April 9, 1963 R. C. BAHR 3,084,976

ADJUSTABLE HIGH CHAIR

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Fig. 1

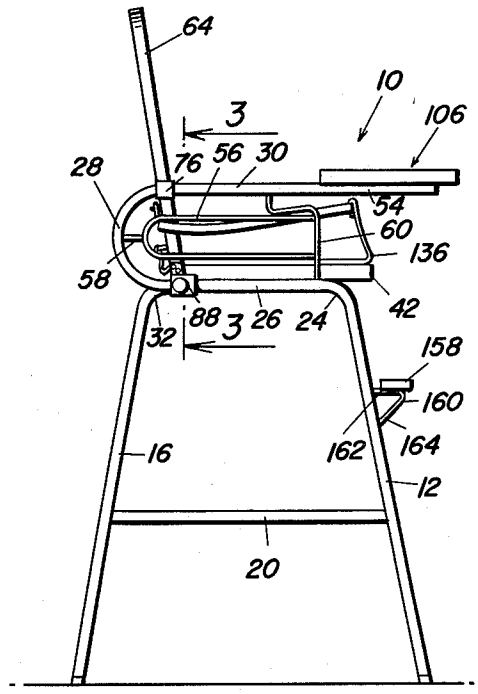


Fig. 2

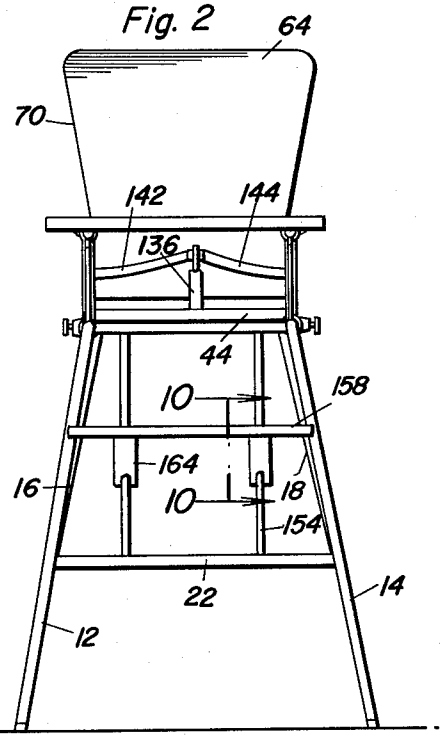


Fig. 3

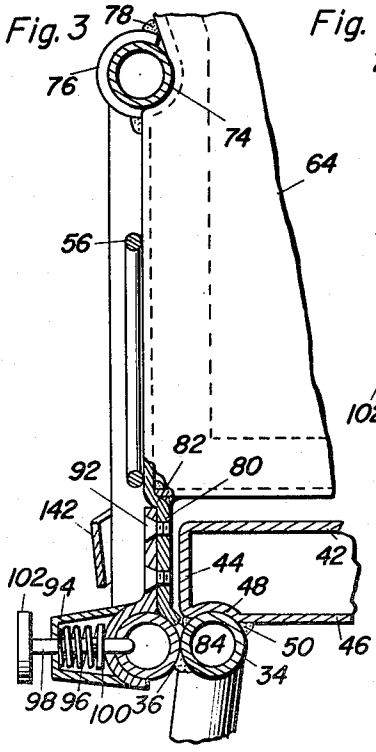


Fig. 4

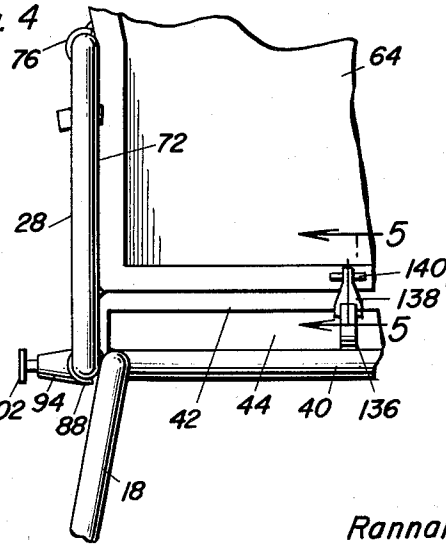
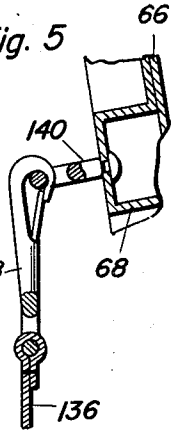


