

Jan. 8, 1963

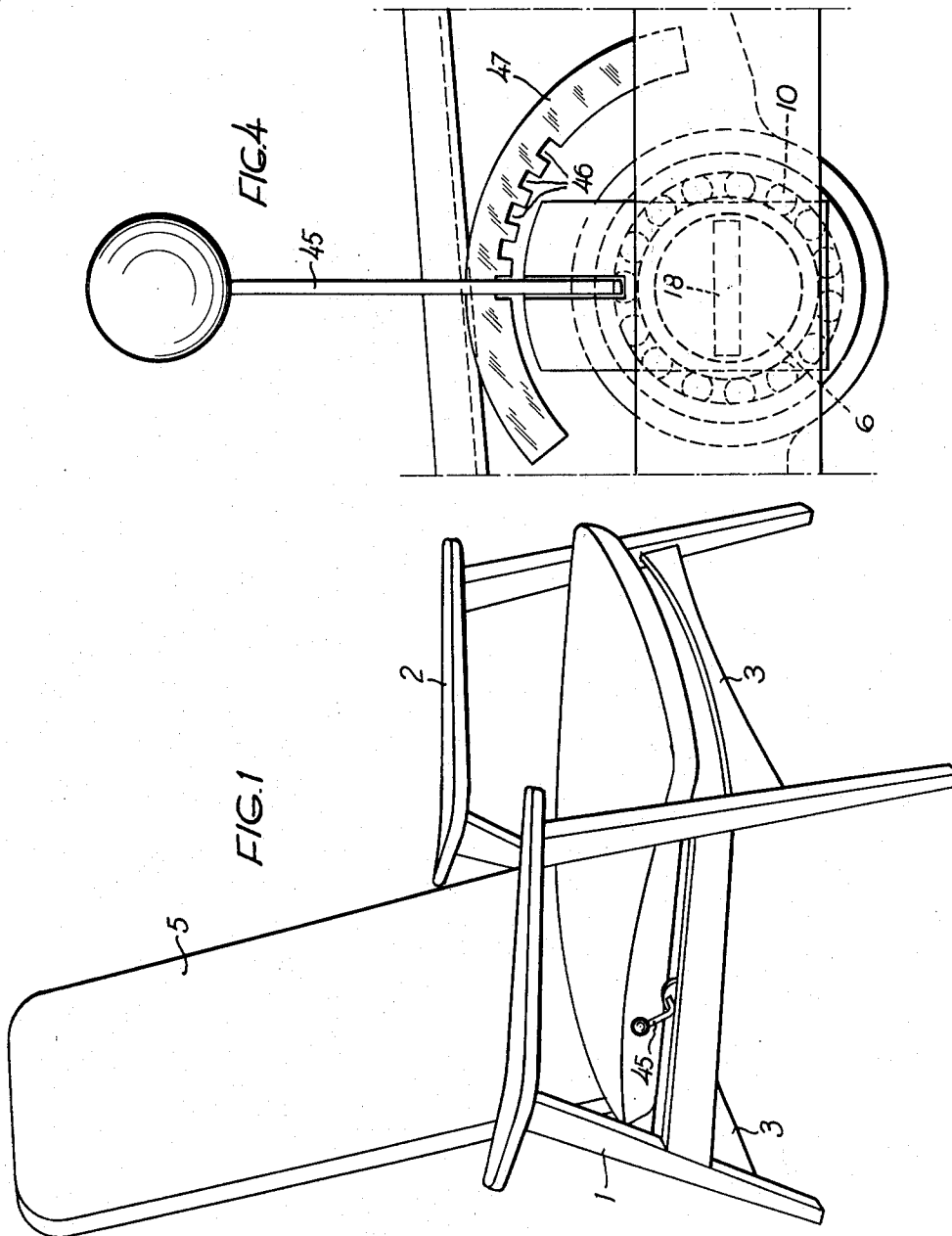
K. G. BLOMBERG

3,072,377

EASY CHAIR

Filed July 19, 1960

4 Sheets-Sheet 1



INVENTOR.

