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(54) Safety folding joint for a foldable play yard

(57) A safety folding joint (1) for a foldable play yard, including a control member (11), two locating blocks (2) respectively pivoted to the control member (11) and coupled to and turned about two frame rods (4) of a rail of the foldable play yard, and two locking sockets (3) respectively, longitudinally slidably mounted around the frame rods (4) and forced by spring means into engagement with the locating blocks (2) to lock the folding frame rods (4) in a longitudinally aligned position, wherein the control member (11) is allowed to be turned relative to the frame rods (4), for permitting the frame rods (4) to be folded up, when the locking sockets (3) are respectively and axially moved backwards and disengaged from the locating blocks (2).

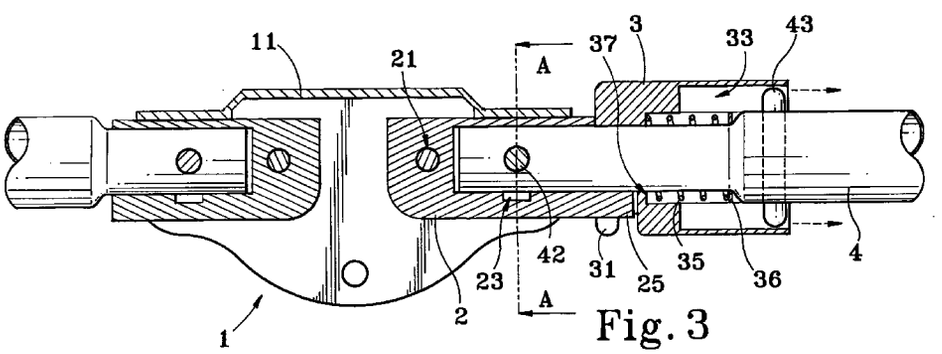

Fig. 3

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Description

BACKGROUND OF THE INVENTION

The present invention relates to a folding joint for a foldable play yard, and more particularly to a safety folding joint which prohibits the frame rods of the foldable play yard from being forced to collapse by an error, so that children can play in the foldable play yard safely.

Conventional play yards, in which infants can be left to play, crawl, are commonly not collapsible, therefore they need much storage space when not in use. Recently, a variety of foldable play yards have been disclosed, and have appeared on the market. Because the frame structures of regular foldable play yards are made foldable by means of the operation of folding joints, they tend to be forced to collapse when infants play with the folding rails. If the frame structure of a foldable play yard is suddenly folded up by an error, infants may be jammed in the collapsed frame structure. U.S. Pat. No. 4,934,025 discloses an improved hinge for foldable play yards. The hinge comprises mating first and second halves, each half with an axial bore adapted to receive members to be pivoted with the hinge, an offset portion formed in each hinge half with a pivot pin extending centrally therethrough, the mating halves adapted to be pivoted about the axis of the pivot pin which is perpendicularly to, but offset from the axes of the bores, interference member located on the hinge halves to limit the degree of pivoting of the hinge halves with respect to each other, circumferential slots extending through the surface of each hinge half for receiving a radially projecting ring securable to the received members to guide the rotational motion of the hinge with respect to the rings and received members. The ring is formed with ratchet teeth cooperable with ratchet teeth in the adjacent hinge half for securing the hinge in a locked or unlocked rotational orientation. This structure of hinge still has drawbacks. One drawing of this structure of hinge is that the ratchet teeth of the hinge wear quickly with use. Another drawback of this structure of hinge is that the upper part of the hinge tends to be forced to deform when the rails are extended out, because only one pivot pin is provided to support the hinge halves, Furthermore, because the two rails are hinged together, they will make a scissors action when they are forced hinge halves are forced to collapse, and infants tend to be jammed in the rails. U.S. Pat. No. 5,211,498 discloses a folding joint for a foldable play yard which is an invention of the present inventor, including a base frame having two connecting members pivotably secured at the inside for holding two rails permitting them to be held in a longitudinally aligned position or folded up into a collapsed position. The connecting members each have an axial hole at one end for receiving either rail, two through holes on two opposite side walls thereof, and a tract connected between the two through holes. The rails each have a pivot hole secured between the two through holes by a headed pin. The two rails are held in the longitudinally aligned position when the head of the headed pin is engaged in one through hole; and the two rails are allowed to be folded up when the head of the headed pin is rotated to the other through hole. This structure of folding joint is functional, however when infants play with the rails, the rails may be forced to collapse, causing an accident to occur.

