United States Patent [19]

Lay et al.

[11] **3,715,142**

[45] **Feb. 6, 1973**

[54] FOLDING HIGH CHAIR

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[73] Assignee: **Hamilton Cosco, Inc.,** Columbus, Ind.

[22] Filed: **June 10, 1971**

[21] Appl. No.: **151,644**

[52] **U.S. Cl.**.....**297/39,** 297/26

[51] **Int. Cl.**.....**A47c 4/18**

[58] **Field of Search**.....297/39, 27, 28, 46, 35, 40, 297/24, 26, 57, 50, 53, 56, 437, 429; 108/117, 120, 133; 248/432

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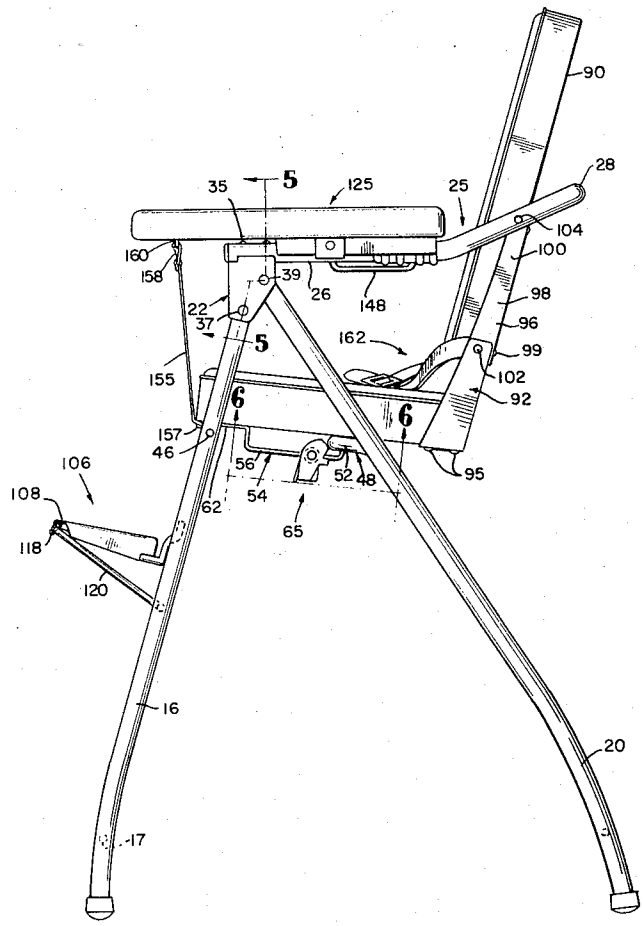
Primary Examiner—Francis K. Zugel

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[57] **ABSTRACT**

A folding high chair in which the front and rear legs are swingably interconnected to each other and to a tray support. The seat is swingably connected to the front legs on a fixed axis and to the rear legs on a sliding axis, and the back rest is swingably connected to said seat and tray support. The front and rear legs are releasably locked in an extended diverging position with the seat and back rest generally normal to each other by a locking assembly carried from the seat.

