June 27, 1933. F. J. TRAINOR 1,915,480

RESILIENT CHAIR

Filed Dec. 24, 1932

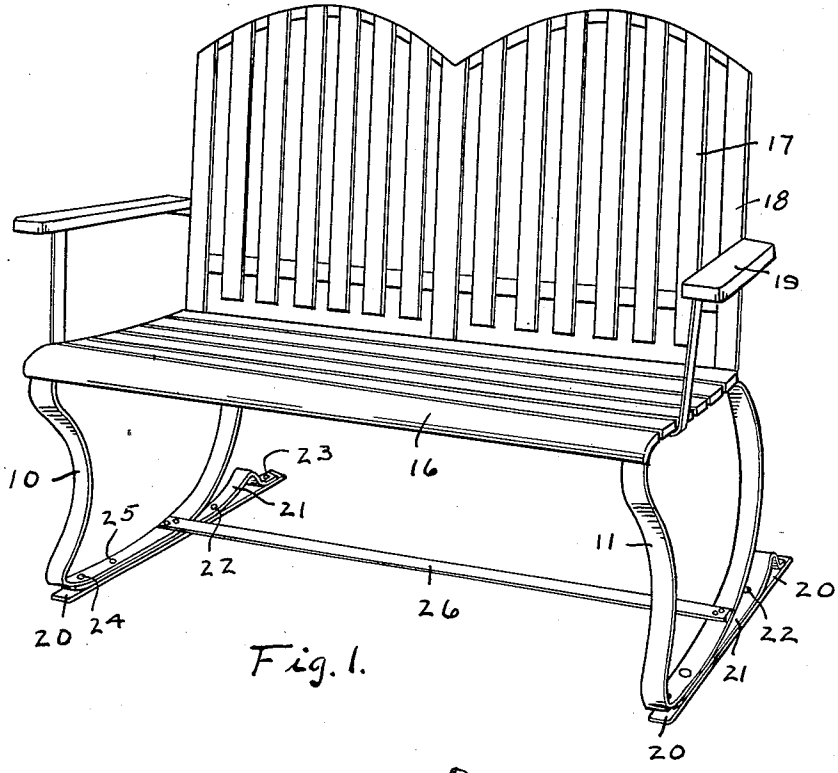


Fig. 1.

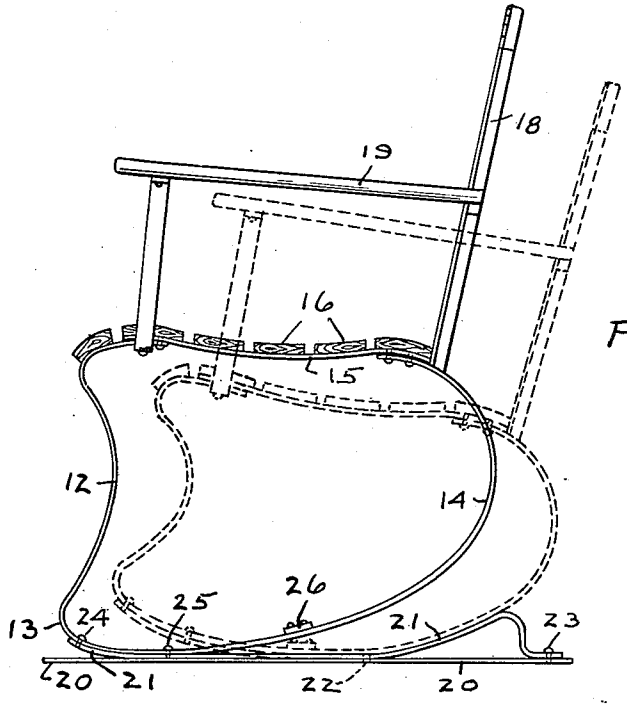


Fig. 2.

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UNITED STATES PATENT OFFICE

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RESILIENT CHAIR

Application filed December 24, 1932. Serial No. 648,750.

This application relates to the art of furniture and particularly to a chair or settee having an elastic frame formed from spring members whereby a seat member may be yieldingly depressed and also be carried rearwardly and forwardly in the manner of a rocking chair, the spring action of the member supporting the seat yieldingly flexing under the weight of the occupant.