SUMMARY OF THE INVENTION

The present invention has been accomplished to provide a folding joint for a foldable play yard which eliminates the aforesaid drawbacks. According to the preferred embodiment of the present invention, the safety folding joint comprises a control member, two locating blocks respectively pivoted to the control member and coupled to and turned about two frame rods of a rail of the foldable play yard, and two locking sockets respectively, longitudinally slidably mounted around the frame rods and forced by spring means into engagement with the locating blocks to lock the folding frame rods in a longitudinally aligned position. When the locking sockets are respectively and axially moved backwards and disengaged from the locating blocks, the control member is allowed to be turned relative to the frame rods from a locking position to an unlocking position, and therefore the frame rods are allowed to be folded up.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an exploded view of a folding joint according to the present invention;

Fig. 2 is a bottom view of a locking socket according to the present invention;

Fig. 3 is a sectional view of the folding joint when set in the operative position according to the present invention;

Fig. 4 is similar to Figure 3 but showing the locking sockets unlocked;

Fig. 5 is similar to Figure 4 but showing the control member and the locating blocks turned through 180x angle relative to the frame rods;

Fig. 6 is a sectional view of the present invention, showing the folding joint folded up;

Fig. 7 is a sectional view taken along line VII-VII of Figure 3;

Fig. 8 is a sectional view taken along line VIII-VIII of Figure 5; and

Fig. 9 is an applied view of the present invention, showing the folding joint installed in one rail of a foldable play yard.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figures 1 and 9, a safety folding joint 1 in accordance with the present invention, is adapted for

use in a foldable play yard to connect two frame rods of a folding frame rod together, comprised of a control member 11, a pair of locating blocks 2 respectively pivoted to the control member 11 at two opposite sides, two frame rods 4 respectively coupled to the locating blocks 2, and two locking sockets 3 respectively mounted around the frame rods 4. Because the locating blocks 2, the locking sockets 3 and the frame rods 4 are symmetrically connected to the control member 11 at two opposite sides, the structure and function of the folding joint 1 can be understood from the following description.

Referring to Figures 2 and 3, and Figure 1 again, the control member 11 is a hollow member adapted for holding one end of the locating block 2 on the inside. The locating block 2 comprises a longitudinal through hole 24, a transverse through hole 22 in the middle, a transverse pivot hole 21 near one end in parallel to the transverse through hole 22, a projecting rod 25 longitudinally extended from one end remote from the transverse pivot hole 21, and a guide groove 23 inside the longitudinal through hole 24 and extended between two opposite ends of the transverse through hole 22. The locking socket 3 comprises a longitudinal through hole 32, two longitudinal sliding grooves 33 bilaterally disposed in communication with the longitudinal through hole 32, an outside annular flange 31 raised around the periphery at one end, an inside annular flange 37 raised around the inside wall corresponding to the outside annular flange 31 (see Figure 3), and a notch 34 disposed at the outside annular flange 37 and adapted for coupling to the projecting rod 25 of the locating block 2. A spring 35 is mounted in the longitudinal through hole 32 of the locking socket 3, and stopped at the inside annular flange 37. The frame rod 4 comprises a front extension tube 41 mounted with a washer ring 36, a first transverse pin hole 44 at one end of the front extension tube 41, and a second transverse pin hole 45 adjacent to the front extension tube 41 and remote from the first transverse pin hole 44.

