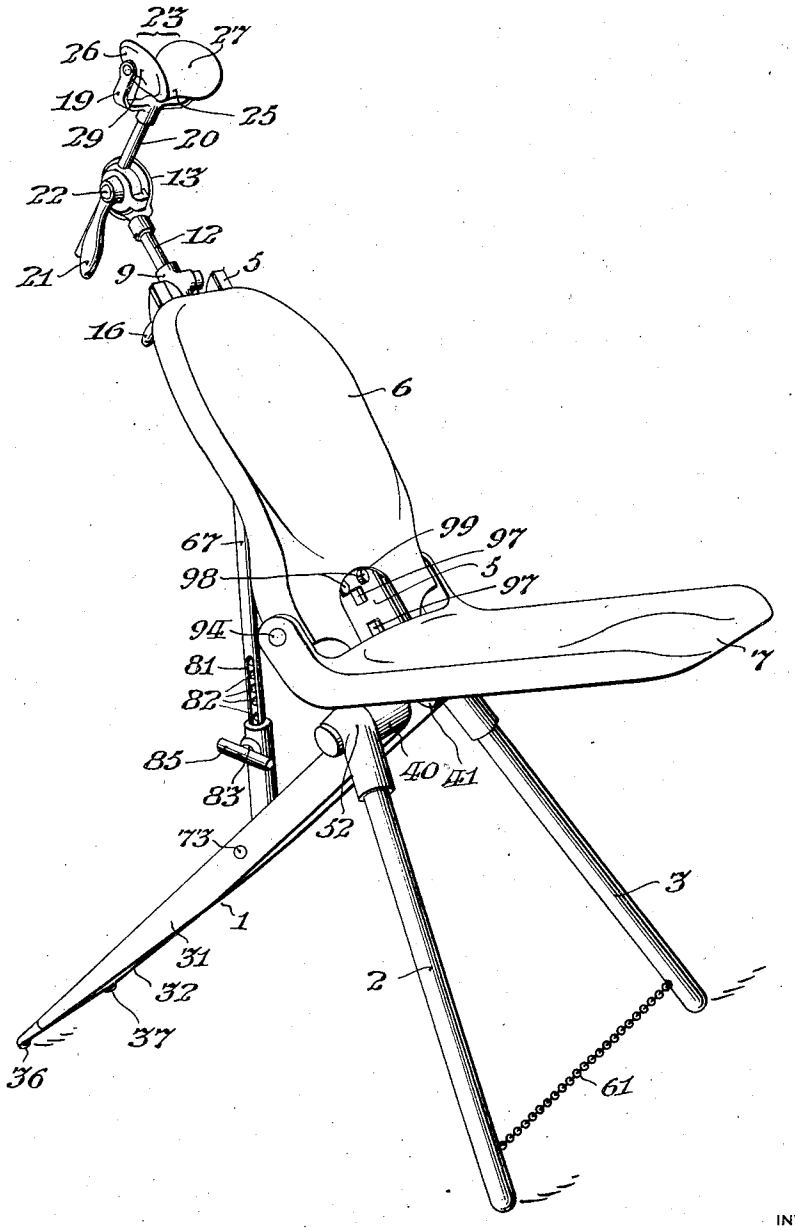
May 5, 1942. R. C. ANGELL 2,282,109

FOLDING CHAIR

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FIG. 1.



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FOLDING CHAIR

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FIG. 2.

