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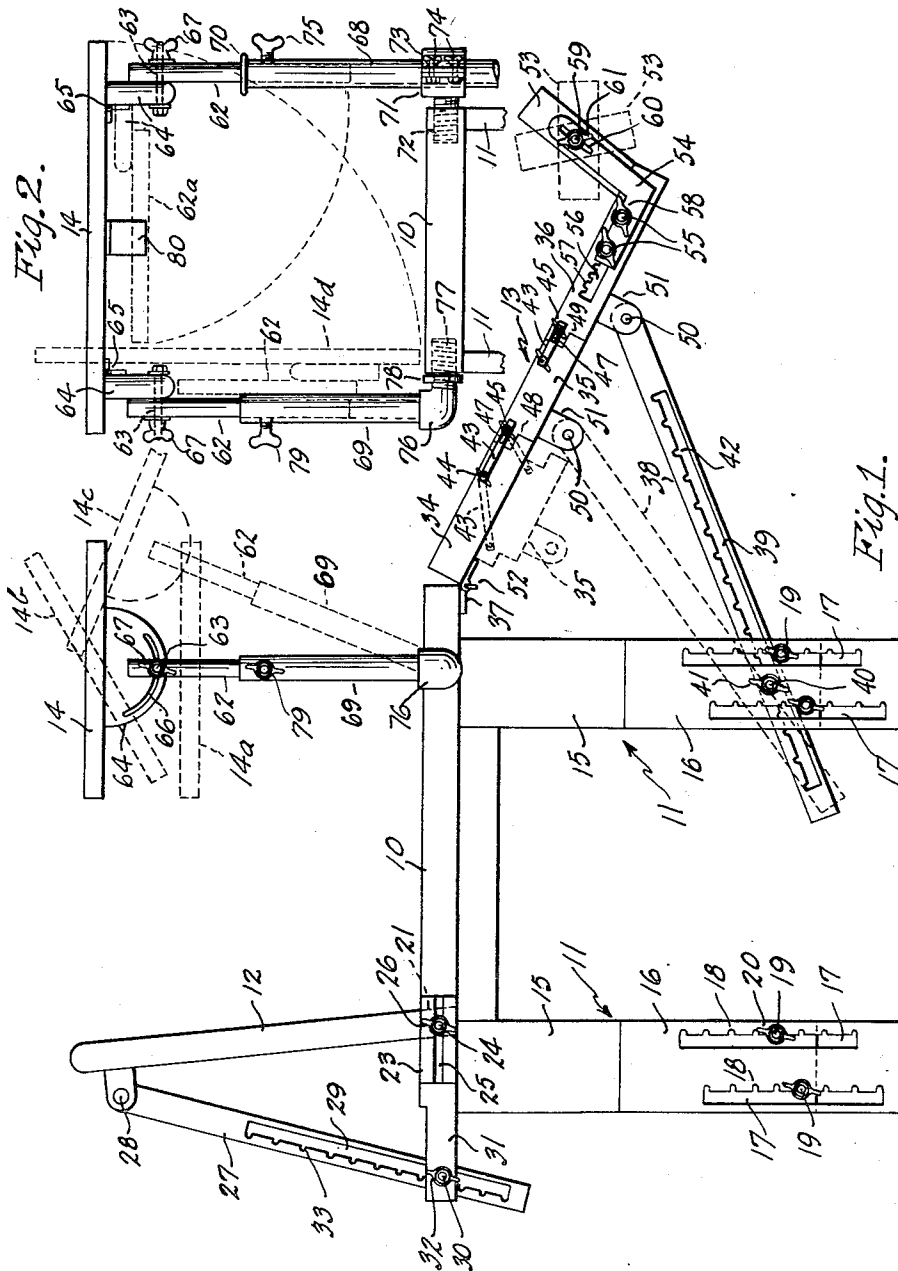
J. A. BURSEY

