Feb. 25, 1941. C. M. DRINKWATER 2,233,201

CHAIR SEAT

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Fig. 1.

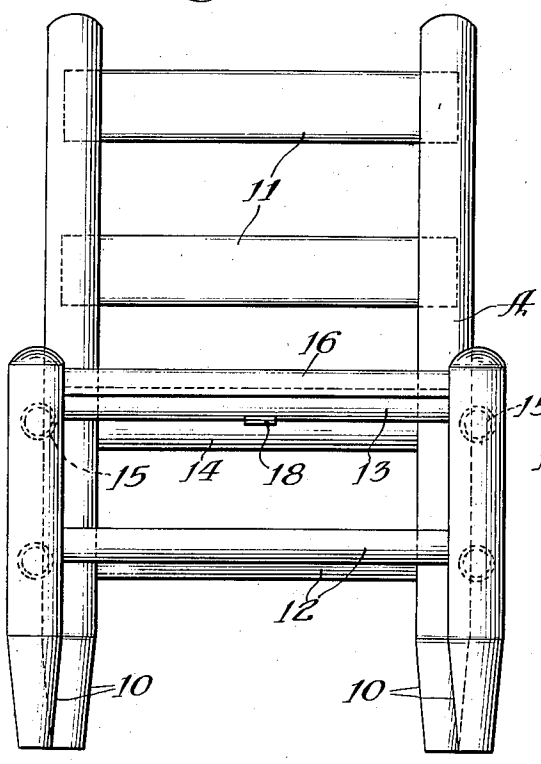


Fig. 2.

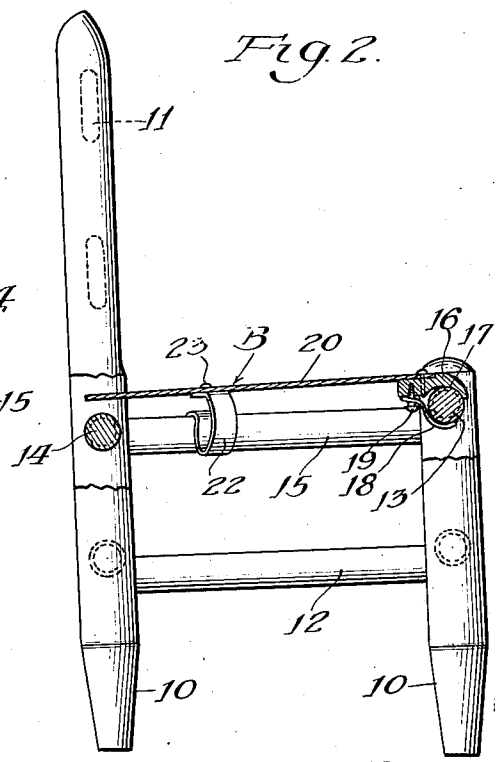


Fig. 3.

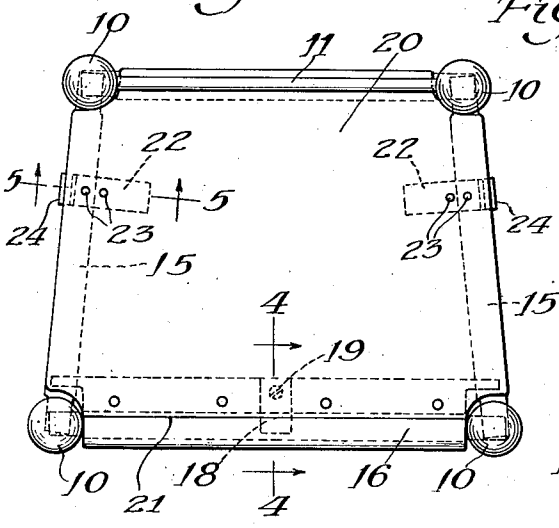


Fig. 4.

