Oct. 21, 1947. R. COOPERSMITH 2,429,260

SOFA BED HINGE

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Fig. 1.

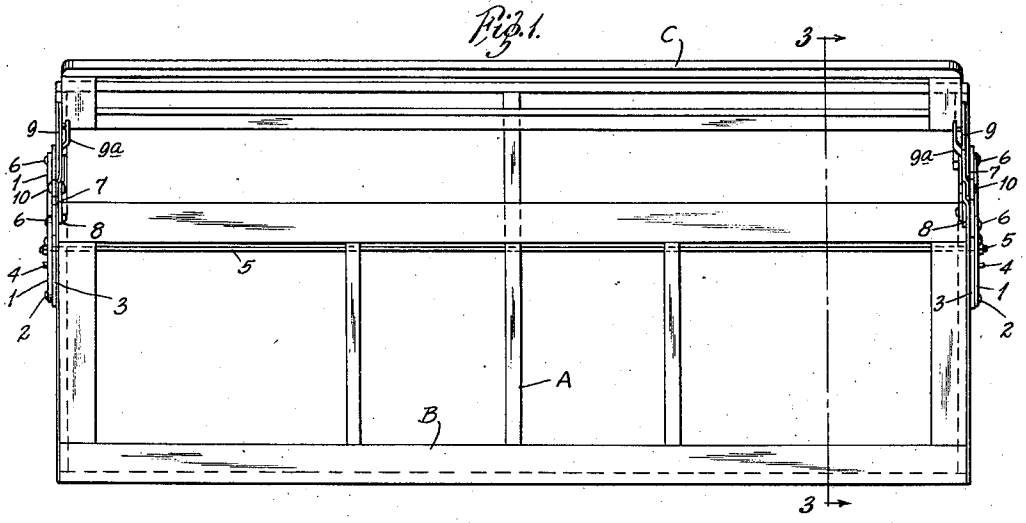


Fig. 2.

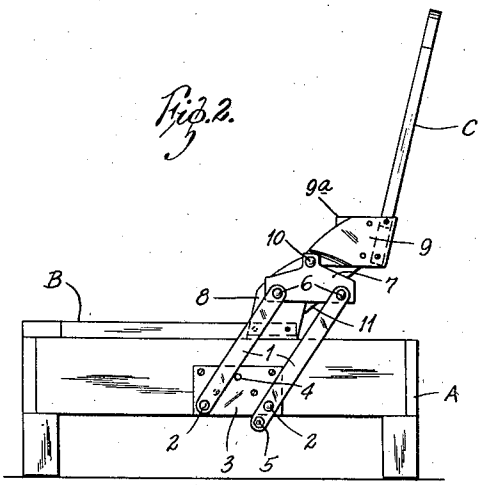


Fig. 3.

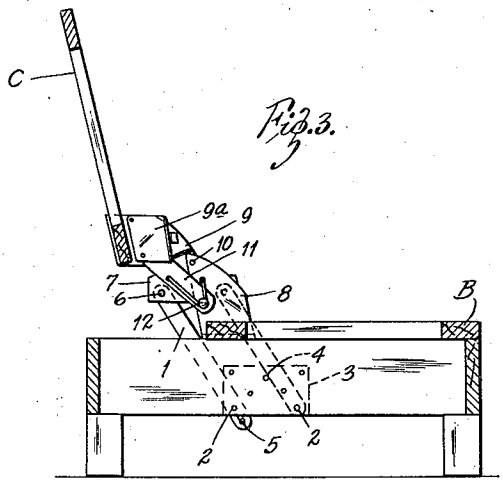


Fig. 4.

