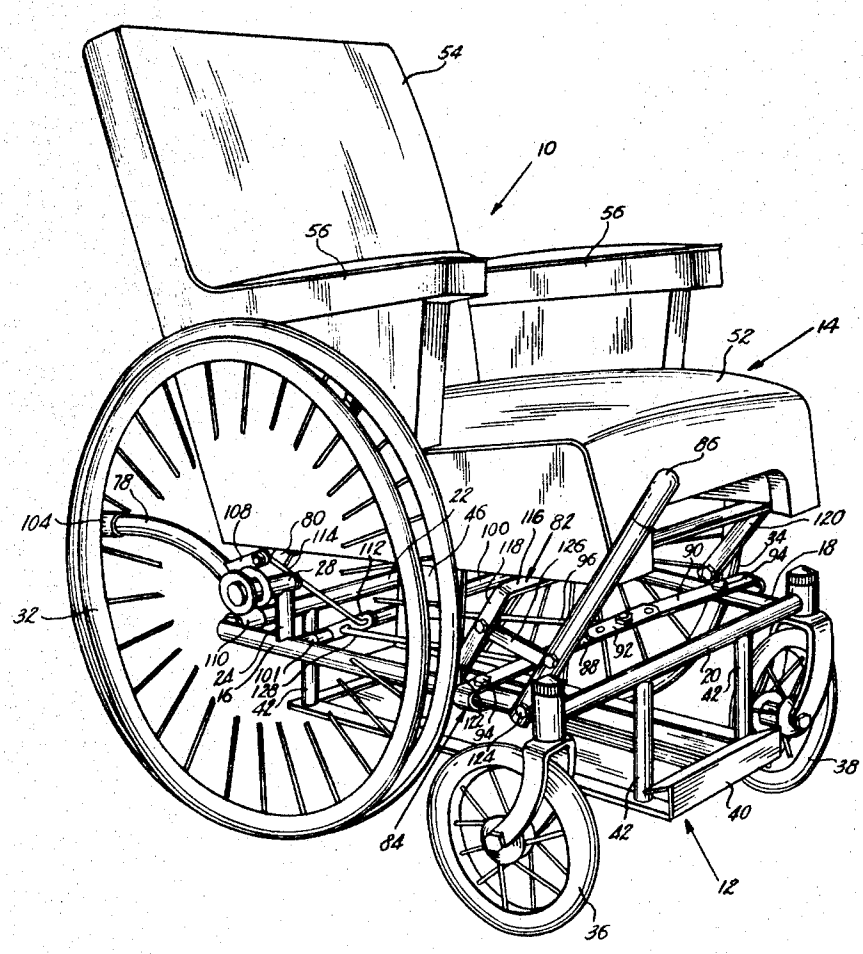
Dec. 10, 1968 L. A. KIEL 3,415,531

ROCKING WHEEL CHAIR

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FIG. 1



