same includes an inner section 15, an outer section 16 and two intermediate sections 17 and 18. The inner section 15 and intermediate section 18 are disposed in spaced upright relation within the furniture frame when the sectional structure is in collapsed relation therein while the outer section 16 and the intermediate section 17 are disposed in spaced substantially horizontal relation for receiving one or more seat cushions on the outer section 16 when the sectional structure is in said collapsed relation within the furniture frame. The outer section 16 is relatively shorter than the intermediate section 17, while the intermediate section 18 is relatively shorter than the inner section 15 and disposes the outer section 16 and intermediate section 17 in spaced apart relation for receiving a mattress D in folded relation therebetween.

The inner section 15 includes oppositely disposed angle iron side rails 20 and 21 which are connected at their inner ends by a cross member 22 and intermediate their ends by a cross member 23. The intermediate section 17 includes oppositely disposed angle iron side rails 24 and 25 which are pivotally connected to the side rails 20 and 21 of the inner section by pivot pins 26 extending through the vertical flanges thereof. The intermediate section 18 includes oppositely disposed angle iron side rails 27 and 28 which are pivotally connected to the side rails 24 and 25 on pivot pins 29 extending through the vertical flanges thereof. The outer section 16 includes oppositely disposed angle iron side rails 30 and 31 which are connected at their outer ends by a cross member 32 and are pivotally connected to the side rails 27 and 28 of the intermediate section 18 by pivot pins 33.

The sectional structure B is supported in extended relation by pairs of legs 35 and 36 which are pivotally connected to the side rails of the outer section 16 and intermediate section 17 on pivot pins 37 and 38 respectively. In order to effect collapsing of the legs 35 with the folding of the sections, links 39 and 40 are provided at each side which are pivoted on pivot pins 41 and 42 respectively to plates 43 affixed to the upper ends of the legs 35. At their inner ends the links 39 are pivoted to the side rails 27 and 28 of the intermediate section 18 on pivot pins 44 while at their inner ends the links 40 are pivoted on pivot pins 45 to triangular shaped side members 46 which latter members are pivoted to the side rails 30 and 31 on pivot pins 47.

The front wall 14 is disposed beneath the outer section 16 when the sectional structure B is extended for use as a bed and said front wall is moved with the sectional structure into position between the opposite side walls 10 and 11 of the furniture frame A when the sectional structure is disposed in collapsed relation within the furniture frame for use as a couch or seat. For this purpose, links 50 are pivoted at their upper ends to the links 39 on pivot pins 51 and at their lower ends said links 50 are pivoted on pivot pins 52 to brackets 53 affixed to said front wall

adjacent the side edges thereof. Angle members 54 rigidly connect the lower ends of the side members 46 with the front wall 13.

The legs 36 are connected by a cross member 56 and link members 57 are pivotally connected to the side rails 27 and 28 respectively by pivot pins 58 and have pivotal and sliding connection with the legs respectively. For this purpose, the legs are formed with slots 59 in which pins 60 affixed to the lower ends of the links 57 are mounted for sliding movement. Links 62 are pivoted at their lower ends to the legs 36 on pivot pins 63 and at their upper ends are pivotally connected to bent links 64 by pivot pins 65. The links 64 are pivotally connected on pivot pins 66 to short straps 67 riveted or otherwise affixed to the side rails 24 and 25. At their lower ends the links 64 are pivoted on pivot pins 69 to flat bars 70 affixed to the opposite side walls 10 and 11 adjacent the bottom of the furniture frame A. A cross bar 72 is connected between the links 64 to retain the links against spreading. Links 73 are arranged against the inside faces of the vertical flanges of the side rails 24 and 25 and are pivoted thereto at their outer ends on the pivot pins 58 and at their inner ends the said links are provided with headed pins 74 which extend through and have sliding engagement in longitudinally extending slots 75 in the vertical flanges of said side rails.

The sectional structure B is provided with means such as a fabric spring secured to the inwardly directed flanges of the side rails thereof and to the cross members 22 and 32 at the ends thereof for supporting the mattress D thereon, as illustrated in Fig. 1 of the drawings.

The sectional structure B is connected with the furniture frame A for swinging movement to dispose the inner section 15 in upright relation and the remaining sections in collapsed relation as hereinbefore described by means of bent links 77 which are secured against the inside faces of the vertical flanges of the side rails 20 and 21 and at the upper ends the said links are pivoted on pivot pins 79 to flat bars 80 which are affixed to the inside faces of the side walls 10 and 11 of the furniture frame and at their lower ends to the flat bars 70. Flat bars 83 are affixed at their upper ends to the flat bars 80 and at their lower ends are affixed to the inner ends of the flat bars 70.

