Title: FOLDING BABY PLAYPRAM

Abstract: A folding playpram for babies that comprises a top frame, a bottom frame, two main uprights each of which is equipped with a folding mechanism, such that each of the said uprights comprises two parts that are joined together by means of an axial joint, whereby the top of the uprights is attached to the top frame by means of an axial joint and their bottom is attached to the bottom frame by means of an axial joint, and whereby the said folding mechanism is located in the middle of the said uprights.
Folding Baby Playpram

Description

TECHNICAL FIELD

The present invention refers to a folding playpram.

BACKGROUND ART

It is often customary to place one or more babies in a playpram and to take the babies on a stroll outdoors. The main problem involved with using currently existing playprams is that they are relatively large and cumbersome, and it is difficult to take them outdoors to use them and to bring them back indoors when the use is over. The folding playpram, subject of the present invention, offers a good solution to the said problem.

THE INVENTION

The main objective of the present invention is to provide a playpram that can be folded into a relatively flat structure and thus facilitate the use of the playpram, and to provide a relatively lightweight playpram. The main objective of the playpram is to provide the possibility of venturing outside the home with children in a way that does not require the children to be restrained but rather enables them to stand, sit, play or lie down comfortably.
The first embodiment of the present invention is a folding playpram (1) that comprises a top frame (2), a bottom frame (3), and two main uprights (4) each of which is equipped with a folding mechanism (5).

The top frame (2) can have a variety of shapes such as those commonly used for the top frames of standard playprams and playpens. In the drawings accompanying this application, the top frame is oval.

The bottom frame (3) can also have a variety of shapes such as those commonly used for the bottom frames of standard playprams and playpens. This frame supports the playpram's floor and mattress. In the drawings accompanying this application, the bottom frame (3) is an oval-shaped surface.

The playpram's uprights (4) have the general shape of thin rods. The tops of the two uprights (4) are attached to the top frame (2) and the bottoms of the uprights (4) are attached to the bottom frame (3). The top frame (2), bottom frame (3), and uprights (4) form the (1) chassis of the playpram (1). The chassis
of the playpram (1), as described above and in the drawings, is similar to the
standard chassis of existing playprams. The innovative component of the
playpram (1), subject of the present invention, is primarily the folding
mechanism (5).

Each of the two uprights (4) is equipped with a folding mechanism (5), located
in the middle of the upright (4), that enables each upright to fold in two.
Drawing No. 1 depicts the playpram (1) in open position, with a fabric cover
around the sides of the playpram (1), forming a kind of crib that the baby is in
when he or she is placed in the playpram. Drawing No. 2 depicts the chassis of
the playpram (1) in open position. Drawing No. 3 depicts the playpram (1) with
the uprights (4) in semi-folded position, and Drawing No. 4 depicts the
playpram (1) when fully folded flat.

**Folding mechanism (5):** To explain the structure of the folding mechanism (5)
and its method of operation, we refer to Drawing No. 5, which depicts the
chassis of the playpram (1) in open position. Each upright (4) comprises two
parts: an upper part (41) and a lower part (42). The upper part (41) and lower
part (42) are joined by an axial hinge with a horizontal pin (43). The way in which the two parts of the upright (4) are joined enables these parts to fold over one another. In order to fold the upright, the top and bottom of the upright (4) are attached, respectively, to the top and bottom frames by axial hinges that enable the upright (4) to rotate relative to the top and bottom frames. When horizontal force is applied to the middle of the uprights (4) in an inwards direction, i.e. towards the center of the playpram (1), the uprights fold (as depicted for instance in Drawing No. 3) until they are folded upon one another as depicted for instance in Drawing No. 4, which depicts the playpram (1) when folded flat.