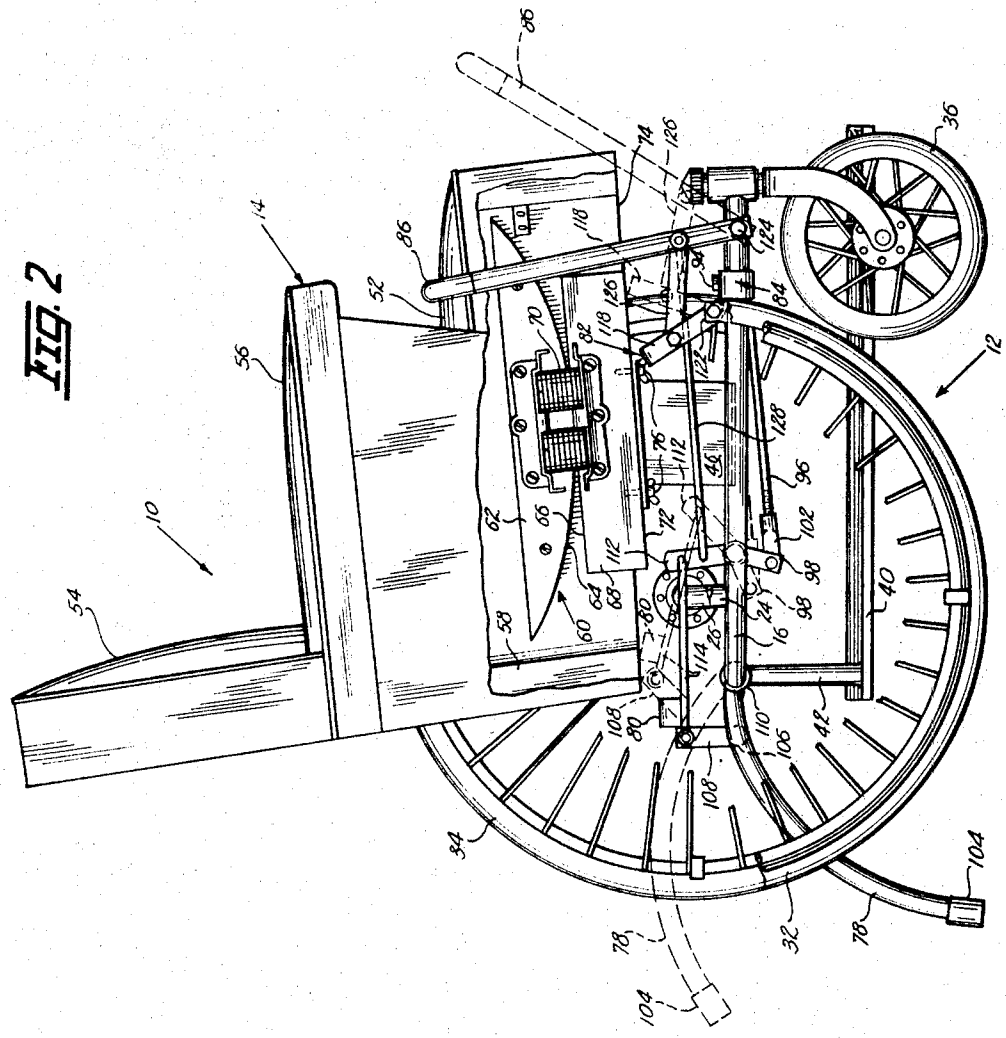
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Fig. 2



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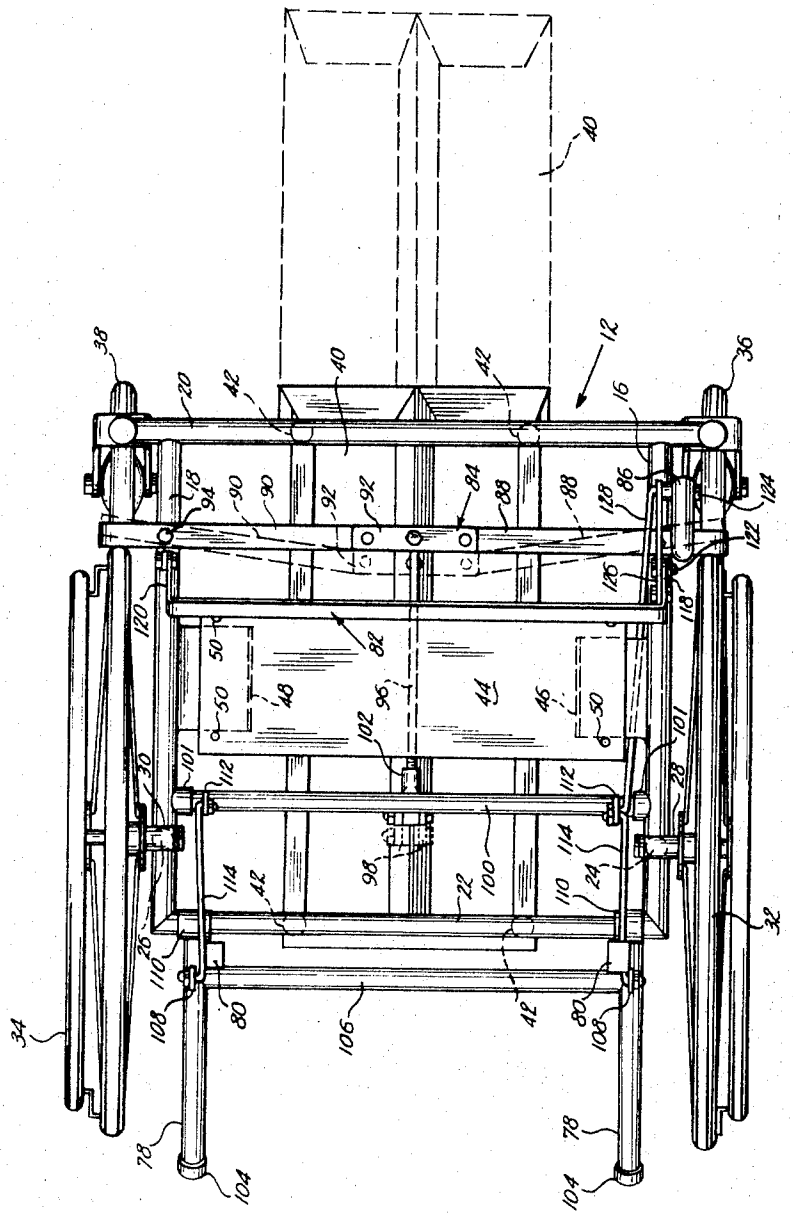


