Dec. 2, 1952 D. E. AUSTIN 2,620,020

FOLDING SEAT

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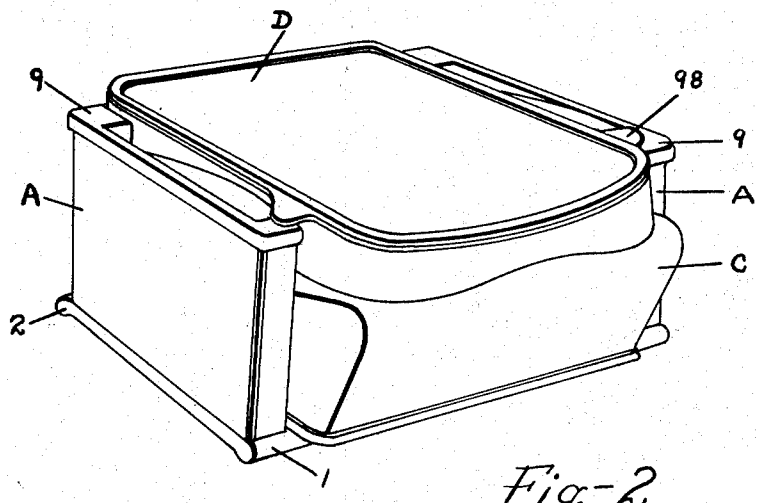


Fig.-2

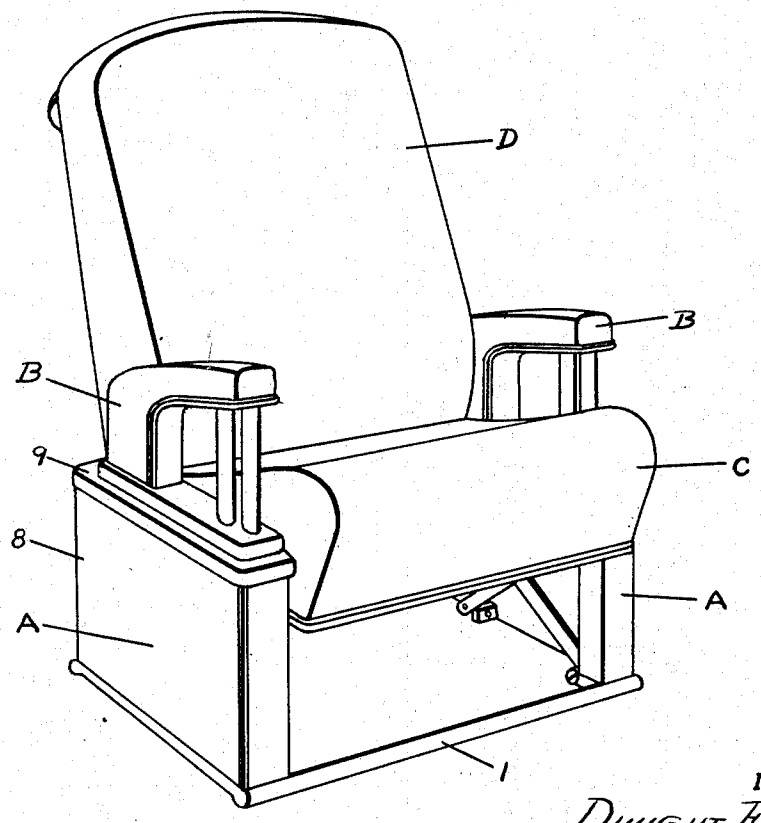


Fig.- 1

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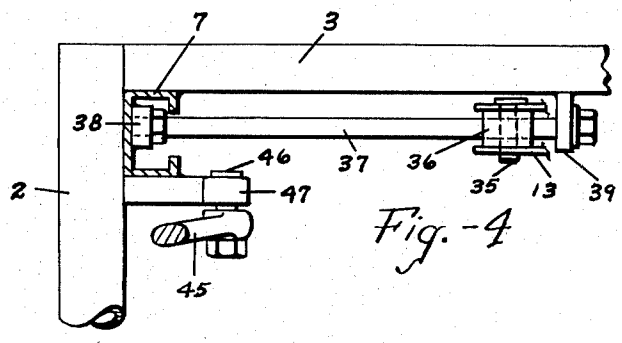


