

[54] **CRIB CONSTRUCTION**

[72] Inventor: **Richard L. Harbison**, Crawfordsville, Ind.
[73] Assignee: **Ingress Manufacturing Corp.**, Crawford-
ville, Ind.

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297/DIG. 2
[51] Int. Cl. **E03d 11/10**
[58] Field of Search **5/93, 100, 186;**
49/431-433, 458, 459; 297/DIG. 2

[56] **References Cited**

UNITED STATES PATENTS

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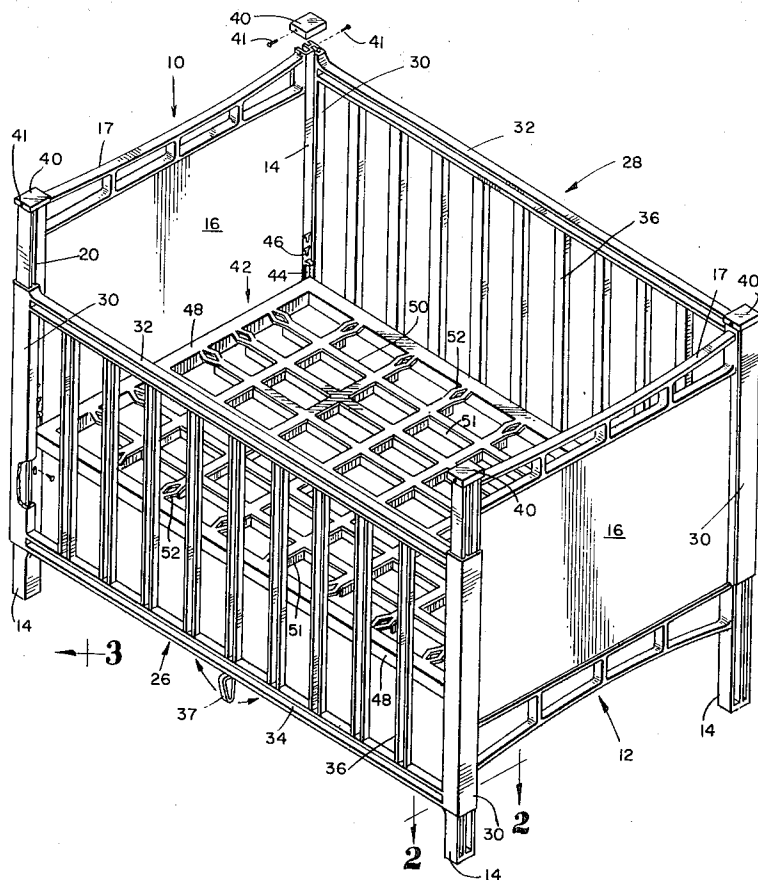
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Primary Examiner—James C. Mitchell
Attorney—Trask, Jenkins & Hanley

[57] **ABSTRACT**

A child's crib having floor-supported ends interconnected by sides at least one of which is vertically adjustable. The sides and at least the major parts of the ends are unitary plastic moldings, and are formed with integral tongue and groove portions through which the ends are operatively connected to the sides. A one-piece mattress support vertically adjustable on the crib-ends is a one-piece plastic molding providing a rigid border frame, a gridlike center portion, and spaced elastic connections between the center portion and the ends and sides of the border frame.

