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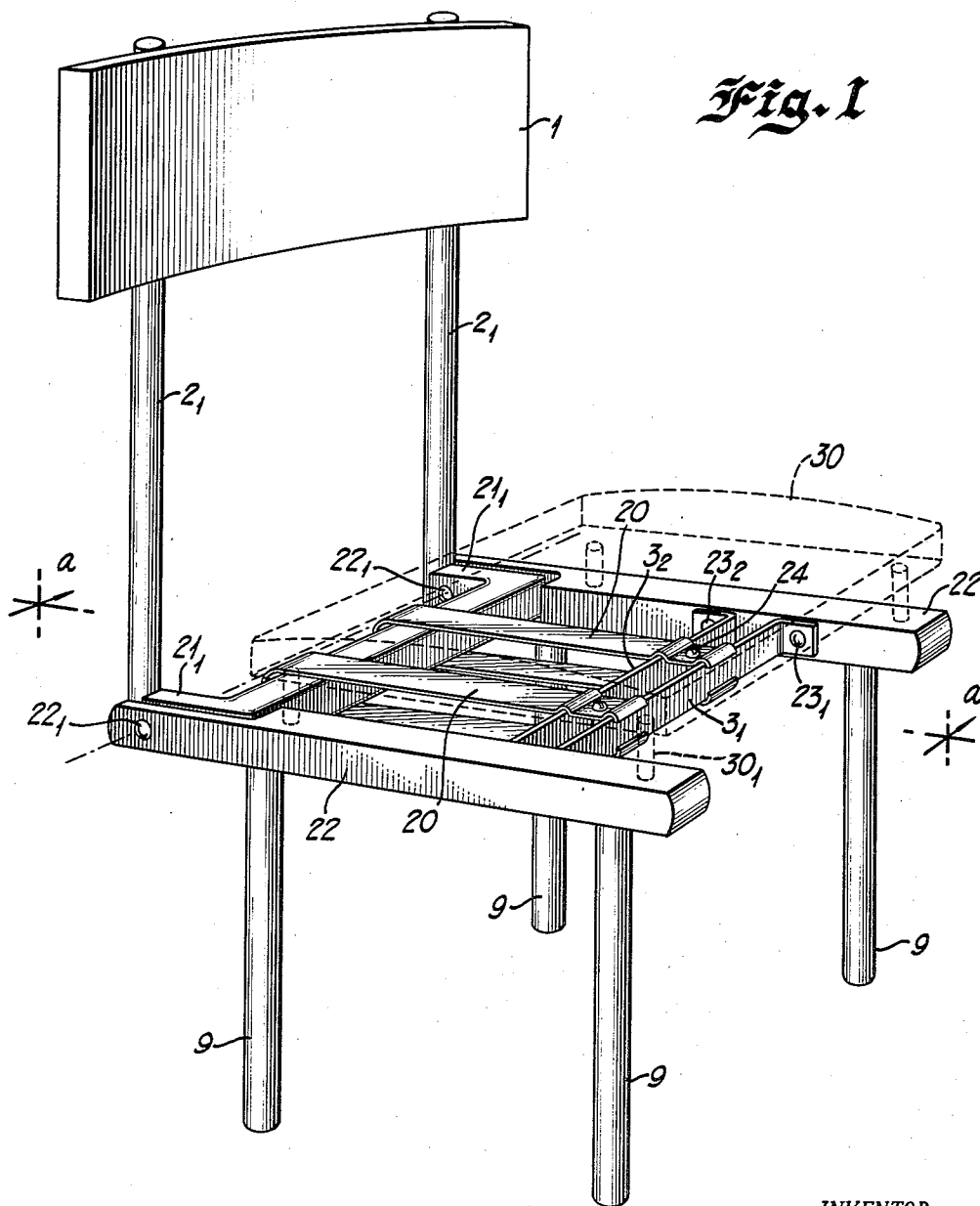
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SEAT OR OTHER ARTICLES SUCH AS COUCH