Referring to Figures 1 and 3 again, the front extension tube 41 of the frame rod 4 is inserted through the longitudinal through hole 32 of the locking socket 3 into the locating block 2, and then coupled thereto by inserting a locating pin 42 into the transverse through hole 22 of the locating block 2 and the first pin hole 44 of the frame rod 4. Before coupling the frame rod 4 to the locating block 2, a locating pin 43 is mounted in the second transverse pin hole 45 of the frame rod 4. The length of the locating pin 43 is longer than the outer diameter of the frame rod 4. Therefore, when the locating pin 43 is mounted in the second transverse pin hole 45 of the frame rod 4, the two opposite ends of the locating pin 43 project out of the periphery of the frame rod 4. When the frame rod 4 is inserted through the longitudinal through hole 32 of the locking socket 3, the two opposite ends of the locating pin 43 are respectively inserted into the longitudinal sliding grooves 33 of the locking socket 3 and moved therein. Therefore, the locking socket 3 is prohibited from rotary motion relative to the frame rod 4. Further, the pivot hole 21 of the locating block 2 is pivotably connected to the control member 11 by a pivot 12. When assembled, the frame rod 4 with the locating pin 42 can be turned within the locating block 2 along the guide groove 23 between two reversed positions (see Figures 7 and 8). However, because one end of the locating pin 42 is moved in the guide groove 23, the frame rod 4 is prohibited from escaping out of the locating block 2.

Referring to Figures 4, 5, and 6, the spring 35 imparts a forward pressure to the locking socket 3, causing the notch 34 of the outward annular flange 31 of the locking socket 3 to be forced into engagement with the projecting rod 25 of the locating block 2, and therefore the locating block 2 is constrained by the locking socket 3 and the frame rod 4 and unable to be folded up. When the locking socket 3 is pulled backwards to compress the spring 35 and to disengage the notch 34 from the projecting rod 25 of the locating block 2 (see Figure 4), the control member 11 and the locating block 2 can then be turned through 180° angle relative to the locking socket 3 and the frame rod 4 (see Figure 5), for permitting the safety folding joint to be folded up (see Figure 6).

Claims

1. A safety folding joint adapted for connecting two frame rods (4) of a rail of a play-yard in a line, permitting the frame rods (4) to be retained longitudinally aligned in the operative position, or folded up into the non-operative position, characterized in that : two locating blocks (2) respectively mounted around the frame rods (4) of said play yard and coupled thereto, and adapted to be turned about said frame rods (4) within 180° angle, and a control member (11) coupled to said locating blocks (2) and turned between a locking position in which said frame rods (4) are retained longitudinally aligned, and an unlocking position in which said frame rods (4) are allowed to be folded up, characterized in that: each of said locating blocks (2) a respective projecting rod (25) at one end; two locking sockets (3) respectively mounted around said frame rods (4) and moved axially relative to said frame rods (4) and prohibited from rotary motion relative to said frame rods (4), each of said locking sockets (3) having a notch (34) at one end adapted for engaging the projecting rod (25) of one locating block (2) to hold said control member (11) in said locking position; two springs (35) are mounted around said frame rods (4) inside said locking sockets (3) to force said locking sockets (3) into engagement with the projecting rods (25) of said locating blocks (2).

