



US00RE43919E

(19) **United States**
(12) **Reissued Patent**
Chen

(10) **Patent Number:** **US RE43,919 E**
(45) **Date of Reissued Patent:** **Jan. 15, 2013**

(54) **BABY CRIB**
(75) Inventor: **Shun-Min Chen**, Taipei (TW)
(73) Assignee: **Wonderland Nurserygoods Co., Limited** (TW)
(21) Appl. No.: **11/588,412**
(22) Filed: **Oct. 26, 2006**

Related U.S. Patent Documents

Reissue of:

(64) Patent No.: **6,859,957**
Issued: **Mar. 1, 2005**
Appl. No.: **10/829,027**
Filed: **Apr. 20, 2004**

(30) **Foreign Application Priority Data**

Jan. 2, 2004 (CN) 2004 2 00018045

(51) **Int. Cl.**
A47D 13/06 (2006.01)
(52) **U.S. Cl.** **5/93.1; 5/98.1**
(58) **Field of Classification Search** **5/93.1, 5/98.1, 99.1, 655; 297/440.11**
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,105,156 A 7/1914 Oliphant
1,246,544 A * 11/1917 Chassaing 5/187
1,374,333 A 4/1921 Stotler et al.
2,493,181 A 1/1950 Andersen, Jr.
2,590,315 A 3/1952 Hawley, Jr.
2,761,153 A * 9/1956 Mew 5/197
2,784,420 A 3/1957 Moltane
2,790,978 A 5/1957 Tigrett
2,899,693 A * 8/1959 Stollenwerk 5/627
2,914,111 A * 11/1959 Mize 297/45

3,041,109 A * 6/1962 Eames et al. 297/451.4
3,173,155 A 3/1965 Schweikert
3,601,446 A * 8/1971 Persson et al. 297/405
3,640,576 A * 2/1972 Morrison et al. 297/440.11
3,658,025 A 4/1972 Hood et al.
3,677,601 A * 7/1972 Morrison et al. 297/440.11
3,784,251 A * 1/1974 Persson et al. 297/248
4,018,260 A 4/1977 Baslow
4,105,244 A * 8/1978 Colby 297/45
4,202,065 A 5/1980 Sullivan
4,538,309 A 9/1985 Gunter
4,750,223 A 6/1988 D'Arcy et al.
4,811,437 A 3/1989 Dillner et al.
4,848,843 A * 7/1989 Gibbs 297/440.22
4,899,496 A 2/1990 Chew, II
4,921,369 A 5/1990 Chew, II et al.
5,318,348 A * 6/1994 Hess 297/440.11

(Continued)

FOREIGN PATENT DOCUMENTS

CN 2159708 Y 3/1994

(Continued)