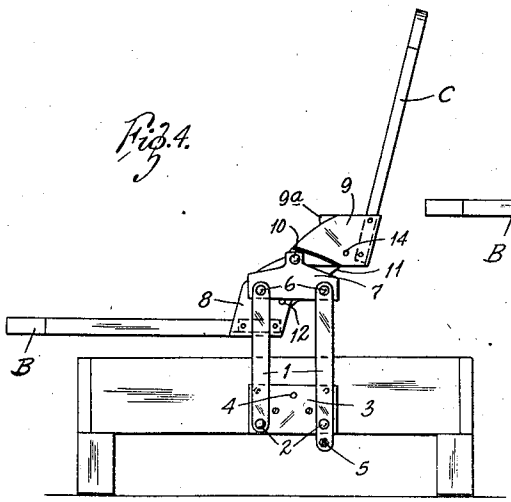
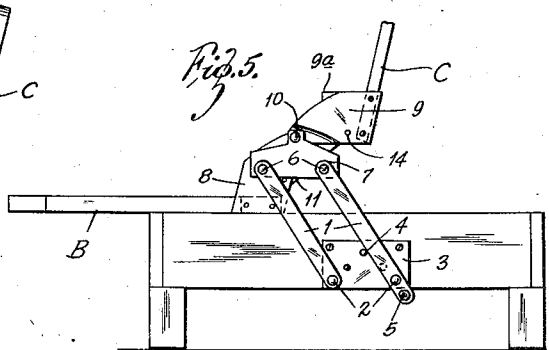


Fig. 5.



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Fig. 6.

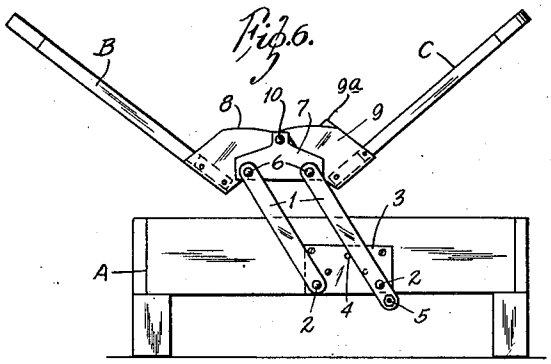


Fig. 7.

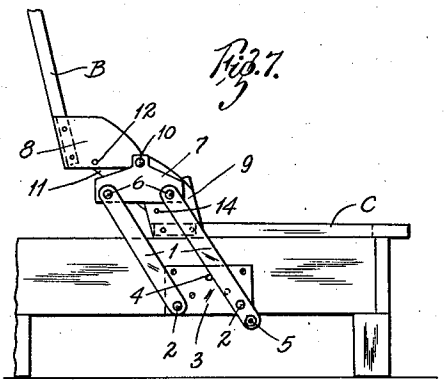


Fig. 8.

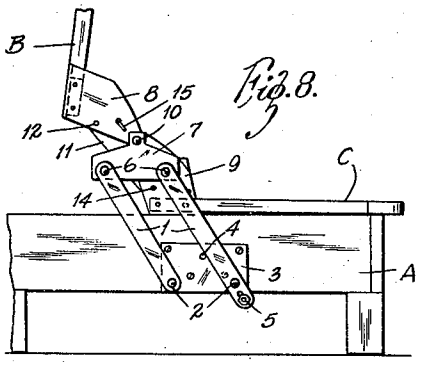


Fig. 9.

