Aug. 2, 1966 H. S. HUNT ETAL 3,263,955

UNDERCARRIAGE FOR A ROCKING CHAIR

Original Filed Sept. 22, 1960 2 Sheets-Sheet 1

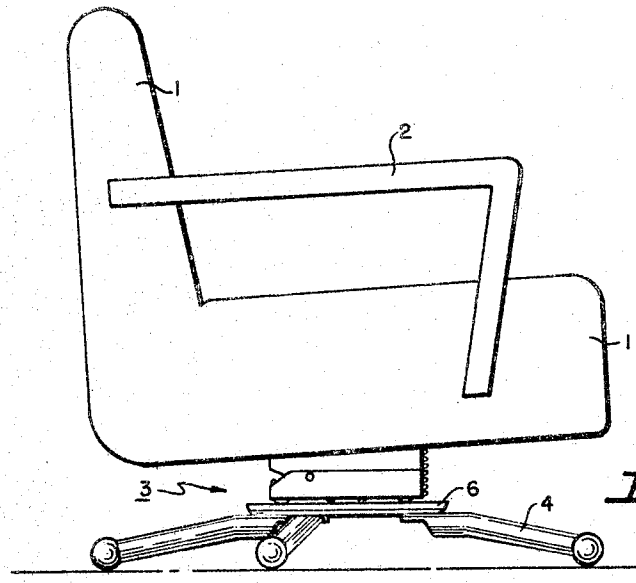


FIG. 1

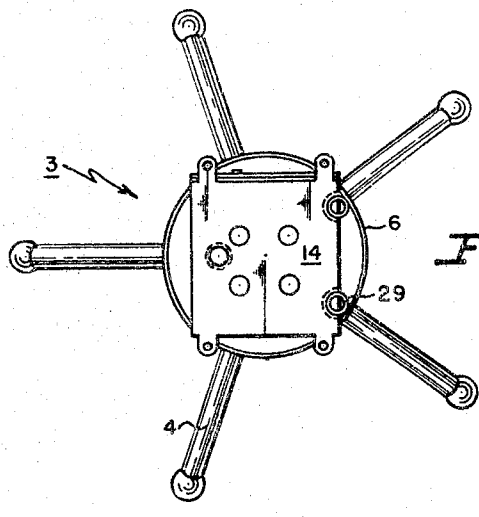


FIG. 2

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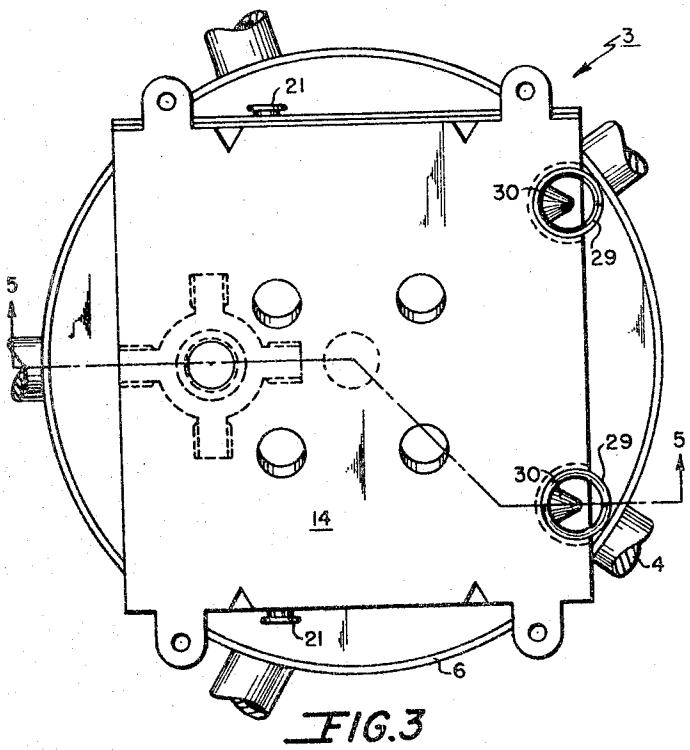


