Aug. 22, 1967 J. A. BENZING 3,337,265

CHAIR CONSTRUCTION

Filed March 4, 1965 2 Sheets-Sheet 1

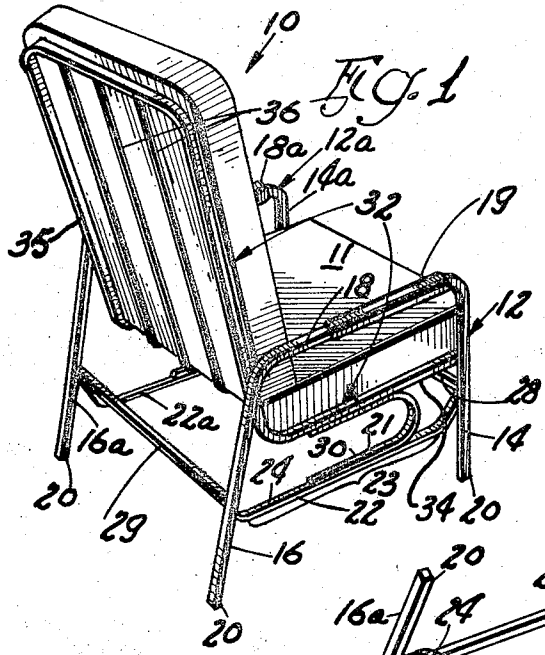


Fig. 1

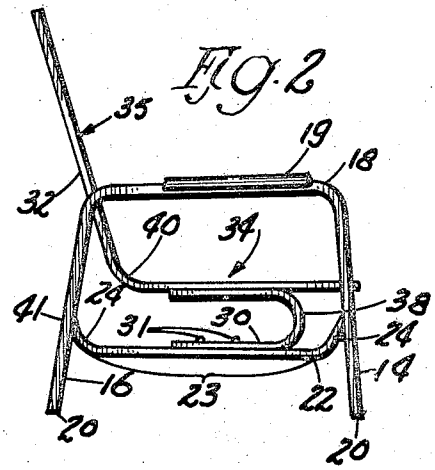


Fig. 2

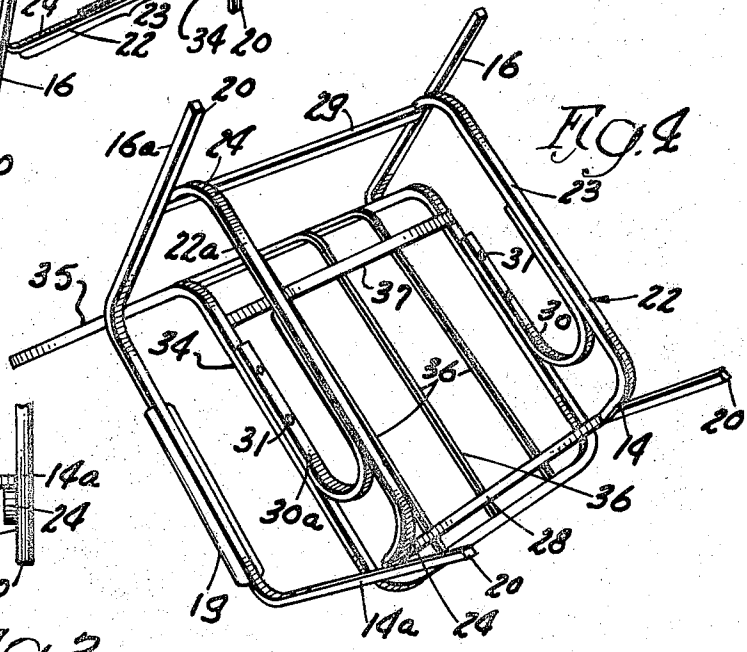


Fig. 4

Fig. 5

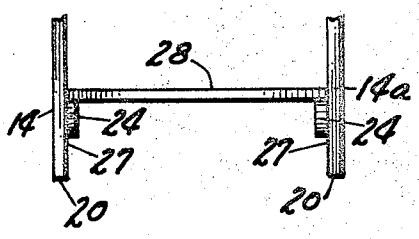
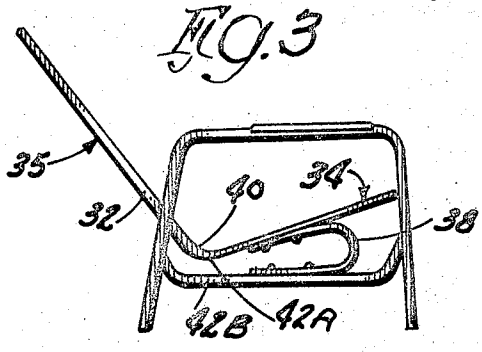