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ADJUSTABLE INVALID'S CHAIR

Filed June 3, 1948

2 SHEETS—SHEET 1



Inventor

Joyce A. Bursey
Hooster & Davis Attorneys

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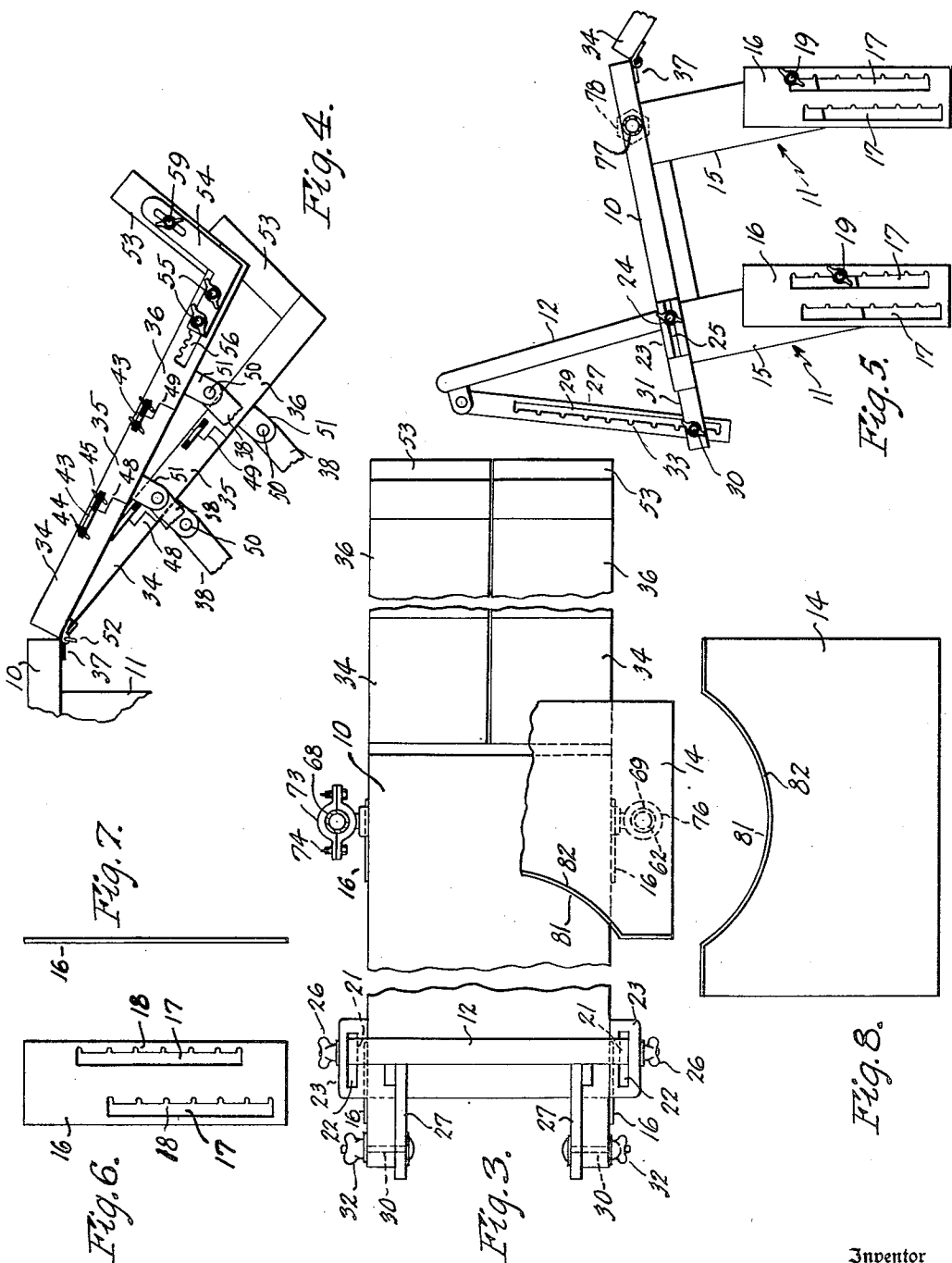
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2 SHEETS--SHEET 2



Inventor

Joyce A. Bursey
Hooster Davis Attorneys.

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ADJUSTABLE INVALID'S CHAIR

Joyce A. Bursey, Bridgeport, Conn.