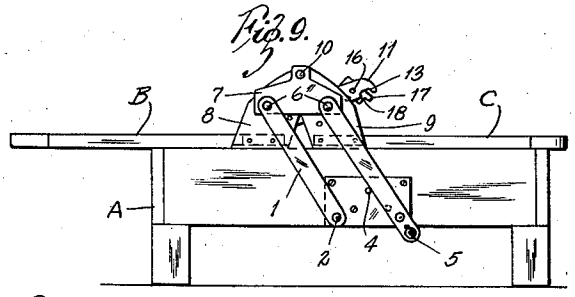
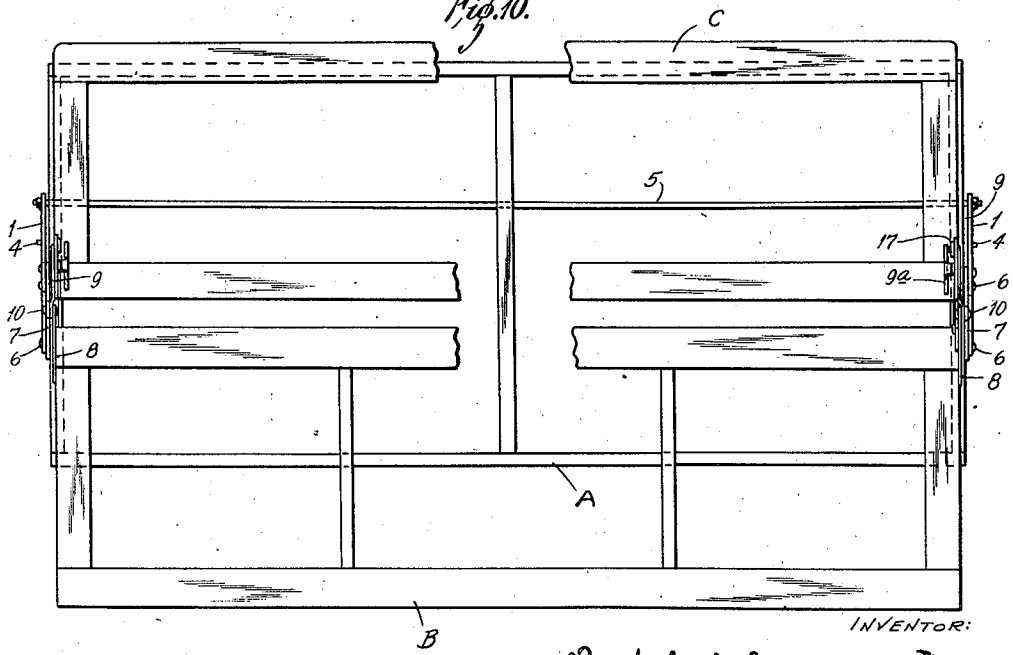


Fig. 10.



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Fig. 11.

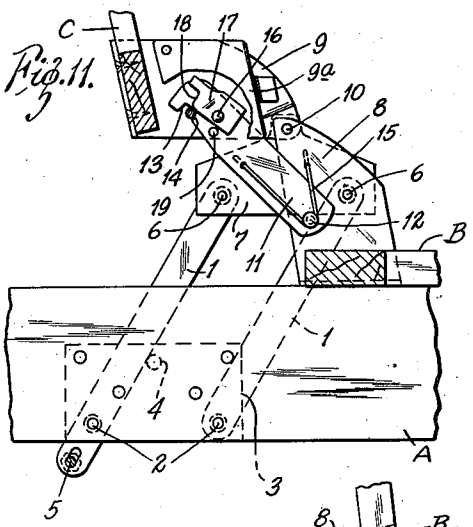


Fig. 12.

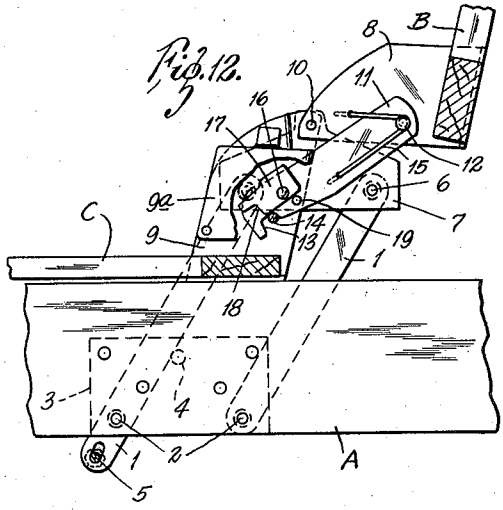


Fig. 13.