**The locking mechanism of the folding mechanism (5):** In order to control the folding of the uprights (4), the mechanism (5) includes means for locking the uprights (4) in open position and for unlocking them and enabling the uprights (4) to fold over until the playpram (1) is fully folded. To explain the structure of the locking and unlocking mechanism of the folding mechanism (5), we refer to Drawing No. 6.
Drawing No. 6 depicts the top part of the lower part (42) of the upright (4), which is composed of two parallel rods (421) (422) [so that when the upper part (41) is folded, it is position in between these two rods. Alternatively, the lower part (42) may constitute a single rod whereby the upper part of the upright (41) will fold over beside it]. The inner side of each of the rods (421) (422) has one or more holes (44) [not shown in the drawing] into which a locking pin (51) is inserted (the rods depicted in Drawing No. 6 each have two holes). The locking pins (51) can move horizontally so that they are either partially inserted into the hole (44) or almost entirely extracted from it. Drawing No. 6 depicts four locking pins (51), two in each of the two rods (421) (422).

Drawing No. 6 also depicts a flat, rectangular plate (52) that is permanently attached via a vertical connection to the upper part (41) of the upright (4) [the upper part (41) is not depicted in Drawing No. 6]. [The upper part (41) surrounds all components of the folding mechanism (5), including the plate (52), so that when the playpram is in use, the folding mechanism (5) is not visible.].
The inner side of the plate (52) has a pin guide (53), which is a flat rectangular plate with several elongated, diagonal, rectangular slits (54) that serve as guides for the locking pins (51). The number of guide slits (54) corresponds with the number of locking pins (51). Each of the pins (51) is locked into a guide slit (54) by a protrusion [not depicted in the drawings] that is inserted into the guide slit (54).

**Locking of the uprights (4):** The pin guide (53) can move up and down. In normal mode, the guide is down due to a force that presses it downward (we recommend that this be a spring force). When the pin guide (53) is in down position, the pins (51) are in the holes (44) in the rods (421) (422). In this position, the upright (4) is open and locked and cannot fold in two since the pins (51) are in matching holes in the upper part (41) [not depicted in Drawing No. 6] as well as in holes (44) in the lower part (43), thus preventing the upright (4) from folding in two. In this position, the uprights (4) are in open position (as depicted for instance in Drawing No. 2) and the pin guide (53) is in down position.
Folding of the uprights (4): To fold the upright (4), the pin guide (53) is pulled upward causing the pins (54) to retract from the holes (44) in the rods (421) (422). The pins move towards the middle point between the two rods (421) (422) since they move within the guide slits (53) as they retract from the holes (44). When the pin guide (53) is pulled upward, as described above, the uprights (4) can be folded over, as depicted in Drawings Nos. 3 and 4.

Pulling and lowering of the pin guide (53): A cable (56) is attached to a point (55) on the upper part of the pin guide (53) (the cable operates similar to a motorcycle's brake or gas cable) [the cable (56) is not depicted in the drawings]. One end of the cable (56) is attached to the pin guide (53) at point (55) and the other end is attached to the handle (6) of the playpram (1). The cable (56) passes within the top frame (2) and the uprights (4) and is not visible when the playpram is in use. The handle (6) is attached to the top frame (2) by means of an axial joint so that it may be raised upward (or lowered downward). Raising [or lowering] the handle (6) [depending on the way the cable (56) is attached to the handle (6)], causes the cable (56) to tension and the pin guide (53) to rise, releasing the said locking of the uprights and enabling the playpram (1) to fold.
As mentioned, a return spring pulls the pin guide (53) back down (to locked position) when the handles returns to its normal position. Drawing No. 6 depicts a situation in which the pin guide (53) is pulled upward, releasing the locking of the uprights (4) and enabling them to fold. Drawing No. 7, on the other hand, depicts a situation in which the pin guide (53) is pulled downward (by the spring) and the uprights (4) are in locked position, i.e. the playpram (1) is in open position.

The playpram (1) can be equipped with wheels (7) that enable the playpram (1) to be moved. The playpram (1) can and should be made of plastic so that it is lightweight and convenient to use.

The second embodiment of the present invention refers to a folding playpram (1) that is similar to the playpram (1) described in the first embodiment of the invention, and includes several modifications, the essence of which is as follows: (a) The top frame (2) can be folded sideways such that the right-hand side of the top frame (2) folds down to the right and the left-hand side of the top frame (2) folds down to the left. (b) The bottom frame (3) can also be
folded sideways such that the right-hand side of the bottom frame (3) folds down to the right and the left-hand side of the bottom frame (3) folds down to the left, as depicted for instance in Drawing No. 8.