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7 Claims. (Cl. 155—28)

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This invention relates to a chair for use by invalids, and particularly persons more or less crippled, and has for an object to provide a simple and effective construction of chair designed to meet the needs of a child or adult crippled through polio or other diseases, who, because of his condition, needs special support and adjustments.

It is a particular object to provide simple and effective adjustments whereby these objects may be attained.

Another object is to provide a construction whereby all these required adjustments are simple to make and require one person only to effect them.

Another object is to provide a chair of this type which is not cumbersome, but is of a strong and rigid construction with no danger of tipping in normal use.

A still further object is to provide adjustments of such a nature that the chair can be readily changed to meet the growth of a child.

A still further object is to provide a construction in which the back can be readily adjusted to permit shortening or lengthening of the seat, and the angle of the back to the seat can be adjusted for all conditions of use.

The legs are also so constructed that the seat may be raised or lowered to different heights, and may be tipped to different angles, and there is an adjustable support for each leg and foot, with adjustments to allow for a Doise or plantar flexed foot and the like, and these supports are so constructed that either one of the leg or foot supports may be removed if desired where only one is required.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawings forming a part of this specification. It is, however, to be understood the invention is not limited to the specific details of construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In these drawings:

Fig. 1 is a side elevation of the chair;

Fig. 2 is a detail elevation of a portion only of the chair, looking from the front;

Fig. 3 is a top plan view with portions broken away to more clearly show the construction;

Fig. 4 is a side view of the foot rest;

Fig. 5 is a side elevation of the chair on a somewhat reduced scale showing one type of leg adjustment;

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Figs. 6 and 7 are plan and edge views respectively of one of the adjustable leg supports, and Fig. 8 is a plan view of a table rest which may be used.

The figures of the drawing show the chair somewhat diagrammatically without going into specific details of various joints or connections and the like, as it will be understood these specific structures may be of suitable known or standard types. The chair comprises a seat 10 supported on four legs 11 with a suitable back or back rest 12 at the back edge of the seat, and adjustable foot and leg rests 13 at the front edge of the seat, with a suitable table 14 above the seat as a support for books, papers, or other articles.

The legs 11 are made in two sections including an upper section 15 comprising preferably substantially rectangular wooden members secured to and projecting downwardly from the seat 10 by any suitable means, the details of which are not shown, and a lower adjustable section 16 which may be of metal or other suitable material, in this construction being a substantially flat plate, as shown in Figs. 6 and 7, provided with laterally spaced longitudinal slots 17 provided with a series of notches 18 in one edge. In these slots are securing bolts 19 fastened to the upper section 15, and by means of which the sections 16 may be held in different adjusted positions for purposes presently to be described, by suitable clamping means, such as the thumb or wing nuts 20.

The back or back rest 12 is provided with downward extensions 21 at its opposite side edges extending into longitudinal slots 22 in the holding brackets 23 located adjacent the back edge of the seat 10, and carry securing bolts 24 each extending through elongated slot 25 in the front outer wall of this bracket, with clamping wing nuts 26 on these bolts for permitting adjustment of the lower edge of this back forwardly or backwardly with respect to the seat, and then clamped in adjusted position. This permits of adjustment of the depth of the seat. The inclination of the back rest 12 may be adjusted by means of the braces 27 pivoted at their upper ends at 28 to the back adjacent its upper edge, and each provided with an elongated slot 29 for passage of a bolt 30 mounted in an extension 31 extending backwardly from the back edge of the seat 10, and provided with thumb nuts 32 for clamping the braces in adjusted position. To facilitate the holding action of the grooves and prevent inadvertent slipping to release the back, slot 29

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is provided with lateral recesses or notches 33 on one edge in which the bolts 30 may seat. It will be evident that by loosening the clamping nuts 26 and 32, the lower edge of the back may be adjusted to change the effective length of the seat, and the angle of the back may be adjusted to any position desired, between the upright, substantially as shown in Fig. 1, to a reclining or any substantially horizontal position.