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2 Sheets-Sheet 1

Fig. 1



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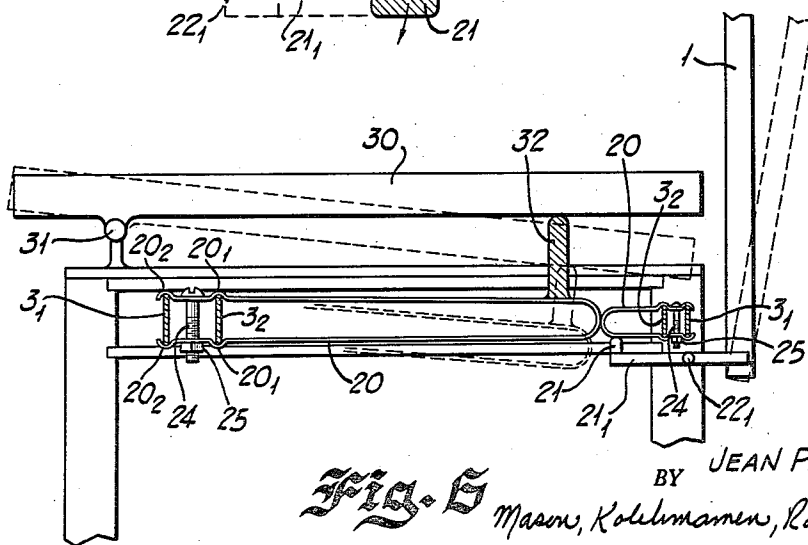
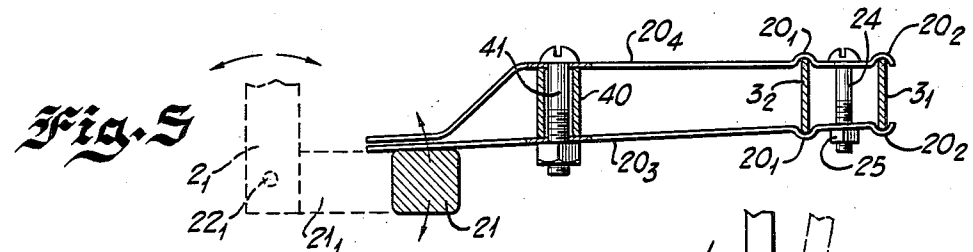
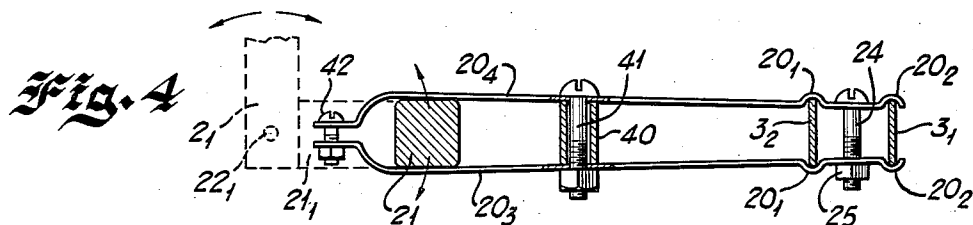
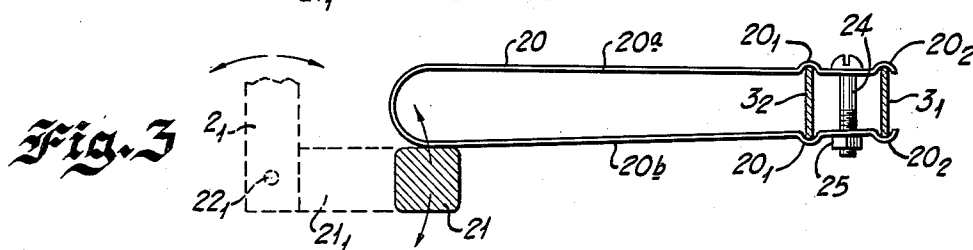
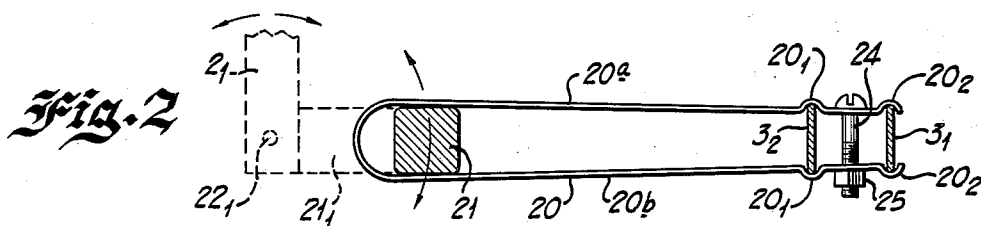
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SEAT OR OTHER ARTICLES SUCH AS COUCH

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Seats or chairs of the type having their backs supported at the base by torsion bars in order to provide flexibility of the backs are already known in the art.

In these known devices, it has been the practice to use the torsion bars as regulating means for simply and rapidly absorbing the variations in stress caused by movement of the back.

One of the objects of the present invention therefore is to provide a new and improved seat or chair in which the amount of force necessary to move or flex the back can be easily and simply regulated.

Other objects and advantages of the present invention will be revealed by the following detailed description when taken in conjunction with the drawings, in which:

FIG. 1 is a perspective view of a seat or chair as characterized by the present invention with the seat plate itself being omitted;

FIG. 2 is a sectional view taken along line *a-a* of FIG. 1;

FIG. 3 is a sectional view similar to FIG. 2 showing another embodiment of the present invention;

FIG. 4 is a sectional view similar to FIG. 2 showing yet another embodiment of the present invention;

FIG. 5 is a sectional view similar to FIG. 2 showing still another embodiment of the present invention; and

FIG. 6 is a side elevational view of a chair as characterized by yet another embodiment of the present invention with portions in deflected positions shown in dotted lines.