Fig. -4

Fig. - 3

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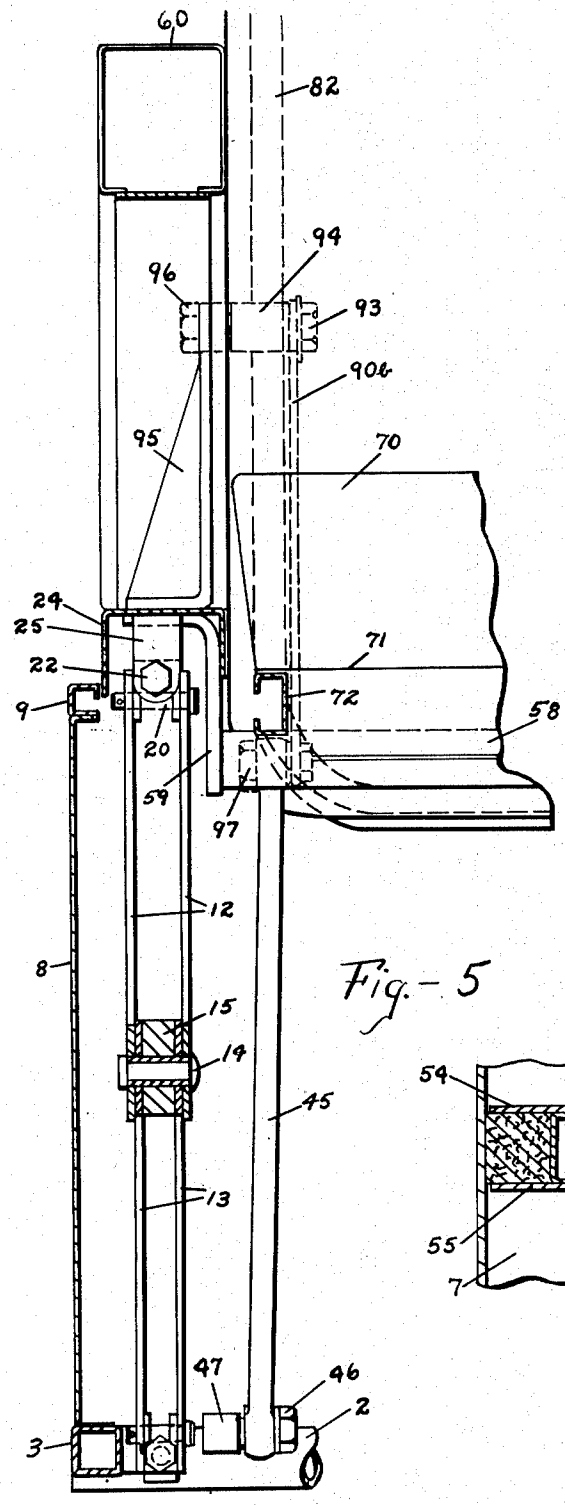


Fig. - 5

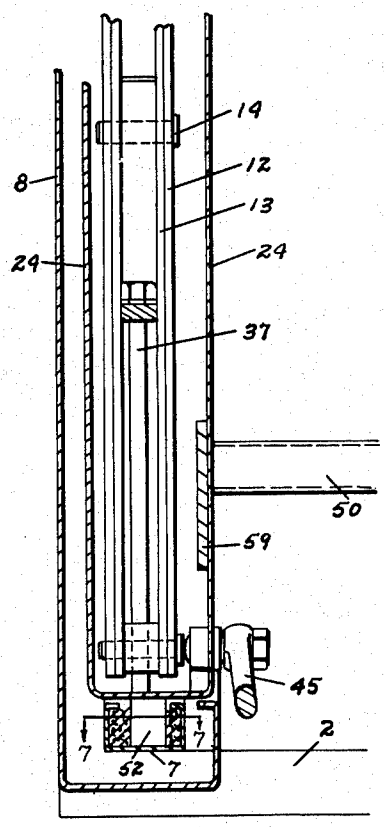


Fig. - 6

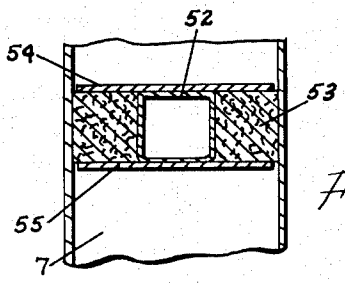


Fig. - 7

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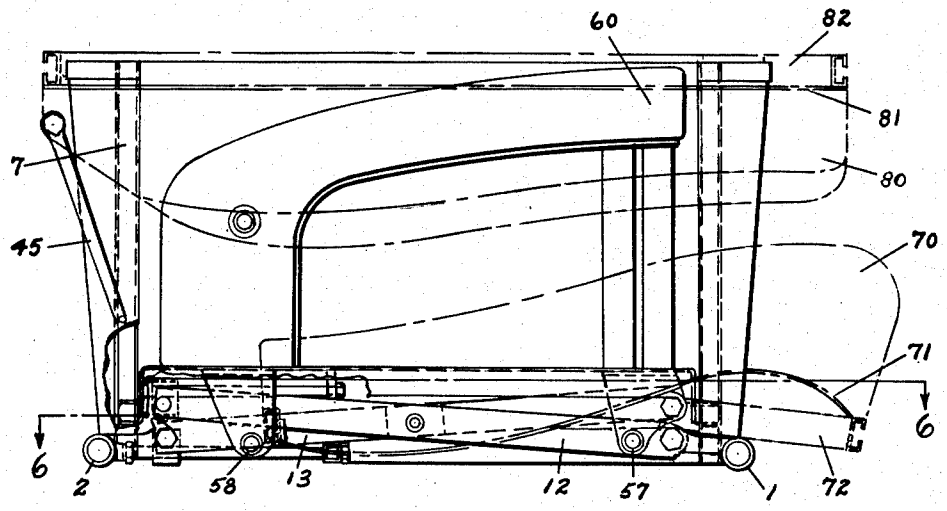