FIG. 3

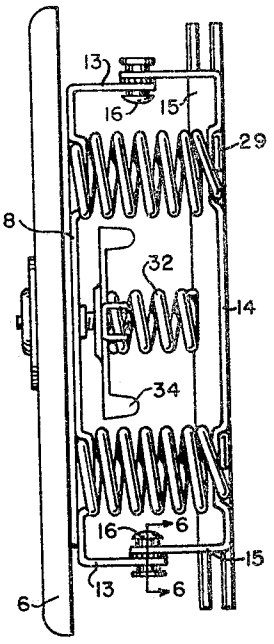


FIG. 4

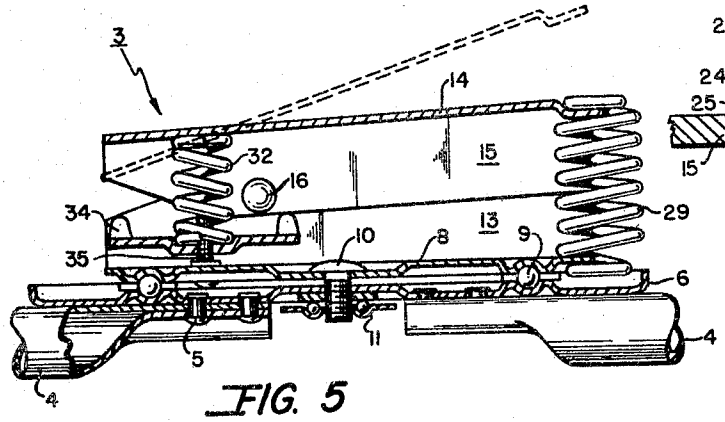


FIG. 5

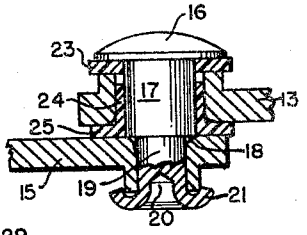


FIG. 6

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United States Patent Office 3,263,955 Patented August 2, 1966

3,263,955

UNDERCARRIAGE FOR A ROCKING CHAIR

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Continuation of application Ser. No. 379,431, June 22, 1964, which is a continuation of application Ser. No. 282,188, Apr. 22, 1963, which is a continuation of application Ser. No. 58,608, Sept. 22, 1960. This application Sept. 30, 1965, Ser. No. 491,783

19 Claims. (Cl. 248—385)

This application is a continuation of our application S.N. 379,431, filed June 22, 1964, now abandoned, which is a continuation of our now abandoned application S.N. 282,188, filed April 22, 1963, which is a continuation of our now abandoned application S.N. 58,608, filed September 22, 1960.

Rocking chairs of various types have heretofore been proposed. These types include the spring-supported, rocker-supported and pivot-supported types. The pivot-supported type normally comprises: (1) a base member; (2) a horizontal rocker member or plate spaced upwardly from the base member; (3) means mounting the rocker member on the base member for relative forward-backward rocking movement about a transversely extending horizontal rocking axis which is located in a vertical plane passing transversely through the center of the rocker member; and (4) front and rear compression springs vertically interposed between the rocker member and the base member on the front and rear sides of said axis to cushion the rocking movement in both directions by compression.

So far as we know, a commercially satisfactory rocking chair of the foregoing pivot-supported type has not heretofore been achieved. It has been our experience that when the undercarriage is made vertically compact, the vertical spacing of the rocker plate from the base is too small to permit a satisfactory degree or amout of rocking action. On the other hand, when this spacing was increased to the degree necessary to get a satisfactory amount of rocking action, we were unable to provide the somewhat bulky result with a satisfactory spring arrangement.

The principal objects of our invention are: to provide a compact and commercially satisfactory rocking chair undercarriage of the pivot-supported type, which is of a simple compact design providing a highly satisfactory degree of rocking movement; to provide one which may be easily and inexpensively manufactured; and to provide one which may be easily and quickly incorporated in a rocking chair and which, when incorporated in a rocking chair, provides that chair with a soft, relatively free, yieldable rocking motion in both directions from a neutral position, and renders it useful as a rocker for children and for adults over a wide range of weights.

Another important object of the present invention is to provide an undercarriage with a simple adjustable mechanism which renders the chair useful as a rocker for adults of a wide range of heavy weights.

The principal objects of our invention are achieved by using a rearwardly offset pivot in combination with double action front springs. For example, where the undercarriage is vertically compact so that the vertical spacing between the rocker member and the base member is too small to provide a satisfactory amount of rocking action about a centrally disposed pivot, we have found: (1) that the amount of rocking action can be increased by offsetting the pivot axis rearwardly from the vertical center plane of the rocker member; and (2) that, by properly correlating the degree of offset with the amount of vertical spacing, one can increase the amount of rocking action to a satisfactory level. Furthermore, when the undercarriage is incorporated in a rocking chair, the rearward offset of the pivot axis not only reduces the possibility of that chair turning over backwardly but also facilitates the use of double action front springs, which provide a soft relatively-free yieldable rocking motion for children and adults over a wide range of weight. By "double action" springs, we mean springs which, on one side of a neutral position, act in tension and, on the opposite side of that neutral position, act in compression. Thus, double action front springs operate, at the front end of the undercarriage, (a) to cushion at least the extreme portion of the forward rocking movement by compression and (b) to cushion at least the extreme portion of the backward rocking movement by tension.