Fig. 3

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ROCKING WHEEL CHAIR

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8 Claims. (Cl. 280—30)

ABSTRACT OF THE DISCLOSURE

A rocking wheel chair where the rocking motion of the chair is possible only when the driving wheels are braked and an anti-tilt leg is engaged with the ground at the rear. With the wheels unbraked and the anti-tilt leg out of engagement with the ground, the chair is locked against a rocking motion.

This invention relates to wheel chairs and more particularly to improved features in such a chair which has a seat portion rockably mounted on a mobil frame as exemplified in my Patent 3,167,350.

The concept for a rocking wheel chair per se is not new since it has been disclosed at least as early as 1910 in Patent 961,389 and while such a chair has many obvious advantages for the pleasure and comfort of the users, there are also certain inherent disadvantages which apparently account for the lack of any popular use of this type of chair. Of primary importance in this regard is the ever present danger of tipping over, particularly backwardly, if the rocking motion becomes too pronounced and thus by reason of the very nature of the occupant who is generally incapacitated in some form, the possibilities for injuries are quite great. Further, since such chairs are mobil by their very design, the rocking feature is not conducive to comfort and adequate control of the chair by the occupant when the chair is being propelled.

With these observations in mind, one of the important objects contemplated by this invention is the provision of a rocking wheel chair that will not tip over either forwardly or rearwardly while the seat portion is utilized for a rocking motion.

More particularly it is an object herein to provide on the supporting frame of a rocking wheel chair one or more ground engaging legs that can be placed in ground engaging position at the rear of the chair when the same is used for rocking and which can be moved out of ground engaging position when the chair is being propelled.

Still another important object of this invention is to provide a brake for the drive wheels of the chair which is interconnected with the ground engaging legs and with a means for preventing rocking motion of the seat so that by a single operating lever, the occupant can lock the chair against rolling, put the legs in ground engaging position and permit the seat to perform a rocking motion. Likewise, with the same lever, the occupant can release the brake, elevate the legs from the ground engaging position and lock the seat against any rocking motion.

To attain these objects and such further objects as may appear herein, or be hereinafter pointed out, reference is made to the accompanying drawings forming a part hereof, in which:

FIG. 1 is a perspective view of a preferred embodiment of this new rocking wheel chair,

FIG. 2 is a side view thereof with parts broken away to more clearly illustrate the construction and with solid and broken line positions of the single lever controlled braking, anti-tilting and anti-rocking assembly, and

FIG. 3 is a top plan view of the frame and drive wheel section of this chair with the seat portion removed.

Referring to the drawings, the chair designated generally by the numeral **10** comprises the wheeled supporting frame **12** and the seat portion **14** attached thereto and susceptible of a rocking motion as will appear. Frame **12** includes the parallel spaced horizontal side rails **16** and **18** which are connected at the front by the cross rail **20** and at the rear by the cross rail **22**. Near the rear portion of rails **16** and **18** are the respective upstanding posts **24** and **26** which at their upper ends carry suitable bearing means **28** and **30** respectively for rotatably supporting the respective drive wheels **32** and **34** of a type well known for wheels of this type. At the extremities of the front cross rail **20** are the respective relatively large caster wheels **36** and **38** and thus far described it will be understood that frame **10** is of a generally well known construction for wheel chairs. Such frame is preferably made of metal tubular material but, of course, other materials may be used, if desired. As an addition to frame **10**, I have provided a foot rest platform **40** which is suitably suspended below frame **10** by the depending supports **42** and designed to be forwardly extensible as best seen in FIG. 3.