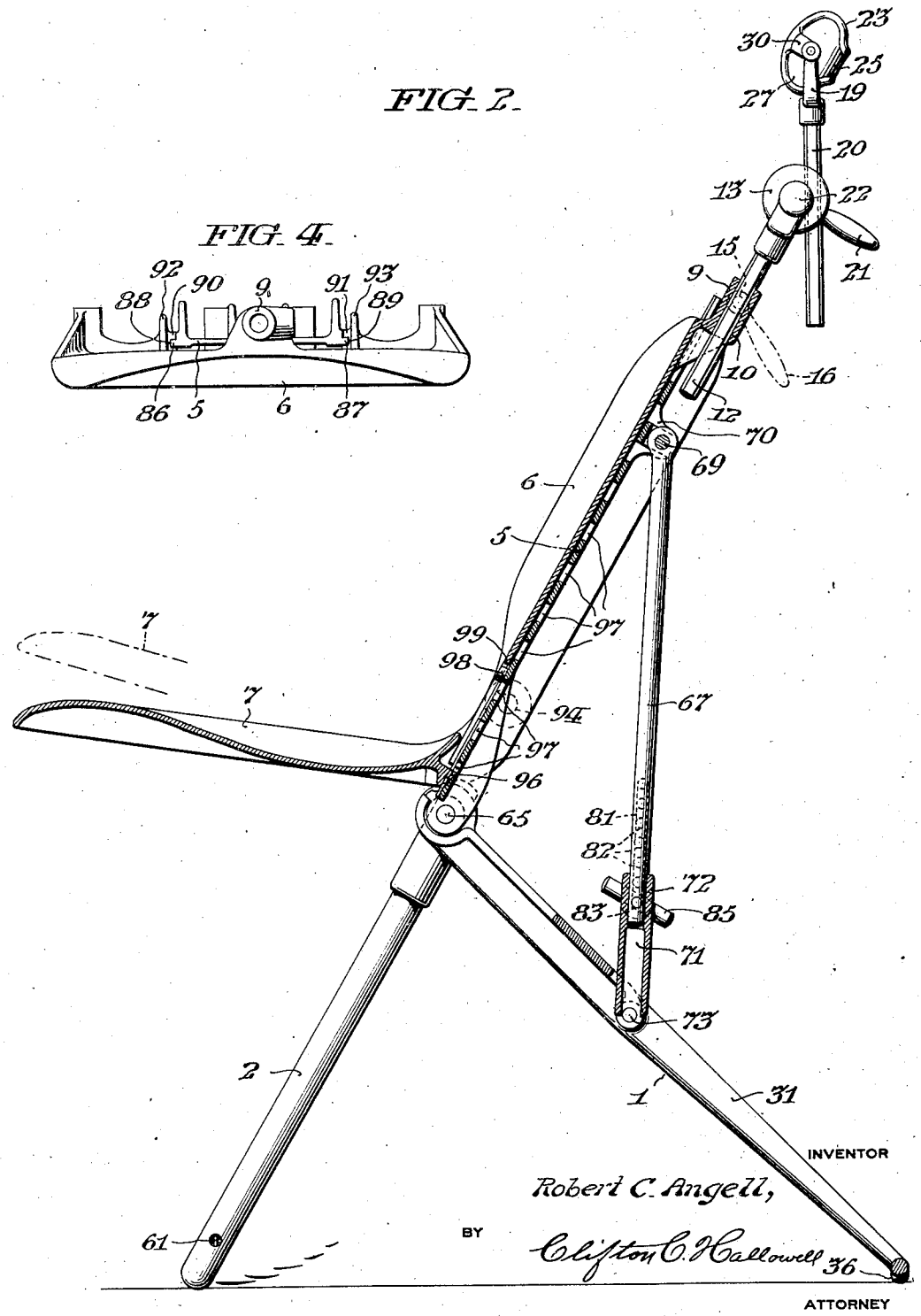


FIG. 4.