More specifically, objects of this invention may be attained by a device including a rocker member with front and rear ends, a base member, means mounting the rocker member on the base member for identically-repetitive rocking movement of both ends of the rocker member through respective paths during each oscillation forwardly and rearwardly through a neutral position about a rearwardly offset horizontal axis, and front spring means interconnecting the rocker member and the base member adjacent the front ends thereof to resist by tension at least the extreme portion of the rocking movement of the rocker member in one direction (backward) from the neutral position and to resist by compression at least the extreme portion of the rocking movement of the rocker member in the opposite direction (forward) from the neutral position.

Other objects of this invention are achieved, in accordance with our invention, by using an adjustable rear compression spring. The rearward offset of the pivot axis reduces the vertical travel or the amount of rocking movement of the rear end of the rocker member and thus facilitates the use thereat of a short compression spring to cushion at least a portion of the backward rocking movement by compression. A short rear compression spring cooperates with the front spring means not only to render the chair useful for adults over a wide range of heavy weights but also to maintain a soft relatively-free yieldable rocking motion. The rear spring adjustment feature enables its resistance to further compression to be increased to still higher levels and thereby provide a corresponding increase in the range of heavy weights which can be accommodated by a rocking chair equipped with this undercarriage.

An embodiment of our invention is illustrated in the accompanying drawings wherein:

FIGURE 1 is a side elevational view of a swiveled rocking chair constructed in accordance with our invention;

FIGURE 2 is a top plan view of the undercarriage of the chair shown in FIGURE 1;

FIGURE 3 is an enlarged top plan view of FIGURE 2 with the legs of the base broken away;

FIGURE 4 is an elevational view of the right side of the undercarriage of FIGURE 3;

FIGURE 5 is a vertical section taken on line 5—5 of FIGURE 3; and

FIGURE 6 is an enlarged section taken on line 6—6 of FIGURE 4.

Our invention, which is illustrated as applied to swiveled rocking chairs, is suited for use also with non-swiveled chairs. The swiveled rocking chair shown in FIGURE 1 conventionally includes a rigid seat-backrest unit 1 having an arm rest 2. This conventional unit is supported by an integrated metal undercarriage 3 which is constructed in accordance with our invention.

UNDERCARRIAGE

The undercarriage 3 supports the unit 1 for rotational movement about a central vertical axis and for rocking

movement about a rearwardly offset horizontal axis. The undercarriage includes: a support; a swivel mounted on the support for rotation about a vertical axis; a rocker member or plate; means mounting the rocker member on the swivel for rotation therewith and for rocking movement relative thereto; and spring means controlling the rocking movement of said rocker member.

Support

The support comprises a radial series of outwardly declined legs **4**, the inner ends of which are rigidly secured, by rivets **5**, to a rigid center plate **6**.

Swivel

The swivel, which is mounted on the support, conventionally includes: the center plate **6** of the support as the lower stationary plate of the swivel; an upper or top rotary base member or swivel plate **8**; means providing plate **6** and base member **8** with corresponding annular ball bearing races containing ball bearings **9** which space the plate **6** and base member **8** apart and provide a rolling bearing means between them; and means operatively connecting the plate **6** and base member **8** together for relative rotation about a fixed vertical axis.

The center plate **6** and the base member **8** are connected by means including: a center bolt **10** having a head at its upper end abutting the top of the base member **8**, an adjacent square shank portion seating in a corresponding square hole in the base member **8**, and a threaded lower or bottom end portion; and a small thrust bearing **11** threaded to the lower end of the bolt **10** and seating against the bottom face of the center plate **6**. This thrust bearing provides an anti-friction bearing means between the bolt and the plate **6** and functions cooperatively with the bolt to press the base member **8** and plate **6** together with a clamping force, which may be adjusted by adjusting the position of the thrust bearing **11** on the threaded end of bolt **10**.

Rocker member

The rocker member **14** is spaced vertically a desired distance from the base member **8**. This spacing should be minimized to promote compactness. The preferred spacing is, therefore, too small to permit the requisite degree of relative rocking movement when a centrally disposed rocker member pivot axis is used. The rocker member also contains suitable apertures to receive the screws used in securing it to the rigid seat-backrest unit **1**.