Fig. 3



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CHAIR CONSTRUCTION

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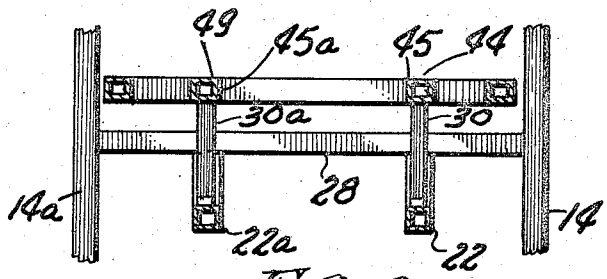


FIG. 7

FIG. 6

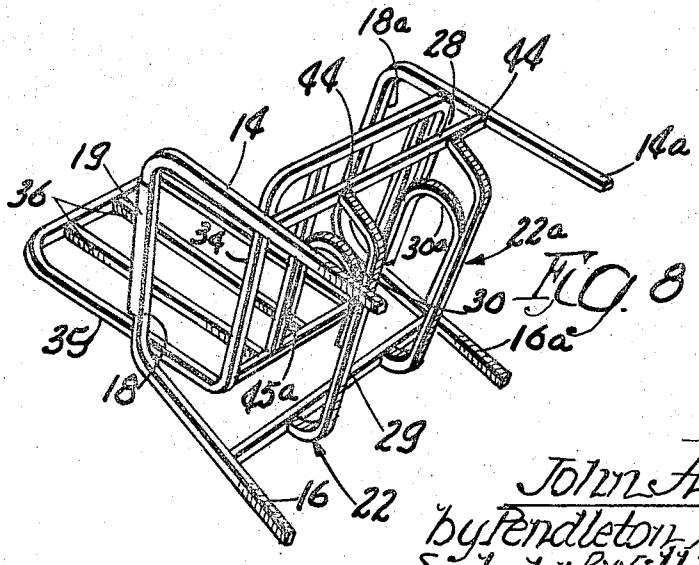


FIG. 8

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CHAIR CONSTRUCTION

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3 Claims. (Cl. 297—285)

This invention relates to improvements in chair constructions and more particularly to rockable or rocking type chairs.

The conventional rocking chair having a pair of arcuate or bow shaped rockers affixed to the legs is well known. Likewise, there are a variety of rockable chairs known as platform rocking chairs. While these constructions have broad utility in many respects, their mode of operation presents certain problems in many areas of use.

For example, conventional rockers take up a considerable amount of space and tend to be somewhat unstable especially for elderly persons when seating themselves in or arising from the rocker. The experience of over-rocking rearwardly and the tendency to "walk" or "creep" while in use and to mar floor surfaces is also well known.

The spring loaded or balanced platform rocker also suffers from some difficulties, particularly in the fact that the chair seat, arms and back rest portions are pivoted and likewise do not provide a steady, firm support for persons who either arise from or seat themselves in the chair.

The difficulties of these conventional rockers become especially acute when they are used by the elderly or the infirm in nursing homes, hospitals, or retirement centers where precautions against injury by falls or slips are of paramount importance.

Accordingly, one of the objects of the present invention is the provision of a rocking type or rockable chair construction which is of durable construction, but does not require the use of floor engaging arcuate rocking elements.

Another object is the provision of a rocking chair which does not require protruding rocking elements for operation.

A still further object is the provision of a rocking chair construction which has a non-rocking base engaging the floor while in use.

A still further object is the provision of a rocking chair construction which has a sturdy grip and arm support portion secured to the base and is relatively immovable with respect thereto.

A still further object is the provision of a rocking chair construction wherein the seat and back rest portions are movable with respect to a base, comprising side arm supports and legs, which rests stationary on a floor or other supporting surface.

A still further object is the provision of a rocking chair which cannot be over-rocked either forwards or backwards in conventional operation.

The fulfillment of these and other objects will be more readily apparent by reference to the following specification, appended claims and attached drawing.

Having reference to the attached drawing:

FIG. 1 is a perspective view of the rocking chair construction of the present invention from a rear quarter;

FIG. 2 is a side view of the frame of the rocking chair of FIG. 1 without cushions;

FIG. 3 is another side view of the rocking chair frame of FIGS. 1 and 2, in rearward rocked position;

FIG. 4 is a bottom perspective view of the rocking chair of FIGS. 1, 2 and 3, also without cushions;

FIG. 5 is a fragmentary sectional view taken along the lines 5—5 of FIG. 2;

FIG. 6 is a perspective view of another embodiment of the chair of the present invention from a front quarter;

FIG. 7 is a fragmentary sectional view of FIG. 6 taken along the line 7—7 of FIG. 6, without cushions; and

FIG. 8 is a bottom perspective view of the chair construction of FIG. 6 without cushions.

Broadly, the rocking chair of the present invention comprises a unified base having a pair of side members unified and held in spaced relationship to each other by interconnecting cross members. Each of the side members is provided with front and rear legs rising and joined at their upper ends by a horizontal arm support. A chair seat and back frame is located between the side members and arm supports and secured to the base via a U-shaped spring member and is adapted to reciprocating spring balanced rocking movement between the said side members.

Referring particularly to FIGS. 1, 2 and 4 of the drawing, there is illustrated a rocking chair of this invention **10** comprising a pair of side members **12** and **12***a*, each of which has front **14**, **14***a* and rear **16**, **16***a* legs, and which are integral with an arm support member **18** and **18***a*. Thus in side member **12** the front **14** and rear **16** legs are in a generally vertical spaced relationship to the horizontal, being joined at their upper ends by arm support member **18** which is generally parallel to the floor surface, and which are engaged by the feet **20** of each leg. As may be seen in the drawings, particularly FIG. 2, the legs **14** and **16** are disposed at an angle slightly greater than 90° with respect to arm support **18** so that the legs **14** and **16** are splayed slightly in the side member **12** and the feet **20** of the legs fall outside of a point directly perpendicular to the ends of the arm support **18**. Side member **12***a* is the same as **12** in the relationship of the legs **14***a* and **16***a* and arm support **18***a*, and forms its complement. Elongated hand or arm rests **19** are also shown on each of the arm supports. The arm rests **19** need not be in any particular form and may be eliminated if desired, although they are valuable as gripping members in this particular construction. A cushion **11** is also shown in FIG. 1 which need not be in any particular form and does not in itself form a part of this invention.

Side members **12** and **12***a* are each provided with spring supports **22** and **22***a* which span the space between the legs **14**, **14***a*, **16** and **16***a* of the side members, in generally horizontal position, and spaced from the horizontal arm supports **18** and **18***a* and leg ends **20**. Since the side members **12** and **12***a* are complementary, the spring supports **22** and **22***a* are positioned identically in each side so as to provide a plane of reference which is parallel to the plane established by the leg ends **20**. Each of the spring supports **22** and **22***a* has a major flat or horizontal sector **23** and a pair of ends **24** which, as shown in the preferred embodiment, curve arcuately upwardly (FIG. 2) of the flat sector **23** of the spring support **22** and the plane of reference described thereby to meet and join cross front member **28** and rear cross member **29** and the respective legs. The total effect is a boat-shaped cradle which has a flat sector **23** where the load of a chair

occupant is focused. The spring supports **22** and **22***a* are affixed to the legs on the inner surface thereof in face to face relationship, as shown in FIG. 5. As indicated, ends **24** of the spring supports **22** and **22***a* joined by cross members **28** and **29** hold the side members in complementary parallel spaced relationship and form a unified base structure of which the arm inverted U-shaped supporting sides are an integral part, firmly engaging a floor surface.

Leaf spring member or more particularly flat U-shaped spring and seat supporting means **30** and **30***a* are affixed to the flat sectors **23** of the spring support members **22** and **22***a*. The mode of attachment, as shown in FIGS. 1–5 of the drawings, is by rivets **31** or other similar fasteners which secure the one leg of each U-shaped spring member to the sector **23**. The other leg of the resilient U-shaped member is affixed to a frame **32**, which together with associated support elements **36** and **37** define a seat **34** and back rest **35** portion for supporting a cushion **11**, as shown in FIG. 1.

The securement of springs **30** and **30***a* to the sector **23** and frame **32** is at a point on the flat portion removed from the bow end **38** of the U. Thus when the rocker is occupied by a person, the maximum stress or force is placed on the bowed portion **38** of spring **30** and **30***a*. The point of securement permits the spring to react in response to stress by deformation of the bow **38** as shown in FIG. 3, causing however the portion of the flat spring sector adjacent the elements **23** and **34** to depart slightly from a face to face relationship. This mode of attachment has been found advantageous since the tension is a more even and linear response to movement of the occupant than if secured closer to the bowed portion **38**.

As shown in FIG. 2 the point of juncture **40** of the back and seat portions **35** and **34**, respectively, of the chair is inside of the juncture of spring supports **22** and **22***a* and the rear legs **16** and **16***a*. This gives the chair stability since the center of gravity of the seat when loaded falls within the area of the base supporting leg ends **20**, as shown in FIG. 3, when the chair is stressed or in rocked position. The meeting points **42***a* and **42***b*, as shown in FIG. 3, prevent excessive articulation and the possibility of over-rock in the backwards direction. The bowed ends of elements **22** and **22***a* permit the chair seat and the fulcrum area to be lowered and provide the increased stability resulting therefrom. The cross braces **28** and **29** affixed to ends **24** of supports **22** and **22***a* are also removed from the area under the chair where one's feet are often placed. Forward over-rock is effectively prevented by the nature of the spring attachment. Rearward motion permits stress to be placed on part of the straight leg sector of the U-shaped spring when the flat portion adjacent the bow **38** moves away from the associated support elements. In forward rocking the movement forces the elements **34** and **23** against the legs of the spring **30** permitting maximum deformable stress on the bow only. This has the effect of distributing the load on a shorter sector of spring, and its resistance to forward movement is accelerated more rapidly.

Thus the direction of rock is by the nature of the spring means and construction limited to almost all rearward motion. Thus the chair in use normally rocks from a generally upright position to a rearward position.

A further advantage mentioned above is that the arm and base members form a means of supporting a person who is arising or seating himself in the chair. The support is firmly engaged on the floor and is therefore less likely to move away or from under the person using it.

It should also be pointed out that the rear legs **16** and **16***a* are preferably at a more obtuse angle than front legs **14** and **14***a* (with respect to horizontal arm supports **18** and **18***a*) to give a slight rearward cant or sloping effect to the arm supporting sectors and the chair as a whole.

Another and a particularly preferred embodiment of the chair construction of the invention is shown in FIGS. 6, 7 and 8. In this embodiment all of the elements of FIGS. 1–5 are essentially the same, differing merely in the location of the spring support elements **22** and **22***a*, which are located between cross members **28** and **29** spaced from the point of joinder of the cross member with the legs **14**, **14***a* and **16** and **16***a*. The points of location indicated as numeral **44** show the support members in the same generally parallel and vertical spaced relationship, but inwardly toward the central plane of symmetry of the chair. Of course the affixation of the spring elements **30** and **30***a* to the seat in this embodiment, rather than the frame requires sturdier support elements **45** and **45***a* shown as tubular square cross-section tubing in FIGS. 6–8. For purposes of convenience elements **36** are also shown as square tubing in this embodiment.

One major advantage of the construction shown in FIGS. 6–8 is that the spring support elements are moved under the seat to prevent accidental pinching of hands by persons using the chair.

The construction of the chairs is such that the seat and associated back rest are free to articulate between the stationary arm supports on the base of the chair. It will be appreciated therefore that a construction which eliminates protuberances or parts which will catch clothing, is desired. The particular embodiments illustrated herein are constructed from steel tubing of square cross section in the framework. Round rods in the support members **36**, for example, may in the alternative be other shapes, such as the square tubing shown in FIGS. 6–8. It will be understood that other structural materials and shapes may also be used.

Likewise a variety of styles of ornamentation, decoration and the like is possible without destroying the effect of the basic structural features and their particular adaptability.

The chair may also be adapted for outdoor furniture by suspending a webbing across the framework of the seating and back rest portion as is commonly done, or by the use of formed or molded plywood, fiberglass reinforced plastic sheet, or metal for the seat portion.

While several particular embodiments of this invention are shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A spring balanced rocking chair comprising a unified base having a pair of side members including floor engaging leg means and generally horizontal arm support means, cross members connecting the side members to form said base, spring supporting means disposed in a generally horizontal position between the cross members and parallel to and spaced inwardly from the legs of the side members, and a pair of U-shaped flat spring members, one leg of each of which is affixed to the spring support means of the base, a unified back and seat means affixed to the other legs of the U-shaped spring members, the U-shaped flat spring means being secured to the spring support and chair seat members at points on the legs of the U, and spaced from the bow of said U, permitting a flat portion of the legs of the U spring between the securement and the bow to flex angularly away from the said support means on maximum rearward rocking motion but restraining flexing of the flat leg portions on rocking motion forward of normal, the back and seat means being supported on the spring means and adapted to rock on the same between the side members of the base.

2. The chair of claim **1** wherein the spring support means have a spring carrying portion which is with respect to the horizontal lower than the point of attachment to the legs of said side means.

3. A spring balanced rocking chair of claim **1** wherein the seat and back portion affixed to the spring means is

so situated on the base that the juncture of the seat and back rest portion falls forwardly of the juncture of the rear legs and the spring support means when the chair is being rocked.

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