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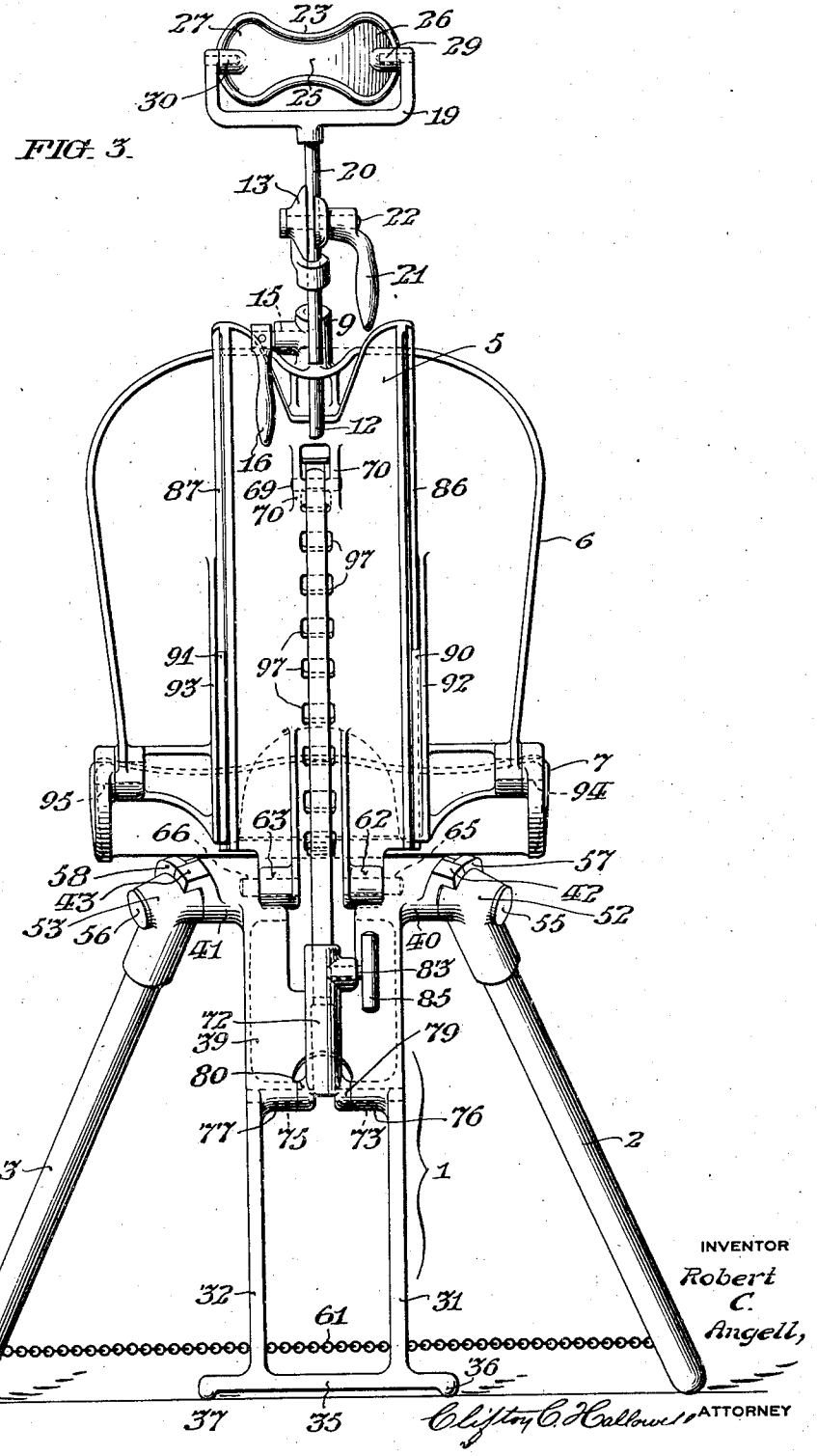
ATTORNEY

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FOLDING CHAIR

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FIG. 3.