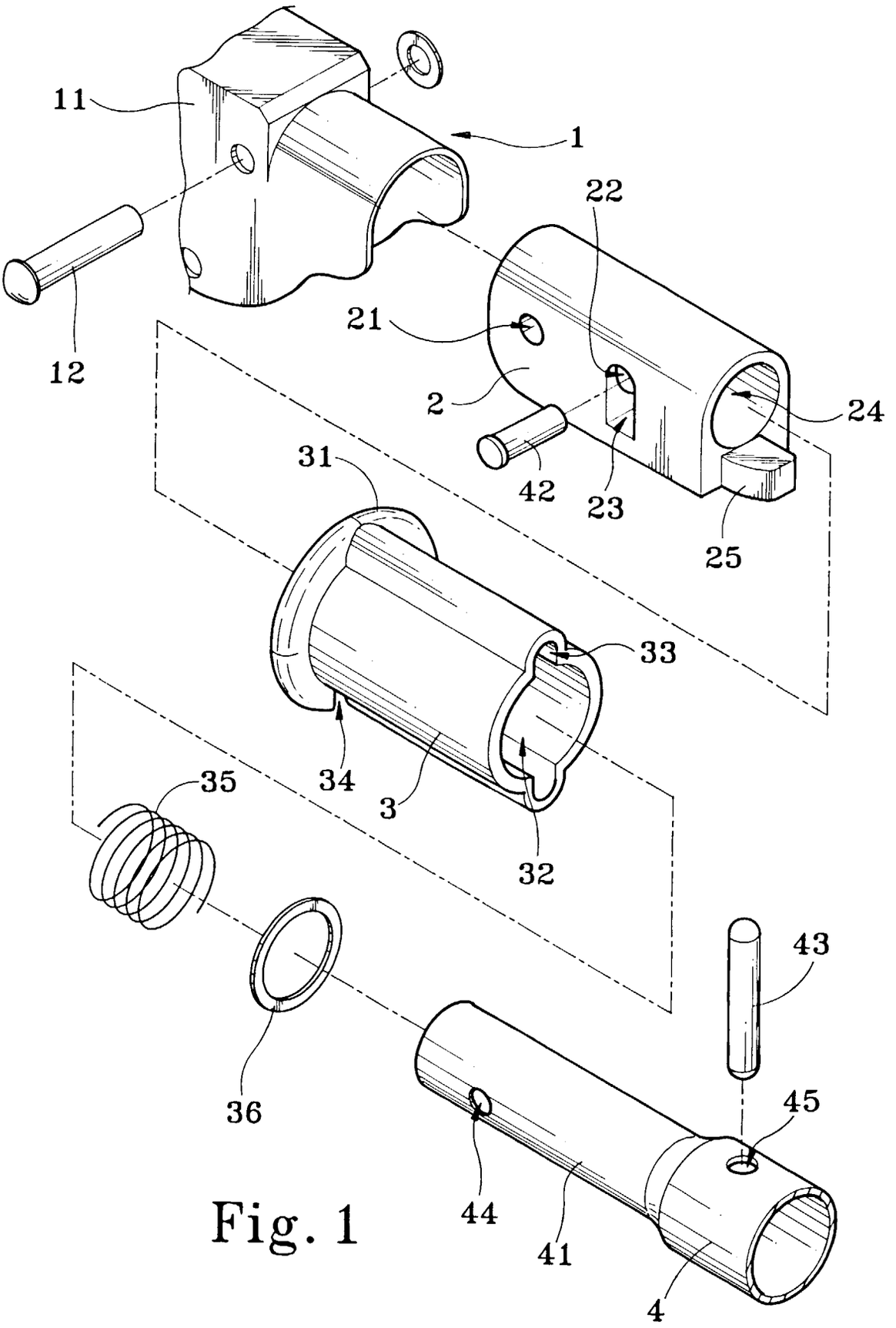

Fig. 1

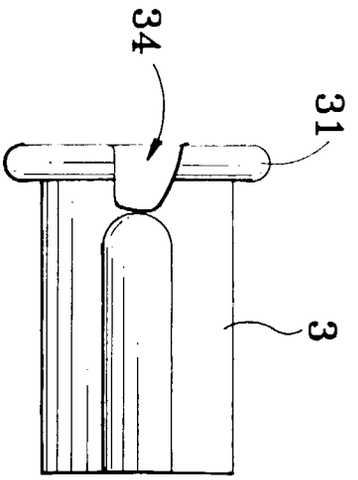

Fig. 2

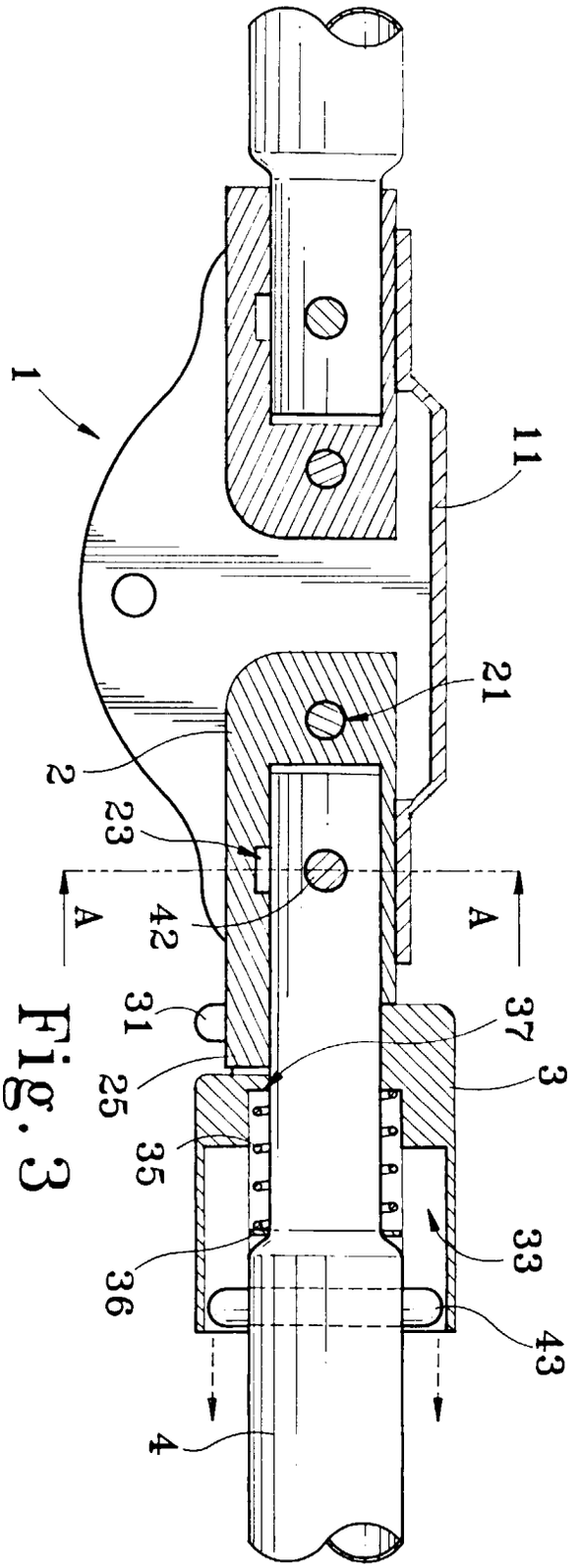