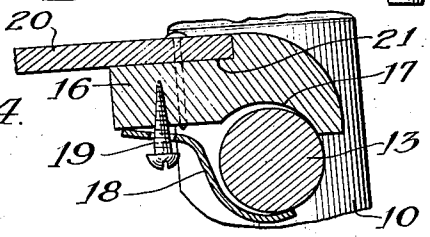
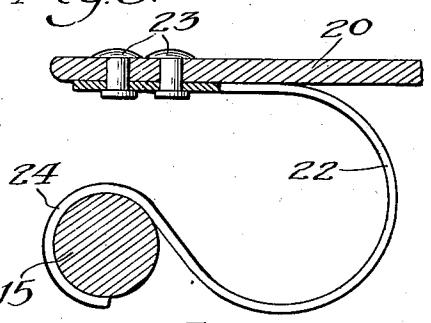


Fig. 5.



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Fig. 6.

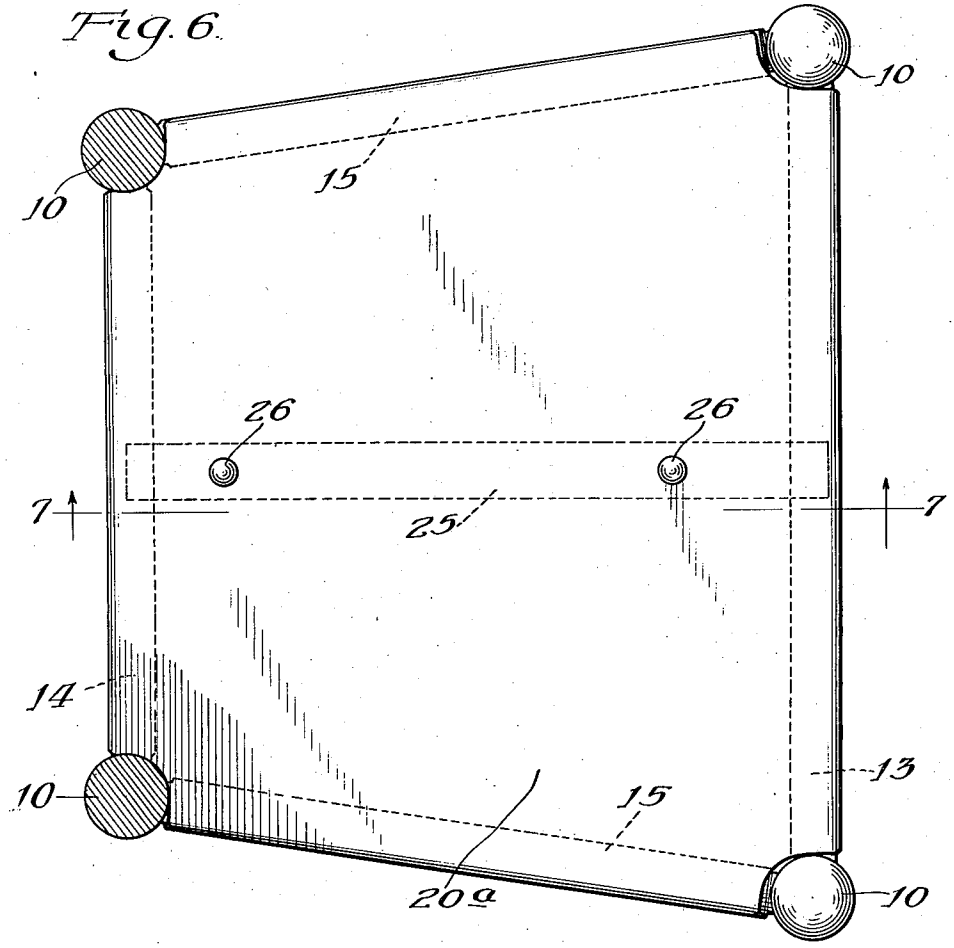
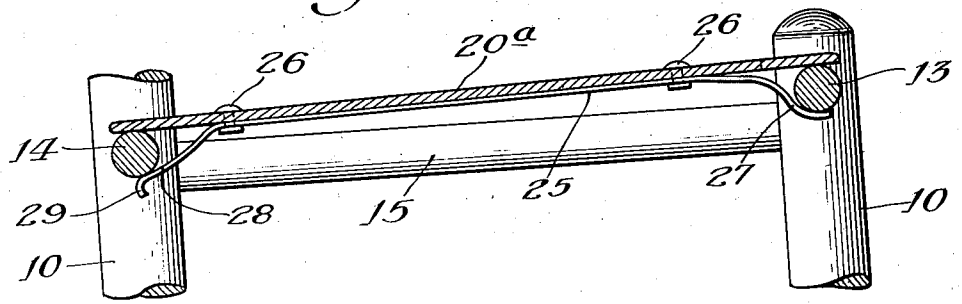