Not only is the above indicated action obtained by forming a structure in accordance with my invention, but flat steel spring members may be employed throughout the supporting frame work as opposed to heretofore used tubular members so that full spring action may be obtained without the limiting rigidity of such tubular members. In addition, my invention permits the formation of an article of furniture at an exceedingly low cost of production as well as pleasing to the eye.

Furthermore the invention provides a structure that does not pitch the occupant forwardly upon forward travel and that prevents overturning upon rearward travel.

These and other objects of the invention will become apparent to those skilled in the art in the following description of one particular form of the invention as illustrated by the accompanying drawing, in which

Fig. 1 is a front view in perspective of a structure embodying my invention, and

Fig. 2, a side elevation.

Like characters of reference indicate like parts in the two views in the drawing.

I form spring members generally designated by the numerals 10 and 11, each member being of the same size and conformation and having a front vertically disposed leg 12 curving rearwardly somewhat and downwardly from the top end, thence forwardly toward the lower end, and rounding backwardly to form the curve 13. Continuing as an integral piece from this curve 13 the steel spring member extends rearwardly and gradually upwardly and thence in a long gradual curve 14 around and forwardly to join with a seat carrying spring bar 15 which is united to the upper and rear turned end of the member 12. While the seat carrying member 15 is here shown as a separate piece uniting the two ends of the continuous spring member, it may become an integral part whereby the member 12 extending around through the various curves is in effect a continuous spring. Slats 16 are here shown as extending across and tying together the two members 10 and 11 to form the seat. The member 15 is elastic permitting the member to bow downwardly in itself, depending upon the weight and the place of application thereof. A back 17 is preferably provided and may assume any form, one form being here shown as comprising vertical slats carried by the vertically disposed posts 18 which in turn are reenforced by the arm rests 19.

A spring bar 20 normally remaining in horizontal plane is provided and a second spring bar 21 is fixed thereto toward its rear end at two points, here shown as by rivets 22 and 23. This bar 21 is formed to have the portion between its connection with the under bar 20 to curve upwardly from the rivet 22 for a distance and thence around and substantially vertically downwardly and thence back along the bar 20, as indicated in Fig. 2. The bar 21 extends forwardly from the rivet 22 normally in contact with the under bar 20 to have the spring member 10 or 11 as the case may be, rest thereon along its forward portion for a short distance and have the front end of the bar 21 fixed to the member 10 or 11 in such a manner as to prevent twisting one member in respect to the other. The method of fixing the two members together is here shown as comprising the rivets 24 and 25 spaced apart longitudinally of the members. The front end of the member 21 is preferably carried around and upwardly to follow part of the curve 13 at the lower end of the leg 12.

A tie 26 is preferably provided and is secured by its ends to the respective members 10 and 11 at points thereon back of the rivet 25.

In using the chair, the various members will assume some such positions as indicated

by the dash lines in Fig. 2 when a load is applied to the seat. The rear curved portion 14 will flex as will the front leg 12 but by reason of the particular shapes of the curves of these two parts, the rear end of the seat 16 will drop down to a lower position than will the front end by reason of the greater initial curvature at that part 14 as compared to that of the leg 12. In other words, the differences in curvature are essential in order to secure the peculiar and desirable action obtained by my invention. The reversed curvature at the top and bottom ends of the leg 12 also aid greatly in obtaining this action since there is greater resistance set up to bending of the complete leg 12 than there is to the bending of the member through the curve 14. As the seat member 16 is rocked rearwardly, the under sides of the members 10 and 11 roll backwardly into a greater length of contact with the members 21 thereunder until the members 10 and 11 roll into contact with the upturned ends of the members 21 which serve as limiting stops to the rearward movement. While such action is taking place, the forward ends of the members 21 are being carried upwardly by the under sides of the members 10 and 11 thereby applying an increasing tendency to return the members 10 and 11 to their normal forward positions. Of course if the seat 16 is forceably carried rearwardly to any great extent, then there is a tendency for the entire structure to pivot about the rear ends of members 20 which tends to set up a bending action not only in the members 20 but also in the members 21 fixed thereto and particularly in that part of the members 21 as is between the points by which it may be fixed to the member 20 thereunder. By reason of the particular formation of such portion of the member 21, considerable resistance is presented to such a bending action although some may occur.