10 Claims, 8 Drawing Figures



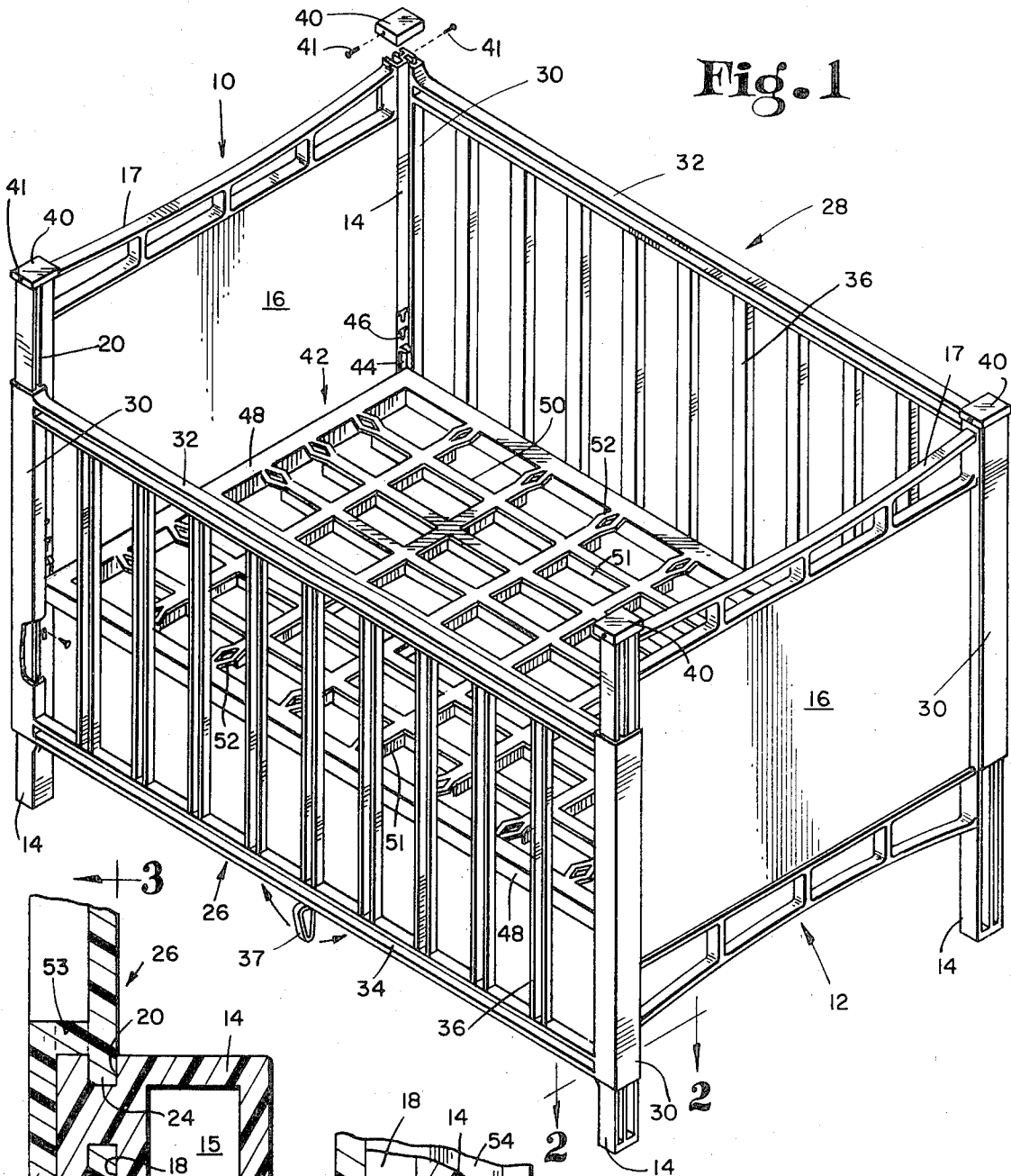


Fig. 1

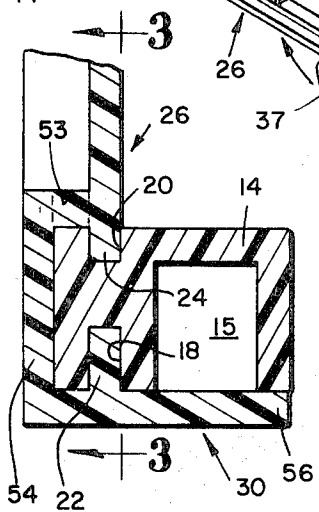


Fig. 2

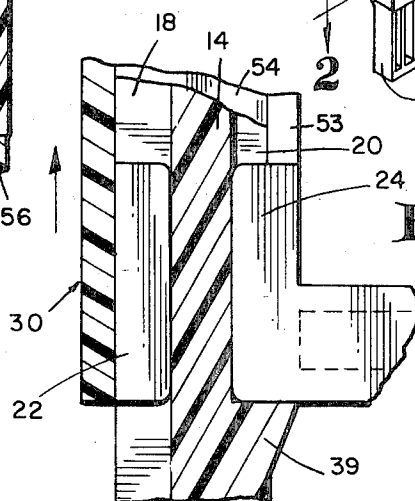