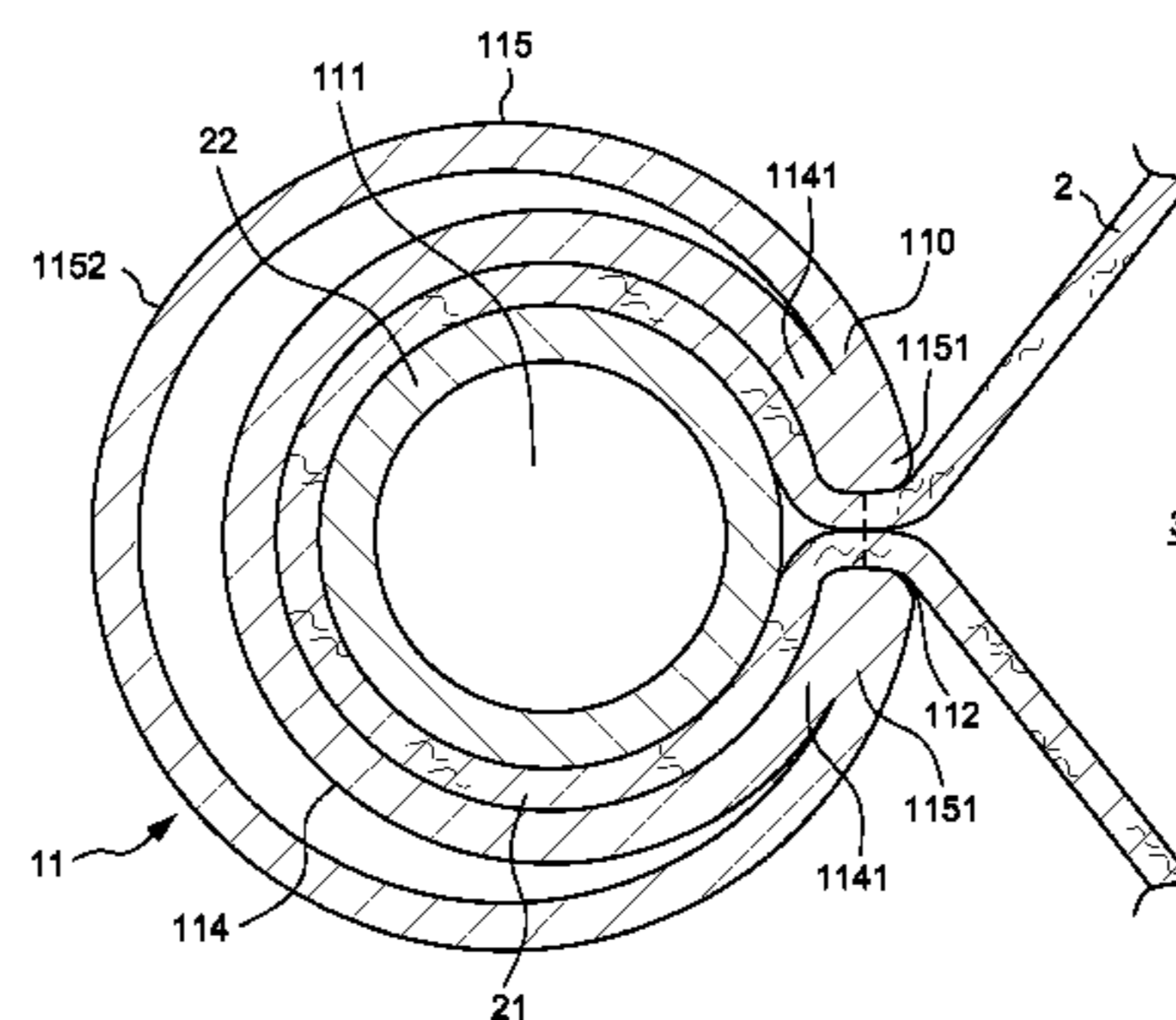
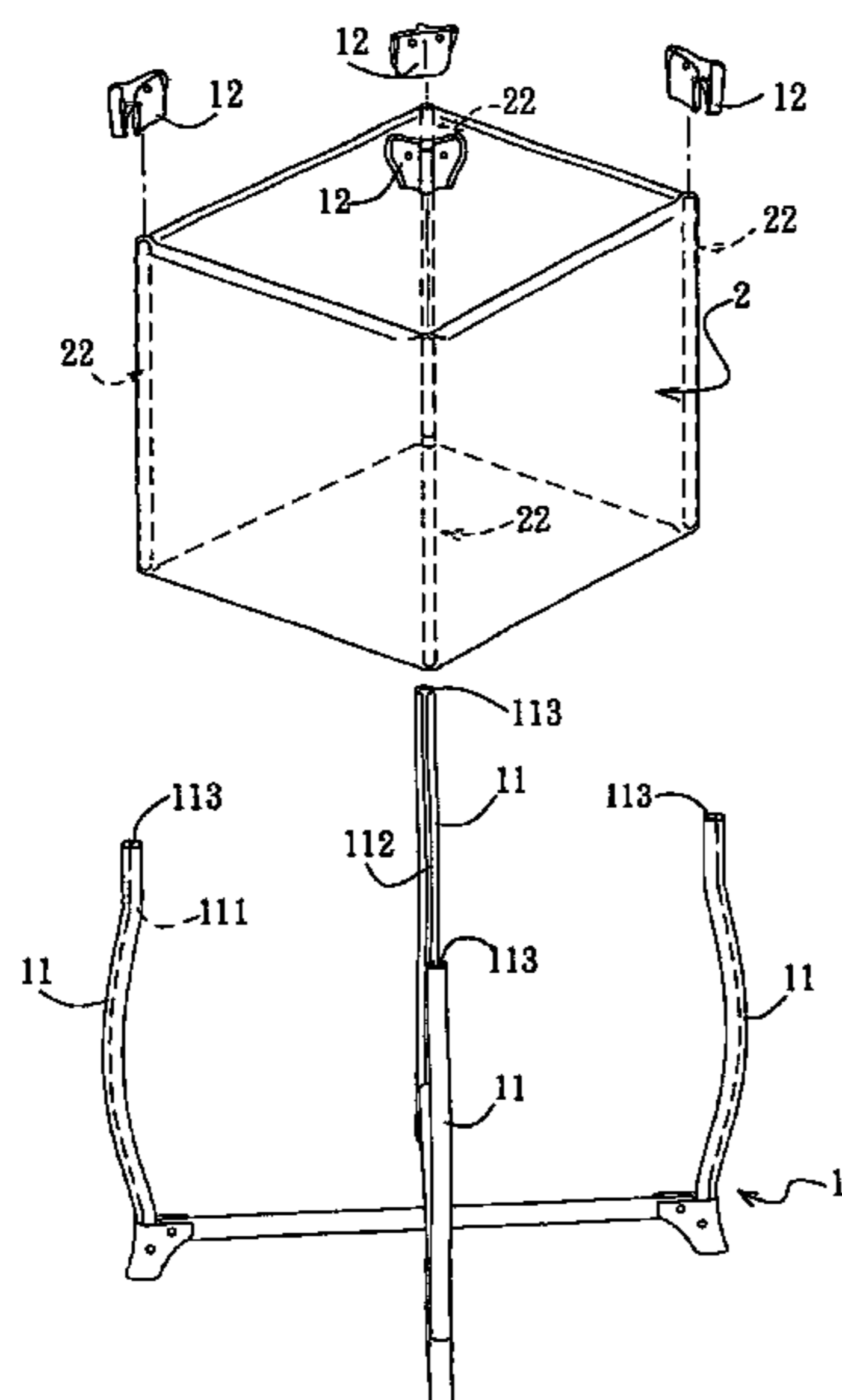
Primary Examiner — Robert G Santos

(74) *Attorney, Agent, or Firm* — Baker & McKenzie LLP;
David I. Roche

(57) **ABSTRACT**

A baby crib includes a bed frame structure, a fabric member mounted on the bed frame structure to define a surrounding wall around the bed frame structure, and a plurality of positioning posts mounted on the fabric member. The bed frame structure includes a plurality of upright tubes, each of which has a tube wall defining a receiving hole and having a slit that extends along the length of the tube wall and that is in spatial communication with the receiving hole. The positioning posts are inserted respectively into the receiving holes in the upright tubes. The fabric member is clamped between each upright tube and a corresponding positioning post, and extends outward through the slit in each upright tube.

29 Claims, 5 Drawing Sheets



(Amended)

US RE43,919 E

Page 2

U.S. PATENT DOCUMENTS

5,396,669 A * 3/1995 Nieminen 5/83.1
5,507,563 A * 4/1996 Arthur, Jr. 297/440.23
5,544,864 A 8/1996 Gabriel-Lacki et al.
5,716,101 A * 2/1998 Frinier et al. 297/440.22
5,762,403 A * 6/1998 Robinson 297/440.11
5,778,465 A 7/1998 Myers
5,867,850 A 2/1999 Mariol
5,911,478 A * 6/1999 Goodman 297/440.11
5,992,348 A * 11/1999 Harding 119/28.5
6,098,217 A 8/2000 Hammil
D432,339 S 10/2000 Cromer, III
6,158,067 A 12/2000 Cheng
6,192,535 B1 2/2001 Warner, Jr. et al.
6,293,624 B1 * 9/2001 Gaylord et al. 297/440.11
6,370,714 B1 * 4/2002 Elzenbeck 5/110
6,402,116 B1 6/2002 Northup
6,511,562 B1 * 1/2003 Coffield 156/66
6,539,563 B1 4/2003 Hsia
6,560,827 B1 * 5/2003 Gross 24/265 C
6,585,323 B2 * 7/2003 Gaylord et al. 297/440.11
6,623,079 B2 * 9/2003 Gregory 297/440.11
6,665,895 B1 12/2003 St. Pierre et al.
6,779,849 B1 * 8/2004 Harper et al. 297/452.13
7,125,081 B2 * 10/2006 Church et al. 297/440.11
7,526,821 B2 * 5/2009 Chen et al. 5/98.1
7,568,242 B2 * 8/2009 Troutman 5/99.1