Fig. 7.



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Fig. 8.

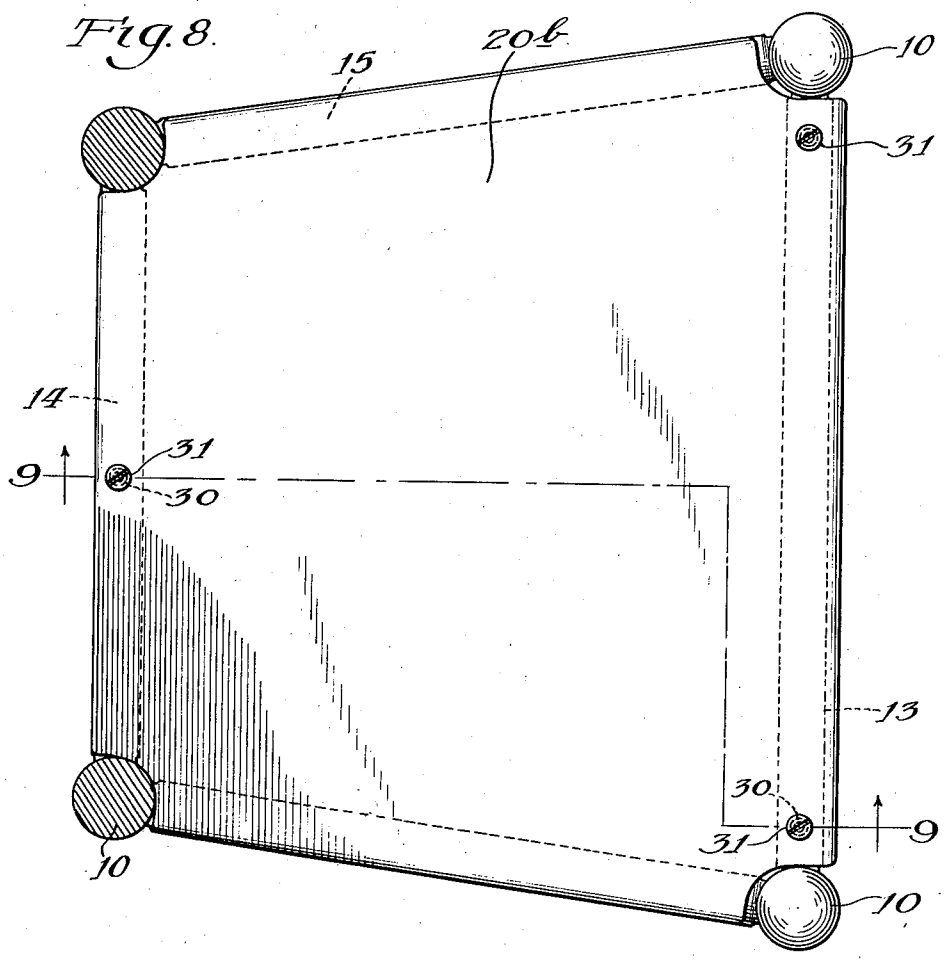
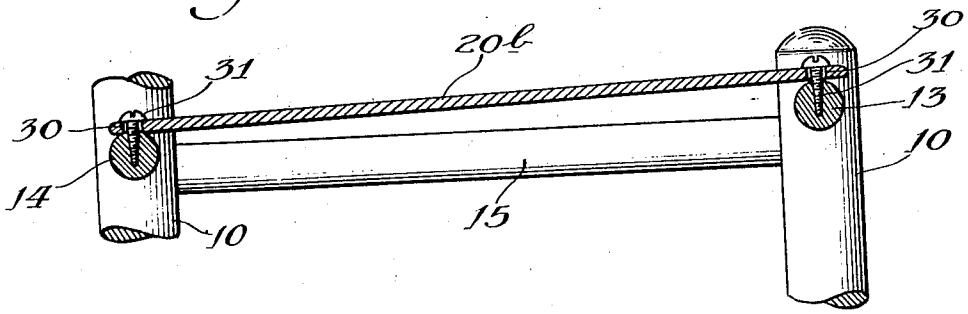