The foot rests 13 at the forward edge of the seat are mounted for independent up and down adjustment, there being preferably two of these rests, one for each foot and leg. The leg rest portions are made in three sections or blocks 34, 35 and 36, the upper section 34 being connected to the seat 10 by a detachable hinge connection 37, and either section 35 or 36 may be adjustably connected to the adjacent front leg 11 of the chair by a brace 38 provided with an elongated slot 39 in which extends a clamping bolt 40 mounted on the leg 11 with a clamping wing nut 41 to secure the braces in different adjusted positions. To facilitate the holding action and prevent inadvertent release of the braces, a series of notches 42 are provided in the upper edge of the slot in which the bolt 40 may rest for more effective holding of the brace. It will be apparent that by loosening this nut 41 the angle of the foot rest may be adjusted to any position desired and then clamped in the adjusted position.

The sections 34, 35 and 36 of the leg rest are detachably connected by the connections 43, so that if desired the rest may be shortened by removing the intermediate section 35 and connecting the lower section 36 to the upper section 34. Any suitable connection may be used, that shown comprising a strap 43 hinged at one end to the upper section by a bolt 44 provided with a clamping wing nut, and at its other end hinged to the lower block or section by a bolt 45 provided with similar clamping wings, these bolts extending through elongated slots 47 in straps 43, to permit longitudinal movement between the sections as well as relative swinging or pivoted movement. Instead of using a straight butt joint between the sections it is preferred to use a stepped joint, as indicated at 48 and 49, so that when in position the upper edges of the lower sections are supported by the lower edges of the next upper section without depending on the straps 43 for supporting them, these straps being used to prevent longitudinal movement to hold the stepped joints together. In removing the central or intermediate section 35, after loosening the bolts 44 and 45 and disconnecting the similar bolts at its connection with the lower section 36, the section 35 may be shifted forwardly to release the stepped joint 48 and then swung backwardly under the upper section 34, as shown in dotted lines, Fig. 1. The lower section 36 can then be connected at its upper edge to the upper section 34 by similar straps 43.

The brace 38 may be pivotally connected to the lower section 36 or the intermediate section 35 by a pivotal connection 50 to an ear or block 51 on the under side of the section. The hinge pin 52 of the connecting hinge 37 between the leg rest and the chair seat is removable and provided with a hand grip for easy withdrawal of this pin so that either leg rest may be removed if it is desired to use one only.

At the lower end of each leg rest is an adjustable foot rest 53. This is of any desired height and is preferably located adjacent the lower or forward edge of the section 36, although it is adjustable on this section forwardly or back-

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wardly to adjust its position nearer to or farther from the chair seat, and it is also permitted angular adjustment, as indicated by the dotted lines in Fig. 1. The form of mounting shown to effect these adjustments comprises an angle bracket or strap 54 secured by a pair of bolts 55 to the section 36, these bolts extending into an elongated slot 56 provided with notches 57 for seating of these bolts to permit longitudinal adjustment of the bracket on the section 36, and it may be clamped in adjusted position by the wing nuts 58. A similar clamping bolt 59 on the foot rest 53 projects through an elongated slot 60 in the upright portion of the strap 54 and is provided with a clamping wing nut 61. This connection permits raising and lowering of the foot rest 53 and its adjustment to different angular positions, as indicated in dotted lines in Fig. 1, and clamped in the adjusted positions by the nuts 61.

The book supporting or writing table 14 is mounted so that it may be adjustable as to height and also as to different angles or inclinations. For this purpose it is mounted by downwardly extending rods 62 pivotally connected at their upper ends by bolts 63 through downwardly extending curved brackets or blocks 64 pivoted to the under side of the table by hinges 65 so that they may be swung inwardly with respect to the table. These brackets 64 are each provided with a curved elongated slot 66 for the bolts 63, and the bolt is provided with a clamping wing nut 67. For clamping the pivotal connection between the rods and the bracket in any adjusted positions along the slot, the two rods 62 are telescoped into the upper ends of a pair of upright pipes or tubes 68 and 69 mounted on the side edges of the chair seat adjacent the front edge of this seat. The pipe or tube 68 is provided with an outwardly extending flange 70 at its upper end, and is mounted for vertical adjustment at its lower end in a clamping bracket 71 secured by a lateral threaded stud 72 threaded into the edge of the seat 10. This bracket is made in two sections with an outer clamping section 73 secured to the other section by the clamping bolts and wing nuts 74. By loosening these nuts the pipe or tube 68 may be released and shifted downwardly below the lower end of the rod 62 to release this rod, for a purpose presently to be described. The tube 68 is clamped in different adjusted positions by the nuts 74, and the rod 62 is clamped in different adjusted positions in this pipe or tube by means of a wing type set screw 75. The opposite tubular support 69 is threaded at its lower end into an elbow support 76 provided with a laterally threaded extension 77 threaded into a tapped hole in the side of the chair seat, by means of which it will permit the elbow 76 to be turned to different angles and then clamped in adjusted position by a lock nut 78 threaded on the extension 77 and adapted to clamp against the side of the chair seat. Longitudinal adjustment of the rod 62 in the tubular support 69 is permitted by the wing type set screw 79, and clamped in adjusted positions by this screw.