7,752,688 B2 * 7/2010 Chen et al. 5/93.1
2002/0166170 A1 11/2002 Hartenstine et al.
2003/0177574 A1 9/2003 Waldman
2005/0120522 A1 * 6/2005 Church et al. 24/265 R
2006/0185082 A1 * 8/2006 Casati Troutman 5/99.1
2006/0225207 A1 * 10/2006 Johnson 5/98.1
2006/0230528 A1 * 10/2006 Church 5/98.1
2008/0115269 A1 * 5/2008 Chen et al. 5/99.1
2010/0132115 A1 * 6/2010 Hsu 5/98.1
2010/0270843 A1 * 10/2010 Wang 297/440.11
2011/0233984 A1 * 9/2011 Lee 297/440.11

FOREIGN PATENT DOCUMENTS

CN 2166699 A1 6/1994
CN 2166699 Y 6/1994
CN 2236272 A1 10/1996
CN 2236272 Y 10/1996
CN 2289466 A1 9/1998
CN 2289466 Y 9/1998
CN 1281670 1/2001
CN 1281670 A 1/2001
CN 1383774 A 12/2002
CN 1383774 A1 12/2002
GB 1360375 * 7/1974
GB 2284988 6/1995
GB 2408201 5/2005

* cited by examiner

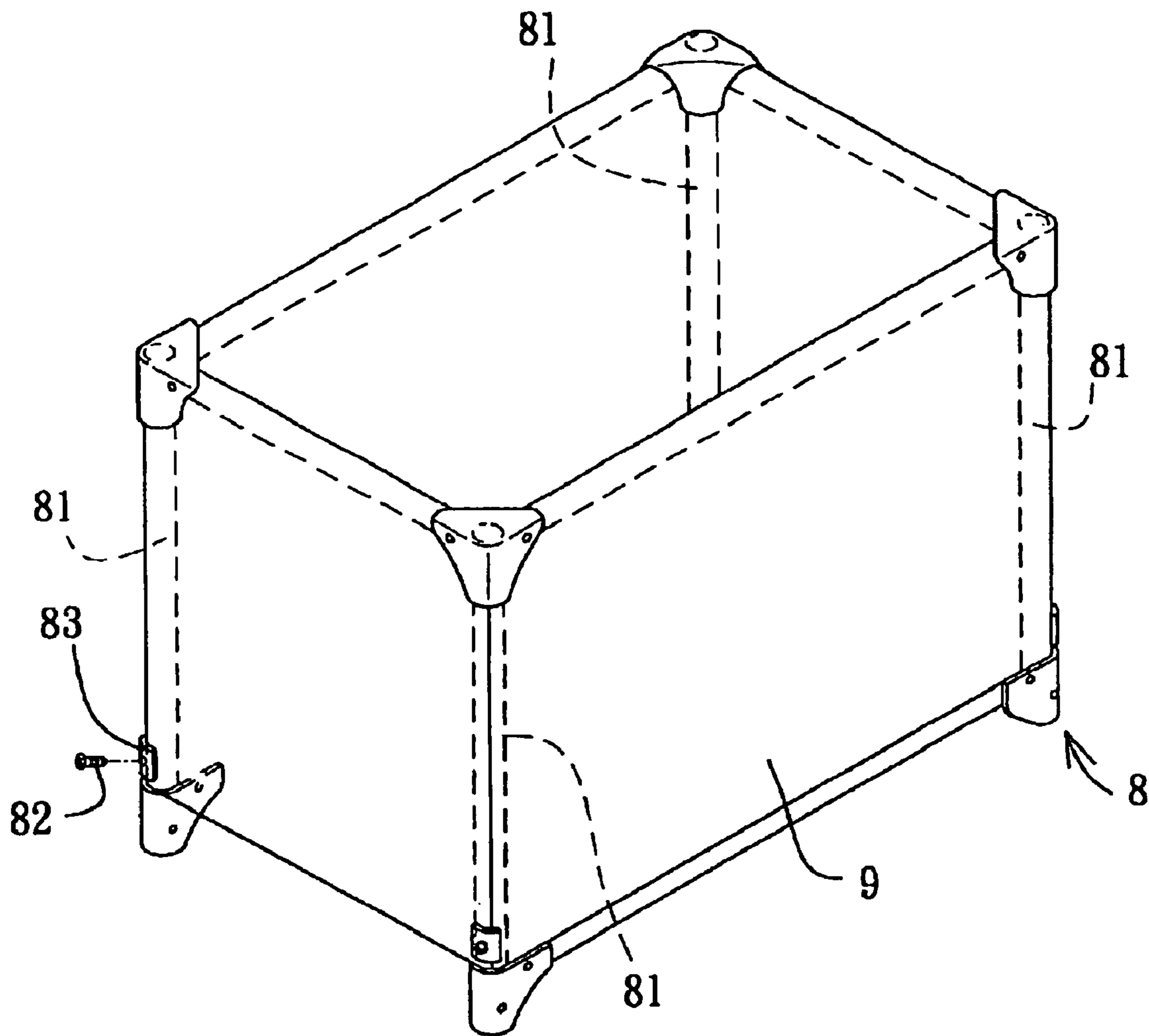


FIG. 1
PRIOR ART

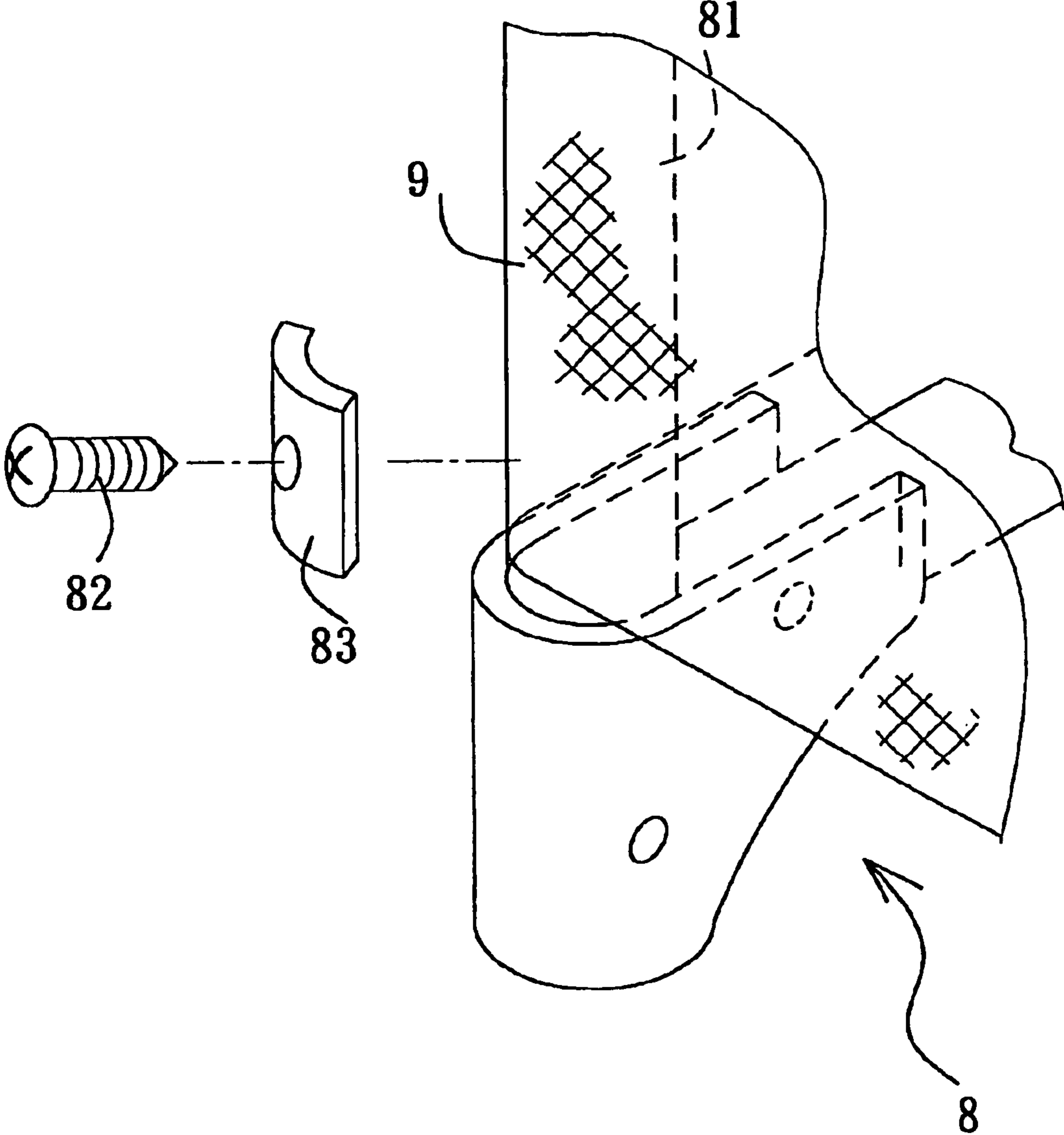


FIG. 2
PRIOR ART

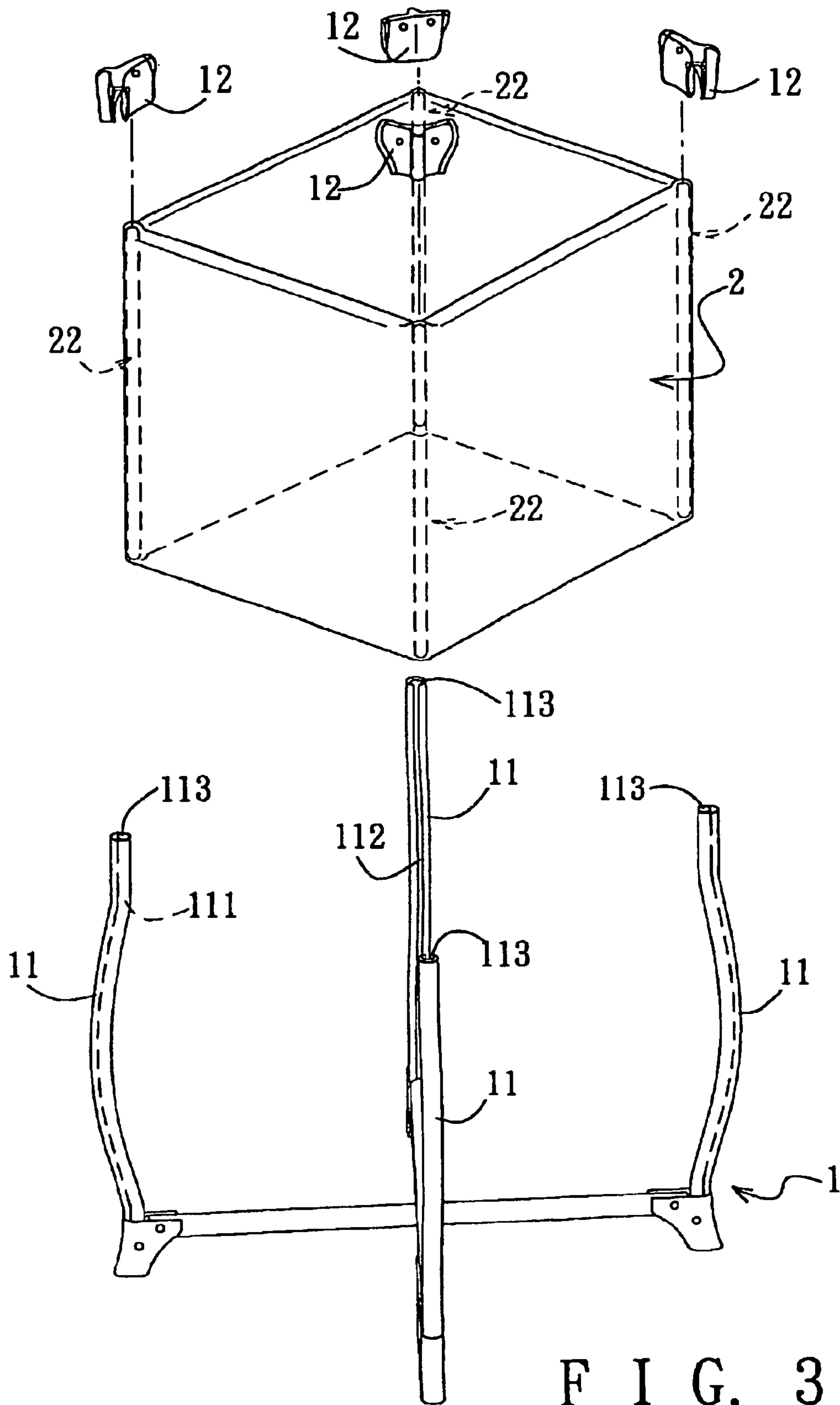
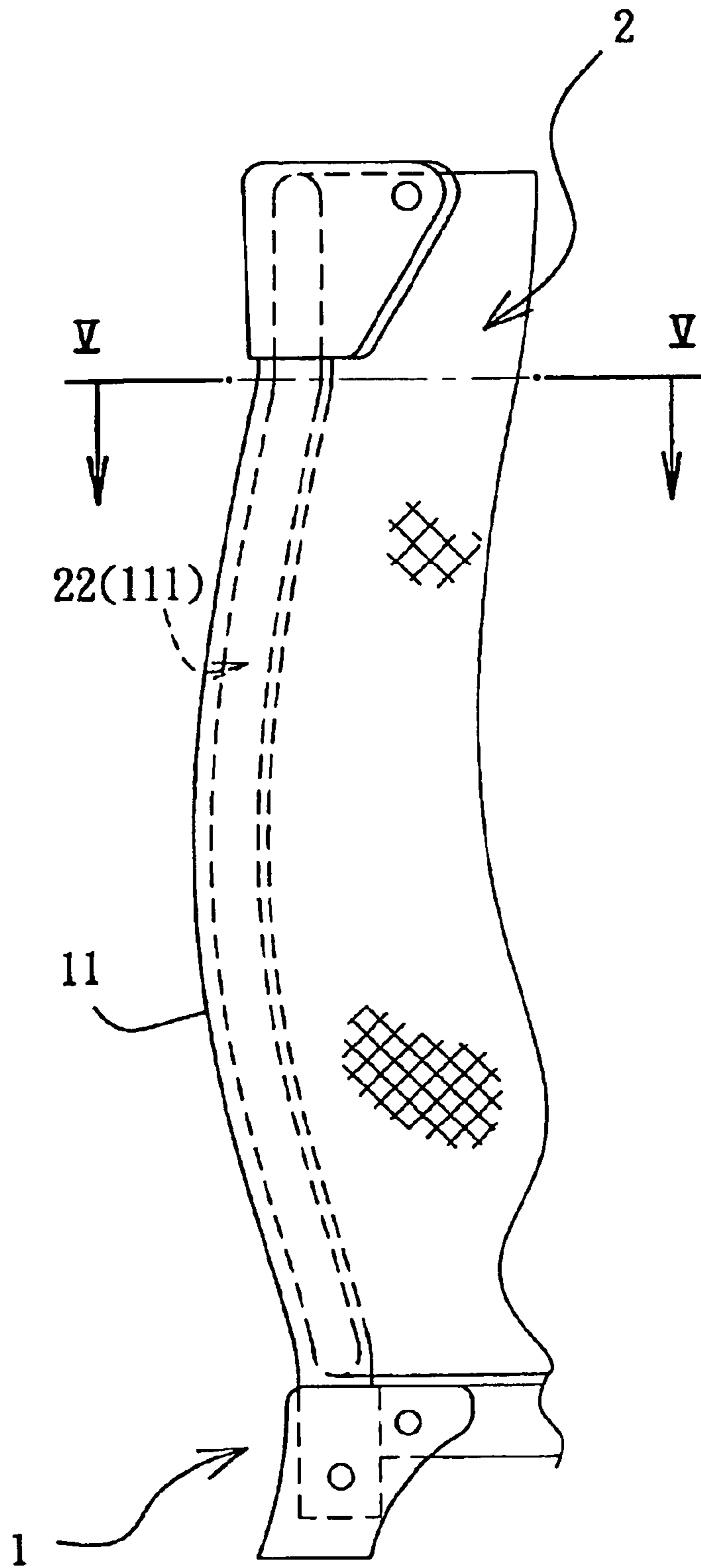


