United States Patent [19]

Feldstein

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[54] **SECURING APPARATUS FOR A DROPSIDE CRIB**

[76] Inventor: **Morris Feldstein,** 782 W. 52nd Ave., Vancouver, British Columbia, Canada, V6P 1G6

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[52] **U.S. Cl.** **5/100;** 5/11

[51] **Int. Cl.²** **A47D 9/02**

[58] **Field of Search** 5/11, 100, 331

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Primary Examiner—Casmir A. Nunberg

Attorney, Agent, or Firm—Fetherstonhaugh & Co.

[57] **ABSTRACT**

A connector element secured to a crib dropside and slidable on an elongated base element secured in a vertical position to a crib end, a latch pin on the connector element and having a headed end adapted to project through a keyhole in the base element. This pin fits in the slot portion of the keyhole when the crib side is secured in the up position. In order to move the dropside downwardly relative to the crib, the dropside has to be raised to move the latch pin out of the slot so that the pin head can be withdrawn through the large portion of the keyhole. The latch pin is biased towards the base element, and lock means is provided for normally holding the pin in the slot.

15 Claims, 12 Drawing Figures

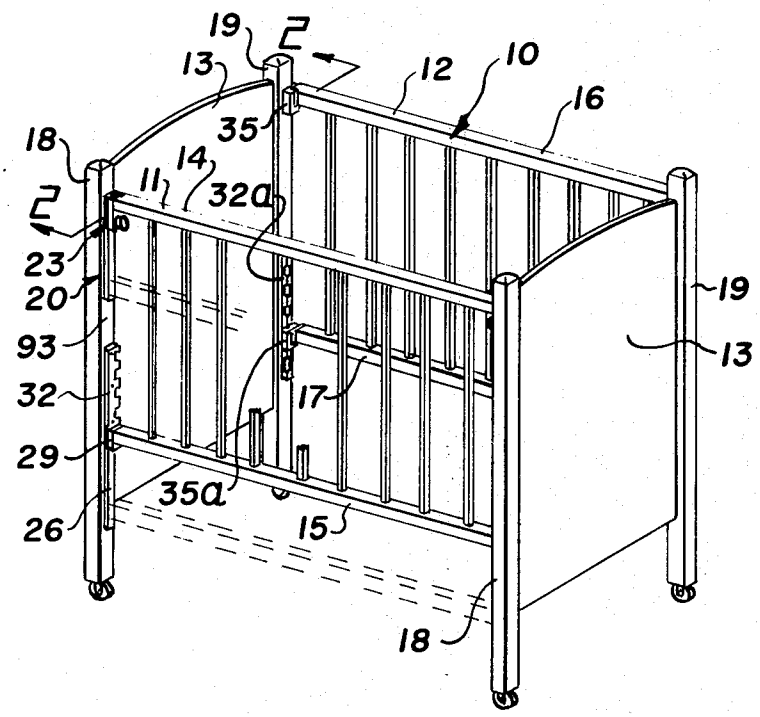


Fig. 1.

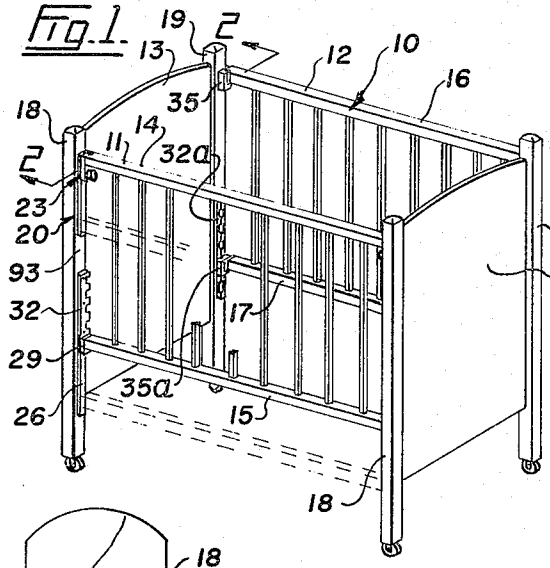


Fig. 2.