Fig. 9.



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Patented Feb. 25, 1941 2,233,201

UNITED STATES PATENT OFFICE

2,233,201

CHAIR SEAT

Charles M. Drinkwater, Chicago, Ill., assignor to The Wabash Screen Door Co., Chicago, Ill., a corporation of Minnesota

Application December 30, 1938, Serial No. 248,585

6 Claims. (Cl. 155—178)

This invention relates to a chair seat and the like.

An object of the invention is to equip a chair or the like with a seat of extremely simple and inexpensive construction and in which the seat may be quickly assembled, the seat providing a yielding support automatically accommodating persons of light or heavy weight. A further object is to provide a yielding seat member which yields initially predominantly in one direction and then at a second stage yields simultaneously in two directions. Another object is to provide a chair seat having a resilient seat member which of itself yields under weight but which is buttressed at certain points with yielding spring supports whereby an extremely comfortable seat is produced. Another object is to provide a yielding seat structure wherein edges thereof which are initially free are brought into contact with supports spaced below whereby the edges are pressed against further movement so as to produce different directional yielding of the seat member. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in preferred embodiments, by the accompanying drawings, in which—

Figure 1 is a front view in elevation of a chair equipped with a seat embodying my invention; Fig. 2, a side view in elevation, the seat portion being shown in longitudinal section; Fig. 3, a top plan view; Fig. 4, an enlarged detail sectional view, the section being taken as indicated at line 4 of Fig. 3; Fig. 5, an enlarged detail sectional view, the section being taken as indicated at line 5 of Fig. 3; Fig. 6, a top plan view of a modified form of structure embodying my invention; Fig. 7, a sectional view, the section being taken as indicated at line 7 of Fig. 6; Fig. 8, a top plan view of a second modified form of seat structure embodying my invention; and Fig. 9, a sectional view, the section being taken as indicated at line 9 of Fig. 8.

In the structure illustrated in Figs. 1 to 5 inclusive, A designates a frame; and B, a yieldable seat carried by the chair frame.

The chair frame may be of any suitable construction. In the illustration given, it comprises legs 10, the rear legs 10 being connected by slats 11. The four legs are joined near the bottom by stretchers 12. Above stretchers 12 is the front stretcher or round 13, the rear stretcher 14, and the two side stretchers 15.

The seat stucture B is preferably hinged at its front end upon some suitable portion of the chair frame A. In the illustration given, I provide a block 16 having a concave lower surface 17 resting upon the stretcher 13. The parts are locked together by means of a metal clamp 18 having one perforated end secured to the block by a screw 19.

The seat member 20, which is secured to the block 16, may be of any suitable material having high resilient qualities and considerable strength. I have found that such a seat member may be satisfactorily formed of presswood, that is wood which is formed of wood fibers pressed and bonded together so as to form an extremely sturdy but resilient support. It will be noted that the board 20 is received within a recess 21 formed in block 16 rearward of the stretcher 13.