FIG. 3



F I G. 4

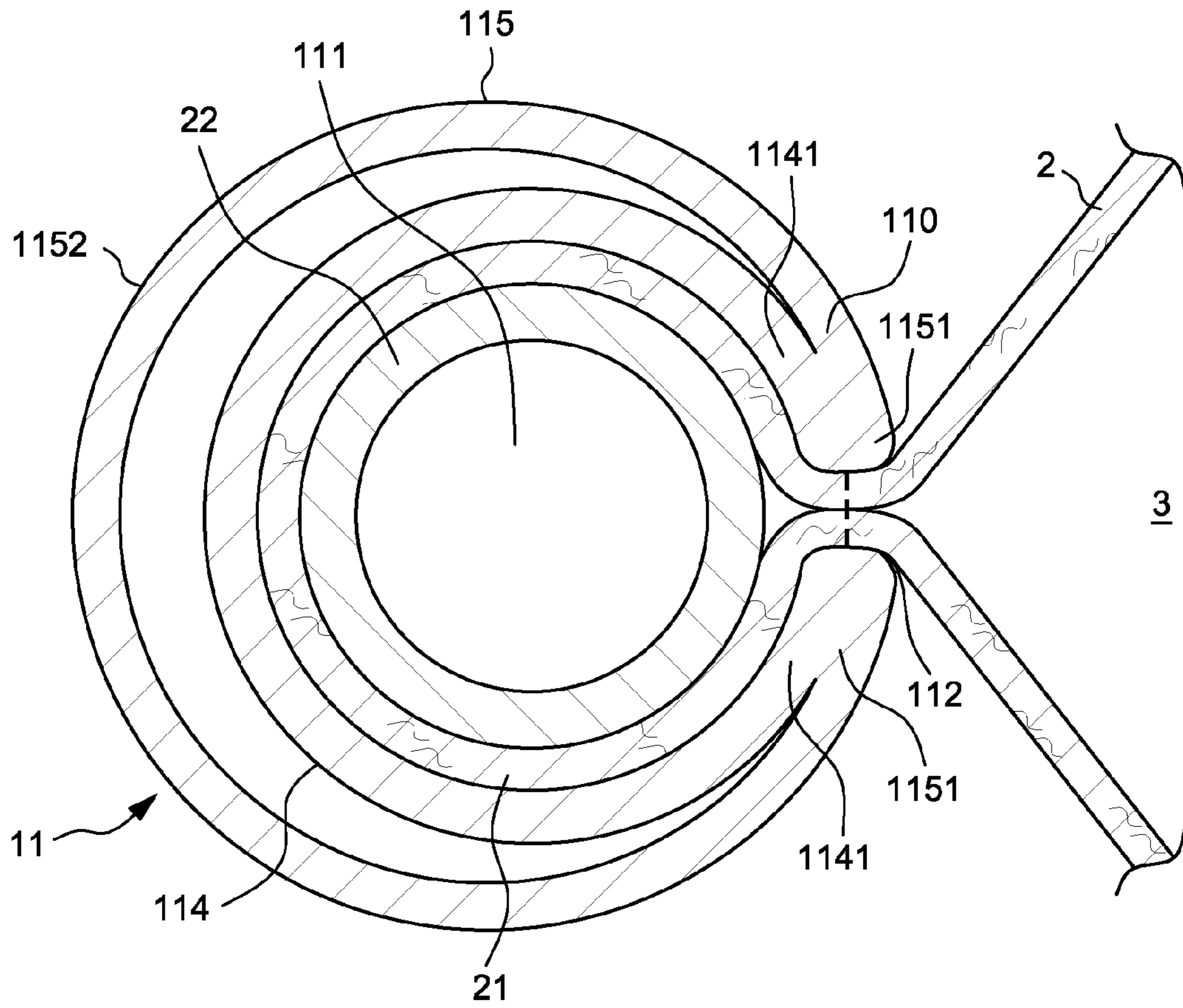


FIG. 5 (Amended)

1

BABY CRIB

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority of Chinese Application No. 2004200018045, filed on Jan. 2, 2004.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to a baby crib, more particularly to a baby crib that can be assembled with ease.

2. Description of the Related Art

Referring to FIGS. 1 and 2, a currently available baby crib is shown to comprise a bed frame structure **8** and an enclosure member **9** mounted on the bed frame structure **8** so as to define a receiving space for a baby to sleep or play.

The bed frame structure **8** usually has an upright tube **81** disposed at each corner of the crib. The enclosure member **9** is sleeved on the four upright tubes **81** of the bed frame structure **8**, and is stretched tightly thereby. A screw **82** is passed through a packing plate **83** and the enclosure member **9**, and engages a bottom end portion of the corresponding upright tube **81** so as to fix the enclosure member **9** on the bed frame structure **8**.

However, assembly of the aforesaid baby crib actually consumes a lot of time. Furthermore, since the screw **82** passes through the enclosure member **9** so as to fix the enclosure member **9** on the corresponding upright tube **81** of the bed frame structure **8**, a hole is formed in the enclosure member **9** such that when the enclosure member **9** is stretched, the enclosure member **9** is likely to tear at the periphery of the hole. Moreover, the outer appearance of the aforesaid baby crib is adversely affected since the screw **82** is visible from the exterior of the bed frame structure **8**.

SUMMARY OF THE INVENTION

Therefore, the object of the present invention is to provide a baby crib that can be easily assembled, that has a fabric member effectively positioned on a bed frame structure, and that has an appealing appearance.

According to this invention, a baby crib comprises a bed frame structure, a fabric member, and a plurality of positioning posts. The bed frame structure includes a plurality of upright tubes, each of which has a tube wall defining a receiving hole and having a slit that extends along the length of the tube wall and that is in spatial communication with the receiving hole. The fabric member is mounted on the bed frame structure to define a surrounding wall around the bed frame structure. The positioning posts are mounted on the fabric member, and are inserted respectively into the receiving holes in the upright tubes. The fabric member is clamped between each of the upright tubes and a corresponding one of the positioning posts, and extends outward through the slit in each of the upright tubes.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment with reference to the accompanying drawings, of which:

2

FIG. 1 is a perspective view of a currently available baby crib;

FIG. 2 is an enlarged fragmentary perspective view of FIG. 1, illustrating how an enclosure member is fixed on a bed frame structure by a screw;

FIG. 3 is an exploded perspective view of the preferred embodiment of a baby crib according to the present invention;

FIG. 4 is a fragmentary schematic view of the preferred embodiment, illustrating how a fabric member is positioned on a bed frame structure; and

FIG. 5 is a sectional view of the preferred embodiment taken along line V-V of FIG. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 3 to 5, the preferred embodiment of a baby crib according to the present invention is shown to comprise a bed frame structure **1**, a fabric member **2**, and a plurality of positioning posts **22**.