Karl Georg Blomberg,
BY *Pierce, Scheffler & Parker*
his Attorneys

Jan. 8, 1963

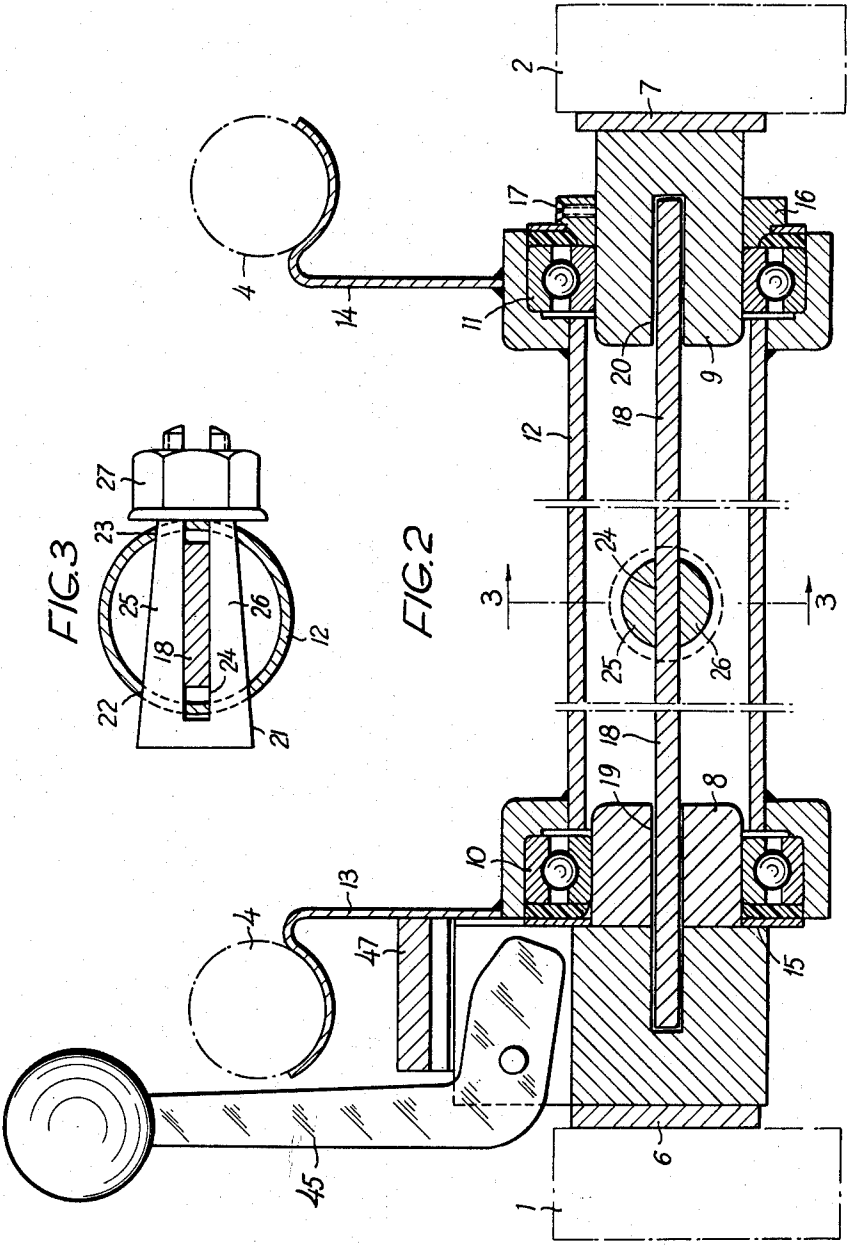
K. G. BLOMBERG

3,072,377

EASY CHAIR

Filed July 19, 1960

4 Sheets-Sheet 2



INVENTOR.

