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L. J. ZERBEE

2,274,117

CHAIR

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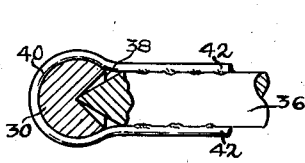


Fig. 2.

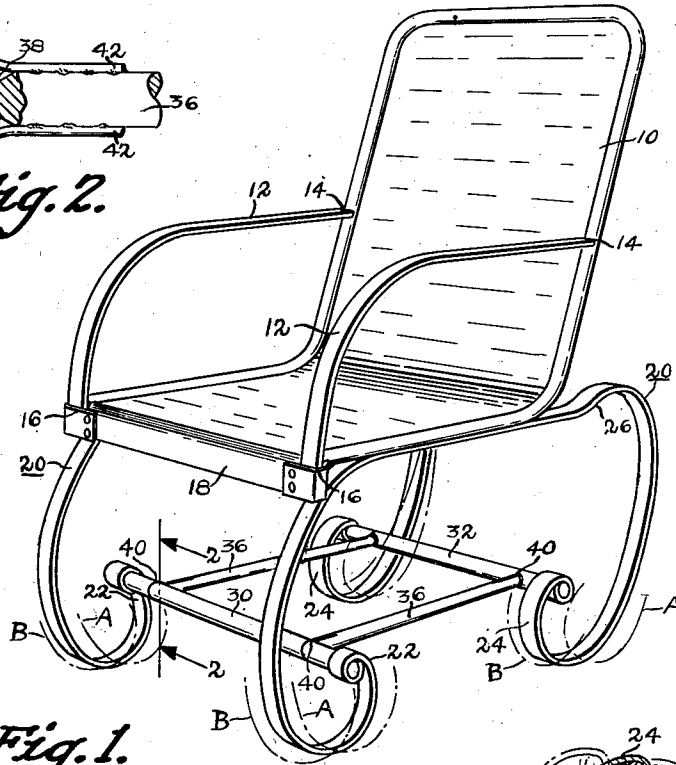


Fig. 1.

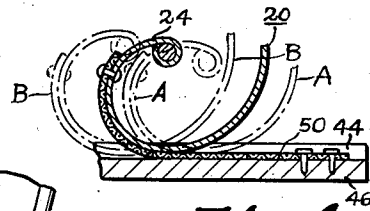


Fig. 4.

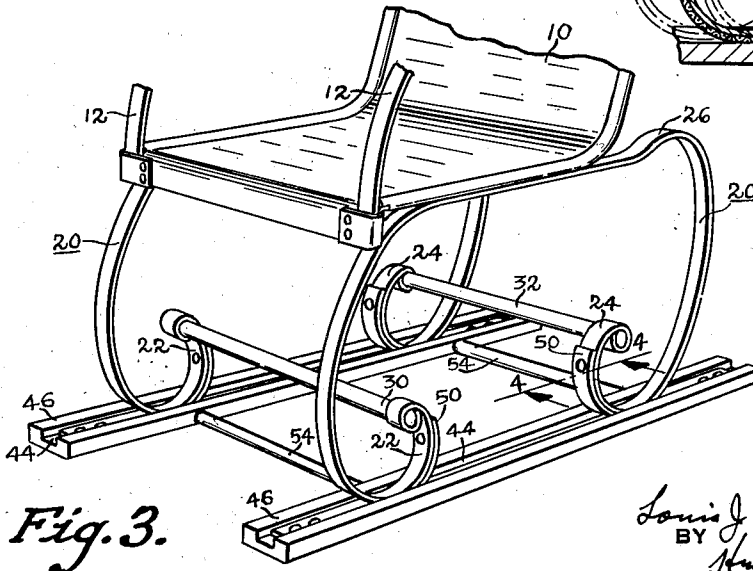


Fig. 3.

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2,274,117

CHAIR

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11 Claims. (Cl. 155—54)

This invention relates to a chair and more particularly to a chair of the spring base type.

It has been found that the resiliency of high carbon steel may be used to advantage in manufacturing chairs. One type is shown in my Patent No. 2,046,715 patented July 7, 1936. In this type of a chair a swinging or oscillating movement is produced by the yielding characteristic of the supporting members. This oscillation is very desirable and results in a very satisfactory chair for some purposes.

An object of this invention is to provide a chair that is cheap, easily produced from low cost material; but at the same time strong and comfortable.

Another object of this invention is to provide a spring assembly that has a rolling or oscillatory action upon the support for the chair.

Another object of this invention is to provide two pairs of springs having a rolling action upon the support, the springs being held in fixed spaced relation to each other.

Another object of this invention is to provide a resilient support for a chair that combines an oscillatory and a rolling action.

Another object of this invention is to provide two pairs of oscillators arranged in tandem.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

Fig. 1 discloses a perspective view.

Fig. 2 discloses an enlarged fragmentary sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 discloses a perspective view of a modification, with parts broken away.

Fig. 4 discloses a fragmentary sectional view taken substantially in the line 4—4 of Fig. 3.

In spring base chairs produced in the past, the movement simulates an oscillating movement where the springs yield in response to the force applied.