Pivotal mounting means

The rocker member **14** is pivotally mounted on the base member **8** for rotation with the base member **8** of the swivel and for forward-backward rocking movement relative to the base member **8** of the swivel. To facilitate the vertical spacing of the rocker member from and its pivotal mounting on the base member **8**, the side margins of each of the members **8** and **14** are bent toward the other member to form two pairs of adjacent side flanges, one pair of adjacent flanges at each side of the undercarriage, each pair consisting of one upstanding and one depending flange which are close enough to each other for pivotal interconnection.

Accordingly, the side margins of the base member **8** are bent upwardly to form upstanding side flanges **13** while the corresponding side margins of the rocker member **14** are bent downwardly to form depending side flanges **15**. In other words, both members are channel-shaped and the channel-shaped rocker member **14** is inverted over the channel-shaped base member **8** so that their adjacent flanges may be pivoted together.

As illustrated, the respective flanges **13** and **15** on each side of the member **8** and **14** are pivoted together, on a rearwardly offset axis, by rivets **16**. The rivets **16** are axially aligned with each other on the rearwardly offset axis about which the rocker member **14** rocks. The rocker member **14** is mechanically constrained through the flanges **15** and rivets **16** for identically-repetitive rocking movement relative to the base member **8** so that each of the respective ends of the rocker member **14** moves about the rearwardly offset axis as defined by the rivets **16**. It is to be understood, however, that various mechanically equivalent means may be utilized, other than the flanges **13** and **15** and rivets **16**, to mount the rocker member **14** on the base member **8** so that both ends of the rocker member **14** move relative to the base member **8** through respective identically-repetitive paths during successive oscillations forwardly and rearwardly through the neutral position (shown in FIGURE 5 and more fully discussed hereinafter) about the rearwardly offset horizontal axis, which is defined in the illustrated embodiment by the rivets **16**. The axis, as defined by the rivets **16** in the illustrated embodiment, is rearwardly offset, from the vertical center plane of the rocker member, a distance ranging from about 30% to about 40% of the distance between that plane and the rear end of the rocker member. It should be noted (in FIGURE 4) that the spacing between the two upright side flanges **13** equals the spacing between the two depending side flanges **15** so that when the two pairs of flanges are overlapped, both of the upper flanges **15** are offset in the same direction from their respective lower flanges **13**. This arrangement allows both pairs of flanges **13** and **15** to be bent or shaped on the same die.

It is highly desirable that the rocking action of the chair be noiseless. A relatively noiseless action may be achieved by using nylon or some other suitable plastic material to insulate all stationary metal surfaces of the pivotal mounting from each adjacent relatively movable rubbing surface. This is accomplished in each pivotal mounting structure shown in FIGURE 6 by rigidly connecting the rivet **16** to one side flange while insulating the other side flange from the rivet and from the adjacent flange through the agency of a nylon bushing or sleeve and pair of nylon washers, one at each end of the bushing.

A rivet **16** of the shoulder type is particularly suited for use in providing a pivotal structure involving a rigid connection to one part or flange **15** and a movable insulated connection to the other part or flange **13**. Such a rivet **16** comprises: a head; and a stem which is stepped intermediate its ends to provide a head end portion **17** of one diameter, extending axially from the head **16** and terminating in an annular shoulder **18**, and a free end portion **19** of relatively reduced diameter, extending axially from the annular shoulder **18** to the free end of the stem which contains an end opening **20** to facilitate the conventional peening or rolling of the free end of the rivet to form a securing bead or flange **21**. With a shoulder rivet, the movable insulated connection to one flange **13** is made around the large head end portion **17** of the rivet while the rigid connection to the other flange **15** is made on the reduced free end portion **19** of the rivet, this particular flange being gripped or clamped rigidly between the annular shoulder **18** and the securing flange **21**.

Accordingly, the movably connected side flanges **13** must be provided with a pivotal receiving opening large enough to accommodate the head end portion **17** of the rivet and the means for insulating that portion from the respective flanges while the rigidly connected side flanges **15** must be provided with a pivotal opening dimensioned to fit the slender free end portion **19** of the rivet very snugly. Both of these side flanges preferably have their pivotal openings axially flanged to provide a larger and better bearing surface.

With the foregoing in mind, each pivotal mounting may be effected by threading the parts together in the appropriate order and then riveting the appropriate side flange on the slender or reduced free end portion of the rivet. The threading operation for the pivotal connection shown in FIGURE 6 and at the bottom of FIGURE 4

is performed by threading the rivet **16** successively through a nylon washer **23**, a nylon sleeve or bushing **24** lining the large pivot opening of upright side flange **13**, a nylon washer **25** and the small pivot opening in depending side flange **15**. The movable and rigid connections of rivet **16** at the bottom of FIGURE 4 are reversed at the top of that figure but only because it is easier to peen the rivet on the outside of side flanges. A nylon sleeve liner **24** and nylon washer **25** may be provided by a flanged bushing as shown rather than as separate parts.

