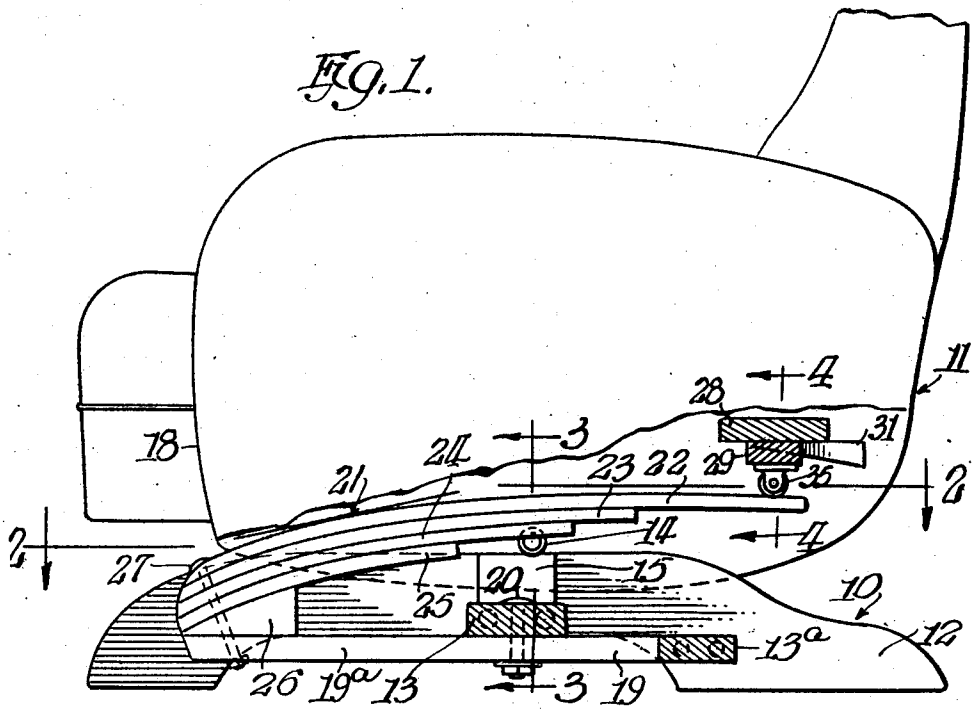
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CHAIR

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Fig. 1.



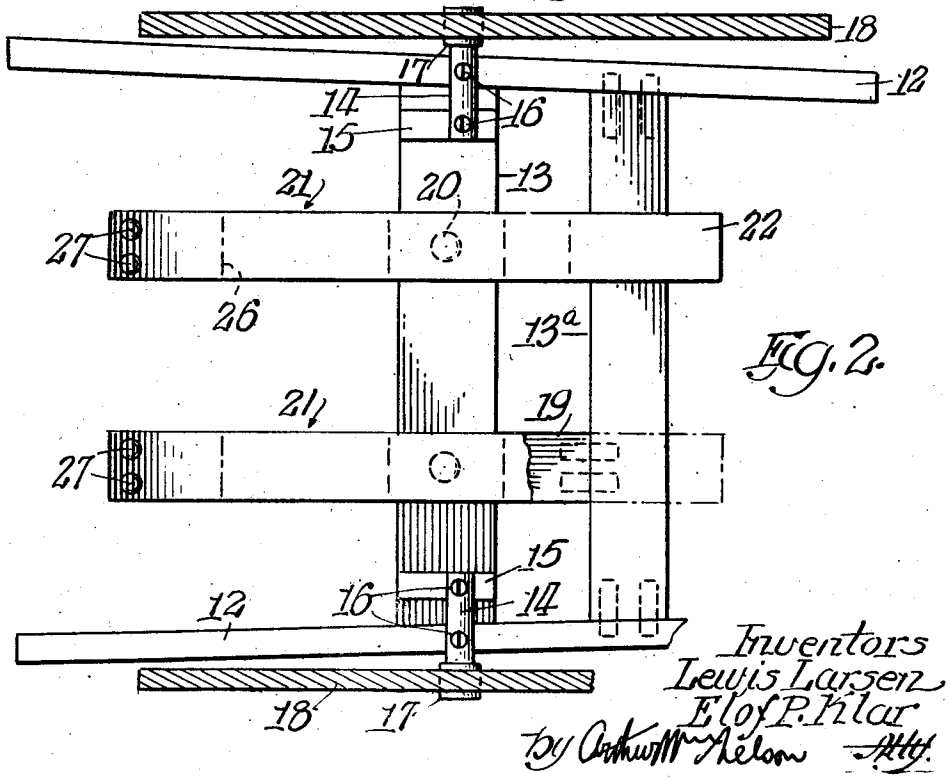


Fig. 2.