5 Claims, 13 Drawing Figures



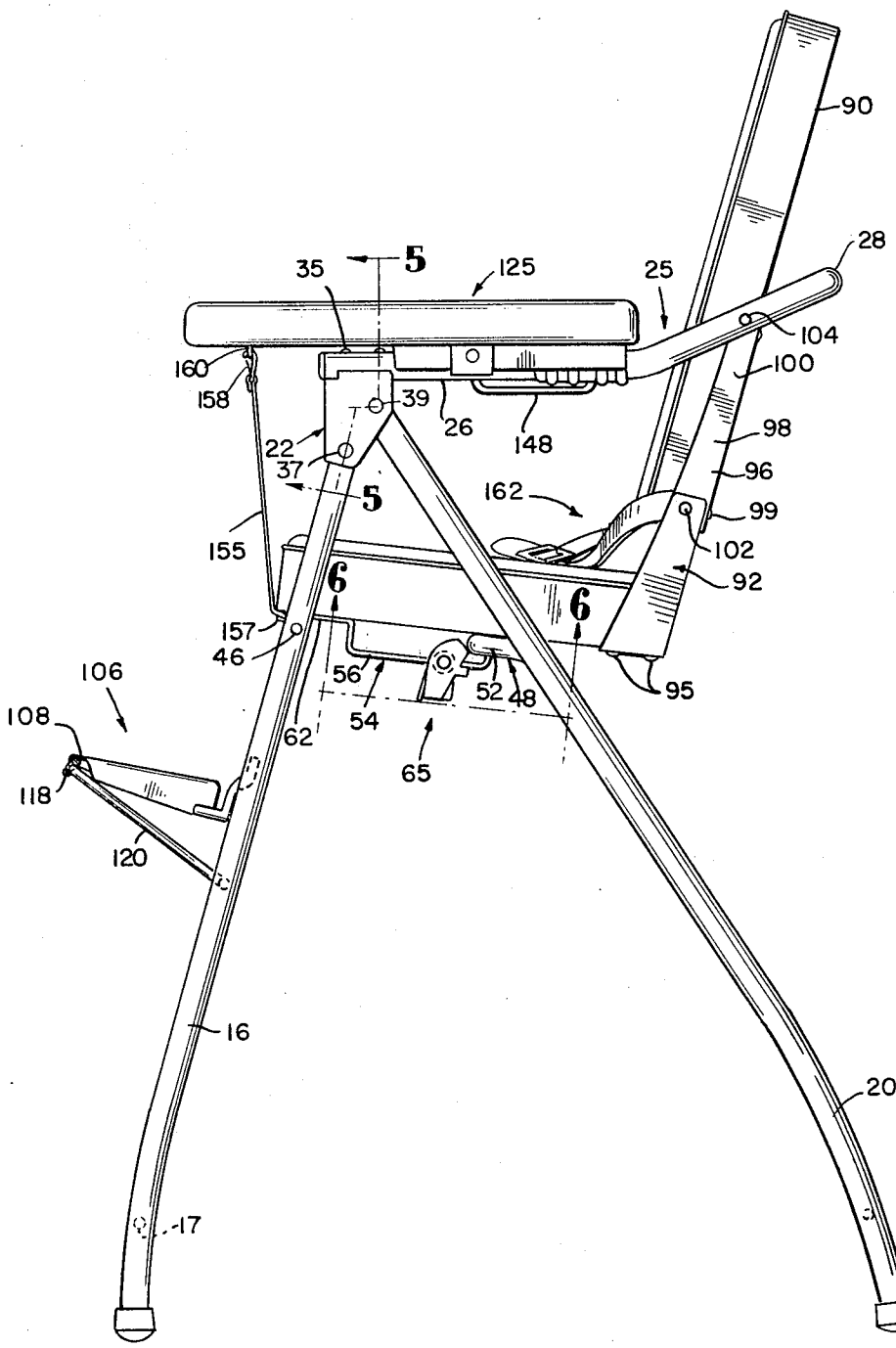


Fig. 1

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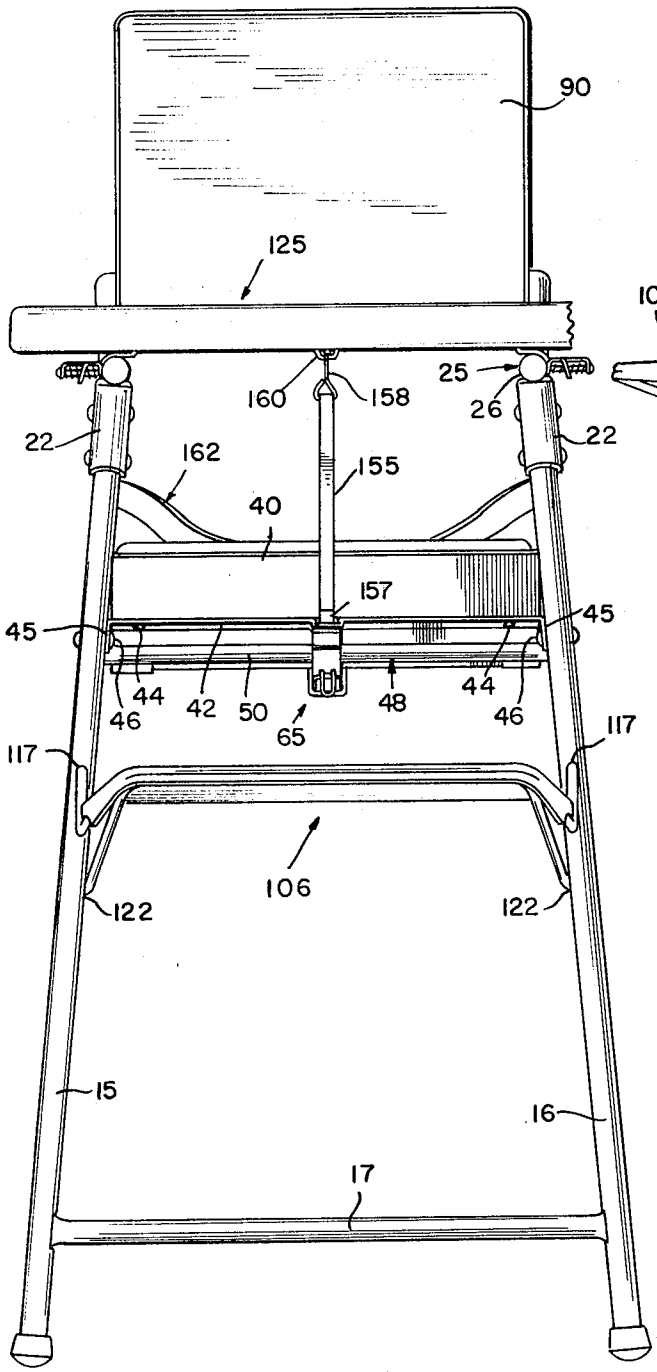


