

[54] **CRIB AND STABILIZING LATCH APPARATUS THEREFOR**

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[57] **ABSTRACT**

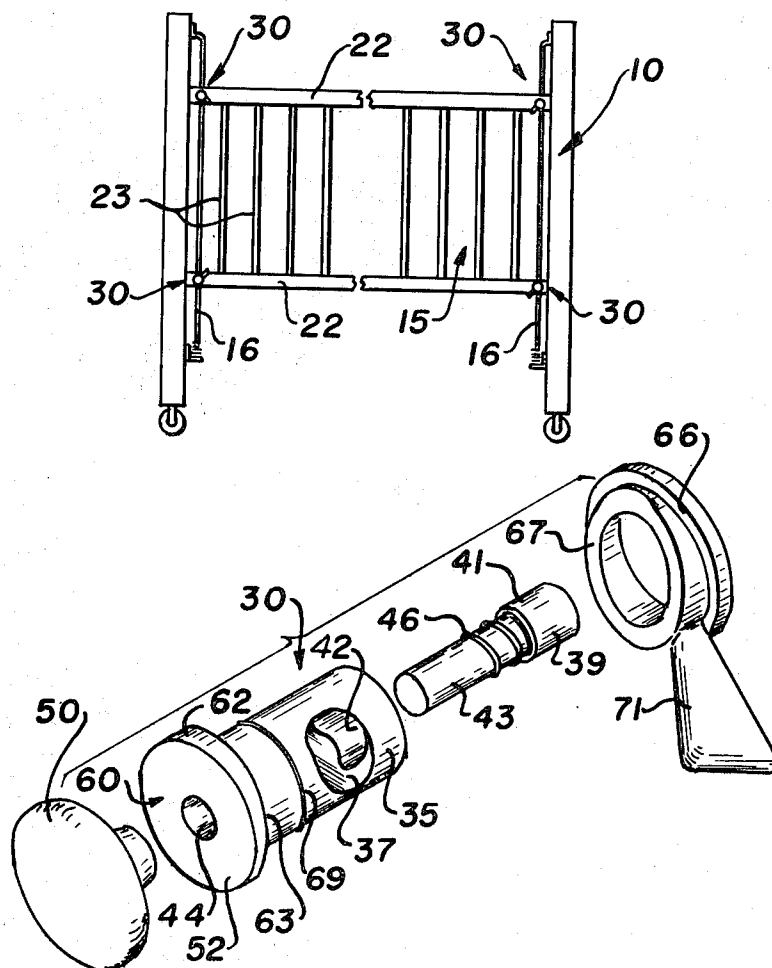
A crib having at least one drop-side slidably mounted on vertical rods adjacent the ends thereof, and stabilizing latch apparatus at one or both ends of the crib side for locking said side at different levels on the rod. The latch apparatus includes means for clamping said crib side on one of the rods, and/or means for locking said side in one position or in a selected one of a plurality of vertically spaced positions.

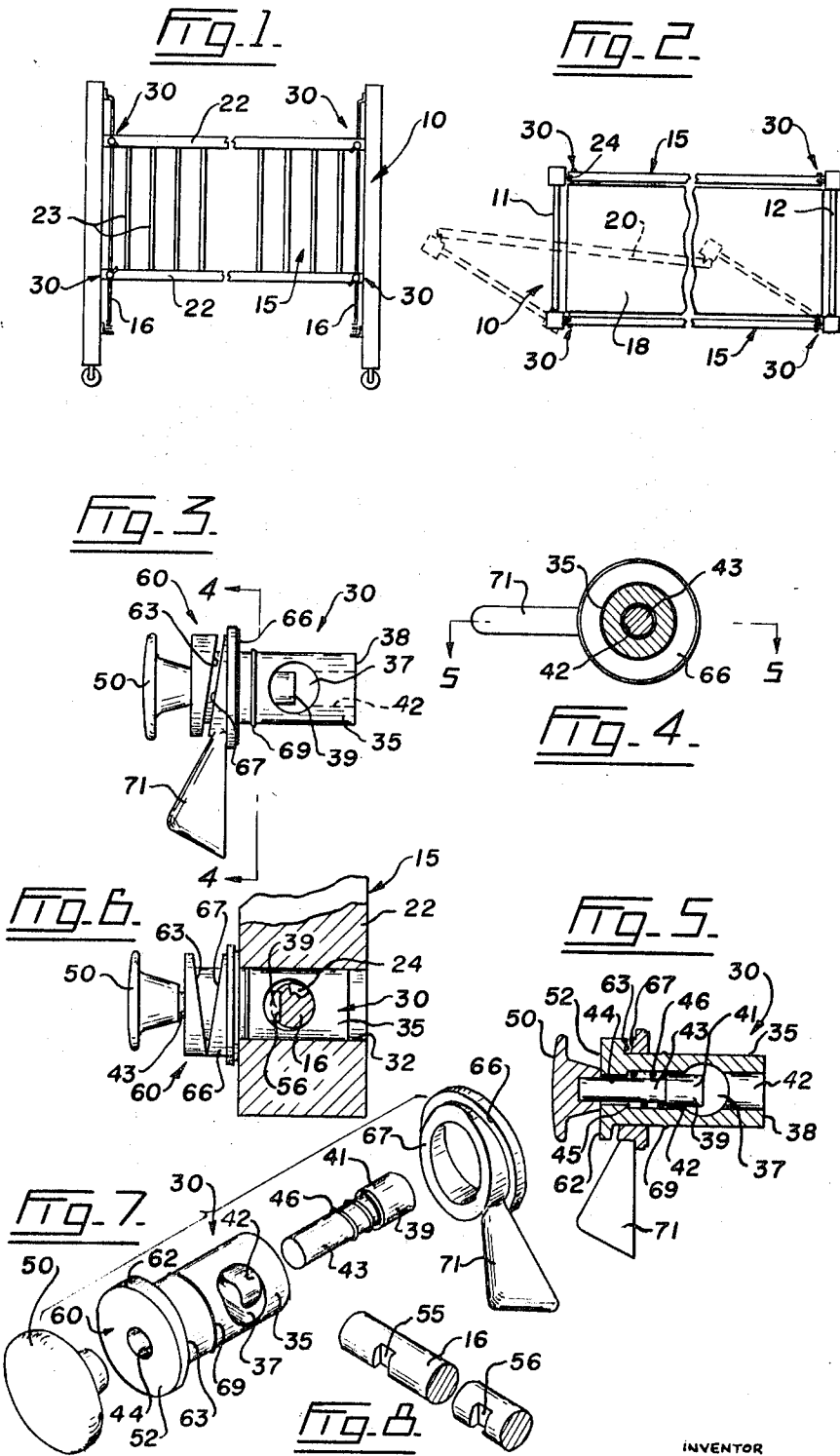
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17 Claims, 8 Drawing Figures





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CRIB AND STABILIZING LATCH APPARATUS THEREFOR

This invention relates to cribs for babies and small children, and having at least one drop-side, and stabilizing latch apparatus for retaining the crib side in desired positions.

Cribs with drop-sides are well known, and even some cribs have two drop-sides, but it is difficult to keep these cribs solid and so they are usually very loose and not too satisfactory to the persons who own them. The main dissatisfaction with the prior art cribs is with the latching mechanisms for the drop-sides. Some drop-sides can be only in a fully raised or fully lowered position, others have latch mechanisms that are awkward to operate, particularly for a person who is holding a baby. Another disadvantage of the prior latching arrangements is that they require nails or screws to hold them in position, and most have to be installed at the factory.

The stabilizing latch apparatus of the present invention can be operated to hold the crib side at any desired level between its uppermost and lowermost positions. This apparatus stabilizes the entire crib by clamping the side or sides to the rods on which they slide thereby eliminating the necessity for stabilizing bars, provides smooth and wear-resistant bearing surfaces in the crib sides and against the rods, and are easily installed, no screws or nails being required. This latch apparatus can also include locking means for positively securing the crib side in its upper position and, if desired, in any one of a plurality of lower positions. The latches are installed merely by following the usual assembling procedures. If the crib has two drop-sides with the present latch apparatus, the mattress support of the crib can be removed so that the crib can be narrowed by moving one side ahead of the other without the necessity of dismantling it. When the crib is squared again, this latch apparatus can be operated to clamp the crib sides on the crib rods, thereby stabilizing the crib. One of the big advantages is the fact that each latch device can be put into place without any fastening means. This enables the crib to be delivered to a purchaser in knockdown condition, and all he has to do is put the parts together as instructed without any tools. The latch devices are such that they are retained in the crib sides by the rods on which said sides slide.

This invention contemplates both the latch apparatus by itself and the crib incorporating the latch apparatus. The latch apparatus includes a body having a passage therethrough extending substantially normal to the longitudinal center thereof, said body being adapted to fit in a hole in a crib side and to be retained in said hole by a rod slidably extending through the crib side and said body passage. The latch apparatus includes a locking plunger and/or a clamping arrangement. The plunger is adapted to retain the crib side positively in its upper position and, if desired, in any one of a plurality of lower positions, and the clamping arrangement is adapted to retain the side at any desired level on the rod. The clamping arrangement can be used by itself in order to prevent rattling and to act as a crib stabilizer.

An example of this invention is illustrated in the accompanying drawings, in which

FIG. 1 is a diagrammatic side elevation of a crib incorporating this invention,

FIG. 2 is a plan view of the crib in FIG. 1,

FIG. 3 is an enlarged plan view of a preferred form of latch apparatus according to the present invention,

FIG. 4 is a vertical cross section taken on the line 4—4 of FIG. 3,

FIG. 5 is a horizontal section taken substantially on the line 5—5 of FIG. 4,

FIG. 6 is a sectional view through a portion of the crib side showing the latch apparatus in operation,

FIG. 7 is an exploded view of the latch apparatus, and

FIG. 8 is a fragmentary view of a portion of a crib rod.

Referring to the drawings, 10 is a crib having usual end boards 11 and 12 and opposite drop-sides 15 slidably mounted on vertical rods 16 secured in the usual manner to end boards 11 and 12. The crib may have only one drop-side 15, in which

case the opposite side of the crib would be fixed, or both sides can be movable, as shown. The crib has a mattress support 18 removably mounted therein. This support is mounted in a standard manner, and this does not require description herein.

If the crib has two drop-sides, and if it is desired to narrow said crib for storage or in order to pass it through a narrow space, such as a doorway, the support 18 can be removed and the sides of the crib shifted longitudinally relative to each other in opposite directions to narrow the crib, as indicated at 20 in broken lines in FIG. 2. When the mattress support 18 is returned to its usual place, the ends and sides of the crib are squared, but the crib is relatively unstable without the latch apparatus of the present invention. All of this can be accomplished without the use of tools.

Each crib side 15 has parallel upper and lower rails 22 interconnected by vertical rails 23. Each of the side rails 22 has a vertical hole 24 therein near each end thereof and through which one of the rods 16 extends so that the side 15 is slidable vertically on these rods.

FIGS. 3 to 7 illustrate a preferred form of latch apparatus 30 in accordance with this invention. Each side rail 22 has a horizontal hole 32 drilled therethrough adjacent each end thereof, each of these holes 32 being in registry with one of the vertical holes 24 of said rail. Each transverse hole 32 is provided for receiving part of a latch 30.

Latch 30 comprises a body 35 which may have any desired shape in cross section. However, it is preferable to make this body circular in cross section so that the hole 32 in the rail 22 therefore, can be drilled through the rail, said hole being just large enough in diameter to receive the latch body, as clearly shown in FIG. 6.

Latch body 30 has a passage 37 therethrough which extends normal to the longitudinal center of said body. This passage is preferably near an inner end 38 of the body so that it is in registry with the vertical rail hole 24 when the latch is in position in the hole 32 thereof.

In this example, a plunger 39 is slidably mounted within body 35 preferably along the longitudinal center thereof and normally projects into passage 37. In the illustrated example, plunger 39 has a head 41 which is slidably mounted in a bore 42 formed within the latch body and a stem 43 which extends from said head slidably through a reduced bore 44 in the body. Suitable means is provided for biasing plunger 39 towards vertical passage 37. In this example, a shoulder or stop 45 is formed in bore 42, and a coil spring 46 arranged around stem 43 extends between this stop and plunger head 41. Suitable handle means is connected to the plunger stem 43. In this example, the stem is long enough to fit within a portion of a knob 50 to which it is secured. This knob bears against the adjacent outer end 52 of body 35 to limit the movement of plunger 39 towards passage 37.

The latch 30 described so far can function on its own. There is a latch 30 at each of the opposite ends of the upper rail 22 of crib side 15. Each vertical rod 16 is formed with an upper notch 55 and, if desired, it can have a lower notch 56, see FIG. 8, into which the inner end of plunger 39 fits when said plunger is aligned with the notch. When the plunger is in upper notch 55, side 15 is locked in its upper position, and when the plunger fits in lower notch 56, the crib side is locked in its lower position. The spring loading of plunger 39 presses rod 16 against the back surface of vertical passage 37 so as to help keep the crib side tight relative to the rod and thereby to help prevent undue rattling or play between these elements.

It is preferable to provide latch 30 with a clamping arrangement 60 in order that the latch and consequently the crib side can be tightened on the vertical rod. In this example, clamping arrangement 60 includes a shoulder 62 formed on latch body 35 at end 52 thereof. This shoulder has a transversely inclined cam surface 63 facing towards the opposite end of the body. A cam 66 is rotatably mounted on body 30 adjacent shoulder 62 and has a cam surface 67 facing and adapted to cooperate with cam surface 63. Latch body 35 may be provided with an annular ridge 69 which normally prevents cam 66 from sliding

off the body. If desired, cam 66 may be provided with a radially extending lever or handle 71.

When a latch 30 is in position in crib side 15, rod 16 extends down through the intersecting side holes 24 and 32 and through passage 37 of the latch to hold the latter in position without the necessity of any other fastening means. The side is retained in the upper and lower positions thereof, respectively, when plunger 39 of the latch is in the rod notches 55 and 56. In order to release the side, it is only necessary to pull outwardly on knob 50 to withdraw the plunger from the rod notch. If it is desired to clamp the side to the rods, including the upper and lower positions, it is only necessary to turn cam 66 by handle 71 so that cam surfaces 63 and 67 cooperate to move shoulder 62 away from cam 66. As the cam is bearing against the surface of the adjacent rail 22, see FIG. 6, body 30 is moved outward so as to jamb rod 16 in vertical passage 37 of the clamp body. This prevents movement of the crib side up or down the rail, and locks the various elements together so that they cannot rattle. It will be realized that the crib side is firmly held in position by the two upper latches 30 at the opposite ends thereof.

By referring to FIG. 1, it will be seen that there are actually four latches 30 in side 15, one at each end of each of the upper and lower side rails 22. The two lower latches may have the plungers 39 therein, but as these are not usually required for the lower rail, the plungers can be omitted. In this case, the clamping arrangements 60 help firmly to clamp the crib side to rods 16. Although two lower latches are not absolutely necessary, they give the crib added rigidity and stability when they are provided and are used.

As stated above, the mattress supports 18 can be removed, and when each of the four latching arrangements is released, the crib can be shifted into the narrower shape shown in broken lines in FIG. 2. When the crib is squared again and the mattress support is returned to its normal position, clamping arrangements 60 are tightened so that the crib is firmly held in its proper squared position. Furthermore, the latches can be tightened so as to prevent the crib sides from rattling when shaken by a baby in the crib or when the baby jumps on the crib mattress.

Although latch 30 may be made of any suitable material, it is preferable to make it from a suitable plastics material, such as nylon. However, the entire unit or any desired portion of it can be made of any other desired material, such as metal. As the vertical rods of the crib slide through the passages in the latch bodies 35, these bodies provide smooth and wear-resistant bearing surfaces for the crib side. The crib can be shipped in knockdown condition, and in order to assemble the sides and the clamping elements thereof, it is only necessary to slide rods 16 through the crib rail holes 24 with the latches in the intersecting rail holes 32. As the rods extend through passages 37 of the latches, the latter are firmly held in position. The various holes and passages can be made large relative to the rods since the sides are held in position and rattling is prevented by the clamping arrangements 60, and the crib is normally very stable.

The latch 30 itself may be very easily assembled in manufacture. Bore 42 is preferably extended across passage 32 and to end 38 of latch body 35, see FIG. 5. Plunger 39 with spring 46 thereon is inserted into bore 42 and moved forwardly therein until stem 43 passes through the reduced bore 44. Knob 50 is frictionally held on the outer end of the stem. Cam 66 is slipped onto and moved along body 35, and a little extra pressure is exerted to move the cam over rib 69. This rib has sufficient depth to prevent the cam from accidentally coming off the latch body when the latch is being handled.

The assembled latch units are supplied to the customer with the crib, and it is a very simple matter for him to assemble the various crib elements.

When the crib has two drop sides, the lower rails 22 of the two sides act as stabilizing bars since they are firmly clamped to the vertical rods 16 of the crib by the latches 30. The prior art cribs of this type are either relatively unstable, or they are

stabilized by means of separate "stabilizing bars" that are usually attached to the crib ends by the purchaser.

I claim:

1. Crib apparatus comprising a body having a passage therewithin and extending therethrough substantially normal to the longitudinal center thereof, said body being adapted to fit within a hole in a crib side and to be retained in said hole by a crib rod slidably extending through said crib side and said body passage, a latching plunger extending longitudinal through said body from one end thereof into said passage so as to be able to engage the rod therein and means engaging the plunger and the body and biasing the plunger in the direction of the passage.

2. Crib apparatus as claimed in claim 1 including handle means secured to the plunger outside the body at said one end thereof.

3. Crib apparatus as claimed in claim 1 in which the body is circular in cross section.

4. Crib apparatus as claimed in claim 2 in which said biasing means comprises a coil spring on the plunger between a head on the plunger in said passage and a stop on the body near said one end thereof, said head forming the end of the plunger extending into said passage, said spring urging the plunger towards the passage, and said handle means engaging the body to limit the movement of the plunger towards the passage.

5. Crib apparatus as claimed in claim 4 in which said plunger is located within a bore extending longitudinally of the body and opening into the passage thereof, said bore continuing from said passage to and opening out through the end of the body opposite said one end thereof.

6. Crib apparatus as claimed in claim 1 including a clamping arrangement on said body adjacent said one end thereof and adapted to engage said crib side, said clamping arrangement when the body is operationally positioned in a crib side being operable to move said body in a longitudinal direction so as to tighten the body against the rod extending through the passage thereof to prevent relative movement between the body, the crib side and the rod.

7. Crib apparatus as claimed in claim 6 in which said clamping arrangement comprises a shoulder on the body and having a cam surface thereon, a cam rotatably mounted on the body and opposing said cam surface, said cam on being rotated bearing against the crib side and said cam surface to move and tighten the body against said rod.

8. Crib apparatus comprising a body having a passage therewithin and extending therethrough substantially normal to the longitudinal center thereof, said body being adapted to fit within a hole in a crib side and to be retained in said hole by a crib rod slidably extending through said crib side and said body passage, and a clamping arrangement on the body and adapted to engage said crib side, said clamping arrangement when the body is operationally positioned in a crib side being operable to move said body in a longitudinal direction so as to tighten the body against the rod extending through the passage thereof to prevent relative movement between the body, the crib side, and the rod.

9. Crib apparatus as claimed in claim 8 in which said clamping arrangement comprises a shoulder on the body and having a cam surface thereon, a cam rotatably mounted on the body and opposing said cam surface, said cam on being rotated bearing against the crib side and said cam surface to move and tighten the body against said rod.

10. Crib apparatus comprising a crib having a drop side with vertically arranged first holes therein adjacent opposite ends thereof and a second hole therein extending normal to and intersecting at least one of said first holes, vertical rods mounted on opposite ends of said crib and extending through said first holes, at least one latch for locking said crib side on the rods; said latch comprising a body fitting in said one of said second holes in the crib side and extending to the intersecting first hole therein, said body having a passage therewithin and extending therethrough substantially normal to the longitudinal center thereof and registering with said intersecting hole, the

rod in said intersecting hole extending through the passage within the body to retain said body in place, a latching plunger extending longitudinally through said body from one end thereof into said passage to engage the rod therein, and means between the plunger and body and biasing the plunger in the direction of the passage.

11. Crib apparatus as claimed in claim 10 in which said one of the second holes is circular in cross section, and said body is circular in cross section to fit in said one second hole.

12. Crib apparatus as claimed in claim 10 including handle means secured to the plunger outside the body at said one end thereof.

13. Crib apparatus as claimed in claim 12 in which said biasing means comprises a coil spring on the plunger between a head on the plunger in said passage and a stop on the body near said one end thereof, said head forming the end of the plunger extending into said passage, said spring urging the plunger towards the passage, and said handle means engaging the body to limit the movement of the plunger towards the passage.

14. Crib apparatus as claimed in claim 10 including a clamping arrangement on said body adjacent said one end thereof and adapted to engage said crib side, said clamping arrangement when the body is operationally positioned in a crib side being operable to move said body in a longitudinal direction so as to tighten the body against the rod extending through the passage thereof to prevent relative movement between the body, the crib side and the rod.

15. Crib apparatus as claimed in claim 14 in which said clamping arrangement comprises a shoulder on the body and

having a cam surface thereon, a cam rotatably mounted on the body and opposing said cam surface, said cam on being rotated bearing against the crib side and said cam surface to move and tighten the body against said rod.

16. Crib apparatus comprising a crib having a dropside with vertically arranged first holes therein adjacent opposite ends thereof and a second hole therein extending normal to and intersecting at least one of said first holes, vertical rods mounted on opposite ends of said crib and extending through said first holes, at least one latch for locking said crib side on the rods; said latch comprising a body fitting in said second hole in the crib side and extending to the intersecting first hole therein, said body having a passage therewithin and extending therethrough substantially normal to the longitudinal center thereof and registering with said intersecting hole, the rod in said intersecting hole extending through the passage within the body to retain said body in place, a clamping arrangement on said body and adapted to engage said crib side, said clamping arrangement when the body is operationally positioned in a crib side being operable to move said body in a longitudinal direction so as to tighten the body against the rod extending through the passage thereof to prevent relative movement between the body, the crib side and the rod.

17. Crib apparatus as claimed in claim 16 in which said clamping arrangement comprises a shoulder on the body and having a cam surface thereon, a cam rotatably mounted on the body and opposing said cam surface, said cam on being rotated bearing against the crib side and said cam surface to move and tighten the body against said rod.

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