Karl Georg Blomberg,
BY *Pierce, Schepfle & Parker*
his Attorneys

Jan. 8, 1963

K. G. BLOMBERG

3,072,377

EASY CHAIR

Filed July 19, 1960

4 Sheets-Sheet 3

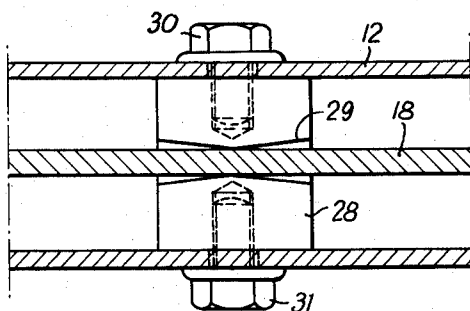


FIG. 5

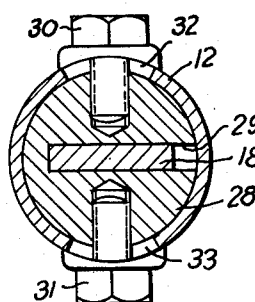


FIG. 6

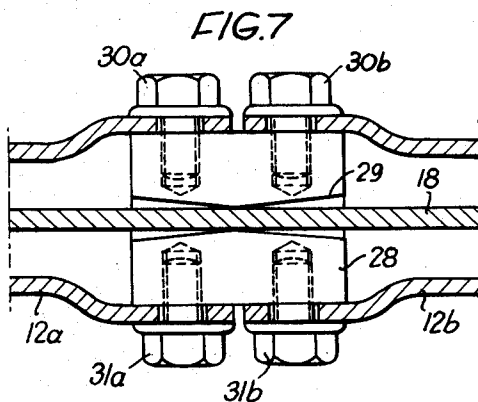


FIG. 7

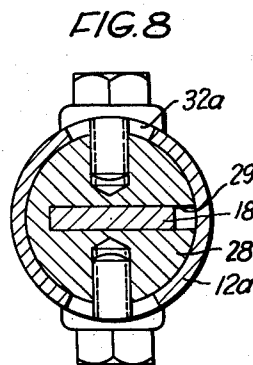


FIG. 8

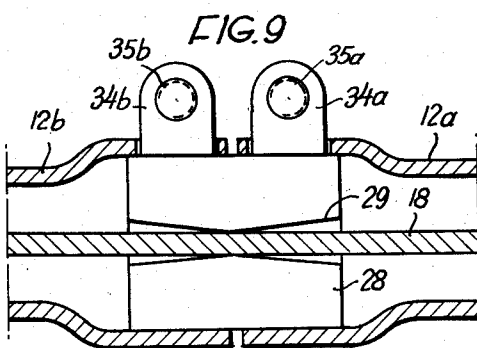


FIG. 9

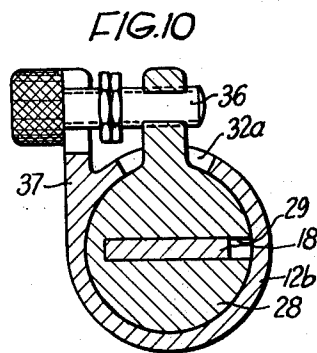


FIG. 10

INVENTOR.

Karl Georg Blomberg,
BY *Pierce, Schaffler & Parker*
his Attorney

Jan. 8, 1963

K. G. BLOMBERG

3,072,377

EASY CHAIR

Filed July 19, 1960

4 Sheets-Sheet 4

FIG. 11

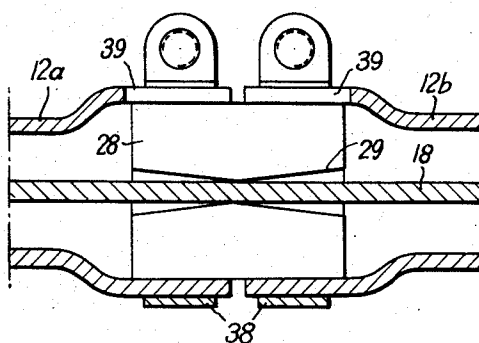


FIG. 12

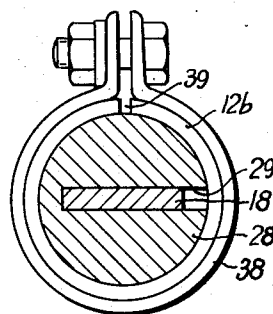


FIG. 13

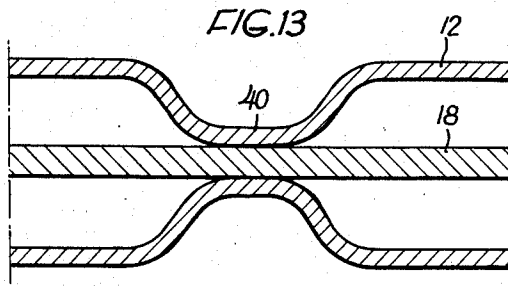


FIG. 14

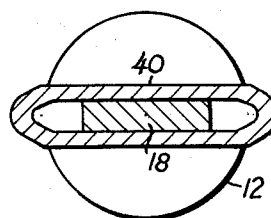


FIG. 15

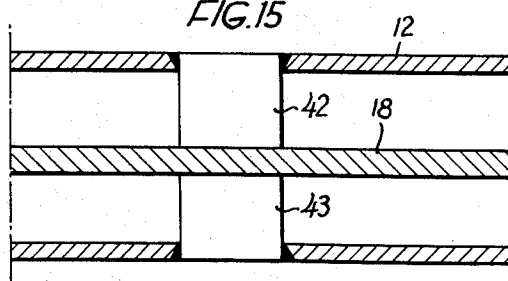
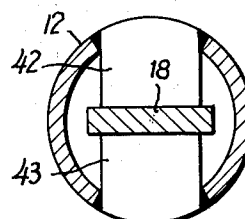


FIG. 16



INVENTOR.