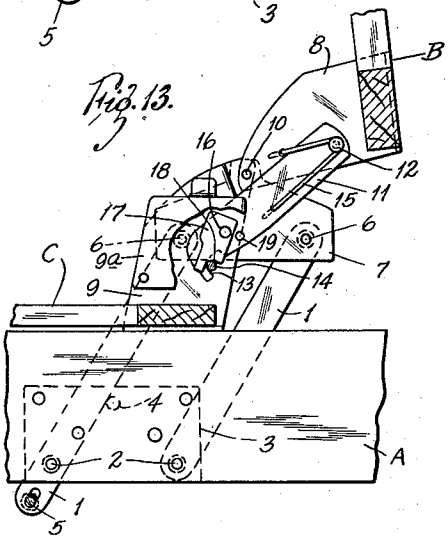


Fig. 14.

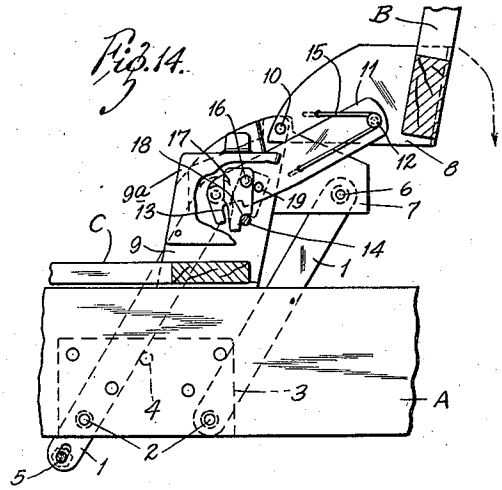


Fig. 15.

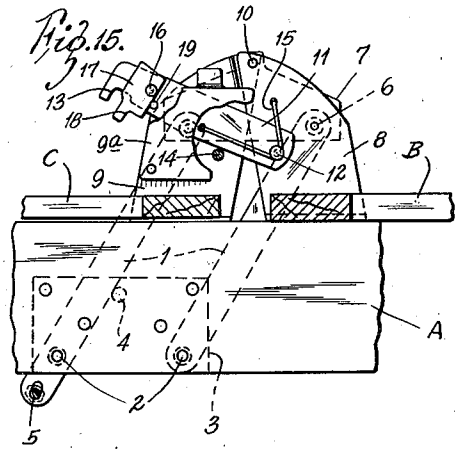
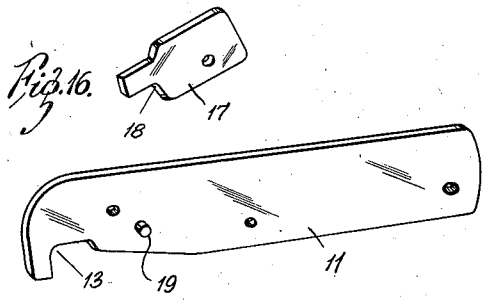


Fig. 16.



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Patented Oct. 21, 1947 2,429,260

UNITED STATES PATENT OFFICE

2,429,260

SOFA BED HINGE

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Application November 8, 1944, Serial No. 562,425

3 Claims. (Cl. 5—47)

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This invention relates to sofa beds and has for its principal object to produce a strong and durable light-weight sofa bed of simple and economical construction which may be quickly and easily converted from a sofa to a bed, that will provide quick releasable means for automatically locking the back and seat together in seat forming position and that will have other advantages hereinafter appearing. The invention consists in the sofa bed and in the parts and combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a front elevational view of a sofa bed embodying my invention,

Fig. 2 is an end elevational view of said sofa bed,

Fig. 3 is a vertical cross-sectional view on the line 3—3 in Fig. 1,

Figs. 4 to 9, inclusive, are views similar to Fig. 2, showing the progressive movement of the parts from sofa position to bed position,

Fig. 10 is a plan view, showing the sofa bed in bed forming position,

Figs. 11, 12 and 13 are enlarged fragmentary cross-sectional views similar to Fig. 3, with the parts in the positions shown in Figs. 5, 7 and 8, respectively,

Fig. 14 is a view similar to Fig. 13, showing the seat latch in unlocked position,

Fig. 15 is a similar view showing the seat and back in bed forming position; and

Fig. 16 is a perspective view of the latch arm and the release trigger carried thereby.