Intermediate rails **20** and **22** there is a transverse elevated seating supporting platform **44** having vertical sides **46** and **48** which at their bottom ends are suitably secured to rails **16** and **18**. Platform **44** has corner holes **50** for securing seat **14** as will appear.

Seat **14** is substantially a comfortable upholstered unit having the seat **52**, back **54** and arms **56**. Seat **52** is formed on a suitable frame **58** and within the confines of such frame and relative to opposed sides thereof adjacent the respective wheels **32** and **34** is the rocking assembly **60**. Both sides of assembly **60** are similarly constructed so a description of one side will suffice. As best seen in FIG. 2, assembly **60** includes a rocker member **62** secured to the side of frame **58** and the curved edge **64** of rocker **62** is disposed to rock on the top edge **66** of a depending plate or board **68** which is attached to rocker **62** by the spring assembly **70** as shown. The bottom edge **72** of plate **68** extends slightly below the bottom **74** of the chair frame and the respective edges **74** of the opposed plates **68** are removably secured to the platform **44** on frame **12** by the bolts and wing nuts **76** engaged therewith relative to holes **50**, it being noted that the bolt portions are fixedly secured to edge **74**. By this arrangement it will be understood that seat **14** can be suitably rocked at the will of the occupant and such a chair is illustrative of the type to which my new control elements have been applied, which in general include the movable ground engaging members at the rear of the chair shown preferably in the form of the anti-tilt legs **78**, rear and forward stops **80** and **82** respectively for selectively engaging the respective rear and forward underside of the chair frame to hold it against rocking at times, a brake means **84** and a lever handle **86** which is interconnected with the several control parts as will appear.

Brake **84**, which is a generally unitary bar like structure extending transversely of rails **16** and **18** near the front thereof, comprises two like end sections **88** and **90** each pivotally connected at their inner end to opposite ends of a center connecting bar **92**. The other ends of sections **88** and **90** are bent U-shaped to embrace rails **16** and **18** and are pivotally attached to such rails by pins **94** on which such end section pivot into and out of engagement with the ground engaging portion of wheels **32** and **34**. A rod **96** connects the center section **92** of brake **84** to a depending arm **98** that is attached to a cross rod **100** which extends between side rails **16** and **18** somewhat forwardly of the rear cross rail **22** as best seen in FIG. 3. Such rod **100** is designed to rotate about its longitudinal axis and is thus set in the bearings **101**. Preferably, a fitting **102** is used intermediate rod **96** and arm **98** to thread-

ably receive such rod and afford a longitudinal adjustment means therefor, and thus far described, it will be appreciated that relative forward and rear motion of rod **96** will move brake **84** from its solid to broken line positions seen in FIG. 2 which will be referred to later in more detail.

The anti-tilt legs **78** are preferably arcuate as seen in FIG. 2 and may include rubber tips or the like **104** on their lower or floor engaging end. Near their upper ends, legs **78** are braced by a cross rod **106** which has an upstanding apertured ear **108** secured thereto at each end. The upper ends of each leg **78** just forwardly of ears **108** are secured to respective collars **110** that in turn are rotatably mounted at respective end portions of the rear cross rail **22**. On each end portion of cross member **100**, there are also spaced upstanding apertured arms **112** which are secured to member **100** for rotation therewith and which are disposed respectively substantially in forward alignment with the respective ears **108** on the cross brace **106**. Pivotally connected to the ear **108** and the upper portion of arm **112** at each side of frame **12** are the respective rigid link members **114**, preferably of rod material and on the rearward portion of each link **114** near ear **108** is the upwardly extending stop **80**. Such stop **80** is in the form of a section of channel material welded to link **114** so that it extends upward and then laterally towards the center area of frame **12** whereby it can abut the bottom edge **74** of the chair at times to prevent any rearward rocking as will be referred to later in more detail.