Spring means

In further accordance with our invention, the rocking movement of the upper rocker member **14** on the base member **8** is controlled by a spring means including: double acting front spring means located between and anchored to the front end portions of the rocker member **14** and the base member **8** and operative to resist or cushion by tension at least the extreme portion of the backward rocking movement of the rocker member **14** from the neutral position and to resist or cushion by compression at least the extreme portion of the forward rocking movement of the rocker member **14** from the neutral position. The double action front spring means interconnects the rocker member **14** and the base member **8** on the side opposite the transverse vertical plane passing through the mid-portion of the rocker member **14** from the transverse axis defined by the rivets **16**. Preferably the spring means also includes: rear spring means located between the rear end portions of the rocker member **14** and the base member **8** and freely separable from at least one of the members **8** and **14**, said rear spring means being operative to resist at least the extreme portion of the backward rocking movement of the rocker member **14** by compression and being inoperative to resist the forward rocking movement of the rocker member **14**; and means for adjusting the compression of the rear spring means. That is to say, the rear spring means is operatively disposed between the rocking member **14** and the base member **8** on the side opposite the transverse axis defined by the rivets **16** from the transverse vertical plane passing through the mid-portion of the rocker member **14** to cushion or resist a portion, or all, depending upon the adjustment, of the rearward rocking movement of the rocker member **14** from the neutral position.

Double acting front spring means

The front spring means comprises a pair of integral double action normally open coil springs **29** connected between and rigidly or firmly anchored to the front edges of both the upper rocker member **14** and the base member **8**. The anchorage of each spring **29** to each respective member is accomplished by inserting the front edge of the member between the last two spring coils, at one end of the spring, and bending a tongue **30**, previously formed in the member during its manufacture, outwardly to abut the inside of the last spring coil and hold it against slipping out of its position on the member. This same type of anchorage is provided at both ends of both springs **29**. The double anchorage renders the spring double acting.

The front springs **29** are selected so that, when relaxed or in equilibrium, they will maintain or hold the upper rocker member **14** substantially in the neutral position shown in full lines in FIGURE 5. When the upper rocker member **14** is rocked backward, as shown in dotted lines in FIGURE 5, its front edge rises and places the springs **29** in tension. The tension resistance of the springs progressively increases as the member **14** rocks backward. The rocking of the member **14** forward from its neutral position lowers the front edge of the member **14** and places the front springs **29** in compression and this compressive resistance of the springs progressively increases as the member **14** is rocked forward farther. Hence, the maximum resistance applied by the springs **29** to the member **14** will be at the extreme limits of its rocking movement in both directions.

Single acting rear spring means

The rear spring means simply constitutes a single coil spring **32** placed between the rear end portions of the rocker member **14** and the base member **8**, a short distance rearwardly of the common rocking axis provided by the rivets **16**. In the preferred embodiment shown, the spring **32** is not anchored to the upper rocker member **14**, but is separable from it, so that when the rocker member **14** is rocked forward from its neutral position, its rear end tends to (but does not necessarily) lift off the spring **32**, rather than placing it in tension. Hence, the spring **32** offers no resistance to forward rocking movement of the upper rocker member **14**, but rather resists or cushions some portion of the rearward rocking movement of rocker member **14**. Also, the rear spring means is disposed closer to the transverse axis defined by the rivets **16** than the front spring means.