Fig.-8

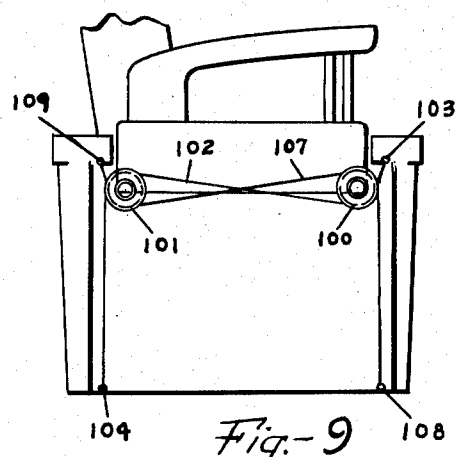


Fig.-9

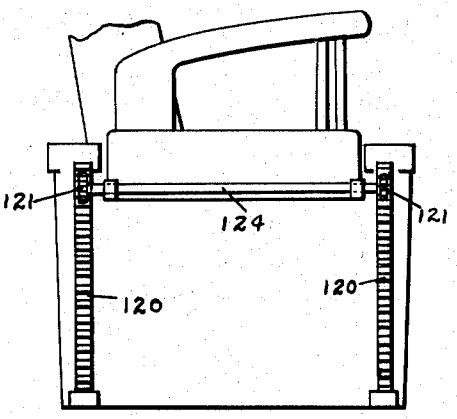


Fig.-11

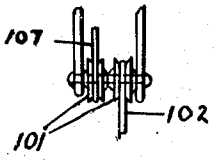


Fig.-10

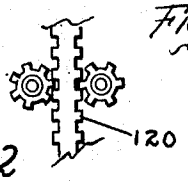


Fig.-12

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FOLDING SEAT

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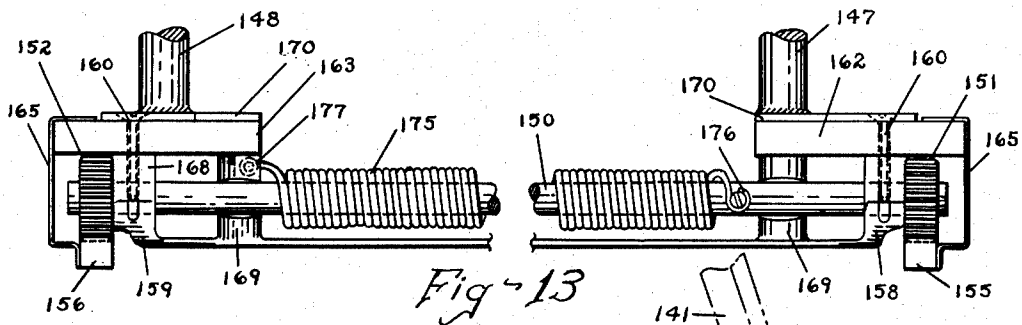


Fig. 13

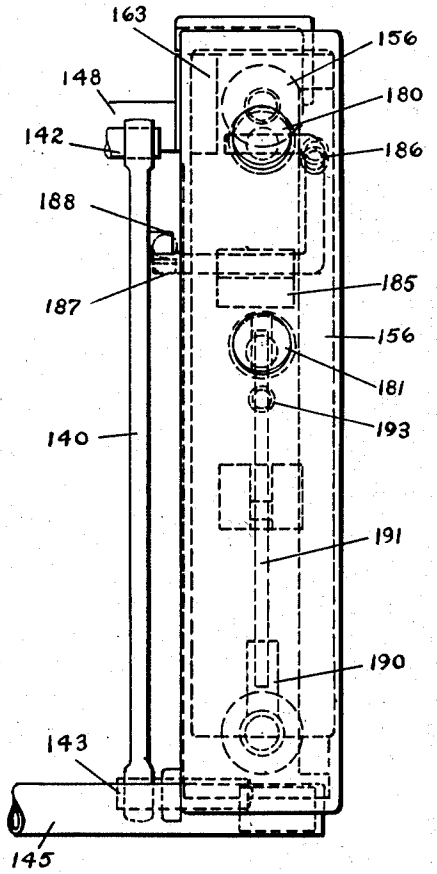


Fig. 14

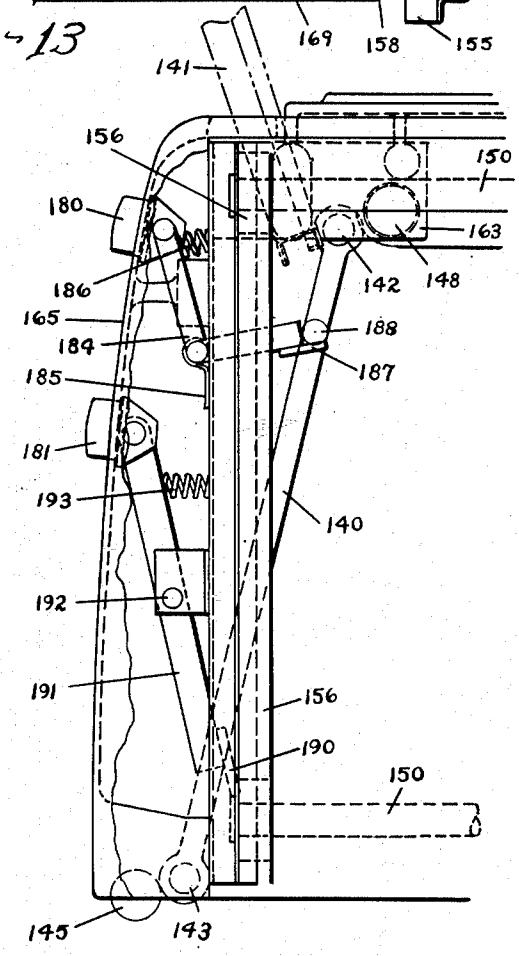


Fig. 15

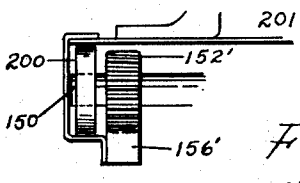


Fig. 16

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2,620,020

UNITED STATES PATENT OFFICE

2,620,020

FOLDING SEAT

Dwight E. Austin, Kent, Ohio

Application April 22, 1947, Serial No. 743,025

25 Claims. (Cl. 155—147)

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This invention relates to a seat, preferably a chair for a single person and especially a lounge chair. The seat is of the folding type in which the back may be folded forward, and the seat and arm rests are raised and lowered with the back. The chair is particularly designed for use in the bedroom of a train or plane or boat or the like because it may be so constructed that, when folded, it may easily be slid under a berth.