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Fig. 3.

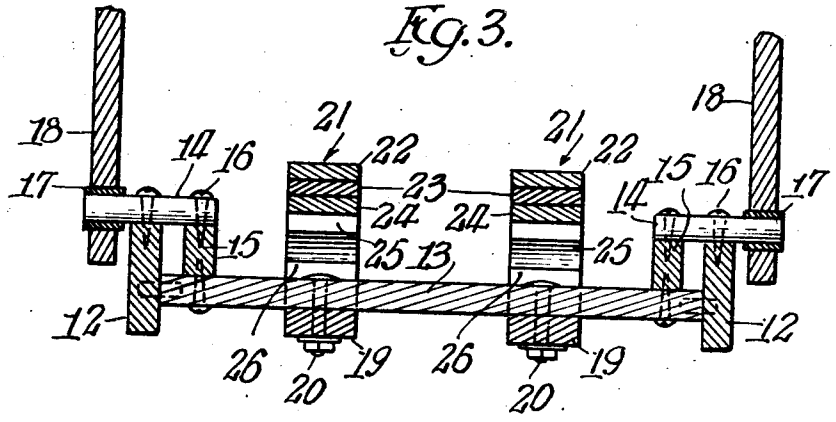


Fig. 4.

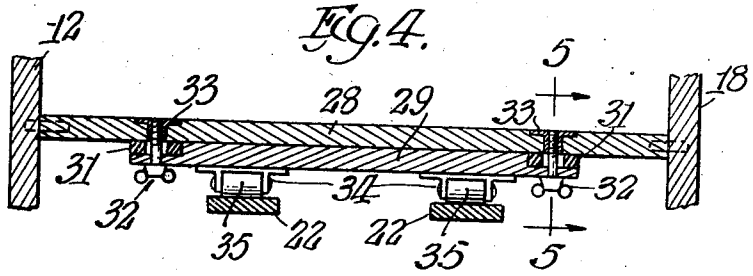


Fig. 5.

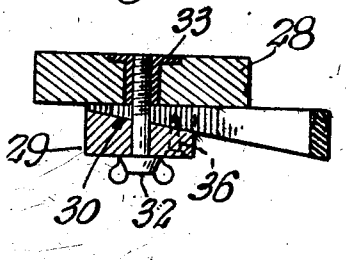
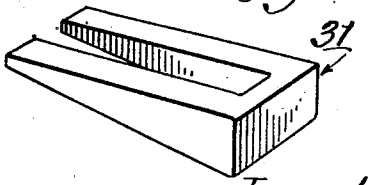


Fig. 6.



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UNITED STATES PATENT OFFICE

2,360,428

CHAIR

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Application January 12, 1943, Serial No. 472,099

4 Claims. (Cl. 155—71)

This invention relates to improvements in chairs and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The present invention is more especially concerned with chairs used in the home and of the kind wherein the seat is mounted on a base for a rearward and forward rocking movement, cushioned in both directions by one or more springs usually carried by the base and suitably engaged by parts carried by the seat to afford the action desired.

Heretofore such leaf-like springs were made of spring steel stock, now difficult to obtain. Even when such stock was readily obtainable, springs made therefrom required considerable shop treatment and labor thereon, and this of course was reflected in the cost of the chair, in which such springs were embodied. As a considerable stress was imposed upon said springs, they had to be strong and durable and therefore, they were made relatively thick, thus using considerable metallic stock.

One of the objects of the present invention is to provide a chair of this kind of such construction that wooden parts may be satisfactorily used to furnish the desired spring action.

Another object of the invention is to provide a chair of this kind, including flexible wooden spring elements that are supported at one end by a cantilever structure of some flexibility which, when added to that of the wooden spring elements affords substantially the same cushioning action as obtained by steel springs heretofore used.

Again, it is an object of the invention to provide a spring chair of such construction that it may be constructed in wood working plants having no facilities for the fabrication and treatment required when metal springs furnish the spring action.