The forward stop **82**, referred to generally heretofore, which is operative to prevent any forward rocking of the chair comprises an elongated bar **116** having integral depending end legs **118** and **120** which, at their bottom ends, are pivotally secured to respective ears **122** on the respective side rails **16** and **18**, such ears being located on such rails at a point substantially in line with the perimeter of wheels **32** and **34** as seen in FIG. 2. Stop **82** is thus an inverted channel shaped bar movable between the solid and dotted line position shown in FIG. 2 and operable as will later appear.

The upstanding single lever handle **86**, located preferably at the right side of frame **12** relative to an occupant of the chair, is pivotally secured at its lower end to the forward end portion of the side rail **16** by a pin **124** and a rigid link **126** is pivotally connected at respective ends to lever **86** slightly above pin **124** and to substantially the longitudinal center of leg **118** of the stop **82**. Another rigid link member **128** pivotally connects at one end to arm **112** below the attachment point thereon of link **114** and at the other end is similarly attached to lever **86** at the point of attachment thereon of link **126**.

Operation

To use chair **10** as a rocking chair, lever **86** is moved or pulled rearwardly with the following results. Link **128** acts on arm **112** to move it rearwardly which effects a rearward rotation of cross rod **100**. Since arm **98** depends from rod **100**, the direction of movement of such arm is forwardly which correspondingly moves rod **96** forwardly that is connected to the brake assembly **84** as seen in FIG. 3, the forward movement of rod **96** pushes the center section **92** forwardly causing it to pivot at its ends relative to sections **88** and **90**. This in turn causes the end portions of sections **88** and **90** to pivot on pins **94** so that such end portions bear against wheels **32** and **34** for braking purposes and such wheels are thereby locked against rotation. The action of section **92** will be a toggle effect in both forward and rear movements so that the brake **84** will not accidentally operate.

Also, as lever **86** is moved rearwardly, the front stop **82** is moved in an arc rearwardly by link **126** to its solid line position in FIG. 2 where it is out of contact with the chair frame and will not interfere with any rocking motion thereto. At the same time, the rearward movement of arm **112** described, effects the rearward movement of link **114** which in turn acts upon ears **108** to rotate the anti-tilt legs **78** downwardly on collars **110** until such legs come into firm contact with the floor and ground and thus serve to stabilize the chair against tipping over backwardly. Simultaneously with the lowering of legs **78** to floor level, the rear stop **80** is moved rearwardly and downwardly completely out of contact with the bottom of the chair frame. Thus, with lever in its rearward or solid line position as best seen in FIG. 2, the brake **84** is set in holding position, legs **78** are in contact with the ground or floor at the rear of the chair, and the seat portion **14** can be rocked at will for the enjoyment, pleasure and exercise of the occupant without danger or fear of tipping over or having the chair start in motion.

When lever **86** is moved or pushed forwardly to the broken line positions in FIG. 2, the various interactions described above are reversed whereby brake **84** is released, legs **78** are elevated and stops **80** and **82** are moved into positions where they abut the respective rear and forward lower edge of the chair frame to prevent any rocking motion thereof.

From the foregoing it is thought a full understanding of the construction and operation of this invention will be had and the advantages of the same will be appreciated and it is submitted that this invention as shown and described is aptly suited to achieve the purposes intended and is characterized by a combination of highly useful and mutually cooperating elements that combine their respective and proportionate functions in accomplishing the objects sought to be obtained.

It will be understood that the phraseology employed herein is for the purpose of description and not for limitation and that modifications and changes in the construction and arrangement of this invention can be made within the scope of what is claimed, without departing from the spirit and purpose thereof. It is thus intended to cover by the claims, any modified forms of structure or mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In an invalid wheel chair of the type which includes a frame defining a forward and rear end, ground engaging wheels mounted to said frame, and a chair member rockably mounted to said frame, the combination therewith of:

a leg movably carried by said frame at said rear end,

means on said frame to selectively move said leg into and out of ground engaging position,

a braking means comprising a bar assembly disposed transversely of and movably mounted on said frame and including end portions susceptible of frictional engagement with the periphery of the wheels on said frame, and

the means for moving said leg being operatively linked to said braking means whereby said braking means is set in holding position when said leg is in ground engaging position and said braking means is in released position when said leg is out of ground engaging position.