Fig. 5



Rannalt C. Bahr

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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Fig. 6

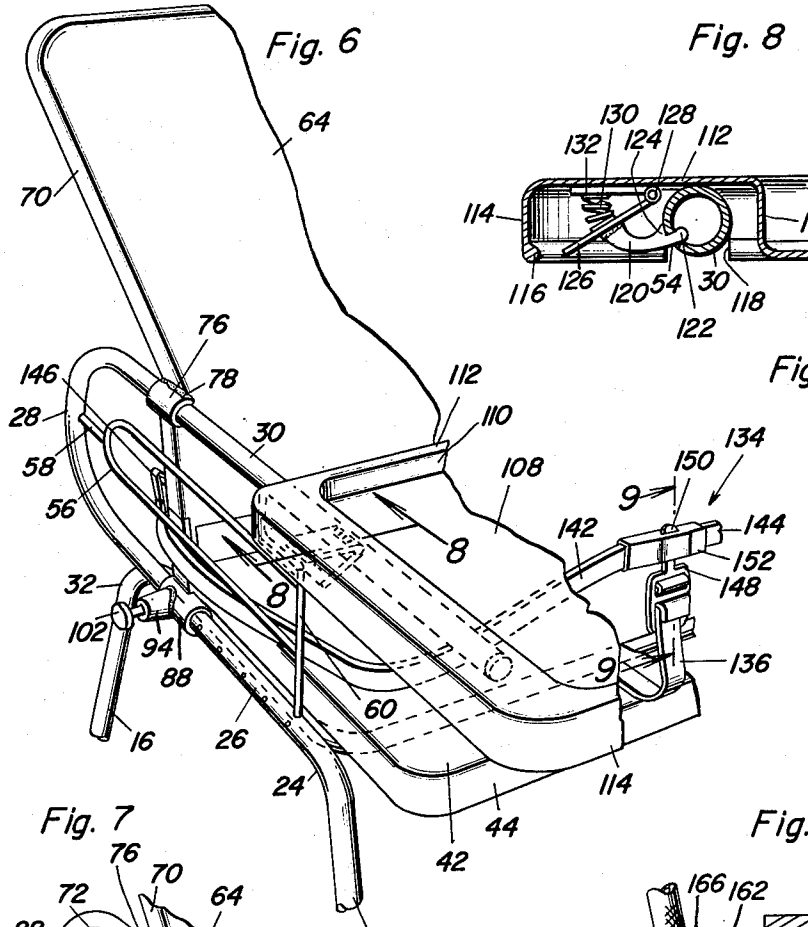


Fig. 8

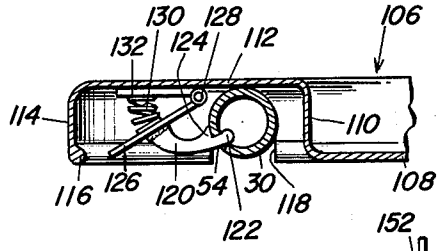


Fig. 9

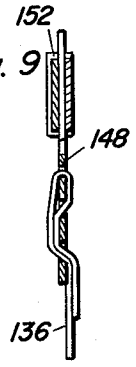


Fig. 7

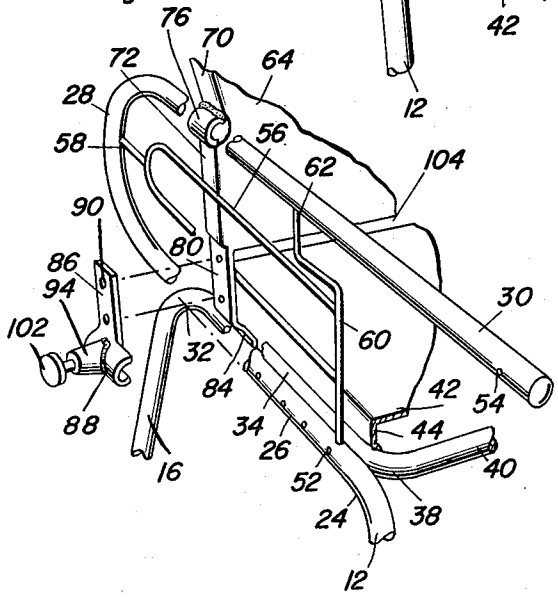
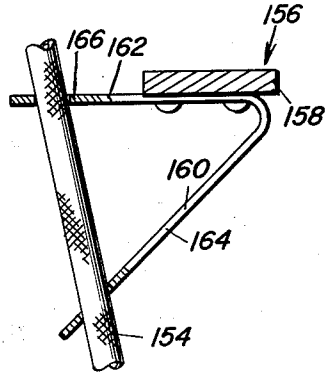