Referring now to the embodiment shown in FIGS. 1 and 2, there is illustrated a seat or chair having a back 1 fixed upon two upright members 2₁, which can be of tubular cross section and which are pivotally attached at their lower ends to a pair of horizontal side members 22 about the axis 22₁. Chair legs 9 are attached to the side members 22 to support the structure from the floor. A seat 30 is supported from the horizontal side members 22 by appropriate means such as the dowels or pins 30', which are positioned at the corners of the seat and are attached to the side members. The seat 30 may also be attached to the chair in the manner shown in FIG. 6 of the drawings and later described in the specification.

The lower ends of the upright members 2₁ are connected to a yoke 21 which is comprised of a member having a central portion in parallel relation to said axis and being bent at right angles at both ends to form legs 21₁ which are attached to the upright members 2₁. The legs 21₁ of the yoke 21 extend at right angles to the uprights 2₁ and toward the front of the seat.

A pair of parallel spaced bars 3₁ and 3₂ are provided adjacent the front portion of the seat to form a torsion bar. These bars 3₁ and 3₂ extend transversely from the horizontal side members 22 and are attached thereto by screws 23₁ and 23₂.

The main central portion of the yoke 21 and the parallel bars 3₁ and 3₂ are interconnected by lever arms 20. As is best shown in FIG. 2, the lever arms 20 are formed of a continuous piece bent into a general U-shape, thus providing two substantially parallel legs 20_a and 20_b. The central portion of the yoke 21 is positioned between the two legs 20_a and 20_b near the rear thereof and the forward ends of the legs 20_a and 20_b in order to and below the torsion bars 3₁ and 3₂. Indentations 20₁ and 20₂ are formed in the legs 20_a and 20_b in order to accommodate the upper and lower edges of the torsion

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bars 3₂ and 3₁ and prevent relative longitudinal movement between the legs 20_a and 20_b and the bars 3₁ and 3₂.

In order to provide the desired flexibility of the back with respect to the seat framework, the nuts 25 can be loosened and the lever arms 20 can be moved toward each other to the center of the seat or away from each other toward the side members 22. When the arms 20 are in the center of the seat, the back will have maximum flexibility since the leverage on the torsion bars 3₁ and 3₂ is at a maximum and when the lever arms 20 are positioned toward the outer sides of the seat adjacent the side members 22, the back will have minimum flexibility since the leverage on the torsion bars 3₁ and 3₂ is at a minimum. Thus, the amount of flexibility of the back 1 relative to the seat framework can be easily adjusted to any desired amount by sliding the lever arms 20 inwardly or outwardly and securing them in the desired position by tightening the nuts 25 on the bolts 24.

In operation, when a person using the seat leans backward against the back 1, it is deflected backward pivoting around the axis 22₁. This action tends to raise the center portion of the yoke 21 and apply a twist to the torsion bars 3₁ and 3₂ through the lever arms 20. The amount of twisting on the torsion bars 3₁ and 3₂ and consequently the amount of deflection of the back 1 for any given force applied to the back can be readily adjusted by positioning of the lever arms 20 toward or away from the center of the seat. When the lever arms 20 are positioned away from the center of the seat in their outermost positions adjacent the side members 22, the leverage on the torsion bars 3₁ and 3₂ is very small and, hence, the back 1 is no longer readily deflectable when a backward force is applied thereto by a person leaning back in the seat. When the lever arms 20 are positioned adjacent the center of the seat maximum deflection of the back 1 will be obtained when a person seated in the seat leans backwards. Between these two extreme positions there are a variety of desired back deflections which can be obtained by adjusting the position of the lever arms 20 relative to the center or outer edges of the seat.

The embodiments shown in FIGS. 3, 4 and 5 of the drawings are similar in operation to the embodiment of FIGS. 1 and 2 differing slightly in construction and placement of the lever arms. In the embodiment of FIG. 3, the central portion of the yoke 21 is positioned below and tangent to the lower leg strap 20_b rather than between the legs 20_a and 20_b as shown in FIG. 2.

In the embodiment of FIG. 4, the lever arm is comprised of two separate legs 20₃ and 20₄ rather than a continuous piece. The center portion of the yoke 21 is positioned between the legs 20₃ and 20₄ and the rearward ends of the legs are fastened together by means of the bolt 42. Also, the legs 20₃ and 20₄ are fastened together adjacent their middle portions by means of struts 40 and bolts 41.