It will be apparent that the height of this table or support may be adjusted as indicated by dotted lines 14a in Fig. 1, by loosening the set screws 75 and 79 and sliding the rods 62 in their tubular support and then clamping them in adjusted positions. The angular position of this table or support on the rods 62 may be adjusted by loosening the nuts 67 and shifting the top relative to the rods 62 by means of the curved slots 66, as indicated by dotted lines 14b in Fig. 1. The table may be shifted toward and from the

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occupant of the chair, as indicated by the dotted lines 14c in Fig. 1, by first loosening the lock nut 78 which will permit turning the supports 71 and 76 about their threaded connections 72 and 77, and then they may be clamped in this adjusted position by tightening the nut 78.

The table may also be swung to an upright position at one side of the chair seat, as indicated at 14d in Fig. 2. To effect this the set screw 75 is loosened, as well as the wing nut 74. This permits the tubular support 68 to be slid down below the lower end of the supporting rod 62 in this tube. This rod may then be swung inwardly and upwardly to the dotted line position 62a at the under side of the table, this being permitted by the hinge connection 65 of the block or bracket 64 to the under side of the table, and it may be held in this position by any suitable type of spring clip or clamp 80. Then the table may be swung down to the dotted line position 14d, as shown in dotted lines Fig. 2, by swinging it about the hinge connection 65 on the block 64 supported by the support 69 on the left hand side of the seat, as viewed in Fig. 2, which is really the right hand side in reference to an occupant of the chair.

The chair seat may be adjusted to various heights and various angles or inclinations by adjusting the lengths of the supporting legs 11. By loosening the clamping nuts 19 the lower section 16 may be adjusted up or down on the upper section 15, and secured in adjusted positions to adjust the height of the chair, or if one or more of these adjustments are made more or less than the other, the angle or inclination of the chair may be adjusted as desired. Thus, for example, by raising the plates or sections 16 of the rear legs more than the front legs, to shorten the rear legs, the chair may be inclined backwardly, as shown in Fig. 5; or by making the front legs shorter than the rear legs by adjusting their sections 16, the chair may be tipped forwardly. In thus adjusting the chair, however, it is preferred to also make an angular adjustment of the sections 16 so that they will rest squarely on the floor at their lower ends, as shown in Fig. 5. This may be permitted by removing one of the securing bolts 19 in each section, which will permit swinging of the section or plate 15 about the other bolt as well as adjusting it to different heights, as shown in Fig. 5, and in which position it may be clamped by tightening up the clamping nut.

It will be clear from the above that the chair is of rigid, sturdy construction, and that it may be given all the adjustments necessary to meet the needs of a crippled or otherwise invalided patient, particularly the needs of a child or adult crippled through polio or other diseases who, because of his condition, needs special supports and adjustments. It will be apparent that all adjustments are simple and do not require the services of more than one person in making them. The chair is adapted for home use, hospital or school, and because of the nature of the adjustments it can be changed to meet the growth of a child. It is, however, intended to construct the chair in three different sizes scientifically proportioned to more easily accommodate or meet growth of the child beyond given limits. The table, although adapted for all adjustments required to meet the desires of the patient as to height, angle of inclination and so forth, may be easily placed to one side so as not to interfere with the patient getting out of the chair, or when not in use it can be locked at one side out

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of the way. The angular adjustable feature of the table is also desirable for a patient requiring sight-saving equipment. This table may be of any suitable shape, as rectangular or square, or it may have a recess 81 in its front edge to permit the side portions to extend at the side of the patient to form arm rests or other supports, and may be provided at this edge with an upwardly extending rim 82 to prevent articles sliding off, particularly when the table is inclined.