The chair consists of two leg assemblies suitably tied together, two arm-rest assemblies also suitably tied together, a seat that preferably rides on the arm-rest assemblies, and a back that is hinged to the leg and arm-rest assemblies. To fold the chair, it is only necessary to fold the back forward as a lid would be operated on a chest or trunk. This action lowers the arm assemblies into the leg assemblies, and the seat which is supported by the arm assemblies is simultaneously lowered into the space between the leg assemblies. In the preferred construction the back folds down until it is flush with the top of the leg assemblies, giving the chair, when folded, an over-all height of preferably not more than about 12 inches. To unfold the chair, it is only necessary to lift the back up in the manner in which the lid of a chest is lifted. The lifting of the back raises the seat and arm assemblies into the correct location. When the back is moved into its upright position, its supporting mechanism passes over the center so as to lock the entire chair in open position. No latch or other locking mechanism is required. However, locking means may be employed, and one preferred form of the invention disclosed herein includes means for locking the chair open and means for locking it closed.

The back is pivotally connected to and supported by the arm assemblies toward their rear. These pivotal points are at all times a constant distance from the seat. Since the connection is with the rearward part of the arm assemblies, suitable mechanism is provided for moving the front and back portions of the arm assemblies and seat in unison.

In addition to these pivotal points of support for the back, it is supported near its base by two links, one on each side of the chair. These are pivoted at their bottom ends to the leg assemblies, near the floor and toward the rear. Thus, as the back is folded down and then back up again and the two first-mentioned pivotal points move down and up in a vertical direction,

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these lower points move rearwardly and forwardly in an arcuate path. This throws the base of the back of the chair to the rear, as the seat is lowered; hence, the top of the back swings forward and down. Conversely, as the back is returned to its normal position, its base is swung forward.

The chair and its operating mechanism will be further described in connection with the accompanying drawings, in which:

Fig. 1 is a view in perspective of the finished upholstered chair in the open position;

Fig. 2 is a view in perspective of the finished upholstered chair in the closed position;

Fig. 3 is a view of the near side of the chair as shown in Fig. 1 with a portion of the leg assembly broken away to more clearly present the operating mechanism of the chair and the sponge-rubber cushion is shown in phantom;

Fig. 4 is a detail taken on the line 4—4 of Fig. 3;

Fig. 5 is a section on the line 5—5 of Fig. 3;

Fig. 6 is a detail on the line 6—6 of Fig. 8;

Fig. 7 is an enlarged detail of the back portion of the chair taken on the line 7—7 of Fig. 6;

Fig. 8 is a section through the middle of the folded chair;

Fig. 9 illustrates diagrammatically alternative means of supporting the seat and arm assemblies;

Fig. 10 is a detail of the pulley arrangement of Fig. 9;

Fig. 11 is a diagrammatic showing of a further alternative means of supporting the seat and arm assemblies;

Fig. 12 is a detail of the rack and gear arrangement shown in Fig. 11;

Fig. 13 is a view of the underside of a chair provided with a rack and gear and shows a counterbalancing spring;

Figs. 14 and 15 are a back and side view, respectively, of the same chair showing means for locking the chair open and means for locking it closed; and

Fig. 16 shows a modified rack and gear structure.

In Figs. 1 and 2 the upholstery is in place over the sponge-rubber cushions on the seat and back of the chair. The upholstery has been omitted from Figs. 3, 5 and 8 for the sake of clarity. The seat and back assemblies are shown in phantom in Fig. 8.

The chair is formed of the leg assemblies A, arm assemblies B, seat C, and back D. The seat C is supported by the arm assemblies and moves up and down with them. As the back is folded

forward, the arm assemblies telescope into the leg assemblies, and the seat sinks between them. Then as the back is lifted, the seat and arm assemblies are returned to their normal position.

The leg assemblies

The leg assemblies are spaced by the tubes or gliders 1 and 2. These have smooth bottoms so that the chairs, when folded, will slide on them easily and may be slid under a berth without difficulty. These gliders are spaced by the stainless-steel tubes 3. Rising perpendicularly in each of the four corners formed by these tubes are front and back channel guides 6 and 7. This framework is advantageously covered by aluminum panels or the like 8 which are capped by stainless-steel stampings 9.

The weight of the back is supported at the rear of the arm assemblies, and the weight of a person sitting in the chair may be largely supported by either the front or back of the arm assemblies. It is, therefore, necessary to provide means for maintaining the front and back of the arm assemblies at the same relative heights at all times. This mechanism is housed within the leg assemblies. One preferred means for accomplishing this is a scissors device, such as is shown in Figs. 4–8. The front ends of the scissors are fastened to the front of the arm and leg assemblies, and the rear ends are slidably fastened to the arm and leg assemblies. As the arm assemblies are lowered and raised, the scissor devices close and open. The four extremities of each scissors always form a parallelogram, and the top extremities are thus in a plane which is always horizontal (or always maintained at the same angle to the horizontal if the lower extremities are not in the same horizontal plane).