INVENTOR
Robert C. Angell,

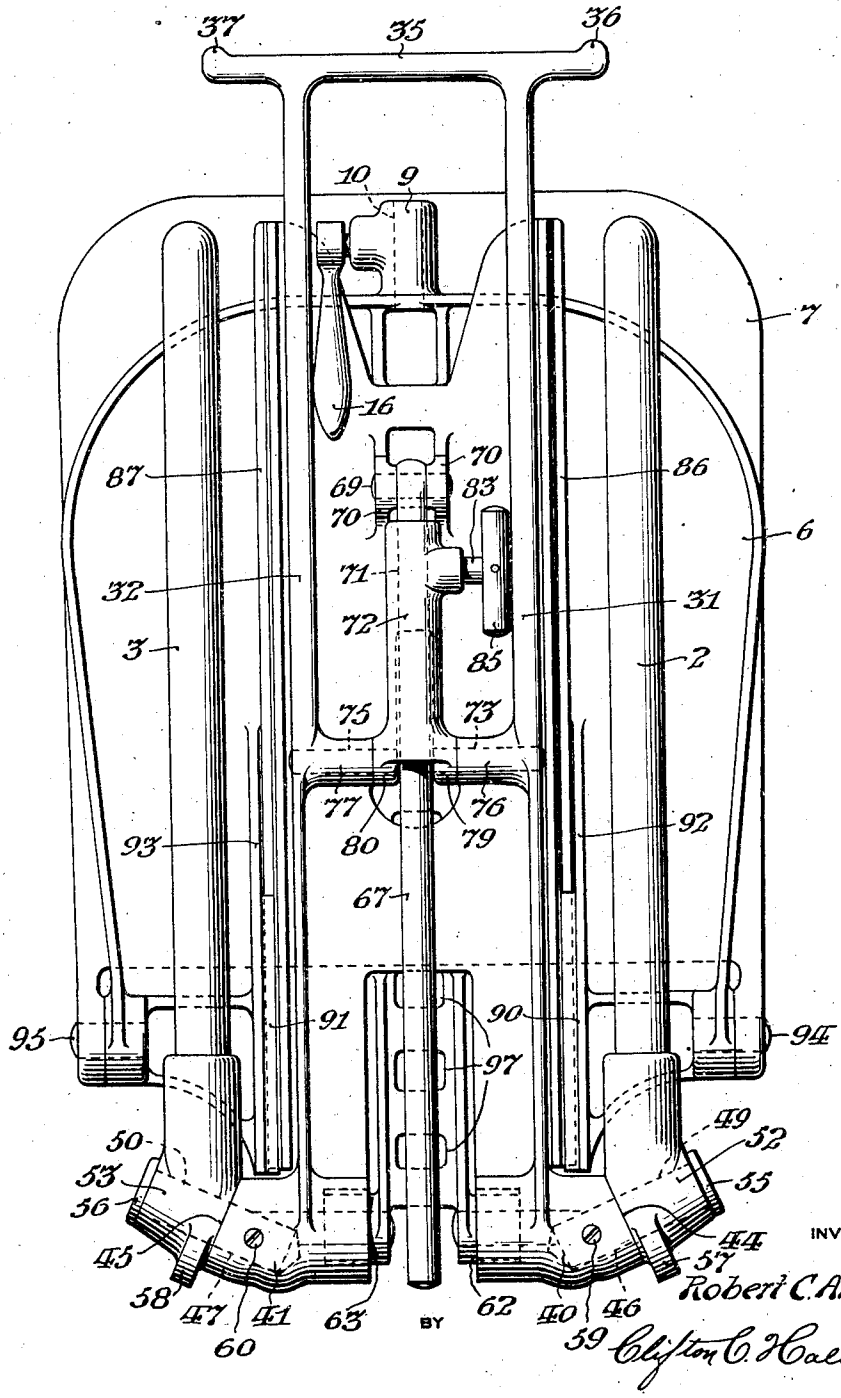
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FOLDING CHAIR

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FIG. 5.



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FOLDING CHAIR

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FIG. 6.