Fig. 3

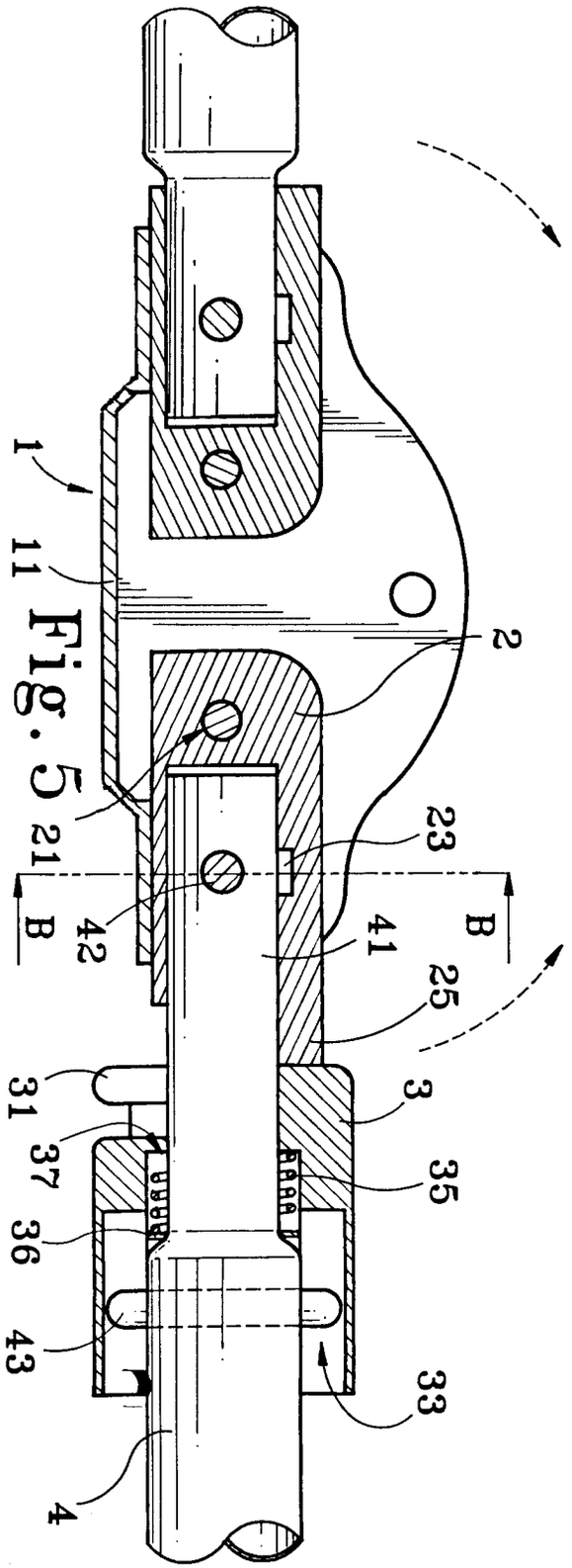
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Fig. 5