Fig. 3

INVENTOR.
RICHARD L. HARBISON
BY

Trask, Jenkins & Hanley

ATTORNEYS

Fig. 4

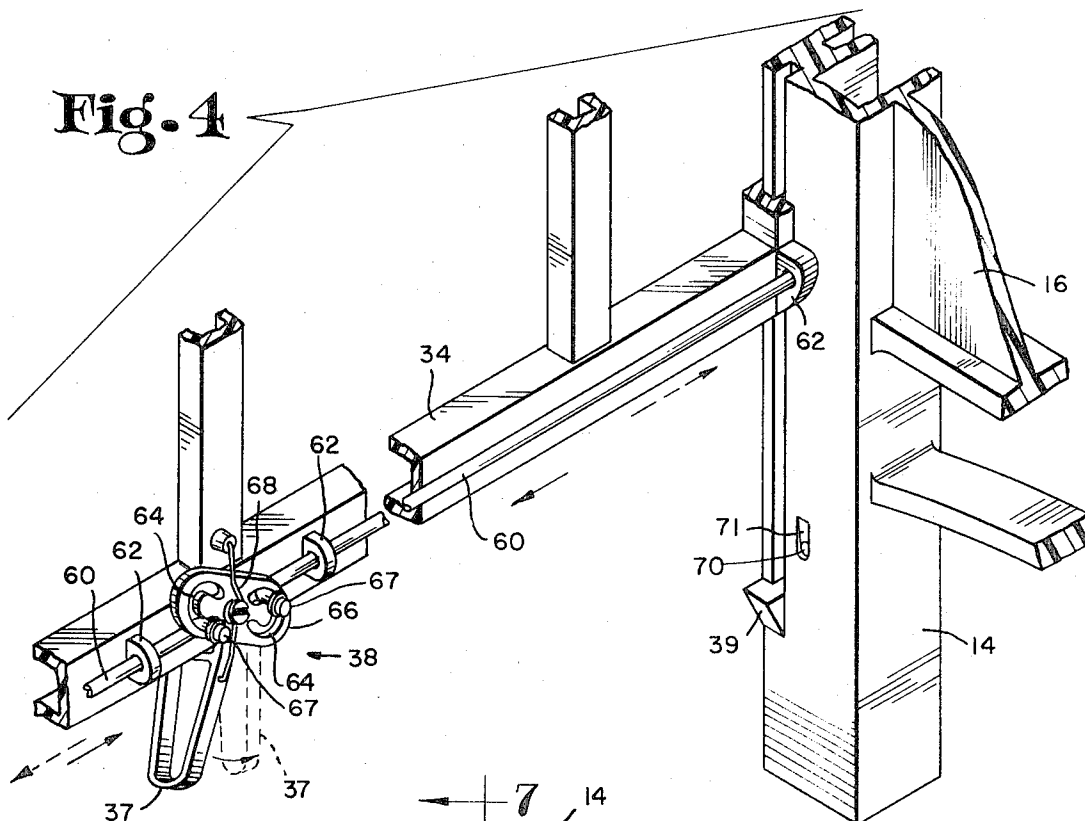
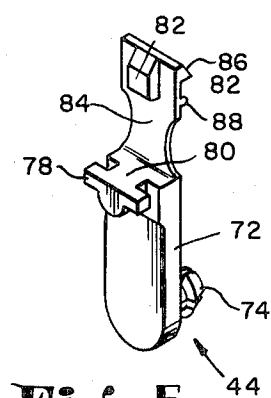