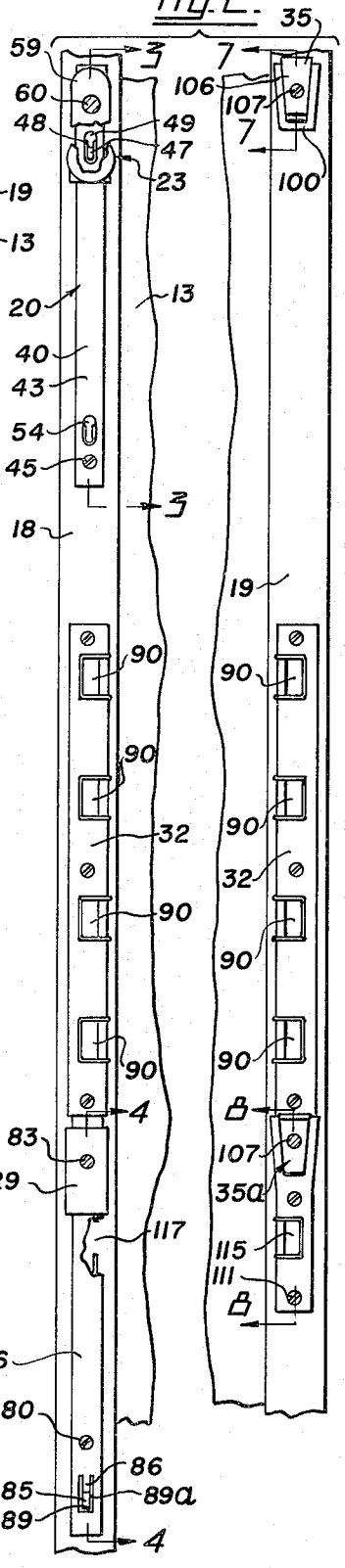
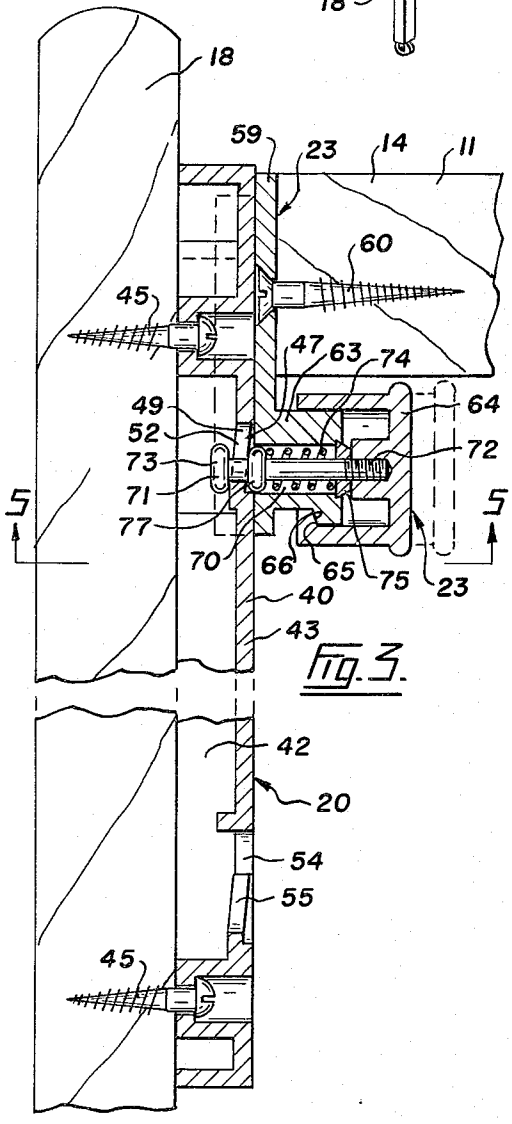


Fig. 3.



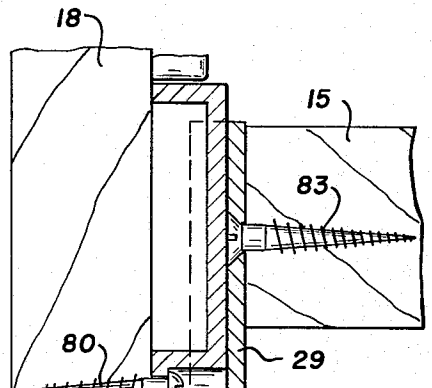


Fig. 4.