Karl Georg Blomberg,
BY *Pierce, Schaffner & Parker*
his Attorneys

1

3,072,377

EASY CHAIR

Karl Georg Blomborg, Norrhagagatan 12,
Nassjö, Sweden

Filed July 19, 1960, Ser. No. 43,852

Claims priority, application Sweden July 24, 1959
16 Claims. (Cl. 248—373)

This invention relates to easy chairs; in this specification the word chair also includes sofas and the like designed for seating more than one person.

Many easy chairs have a body supporting member, for example a back rest or seat, which is tiltable relatively to the frame of the chair against the action of a spring arrangement. In some chairs the tiltable body supporting member comprises both a seat and back rest.

In a proposed embodiment of such a spring arrangement a spring is arranged underneath and parallel with but displaced from the tilt axis of the seat. One end of the spring is secured to the frame of the chair and the other end is secured to the seat. When a person is sitting and swinging in the chair, the twisting force experienced by the frame can be substantial; and since the frame is unevenly loaded it is often twisted, which may be uncomfortable for the person sitting in the chair. The absorption of the entire twisting force by one side member tends to weaken the frame; and this may be serious when the frame is made of wood.

The main object of the present invention is to avoid these disadvantages.

The easy chair according to the invention comprises a frame having two opposed side members, a body supporting member tiltable relatively to said frame, and a device for biasing said body supporting member into a certain position relative to said side members, said device comprising a torsion spring substantially coaxial with the tiltable axis of said body supporting member and non-rotatably connected to both of said side members of said frame and said body supporting member.

The preferred chair according to the invention will now be described with reference to the accompanying drawings in which:

FIGURE 1 is a perspective view of an easy chair;

FIGURE 2 is a longitudinal section through a part of the chair;

FIGURE 3 is a cross-section on the line 3—3 of FIGURE 2;

FIGURE 4 is a side view of part of the chair, and

FIGURES 5-16 show in longitudinal section and in cross-section in six modifications of the part of the chair shown in FIGURES 2 and 3.

The chair shown in FIGURE 1 comprises a wooden frame 1 having two opposed side members 1 and 2 which are interconnected by crosspieces 3.

The frame supports a tubular frame 4 (FIG. 2) for a body supporting member 5 having a sitting surface and a back rest formed as a unit and both tiltable as a unit relatively to the frame 1. The chair may however be such that only the back rest or only the sitting surface is tiltable relatively to the frame 1.

FIGURE 2 shows how the seat is supported by the frame. Strips 6 and 7 are fitted respectively to the insides of the side members 1 and 2. The strips are each provided with bosses 8 and 9 which project towards each

2

other from the side members and on which a rotatable tube 12 is rotatably supported by ball bearings 10 and 11. Two brackets 13, 14 are welded to the tube, and their upper part is channel-shaped for supporting the tubular frame 4 of the seat, indicated with chain lines in FIGURE 2. By means of the brackets, tube and bearings the body supporting member is consequently tiltable mounted on the bosses 8 and 9 projecting from the strips 6 and 7.

The bearings 10, 11 and the tube 12 lying between them are located between an end stop in the form of a shoulder 15 on the boss 8 and an axially adjustable stop in the form of a ring 16 on the boss 9. The stop ring 16 is locked by means of a set screw 17. The distance between the side members 1 and 2 can consequently vary slightly. FIGURE 2 shows the position of the stop ring 16 for the minimum distance between the side members 1 and 2. If this distance should be somewhat larger, this can be allowed for in a simple manner by moving the stop ring further out on the boss 9. This possibility to adjust the bearing arrangement for different distances between the side members is an advantage when the frame is made of wood, small size variations being then unavoidable.