The preferred operating mechanism shown in the drawings utilizes double scissor blades or plates. Thus, the scissor half which extends from the front lower corner to the upper rear corner comprises the plates 12 which embrace the plates 13, the four plates being held together by the pivot 14 and spaced by the block 15.

The lower front ends of the plates 12 are pivotally fastened to a stud 18 welded to the tube 1. The upper rear ends are held by the pivot 20 in the block 21 which slides on the rod 22. This rod is inserted through a hole in the depending flange 23 of the base 24 of the arm assembly. The inner end is threaded into nut 25 welded to a bracket supported by the base 24.

The scissor plates 13 are pivoted at their front ends by the pivot 30 in the flange 31 which is welded to the base 24. The rear ends are pivoted at 35 to the block 36 which slides on the bar 37 which is threaded into the nut 38 (Fig. 4) welded to the guide channel 7. The front end of the bar 37 is supported in the bracket 39 which is welded to the tube 3.

As the seat and arm assemblies are lowered, the scissors close and their rear ends slide rearwardly on the bars 22 and 37. As the seat and arm assemblies are raised, these rear ends slide forward on these bars.

The other element of each leg assembly is the link 45 which supports the back in a manner to be explained below. At its lower end it is pivoted at 46 to the stud 47 which is fastened to the bar 2. As the seat and arm assemblies are lowered, the upper end of this link swings backward, describing an arc around the pivot 46.

The arm assemblies

The arm assemblies are built on the base plate 24. It is bent down at the rear to form the flange 23 and at the front to form the flange 50. Projecting rearwardly from the flange 23 and forwardly from the flange 50 are guide pins 52 which ride vertically in the channels 7 and 6, respectively. These guide pins are flanked by the felt pads 53 which are held in place by the top and bottom plates 54 and 55. The felt pads are suitably lubricated to slide up and down in the channels 6 and 7.

The arm assemblies are spaced by the tubes 57 and 58 welded to the depending brackets 31 and 59 which are welded to the front and rear ends of the base plates 24. Thus, the guides 52 riding in the channels 6 and 7 keep the leg assemblies properly spaced.

The arm rests 60 are suitably fastened to the base plates 24 and at the front are supported by the pillars 62.

The seat

The seat is formed of a cushion 70 of sponge rubber or the like. It is supported by the thin steel plate 71 on the channel frame 72. This frame is channeled to hold the upholstery as will be explained below. The front of the seat rests on the tube 57 and the rear is fastened, as by welding, to the clip 73 which is welded to the tube 58, thus the seat rides up and down between the leg assemblies as the arm assemblies are raised and lowered.

The back

The back is provided with the cushion 80 of sponge rubber or the like which is supported by the thin metal plate 81 on the channeled frame 82. The frame is channeled to hold the upholstery, as will be explained below.

Supported by the frame is the three-membered support 90 composed of the parts 90*a*, 90*b*, and 90*c*. The legs 90*a* and 90*c* are welded to the frame 82, and the arm 90*b* connects them. Bolt 93 which passes through the junction of 90*a* and 90*b* passes through the spacer 94 and brace 95 which is fastened to the base plate 24 of the arm assembly. Nut 96 is threaded onto the bolt 93. Thus, the back is pivoted at each side to the arm assembly.

The only other support for the back is the links 45 which are pivoted to the brace 90 at the junction of the arms 90*b* and 90*c* by the pivot 97. When the back is folded forward, the pivot 97 moves in an arc around the base of the link 45. As the back is returned to its open position, the pivot moves forward in an arc. It is to be noted that with respect to the pivot points 46 and 93 the pivot 97 is over center when the back of the chair is in its open position, shown in Fig. 3.

The operation of the chair

When it is desired to fold the chair up, the top of the back is moved forward and down. This moves the pivot point 97 to the rear. It describes an arc about the pivot 46. As 97 moves backward, the point 93 must move nearer the point 46. It can only move vertically downward because the whole arm assembly moves in the channel guides 6 and 7. The front of the arm assembly moves downward with the back because of the scissor parallelogram. The pivot point 97 continues to move rearwardly, and the pivot point 93 continues downward until the ears 98 fastened to the back-supporting channel

82 come to rest on the caps 9 of the leg assemblies, as shown in Fig. 2. The operation is reversed when the back is lifted, and the movement is continued until the pivot point 97 passes the center and locks the seat and arm assemblies against downward movement.

The upholstery-fastening means

A bead is fastened to the edge of the upholstery. This bead may be of twisted or braided cord, molded plastic or the like. The edge of the seat fabric to which such a bead is fastened is inserted in the seat-supporting channel 72, and the edge of the back fabric to which such a bead is fastened is inserted in the back-supporting channel 82. Then any suitable channel-filling means is inserted in the respective channels to prevent removal of the upholstery. Elastic solid rubber tubing is preferred for the purpose. It should be of such thickness that it can't be inserted in or removed from the channel without stretching. Such upholstery-fastening means is described and claimed in my copending application Serial No. 655,762, filed April 29, 1946. Any suitable means for fastening the upholstery may be employed.