The retaining means C includes reciprocatory bars 88 mounted for guided movement in openings 89 in brackets 90 affixed to the flat bars 80 intermediate the ends thereof. At their lower ends the bars 88 are pivoted to levers 91 on pivot pins 92, the outer ends of the levers 91 being pivoted on pivot pins 93 to the flat bars 70. Coiled springs 95 are affixed at their upper ends to the brackets 90 respectively and at their lower ends are affixed to the levers 91 for maintaining the said levers together with the reciprocatory bars 88 in uppermost position when the sectional structure B is in bed forming relation as shown in Fig. 1 of the drawings. Coiled springs 96 are secured at their upper ends to the bent links 77 and at their lower ends to the inner ends of the flat bars 70. The latter springs are tensioned by the downward movement of the sectional structure B into folded relation within the furniture frame A whereby the said springs facilitate the upward swinging of the sectional structure in the movement thereof from the couch or seat position to the bed position.

The opposite side rails 24 and 25 of the intermediate section 17 are provided with side members 98 which are affixed to the outer faces thereof to project outwardly therefrom so as to engage rollers 99 pivotally mounted on the levers 91 for swinging the levers downwardly against the tension of the springs 95 with the downward movement of the section structure B from the position shown in Fig. 5 of the drawings to the position shown in Fig. 6 thereof within the furniture frame A. This moves the bars 88 downwardly so that the inwardly directed upper ends 100 thereof engage brackets 101 affixed to the outer end of the outer section 16 which is then moved downwardly with the bars 88 and retained in downward position within the furniture frame as shown in Fig. 6 of the drawings. The rollers 99 are retained beneath the side members 98 so that the upper ends 100 of the bars 88 retain the outer section 16 against upward movement and the mattress D in tightly folded relation within the collapsed sectional structure B for supporting cushions on the outer section 16 so that the article of furniture may be used as a couch or seat.

In folding the sectional structure B from the bed forming position shown in Fig. 1 of the drawings to the collapsed position within the furniture frame A as shown in Fig. 6 for supporting one or more cushions for use as a couch or seat, the outer section 16 is swung into upright relation on the pivotal connections 33 with the section 18. This disposes the legs 35 in parallel relation with the section 16. The section 18 is then swung upwardly on the pivotal connections 29 into upright relation with reference to the section 17. This disposes the outer section 16 in substantially parallel relation with the section 17 and the front wall 14 in vertical position in front of the section 18 and the mattress D in doubled-over relation between the sections 16 and 17 as illustrated in Fig. 4 of the drawings. The section 17 is then swung upwardly on the pivotal connections 66 with the links 64. This also effects a swinging of the links 64 about the pivotal connections 69 with the furniture frame so as to dispose the outer sections in the inclined relation shown in Fig. 5. Continued downward movement of the sectional structure effects the engagement of the side members 98 with the rollers 99 so as to move the bars 88 downwardly and the inwardly directed upper ends 100 thereof into engagement with the brackets 101 of the outer section 16 and to move the outer section 16 into substantially parallel relation with the section 17. The outer section 16 is thus held downwardly against the upward expansive action of the folded over outer end of the mattress D.

The furniture frame A is rigidly affixed at each side to a supporting frame consisting of the horizontally disposed flat bars 70, the vertical bars 80 and the diagonally extending bars 83 with the bottom of the furniture frame spaced above the supporting surface. Headed supporting screws 103 are provided at each side, the threaded shanks of which engage through threaded openings in the inwardly directed lower ends of angle members 105. The angle members 105 are riveted or otherwise affixed to the flat bars 70 and are located adjacent the opposite ends thereof on each side of the furniture frame. This provides means by which the weight on the sectional structure B when serving as a couch or seat will be imposed upon the flat bars 70 and thence to the supporting screws 103. The supporting screws 103 may be turned in the threaded openings in the angle members 105 for adjusting the elevation of the sectional structure B with reference to the supporting surface. The supporting screws 103 are adjustable for taking up any irregularity in the supporting surface whereby the sectional structure B will be supported at four points and may be maintained in level formation irrespective of any irregularity in the supporting surface.