2. A chair as defined in claim **1** including:

a stop movably carried by said frame, and

means connecting said stop to said leg for movement therewith whereby when said leg is out of ground engaging position said stop is in abutment with the underside of one end of said chair to prevent it from rocking in one direction and when said leg is in ground engaging position, said stop is out of contact with said chair.

3. A chair as defined in claim **2** including:

an other stop movably carried by said frame, and

means interconnecting said other stop to the means for moving said leg whereby when said leg is out of ground engaging position said other stop is in abutment with the underside of the opposite end of said

chair to prevent it from rocking in one direction and when said leg is in ground engaging position, said stop is out of contact with said chair.

4. A chair as defined in claim 1 including:

a stop movably carried by said frame,

means connecting said stop to said leg for movement therewith whereby when said leg is out of ground engaging position said stop is in abutment with the underside of one end of said chair to prevent it from rocking in one direction and when said leg is in ground engaging position, said stop is out of contact with said chair,

an other stop movably carried by said frame,

means interconnecting said other stop to the means for moving said leg whereby when said leg is out of ground engaging position said other stop is in abutment with the underside of the opposite end of said chair to prevent it from rocking in one direction and when said leg is in ground engaging position, said stop is out of contact with said chair,

a braking means comprising a bar assembly disposed transversely of and movably mounted on said frame and including end portions susceptible of frictional engagement with the periphery of the wheels on said frame, and

the means for moving said leg being operatively linked to said braking means whereby said braking means is set in holding position when said leg is in ground engaging position and said braking means is in released postion when said leg is out of ground engaging position.

5. In an invalid wheel chair of the type which includes a frame defining a forward and rear end, ground engaging wheels mounted to said frame, and a chair member rockably mounted to said frame, the combination therewith of:

a leg movably carried by said frame at said rear end,

first and second stops respectively engageable with the underside of said chair at the respective rear and forward ends thereof movably carried by said frame,

a brake bar movably disposed on said frame transversely of the longitudinal axis thereof and susceptible of frictional engagement with the periphery of the frame wheels,

a single upstanding manually operable lever pivotally secured at its lower end to said frame, and

a linkage assembly interconnecting said leg, first and second stops and brake bar with said lever whereby movement of said lever in one direction places said leg in ground engaging position, sets said brake bar against the wheels of the frame and moves said first and second stops out of engagement with said chair, and movement of said lever in the opposite direction elevates said leg from ground contact, releases said brake bar and moves said stops into abutting engagement with the underside of said chair at the rear and front end thereof.

6. In an invalid wheel chair of the type which includes a frame defining a forward and rear end, ground engaging wheels mounted to said frame, and a chair member rockably mounted to said frame, the combination therewith of:

ground engaging means carried by said frame at said rear end,

means on said frame to selectively move said ground engaging means into and out of ground engaging position,

a braking means comprising a bar assembly disposed transversely of and movably mounted on said frame and including end portions susceptible of frictional engagement with the periphery of the wheels on said frame, and

the means for moving said ground engaging means being operatively linked to said braking means whereby said braking means is set in holding position when said ground engaging means is in ground engaging position and said braking means is in released position when said ground engaging means are out of ground engaging position.

7. In an invalid wheel chair of the type which includes a frame defining a forward and rear end, ground engaging wheels mounted to said frame, and a chair member rockably mounted to said frame, the combination therewith of:

ground engaging means carried by said frame at said rear end,

means on said frame to selectively move said ground engaging means into and out of ground engaging position,

a stop movably carried by said frame, and

means connecting said stop to said ground engaging means for movement therewith whereby when said ground engaging means is out of ground engaging position said stop is in abutment with the underside of one end of said chair to prevent it from rocking in one direction and when said ground engaging means is in ground engaging position, said stop is out of contact with said chair.

8. A chair as defined in claim 7 including:

an other stop movably carried by said frame, and

means interconnecting said other stop to the means for moving said ground engaging means whereby when said ground engaging means is out of ground engaging position said other stop is in abutment with the underside of the opposite end of said chair to prevent it from rocking in one direction and when said ground engaging means is in ground engaging position, said stop is out of contact with said chair.

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