Rear spring adjustment means

The rear spring adjustment means includes an adjusting member **34** which is located within the rear end portion of the box chamber and is interposed between spring **32** and base member **8** where it is accessible for adjustment through the rear access opening of the box. The bottom of the rear spring **32** sits in a cup-shaped nut **34** which is threaded on a vertical stud **35** projecting upwardly from the base member **8**, adjacent its rear end. Screwing the nut **34** upwardly and downwardly simply raises and lowers the elevation of the rear spring as a whole and thereby increases and decreases, or selectively changes, the resistance offered by the rear spring **32** to backward rocking movement of the upper rocker member **14**. It also will tend to change the neutral position of the upper rocker member **14** slightly. Normally, the nut **34** is screwed upwardly at least far enough to hold the top of the rear spring **32** snugly (at least lightly) against the rocker member **14** in all of its positions but the nut **34** may also be screwed downwardly far enough so that the top of the rear spring **32** is in spaced relation to the rocker member **14** so that the rear spring **32** does not resist the initial rearward rocking movement of the rocker member **14** from the neutral position. That is to say, the rear spring **32** resists or cushions at least a portion of the rearward rocking movement, the portion of rearward rocking movement resisted by the rear spring **32** depending upon the length of the spring **32** and the adjustment of the nut **34**. The front spring means normally holds the rocker member **14** in the neutral position illustrated in solid lines in FIGURE 5. When the rear spring means is adjusted so that the rear spring **32** applies no force to the rocker member **14** in the neutral position, the front spring means (springs **29**) is neither in compression nor tension in the neutral position so that the front spring means resists by compression rocking movement of the rocker member **14** on a first side (forward) of the neutral position and resists by tension rocking movement of the rocker member **14** on the second side (rearward) of the neutral position. And, regardless of the adjustment of the rear spring means, the front spring means resists by compression at least the extreme portion of forward rocking movement of the rocker member **14** and resists by tension at least the extreme rearward rocking movement of the rocker member **14**. Likewise, the rear spring means resists at least the extreme rearward rocking movement of the rocker member **14** regardless of the adjustment thereof.

Obviously also one may vary the number of springs used, e.g., using one single or integral double action normally-open coil spring **29** at the front instead of the two shown or two single action springs at the rear instead of the one shown. Furthermore, in the smaller chairs made to accommodate lighter weights, the single action spring at the rear may be entirely omitted.

SUMMARY

It will be appreciated that the base member **8**, the rocker member **14** and the elements associated therewith provide a rocker assembly for the undercarriage of rocking chairs and the like comprising: a rocker box having front and rear ends, a vertical center plane passing transvesely through the box substantially midway between its ends, a horizontal base member **8**, a horizontal rocker member **14** cooperating with the base member **8** to form a box chamber extending from one end of the box to the other and an access opening for the rear end portion of the box chamber, and means **13**, **15** and **16** at opposite sides of the box chamber pivotally mounting the rocker member **14** on the base member **8** for relative forward-backward rocking movement about a transversely extending horizontal rocking axis, corresponding to the transverse center of pivot **16**, which axis is spaced a substantial distance forwardly from the rear end of the box and offset a substantial distance rearwardly from the vertical center plane; double action spring means **29** located at the front end portion of said box chamber where it is not only spaced forwardly from said vertical center plane a distance substantially greater than the offset spacing of said rocking axis from the plane, and vertically arranged between members **8** and **14**, but is also anchored to both members **8** and **14** so as to be operative to resist or cushion at least the extreme portion of the forward rocking movement by compression and at least the extreme portion of the backward rocking movement by tension.

In its broadest aspects, therefore, the instant invention provides a device for a rocking chair and includes a base member, a rocker member having first and second ends, means operatively interconnecting the base member and the rocker member for allowing identically-repetitive oscillatory rocking movement of the rocker member relative to the base member on either side of a neutral position so that the first and second ends of the rocker member respectively move about a transverse axis disposed between a plane passing transversely through the mid-portion of the rocker member and the first end of the rocker member, and spring means interconnecting the rocker member and the base member on the side opposite the plane passing transversely through the mid-portion of the rocker member from the transverse axis for normally holding the rocker member in the neutral position and for resisting by compression rocking movement of the rocker member on one side of the neutral position and for resisting by tension rocking movement of the rocker member on the opposite side of the neutral position.

While this arrangement uses only one set of springs, it has the advantage of cushioning or resisting movement in both directions. It has another important advantage in that its pivotal axis is located sufficiently rearward as to render it extremely difficult to rock the chair backwardly to a dangerous degree. While some of the advantages which it possesses from a manufacturing standpoint are believed to be obvious, one particular advantage which is not so obvious resides in its flexibility. This design is flexible because it is particularly suited for use by children and adults in the lighter weight classes and it can be readily suited for use by adults of the heavier weight classes.

To suit it for use by adults of the heavier weight classes, it is only necessary to add the single action spring means **32**. This means is located on the rear side of the rocking axis where it is operative to resist or cushion at least the extreme portion of the backward rocking movement by compression but is inoperative to resist the forward rocking movement by tension. Since the transverse pivot axis is rearwardly offset, the single action spring means is located much closer to the transverse pivot axis than is the double acting front spring means. As a result, the short leverage extending from that axis to the rear spring renders it doubly effective in preventing backward rocking movement to a dangerous degree.

Furthermore, it is possible to extend comfortable and safe use of the invention by adults over a wide range of weights by providing adjustment means for adjusting the maximum compression of the rear single action spring means.