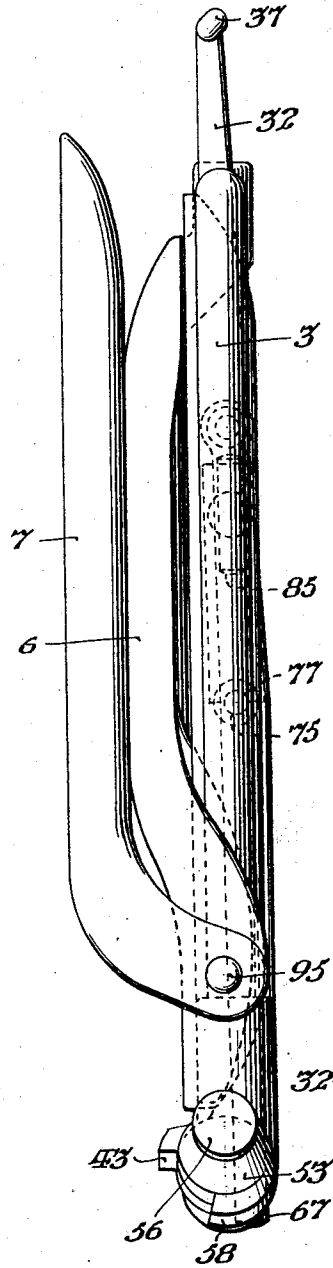


FIG. 7.

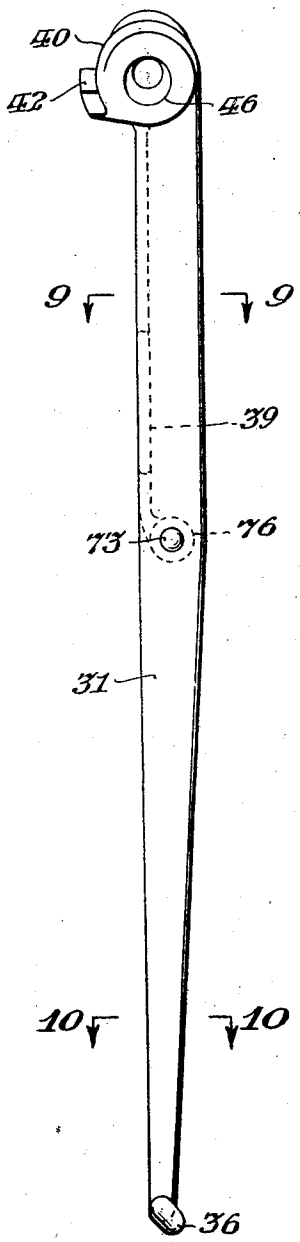


FIG. 8.

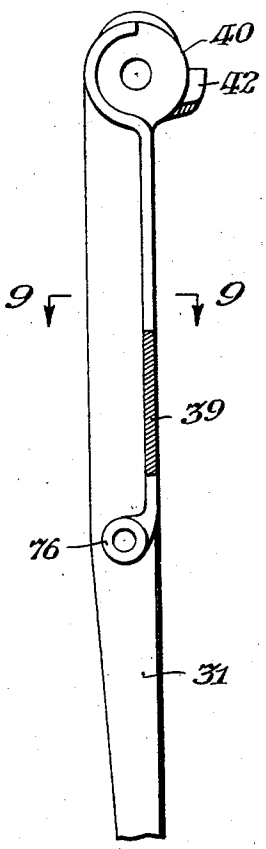


FIG. 9.

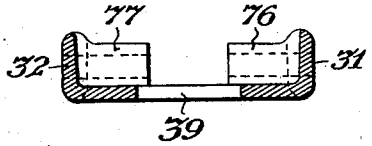
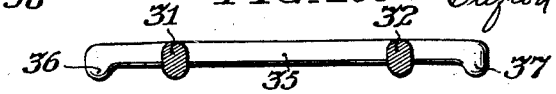


FIG. 10.



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Patented May 5, 1942 2,282,109

UNITED STATES PATENT OFFICE

2,282,109

FOLDING CHAIR

Robert C. Angell, Prince Bay, N. Y., assignor to The S. S. White Dental Manufacturing Company, a corporation of Pennsylvania

Application October 5, 1939, Serial No. 297,990

6 Claims. (Cl. 155—25)

My invention relates particularly to that type of chairs that may be folded to occupy a minimum of space and to be conveniently transported from place to place, and is especially directed to chairs adapted to the requirements of itinerant dental practitioners and to the needs of the professional staff of the army and navy.