Fig. 3

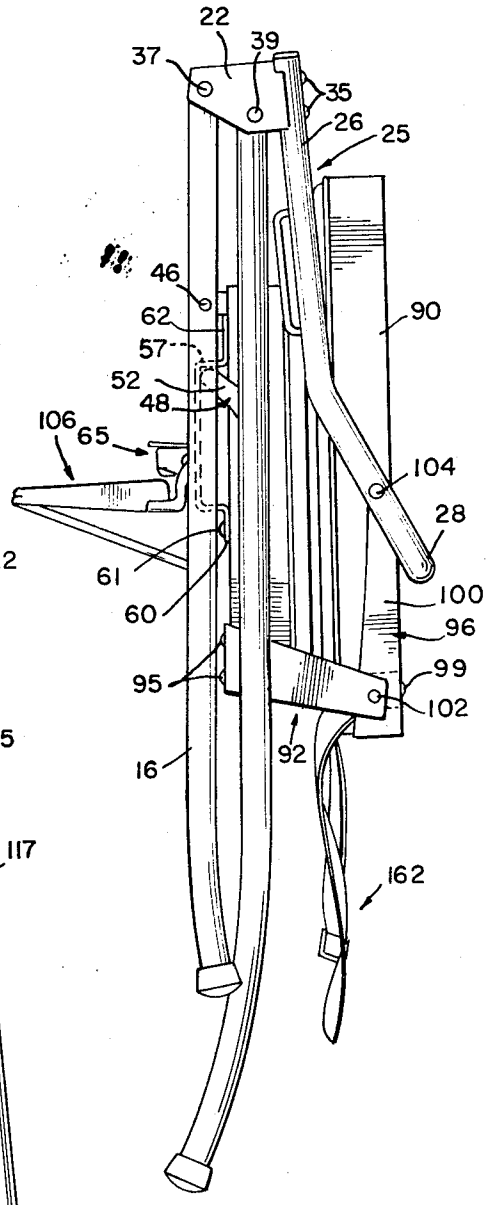


Fig. 2

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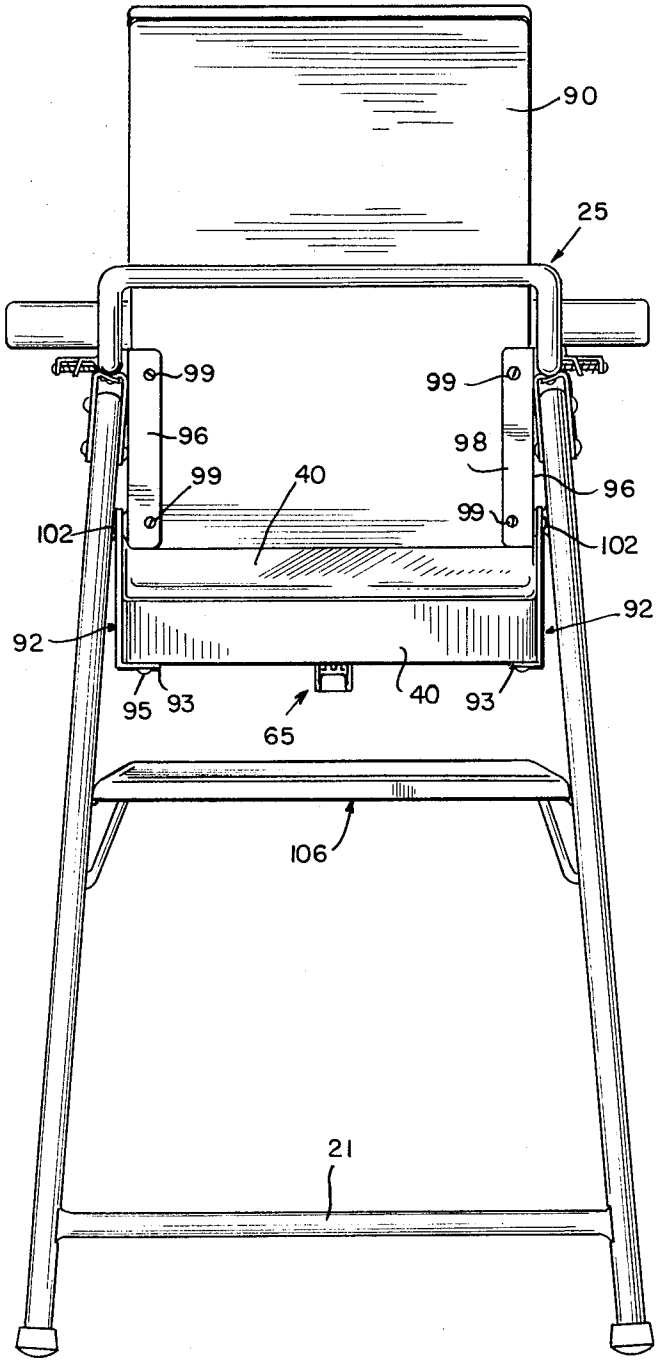