The above mentioned objects of the invention, as well as others, together with the several advantages thereof, will more fully appear as the specification proceeds.

In the drawings:

Fig. 1 is a front to rear vertical sectional view through the lower portion of a chair embodying the preferred form of the invention.

Fig. 2 is a horizontal sectional view through the chair as taken on the line 2—2 of Fig. 1.

Fig. 3 is a transverse vertical sectional view through a part of the chair as taken on the line 3—3 of Fig. 1.

Fig. 4 is another transverse vertical sectional view through another part of the chair as taken on the line 4—4 of Fig. 1.

Fig. 5 is a vertical detail sectional view, on an enlarged scale, through a part of the chair as taken on the line 5—5 of Fig. 4.

Fig. 6 is a perspective view of a certain wedge member employed in the chair and to which reference will be hereinafter made.

Referring now in detail to that embodiment of the invention illustrated in the drawings: 10 indicates as a whole the floor engaging base of the chair and 11 indicates the seat supporting means thereof.

The base includes laterally spaced vertically edgewise disposed, wooden side rails 12—12 which converge rearwardly and are operatively connected and held in the desired relation by means of front and rear cross bars 13 and 13a respectively. The cross bars 13 and 13a are made as horizontally edgewise disposed pieces of wooden stock that are dowelled at the ends to the side rails and the top surface of the rear bar is disposed substantially in the horizontal plane of the bottom surface of the front bar as apparent from Fig. 1.

14—14 indicates aligned stub shafts that extend transversely of the base and each of which is fixed to the top edge of a rail 11 and to an upright block 15 rising from the cross bar 13 adjacent said rail. The stub shafts are preferably formed from metal tubing and are secured in place to said rails and blocks by screws 16. The outer end of each shaft extends a suitable distance outwardly from each side rail to form trunnions, each of which engages in a suitable bearing sleeve 17 in an associated side 18 of the seat supporting means 11. By means of the structure described, the seat supporting means is capable of a rearward and forward rocking movement on the base, about the axes of said stub shafts.

To cushion the rearward rocking movement and to assist in the forward rocking movement of the seat supporting means, a novel arrangement is provided that is composed substantially entirely of wood and which will now be described. Extending from the front to the rear of the base is a pair of laterally spaced cantilever members 19—19 each of which is preferably made of a length of wood of substantially the same cross section as that used for the rear cross bar 13a. These cantilever members abut and are dowelled at their rear ends to the cross bar 13a of the base and at their mid portions pass under the cross bar 13 and are secured thereto as by the

bolts 20 and associated nuts. Thus, each member is supported at its rear end and at an intermediate portion, leaving the front end portion 19a thereof unsupported so that it is capable of such upward and downward flexing as is permitted by the thickness of the wooden stock of which said members are constituted.

Associated with and arranged above each cantilever member 19 is a leaf spring assembly 21, each made up of a series of top, bottom and intermediate leaf-like strips of wood, 22, 23, 24 and 25 respectively of successively decreasing lengths. The front end of all of said leaves in a set are disposed to engage upon a wedge block 26, the top surface of which is directed upwardly and rearwardly. The front end of all of said leaves, along with the wedge block, are fixed to the front end of the cantilever portions by bolts 27 which also act to prevent lateral relative shifting of said leaves. The bottom leaf 25 is the shortest in length and its rear free end is disposed forward of the axis of the trunnion tubes while the intermediate and top leaves are successively longer and their rear free ends are disposed rearward of said trunnion axis. The rear end of the topmost leaf has a considerable overhang with respect to the next intermediate leaf. Preferably the leaves have a longitudinal curvature and set as in a quarter elliptic leaf spring.

Oak or rock elm each well serves the purpose for these spring leaves, but other wood may also be used. The spring leaves have a permanent set imparted thereto. One way to so impart the set is by moistening and bending them and drying them while held in the bent condition. Thereafter they may have a sealing coat of material, such as lacquer applied thereto which will prevent the leaves from absorbing moisture or at least greatly reduce moisture absorption.

The seat supporting member 11 is provided toward its rear bottom corner with a reach bar 28 securely attached at its ends to the side members 18 of said seat supporting member. This bar carries a second bar 29 on its underside. At each end of the second bar there is provided an upwardly and forwardly inclined top surface portion 30. These surface portions coact with the underside of the bar 28 to form tapered spaces each to receive, from the rear side of the bars 28 and 29, a wedge block 31 as best appears in Figs. 5 and 6.