In the embodiment of FIG. 5, the lever arms are also constructed of two separate legs 20₃ and 20₄. The upper leg 20₄ is bent downwardly adjacent its rearward end and parallels the lower leg 20₃ for a distance adjacent the rearward end thereof. The middle portion of the yoke 21 is positioned below the lower leg 20₃ adjacent its rearward portion rather than between the two legs 20₃ and 20₄ and these legs are connected at their mid portions by the struts 40 and bolt 41.

Another embodiment of the invention is shown in FIG. 6 where there is illustrated a seat having legs 9 which support side members 22 forming the frame of the seat. Torsion bars 3₁ and 3₂ are attached to the side members 22 in a similar manner to that shown in FIG. 1 and lever arms 20 are secured thereto in a manner similar to that shown in FIG. 2. A seat member 30 is pivotally attached to an axle 31 located adjacent the front portion of

the framework and the rear portion of the seat member 30 is supported on fingers 32 which are attached to the rearward ends of the leverage arms 20. A back 1 may be pivotally connected to the side members 22 and the lever arms 20 in a manner similar to that shown in FIGS. 1 and 2. When a person sits on the seat member 30 and leans backward against the back 1, these parts are deflected as is shown in the dotted lines of FIG. 6. The torsional stress caused by the deflection of these parts is taken by the torsion bars 3₁ and 3₂. Again, the amount of deflection of the seat member 30 and back 1 can be adjusted for a given force by adjusting the position of the lever arms 20 relative to the center of the seat as previously described. It is also to be understood that it is within the scope of the present invention to provide a combination wherein the seat member 30 and the back 1 could each be connected to a separate torsion bar in accordance with the principles previously described.

It is to be understood that the above-described embodiment of this invention is merely illustrative of the principles thereof and that numerous other modifications may be devised by those skilled in the art which will fall within the spirit and scope of the principles of this invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A seat, chair, sofa and the like comprising a pair of side members adapted to be supported above a floor surface, a back pivotally attached to said side members about an axis, a yoke attached to said back and having a portion spaced from and in parallel relation to said axis, a torsion bar rigidly attached to said side members and spaced from and in parallel relation to said axis, and a lever arm rigidly attached adjacent one end thereof to said torsion bar with the other end thereof positioned to contact said portion of said yoke so as to transmit a torsional stress to said torsion bar when said back is rotated around said axis.

2. A seat, chair, sofa and the like comprising a pair of side members adapted to be supported above a floor surface, a back pivotally attached to said side members about an axis adjacent the rearward end of said side members, a seat pivotally attached to said side member about a second axis adjacent the forward end of said side members and parallel to said first axis, a torsion bar rigidly attached to said side members spaced from and parallel to said first axis, a yoke attached to said back and having a portion spaced from and parallel to said first axis, and a lever arm rigidly attached adjacent one end thereof to said torsion bar with the other end thereof positioned to lie adjacent to and contact said portion of said yoke and to said seat so as to transmit a torsional stress to said torsion bar when said back and/or said seat are rotated around their respective axes.

3. A seat, chair, sofa or the like comprising a pair of

parallel spaced generally horizontal side members adapted to be supported above a floor surface, a back having a pair of parallel downwardly extending struts, said struts having their lower ends pivotally attached to said side members about a common axis positioned transversely of and adjacent the rearward end of said side members, a yoke having its ends attached to said struts adjacent their lower ends and having center portions spaced from and parallel to said axis, a torsion bar having its ends attached to said side members, said torsion bar spaced forward of and parallel to said axis and said center portion of said yoke, and at least one lever arm having its forward end adjustably attached to said torsion bar intermediate its ends, said lever arm extending rearwardly and connected to said center portion of said yoke so as to transmit a torsional stress to said torsion bar when said back is rotated around said axis.

4. Apparatus as defined in claim 3 wherein said torsion bar is comprised of a pair of parallel bars spaced apart from each other one being forward of the other and wherein a pair of lever arms are provided, each of said lever arms comprising an upper and lower leg, said legs being positioned above and below said parallel bars and defining indentations adjacent the forward ends of said legs for receiving said bars, and clamping means for securing the forward ends of said legs to said bars in various positions along the longitudinal length of said bars.

5. Apparatus as defined in claim 4 wherein said center portion of said yoke is positioned between said legs of said lever arms.

6. Apparatus as defined in claim 4 wherein said center portion of said yoke is positioned to lie below the lower of said legs and in contact therewith.

7. Apparatus as defined in claim 4 wherein said legs of said lever arms are joined together adjacent their rearward ends by clamping means.

8. Apparatus as defined in claim 4 wherein said legs of said lever arms are joined together at their rearward ends by an integral continuous web.

9. Apparatus defined in claim 4 wherein said upper and lower legs of said lever arms are additionally joined together intermediate these ends.

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