The sofa bed shown in the accompanying drawings comprises a main supporting frame A and folding seat and back frames or sections B and C, respectively. Said frames may be of any suitable construction and covered with suitable upholstery (not shown). The seat and back frames or sections may also be provided with body supporting springs (not shown). Located at each end of the sofa bed is a pair of spaced parallel upright links 1 whose lower ends are secured by horizontal pivots 2 to a plate 3 fixed flatwise to the outer face of the end rail of the main frame A. The parallel links 1 are adapted to swing forward and backward on their supporting pivots 2; and a stop pin 4 is fixed to the plate 3 between said links for limiting the forward and backward swinging movement thereof. As shown in the drawings, one of the parallel links of the pair at one end of the frame A is connected by

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means of a longitudinal rod 5 to the corresponding link of the pair at the other end thereof so as to provide for joint movement of the two pairs of links.

At each end of the main frame A the two parallel links 1 extend above the level of the top thereof and have their upper ends connected by horizontal pivots 6 to the outer side of a vertically disposed cross-plate 7. Rigidly secured to and extending upwardly from each end of the seat section B adjacent to the rear corner thereof is a hinge plate 8; and similarly secured to each end of the back section C adjacent the lower corner thereof is a forwardly projecting hinge plate 9. The hinge plates 8 and 9 are located alongside the inner face of the link supported cross-plate 7 and have their ends overlapped and pivotally secured together and to said cross-plate by a common horizontal pivot pin 10, whereby the seat and back sections are adapted to move with said cross-plate and are adapted for pivotal movement relative thereto and to each other about the pivot pin 10.

In sofa forming position, the seat section B rests flatwise on the top of the main frame A and the parallel links 1 incline rearwardly and upwardly so as to bring the front edge of said seat section into substantially flush alinement with the corresponding edge of said main frame and the back section C is located rearwardly of said seat section with its lower edge spaced above the level thereof. In this position of the parts, the back section C is rigidly locked to the seat section B preferably by means of a latch arm 11 which has one end secured by a horizontal pivot 12 to the inner face of the hinge plate 8 of the seat section B and has a downwardly opening notch 13 at its other end that fits over a horizontal locking pin 14 fixed to the hinge plate 9 of the back section C. A torsion spring 15 is mounted on the pivot 12 for the latch arm 11 with one end anchored to the latter and the other end anchored to the upstanding hinge plate 8 of the seat section B and serves to yieldably hold the notched end of said latch arm down on the locking pin 14. Secured to the latch arm 11 by means of a horizontal pivot 16 is a release trigger 17 which is located adjacent to the notched end of said latch arm and has a notch 18 in the lower corner of its free outer end adapted for cooperation with the lock pin 14. The latch arm 11 is also provided adjacent to the notched side of the release trigger 17 with a pin 19, the purpose of which will appear hereinafter. Rigidly secured to the hinge plate 9 in spaced relation thereto is a

guard plate 9a which provides a clear space for the latch arm 11 to work in and serves to space the upholstering and bedding from said latch arm. The guard plate 9a also has a marginal extension 9b which, in the bed position of the seat and back sections, serves to limit the upward swinging movement of the latch arm 11 under the influence of the spring 15.

The sofa bed is converted from a sofa to a bed by grasping the seat section B and drawing it forward, thereby causing the parallel links 1 to swing forwardly on their supporting pivots 2 and the seat section to seat on the front portion of the main frame A in the position shown in Fig. 5. The seat section B is then swung rearwardly about the supporting pivot 10; and the back section C, being locked to the seat section by the latch arm 11, pivots with said seat section about said pivot and seats flatwise on the rear portion of the main frame A in the position shown in Figs. 7 and 12. As shown in Figs. 8 and 13, the seat section B is then swung upwardly on the pivot 10 to draw the latch arm 11 forwardly far enough to permit the notched corner 18 of the pivotal release trigger 17 to seat on the lock pin 14 located in the notch 13 in said latch arm, said notch being long enough to permit such movement of said latch arm relative to said pin. The seat section B is then swung downwardly on its supporting pivot 10 (see Fig. 14) and the endwise engagement of the release trigger 17 with the lock pin 14 causes the notched end 13 of the latch arm 11 to lift off said lock pin and thus permit said seat section to seat flatwise on the front portion of the main frame and become coplanar with the back section C seated on the rear portion thereof to form a bed (see Figs. 9 and 15). After the notched end of the latch arm 11 is lifted clear of the lock pin 14 by the trigger 17, the pin 19 on said latch arm engages said trigger and swings the notched end thereof clear of said lock pin. The sofa bed is converted from bed to seat position by swinging the seat section B upwardly relative to the back section C until the notched end 13 of the latch arm 11 drops over the lock pin 10 and locks the two sections together. The two sections and the supporting links 1 therefor are then pushed rearwardly. At the same time, the seat section B is swung downwardly to sofa position and the back section C locked to said seat section is swung upwardly to sofa position.