Fig. 4

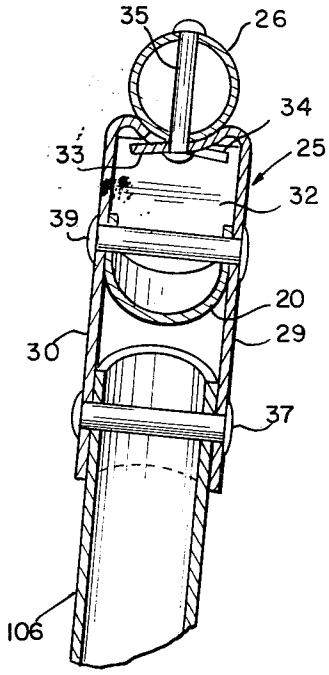


Fig. 5

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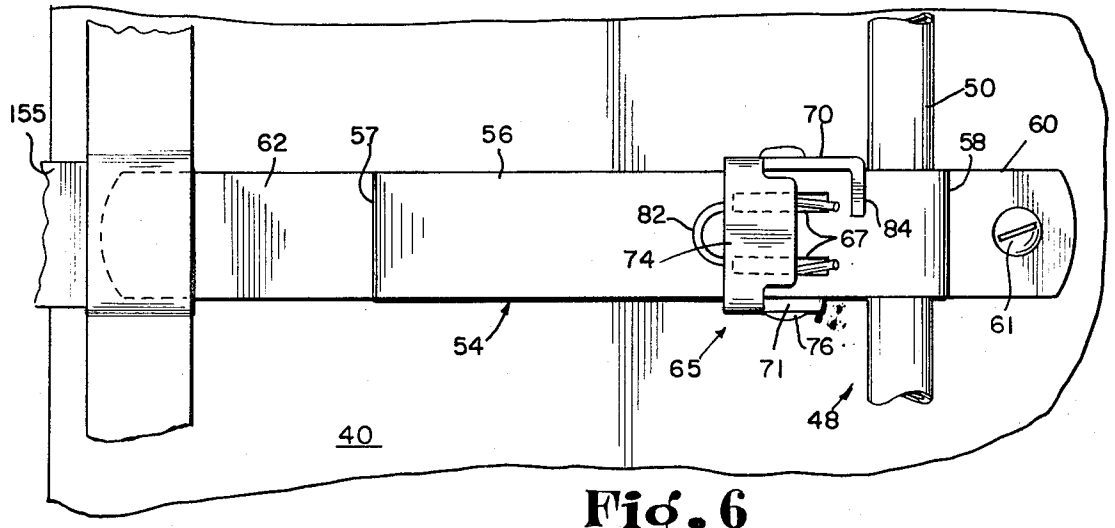