Fig. 5

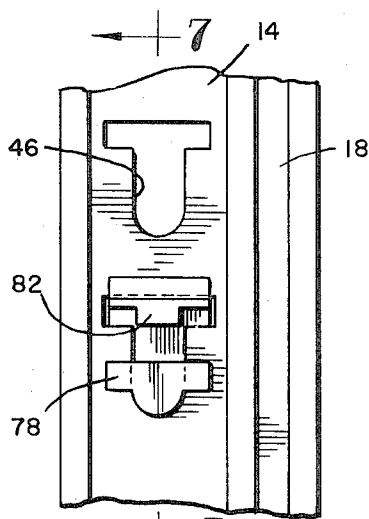


Fig. 6

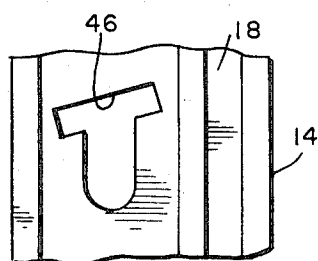


Fig. 8

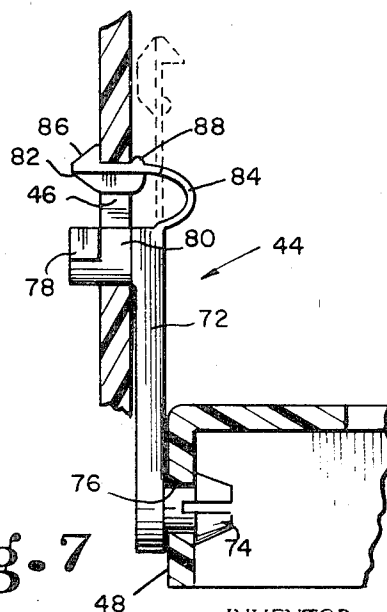


Fig. 7

INVENTOR.
RICHARD L. HARBISON

BY

Trust, Jenkins & Stanley
ATTORNEY

CRIB CONSTRUCTION

BACKGROUND OF THE INVENTION

Cribs are commonly constructed of a multiplicity of parts. Thus, the crib-ends embody legs, usually of wood, interconnected by other parts, also of wood; additional parts extend between the crib-ends to form a relatively rigid frame; and child-retaining sides are assembled from horizontal top and bottom rails of wood between which wooden slats extend. Metal brackets or other metal elements are employed at the corners of the crib and elsewhere to interconnect wooden parts, and in many cases the yieldable mattress support is formed entirely of metal parts. Where a crib-side is vertically adjustable, it is usually slidable in metal rods secured to the legs. While having been used for many years, there are various disadvantages in this conventional construction, in that the metal to wood junctions often become weakened, the wood parts are easily marred, the metal parts are subjected to various types of corrosion, and the assembly and interconnecting of the many separate parts involves relatively high-labor costs. It is an object of this invention, therefore, to provide an improved crib which may be manufactured substantially of a relatively few molded plastic components.

SUMMARY OF THE INVENTION

A crib in accordance with the invention, may comprise a pair of crib-ends or headboards having legs which are provided with vertically extending grooves for slidably receiving tongues on a pair of sides. Each side, including its tongues, and at least each leg of the crib ends is formed as a one-piece molding of a suitable plastic, such as high-impact polystyrene. In horizontal section, the interfitting tongues and grooves are so shaped as to hold the sides perpendicular to the crib-ends while still permitting the sides to slide vertically in the legs. Appropriate latch means cooperating with provisions integral with each leg controls the height of each side. A mattress support for the crib is formed as a one-piece plastic molding providing a border frame, a gridlike center portion, and elastic connections between such portion and the sides and ends of the border frame. The mattress support hangs by plastic straps fastened to the frame and retained in openings provided in the lets of the crib-ends.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings illustrate one embodiment of the invention. In such drawings:

FIG. 1 is an isometric view of a fully assembled crib embodying the invention;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a fragmental view of the lower portion of a leg of the crib shown in FIG. 1, illustrating a latch mechanism for locating a crib-side;

FIG. 5 is an isometric view of a fastener which holds the mattress support of the crib to the legs of the crib ends;

FIG. 6 is a front view of an outer end face of one of the legs, with the side removed, and shows a mattress support hanger inserted in a slot in the crib leg;

FIG. 7 is a sectional view taken along line 7—7 of FIG. 6; and

FIG. 8 is a view similar to FIG. 6, showing a modified slot for receiving a mattress support hanger.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in FIG. 1, one embodiment of our crib construction is formed by crib-ends 10 and 12, each having a pair of vertically disposed legs 14 interconnected by a panel 16. In the structure of FIG. 1, it is contemplated that the legs 14 and the panel 16, together with strengthening rails 17 at the top and bottom of the panel will be parts of a single plastic molding.

Each of the legs 14 is provided with a pair of grooves 18 and 20 for slidably receiving opposed tongues 22 and 24 on the adjacent end of one or the other of a pair of sides 26 and 28 through which the ends 10 and 12 are connected. Each side is a one-piece molding having a pair of vertically disposed end members 30 which carry the integral tongues 22 and 24, and which are interconnected at their upper and lower ends by top and bottom rails 32 and 34. Spaced vertical slats 36, integral with the rails 32 and 34, give structural rigidity to the sides 26 and 28 and prevent infants from falling out of the crib. Each side 26 and 28 is vertically adjustable by means of the tongue and groove connections between its end members 30 and the legs 14 of the end panels. The side rails may be locked in place at various positions along the legs 14, and may be released from their locked positions by means of the lever 37 of a latch mechanism 38, conveniently of a form described below. Downward movement of the side rails is limited by lugs 39, disposed one on each leg and integral therewith; and, upward movement of the side rails is limited by caps 40, connected as by screws 41 to the tops of the legs 14.

A mattress support 42 is suspended by a plurality of hangers 44 coupled between the corners of the mattress support and T-shaped openings 46 provided in the inner face of each leg 14. The mattress support is desirably a one-piece plastic molding comprising a generally rectangular border frame 48 and a gridlike center portion 50 resiliently connected to the border frame along its ends and sides. As shown, the border frame 48 is of relatively thick cross section to provide desired rigidity, even though the plastic of which the support is formed possesses a degree of flexibility. On the other hand, those portions of the gridlike center portion uniting it with the border frame are straplike and relatively thin and flexible to provide resilience and permit some downward movement of the supported mattress under load. Such resilience can be enhanced by so forming the straplike connections that each, as a whole, is elastically extendible. In the illustrated structure, this is done by forming each connection in a hollow diamond shape, as indicated at 52, the sides of which can bend and thus, in effect, impart a measure of elastic extensibility to the connections. By this means, it is possible to make the entire mattress support of a single plastic while still providing adequate rigidity in the border frame and adequate resilience under the mattress. Sagging of the center portion of the support between the connections 52 can be limited by providing it with stiffening ribs 51.

FIGS. 2 through 7 illustrate the details of the crib structure of FIG. 1. In particular, FIG. 2 shows a cross section of the vertical end member 30 of the side 26 in slidable engagement with the adjacent leg 14 of the crib-end 12. Each leg 14 is of a general channel section defining a vertically extending space 15 opening outwardly away from the plane of the crib-end. The openings 46 previously mentioned are in the web of the channel (FIG. 6). The vertical end member 30 of each side 26 and 28 comprises a first wall 53 projecting laterally outward with respect to the crib-side, a second wall 54 overlying the outer side face of the leg 14, and a third wall 56 overlying the space 15. The tongues 22 and 24 project toward each other from the inner faces of the walls 56 and 53 into the grooves 18 and 20 of the leg. It is not essential that the tongues 22 and 24 extend for the full length of the associated end member 30, but it is desirable that they be present at or near the upper and lower ends of such member. The fit of the leg 14 within the walls 53, 54 and 56 and the fit of the tongue 22 and 24 within the grooves 18 and 20 maintain the crib-sides parallel to each other and perpendicular to the crib-ends.