In the present embodiment this yielding movement has been utilized and in addition thereto, a movement simulating a rolling, a gliding or an oscillatory movement has been produced, that is, the springs have a rolling contact with the support for the chair, so that as the chair is used it combines the desirable features of a spring base chair with those of a rocking chair.

Referring to the drawing, the embodiment shown includes a unitary seat and back rest 10, provided with a marginal bead similar to the disclosure in my Patent No. 2,046,715. A pair of arm rests 12 have the rear ends attached to the

back rest at 14 and the forward ends attached at 16 to a downwardly projecting flange 18 extending along the forward edge of the seat. Any other type of a seat and back rest, either with or without arm rests, may be used within the purview of this invention.

This seat and back rest assembly is supported upon a pair of springs 20. The forward portion of each spring 20 is arched so as to project downwardly, curved rearwardly along the floor and projected upwardly at 22. The rear portion of each spring 20 is provided with an arched portion curved forwardly near the floor, projecting upwardly at 24. Immediately to the rear of the seat portion each spring 20 is deflected upwardly at 26, so that the radius of curvature of the rear portion may be greater and the arc longer than those of the forward portion. This results in the rearward portion of the chair responding more easily to a change in force than the forward portion of the chair. The downwardly projecting portions together with the floor engaging portions of the springs, simulate hyperbolic spirals, so that the chair is supported upon four legs having a shape simulating hyperbolic spirals.

A pair of rungs 30 and 32 are fixedly attached to the ends 22 and 24 respectively of the springs 20. The rungs 30 and 32 steady the chair, so as to reduce the tendency to sway to the sides. Side sway is an objectionable feature. The rungs 30 and 32 are preferably welded or otherwise secured to the ends of the springs 20.

As the chair is used, the construction of the springs 20 is such that the chair will oscillate on the lower ends of the springs 20. This produces much the same effect as is produced by a rolling or gliding chair or settee, a very desirable effect, pleasing to the occupant of the chair.

It has been found that this rolling action has a tendency to cause the lower ends of the chair to creep together, that is, shorten the distance between the forward end 22 of the spring and the rearward end 24. This creeping action is objectionable if not rectified, as there would be a tendency for the springs to jump or spring apart whenever the weight is removed from the chair. This undesirable creeping action has been overcome by a pair of spacers 36 arranged in parallel relation, extending from the forward rung 30 to the rear rung 32. The ends of the spacer 36 are pointed or tapered and seated in counterbores or conical shaped recesses 38, properly positioned in the rungs 30 and 32. By the point contact of the spacers 36 with the rungs 30 and 32 substantially at the center of the rungs 30

and 32, the relative movement between the spacers 36 and the rungs is very small. This construction has been adopted to prevent or eliminate squeaks and undesirable noises. Various other attempts were made to hold the rungs 30 and 32 apart; but the other attempts failed in that the construction was noisy.

The spacers 36 are held in alignment with the conical recesses 38 by a suitable band, strap or wire 40, having its ends attached at 42 to the spacer 36 by welding, or in any other suitable manner. The bight of member 40 encircles the rungs. This holds the spacers 36 in position when the chairs are tipped, moved and used. The band 40, however, does not come into contact with the rung when the chair is used, as the ends of the springs have a tendency to work toward each other, or if there is a contact, this contact is very slight and the friction between the parts is negligible, so as to be noiseless.

When a force is applied so as to push the seat rearwardly, the springs move into the position A, shown by dotted lines. When this force is released and the chair is permitted to move forwardly, the springs will oscillate or roll along the floor into the position B, shown by dotted lines. Thus, it is seen that in addition to the resiliency of the springs resulting in a very pleasing cushioning support, the chair also has a forward and aft rolling action, adding to the pleasing qualities of the chair.

In the modification disclosed in Figure 3, the spacers 36 and the construction associated therewith have been eliminated. Instead of spacers, the lower ends of the springs 20 are seated in grooves or races 44 in track members 46 extending along the floor. In order to prevent the forward end of the springs creeping rearwardly and the rearward end of the springs creeping forwardly, these springs are held in position by suitable flexible bands 50 made from fabric, rubber, or for that matter, metal. One end of each of the flexible bands 50 being connected near the top of the ends 22 or 24, as the case may be, of the springs 20, the opposite end of each flexible member 50 is attached near the end of the race 46. The springs roll the bands up and unroll the bands, or vice versa as the case may be, when the springs travel through a cycle. The tracks 46 may be held in spaced relation by a pair of rungs 54, extending from one track member to the other.

Although the preferred embodiment of the modification discloses a chair, this spring assembly may be used for gliders, settees, swings and the like.

Although the preferred modification of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts which generally stated consist in a device capable of carrying out the objects set forth, in the novel parts, combination of parts and mode of operation, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. In a chair or the like the combination including a seat portion, a base portion disposed intermediate the seat portion and the floor for supporting the seat portion attached thereto, said base portion including a pair of spring portions projecting downwardly from each side of the seat portion, said spring portions terminating in arcuate floor-engaging portions, the floor-engaging

portions being arranged in tandem on each side of the chair, spacer means including transversely disposed rungs extending from the arcuate portions on one side of the chair to corresponding arcuate portions on the other side, and longitudinally disposed spacer members extending between the rungs, each of said spacer members terminating in tapered ends seated in conical recesses in the rungs.