Fig. 10



Rannalt C. Bahr

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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3,084,976

ADJUSTABLE HIGH CHAIR

Rannalt C. Bahr, 146 Ingalton Ave., West Chicago, Ill.

Filed June 28, 1961, Ser. No. 120,372
6 Claims. (Cl. 297—153)

The present invention generally relates to a high chair for small children in which the components thereof are adjustable for varying the effective size of the chair thus enabling it to be more effectively used with small children of different sizes.

Conventionally, high chairs are equipped with a movable tray which may be adjusted in relation to the seat and seat back. However, this form of adjustment is ineffective since a child always likes to sit with his feet and lower leg hanging from the front edge of the seat and engaged with the footboard normally provided. For very small children, this requires a pillow or some other spacer be provided between the back of the child and the stationary seat back. Accordingly, it is the primary object of the present invention to provide a high chair construction in which the seat back is adjustable in relation to the seat together with novel means for locking the seat back in adjusted position and rigidly retaining the seat back in proper angulated relation to the seat.

Another very important object of the present invention is to provide a high chair having an adjustable footboard thereon which may be adjusted in relation to the seat thereby orientating the foot board for engagement by the feet of children having different length legs thus enabling the high chair to be more effectively employed for children over a wider size range.

Still another very important feature of the present invention is to provide a high chair having a novel harness connected thereto for encircling a small child for retaining the child in position on the seat without any possibility of the child sliding forwardly under the tray.

Still another feature of the invention is the provision of a high chair having a tray construction with novel means for locking the tray in adjusted position on the forwardly extending arms.

Still another feature of the present invention is the provision of an adjustable high chair which is quite simple in construction, easy to adjust, effective for its particular purposes and relatively inexpensive to manufacture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a side elevational view of the high chair;

FIGURE 2 is a front view of the chair;

FIGURE 3 is a vertical sectional view taken substantially upon a plane passing along section line 3—3 of FIGURE 1 illustrating the mechanism for retaining the chair back in adjusted position;

FIGURE 4 is a rear fragmental view of the chair back illustrating the relationship thereof to the seat;

FIGURE 5 is a fragmental sectional view taken substantially upon a plane passing along section line 5—5 of FIGURE 4 illustrating the manner in which the harness is attached to the chair back;

FIGURE 6 is a partial perspective view of the upper portion of the high chair;

FIGURE 7 is an exploded group perspective view of the components of the invention;

FIGURE 8 is a detailed sectional view taken substantially upon a plane passing along section line 8—8 of FIGURE 6 illustrating the novel mechanism for locking the tray in position;

FIGURE 9 is a detailed sectional view taken substantially upon a plane passing along section line 9—9 of FIGURE 6 illustrating the connection between the harness component; and

FIGURE 10 is a detailed sectional view taken substantially upon a plane passing along section line 10—10 of FIGURE 2 illustrating the manner of locking the footboard in vertically adjusted position.

Referring now specifically to the drawings, the numeral 10 generally designates the adjustable high chair of the present invention which includes four downwardly extending and diverging legs 12, 14, 16 and 18. The front legs 12 and 14 are connected with the rear legs 18 and 16 by front to rear brace members 20 and the front legs 12 and 14 are interconnected by transverse brace members 22 and the rear legs 16 and 18 are interconnected in the same manner thereby forming a rigid base for the high chair which may conveniently be constructed of tubular metal members.