The bed frame structure **1** is rectangular, and includes four upright tubes **11** disposed on each corner of the bed frame structure **1**. Each of the upright tubes **11** is rigid, and has a tube wall **110** defining a receiving hole **111**. To enhance the appearance of the baby crib of the present invention, each upright tube **11** is preferably curved, as best shown in FIG. 3. Each upright tube **11** is formed of extruded aluminum such that an inner portion thereof is formed with the receiving hole **111** that extends along the length of the tube wall **110**. The tube wall **110** is formed with a slit **112** which extends along the length of the tube wall **110** and which is in spatial communication with the receiving hole **111**. Each upright tube **11** further has a top open end **113** that is in spatial communication with the receiving hole **111**.

The fabric member **2** is mounted on the bed frame structure **1** so as to define a surrounding wall around the bed frame structure **1**, and includes four sleeve portions **21** (only one is shown in FIG. 5) formed by sewing.

In this embodiment, there are four positioning posts **22** mounted on the fabric member **2**, and each of the positioning posts **22** is formed as a flexible tube, such as a plastic or metal tube. Each positioning post **22** is enclosed within the respective sleeve portion **21** of the fabric member **2** so that the fabric member **2** is formed with four lateral sides when the latter is mounted on the bed frame structure **1**.

During assembly, the fabric member **2** is directly mounted on the bed frame structure **1** by inserting the positioning posts **22** respectively into the receiving holes **111** in the upright tubes **11** through the top open ends **113**. As shown in FIG. 5, the tube wall **110** of each upright tube **11** includes a first wall part **114** and a second wall part **115**. The first wall part **114** is concentric with a respective one of the positioning posts **22**, and has two opposite first ends **1141** on two sides of the slit **112**. The second wall part **115** is eccentric relative to the respective one of the positioning posts **22**, and extends around the first wall part **114**. The second wall part **115** has two opposite second ends **1151** connected integrally to the first ends **1141** of the first wall part **114**, and a remaining part **1152** spaced apart from the first wall part **114**.

Since the positioning posts **22** are flexible, they can follow the curved configuration of the upright tubes **11** upon insertion into the receiving holes **111**, as best shown in FIG. 4. [At this time] Moreover, as shown in FIG. 5, the fabric member **2** is clamped between each of the upright tubes **11** and a corresponding one of the positioning posts **22**, and extends outward through the slit **112** in each of the upright tubes **11**, as best illustrated in FIG. 5.] to form an enclosure member

3

having a plurality of side panels that surround an inner enclosed space 3 for receiving a baby. The fabric member 2 can extend outside the upright tube 11 generally in two directions of two other upright tubes 11, and lie substantially out of contact with the outwardly facing surface of the outer tube wall defined by the remaining part 1152 of the second wall part 115. As the outwardly facing surface on each upright tube 11 is exposed outward, an outer contour shape of each upright tube 11 can be substantially visible from the outside of the enclosed space 3.

Since the fabric member 2 is clamped between each of the upright tubes 11 and a corresponding one of the positioning posts 22, the fabric member 2 can be positioned fixedly on the bed frame structure 1 without the need for screws. As such, not only is the assembly operation of the baby crib of the present invention quick, the outer appearance of the baby crib is enhanced as well since there are no screws visible from the exterior of the bed frame structure 1.

Referring back to FIG. 3, a cap 12 is provided at the top open end 113 of each upright tube 11 after the corresponding positioning post 22 is inserted into the corresponding receiving hole 111 so as to cover the top open end 113, thereby further enhancing the outer appearance of the baby crib of the present invention.

In this embodiment, the aforementioned positioning posts 22 are flexible so as to follow the curved configuration of the upright tubes 11 upon insertion into the latter. However, when the upright tubes 11 are configured as straight posts, the positioning posts 22 need not be made of flexible materials. Instead, the positioning posts 22 can be made of wood. Furthermore, while the sleeve portions 21 are formed on the fabric member 2 by sewing so as to enclose the positioning posts 22 within the disclosed embodiment, alternative methods are available for mounting the positioning posts 22 fixedly to the fabric member 2.

From the aforementioned description of the preferred embodiment of the baby crib of the present invention, it is apparent that through the presence of the receiving holes 111 in the upright tubes 11 of the bed frame structure 1, and through the mounting of the positioning posts 22 on the fabric member 2 prior to insertion into the receiving holes 111, screws are not required to position the fabric member 2 on the bed frame structure 1. As such, assembly and disassembly of the baby crib of the present invention is easy, the fabric member 2 is not easily damaged, and the outer appearance of the baby crib of the present invention is enhanced as well.

While the present invention has been described in connection with what is considered the most practical and preferred embodiment, it is understood that this invention is not limited to the disclosed embodiment but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation so as to encompass all such modifications and equivalent arrangements.

I claim:

1. A baby crib comprising:

a bed frame structure including a plurality of upright tubes, each of which has [a] an inner tube wall, and an outer tube wall defining an outer contour shape of the upright tube, the inner tube wall defining a receiving hole, and the outer tube wall having an outwardly facing surface and a slit that extends along the length of said outer tube wall and that is in spatial communication with said receiving hole;

a fabric member mounted on said bed frame structure to define a surrounding wall around said bed frame structure and delimit an enclosed space adapted to receive a baby; and

4

a plurality of positioning posts mounted on said fabric member and inserted respectively into said receiving holes in said upright tubes, said fabric member being clamped between each of said upright tubes and a corresponding one of said positioning posts and extending outward through [said slit in each of said upright tubes] each of said slits in each of said upright tubes, whereby the fabric member extends in directions between the upright tubes substantially out of contact with the outwardly facing surface of the outer tube wall of each of the upright tubes, such that the outwardly facing surface of each of the upright tubes is exposed on an outside of the enclosed space.

2. The baby crib as claimed in claim 1, wherein said fabric member includes a plurality of sleeve portions, said positioning posts being enclosed respectively in said sleeve portions.

3. The baby crib as claimed in claim 1, wherein each of said positioning posts is formed as a flexible tube.

4. The baby crib as claimed in claim 1, wherein each of said upright tubes is formed with a top open end for insertion of a respective one of said positioning posts.