It is thus to be seen that the forward end of each of the members 20 serves as a track or foundation on which the member 21 thereabove normally rests in intimate contact and that as the seat may be rocked, the spring member 21 is flexed resisting such rocking and tends to return the structure to the normal position. What bending action may be set up in the combined bars 20 and 21 between their attaching points tends to lift the front end of each of the bars 20 against the normal tendency for such bars to remain straight and therefore this normal tendency to return to straight line positions tends to pull the front portions of he bars 21 downwardly which in turn tends to pull the front ends of the members 10 and 11 downwardly.

While I have herein shown a novel seat supporting structure, it is obvious that structural changes may be made without departing from the spirit of the invention and I therefore do not desire to be limited to that precise form beyond the limitations as may be imposed by the following claims.

I claim:

1. In a seat supporting structure, a spring member normally horizontally disposed, a seat supporting member of an elastic nature comprising a forward elastic leg having an upper rearwardly turned end and curving around, downwardly and rearwardly in a comparatively short curve, and thence curving forwardly by a longer curve from the lower end of which the leg curves around rearwardly relatively sharply and thence extends rearwardly over said spring member to slope upwardly therefrom and finally curving upwardly, around, and forwardly in a curve sharper than that of the leg to extend forwardly toward said leg upper end, and a seat carried over said ends, said spring member being secured by its front end to said seat supporting member immediately back of the lower end of said leg.

2. In a seat supporting structure, a spring member normally horizontally disposed, a seat supporting member of an elastic nature comprising a forward elastic leg having an upper rearwardly turned end and curving around, downwardly and rearwardly in a comparatively short curve, and thence curving forwardly by a longer curve from the lower end of which the leg curves around rearwardly relatively sharply and thence extends rearwardly over said spring member to slope upwardly therefrom and finally curving upwardly, around, and forwardly in a curve sharper than that of the leg to extend forwardly toward said leg upper end, and a seat carried over said ends, said spring member being secured by its front end to said seat supporting member immediately back of the lower end of said leg, and a foundation member, said spring member being secured by its rear portion to the rear end of the foundation member and extending forwardly thereover normally having its major portion in contact therewith.

3. In a flexible seat supporting structure, a seat, a pair of symmetrically formed springs each having a front elastic leg bowed rearwardly somewhat, a rear elastic leg bowed rearwardly to a greater extent than the front leg, the lower ends of the legs being interconnected by a spring bar normally sloping upwardly from the front to the rear leg, and a spring member under each bar having its major length normally horizontally disposed, said spring member being fixed in each instance by its forward end to near the forward end of said bar and disposed rearwardly thereunder.

4. In a flexible seat supporting structure, a seat, a pair of symmetrically formed springs each having a front elastic leg bowed rearwardly somewhat, a rear elastic leg bowed

rearwardly to a greater extent than the front leg, the lower ends of the legs being interconnected by a spring bar normally sloping upwardly from the front to the rear leg, and a spring member under each bar having its major length normally horizontally disposed, said spring member being fixed in each instance by its forward end to near the forward end of said bar and disposed rearwardly thereunder, and a horizontal foundation bar disposed in parallel arrangement under each spring member and engaging the spring member near its rear end.

5. In a flexible seat supporting structure, a seat, a pair of symmetrically formed springs each having a front elastic leg bowed rearwardly somewhat, a rear elastic leg bowed rearwardly to a greater extent than the front leg, the lower ends of the legs being interconnected by a spring bar normally sloping upwardly from the front to the rear leg, and a spring member under each bar having its major length normally horizontally disposed, said spring member being fixed in each instance by its forward end to near the forward end of said bar and disposed rearwardly thereunder, and a horizontal foundation bar disposed in parallel arrangement under each spring member and engaging the spring member near its rear end, said spring member having an upwardly extending portion toward its rear end to limit the backward movement of the rear leg.

6. In a flexible seat supporting structure, a seat, a pair of symmetrically formed springs each having a front elastic leg bowed rearwardly somewhat, a rear elastic leg bowed rearwardly to a greater extent than the front leg, the lower ends of the legs being interconnected by a spring bar normally sloping upwardly from the front to the rear leg, and a spring member under each bar having its major length normally horizontally disposed, said spring member being fixed in each instance by its forward end to near the forward end of said bar and disposed rearwardly thereunder, and a foundation bar disposed in parallel arrangement under each spring member and engaging the spring member near its rear end, said spring member having an upwardly extending portion toward its rear end, said extending portion being removed from the foundation member and the spring member being secured to the foundation member to either side of said portion.

In testimony whereof I affix my signature.

FELIX J. TRAINOR.