The upper end of the front legs 12 and 14 are provided with rearward curved portions 24 which extend into a top rail 26. The rear of the top rail 26 extends into a U-shaped bend 28 which is vertically orientated and the upper end of the U-shaped bend 28 continues forwardly into overlying relation to the top rail 26 in spaced vertical relationship thereto and forms forwardly extending arms 30 at each side of the high chair. The legs 12 and 14, bends 24, top rail 26, U-shaped bends 28 and arms 30 are all of one-piece construction in the form of a metallic tube bent into the shape as illustrated and described.

The upper ends of each of the rear legs 16 and 18 is provided with a forwardly extending bend 32 terminating in a forwardly extending member 34 secured to the inner surface of the top rail 26 as by welding 36 thus forming a rigid supporting framework. The forwardly extending member 34 which also forms a top rail extends along the inner surface of the top rail 26 and then is provided with a right angled bend 38 which extends into a transverse member 40 which is unitary with a similar structure on the opposite side whereby the two rear legs 16 and 18, bends 32, forwardly extending rails 34, bends 38 and transverse member are all of unitary one-piece construction of tubular metal bent into the shape as illustrated and described. With this construction, an extremely rigid framework is provided and for purposes of attractiveness, the supporting base and framework may be constructed of any suitable material such as chrome plated metallic tube or the like.

Attached to the forwardly extending rails 34 and extending forwardly of the transverse member 40 is a rigid seat 42 having a depending peripheral flange 44 and a bottom plate 46. The bottom plate 46 is provided with an indentation 48 receiving the upper surface of the forwardly extending rail 34 and the plate 46 is secured rigidly thereto as by welding 50 or the like thus providing a rigid connection between the rigid seat 42 and the top rails or forwardly extending rails 34 thus further rigidifying the supporting frame.

The top rail 26 is provided with a plurality of longitudinally spaced apertures 52 therein and the forward part of the arm 30 is provided with a plurality of apertures 54 therein for purposes of adjustment of certain features of the invention. For forming a closure between the top rail 26 and the arm 30, there is provided a generally U-shaped wire rod 56 having a bight portion secured to the U-shaped bend 28 by a rod 58 and having the forward ends thereof attached to a vertically extending wire rod 60 having an offset upper end portion 62. The wire rods 56–62 are welded together or otherwise secured together and welded to the respective points of attachment to the top rail 26, U-shaped bend 28 and arm 30 thus

rigidifying the side structure and also forming a closure for this area to prevent the child from sliding out of this area.

Mounted in upstanding and slightly rearwardly inclined relation on the supporting framework is a seat back **64** generally in the form of a plate-like member **66** having a peripheral box frame **68** formed thereon for reinforcement purposes. The side edges of the seat back converge downwardly as indicated by numeral **70** with the bottom side edge portion being straight as indicated by numeral **72**. At the juncture between the straight portion **72** and the inclined portion **70** of the seat back, there is provided a partial notch **74** as illustrated in FIGURE 3. Attached to the edges of the notch is a partial sleeve **76** rigidly secured thereto as by welding **78** thus forming a circular sleeve for sliding engagement with the arm **30** whereby the arm **30** will stabilize the seat back **64** and prevent any possible tilting movement thereof about a transverse axis.

The bottom edge of the straight portion **72** of the side edge of the seat back **64** is provided with an extending plate **80** depending therefrom either as an integral unit or as a separate plate attached thereto and the plate **80** is provided with an inwardly offset portion **82** where it joins with a seat and is provided with an inwardly flared terminal end **84** which engages a portion of the surface area of the top rail **26** inwardly and generally between the top rail **26** and the member **34**. Attached to the depending plate **80** is a bracket **86** for a partial cylindrical sleeve **88**. The bracket **86** is provided with apertures **90** receiving fastening screws **92** or the like thus rigidly affixing the partial sleeve **88** to the plate **80** in spaced relation to the flared end portion **84** thus forming a sleeve for captively engaging the top rail member **26**.