5. The baby crib as claimed in claim 4, wherein each of said upright tubes further includes a cap to cover said top open end thereof.

6. The baby crib as claimed in claim 1, wherein said tube wall of each of said upright tubes includes a first wall part that is concentric with a respective one of said positioning posts and that has two opposite first ends on two sides of said slit, and a second wall part that is eccentric relative to the respective one of said positioning posts, that extends around said first wall part, and that is connected to said first ends.

7. The baby crib as claimed in claim 6, wherein said second wall part has two opposite second ends connected integrally to said first ends, and a remaining part spaced apart from said first wall part.

8. A baby crib comprising:

a bed frame structure including a plurality of upright tubes, wherein each of the upright tubes, respectively, includes an outer wall and a receiving hole extending along a length of the upright tube, the outer wall having an outwardly facing surface and defining an outer contour shape of the upright tube;

an enclosure member surrounding an enclosed space adapted for receiving a baby therein; and

a plurality of positioning posts provided on the enclosure member at locations corresponding to the upright tubes, wherein the positioning posts are configured to lodge into the receiving holes of the upright tubes for supporting the enclosure member between the upright tubes, whereby the enclosure member extends from one upright tube generally in directions of other of the upright tubes substantially out of contact with the outwardly facing surfaces of the upright tubes, such that the outwardly facing surface of each of the upright tubes is exposed on an outside of the enclosure member.

9. The baby crib according to claim 8, wherein the positioning posts are made of a flexible material.

10. The baby crib according to claim 8, wherein the receiving holes open at a top end of the upright tubes for insertion of the positioning posts.

11. The baby crib according to claim 10, wherein the top end of the upright tubes further respectively includes a cap for closing each receiving hole.

12. The baby crib according to claim 8, wherein the enclosure member includes a plurality of sleeve portions in which the positioning posts are provided.

5

13. The baby crib according to claim 12, wherein the sleeve portions are clamped inside the receiving holes when the positioning posts are inserted in the upright tubes.

14. The baby crib according to claim 8, wherein the enclosure member is made of a fabric material.

15. A baby crib comprising:

a plurality of upright tubes defining corners of the baby crib, wherein each of the upright tubes has an outer wall that defines an outer contour shape of the upright tube; and

an enclosure member including a plurality of side panels contiguously connected to one another along edge portions and surrounding an enclosed space adapted for receiving a baby therein; and

a plurality of positioning posts provided on the enclosure member at locations corresponding to the edge portions of the enclosure member, wherein the positioning posts are lodged inside the upright tubes, the side panels extending between the upright tubes substantially out of contact with the outside surfaces of outer walls of the upright tubes, such that the outwardly facing surface of each of the upright tubes is exposed on an outside of the enclosure member.

16. The baby crib according to claim 15, wherein the edge portions of the enclosure member are provided with positioning posts configured to respectively slide into the upright tubes.

17. The baby crib according to claim 16, wherein at least one edge portion of the enclosure member includes a sleeve in which one positioning post is provided.

18. The baby crib according to claim 17, wherein the upright tubes open at a top end for insertion of the positioning posts.

19. The baby crib according to claim 15, wherein the enclosure member is made of a fabric material.

20. A baby crib comprising:

a frame structure including a plurality of support tubes, wherein each of the support tubes has an outer wall that defines an outer contour shape of the upright tube;

an enclosure member including a plurality of side panels having edge portions; and

6

an attachment structure configured to mount and secure the edge portions of the enclosure member along the support tubes,

whereby the side panels surround an enclosed space, and each of the side panels extends generally between two of the support tubes substantially out of contact with outwardly facing surfaces of the outer walls thereof, such that the outwardly facing surface of each of the upright tubes is exposed on an outside of the enclosure member.

21. The baby crib according to claim 20, wherein the attachment structure clamps the edge portions of the enclosure member inside the support tubes.

22. The baby crib according to claim 20, wherein the attachment structure includes:

a first connecting structure provided on at least one edge portion of the enclosure member and having a first surface; and

a second connecting structure provided on at least one support tube and having a second surface matching with the first surface;

wherein the first and second connecting structures securely mate each other by sliding the first surface along the second surface.

23. The baby crib according to claim 22, wherein the first connecting structure includes one positioning post and the second connecting structure includes a receiving hole configured to receive the insertion of the positioning post therein.

24. The baby crib according to claim 23, wherein the positioning post is made of a flexible material.

25. The baby crib according to claim 23, wherein the positioning post is provided in a sleeve portion formed at the one edge portion.

26. The baby crib according to claim 23, wherein the receiving hole opens at a top end of the at least one support tube for insertion of the positioning post.

27. The baby crib according to claim 20, wherein the enclosure member is made of a fabric material.

28. The baby crib according to claim 20, wherein the upright tubes are curved.

29. The baby crib according to claim 15, wherein the upright tubes are curved.

* * * * *

(12) INTER PARTES REVIEW CERTIFICATE (2246th)

**United States Patent
Chen**

**(10) Number: US RE43,919 K1
(45) Certificate Issued: Aug. 17, 2021**

(54) BABY CRIB

(75) Inventor: Shun-Min Chen

**(73) Assignee: Wonderland Nurserygoods Co.,
Limited (TW)**

Trial Number:

IPR2015-00842 filed Mar. 4, 2015

Inter Partes Review Certificate for:

Patent No.: **RE43,919**
Issued: **Jan. 15, 2013**
Appl. No.: **11/588,412**
Filed: **Oct. 26, 2006**

The results of IPR2015-00842 are reflected in this inter partes review certificate under 35 U.S.C. 318(b).

INTER PARTES REVIEW CERTIFICATE
U.S. Patent RE43,919 K1
Trial No. IPR2015-00842
Certificate Issued Aug. 17, 2021

1

2

AS A RESULT OF THE INTER PARTES
REVIEW PROCEEDING, IT HAS BEEN
DETERMINED THAT:

Claims **1-5** and **8-29** are found patentable.

5

* * * * *