Fig. 6

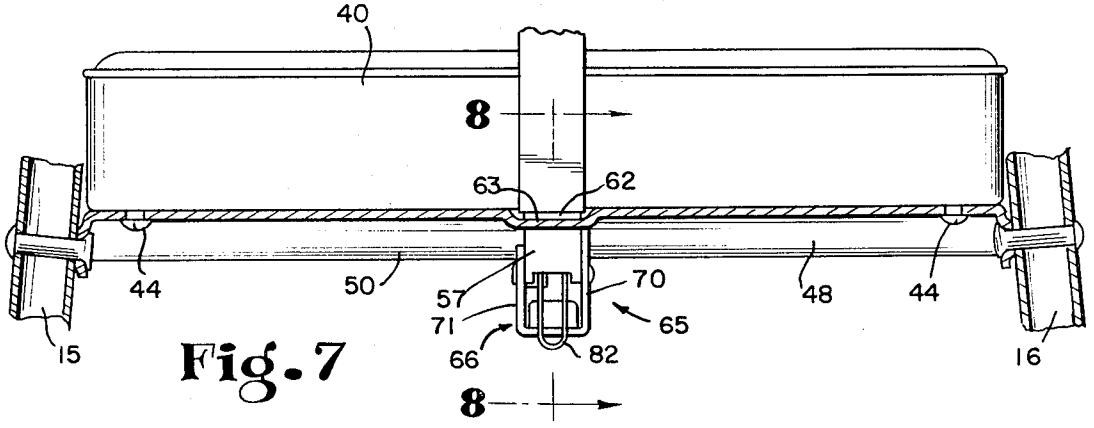


Fig. 7

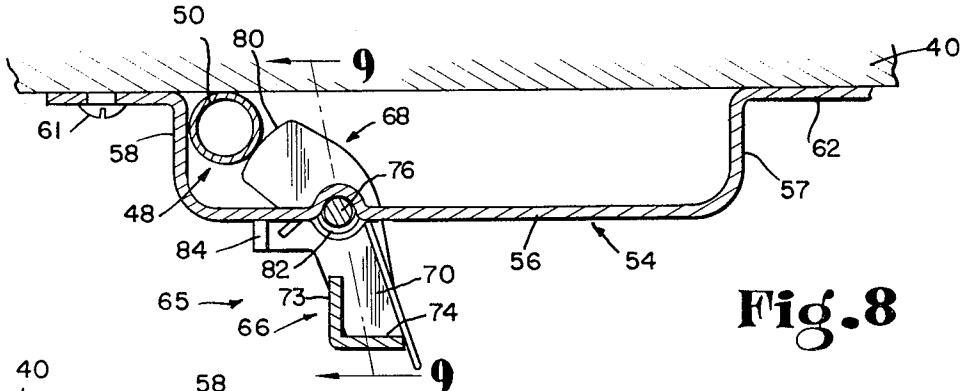


Fig. 8

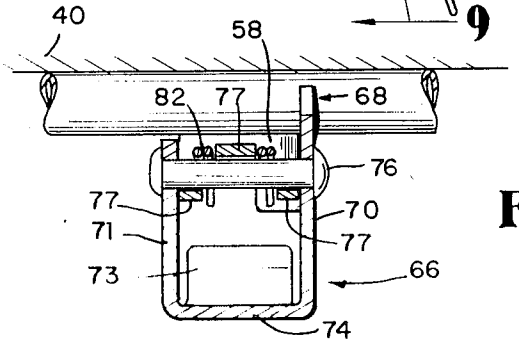


Fig. 9

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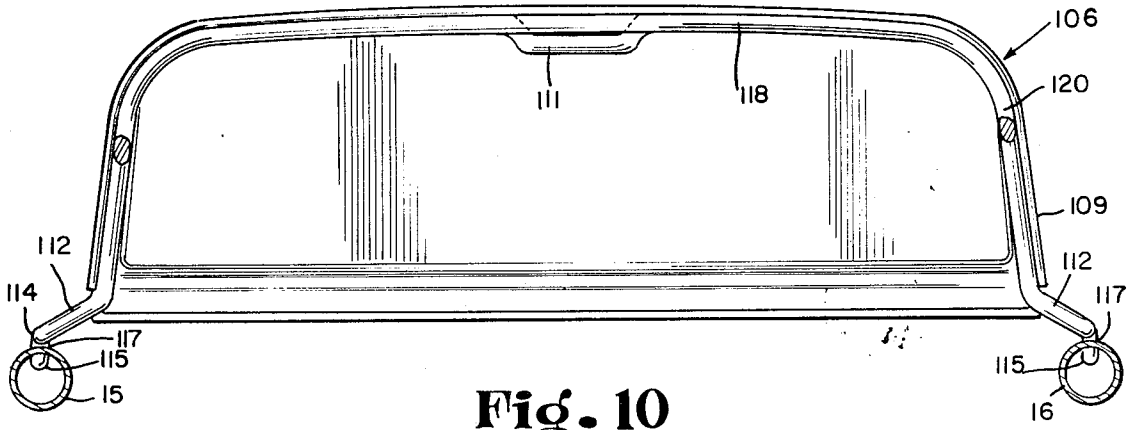


Fig. 10

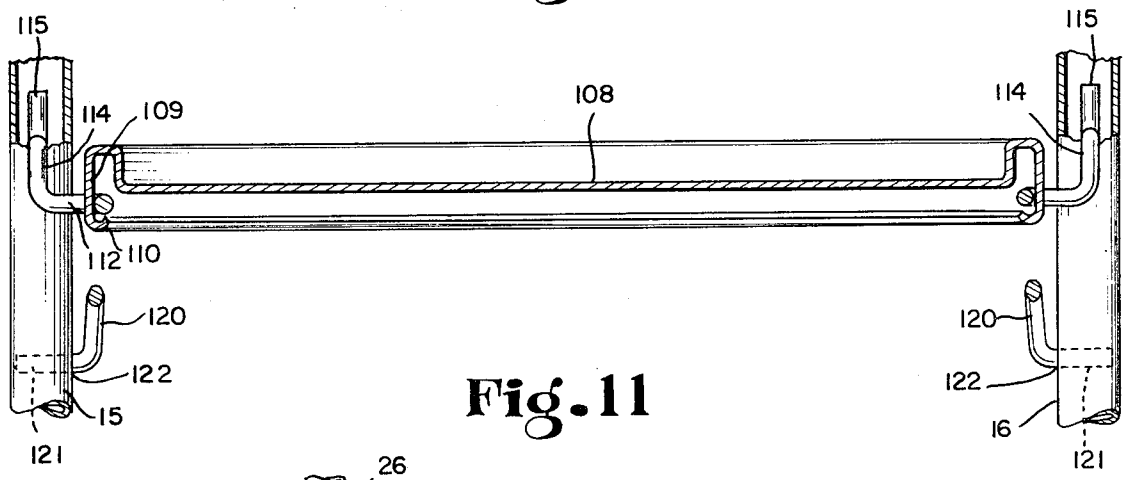


Fig. 11

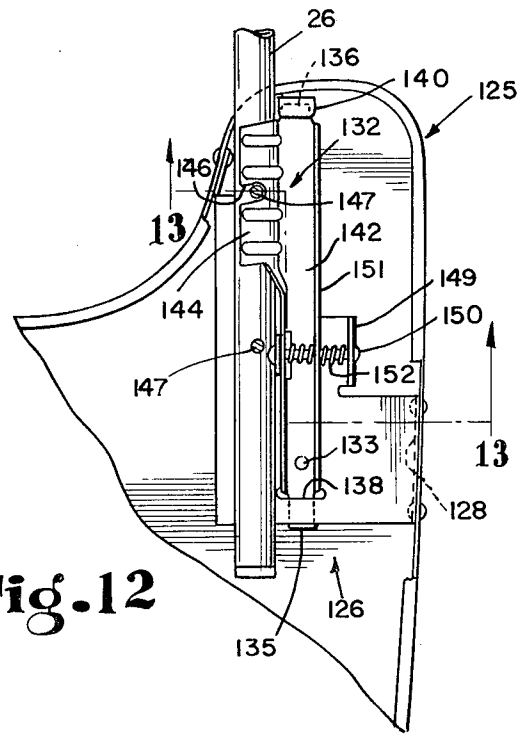


Fig. 12

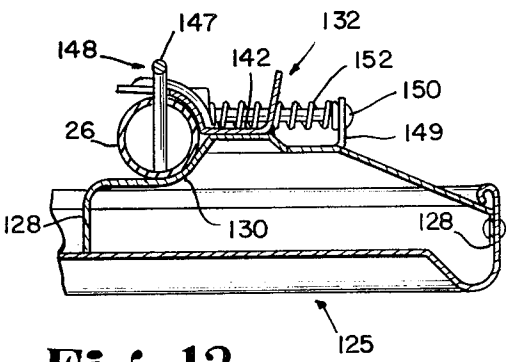


Fig. 13

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FOLDING HIGH CHAIR

SUMMARY OF THE INVENTION

In accordance with one form of the invention, there is provided pairs of front and rear legs swingably connected at their upper ends to brackets mounted on a generally U-shaped tray support. A seat is swingably interconnected adjacent its forward end to the front legs on a fixed axis. A guide is mounted on said seat and receives a slide on the rear legs for swingably interconnecting said seat and rear legs on a slidable axis. A back rest projects above the seat at the rear thereof and is swingably interconnected to said seat and to the tray support.