We have gotten excellent results with a rocker box constructed in accordance with the embodiment of the invention illustrated in FIGURES 1 through 6, which comprises: top and bottom members, each approximately 7¾" long from front to rear and 7½" wide and each having its pivotal axis offset 1⅜" rearwardly from a vertical plane passing transversely through the center of these members and spaced 2½" forwardly from the rear end of the members and 1.0" downwardly from the ceiling of the rocker member and upwardly from the floor of the base member, the base member having a vertical axis of swivel rotation which is spaced 1¼" forwardly from the pivotal axis, 3¾" from the rear end of the base member and 4" from the front thereof. Accordingly, by the term "vertical center plane" of the rocker box (or of the rocker member), we mean a vertical plane passing transversely through the mid-portion of the rocker box (or of the rocker member) so as to be in the vicinity of one or the other or both of the two vertical planes which pass transversely through the mid portion of the box, one going through the center of both members (or of the rocker member) and the other going through the axis of swivel rotation.

The invention has been described in an illustrative manner and it is to be understood that the terminology which has been used is intended to be in the nature of words of description rather than of limitation.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

Having described our invention, we claim:

1. A rocker assembly for the undercarriage of rocking chairs and the like, comprising:

a base member;

a horizontal rocker member having first and second ends and positioned over and spaced upwardly from said base member;

means mounting said rocker member on said base member for relative forward-backward rocking movement of both of said first and second ends of said rocker member

about a transversely-extending horizontal rocking axis,

which is offset a substantial distance rearwardly from a vertical center plane passing transversely through the mid-portion of said rocker member; and

double action spring means other than said first-named means

located on the front side of said rocking axis, vertically arranged between the rocker member and the base member, and

secured to both so as to be operative to cushion at least the extreme portion

of the forward rocking movement by compression and of the backward rocking movement by tension.

2. The rocker assembly of claim **1** wherein: said double action spring means comprises at least one normally open ended coil spring.

3. The rocker assembly of claim **1** including:

single action spring means located on the rear side of said rocking axis,

vertically arranged between the rocker member and the base member, and

secured to one of said rocker-member and base-member parts to resist at least the extreme portion of the backward rocking movement by compression without cushioning the forward rocking movement.

4. The rocker assembly of claim 3 including:
means for adjusting the resistance of said single action spring means to compression,
said means including an adjusting member which is located between said single action spring means and one of said rocker-member and base-member parts and
which is accessible for adjustment at the rear end portion of the space between said parts.

5. A rocker assembly for the undercarriage of rocking chairs and the like, comprising:
a base member;
a horizontal rocker member having first and second ends and positioned over and spaced upwardly from said base member;
means mounting said rocker member on said base member for relative forward-backward rocking movement of both of said first and second ends of said rocker member about a fixed transversely-extending horizontal rocking axis,
which is offset a substantial distance rearwardly from a vertical center plane passing transversely through the mid-portion of said rocker member; and
double action spring means
located on the front side of said rocking axis, vertically arranged between the rocker member and the base member, and
secured to both so as to be operative to cushion at least the extreme portion of the forward rocking movement by compression and of the backward rocking movement by tension.

6. An integrated metal undercarriage of the type suited for use in mounting the rocker member of a rocking chair on the base member thereof for rocking movement, comprising:
a metal base member having front and rear ends;
a metal rocker member having front and rear ends, said rocker member being positioned over and spaced upwardly from said base member;
means mounting said rocker member on said base member and mechanically-constraining said rocker member for identically-repetitive rocking movement relative to said base member forwardly and rearwardly through a neutral position so that said front and rear ends of said rocker member each respectively move about a transversely-extending horizontal rocking axis which, in said neutral position, is offset from a vertical center plane passing transversely through the mid-portion of said rocker member a rearward distance sufficient to provide a substantial rocking movement in both directions from said neutral position and
an integral double action spring located on the front side of said rocking axis, and vertically arranged between the rocker member and the base meber, and
rigidly secured at its upper end to the front end portion of the rocker member and at its lower end to the underlying front end portion of the base member so as to be operative
to hold the rocker member yieldably in said neutral position, and
to resist at least the extreme portions of the rocking movement in the forward direction by compression and in the rearward direction by tension.