The hereinbefore described sofa bed is of simple and economical construction and may be quickly and easily converted from a sofa to a bed and vice versa. The back and seat sections are automatically locked together against relative movement in sofa forming position and are easily unlocked by movement of the seat section to permit movement thereof to bed position. The arrangement of parts permits the sofa bed to be positioned with its back close to a wall and converted to a bed without pulling the main frame away from said wall.

The guard plate 9a provides a clear working space for the latch arm without interferences from the upholstery or bedding; and the parallel supporting links are located outside of the hinge plates where they cannot rub or snag the upholstery on the seat and back sections. The torsion spring serves to hold the latch arm down on the lock pin in the sofa position of the parts and to hold said arm clear of said lock pin when the parts are in bed position.

Obviously, the hereinbefore described sofa construction admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the precise construction shown and described.

What I claim is:

1. A sofa bed comprising a sofa frame, a pair of upright links pivoted at their lower ends to said frame in spaced relation crosswise thereof for forward and backward swinging movement relative thereto, a cross link connecting the upper ends of said pair of upright links together in spaced parallel relation, and seat and back sections pivotally supported on said cross link, whereby said seat and back sections are bodily movable jointly with said cross link and are pivotally movable jointly or independently on said cross link crosswise of said frame.

2. A sofa bed comprising a sofa frame, a pair of upright links pivoted at their lower ends to said frame in spaced relation crosswise thereof for forward and backward swinging movement relative thereto, a horizontal cross link connection between the upper ends of said pair of upright links for holding them in spaced parallel relation, seat and back sections pivotally supported on said cross link connection, whereby said seat and back sections are bodily movable jointly with said cross link connection and are pivotally movable jointly or independently on said cross link connection crosswise of said frame.

3. A sofa bed comprising a sofa frame, a pair of upright links pivoted at their lower ends to each end of said frame in spaced relation crosswise thereof for forward and backward swinging movement relative thereto, a horizontal cross link connection between the upper ends of said pair of upright links for holding them in spaced parallel relation, seat and back sections pivotally supported on said cross link connection, whereby said seat and back sections are bodily movable jointly with said cross link connection and are pivotally movable jointly or independently on said cross link connection crosswise of said frame, said seat and back sections being pivotally supported on said cross link connection midway between the points of connection between said cross link connection and said pair of links, a stop pin fixed to said frame between said pair of links for limiting the swinging movement thereof in both directions, and a connection between one of the links of the pair at one end of said frame and the corresponding link of the pair at the other end thereof.

RUDOLPH COOPERSMITH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
637,976	Rolph	Nov. 28, 1899
789,903	Fenner	May 16, 1905
820,826	Seng	May 15, 1906
1,878,405	Karpen	Sept. 20, 1932
2,201,903	Krakauer	May 21, 1940
2,224,825	Krakauer	Dec. 10, 1940
2,317,105	Neunherz	Apr. 20, 1943
2,328,254	Bell	Aug. 31, 1943
2,334,493	Johnson	Nov. 16, 1943
2,335,870	Martin	Dec. 7, 1943

FOREIGN PATENTS

Number	Country	Date
181,302	Great Britain	May 29, 1922