As shown more clearly in Figs. 2 and 5, I provide spring means for supporting the seat member 20 at a spaced distance above the rear stretcher 14 and the side stretchers 15, the member 20 being supported also in its raised position preferably at a slight rearward inclination. The spring means comprises a loop spring member 22 at each side of the board 20, the body of the loop extending inwardly and below the member 20. The outer end of each spring 22 is perforated and secured by rivets 23 to the lateral edge portion of member 20. The lower end of the spring 22 is turned to form a loop 24, freely engaging the round or stretcher 15.

In the operation of the device, the seat 20 swings upon the forward pivot portion 17 downwardly against the force of springs 22. The rear side of the seat member 20 then engages the rear stretcher 14 and this causes the yieldable member 20 to bend transversely under the weight imposed. Further movement causes the lateral edges of the seat member 20 to engage the side stretchers 15 and this causes the seat to bend or yield under further pressure about an imaginary longitudinal axis running from front to rear of the member 20. Thus, in the lower position, the natural resilience of the presswood board 20 is utilized to insure further downward movement of the seat by engagement of the stationary supports 14 and 22 with the rear and lateral edges of the board. The result is a concave bending of the board, providing an extremely comfortable seat and one that readily adapts itself to a person of light weight as well as to a person of heavy weight.

In assembling the seat structure to the chair, it

is a simple operation to slip the loop portions 24 of springs 22 about the stretchers 15. The clamp 18 is then placed in position after the curved portion 17 of block 16 rests upon stretcher 13. After the single screw 19 is threaded into position, the seat is firmly secured in position.

Should the seat structure B or any portion thereof break or should it become necessary to repair the same, it is only necessary to withdraw screw 19 and clamp 18, whereby the seat B can be replaced, repaired, and it or the new seat again secured in position.

It will be noted that the spring member 22 and the loop portion 24 thereof freely engage the side rounds 15 so that during the swinging movement of the seat board 20, the loop portion 23 is free to creep or rotate upon the bar 15.

In the structure shown in Figs. 6 and 7, the resilient seat 20^a is provided centrally on its lower side with a spring metal strap 25, the strap being secured to the board 20^a at the two points indicated by rivets 26. The front end of the spring member 25 is turned downwardly and forwardly at its end to form a spring arm 27 engaging the front stretcher 13. The rear end of the spring member 25 is turned downwardly to provide a spring arm 28 adapted to extend under and engage the rear stretcher 14. I prefer to turn the end of the arm 28 slightly forwardly at 29 so as to facilitate the assembly of the seat with the chair. If desired, however, the shape of the arms 27 and 28 may be reversed.

It will be observed that in this structure also, the sides of the resilient member 20^a extend well over the side stretchers 15 and are spaced thereabove.

In the operation of the structure shown in Figs. 6 and 7, the member 20^a, reinforced by spring 25, yields under weight, the bending being transversely of the seat until the sides of the member 20^a strike the stretchers 15 spaced therebelow. Further movement of the member 20^a causes the member to bend not only transversely but longitudinally so that again a dished effect is produced, thus producing a sturdier support for the member 28 under the increased weight while at the same time affording greater comfort. If desired, a substantial portion of the metal spring 25 between the rivets 26 may be eliminated and the pressed board 20^a relied upon for the resilience and support desired. The structure still provides the arms 27 and 28 by which the board is secured upon stretchers 13 and 14. With the arms arranged as shown, it will be observed that the ends of the board 20^a can freely pivot about the stretchers 13 and 14.

In the assembly operation, it is only necessary to thrust the arm 27 below the forward stretcher 13 and then to draw the rear arm 28 forwardly so as to permit it to slide under and below the stretcher 14. The operation is extremely simple and one that can be carried on with great speed in an assembly plant. Likewise, the structure can be readily disassembled, the arm 28 being drawn forward to permit the rear portion of seat 20^a to be lifted off to round 14 and the seat 20^a may then be drawn rearwardly to remove it from engagement with stretcher 13.