Formed unitarily with the partial sleeve **88** is an outwardly extending tubular housing **94** having a compression coil spring **96** therein which encircles a plunger **98** having a shoulder **100** formed adjacent the inner end thereof. The spring **96** rests against the shoulder **100** and the inner surface of the housing **94** thus urging the plunger **98** towards the top rail **26** for engagement in one of the apertures **52** so that retraction of the plunger **98** enables the seat back **64** to be moved longitudinally in relation to the seat member **42** along the top rail **26**. Upon release of the plunger **98**, the plunger will immediately lock into one of the selective apertures **52** for rigidly securing the seat back **64** in place. For purposes of manipulating the plunger **98** there is provided a cylindrical handle or knob **102** on the outer end thereof whereby the plunger may be retracted from engagement with the top rail **26**, thus enabling the adjustment of the seat back **64** in an obvious manner.

As illustrated in the drawings, the bottom edge of the seat back is slightly spaced above the seat with this space being designated by numeral **104** which facilitates the cleaning of the seat and seat back and also enables a cushion or other covering member to be readily applied to the seat as well as the seat back. In view of the two points of connection between the supporting frame and the seat back, the seat back will be rigidly secured in place but yet readily longitudinally adjustable in relation to the arm **30** and the top rail **26** and adjustable in relation to the seat member **42** whereby the horizontal dimension of the seat in front to back relationship may be varied as desired so that the seat back may be brought into engagement with the back of the child when the child is properly orientated in relation to the seat.

Adjustably attached to the arms **30** is a tray generally designated by numeral **106** and which includes a depressed central area **108** in the form of a plate for receiving articles of food and the like and the depressed central area is enclosed by an upstanding vertical flange **110** integral therewith. The upstanding vertical flange is provided with a peripheral horizontal flange **112** at the upper edge thereof which is spaced above the plate **108** and the horizontal flange **112** terminates in a depending peripheral flange **114** having a rounded edge **116** whereby the tray is of unitary one-piece construction.

The rear depending flange **114** is provided with a pair of notches **118** receiving the arms **30** which have the longitudinally spaced apertures **54** therein. For locking the tray **106** longitudinally on the arms **30**, there is provided a swingable lock arm **120** having a projecting lug or finger **122** extendable through the apertures **54**. A stop lug **124** is provided for limiting the insertion of the finger **122** into the aperture **54**. The arm **120** is arcuate and has one end thereof rigidly affixed to a pivotal plate **126** having one end thereof pivotally attached to the undersurface of the flange **112** by pivot means **128**. The plate **126** is spring biased downwardly away from the flange **112** by a compression spring **130** engaged therewith and in which the other end of the compression spring **130** is engaged with a seat member **132** rigid with the bottom surface of the flange **112** thereby pivotally supporting the lock arm **120** and spring biasing the lock arm **120** into engagement with the arms **30** for varying the adjusted postion of the tray. As illustrated, the plates **126** are disposed adjacent the side peripheral flange portion **114** so that it is only necessary to reach the fingers slightly under the rounded edge **116** and engage the small plates **126** thus releasing the lug **122** from the apertures **54** whereby the tray then may move longitudinally in relation to the supporting arms.

For retaining the child in position on the seat, there is provided a retaining harness generally designated by numeral **134** and which includes a crotch strap **136** extending along the top surface of the seat **42** and terminating at its rear end in a snap hook **138** detachably engaged with an eye or loop member **143** rigidly affixed to as by pivoting to the peripheral frame member **68** of the seat back **64**. A pair of side straps **142** and **144** are provided and the side straps are attached to loops or other suitable anchor means **146** on the back surface of the seat back intermediate the height of the straight portion **72** and extends forwardly and across the lower abdominal region of the child. The forward end of the crotch strap **136** is provided with an attaching buckle member **148** through which the terminal end of the strap **136** is interwoven and secured and the buckle **148** is provided with a generally T-shaped axial projection **150** which extends vertically through a connector **152** for the straps **142** and **144** thus connecting the straps **136**, **142** and **144** in assembled relationship wherein the strap **136** extends through the crotch and the straps **142** and **144** extend over the leg thus securely retaining the child in position. The straps may be adjusted by varying the relationship thereof to the buckles **148** and connector **152** respectively and may be constructed of any suitable material such as webbing, plastic or the like.

Supported forwardly on the frame is a pair of downwardly and forwardly inclined supporting members **154** which are roughened or serrated on the outer surface thereof and which are rigidly affixed to brace member **22** as well as transverse member **40**. Mounted on the inclined members **154** is a footboard generally designated by the numeral **156** and including a generally horizontally disposed board or shelf **158** attached to an angulated bracket member **160** supported from the inclined members **154**.