The principal objects of my invention are to provide a portable chair of such simplified construction that it may be readily folded into such a compact form as to be conveniently housed in a minimum sized container, or a plurality of such chairs may be stacked in folded condition so as to conserve space when stored or when loaded for transportation from one place to another.

Other objects of my invention are to provide a portable chair having relatively adjustable seat, back and headrest, with legs readily foldable into compact relation therewith for convenient transportation or storage, as may be desired, and that may be as easily unfolded, and the assembled structure set up for use with equal facility.

Further objects of my invention are to provide a portable chair in which the seat and back are capable of a wide range of adjustment, and may be conveniently raised and lowered or tilted into the different desired positions most convenient to the operator and comfort to the patient.

My invention comprehends a portable chair having a substantially form-fitting seat, back and headrest preferably formed of thin material, preferably metal, and being capable of relative adjustment, the seat and back being hingedly connected and together slidably mounted upon the backrest frame slide-bar which is tiltably supported upon a suitably provided foldable tripod mounting.

The form of my invention as hereinafter more definitely specified comprises a portable dental chair in which the seat and back are relatively hinged to permit them to be collapsed into folded position and to afford adjustment into different positions on the back-supporting slide-bar, which is tiltably mounted and adjustably retained in relatively different positions of inclination upon the tripod mounting. Said tripod mounting comprises a frame prop normally inclined and extending rearwardly and terminating in a strut bar having relatively spaced feet, its forward end affording a pivotal or hinged support for said backrest supporting slide-bar and providing relatively angular pintle supports for the forwardly and outwardly inclined supporting legs of the tripod mounting. Said legs are so mounted that when turned rearwardly into folded position, they will lie in closely adjacent position to the side bars of said frame prop and in substantially parallel relation thereto.

My invention also includes all of the various novel features of construction and arrangement as hereinafter more definitely specified.

In the accompanying drawings, Figure 1 is a perspective view of the portable folding dental chair constructed in accordance with my invention as viewed from a position slightly forward of the right hand side thereof; Fig. 2 is a central vertical longitudinal sectional view of the chair shown in Fig. 1; Fig. 3 is a rear elevational view of said chair; Fig. 4 is a plan view of the backrest and its supporting slide-bar; Fig. 5 is a rear elevational view of said chair shown in upright folded or collapsed position; Fig. 6 is a side elevational view of the folded or collapsed chair as viewed from the left hand side thereof; Fig. 7 is a side elevational view of the tripod frame prop per se as viewed from the right hand side of the chair; Fig. 8 is a fragmentary central vertical sectional view of the upper portion of the tripod frame prop looking outwardly toward the right hand bar thereof; Fig. 9 is a horizontal sectional view of said tripod frame prop taken on the lines 9—9 in Figs. 6 and 7; and Fig. 10 is a horizontal sectional view of said tripod frame prop taken on the line 10—10 in Fig. 7.

In said figures the chair, which is best shown in its set-up or operative position in Figs. 1, 2 and 3, comprises the collapsible tripod mounting including the inclined frame prop 1 extending rearwardly and the forwardly extending legs 2 and 3 which relatively spread laterally, as best shown in Figs. 1 and 3; the backrest supporting slide-bar 5 upon which the backrest 6 may be slidably adjusted up or down, and the seat of which is hingedly connected to the opposite sides of said backrest 6 so as to be turned up or folded into parallel relation with respect to said backrest.

The backrest 6 is extended upwardly to provide the boss 9 having the bore 10 through which the shaft 12 of the headrest mounting clamp 13 extends, which shaft 12 may be engaged in different adjusted positions by the set-screw 15 having the hand lever 16. The clamp 13 supports the headrest mounting-yoke 19 whose stem 20 extends through said clamp 13 and may

be engaged therewith by the hand lever 21 on the headed screw 22 in any desired adjusted position in a well known manner.

As shown in Figs. 1, 2 and 3, the headrest mounting-yoke 19 rotatably supports the headrest pad 23 which is, generally speaking, of the form of the figure eight extended horizontally, having a medial waist region 25 and oppositely extended lateral portions 26 and 27 expanded into cupped substantially circular contour and provided with the lugs 29 and 30.