7. The undercarriage of claim 6 wherein: said double action spring is in the form of a normally-open coil spring.

8. The undercarriage of claim 6 wherein: said rocking axis is fixed.

9. A rocker assembly for the undercarriage of rocking chairs and the like comprising:
a base member,
a rocker member having first and second ends,
means operatively interconnecting said base member and said rocker member for allowing identically repetitive oscillatory rocking movement of said rocker member relative to said base member on either side of a neutral position so that said first and second ends of said rocker member respectively move about a transverse axis disposed between a plane passing transversely through the mid-portion of said rocker member and said first end of said rocker member, and
spring means interconnecting said rocker member and said base member on the side opposite said plane from said transverse axis for normally holding said rocker member in said neutral position and for resisting by compression rocking movement of said rocking member on a first side of said neutral position and for resisting by tension rocking movement of said rocking member on the second side of said neutral position.

10. The assembly as set forth in claim 9 including second spring means operatively disposed between said rocking member and said base member on the side opposite said axis from said plane to resist at least the extreme portion of said rocking movement of said rocker member on said second side of said neutral position.

11. The assembly as set forth in claim 10 including an adjustment means operatively connected to said second spring means for selectively changing the resistance offered by said second spring means to said rocking movement on said second side of said neutral position.

12. The assembly as set forth in claim 10 wherein said second spring means is disposed nearer to said transverse axis than said first-mentioned spring means.

13. An undercarriage for a swiveled rocking chair comprising;
a support,
a base member operatively connected to said support for rotation relative thereto about a vertical axis,
a rocker member having first and second ends,
means operatively interconnecting said rocker member and said base member so that said rocker member rotates about said vertical axis with said base member and for allowing identically-repetitive oscillatory rocking movement of said rocker member relative to said base member on either side of a neutral position so that said first and second ends of said rocker member respectively move about a transversely extending horizontal axis disposed between a plane passing transversely through the mid-portion of said rocker member and said first end of said rocker member, and
spring means interconnecting said rocker member and said base member on the side opposite said plane from said transverse axis for normally holding said rocker member in said neutral position and for resisting by compression rocking movement of said rocker member on a first side of said neutral position and for resisting by tension rocking movement of said rocker member on the second side of said neutral position.

14. A rocker assembly for the undercarriage of rocking chairs and the like comprising:
a base member;
a rocker member having first and second ends;
means operatively interconnecting said base member and said rocker member for allowing identically repetitive oscillatory rocking movement of said rocker member relative to said base member on either side of a neutral position so that said first and second ends of said rocker member respectively move about a transverse axis disposed between said first end of said rocker member and a plane passing transversely through the mid-portion of said rocker member; and
spring means operatively connected between said base member and rocker member for resisting rocking movement of said rocking member from said neutral position.

15. A rocker assembly for the undercarriage of rocking chairs and the like comprising:
a base member having first and second ends,
a rocker member,
means operatively interconnecting said base member and said rocker member for allowing identically repetitive oscillatory rocking movement of said rocker member relative to said base member on either side of a neutral position so that said first and second ends of said rocker member respectively move about a transverse axis disposed between said first end of said base member and a plane passing transversely through the mid-portion of said base member, and
spring means operatively connected between said base member and rocker member for resisting rocking movement of said rocking member from said neutral position.

16. A rocker assembly for the undercarriage of rocking chairs and the like comprising:
a base member,
a rocker member having first and second ends,
means operatively interconnecting said base member and said rocker member for allowing identically repetitive oscillatory rocking movement of said rocker member relative to said base member on either side of a neutral position so that said first and second ends of said rocker member respectively move about a transverse axis which is always disposed between said first end of said rocker member and a plane passing transversely through the mid-portion of said rocker member, and
spring means operatively connected between said base member and rocker member for resisting rocking movement of said rocking member from said neutral position.

17. A rocker assembly for the undercarriage of rocking chairs and the like comprising:
a base member having first and second ends,
a rocker member having first and second ends,
means operatively interconnecting said base member and said rocker member for allowing identically repetitive oscillatory rocking movement of said rocker member relative to said base member on either side of a neutral position so that said first and second ends of said rocker member respectively move about

a transverse axis disposed between said first end of one of said members and a plane passing transversely through the midportion of one of said members, and
spring means operatively connected between said base member and rocker member for resisting rocking movement of said rocking member from said neutral position.

18. A rocker assembly for the undercarriage of rocking chairs and the like comprising:
a base member,
a rocker member having first and second ends,
means operatively interconnecting said base member and said rocker member for allowing identically repetitive oscillatory rocking movement of said rocker member relative to said base member to a greater degree on one side of a neutral position than the other, and
spring means operatively connected between said base member and rocker member for resisting rocking movement of said rocking member from said neutral position.

19. The rocker assembly defined in claim 17 wherein said axis is fixed relative to said base member and said rocker member.

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