What is claimed is:

1. In a sofa bed construction, a furniture frame, a sectional structure swingably connected with the furniture frame and composed of a plurality of sections pivotally connected together in end to end relation for movement from aligned formation to a folded formation within the furniture frame with two of the sections disposed in spaced substantially horizontal relation, means connecting one of said two sections with the furniture frame for swinging movement from said aligned formation to lowered relation with the movement of the sections into folded relation within the furniture frame, retaining means including a lever pivoted to said furniture frame, means carried by said lever providing a head projecting inwardly into overlying relation with said two sections when in folded relation within the furniture

frame, means tensioning said lever to dispose the same in normal inoperative position, and means carried by one of said two sections and movable with the downward movement thereof into engagement with said lever for depressing the lever and moving the head downwardly into engagement with the uppermost of said two sections for retaining said two sections in folded relation.

2. In a soft bed construction, a furniture frame, a sectional structure swingably connected with the furniture frame and composed of a plurality of sections pivotally connected together in end to end relation for movement from aligned formation to a folded formation within the furniture frame with two of the sections disposed in spaced substantially horizontal relation, means connecting one of said two sections with the furniture frame for swinging movement from said aligned formation to lowered relation with the movement of the sections into folded relation within the furniture frame, reciprocatory means carried by said furniture frame and including a head projecting inwardly into overlying relation with said two sections when the sectional structure is in folded relation within the furniture frame, means tensioning said reciprocatory means to dispose the head in normal inoperative position, and means carried by one of said two sections and movable with the downward movement thereof into engagement with said reciprocatory means for depressing the same and moving the head downwardly to retain said two sections in folded relation.

3. In a sofa bed construction, a furniture frame, a sectional structure adapted for supporting a mattress, said sectional structure being swingably connected with the furniture frame and composed of a plurality of sections pivotally connected together in end to end relation for movement with the mattress from aligned formation to a folded formation within the furniture frame and with the mattress folded within the folded sectional structure and with two of the sections disposed in spaced substantially horizontal relation, means connecting one of said two sections with the furniture frame for swinging movement from said aligned relation to lowered relation with the movement of the sections into folded relation within the furniture frame, retaining means arranged on both sides of the sectional structure and each including a lever pivoted to said furniture frame, a bar carried by each lever having a laterally projecting upper end, means tensioning said levers to dispose the same in normal inoperative position, and means carried by one of said two sections on each side thereof and movable with the folding thereof into engagement with said levers for depressing the levers and moving the bars downwardly and the upper ends thereof into engagement with the uppermost of said two sections for retaining the same in folded relation against the expansive action of the folded mattress.

4. In a sofa bed construction, a furniture frame, a sectional structure swingably connected with the furniture frame and composed of four sections pivotally connected together in end to end relation for movement from aligned formation to a folded relation in which one of the sections is disposed above another in spaced apart substantially horizontal relation, means connecting one of said last mentioned sections with the furniture frame for swinging movement from said aligned relation to lowered relation within the furniture frame with the movement of the sections into folded relation, retaining means including a lever pivoted to said furniture frame, means carried by said lever providing a head projecting inwardly into overlying relation with said last mentioned sections when the sectional structure is in folded relation within the furniture frame, means tensioning said lever to dispose the same in normal upper position, and means carried by one of said last mentioned sections and movable with the folding thereof into engagement with said lever for depressing the lever and moving the head downwardly for retaining the uppermost of said two last mentioned sections against upward movement.

5. In a sofa bed construction, a furniture frame, a sectional structure adapted for supporting a mattress, said sectional structure being swingably connected with the furniture frame and composed of four sections pivotally connected together in end to end relation for movement from aligned formation to a folded relation in which one of the sections is disposed above another in spaced substantially horizontal relation and with the mattress folded therebetween, means connecting one of said two last mentioned sections with the furniture frame for swinging movement from said aligned formation to lowered relation within the furniture frame with the movement of the sections into folded relation, retaining means arranged on both sides of the sectional structure and each including a lever pivoted to said furniture frame, bars carried by said levers having laterally projecting heads, means carried by the furniture frame providing guides for said bars respectively, means tensioning said levers to dispose the same in inoperative position, and means carried by one of said two last mentioned sections on each side thereof and movable with the folding thereof into engagement with said levers for depressing the levers for moving the bars together with the heads downwardly for depressing the uppermost of said two last mentioned sections and retaining the same against the upward expansion of the folded mattress.

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