The bracket **116** is constructed of spring metal and includes a generally horizontally disposed leg **162** and a downwardly inclined leg **164** in diverging relation thereto. The legs **162** and **164** have substantially oval-shaped openings **166** therein for receiving the support members **154**. The specific construction of the legs **162** and **164** is such that in their normal relaxed position, the apertures **166** will not be in alignment. However, when the legs **162** and **164** are spring urged toward each other, the apertures **166** are brought into alignment whereupon the footboard **158** may be adjusted vertically on the support members **154**. Thus, this provides a readily movable

support board or shelf which has a positive locking means therein due to the bias engagement of the edges of the opening 166 with opposed surfaces of the roughened or knurled rods or shafts 154.

With the structure of the present invention, the seat back may be moved fore and aft of the seat member in order to orientate the seat back in proper relationship to the front edge of the seat so that substantially any sized child may be positioned properly on the seat and have his back engage the seat back and have the portion of the legs below the knees depend below the front edge of the seat so that his feet may engage the footboard which also may be vertically adjusted. This will enable the child to be properly orientated so that he will sit up in substantially a straight condition when consuming food normally positioned on the tray. The tray itself is removable and adjustable for enabling the child to be more easily removed from the chair or placed in the chair. Additionally, the harness which retains the child is independent of the tray so that the chair may be used without the tray if desired. Wherein the harness will still retain the child in place. This is especially true since the harness is attached to the seat back and is movable therewith so that the relationship of the harness to the seat back will be maintained and so that the harness will actually retain the child against the seat back thus providing means for stabilizing the child in the chair.

The construction of the various components of the chair facilitates the use of sheet metal and metal tubular members all of which renders the device relatively inexpensive to manufacture by the use of standard manufacturing procedures.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A high chair comprising a supporting base including downwardly diverging leg members interconnected by braces, longitudinally extending top rails integral with the front legs, the rear legs including forwardly extending portions disposed inwardly and alongside of the top rails and terminating in a transverse member, a seat member rigidly secured between said top rails, a seat back member extending upwardly from the top rails, means adjustably and rigidly attaching the seat back to the top rails for fore and aft adjustment of the seat back in relation to the seat member, said base including a pair of arms projecting upwardly from the rear thereof and extending horizontally forwardly in vertically spaced relation to the edges of the seat, means slidably interconnecting the arms and the side edges of the seat back in spaced relation to the connection between the seat back and the top rails thus rigidifying and stabilizing the seat back, a tray removably and adjustably mounted on the horizontally disposed arms forwardly of the seat back and in overlying relation to the seat, means releasably securing the tray in longitudinally adjusted position on the arm, a pair of depending support members at the forward edge of the supporting base, a transverse footboard extending across the depending support members, and bracket means adjustably connecting the footboard with the support members.

2. The structure as defined in claim 1 wherein said support members are provided with a roughened external surface, said bracket means includes an angulated spring metal member having a pair of legs disposed in angular relation and each leg having an oval-shaped opening therein for engagement with the respective support members, said openings in the legs being normally misaligned when the bracket is in relaxed condition whereby the openings may be aligned by moving the legs toward each other thus enabling the footboard to be vertically adjusted on the support members and automatically locked in vertically adjusted position when the legs are released.

3. The structure as defined in claim 1 wherein said tray includes a depending peripheral flange having a rounded edge, the rear portion of said flange having notches therein slidably receiving said arms.

4. The structure as defined in claim 1 wherein the seat back member includes side edges converging downwardly to a point at approximately even height with the arms, and said means interconnecting said arms and side edges include a partial notch formed in each edge at said point, and a partial sleeve rigidly secured to said edge so as to form a circular sleeve, said arms slidably received within said sleeves.

5. The structure as defined in claim 4 wherein said arms form a continuation of the top rails and are rigidly interconnected therewith by a U-shaped portion forming an extension of the top rails at the rear thereof and being integral with the arms at the rear of the arms.

6. The structure as defined in claim 5 including a closure between each top rail and arm comprising a generally U-shaped wire rod having the bight portion secured to the U-shaped portion interconnecting the rail and arm, and the forward ends thereof attached to a rod extending vertically between the top rail and arm.

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