Alternative means for supporting the arm assemblies

Any suitable arrangement may be used for insuring that the front and the back of the arm assemblies move together. Figs. 9 and 10 illustrate diagrammatically one means for accomplishing this. Pairs of pulleys 100 and 101 are located at the front and rear of the seat assembly on each side of the chair. The cable 102 which is fastened to the front of the leg assembly, at the top, at 103, passes under the outside pulley 100 and over the outside pulley 101 and is fastened to the rear of the leg assembly at 104, at the bottom. The other cable 107 is fastened at the front at the bottom, at 108, and at the rear top at 109. It passes over and under the inside pulleys. Both pulleys 100 are mounted to turn together, and both pulleys 101 are similarly mounted to turn together. The cables cause the front and back pulleys to turn together. This keeps the front and back of the seat at the same relative height at all times. The cables might be replaced by chains and sprockets.

In the other arrangement shown in Fig. 12 there are four racks 120 at the four corners of the chair. The gears 121 at the front mesh with the front rack, and the gears 122 at the rear mesh with the back rack. The outside gear of each pair 121 and 122 is mounted to turn with the rod 124, and the inside gears are similarly mounted. Thus, the front and back of the arm assemblies are made to move together.

Details of a modified construction using a different rack arrangement are shown in Figs. 13–15. Fig. 14 is an elevation of the rear of the right leg assembly, Fig. 15 is a side view of the same, and Fig. 14 is a view up under this right leg assembly. As in the previous arrangements the back of this chair is pivotally supported a short distance above its base, from the arms. Below this support there is another support for the back at each side of the chair, and this support is a link 140 (which corresponds to the link 45 of Fig. 3). The upper end of the link 140 is pivotally connected to the base (or near the base) of the back 141 at 142, and the lower end of the link 140 is adapted to swivel about the pivot 143 located at the base of the chair. As the back is folded forward to close the chair, the top of this link 140 swings back about the pivot 143.

As in the previously described modification the chair of Figs. 13–15 is preferably equipped with gliders to facilitate moving it from one position to another. The glider 145 extends across the back of the chair and a similar glider extends across the front.

The seat of the chair is suitably supported on the front and rear braces 147 and 148 which move up and down with the seat as the back is pushed back or folded forward. To insure uniform up-and-down movement of the front and back portions of the seat there is a rod 150 on each side of the chair which is keyed to the front and rear gears 151 and 152 which mesh with the front and rear racks 155 and 156. The rod 150 is mounted in bearings 158 and 159. The gears 151 and 152 are kept in mesh with the racks 155 and 156 by the spacer blocks 162 and 163 wedged inside the frame 165 of the leg assembly and held to lugs 167 and 168 on the bearings 158 and 159 by screws 160. They are thus braced against the studs 169 which are welded to the seat frame. These screws also hold plates 170 to which the braces 147 and 148 are welded. The spacer blocks are non-metallic and somewhat resilient so as to absorb vibration noises generated by the meshing of the gears. They may, for example, be made of wood or a block of plastic-treated fiber.

In Fig. 13, as in Figs. 14 and 15, the rod 150 and gears 151 and 152 are in the raised position, although also shown in dotted lines in the lowered position in Figs 14 and 15. As the seat is lowered the gears revolve and this revolves the connecting rod 150. The spring 175 encircles this rod. One end of the spring is fastened to the rod at 176 and the other end is fastened at 177 to the stud 169 which moves up and down with the rod 150 and the rest of the seat assembly. As the back of the chair is swung forward and the seat assembly is lowered, the rotation of the rod 150 winds and tightens the spring. The increased tension on the spring approximately counterbalances the weight of the back as it is swung forward to an off-center position. This prevents the back from falling forward rapidly. Conversely when the back and seat are raised the unwinding of the spring aids in lifting them. When properly counterbalanced the back will remain stationary in any intermediate position, whether being raised or lowered.

Locks are provided to hold the chair in the erect position and to keep it in the folded position, and push buttons 180 and 181 are provided to release these locking means. The push button 180 is swivelly conneced to the outer end of the arm 184. This arm is held in the clip 185. The upper end is pressed out by the spring 186. The lower end is provided with the catch 187 which engages the stud 188 on the link 140. As long as the link 140 is held in the forward position (shown in Fig. 15) the back 141 is locked in its erect position. It cannot be folded forward because this necessitates swinging the link 140 back around the pivot 143. If the button 180 is pushed, the lower end of the arm 184 is lowered and this releases the stud 188 so that the link 140 may swing back and the back may then be folded forward.

When the chair is folded up, the seat is close to the floor. The rod 150 which connects the gears assumes the position shown in dotted lines, near the base of Fig. 15. The chair cannot be opened as long as the rod 150 is kept in this posi-

tion. The catch 190 at the lower end of the arm 191 fits over the end of this rod. The arm 191 is pivoted at 192. The spring 193 presses the upper end of the arm out and keeps the catch 190 engaged with the rod 150. When the button 181 is pushed it disengages the catch and the seat may be opened.

Fig. 16 shows a modified construction in which the spacer plate 153 is absent and the gear 152' is kept in mesh with the rack 156' by means of the roller 200 which is mounted on the end of the shaft 150' and is not keyed thereto but is free to turn on the shaft. The circumferential surface of the roller 200 engages the surface of the plate 201 when there is any tendency for the gear 152' to separate from the rack 156'. Thus the gear and rack are kept in engagement at all times.