2. In a chair or the like the combination including a seat portion, a base portion disposed intermediate the seat portion and the floor, said base portion including a pair of spring portions attached to the seat portion and downwardly disposed on each side of the seat portion, said spring portions terminating in arcuate floor-engaging portions, the floor-engaging portions being arranged in tandem on each side of the chair, spacer means including transversely disposed rungs extending from the arcuate portions on one side to the corresponding arcuate portions on the other side, longitudinally disposed spacer members extending between the rungs, each of said spacer members terminating in tapered ends seated in conical recesses in the rungs, and bands attached to the spacer members and encircling the rungs for holding the spacer members in position.

3. A spring base chair or the like, the combination including a seat portion, a pair of springs attached to the seat portion, the forward end of each of the springs extending from near the front of the seat portion downwardly a distance approximately equal to the height of the seat, the rear end of each spring extending upwardly slightly but being deflected downwardly so as to cause the rear end of each spring to have a greater curvature than the front end of each spring, the lower portion of each end of each spring being curved so as to terminate in a reentrant portion and present a curved oscillating portion to the support of the chair, the relative positions of the arcuate floor contacting surfaces shifting substantially uniformly with respect to the seat portion as the chair is oscillated.

4. A spring base chair including a pair of curved springs and a seat mounted upon and attached to the springs, each of said springs having the ends downwardly disposed to form legs arranged in tandem standing upon a support for supporting the seat of the chair, the front legs being curved from the seat to the support so as to bulge forwardly and terminating in rearwardly and upwardly directed support engaging portions, the rear legs being curved from the seat to the support so as to bulge rearwardly, said legs being oscillatory upon the support when in use.

5. In a chair of the spring base type, the combination including a seat portion, a back rest portion and a supporting base for the seat portion, said base including a pair of curved spring members each having the ends deflected downwardly from the seat portion so as to form a front leg and a rear leg, the front legs curving forwardly and downwardly from the seat, the curvature increasing towards the floor support engaging portion of the chair so as to cause the legs to curve rearwardly and upwardly near the floor support engaging portion, the radius of curvature of the legs adjacent the floor support engaging portion being less than the radius of curvature of the legs intermediate the seat and the support, the rear legs curving downwardly and rearwardly from the seat portion terminating in a forwardly and upwardly curved portion near the floor support,

the radius of curvature of the rear legs being less near the floor support engaging portion than the portion extending between the seat and the floor support engaging portion.

6. A spring base chair including a pair of curved springs, a seat mounted upon and attached to the springs, each of said springs having the ends downwardly disposed to form legs arranged in tandem standing upon a support for supporting the seat of the chair, the front legs being curved from the seat to the support so as to bulge forwardly and terminating in rearwardly and upwardly directed support engaging portions, the rear legs being curved from the seat to the base so as to bulge rearwardly, said legs being oscillatory upon the support when in use, and separate means for holding the lower ends of the legs in fixed spaced relation relative to each other.

7. In a chair or the like, the combination including a seat portion, a base portion attached to the seat portion, said base portion constituting arcuate springs projecting downwardly from the seat portion and terminating in arcuate portions constituting oscillatory members supporting a chair, the entire downwardly projecting portions being curved so that the front legs bulge forwardly and the rear legs bulge rearwardly, said legs oscillating upon the floor when in use, and separate means for holding the ends of the legs in fixed spaced relation from each other.

8. In a chair or the like, the combination including a seat portion, a base portion constituting four arcuate spring supports curving downwardly continuously from the seat portion to the floor and terminating in arcuate floor engaging portions, the front legs having the bulge extending

forwardly and the rear legs having the bulge extending rearwardly, said legs forming oscillatory supports for the chair.

9. In a chair or the like, the combination including a seat portion, a base portion disposed intermediate the seat portion and the floor, said base portion including a pair of arcuate spring portions attached to the seat portion and extending downwardly from each side of the seat portion, the spring portions upon opposite sides bulging outwardly in opposite directions, said spring portions terminating in arcuate floor engaging portions arranged in tandem on each side of the chair, and spacer means for interconnecting the arcuate floor engaging portions.

10. In a chair or the like, the combination including a seat portion, a base portion, disposed intermediate the seat portion and the floor, said base portion including a plurality of arcuate spring legs extending substantially from the seat portion to the floor, each simulating a hyperbolic spiral with the greatest curvature near the bottom of the legs, said spring legs constituting oscillatory supports for the chair.

11. In a chair or the like, the combination including a seat portion, a base portion disposed intermediate the seat portion and the floor, said base portion including a pair of front legs and a pair of rear legs, each of the legs having a curvature simulating a hyperbolic spiral extending from the seat portion to the floor with the greatest curvature thereof near the floor, and means for holding the lower ends of the legs in fixed spaced relation relative to each other, said legs forming oscillatory supports for the chair.

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