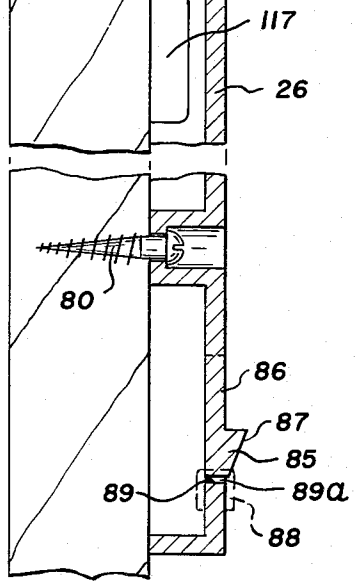


Fig. 7.

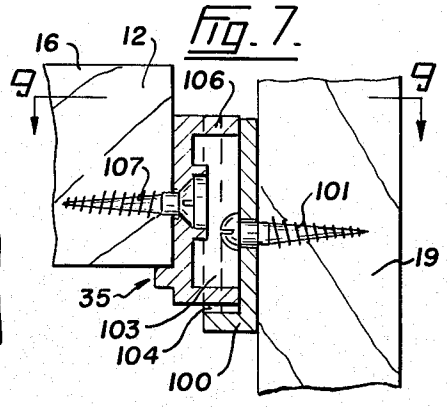


Fig. 8.

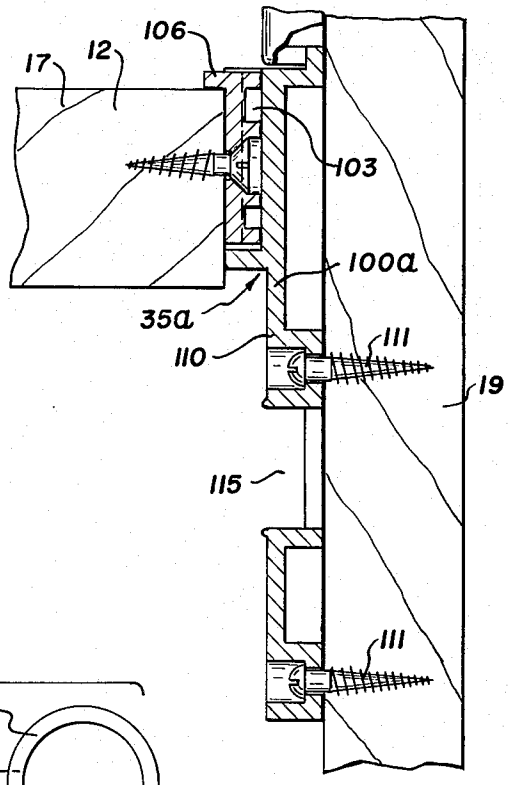
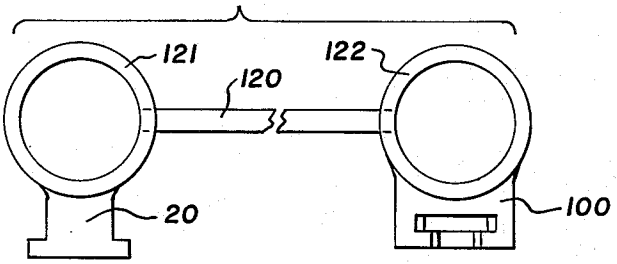


Fig. 12.



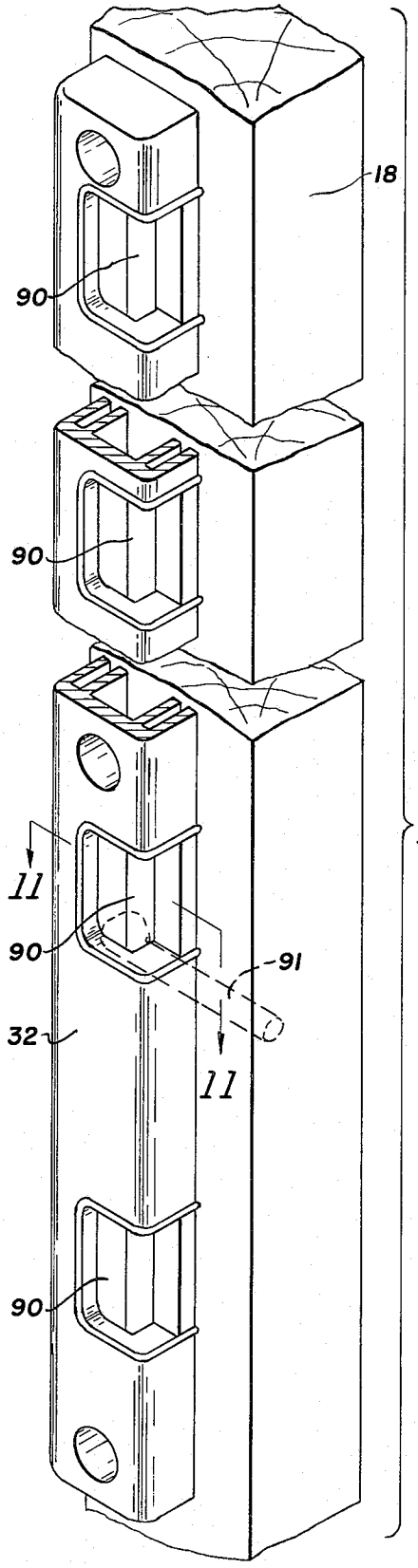


Fig. 10.

Fig. 5.

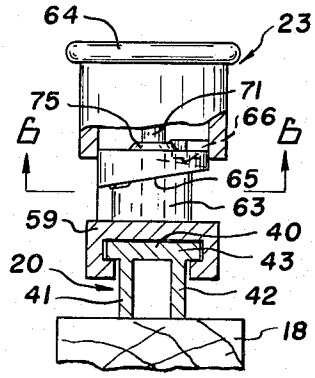


Fig. 6.

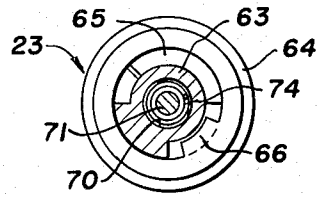
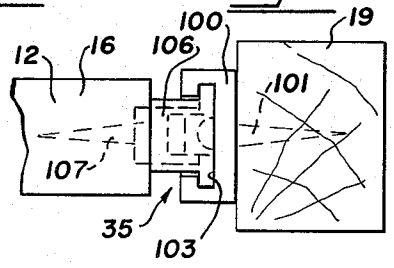


Fig. 9.



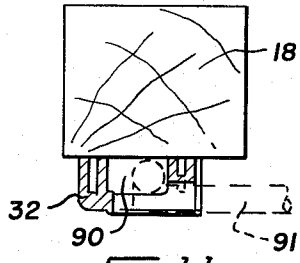


Fig. 11.

SECURING APPARATUS FOR A DROPSIDE CRIB

This invention relates to dropside cribs and particularly to apparatus for securing the sides of the cribs firmly in position without screws or other similar fastening means.

Dropside cribs are well known, but most of the prior cribs require screws or similar fastening means for securing the various elements together. Most cribs today are delivered to the purchasers in knocked-down condition, and it usually is difficult to assemble the various parts, and to hold them in position while screws are inserted and tightened. This also requires tools for the job. Today many people are not equipped to assemble cribs.

Another disadvantage of the prior cribs is that many of them become loose when subjected to the usual activity of young children in them. The looseness causes a crib to be noisy when a child jumps in it or otherwise treats it rather roughly, and such a crib is often dangerous. In some prior cribs, the child can release the dropside, making it possible for the child to fall out.

A crib in accordance with the present invention can be quickly and easily assembled without the use of any tools. The two sides of the crib are secured and clamped to the crib ends so that the various parts are tightly held together, and there is very little likeihood of them becoming loose during use of the crib. The crib can have two dropsides, or as is more common, it can have one dropside and one fixed side. In this case, the fixed side is wedged to the crib ends so that this side and the ends are very firmly secured together. Each end of the dropside is slidably secured to an adjacent crib end by an arrangement that permits the dropside to move up and down freely, and yet can be very firmly clamped in either the up or down position. This securing apparatus also is such that for the child in the crib to release the dropside, he would not only have to release the clamp mechanism, but he would have to lift the dropside and at the same time draw latching pins out of their normal latching positions. It is practically impossible for a young child to do this.

Securing apparatus according to this invention comprises an elongated base element to be secured in a vertical position to a crib end near a side thereof. Alternatively, this base element and the corner post of the crib end can be molded in one piece, if desired. The securing apparatus also includes a connector element to be secured to a movable crib side and slidably connected to the base element, a keyhole in the base element and formed with a narrow slot extending downwardly from a relatively large opening, a bore in the connector element substantially normal to the base element and positioned to be aligned with the keyhole, a latch pin extending through said bore and having a head on an inner end thereof adapted to pass through said opening, said pin fitting in said slot when the connector element is moved downwardly after the head has been moved through the keyhole opening, and means biasing the pin in the direction of the base element.

The securing apparatus preferably includes cam means between the knob and the connector element and adapted to draw the pin head against the base element upon rotation of the knob in one direction while the pin is positioned in the keyhole slot. In addition, an elongated track is adapted to be secured to or formed with the crib end below and substantially in line with the base element, and a slide element secured to the crib side below the connector element is slidably connected to this track.

When the crib has a fixed side, the securing apparatus of this invention includes a base to be mounted on or formed with the crib end near the side thereof remote from the dropside, said base having a wedged-shaped socket therein. A wedge to be secured to the second crib side is adapted to be inserted in this socket and fits snugly therein when the crib side is moved downwardly relative to the crib end rigidly to secure the side thereto.

Examples of this invention are illustrated in the accompanying drawings, in which

FIG. **1** is a reduced diagrammatic view of a crib having a dropside and a fixed side with the securing apparatus of this invention connecting these to the crib ends,

FIG. **2** is an enlarged fragmentary vertical sectional view taken on the line **2—2** of FIG. **1,** showing an end of the crib in elevation and with the dropside and the fixed side removed,

FIG. **3** is an enlarged vertical section taken on the line **3—3** of FIG. **2,** and including part of the dropside,

FIG. **4** is an enlarged vertical section taken on the line **4—4** of FIG. **2,** and including part of the dropside,

FIG. **5** is a cross-section taken on the line **5—5** of FIG. **3,**

FIG. **6** is a framentary sectional view taken on the line **6—6** of FIG. **5,**

FIG. **7** is an enlarged vertical section taken on the line **7—7** of FIG. **2,** and including part of the fixed side,

FIG. **8** is an enlarged vertical section taken on the line **8—8** of FIG. **2,** and including part of the fixed side,

FIG. **9** is a cross-section taken on the line **9—9** of FIG. **7,**

FIG. **10** is an enlarged perspective view of a support secured to the crib end for a bail connected to the mattress support of the crib,

FIG. **11** is a horizontal section taken on the line **11—11** of FIG. **10,** and

FIG. **12** is a reduced plan view of an alternative form of the invention in which the securing apparatus is molded with corner posts of the crib end.

Referring to FIG. **1** of the drawings, **10** is a crib having a dropside **11,** a fixed side **12,** and two opposite ends **13.** Dropside **12** has upper and lower rails **14** and **15,** side **12** has upper and lower rails **16** and **17,** and each end **13** has end posts **18** and **19.** This type of crib has a flat mattress support which is carried by bail means at opposite ends thereof and which are removably secured to the crib ends. The mattress support and bail means have been omitted for the sake of clarity.

As the securing apparatus of this invention is duplicated at opposite ends of the crib, the apparatus at one end only will now be described in detail.

The illustrated securing apparatus in accordance with this invention includes a vertical base element **20** secured to end post **18** near the upper end thereof, a connector element **23** secured to dropside **11** at upper rail **14** thereof and slidable on the base element, a vertical track **26** mounted on post **18** below and in line with base element **20,** a slide element **29** fixed to the dropside at the lower rail **15** thereof and slidable on the track, and an elongated verticcal support **32** mounted on the crib post in line with and between the base element and the track.

For a crib having a fixed side **12**, the securing apparatus of this invention includes a wedge unit **35** at the top rail **16** and similar unit **35***a* at bottom rail **17** of said side. A bail support **32***a* is mounted on end post **19** between the upper and lower wedge units.

FIGS. **2** and **6** illustrate the securing apparatus of the dropside in detail. The base element **20** consists of an elongated member **40** having side walls **41** and **42**, and a front wall **43** which spans the side walls and projects laterally therefrom, see FIG. **5**. The member **40** is secured to end post **18** by suitable fastening means, such as screws **45**. An upper keyhole **47** is formed in wall **43** and is spaced a little downwardly from the upper end thereof. This keyhole is formed with a slot **48** extending downwardly from an enlarged hole portion **49**. Although not absolutely necessary, it is preferable to provide front wall **43** with a vertical ramp **52** at the keyhole and which is inclined inwardly of said wall in a downward direction, as clearly shown in FIG. **3**. Keyhole **47** is formed in this ramp. It is also preferable to provide a lower keyhole **54** in front wall **43** spaced above the lower end thereof, said keyhole being identical with keyhole **47**, and preferably located in a downwardly and inwardly inclined ramp **55** formed in the front wall.

Connector element **23** is in the form of a vertical slide **59** slidably mounted on and shaped to fit around the side edges of front wall **43** of base member **40**, see FIG. **5**. Slide **59** is mounted on the upper rail **14** of dropside **11** by suitable securing means, such as a screw **60**.

A boss **63** is circular cross-section is formed on slide **59** near the lower end thereof and projects outwardly therefrom beneath rail **14**, and a knob **64** is rotatably mounted on this boss. In this example, cam means is provided between knob **64** and slide **59** of the connector element to cause the knob to move axially of the boss during rotation thereon. For this purpose, boss **63** is formed with an inwardly facing cam surface **65**, while the knob is formed with an outwardly facing and matching cam surface **66**. When the knob is rotated on the boss, these cam surfaces cause the knob to move axially on the boss.

Boss **63** is formed with a bore **70** which is substantially normal to base element **20**, and a pin **71** extends centrally through this bore, the outer end **72** of this pin being connected to knob **64**, and the inner end of the pin being formed with a head **73** thereon. A spring **74** in bore **70** bears at one end against a plug **75** closing the outer end of the bore, and at its opposite end against an inner head **77** formed on the pin and spaced from its outer head **73**. This spring normally biases the pin in the direction of the base element. Head **73** is small enough to pass through the enlarged portion **49** of keyhole **47**, and pin **71** fits in slot **48** when the crib side is in its normal elevated position.

FIG. **3** shows dropside **11** in its normal position and locked therein by connector element **23**. In order to lower the dropside, it is necessary to lift it upwardly to align head **73** with the hole enlargement **49** of the keyhole and then to draw the head outwardly through the enlargement by pulling knob **64** outwardly. On the other hand, when pin **71** is in the keyhole slot and knob **64** is rotated, cam surfaces **65** and **66** cause head **73** to be drawn against the inner surface of ramp **52** to lock the connector element in position on base element **20**. At this time, inner head **77** is positioned against the outer surface of the ramp so that any effort to raise the dropside is resisted by the inclined outer surface of the ramp which bears against the inner head at this time. In order to release the crib side, it is only necessary to rotate knob **64** in the opposite direction, and then to lift the side enough to align head **73** with the enlargement of the keyhole so that the head can be drawn therethrough into bore **70** and clear of the front wall **43** of the base element. As the dropside is moved downwardly, the knob can be released since head **73** will bear against and slide along the outer surface of wall **43** until the head comes into alignment with the enlargement of keyhole **54**, at which time spring **74** will urge the head through the keyhole so that pin **71** will drop into the slot of this keyhole. The knob can be turned to tighten the connector element and, consequently, the crib side in this position.

As stated above, slide element **29** is slidably mounted on track **26**, see FIGS. **2** and **4**. This track is connected to end post **18** by suitable connectors, such as screws **80**, while slide element **29** is connected to the lower rail **15** of dropside **11** by suitable securing means, such as a screw **83**.

Stop means is provided near the lower end of the track **26**, for example, a stop **85** is located at the front surface of track **26** near the lower end thereof, and is normally biased outwardly relative to said surface, see FIG. **4**. In this example, track **26** is formed of a suitable plastic material, and stop **85** is integrally connected with the track by a strip **86** of this material, which is resilient. Stop **85** is formed with an outer inclined surface **87**, this surface being inclined upwardly and outwardly, as clearly shown in FIG. **4**.

If desired, the stop means for track **26** may be a U-shaped stop clip **88** fitted over the edge **89** at the lower end of the opening **89a** in track **26**, said clip being shown in broken lines in FIG. **4**. This clip is placed on edge **89** after connector element **23** has been moved on to track **26** from the lower end thereof.

Support **32** is secured to end post **18** by screws or the like, and it has a plurality of vertically-spaced notches **90** therein into which the ends of a mattress support bail can be inserted, a portion of one of these bails **91** being shown in broken lines in FIGS. **10** and **11**.

By referring to FIG. **1**, it will be seen that there is a space **93** between the lower end of base element **20** and the upper end of support **32**. The distance between the lower end of the base element and the lower end of track **26** is substantially the same as the distance between connector **23** and slide element **29** so that when dropside **11** is to be connected to crib end **13**, the connector element is moved into space **93** and into line with the lower end of base element **20** when slide element **29** is moved into alignment with the lower end of track **26**. The side is now moved upwardly so that the connector element rides on the base element while the slide element rides on the track. As the crib side is drawn upwardly, slide element **29** engages the inclined surface **87** of stop **85** to depress the stop so that the side element can moved up the track. When the slide element clears the stop, the latter springs outwardly so that the slide element cannot be moved downwardly off the track unless someone depresses stop **85**.

By referring to FIGS. **3** and **4**, it will be seen that member **40** and track **26** are similar male track elements, and that slide **59** and slide **29** are similar female slide elements riding on the track elements. It is obvi-

ous, however, that the tracks can be formed as female elements and the slides as male elements, without departing from the scope of the present invention.

FIGS. **2**, **7** and **9** illustrate wedge unit **35** in detail. Unit **35** includes a base **100** mounted on end port **19** by suitable securing means, such as a screw **101.** This base is formed with a wedge shaped socket **103** therein having a base **104.** A wedge **106** is secured to the upper rail **16** of crib side **12** by a screw **107** or the like. This wedge is shaped to move downwardly in and fit snugly within socket **103** while spaced above base **104** thereof, see FIG. **7.** It will be noted that base **100** with its socket **103** and wedge **106** are relatively long so that when the wedge fits within the pocket, the crib side **12** is firmly secured to end post **19.**

The lower wedge unit **35***a*, see FIG. **8,** may be identical with wedge unit **35** or, as shown, base **100***a* of unit **35***a* may have an extension **110** projecting downwardly therefrom and secured to post **19** by a screw **111** or the like. A notch **115** is formed in the extension **110** and is adapted to receive an end of bail **91.** This enables the bail to be positioned well down in the crib. If this notch **115** is provided, it is necessary to provide a corresponding notch **117** in the side of track **26,** see FIGS. **2** and **4,** opposite socket **115** to receive the opposite end of the bail at this level.

In order to connect fixed side **12** to an end **13,** it is only necessary to drop wedges **106** of the upper and lower wedge units **35** and **35***a* into the adjacent socket **103** of the bases **100** and **100***a*, and then to press the side downwardly. The two wedges jamb in their respective sockets, and form a strong and rigid connection between the crib side and crib end. The length of the wedges and their sockets provide relatively large bearing surfaces at the upper and lower edges of the crib side so as to prevent any relative movement between these elements as a result of a young child jumping up and down on the mattress of the crib.

FIG. **12** illustrates a variation of this invention. An alternative crib end **120** has tubular corner posts **121** and **122** formed of suitable plastic material. The base element **20,** support **32** and track **26** are molded with post **121,** base element **20** being shown in this FIG. Similarly, the bases **100** and **100***a* of wedge units **35** and **35***a* are molded with post **122.** The upper base **100** is shown in this Figure.

When a purchaser of a crib **10** receives the crib in knocked-down condition, all he has to do is slip the wedges of side **12** into their respective sockets on the two ends **13** and then press the side firmly downwardly. Following this, he leads connectors **23** at opposite ends of dropside **11** on to base elements **20,** and slide elements **29** on to tracks **26** and then moves the side upwardly until slide elements clear stops **85.** As the dropside is moved towards its uppermost position, head **73** of each connector will automatically enter the adjacent keyhole **47,** and when the side is released, pin **71** drops into the slot of the keyhole. Following this, each knob **64** is turned to clamp its connector element to the base element. As this clamping action is accomplished at both ends of the dropside, the latter is very firmly secured to the crib ends and will not rattle even when the child jumps in the crib. It is actually impossible for the child to get the dropside down on his own. He would have to turn the two knobs at the ends of the dropside, lift the dropside against the resistance of the slopes of ramps **52,** then pull the knobs outwardly to get heads **73** through their respective keyholes.

In order to lower the dropside, knobs **64** are turned to unclamp the connector elements, and after the side is raised a little, the knobs are drawn outwardly in the direction away from the crib ends to withdraw heads **73** from the keyholes. When the crib side is lowered, heads **73** slide along the crib surfaces of the base elements until they move into alignment with and enter lower keyholes **54.**

When the knobs are tightened at the ends of the dropside, this side becomes a stabilizing structure to ensure maximum rigidity on the entire crib unit. This cuts down the noise factor, which results from loose parts, eliminates the necessity of the stabilizing members normally used in cribs, and is particularly useful if the crib has two dropsides. In addition, the crib can be quickly and easily put together without the necessity of using any tools.

I claim:

1. Securing apparatus for dropside crib comprising an elongated base element to form part of or to be secured in a vertical position on a crib end near a side thereof, a connector element to be secured to a movable crib side and slidably connected to the base element, a keyhole in the base element and formed with a narrow slot extending downwardly from a relatively large opening, a bore in the connector element substantially normal to the base element and positioned to be aligned with the keyhole, a latch pin extending through said bore and having a head on an inner end thereof adapted to pass through said opening, said pin fitting in said slot when the connector element is moved downwardly after the head has been moved through the keyhole opening, and means biasing the pin in the direction of the base element.

2. Securing apparatus as claimed in claim **1** including an inner head on the pin spaced from the first-mentioned head and normally pressed by said biasing means against the base element, and a vertical ramp on the base element and inclined inwardly of said base element in a downward direction and away from the connector element, said keyhole being formed in said ramp, whereby said ramp resists upward movement of the connector element while the pin is in the keyhole slot.

3. Securing apparatus as claimed in claim **1** including a knob on an outer end of said pin by means of which the pin can be drawn outwardly relative to the base element and against the action of said biasing means to draw the head through the keyhole opening after the connector element has been raised to clear the pin from said slot.

4. Securing apparatus as claimed in claim **3** including cam means between the knob and the connector element and adapted to draw said head against the base element upon rotation of the knob in one direction while the pin is positioned in the keyhole slot.

5. Securing apparatus as claimed in claim **4** including an inner head on the pin spaced from the first-mentioned head and normally pressed by said biasing means against the base element, and a vertical ramp on the base element and inclined inwardly of said base element in a downward direction and away from the connector element, said keyhole being formed in said ramp, whereby said ramp resists upward movement of

the connector element while the pin is in the keyhole slot.

6. Securing apparatus as claimed in claim **1** including a second similar keyhole formed in the base element below and in line with the first-mentioned keyhole.

7. Securing apparatus as claimed in claim **6** including an inner head on the pin spaced from the first-mentioned head and normally pressed by said biasing means against the base element, and a vertical ramp on the base element and inclined inwardly of said base element in a downward direction and away from the connector element, said keyhole being formed in said ramp, whereby said ramp resists upward movement of the connector element while the pin is in the keyhole slot and the first head is drawn against the base element.

8. Securing apparatus as claimed in claim **1** including an elongated track to be secured to said crib end below and substantially in line with the base element, and a slide element to be secured to said outer side below the connector element and slidably connected to said track.

9. Securing apparatus as claimed in claim **8** including a stop biased outwardly from the track near a lower end thereof to limit downward movement of said slide element on the track.

10. Securing apparatus as claimed in claim **7** including an elongated track to be secured to said crib end below and substantially in line with the base element, and a slide element to be secured to said crib side below the connector element and slidably connected to said track.

11. Securing apparatus as claimed in claim **10** including a stop biased outwardly from the track near a lower end thereof to limit downward movement of said slide element on the track.

12. Securing apparatus as claimed in claim **1** including a base to be mounted on said crib end near an opposite side thereof, said base having a wedge-shaped socket therein, and a wedge to be secured to a second crib side, said wedge being adapted to be inserted in said socket and fitting snugly therein when the second crib side is moved downwardly relative to the crib end rigidly to secure said second side thereto.

13. Securing apparatus as claimed in claim **1** including upper and lower bases to be mounted on said crib end near an opposite side thereof, each of said bases having a wedge-shaped socket therein, and upper and lower wedges to be secured to a second crib side and positioned to fit in the sockets of the upper and lower bases respectively, each wedge fitting snugly in the adjacent base socket when the second crib side is moved downwardly relative to the crib end rigidly to secure said second side thereto.

14. Securing apparatus as claimed in claim **8** including a base to be mounted on said crib end near an opposite side thereof, said base having a wedge-shaped socket therein, and a wedge to be secured to a second crib side, said wedge being adapted to be inserted in said socket and fitting snugly therein when the second crib side is moved downwardly relative to the crib end rigidly to secure said second side thereto.

15. Securing apparatus as claimed in claim **8** including upper and lower bases to be mounted on said crib end near an opposite side thereof, each of said bases having a wedge-shaped socket therein, and upper and lower wedges to be secured to a second crib side and positioned to fit in the sockets of the upper and lower bases respectively, each wedge fitting snugly in the adjacent base socket when the second crib side is move downwardly relative to the crib end rigidly to secure said second side thereto.

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