A wing bolt 32 passes up through the ends of the bar 29 to be threaded in a ferrule 33 provided therefor in the bar 28, the wedge block straddling the bolt. Secured to the underside of the bar 29, in the plane of each spring assembly 21, is a pair of brackets 34 and in each bracket is journalled a roller 35 for engaging the top surface of the rear end of each spring leaf 22. The wedges may be moved forwardly or rearwardly to insure the proper engagement of the rollers 35 with the rear end of the spring leaves 22—22 and then said wedges are locked in place by a screw 36 (see Fig. 5) passing up through the bar 29 from below, into one of the side portions of the wedge. After the wedges have been once adjusted and secured in place by said screws, further adjustment of the parts is not ordinarily required.

When a downward pressure is imposed upon the rear end of the spring 21, the leaves as a whole are flexed downwardly with the resistance to flexing increasing toward the front end thereof at which point, i. e., above the block 26, they are substantially rigid. At this point, however, such flexing as is transmitted toward the front end of the group of leaves is passed on to the cantilever portion 19a of bar 19, which will then flex somewhat downwardly at its front end. Thus there is a compound flexing action imposed upon the spring as a whole and a part thereof is afforded by the group of spring leaves and another part is afforded by the cantilever action of the part 19a. This action cushions not only the rocking movement of the means 11 in one direction but it tensions the said parts so that as soon as the rocking movement of the member 11 is reversed, said parts expand to assist in the rocking action of the member 11 in the other direction to return said member 11 toward its normal position.

By the construction described, it is possible to employ a wooden spring unit, which may be made at a low cost compared to a metal spring of the leaf type, and which unit is quiet in operation and uses but a minimum of metal in the make-up of the chair.

While in describing the invention we have referred in detail to the form, arrangement and construction of the parts involved, the same is to be considered only in the illustrative sense so that we do not wish to be limited thereto except as may be specifically set forth in the appended claims.

We claim as our invention:

1. A chair embodying therein means providing a base, a seat supporting means mounted thereon for a rearward and forward rocking movement, said base providing means including a plurality of transverse members, a member fixed at one end to one of said transverse members and supported between its ends from the other transverse members so that its other end constitutes a forwardly extending cantilever, spring leaf means fixed to the front end of said cantilever and extending rearwardly therefrom and having a rear end portion for engagement by a part supported by the seat supporting means for cushioning the rocking action thereof in one direction.

2. A chair embodying therein means providing a base, a seat supporting means mounted thereon for a rearward and forward rocking movement, said base providing means including a plurality of transverse members, a member fixed at one end to one of said transverse members and supported between its ends from the other transverse members so that its other end constitutes a forwardly extending cantilever, spring leaf means fixed to the front end of said cantilever and extending rearwardly therefrom and having a rear end portion for engagement by a part supported by the seat supporting means for cushioning the rocking action thereof in one direction, said parts of said spring means being made entirely of wood.

3. A chair embodying therein a base and a seat supporting means mounted thereon for a backward and a forward rocking movement, a spring mechanism arranged longitudinally of and between the base and the seat supporting means, said mechanism including a wooden cantilever-like member fixed at one end and at its mid portion with respect to the base and relatively free at its other end, a leaf spring assembly consisting of a plurality of wooden leaves operatively attached at one end to the free end of said cantilever-like member and extending upwardly and longitudinally therefrom toward one end of the seat supporting means to there terminate as a free end, and means carried by said seat support-

ing means and operatively engaged with the free end of said plurality of wooden spring leaves.

4. A chair embodying therein a base and a seat supporting means mounted thereon for a backward and a forward rocking movement, a spring mechanism arranged longitudinally of and between the base and the seat supporting means, said mechanism including a wooden cantilever-like member fixed at its rear end and at its mid portion with respect to the base and relatively free at its front end, and a leaf spring assembly consisting of a plurality of wooden leaves operatively attached at the front end to the free end of the cantilever-like member and extending upwardly and rearwardly therefrom toward the rear end of the seat supporting means to there terminate as a free end, and means carried by said rear end of the seat supporting means and operatively engaged with the free end of said series of spring leaves.

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