The tripod frame prop 1 comprises the relatively spaced side-bars 31 and 32 connected at their lower ends by the transverse bar 35 which extends oppositely beyond said side-bars and terminates in the feet 36 and 37, and said side-bars 31 and 32 are connected at their upper regions by the web 39 affording a strut which merges upwardly into the substantially cylindrical bosses 40 and 41 respectively extending both inwardly and outwardly from the plane of said side-bars 31 and 32, and being provided with the projecting stop lugs 42 and 43 respectively.

As best shown in the folded chair, see Fig. 5, the outer faces 44 and 45 are relatively inclined in angular relation to the common axis of said bosses 40 and 41, and are provided with the bores 46 and 47 respectively extending into said bosses on axes respectively normal to said faces 44 and 45, and arranged to receive the pintles 49 and 50 extended through the fittings 52 and 53 of the legs 2 and 3, and having the heads 55 and 56 which retain said legs 2 and 3 and their fittings 52 and 53 in position to rotate about said axes, said pintles 49 and 50 being retained in said bores by the set-screws 59 and 60.

As shown in Fig. 3, the relative spread of the tripod prop 1 and the legs 2 and 3 when in operative position is limited by engagement of the radially projecting flanges 57 and 58 on the leg fittings 52 and 53 respectively engaging the stop-lugs 42 and 43 on the bosses 40 and 41.

It will be obvious from inspection of Figs. 3 and 5 that by reason of the relatively angular axes of the pintles 49 and 50, the legs 2 and 3 when thrust forwardly will spread laterally to an extent limited only by the chair 61 as shown in Fig. 3; and when turned upwardly as shown in Fig. 5 into folded position, said legs 2 and 3 will assume a relatively parallel relation to the tripod frame prop 1.

Referring now to Figs. 2 and 3, the backrest slide-bar 5 is narrowed downward and terminates in the bearing bosses 62 and 63 through the bores of which the pintles 65 and 66 respectively projecting from the inner faces of the bosses 40 and 41 extend, so that said backrest slide-bar 5 may be adjusted about the axis of said pintles 65 and 66 into various relatively inclined positions more nearly approaching the horizontal, its position being determined and limited by the backrest slide-bar supporting rod 67.

Said supporting rod 67 is pivotally engaged by the pintle 69 with the lugs 70 projecting rearwardly from the upper region of the backrest supporting slide-bar 5, which rod 67 extends into the bore 71 in the supporting rod guide 72, which is pivotally connected to the tripod frame prop 1 by the relatively alined pintles 73 and 75 extended through the bosses 76 and 77 on the tripod frame support 1 and the laterally extended bosses 79 and 80 on the supporting rod guide 72.

As shown in Figs. 1 and 2, the supporting rod 67 is provided with the slot 81 from the floor of which a series of depressions 82 extend inwardly, into which the inner projecting end of the set-screw 83 extends, being provided with the handle 85 by which it may be actuated to engage or release any one of said depressions to vary the inclination of the backrest supporting slide-bar 5 and the backrest 6 and seat 7 which are carried thereby.

Referring particularly to Figs. 2, 3, 4 and 5, it will be noted that the backrest supporting slide-bar 5 affords guide rails 86 and 87 which are slidably engaged in the grooves 88 and 89 formed by the flanges 90 and 91 projecting from the opposed faces of the ribs 92 and 93 which project rearwardly from the backrest 6, as best shown in Fig. 4.

Referring again to Figs. 2 and 3, the backrest 6 and seat 7 are hingedly connected by the pintles 94 and 95 so that said seat 7 may be turned upwardly about said pintles into parallel relation to said backrest 6, as shown in Figs. 5 and 6, and thus folded for stacking or transporting.

As illustrated in Fig. 2, the seat 7 is provided with the rearwardly extended detent 96, which is arranged to be projected into any one of the several centrally alined detent apertures 97 in the backrest supporting slide-bar 5, and to so engage the lower surface thereof as to support said seat and back in the various positions incident to the relative spacing of said apertures, said detent 96 being engaged with the lowermost aperture 97, and consequently said seat and back, as illustrated in Fig. 2, occupy the lowermost position of adjustment.