Thus, the chair is movable between a folded collapsed position in which said front and rear legs, tray support, seat and back rest are in generally parallel planes and an extended operative position in which said front and rear legs are in a diverging relationship with said tray support and seat supported in generally parallel horizontal planes and the back rest generally normal to said seat. In order to releasably lock said chair in its extended operative position, a lock is mounted on said guide for engagement with said slide.

Conveniently, a foot rest is mounted on said front legs below their interconnection to the seat, and said tray support is provided with hangers for mounting a tray thereon.

BRIEF DESCRIPTION OF THE DRAWINGS:

The accompanying drawings illustrate the invention in such drawings:

FIG. 1 is a side elevation of a high chair embodying the invention;

FIG. 2 is a side elevation of the chair shown in FIG. 1, but showing said chair with the tray removed and folded into its collapsed position;

FIG. 3 is a front elevation of the chair shown in FIG. 1;

FIG. 4 is a rear elevation of the chair shown in FIG. 1;

FIG. 5 is an enlarged vertical section taken on the line 5—5 of FIG. 1;

FIG. 6 is an enlarged horizontal section taken on the line 6—6 of FIG. 1;

FIG. 7 is an enlarged vertical section taken on the line 7—7 of FIG. 6;

FIG. 8 is a vertical section taken on the line 8—8 of FIG. 7;

FIG. 9 is a vertical section taken on the line 9—9 of FIG. 8;

FIG. 10 is an enlarged horizontal section taken on the line 10—10 of FIG. 1;

FIG. 11 is an enlarged vertical section taken on the line 11—11 of FIG. 1;

FIG. 12 is an enlarged fragmentary bottom plan view of the tray showing the locking mechanism thereon; and

FIG. 13 is a vertical section taken on the line 13—13 of FIG. 12.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In the embodiment of the invention illustrated in the drawings, the chair is provided with a pair of front legs

15 and 16 interconnected adjacent their lower ends by a transverse brace 17 and a pair of rear legs 19 and 20 interconnected adjacent their lower ends by a transverse brace 21. The upper ends of said front and rear legs are swingably interconnected, as by brackets 22, to a generally U-shaped tray support 25 formed by a pair of rearwardly extending arms 26 interconnected at the rear of the chair by a transverse bight 28.

The brackets 22 are identical in construction. As shown in FIGS. 1 and 5, each comprises a pair of side walls 29 and 30 interconnected at their forward ends by a front wall 32. A flange 33 projects inwardly from the upper end of the wall 29 adjacent the rear of the bracket, and in a like manner, a flange 34 projects inwardly from the upper end of the wall 30 adjacent the front of the bracket. As shown in FIG. 5, the flanges 33 and 34 underly the adjacent tray support arm 26 and are fixedly connected thereto by rivets 35. The upper ends of the legs 15 and 16 are received between the bracket side walls 29 and 30 and are swingably connected thereto by pivot pins 37. In a like manner, the upper ends of the rear legs 19 and 20 are received between the bracket side walls 29 and 30 and are swingably connected thereto by pivot pins 39 disposed above and to the rear of the pins 37.

A seat 40 is supported on the front and rear legs below the plane of the tray support 25. The seat is swingably interconnected adjacent its front edge to the front legs 15 and 16 by a transversely extending bar 42 fixedly connected to the bottom of said seat by screws 44. A pair of ears 45 extend downwardly from the ends of the bar 42 in abutting engagement with the inner faces of the front legs 15 and 16. Said ears are swingably connected to said legs by pivot pins 46. Thus, the seat 40 is swingable with respect to the front legs about the axis of the pins 46.

The seat 40 is swingably interconnected to the rear legs 19 and 20 on a longitudinally slidable axis. To this end, and as best shown in FIGS. 6–8, a U-shaped slide 48 is mounted on the rear legs. As shown, said slide comprises a transverse bight 50 engagable with the bottom of the seat and interconnecting a pair of arms 52 fixedly mounted on the legs 19 and 20 and projecting forwardly therefrom. The bight 50 is slidably and rotatably carried in a guide 54 mounted on the bottom of the seat 40. Said guide comprises a yoke having a bottom runner 56 connected to upwardly extending end walls 57 and 58. The upper end of the wall 58 has a rearwardly projecting tongue 60 abutting the bottom face of the seat 40 and connected thereto by a screw 61. The upper end of the wall 57 has a forwardly projecting tongue 62 abutting the bottom of the seat 40 and received in a channel-shaped offset 63 formed in the bar 42. Thus, the slide bight 50 is slidably carried between the guide runner 56 and the bottom of seat 40 with its longitudinal sliding movements being limited by the front and rear guide walls 57 and 58.