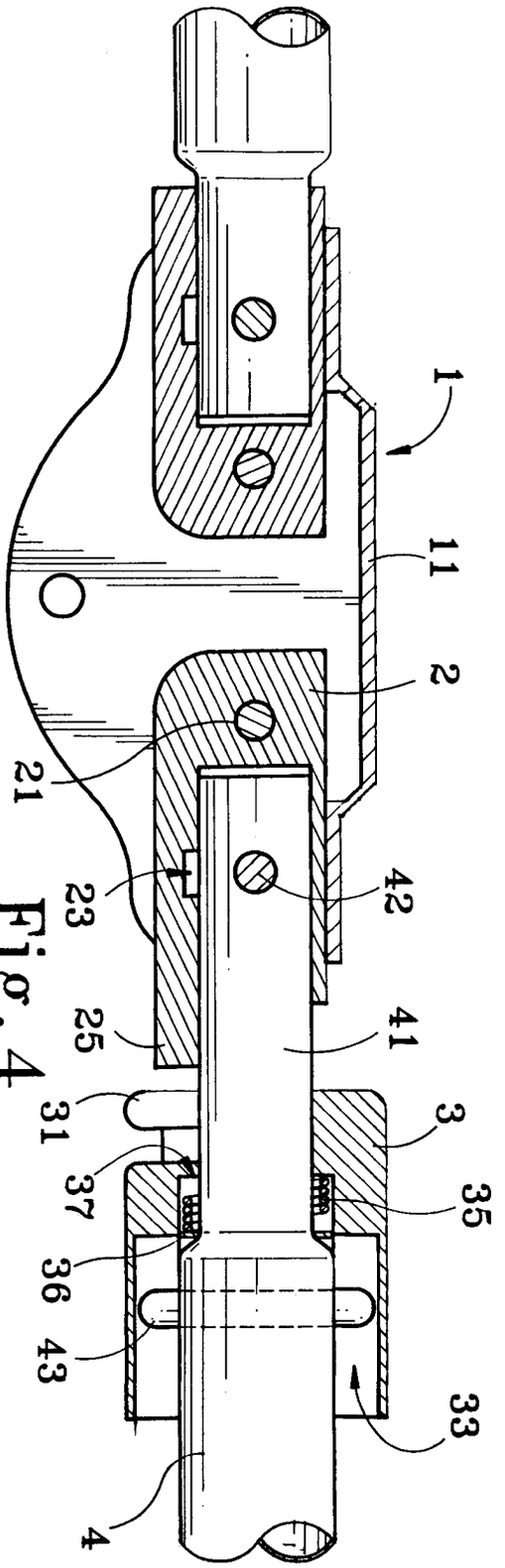
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Fig. 4