The latch mechanism 38 shown in FIG. 4, comprises a pair of rods 60 which extend respectively through guides 62 mounted on the lower rail 34 of the crib-side, from the center of said lower rail to the outer end thereof. The adjacent ends of horseshoe-shaped rods 60 are bent inwardly and extend through respective horseshoe-shaped cam slots 64 in a plate 66 which is fixed to the lever 37, and said adjacent ends receive caps 67 thereover to prevent their removal from the

slots 64. Desirably the plate 66 and lever 37 are parts of an integral molding pivotally mounted near its center to the lower rail 34, and a coiled torsion spring 68 surrounds the pivotal mounting and fixed at one end to one of the side rail slats 36, and at the other end to the lever 37. The spring 68 urges the lever 37 into a normal, generally vertical position wherein the bent ends of the rods are held near the center, radially outermost portions of the slots. In this condition, the outer ends of the rods are received in openings 70 in the legs 14. As will be clear from FIG. 4, the upper edges of the openings 70 are deeply chamfered as shown at 71 to provide inclined surfaces permitting the ends of the rods 60, as the crib-side is lowered, to enter the openings 70 and to apply an inward effort to the rods when the crib-side is raised. To permit the rods to move inwardly under that effort, the spring 68 normally holds the lever 37 in such a position that the radially outermost portions of the cam slots 64 are displaced slightly in the same rotative direction from the inbent ends of the rods 60. Thus, with the rods 60 in the holes 70 and an inward effort applied to them by chamfers 71, the inbent rod ends, engaging radially inclined inner walls of the cam slots, will cause the lever 37 to rotate and thereby permit the rods to move out of the holes 70 as the crib-side is raised. Accordingly, the latching mechanism need not be utilized to unlock the rods when the side rails are to be moved upwardly, but said mechanism must be actuated to withdraw the rods from the openings when the side rails are to be lowered. Such withdrawal of the rods is effected by forcing the lever 37 in either direction from its normal position, thereby causing the bent inner ends of the rods to travel through the slots 64 and to be drawn inwardly toward the rotatable mounting of the plate 66. If it is desirable that one of the side rails 26 or 28 be fixed to the legs 14, then the mechanism 38 can be omitted from that side rail, and a screw may be passed through a guide 62 and threaded into one of the openings 70.

FIGS. 5, 6, and 7 illustrate hangers 44 which may be used to suspend the mattress support within the rectangle defined by the sides and ends of the crib. Each hanger 44 is preferably formed of flexible plastic and has a straplike body portion 72 provided with a compressible slotted head 74 which projects outwardly at one end of the body portion for reception in an opening 76 in the frame 48 of the mattress support. At the other end of the body 72 is a T-shaped lug 78 which projects from the side of the body portion opposite the notched head 74, for reception in one of the T-shaped slots 46 in the leg 14. To connect the hanger 72 to a leg 14, the crossbar of the lug 78 is passed through the top of the slot 46 and the hanger lowered until the neck 80 of the lug is rested in the lower end of the slot.

As an infant jumping up and down in the crib could cause accidental withdrawal of a hanger lug from its slot in the leg, it is desirable that such accidental withdrawal be prevented. For that purpose, the hanger may be provided with a releasable means preventing the lug 78 from rising in the slot 46 to the extent necessary to effect its disengagement. Such a means may embody a lug 82, integrally connected to the hanger 72 by an elastic strap 84 and insertable in the upper portion of the slot 46 above the lug 78 to limit or prevent its upward movement. The plug may be provided with spaced, transverse ribs 86 and 88 releasably engageable with the upper edge of the slot 46 to hold the plug in place.