Thus although locks for holding the chair open and closed are not necessary, they may at times be desirable. Modifications in design other than those shown are possible. Although a chair for a single person constitutes a preferred form of the invention a wider seat of any design may be constructed utilizing the features of this invention. Thus a seat wide enough to accommodate two or more persons is within the scope of this invention which is defined in the appended claims.

What I claim is:

1. A folding seat with legs, a seat portion, means for moving the seat portion up and down with respect to the legs, and a back extending above the seat portion, supporting means for the back which is adapted to move forwardly and backwardly with respect to the legs, and other supporting means for the back which is adapted to move up and down with the seat portion.

2. A folding seat with stationary legs, a seat portion, and two arm rests, means for moving the seat portion and arm rests up and down with respect to the legs, means for maintaining the front and back of the seat portion at the same relative height at all times, and a back extending above the seat portion, supporting means for the back which is adapted to move forwardly and backwardly with respect to the legs, and other supporting means for the back which is adapted to move up and down with the seat portion.

3. A folding seat composed of a seat portion, a back above the seat portion, two arm assemblies and means rigidly connecting them to one another, two leg assemblies, means rigidly connecting them to one another, means for keeping the front and back of the arm assemblies at the same height at all times and for reciprocating the arm assemblies up and down with respect to the leg assemblies, and means for supporting the seat portion by the arm assemblies, the back being pivotally supported near its lower end by the arm assemblies and lower down by means fastened to the leg assemblies which is adapted to move backward as the back is folded forward, and forward as the back is unfolded.

4. A folding seat which comprises leg assemblies which are stationary, and a back which is adapted to fold forwardly from its upright position and is pivotally fastened at each side to means which is adapted to move substantially vertically with respect to the leg assemblies and which is also fastened to means which is below the pivotal fastening when the seat is unfolded, which latter means is adapted to move away from the front of the leg assemblies as the back is folded forwardly.

5. A folding seat which comprises a seat portion, leg assemblies which are stationary, and a back which is adapted to fold forwardly from its upright position on two pivotal means of support, one of which is above the other when the seat is unfolded and is adapted to move substantially vertically with respect to the leg assemblies, and the top of the other of which is adapted to move toward and away from the front of the leg assemblies.

6. A folding seat which comprises a seat portion, leg assemblies which are stationary, and a back with two pivotal means of support, said back being adapted to fold forwardly from its upright position, one of said pivotal means being adapted to move substantially vertically with respect to the leg assemblies, and the top of the other of said pivotal means being adapted to move toward and away from the front of the leg assemblies and movable lock means adapted to prevent movement of said other means.

7. A folding seat, the back of which is pivotally supported at two levels, the means of support at the upper of the two levels being adapted to move substantially vertically and the means of support at the lower level being adapted to describe an arc, the center of which is located near the floor and toward the rear of the seat, the back being adapted to fold forwardly from the upright position about the upper pivotal support.

8. A folding seat which comprises a seat portion, arms on each side of the seat portion and constructed to move with it, a leg assembly on each side of the seat portion, mechanism connected at the bottom with the leg assemblies and at the top with the seat portion and arm assembly which permits the seat portion and arms to move vertically with respect to the leg assemblies while maintaining the seat portion at substantially a constant angle to the vertical, and a back pivotally fastened on one side at one point to the seat portion and arm assembly and at a point below this to the top of a link which is pivotally fastened at its bottom to the leg assembly, said points and the bottom fastening being so arranged that when the seat is open, straight lines joining them form an obtuse angle which points toward the front of the seat.

9. A folding seat which comprises a seat portion and on each side thereof an arm assembly and a leg assembly, the seat portion and arm assemblies being adapted to move up and down with respect to the leg assemblies, mechanism for maintaining the front and rear of the arm assemblies at the same height as they move up and down with the seat portion, and at each corner of the seat guides on the arm assemblies and vertical channels in the leg assemblies in which said guides move.

10. A folding seat which comprises legs, arms, a seat portion, and a back which is adapted to be folded down forward and then be swung back to open the seat, which back is supported at only four points, two on each side of the seat, the upper point on each side of the seat being a pivotal connection with the arm on that side of the seat, the lower point being a pivotal connection on a supporting member the lower end of which is pivotally fastened near the floor so that said lower point is adapted to describe an arc backwardly about said fastening as the top of the back is folded down forward and an arc

forwardly as the top of the back is swung back, and in describing an arc in moving forwardly moves to the front of center with respect to said upper point, and means for maintaining the front and back of the seat portion at the same relative height at all times.

11. A folding seat having a back adapted to fold forwardly downward, a link pivoted at one end near the floor and toward the rear of the seat and at the other end to the back, the back also being pivoted to means slidable substantially vertically so that as the top of the back is moved forward, the top of the link is moved backward, and vice versa, the point at which the back is pivoted to the slidable means being above the link when the seat is unfolded.

12. A folding seat having a back adapted to fold forward and back, a link pivoted at one end near the floor and toward the rear of the seat and at the other end to the back, the back also being pivoted above this to means slidable substantially vertically so that as the top of the back is moved forward, the top of the link is moved backward, and as the top of the back is moved back to return the seat so that it may be used as a seat, the point where the link is pivoted to the back moves forward and over center with respect to the line joining the point where the link is pivoted near the floor and said point where the back is connected to said slidable means.

13. A folding seat which comprises a seat portion, leg assemblies which are stationary, above the seat a back pivotally supported near its base, means for pivoting the back forward and lowering the seat portion within the leg assemblies as the back is folded forward and means for locking the seat in this position and means for locking the seat with the back folded back.

14. A folding seat which comprises leg assemblies, a seat portion, a folding back pivotally fastened to the seat portion, a gear at each corner of the seat and a vertical stationary rack in each corner of the seat with which the gear in that corner meshes, and two rods each of which is keyed at its ends to said gears in adjacent corners of the seat, means for moving the seat portion and the top of the back up and down with said rods and gears.

15. A folding seat which comprises leg assemblies, a seat portion, a folding back pivotally fastened to the seat portion, a gear at each corner of the seat, and secured to the leg assemblies a vertical stationary rack in each corner of the seat with which the gear in that corner meshes, and two rods each of which is keyed at its ends to said gears in adjacent corners of the seat, the seat portion adapted to move up and down with said rods and gears and a spring encircling one of said rods and fastened at one end to the rod and at the other end to a portion of the seat assembly which is adapted to move up and down and does not rotate with the rod, whereby as the seat assembly moves down the spring is placed under tension and as the seat assembly moves up the tension is released.

16. A folding seat which comprises leg assemblies, a seat portion, a folding back pivotally fastened to the seat portion, a gear at each corner of the seat, and secured to the leg assemblies a vertical stationary rack in each corner of the seat with which the gear in that corner meshes, and two rods each of which is keyed at its ends to said gears in adjacent corners of the seat, the seat portion adapted to move up and down with said rods and gears and movable lock means adapted to prevent movement of the rod and gears.

17. A folding seat constructed with a seat portion, a leg assembly at each side of the seat portion, a rack with teeth therein extending substantially to the floor arranged substantially vertically at each end of each leg assembly, a gear mounted in each corner of the seat portion and each in mesh with one of the racks, and means holding the gears in mesh with their respective racks.

18. A folding seat which comprises leg assemblies, a seat portion, vertical stationary racks secured to the leg assemblies, gears attached to the seat portion each of which is in mesh with a vertical rack whereby the seat portion is vertically movable with respect to the leg assemblies, a rod having one of said gears rigidly secured at each end thereof and which rotates with said gears when the seat portion is moved up and down, and a spring encircling the rod, which spring is fastened at one end to the rod and at the other end to a portion of the seat assembly which is adapted to move up and down but does not rotate with the rod, whereby vertical movement of the seat varies the tension in the spring.

19. A folding seat which comprises leg assemblies which are stationary, a seat portion, means for supporting the seat portion at different vertical positions with respect to the leg assemblies, a back which is pivoted near its lower edge to the seat portion and is adapted to be folded forward and back, supporting means for the back which also supports the seat portion and lowers the seat portion when the back is folded forward and raises the seat when the back is folded back, locking means engaging with the back supporting means when the back is folded back to hold the back in this position and other locking means engaging with the seat portion supporting means when the back is folded forward to hold the back in this position.

20. A folding seat with legs, a seat portion having means at each corner thereof cooperating with means mounted in the legs whereby the seat portion is adapted to move up and down with respect to the legs, and a back extending above the seat portion and having its lower portion pivotally connected with the seat portion and means for folding it forward and back as the seat portion is moved down and up.

21. A folding seat with stationary legs, a seat portion with arm rests rigidly attached thereto, means at each corner of the seat portion cooperating with means mounted in the legs whereby the seat portion and arm rests are adapted to move up and down with respect to the legs, and a back extending above the seat portion and having its lower portion pivotally connected with the seat and means for folding it forward and back as the seat portion is moved down and up.

22. A folding seat composed of two arm assemblies rigidly connected by cross rods, a seat portion supported by the cross rods, a back extending above the seat portion, two leg assemblies rigidly connected to one another and stationary, means for reciprocating the arm assemblies and seat portion up and down with respect to the leg assemblies and for keeping the front and back of the arm assemblies at the same height at all times, the lower portion

of the back being pivotally supported by the arm assemblies and also connected to means fastened to the leg assemblies which is adapted to move backward as the back is folded forward, and forward as the back is unfolded.

23. A folding seat which comprises two leg assemblies, a seat portion, a back pivotally supported on an axis between two points on opposite sides of the back and toward the bottom thereof, means for moving the seat portion and said two points substantially vertically while maintaining said two points at a constant distance from the seat portion, and a link pivotally connected to points on the leg assemblies and also pivotally connected at two other points on opposite sides of the back which latter two points are below the first-mentioned points on the back when the seat is unfolded, which link swings arcuately about said points in the leg assemblies as the seat is moved vertically.

24. An article of furniture comprising a seat, supporting legs therefore, means on the seat engaged with means on the legs to support the seat at different elevations with respect to the legs, a back pivotally connected to the seat and to the legs and adapted to be folded down forward toward the seat from its normally upright position in which it projects upwardly from the seat, said means on the seat being operable to change the elevation of the seat by pivotal movement of the back.

25. An article of furniture comprising a seat,

legs, seat supporting means connected with the legs and adapted for vertical reciprocation of the seat, and a back which is pivotally supported by means which includes at least one link pivotally connected to the legs and to the back, the back being thereby adapted to be folded pivotally forward with respect to the legs from a position in which it projects upwardly from the legs to a position in which it is substantially horizontal, the link being adapted to move arcuately about the point at which it is connected to the legs as the back is moved between its open and closed positions, and means for engaging the back with the legs to retain the back in the closed position.

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