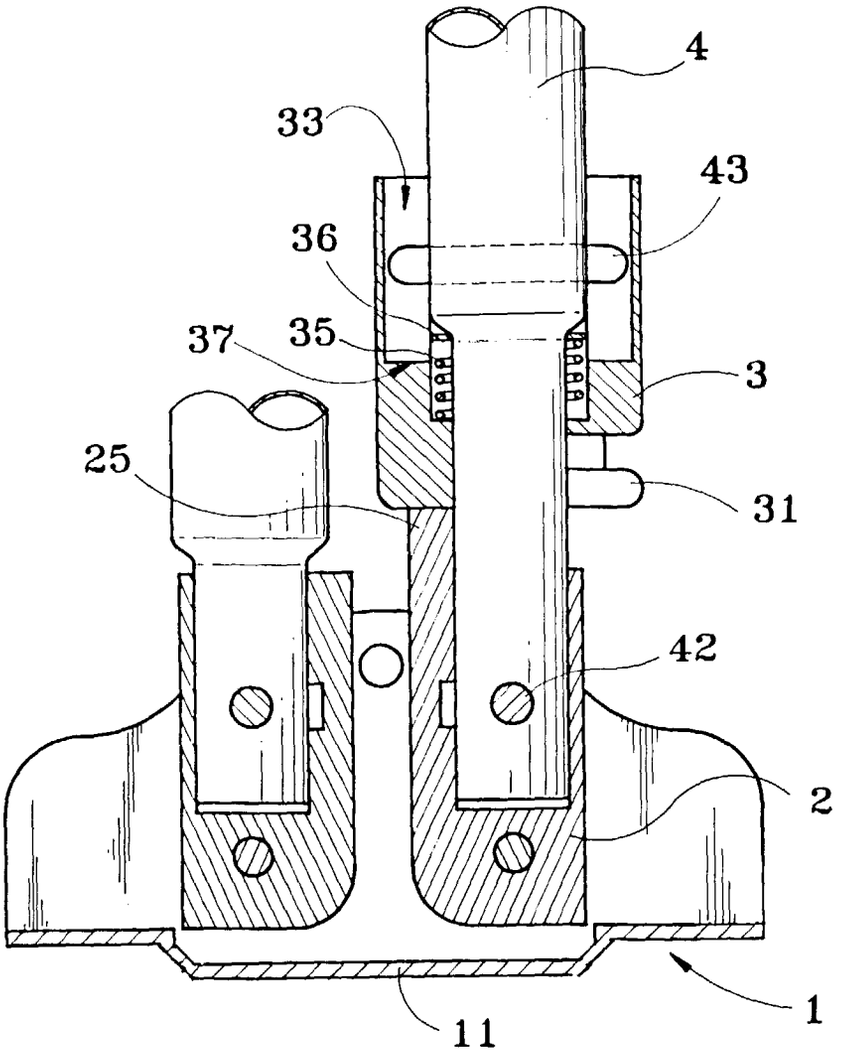


Fig. 6

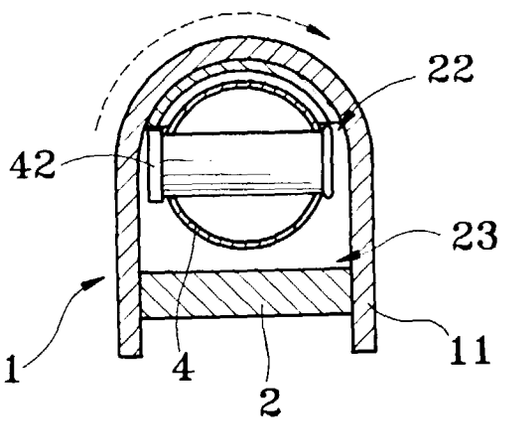


Fig. 7

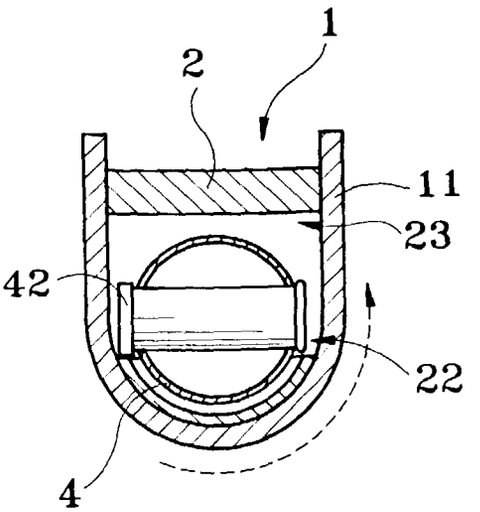
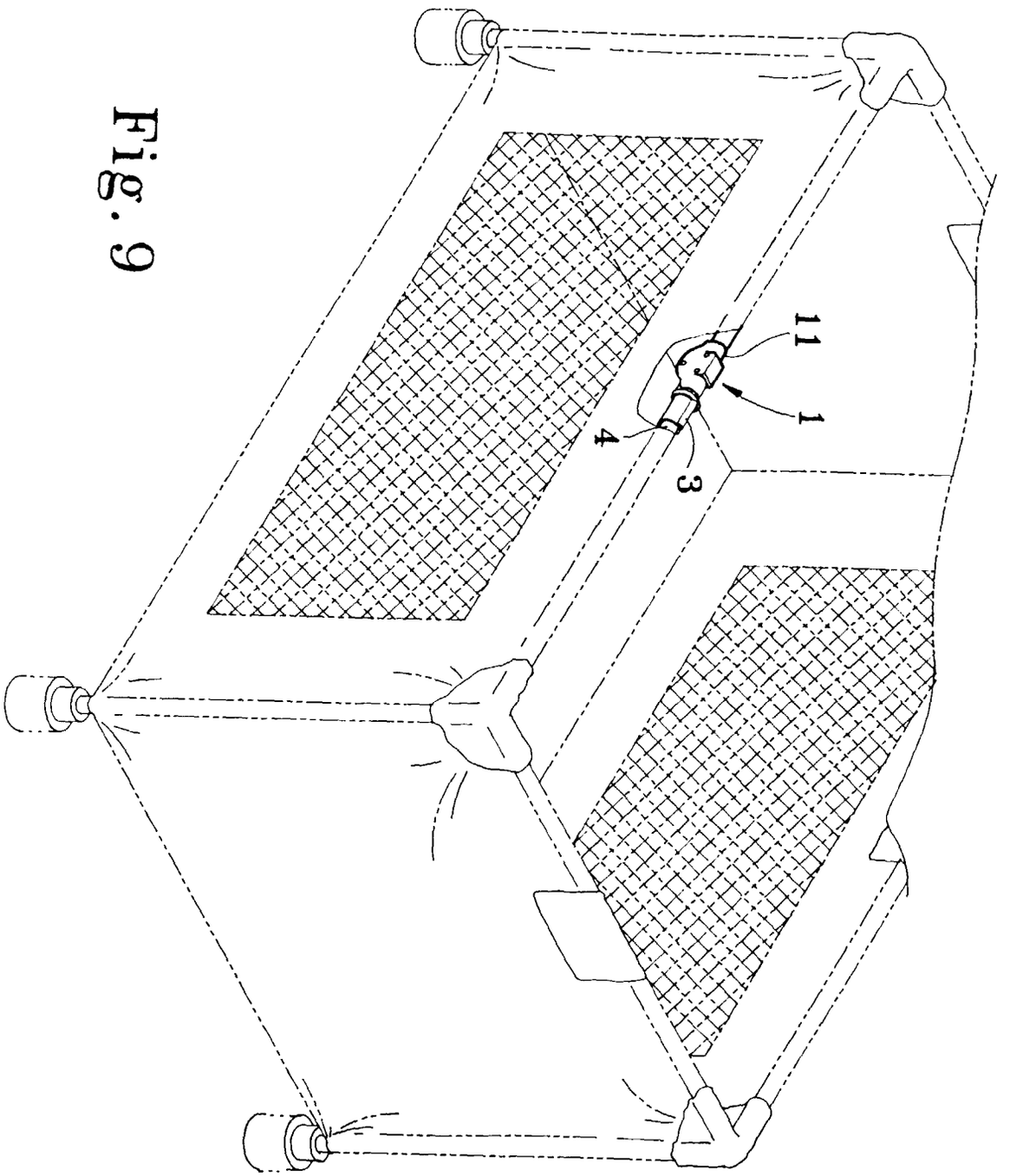


Fig. 8

Fig. 9



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EUROPEAN SEARCH REPORT

Application Number
EP 96 11 9539

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	GB 2 291 467 A (FAIR LAND BABY CARRIAGES) * the whole document *	1	A47D13/06
A	DE 91 13 474 U (HUANG)		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A47D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 April 1997	VandeVondele, J

CATEGORY OF CITED DOCUMENTS

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