In the modification shown in Figs. 8 and 9, the resilient board 20^b is secured at its front end to the stretcher 13 and at its rear end to the stretcher 14, over-sized holes 30 being formed in the board 20^b for receiving the attachment screws 31. The enlarged openings 30 are sufficiently large to permit flexing of the board 20^b downwardly without straining the screws 31. In other words, the openings are large enough to allow the ends of the board to swivel or turn on the stretchers in the flexing operation. Here, the side stretchers 15 are disposed a spaced distance below the board 20^b and come into play when the board is depressed through the predetermined distance. The lateral edges of the board 20^b then engage the stretchers 15 and further downward movement produces a flexure which is not only transverse of the board but longitudinal thereof. The enlarged openings 30 accommodate both directional movements.

In all the modifications, the structure employed is extremely simple, permitting rapid assembly and ready removal for repair or substitution, while at the same time affording a two-stage flexure of the seat structure affording greater strength for the resilient seat board and providing greater comfort for the occupant. It will be noted that the side stretchers 15 which are illustrated as below the stretchers 13 and 14 may just as readily be placed above the stretchers 13 and 14, whereby the resilient seat board would be initially supported by the stretchers 15 and come into contact with the other stretchers only after the first bending phase of movement. Other similar reversals of arrangements and other changes in details may be made within relatively wide limits without departing from the spirit of my invention.

The foregong detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

I claim:

1. In combination with a chair frame, having front, rear and side stretchers, a seat member pivotally supported upon the front stretcher, releasable clamping means for securing said seat member upon said front stretcher, and spring members secured to said seat member and having loop portions engaging said side stretchers for supporting the rear edge of said seat member above said rear stretcher.

2. In combination with a chair frame, having front, rear and side stretchers, a block member having a curved portion and extending over said front stretcher, a clamp member extending under said stretcher and releasably secured to said block, a resilient seat member secured to said block member and extending rearwardly over said side and rear stretcher members, and a loop spring on each side of said seat member and secured to the bottom portion thereof, said spring having a curved portion engaging a side stretcher, the main loop portion of said spring extending inwardly of said stretchers.

3. In combination with a chair frame, having front, rear and side stretchers, two of said stretchers being spaced below the other two stretchers, a resilient seat support supported upon said stretchers for pivotal movement upon at least one thereof, said seat support being sufficiently flexible to bring the side edges thereof into engagement with said two lower stretchers and yielding both transversely and longitudinally when in engagement with said lower stretchers.

4. In combination with a chair frame, a pair of parallel stretchers spaced below and at least one stretcher thereabove, a resilient seat board support pivotally supported upon said frame and engaging said top stretcher, said board support

being sufficiently flexible under the weight of the occupant to bring the side edges thereof into engagement with said lower stretchers and yielding both transversely and longitudinally when in engagement with said lower stretchers.

5. In combination with a chair frame, having at least one upper stretcher and a pair of stretchers spaced therebelow, a resilient presswood seat board supported upon said stretchers for pivotal movement thereon, said board being sufficiently flexible under the weight of an occupant to bring the said edges thereof into engagement with said lower stretchers and yielding both transversely and longitudinally when in engagement with said lower stretchers.

6. In combination with a seat frame, a pair of parallel stretchers spaced below and at least one stretcher thereabove, a resilient seat board support pivotally supported upon said frame and engaging said top stretcher, said board support being sufficiently flexible under the weight of the occupant to bring the side edges thereof into engagement with said lower stretchers and yielding both transversely and longitudinally when in engagement with said lower stretchers, and a spring strap secured to the bottom portion of said seat board and having spring end portions engaging oppositely disposed parallel stretchers to lock said board thereon.

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