A blade spring 18 extends between the bosses 8, 9 coaxially in the tube 12. The ends of the blade spring fit in correspondingly shaped slots 19, 20 in the bosses 8, 9 so that the blade spring is non-rotatably connected to the frame of the chair. Approximately centrally between the ends of the blade springs the blade spring is non-rotatably connected to the tube 12. This connection can take many forms as shown in FIGURES 2, 3 and 5-16.

As shown in FIGURES 2 and 3 a conical slotted wedge extends diametrically through the tube 12 in two diametrically opposed holes 22, 23 in the tube. The wedge has a slot 24 so that the wedge forms a fork having two legs 25, 26, which as shown in FIGURE 3 lie on each side of the blade spring 18 and lock it against rotation relatively to the tube 12. The wedge is held in position by a nut 27.

The feature common to all the forms of connection shown in FIGURES 5-12 is a cylindrical insert which has an axially extending aperture which has flat sides and through which the blade spring projects.

In FIGURES 5-12 the cylindrical insert is designated by 28 and its axially extending aperture by 29. The width of the slot increases slightly from the centre towards the ends of the insert. The insert 28 is locked by two screws 30, 31 which each fit in a circumferential slot 32, 33 in the tube. Before the screws are tightened, the inclination of the body supporting member may be adjusted by rotating the insert in the tube, that is the position of the seat when the chair is not in use.

FIGURES 7-12 show a form of connection in which the tube 12 is divided in its centre to form two parts.

In FIGURES 7 and 8 the adjacent parts of the ends of the tubes 12a and 12b are somewhat widened for receiving the cylindrical insert 28. The screws 30a and 30b connect the parts 12a and 12b of the tube to the insert 28 in the same manner as described in connection with FIGURE 5.

In FIGURES 9 and 10 an insert 28 is shown which has two ears which project into corresponding slots 32a in the tubes parts 12a, 12b; each ear has a threaded opening

for bolts 36 which are mounted in and lockable relatively to a bracket 37 on each part 12a and 12b of the tube. By means of the bolts 36 the angular position of the tube parts 12a, 12b can be adjusted relatively to the blade spring 18 for adjusting the unloaded position of the seat.

In the form shown in FIGURES 11 and 12 there is a clip ring 38 around each tube end 12a and 12b, and the ends 12a, 12b have a longitudinal slot 39 so that the ends of the tubes can be secured to the insert 28 by means of the rings.

FIGURES 13 and 14 show a simplified arrangement for locking the centre part of the tube 12 to the blade spring 18. The tube is in its centre flattened at 40 so that its cross-section is as shown in FIGURE 16.

Finally, FIGURES 15 and 16 show a form of connection in which the tube has two opposed slots in which projections 42 and 43 are fixed. The projections project inwardly towards each other, and the distance between the inner ends of the projections is approximately equal to the thickness of the blade spring so that the blade spring can be inserted between the projections and thereby locked against movement relative to the tube.

The catch shown in FIGURES 2 and 4 comprises a lever 45 pivotally mounted about an axis transverse to the tilting axis of the body supporting member and rockable into one of a plurality of recesses 46 in the body supporting member. The recesses are formed in an arcuate member 47 fixed to the bracket 13.

The torsion spring arrangement described above can of course be used for chairs in which the back rest or seat is tiltable independently of the other.

What I claim is:

1. A chair comprising a frame having two opposed side members, two bosses projecting towards each other from the side members, a body supporting member rotatably mounted on said bosses so as to be tiltable relatively to said frame, and a device for biasing said body supporting member into a certain position relatively to said side members, said device comprising a torsion spring substantially coaxial with the axis of rotation of said body supporting member about said bosses and non-rotatably fixed at its ends to said bosses and at its central part to said body supporting member.

2. A chair according to claim 1 in which said torsion spring is a blade spring.

3. A chair comprising a frame having two opposed side members, two bosses projecting towards each other from the side members, a body supporting member having a sitting surface and a back rest and rotatably mounted on said bosses so as to be tiltable relative to said frame, and a device for biasing said body supporting member into a certain position relatively to said side members, said device comprising a torsion spring substantially coaxial with the axis of rotation of said body supporting member about said bosses and non-rotatably fixed to said bosses and said body supporting member.