From the foregoing description it will be obvious that when the seat 7 is swung upwardly on the axis of the pintles 94 and 95 to the position indicated by the dot-and-dash lines in Fig. 2, the detent will be sufficiently withdrawn from the lowermost aperture 97 to permit raising of the backrest 6 and seat 7 on the guide rails 86 and 87 to such positions that by permitting the seat 7 to again swing downwardly about the pintles 94 and 95 the detent 96 may enter any one of the several apertures 97, whereby said backrest 6 and seat 7 may be supported at the relative distance from the floor as may be desired by the operator.

As shown in Figs. 1 and 2, the seat 7 and backrest 6 are limited in their downward movement of adjustment on the backrest supporting slide-bar 5 by the forwardly projecting lugs 98 against which the lower arched edge 99 of the backrest 6 may be engaged.

From an inspection of Figs. 5 and 6 in which the chair proper is illustrated in its folded condition, it will be obvious that said chair may be enclosed for shipment in a container, the internal minimum dimensions of which are determined only by the breadth, length and depth of the folded structure shown, there being afforded sufficient interproximal spaces between the members of the folded structure to permit packing of the accessories, such as the headrest and its several supporting parts illustrated in Figs. 1, 2 and 3, within the dimensions above referred to.

My invention is advantageous in that the chair, which is constructed to accommodate persons of any size and weight and may be extended to various heights and inclined at different angles to meet all possible requirements of the operator, may be readily folded or collapsed so as to be enclosed in a minimum space for stacking or shipping.

I do not desire to limit my invention to the precise details of construction and arrangement as herein set forth, as it is obvious that various

modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A folding chair comprising a seat and backrest, a supporting structure cooperatively supporting said seat and back and having a supporting prop, and including legs pivoted thereto on widely spaced relatively angular axes normally maintaining them in spreading relation, and causing them when turned into folded position to assume a relatively parallel relation with said prop, and a backrest supporting slide-bar hingedly connected with said prop.

2. A folding chair comprising a backrest having grooves extending longitudinally thereof, a backrest supporting slide-bar having slide rails movably engaged in said grooves and upon which said backrest may be adjusted up and down, a seat connected with said backrest and having a detent engageable with means on said slide-bar to maintain the backrest and seat in different adjusted relation to said slide-bar, and collapsible means arranged to support said slide-bar.

3. A folding chair comprising a backrest, a slide-bar, having a plurality of detent engaging means, and upon which said backrest may be adjusted up and down, a seat hingedly connected with said backrest and having a detent unitary therewith arranged to be engaged with any one of said detent means to maintain the backrest and seat in different adjusted positions on said slide-bar, a support for said slide-bar, and means adjustably connecting said slide-bar and said support and arranged to maintain said slide-bar in different angles of inclination.

4. A folding chair comprising a backrest formed of thin rigid material and having a headrest support formed unitary therewith, means supporting a headrest carried thereby and adjustable thereon, a slide-bar having a plurality of detent means upon which said backrest may slide up and down, a seat formed of thin rigid material hingedly connected with said backrest and having a detent formed unitary therewith and arranged to be engaged or disengaged with any of said detent means by effecting a slight rocking movement of said seat with respect to said backrest.

5. A folding chair comprising a supporting structure having a supporting prop and including legs pivoted thereto on widely spaced relatively angular axes disposed substantially in a common plane with said prop and normally maintaining them in spreading relation and causing them when turned into folded position to swing toward said prop and to assume a relatively parallel relation to said prop.

6. A folding chair comprising a supporting structure having a prop and including legs pivoted directly to said prop on widely spaced relatively angular axes projecting outwardly and downwardly therefrom and normally maintaining said legs in widely spaced spreading relation and causing them when turned into folded position to assume a relatively parallel relation to said prop, and disposed upon opposite sides thereof.

ROBERT C. ANGELL.