An alternative arrangement, shown in FIG. 8, for preventing the lug 78 from escaping from its slot involves forming the slot 46 so that its crossbar is inclined to the normally horizontal head of the lug 78. By flexing the hanger 72 laterally, such head may be inserted through the slot, and when the flexing effort is relieved the head of the lug will lie at an angle to the

crossbar of the slot in a position such that it will not pass through the slot accidentally.

From the above, it will be evident that the invention makes possible the production of a drop side crib with a vertically adjustable mattress support using a relatively small number of component parts. Forming such components as the sides, ends and mattress supports as one-piece plastic moldings facilitates assembly and materially reduces labor costs. Further, the plastic or plastics from which the moldings are formed will not be so subject to staining, corrosion, or other deterioration as are the wood and metal used in prior cribs.

I claim:

1. A child's crib, comprising a pair of crib-ends each having a pair of legs at its sides, a mattress support removably connected at its ends to said legs, a pair of crib sides on opposite sides of said mattress support and interconnecting said ends, at least one of said crib-sides being vertically adjustable, means slidably interconnecting the adjustable side with a leg on each crib-end and so constructed and arranged as to maintain the ends perpendicular to the adjustable side, and releasable means for retaining the adjustable side in a position of adjustment.

2. A crib according to claim 1, wherein said interconnecting means includes slidably associated tongues and grooves, the tongues being on the crib-side and the grooves being in legs of the crib-ends.

3. A crib according to claim 1, wherein said interconnecting means includes slidably associated tongues and grooves.

4. A crib according to claim 3, wherein the adjustable side includes at each of its ends a vertically extending member at least partially embracing the associated leg.

5. In a child's crib having sides and ends and a mattress support within the crib, means for vertically adjusting said support comprising a flexible straplike hanger at each corner of the support and extending upwardly therefrom, each of said hangers having near its upper end an outwardly projecting integral lug receivable in any of a plurality of vertically spaced openings in a crib end.

6. The invention of claim 5 with the addition of releasable means for retaining the lug in the opening receiving it.

7. A mattress support for a child's crib, said support being an integral molding formed of an elastic plastic and comprising a border frame, a sheetlike center portion, and resiliently extensible connecting portions integrally connecting the edges of the center portion with the border frame at spaced points along the periphery of the border frame, said border frame being of heavier construction and more rigid than said extensible connecting portions.

8. A child's crib, comprising a pair of crib ends, each having legs at its opposite sides, a pair of crib sides each extending between and connecting legs of the crib-ends to form a rectangular structure, each of said crib sides being formed as a one-piece molding of plastic, at least one of said crib-sides having at each end integral provisions, slidably connecting it to the adjacent crib and leg and maintaining the crib-ends perpendicular to the crib-side.

9. A child's crib, comprising a pair of crib-ends, each having legs at its opposite sides, a pair of crib sides each extending between and connecting legs of the crib-ends to form a rectangular structure, each of said legs being formed as a one-piece molding having integral provisions cooperating with the adjacent crib-side to form a connection holding the associated crib-end perpendicular to the adjacent side, the connection effected by the provisions on at least one side being slidable.

10. A crib according to claim 9 wherein both legs of each crib-end constitute integral portions of a one-piece plastic molding.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,634,894 Dated January 18, 1972

Inventor(s) Richard L. Harbison

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 21, change "high-labor" to -- high labor --
line 44, change "lets" to -- legs --.
Column 2, line 65, change "tongue" to -- tongues --
line 72, before "rods 60" cancel -- horseshoe-shaped-
Column 3, line 9, change "lets" to -- legs --
line 45, change "heat" to -- head --
line 56, change "extend" to -- extent --.

Signed and sealed this 4th day of July 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents