Nov. 8, 1949 E. R. CHURCHWELL 2,487,636

FOLDING CRIB

Filed June 11, 1947

Fig-1

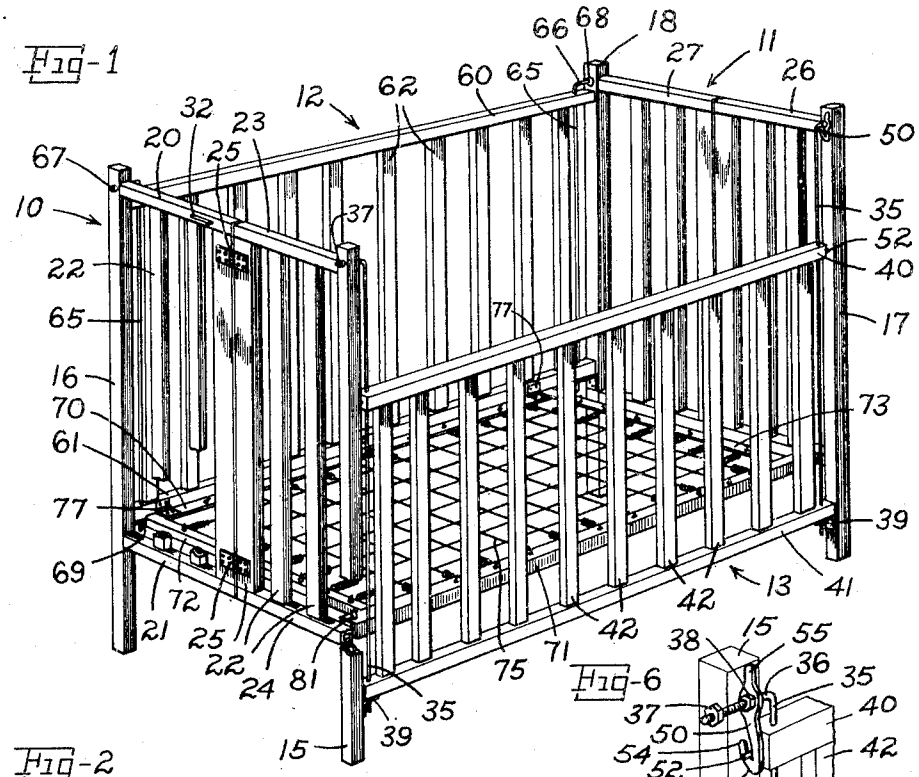


Fig-6

Fig-2

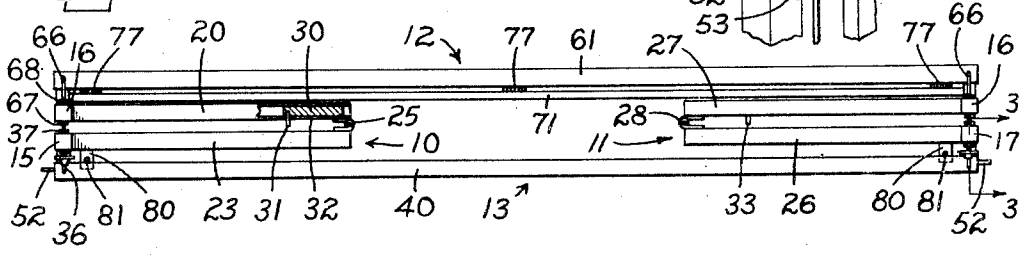


Fig-3

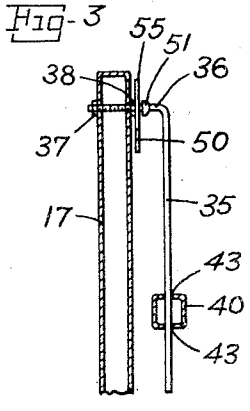


Fig-4

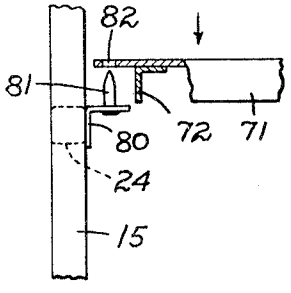
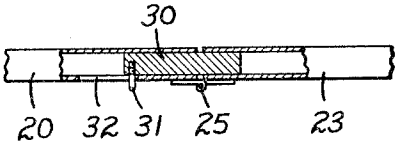


Fig-5



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UNITED STATES PATENT OFFICE

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FOLDING CRIB

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6 Claims. (Cl. 5—99)

1

This invention relates to folding baby cribs.

One of the principal objects of the invention is to provide a folding crib which is simple and inexpensive in manufacture, strong and rugged in construction, easily set up, handled and moved when that is desired, and which is capable of withstanding severe and repeated handling both in household use and in the more severe use encountered in hotels, institutions and the like.

Another object is to provide a folding crib which is readily adapted to construction entirely of metal, such as hollow bars or rails of aluminum or other light metal, and which will accordingly be light in weight and easy to handle while at the same time possessing adequate strength and rigidity for satisfactory performance.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawing and the appended claims.

In the drawing:

Fig. 1 is a view in perspective showing a folding crib in accordance with the invention, parts thereof being broken away to illustrate details of construction and arrangement;

Fig. 2 is a top plan view showing the crib of Fig. 1 in collapsed and folded position, part of one of the end frames being broken away and in section to show the bracing and locking arrangement;

Fig. 3 is a fragmentary view in vertical section through one corner of the crib, the view being taken approximately on the line 3—3 of Fig. 2;

Fig. 4 is an enlarged detail view in elevation showing a fragment of the bedspring frame and one of the supporting and bracing members for the bedspring;

Fig. 5 is an enlarged detail view partly in horizontal section through the top bars of one of the end frames of the crib to show the bracing and locking bar arrangement; and

Fig. 6 is a diagrammatic view in the nature of a perspective illustrating the hook arrangement for supporting the drop side frame in its upper position, a fragment of one corner post being shown in phantom outline.

Referring to the drawing, which illustrates a preferred embodiment of the present invention, Fig. 1 shows a folding crib comprising a pair of end or head and foot frames, identified generally as 10 and 11, and a pair of side frames identified generally as 12 and 13, the side frame 13 being a drop side and being shown in its lower position in Fig. 1. The end frame 10 includes a pair

2

of corner posts 15 and 16, and the end frame 11 similarly includes a pair of corner posts 17 and 18. These end and side frames are each made up of a plurality of horizontally arranged rails or bars and a plurality of vertically arranged connecting bars or slats, these parts being shown as each formed of hollow metal tubing of rectangular cross section. For example, satisfactory results from the standpoint of light weight and adequate rigidity have been obtained with the use of hollow bars of a light metal such as aluminum, although other metals or other bars or rails may be used.

Each of the end frames 10 and 11 includes two sections connected together for folding movement inwardly of the crib. As shown in Fig. 1, one section of the end frame 10 is made up of horizontally arranged upper and lower hollow bars 20 and 21, respectively, which are welded or otherwise secured to the corner post 16 and connected together by vertical slats or bars 22. The other section of the end frame 10 similarly includes upper and lower horizontal bars 23 and 24 secured to the corner post 15 and similarly connected by vertical slats 22. These two sections are connected together for inwardly folding movement at the center of the end frame 10 by means of hinges 25 screwed or otherwise secured to the center pair of slats 22, which are shown as of somewhat greater width than the other slats in each end section. The end frame 11 is composed of two similarly constructed sections, identified generally as 26 and 27, which are connected by means of hinges 28 for inwardly folding movement as shown in Fig. 2.

Means are provided for bracing the component sections of each of the end frames 10 and 11 in substantially rigid relation when the crib is set up. For this purpose, a locking bar 30 is mounted for sliding movement within the upper horizontal bar 20 of one section of the end frame 10. This locking bar 30 is adapted to slide into the adjacent horizontal bar 23 of the other section of end frame 10 when the crib is set up. To control movement of the locking bar, a control member or handle such as a pin 31 is mounted therein and extends through a slot 32 in the side of frame bar 20. The length of slot 32 is such that when pin 31 is drawn to the end thereof adjacent corner post 16, the locking bar 30 will be retracted from within the frame bar 23 to permit folding of the end frame as shown in Fig. 2. On the other hand, when pin 31 is at the end of slot 32 adjacent frame bar 23, as shown in Fig. 3, the locking bar 30 will be inserted a substantial

distance within frame bar 23 to brace the two frame sections in substantially rigid relation. A similar locking bar is provided in the corresponding frame bars of the end frame 11, as indicated by the control pin 33 in Fig. 2, and it will be seen that this construction provides a simple and effective bracing action relieving hinges 25 of a part of the load, while at the same time the bracing parts are substantially concealed within the frame and do not detract from the appearance of the crib.

The side frames are connected to the end frames for relative pivotal and sliding movement by simple and effective means eliminating the necessity for hinges. Referring to Figs. 1 to 3, each of the corner posts of the crib has a rod secured thereto which includes a vertically arranged portion extending a substantial proportion of the length of the post. As shown in Figs. 1 and 3, the rods secured to corner posts 15 and 17 include vertical portions 35 and horizontal portions 36 at the upper ends thereof, and this horizontal portion 36 of each rod is secured to the corner post in such manner as to support the vertical rod portion 35 in spaced and substantially parallel relation with the post. As shown in Figs. 3 and 6, each horizontal rod portion 36 includes a threaded outer part which traverses the corner post and is clamped thereto by means of nuts 37 and 38. The lower end of each vertical rod portion 35 is supported in an angle bracket 39 mounted adjacent the lower end of the corner post.

The drop side frame 13 is composed of upper and lower horizontal bars 40 and 41 and vertical slats 42. Each of the horizontal bars 40 and 41 has a pair of vertically arranged holes 43 adjacent each end thereof adapted to receive one of the vertical rod portions 35 in pivotal and sliding relation, and these rods engage in the holes 43 as shown in Figs. 1 and 3 to support the drop side frame in pivotal and sliding relation to the end frames. As shown in Fig. 1, the angle brackets 39 act as stops to limit downward sliding movement of the drop side to define a lower position therefor. Means are also provided for releasably supporting the drop side in an upper position.

Referring particularly to Figs. 3 and 6, a hook 50 is mounted for swinging movement on each horizontal rod portion 36 and is held axially thereon between nut 38 and a nut or collar 51. This hook is adapted to engage a pin or dog 52 welded or otherwise secured to the end of the horizontal frame bar 40 and projecting longitudinally therefrom as best seen in Fig. 6. Each hook 50 is formed on its lower side with a camming surface 53 which lies in the path of upward movement of pins 52. Thus when the drop side 13 is raised, pins 52 will first push hooks 50 out of their paths until they pass the hook points 54, after which the hooks will swing back under the pins as shown in Fig. 6 to hold the drop side in its upper position. To release the drop side, it is only necessary to raise it sufficiently to permit hooks 50 to be disengaged, as by means of their upstanding handle portions 55, after which it may be dropped to its lower position shown in Fig. 1.

The construction and mounting of the side frame 12 is similar to that of the drop side frame 13 as described and shown, but side frame 12 is substantially fixed against sliding movement in an upper position at substantially the same level as the upper position of the drop side frame 13 determined by hooks 50. The side frame 12 includes upper and lower horizontal bars 60 and 61, respectively, and vertical slats 62. The rods for mounting side frame 12 on corner posts 16 and 18 are similar to rods 35 and 36, except that since the side frame 12 is held against sliding movement, the vertical portions 65 of these rods need not be as long as rod portions 35. The horizontal rod portions 66 are secured to corner posts 16 and 18 in the same manner as described in connection with the rod portions 36, as indicated by the nuts 67 and 68 in Figs. 1 and 2. The lower ends of the rod portions 65 are supported in angle brackets 69 which are secured to corner posts 16 and 18 and act to support side frame 12 against sliding movement as shown in Fig. 1.

A bedspring is secured to the side frame 12 for relative pivotal movement about a horizontal axis. Referring to Figs. 1, 2 and 4, the bedspring includes side angle bars 70 and 71 and end angle bars 72 and 73 forming a rectangular frame which supports a flat spring 75 of the usual type. The side angle bar 70 is hingedly secured to the lower horizontal bar 61 of side frame 12, as by means of the hinges 77 shown in Figs. 1 and 2. In addition, the spring frame and the end frames 10 and 11 have cooperating parts which serve both to support the spring and to brace the side and end frames in substantially rigid relation when the crib is set up.

Referring to Figs. 1, 2 and 4, an angle bracket 80 is secured to the lower horizontal bar 24 of one section of the end frame 10, and a similar angle bracket 80 is secured to the corresponding frame bar of the end frame 11 as shown in Fig. 2. These brackets 80 are so arranged that the side angle bar 71 of the bedspring will rest thereon when the bedspring is in its horizontal position for use. In addition, each bracket 80 carries an upwardly projecting pin or lug 81, and each end of the bar 71 is provided with a hole 82 adapted to receive one of these pins 81, thus firmly bracking the two end frames against lateral movement with respect to the side frame when the crib is set up for use.

When the crib is to be collapsed for transportation or storage, it is merely necessary to lift the bedspring on hinges 77 and to release locking bars 30 as described, whereupon the end frames can be folded inwardly, as shown in Fig. 2, with the side frames pivoting with respect to the end frames about vertical rod portions 35 and 65. In setting up the crib, the reverse operation takes place, and when the bedspring is lowered to its position of engagement between pins 81 and bar 71 and the locking bars 30 are engaged, the crib will be braced for adequate strength and rigidity in use.

It will accordingly be seen that the invention provides a folding crib of simple but strong and rigid construction capable of withstanding even severe usage. When set up, the crib possesses adequate rigidity, and may easily be collapsed to small size for convenient storage and transportation. With the side frames secured to the end frames by means of the guide rods as described, separate hinges between the side and end frames are eliminated, thus avoiding the usual difficulties encountered with hinges at the corners of a crib, while at the same time the desired relative pivotal and sliding movement of the side frames is obtained. In addition, although this crib may be constructed of different suitable materials, it is particularly adapted for construction of hollow

metal tubing and will thus be light in weight for easy handling in setting up or collapsing for storage and of adequate strength to assure a long useful life.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A folding crib of the character described comprising end frames each including corner posts and two sections, a connection between each two of said sections providing for inwardly folding movement of each said frame, a pair of side frames, each of said corner posts having a rod secured thereto including a vertically arranged portions spaced from said corner post and extending a substantial proportion of the length of said post and a horizontal portion at the upper end of said vertical portion, each of said side frames being mounted for pivotal and vertically sliding movement on said vertical portions of said rods, means substantially limiting said sliding movement of one of said side frames, the other of said side frames being freely slidable between an upper position and a lower position, and releasable means carried by said horizontal rod portions for supporting said freely slidable side frame in said upper position.

2. A folding crib of the character described comprising head and foot frames each including corner posts and two sections, a connection between each two of said sections providing for inwardly folding movement of each said frame, a pair of side frames, each of said corner posts having a rod secured thereto including a vertically arranged portion spaced from said corner post and extending a substantial proportion of the length of said post, each of said side frames including upper and lower horizontal bar portions, each of said bar portions having a hole therein adjacent each end thereof adapted to receive one of said rods in slidable relation, said rods engaging in said holes to support said side frame for pivotal movement with relation to said head and foot frames.

3. A folding crib of the character described comprising a head frame and a foot frame each including two sections, a connection between each two of said sections providing for inwardly folding movement of each said frame, a side frame, each of said head and foot frames having a pair of vertically arranged rods mounted on the inner side and adjacent opposite ends thereof, said side frame being mounted for pivotal and vertically sliding movement on a pair of said rods, means for supporting said side frame in a substantially fixed vertical position on said rods, a bedspring hingedly secured to said side frame, means providing a releasable connection between said spring and said head and foot frames for bracing said frames in substantially rigid relation with said side frame, another side frame mounted for pivotal and vertically sliding movement on the other pair of said rods between an upper position and a lower position, and means for releasably supporting said sliding side frame in said upper position.

4. A folding crib of the character described comprising end frames each including two sections, a hinged connection between each two of said sections providing for inwardly folding movement of each said frame, a pair of side frames, means pivotally connecting each of said side frames to said end frames, said connecting means comprising vertically arranged rods spaced from and secured to the ends of said end frames adjacent each corner of said crib and means mounting each end of each of said frames for pivotal and sliding movement on one of said rods, means substantially limiting said sliding movement of one of said side frames, the other of said side frames being freely slidable on said rods between an upper position and a lower position, and means for releasably supporting said last named side frame in said upper position.

5. A folding crib of the character described comprising a pair of end frames, a pair of side frames, each of said frames comprising a plurality of horizontally arranged hollow metal bars, said end frames each including two sections, a hinged connection between each two of said sections providing for inwardly folding movement of each said end frame, vertically arranged rods spaced from and secured to the ends of said end frames, said horizontal bars of said side frames each having vertically arranged holes adjacent each end thereof adapted to receive one of said rods in pivotal relation, said rods engaging in said holes to support said side frames in pivotal relation to said end frames, and a bedspring hingedly secured to one of said side frames.

6. A folding crib of the character described comprising a pair of end frames, a pair of side frames, each of said frames comprising a plurality of spaced apart horizontally arranged hollow metal bars, said end frames each including two sections, a hinged connection between each two of said sections providing for inwardly folding movement of each said end frame, a locking bar mounted in one of said horizontal bars of one of said end frame sections for sliding movement into the adjacent horizontal bar of the adjacent frame section to brace said frame sections in substantially rigid relation when said crib is set up, vertically arranged rods spaced from and secured to the ends of said end frames, said horizontal bars of said side frames each having a pair of vertically arranged holes adjacent each end thereof adapted to receive one of said rods in pivotal and sliding relation, said rods engaging in said holes to support said side frames in pivotal relation to said end frames, a bedspring hingedly secured to one of said side frames, means for securing said bedspring supporting side frame in an upper position with respect to said end frames, means carried by said spring and said side frames adapted to cooperate when said crib is set up to brace said side frames with respect to said end frames, the other of said side frames being slidable on said rods between an upper position and a lower position, and means for releasably securing said sliding side frame in said upper position.

ERNEST R. CHURCHWELL.

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The following references are of record in the file of this patent:

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Certificate of Correction

Patent No. 2,487,636 November 8, 1949

ERNEST R. CHURCHWELL

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 4, line 44, for "bracking" read *bracing*; column 5, line 20, for the word "portions" read *portion*; column 6, line 6, before "frames" insert *side*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of March, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.