4. A chair according to claim 3 in which said torsion spring is a blade spring whose ends fit in slots in said bosses.

5. A chair comprising a frame having two opposed side members, two bosses projecting towards each other from the side members, a body supporting member rotatably mounted on said bosses so as to be tiltable relatively to said frame, a device for biasing said body supporting member into a certain position relatively to said side members, said device comprising a torsion blade spring which is substantially coaxial with the axis of rotation of said body supporting member about said bosses, whose ends fit non-rotatably in slots in said bosses, and whose centre is non-rotatably secured to said body supporting member, and a catch for locking the body supporting member in a certain relative position.

6. A chair according to claim 5 in which said catch is

a lever pivotally mounted on a side member and rockable into engagement with the body supporting member.

7. A chair according to claim 5 in which said catch is a lever pivotally mounted about an axis transverse to the tilting axis of the body supporting member on a side member and rockable into engagement with one of a plurality of recesses in said body supporting member, whereby said body supporting member can be locked in a selected inclined position.

8. A chair comprising a frame having two opposed side members, two bosses projecting towards each other from said side members, ball bearings mounted on said bosses, a tube supported by said ball bearings, a body supporting member fixed to said tube whereby said body supporting member is tiltable relatively to said frame, and a device for biasing said body supporting member into a certain position relatively to said side members, said device comprising a blade torsion spring which is coaxial with said bearings, whose ends fit non-rotatably in slots in said bosses, and whose centre is non-rotatably connected to said tube.

9. A chair according to claim 8 comprising a slotted wedge, said wedge extending through diametrically opposed apertures in said tube, and said blade spring extending through the slot in said wedge.

10. A chair according to claim 8 comprising a cylindrical insert in said tube having an aperture with flat sides, said blade spring extending through said aperture in said insert, said insert being rotatable to adjust the angle which the flat sides of said aperture make with the horizontal, and means locking said insert in adjusted position.

11. A chair according to claim 8 comprising a cylindrical insert in said tube having an aperture with flat sides, said blade spring extending through said aperture in said insert, said insert having an ear which projects with substantial clearance through a slot in said tube, a bracket projecting from said tube, and a bolt which is mounted in said bracket and engages said ear, whereby the said insert is rotatable to adjust the angle which the flat sides of said aperture make with the horizontal.

12. A chair according to claim 8 comprising a clip ring and a cylindrical insert in said tube having an aperture with flat sides, said blade spring extending through said aperture in said insert, said tube having a longitudinal slit such that when said clip ring is tightened around said tube, said insert is prevented from rotating relatively to said tube.

13. A chair according to claim 8 in which said centre part of said tube is flattened so as to prevent relative rotation between said tube and said blade spring.

14. A chair according to claim 8 in which two projections extend inwardly from diametrically opposed sides of said tube to prevent relative rotation between said tube and said blade spring.

15. A chair comprising a frame having two opposed side members, two bosses projecting towards each other from the side members, ball bearings mounted on said bosses, a tube rotatably supported by said ball bearings, a body supporting member fixed to said tube, an end stop on one of said bosses for limiting axial movement of one of said ball bearings and said tube in one direction, an adjustable stop on the other of said bosses whereby the distance apart of said ball bearings is adjustable, and a device for biasing said body supporting member into a certain position relatively to said side members, said device comprising a torsion blade spring which is located in said tube coaxially with the axis of said ball bearings, whose ends fit non-rotatably in slots in said bosses, and whose centre part is non-rotatably connected to said tube.

16. A chair comprising a frame having two opposed side members, two bosses projecting towards each other from said side members, ball bearings mounted on said bosses, a tube divided in its centre to form two parts, each part being mounted on one of said bosses, a body

5

supporting member fixed to said tube whereby said body supporting member is tiltable relatively to said frame, and a device for biasing said body supporting member into a certain position relatively to said side members, said device comprising a blade torsion spring whose ends are fixed in slots in said bosses and which is coaxial with said ball bearings, a cylindrical insert located in said tube and secured to each part of said tube, said insert having a flat sided aperture through which said blade spring extends whereby said spring is non-rotatably connected to said side members and to said body supporting member.

5

10

2,249,828
2,424,753
2,606,758
2,624,568
2,718,257
2,845,991

516,521

6

References Cited in the file of this patent

UNITED STATES PATENTS

Herold ----- July 22, 1941
Herold ----- July 27, 1947
Collier ----- Aug. 12, 1952
Kany ----- Jan. 6, 1953
Lie ----- Sept. 20, 1955
Soderberg ----- Aug. 5, 1958

FOREIGN PATENTS

France ----- Apr. 20, 1921