Having thus set forth the nature of my invention, I claim:

1. A chair of the character described comprising a seat, legs supporting the seat, an upright back support at the rear edge of the seat, guides at the side edges of the seat adjacent its rear edge, cooperating means at the lower edge of the back support slidable in said guides for adjustment of this edge forwardly and backwardly to adjust the effective length of the seat and to secure the back support in adjusted positions, said means also constructed to permit swinging movement of the back support to vary its angular position with respect to the seat, and a supporting brace connecting the upper portion of the back rest and the seat and adjustable to permit angular adjustment of the back rest and secure it in adjusted positions.

2. A chair of the character described comprising a seat, legs supporting the seat, an upright back support at the rear edge of the seat, guiding means at the opposite side edges of the seat provided with elongated slots, said back rest being provided with downward extensions at its lower edge located in said slots and adjustable forwardly and backwardly therein to vary the effective length of the seat, clamping means for securing said extensions in adjusted positions, supporting braces pivoted at their upper ends to the upper part of the back support and provided with longitudinally extending slots, supports extending rearwardly from the seat, and clamping bolts on said supports and extending through the slots to secure the back support in different angular positions with respect to the seat.

3. A chair of the character described comprising a seat, legs supporting the seat, an upright adjustable back support at the rear edge of the seat, a pair of leg and foot rests pivoted side by side to the forward edge of the seat and each comprising a series of sections detachably secured together whereby the length of the rest may be varied by removing one of said sections, and means for mounting the foot rest on the forward section of the leg rest for adjustment toward and from the leg rest and to change its angular position.

4. A chair of the character described comprising a seat, legs supporting the seat, an upright adjustable back support at the rear edge of the seat, a leg and foot rest hinged to the forward edge of the seat and comprising a series of separable sections provided with overlapped stepped joints at their abutting edges, means detachably securing the overlapped portions of said joints together to permit removal of one of said sections to vary the length of the leg rest, a foot rest adjustably secured to the lower section of the leg rest, a supporting brace pivoted to the leg rest, and means adjustably securing said brace to a leg of the chair and securing it in adjusted positions to change the inclination and height of the leg rest.

5. A chair of the character described comprising a seat, an upright adjustable back support at the rear edge of the seat, front and rear legs

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supporting the seat, said legs comprising upper rectangular wooden members and lower elongated plates provided with laterally spaced upright elongated slots, and clamping bolts extending through said slots and secured to the upper members to permit vertical adjustment of said plates and to secure them in adjusted positions.

6. A chair of the character described comprising a seat, an upright adjustable back support at the rear edge of the seat, front and rear legs supporting the seat, said legs comprising upper rectangular wooden members and lower elongated plates provided with laterally spaced upright elongated slots, clamping bolts extending through the slots and secured to the upper members to permit vertical adjustment of the plate to vary the length of the leg, one edge of each slot being provided with a series of notches spaced along said edge and adapted to receive and seat the bolt in the slot, and clamping nuts on the bolts for clamping the plate in adjusted positions.

7. A chair of the character described comprising a seat, an upright adjustable back support at the rear edge of the seat, front and rear legs supporting the seat, said legs comprising upper rectangular wooden members and lower elongated plates provided with laterally spaced upright elongated slots and having a straight lower end to rest on a floor, clamping bolts extending through said slots and secured to the upper mem-

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bers to permit vertical adjustment of the plate to vary the length of the leg and adjustment of the seat to different inclinations, one of said bolts being removable to permit angular adjustment of the plate member on the upper member so that in different angular positions of the seat the lower straight edge of the plates may rest squarely on the floor, and clamping nuts on the bolts for securing the plates in adjusted positions.

JOYCE A. BURSEY.

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