When the chair is in its fully extended position, the slide bight 50 is disposed in abutting engagement with the guide end wall 58. In order to releasably lock the slide in such position for releasably locking the chair in its extended position, a lock 65 is mounted on the guide 54. As shown in FIGS. 8 and 9, the lock 65 comprises a lower portion 66 projecting downwardly along the sides of the guide 54 and integral with a rearwardly angled

upper portion 68 disposed above the runner 56. The lock portions 66 and 68 are formed from a pair of side walls 70 and 71 interconnected at the bottom of the lower portion 66 by an end wall 73 and bottom wall 74. The lock is swingably mounted on the guide by a pivot pin 76 mounted in the side walls 70 and 71 and journaled in upwardly and downwardly deformed offsets 77 and 78 formed in the guide runner 56. As shown in FIG. 8, the side wall 70 at the upper end of the lock portion 68 is rounded, as at 80, and is adapted to bear against the slide bight 50 for retaining said bight in a locked position against the guide end wall 58. The lock is biased into its locked position by a U-shaped spring 82 projecting through a pair of openings 67 in the runner 56 and wrapped around the pivot pin 76. One end of said spring bears against the edge of the openings 67 and the opposite end of said spring bears against the lock bottom wall 74 thereby urging the lock to swing in a clockwise direction as viewed in FIG. 8. Desirably, in order to limit the swinging movement of the lock under the influence of the spring 82, a finger 84 projects inwardly from the side wall 70 for engagement with the bottom face of the guide runner 56.

A back rest 90 is interconnected to the seat 40 at the rear thereof. To this end, a support plate 92 is connected to the seat at each side thereof. Each of said plates comprises a bottom wall 93 connected to the bottom of the seat by screws 95 and an upwardly projecting side wall 96. A pair of mounting plates 96 are connected to the sides of the back rest 90. Each of the plates 96 comprises a back wall 98 connected to the rear face of the back rest by screws 99 and a side wall 100 swingably connected to the adjacent support plate side wall 96 by a pivot pin 102. The back rest 90 projects upwardly through the plane of the tray support 25, and pivot pins 104 swingably interconnect the support arm 26 to the plate side wall 100 for thus swingably interconnecting said tray support and back rest. As shown, the back rest is connected to the tray support with its rear face disposed in a forwardly spaced relation to the tray support bight 28.

A foot rest 106 is mounted on the front legs 15 and 16 below the plane of the seat 40. Conveniently, said foot rest is formed as a sheet-metal stamping and comprises an upper tread face 108 having a depending peripheral skirt 109 which terminates at its lower end in a downwardly directed lip 110. The foot rest is supported on the front legs by a hanger having a transverse stretch 111 interconnecting a pair of lateral stretches 112 projecting rearwardly of the foot rest through notches formed in the skirt 109 and lip 110 at the rear corners of the foot rest. The rear ends of the stretches 112 are continuous with a pair of vertical stretches 114 having their upper ends offset, as at 115. As shown in FIG. 11, the offsets 115 are received in openings 117 in the front legs 15 and 16 and are disposed within said legs in alignment therewith while the stretches 114 are disposed in abutting engagement with the front faces of said legs. The foot rest is also supported on a brace having a transverse stretch 118 fixedly connected to the hanger stretch 111. A pair of side stretches 120 angle downwardly and rearwardly from the stretch 118 and at their rear ends are continuous with out-turned fingers 121 spring-biased by the inherent resiliency of the hanger into openings 122 formed in the side faces of the legs 15 and 16, said fingers being disposed in a plane transverse to the axes of said legs. Conveniently, a series of the openings 117 and 122 are formed in the legs 15 and 16 for mounting the foot rest on said legs in the desired position of vertical adjustment.

Any type of tray 125 can be mounted on the tray support 25. For example, a tray having a locking mechanism like that shown in U.S. Pat. No. 3,330,597 may be employed. As shown in FIGS. 12 and 13, mounted on the underside of the tray adjacent each side thereof is a bracket comprising a web 126 provided with upstanding flanges 128 connected to the tray. The bracket web 126 is curved, as at 130, to abut the upper outer quadrant of the adjacent tray support arm 26 for slidably supporting the tray on the support 25. A latch 132 is swingably connected to the lower face of the bracket web 126 by a vertically extending pivot pin 133. The latch has tongues 135 and 136 at its front and rear ends. The tongue 135 is swingably supported in a channel 138 projecting downwardly from the front end of the bracket, and the tongue 136 is slidably supported in a hook 140 formed at the rear of the bracket. The tongues 135 and 136 are interconnected by a web 142 curved to define a wing 144 which abuts the lower outer quadrant of the adjacent support arm 26 when the latch is in its locked position. A slot 146 is formed in the inner edge of the wing 144 for selective reception around the vertically extending arms 147 of a U-shaped hanger 148 mounted on the bottom of the support arm 26 for locking the tray in the desired fore and aft position of adjustment on the support 25.

In order to releasably retain the slot 146 in locking engagement around one of the hanger arms 147, the bracket web 126 has a pair of laterally spaced, downwardly projecting ears 149. A headed pin 150 extends through aligned openings in said ears and in a pair of ears 151 projecting downwardly from the latch. The pin 150 supports a coil spring 152 acting between the outermost ear 149 and the innermost ear 151 for opposing outward swinging movement of the latch. Desirably, one of the ears 151 projects below the outermost ear 149 to provide a finger grip for swinging the latch outwardly to release its slot 146 from the hanger arm 147 to permit the tray to be adjustably moved along or removed from the support 25.

With the support bight 28 being spaced rearwardly of the back rest 90, said bight can serve as a towel holder. In addition, the bight 28 can serve as a storage support for the tray 125. With the tray removed from the tray support 25, one of the latches 132 can be opened to permit its wing 144 and the curved portion 130 on its associated bracket web to be received around the bight 28. When the latch is released, the tension of its spring 152 will cause its wing 144 and the web portion 130 to bindingly engage the bight 28 and thereby support the tray in a downwardly hanging position from said support.

Desirably, a crotch strap 155 extends between the seat 40 and tray 125 when the latter is mounted on the support 25. As shown, the lower end of said strap has a loop 157 received around the bar 42, and the upper end of said strap has a hook 158 mounted thereon adapted to be received in an eyelet 160 on the bottom of the tray. A seat belt 162 is also connected to the back rest 90 by the screws 99.

In order to move the chair from its extended operative position shown in FIG. 1 to its folded collapsed position shown in FIG. 2, the tray 125 is removed. The lock 65 is swung in a counter-clockwise direction as viewed in FIG. 8, as by pulling its lower portion 66 forwardly, to swing the upper portion 68 of said lock below the plane of the slide bight 50 and thereby permit said bight to slide forwardly in the guide 54. With the seat thus unlocked, the rear legs 19 and 20 can be swung forwardly to cause the seat 40 to swing downwardly about the axes of the pins 46 and the slide bight 50. As the seat swings downwardly, the back rest 90 also will swing downwardly about the axes of the pins 102 and 104 and the tray support 25 will swing about the axes of the pins 37 and 39. Thus, with the chair in its fully collapsed position, the front and rear legs, seat, back rest and tray support will all be disposed in adjacent generally parallel planes.

Should it be desirable to have the chair assume an even more compact thickness, the foot rest 106 can be removed. This can be easily accomplished by springing the brace stretches 120 inwardly to disengage the fingers 121 from their leg openings 122. This then permits the hanger offset ends 115 to be removed from the leg openings 117 for disconnecting the foot rest from the front legs.

In order to move the chair into its extended position shown in FIG. 1, it is merely necessary to pull upwardly and rearwardly on the support bight 28 whereupon the rear legs 19 and 20 will swing rearwardly and the tray support 25, seat 40, and back rest 90 will swing upwardly into their extended positions shown in FIG. 1. During such movements, the slide bight 50 will slide rearwardly in the guide 54. As the bight 50 moves rearwardly in the guide it cams the rearwardly angled upper lock portion 68 in a counter-clockwise direction as viewed in FIG. 8 against the action of the spring 82 to clear the lock 65. After the bight has cleared the lock, said lock will return to its locking position under the action of spring 82 to releasably retain the bight 50 against the guide end wall 58 and thereby releasably lock the chair in its extended position.

We claim:

1. A folding high chair, comprising a pair of front legs, a pair of rear legs, a tray support, means swingably interconnecting said front and rear legs to each other and to said tray support, a seat swingably interconnected to said front legs, a guide on said seat, a generally U-shaped slide on said rear legs, said slide having a pair of arms connected to said rear legs and a transverse bight swingably and longitudinally slidably carried in said guide against the bottom of said seat, a lock swingably mounted on said guide for releasably retaining said slide in a fixed position in said guide, said lock having a first portion projecting into said guide and a second portion projecting below said guide, and biasing means urging said first portion into a locked position to releasably retain said bight against one end of said guide, said second portion being manually manipulatable for swinging said first portion into an unlocked position whereby said bight is free to move along said guide, a back rest swingably interconnected to said seat and tray support, and a tray removably mountable on said tray support.

2. A folding high chair as set forth in claim 2 with the addition that a finger projects outwardly from said lock for engagement with said guide to limit movement of said first portion of the lock toward its locked position.

3. A folding high chair as set forth in claim 2 in which said first portion releasably retains said bight in locked position against the rear of said guide and the bottom of said seat, and said first portion is angled rearwardly in said guide.

4. A folding high chair, comprising a pair of front legs, a pair of rear legs, a tray support, means swingably interconnecting seat front and rear legs to each other and to said tray support, a seat, a transverse bar fixedly connected to said seat with its ends swingably connected to said front legs for swingably interconnecting said seat and front legs, a guide comprising a yoke having a longitudinally extending runner disposed in spaced relation to said seat, said yoke having its forward end retained between said bar and seat and its opposite end fixedly connected to said seat, a back rest swingably connected to said tray support and said seat, a generally U-shaped bight on said rear legs swingably and longitudinally slidably carried in said guide against the bottom of said seat, a lock mounted on said runner for releasably retaining said slide against the rear portion of said yoke, and a tray removably mountable on said tray support.

5. A folding high chair as set forth in claim 2 with the addition that a foot rest is mounted on said front legs, said foot rest comprises a tread face, a generally U-shaped hanger carried under said tread face and having its ends received in a first set of openings in said front legs, and a brace connected to said hanger and angled rearwardly and downwardly therefrom with its ends biased into a second set of openings in said front legs, said first set of openings being in alignment with the ends of said hanger and said second set of openings are in a plane transverse to the axes of said legs.

* * * * *