The third embodiment of the present invention refers to a folding playpram (100) that is similar to the playpram (1) described in the first embodiment of the invention, and includes several modifications, the essence of which is as follows: (a) The top frame (2) can be folded such that one half of the frame (2) folds around, by about half a revolution, until it overlaps the second half of the frame (2), as depicted in Drawing No. 9. (b) Half of the bottom frame (3) folds upward by about a quarter of a revolution, as depicted in Drawing No. 9.

The following supplement refers to an upgrading of the playpram (1) (10) (100) as described in the first, second and third embodiments of the original application.
The playpram can be equipped with a folding seat (7) that is placed on the floor of the playpram and can be in flat position, as a kind of mattress on the floor of the playpram (hereinafter referred to as "flat position") or in folded position and serve as a kind of seat for the baby or toddler in the playpram (hereinafter referred to as the "folded position"). The seat (7) is detachable and so it can either be placed on the floor of the playpram and be used in flat or folded position, or it can be removed from the playpram and be used only according to need. Drawings Nos. 10-14 depict the seat (7).

The folding seat (7) is made up of three rectangular flat sections that are joined to one another in series by means of hinges. The three said sections are referred to and numbered as follows: Head section (71), middle section (72), and feet section (73). The seat (7) can be positioned in flat position on the floor of the playpram, as depicted for instance in Drawing No. 10, or in folded position, as depicted for instance in Drawing No. 11.
The head section (71) has a pair of folding legs (71 1) such that when the seat (7) is in flat position, the legs (71 1) are parallel to the head section (71) and the seat (7) can be in flat position without the legs interfering. The middle section (72) also has a pair of legs (721) with similar functioning. Drawing No. 12 depicts the folding seat (7) with the legs (711) (721) in perpendicular position relative to the sections (71) (72) and Drawing No. 13 depicts them in parallel position. Drawing No. 14 depicts the seat (7) being used as a baby seat.

The playpram can be equipped with a top mattress (8) that may be installed over the playpram's circumferential frame and is designed to serve as a sleeping surface for the baby, as depicted in Drawings Nos. 15 and 16. The mattress is, in general, rectangular in shape and is made of a material commonly used to manufacture baby's mattresses. The mattress (8) is equipped with four straps (81) at the mattress' four corners that are designed to be attached to the playpram's upper circumferential frame. The mattress (8) is removable so that it can be installed in the playpram (for instance, when pushing a baby) or removed and used according to need.
The playpram can be equipped with a removable folding cover (9) that may be installed over the playpram's circumferential frame and which is designed to serve as a shade, as depicted in Drawing No. 17. The cover (9) comprises a base frame (91) that should preferably match the playpram's upper circumferential frame in terms of its size, to which one or more arcs (92) are attached whose ends are attached by means of a hinge joint to a point close to the center of the base frame (91) and which are covered with a sheet (93), preferably a fabric sheet. The arcs (92) may be rotated in order to cover the upper opening of the playpram with the fabric sheet in case of the need to protect the baby against the sun (or rain). Alternatively, the arcs (92) may be folded back into open position.

The playpram can also be equipped with a detachable baby car seat holder (100) that can be attached to the playpram's upper frame. The car seat holder (100) is depicted in Drawing No. 18 and comprises a transverse bar (101) whose ends are attached to the circumferential arms of the playpram's upper frame and a support bar (102) that supports the head of the car seat on the playpram's upper frame.
While the present invention has been described in connection with what is considered the most practical and preferred embodiments, it is understood that this invention is not limited to the disclosed embodiments 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.

**DESCRIPTION OF THE DRAWINGS**

Drawing No. 1 depicts the playpram (1) in open position (including a fabric cover).

Drawing No. 2 depicts the chassis of the playpram (1) in open position.

Drawing No. 3 depicts the chassis of the playpram (1) in semi-folded position.

Drawing No. 4 depicts the chassis of the playpram (1) in folded position.

Drawing No. 5 depicts the chassis of the playpram (1) in open position.

Drawing No. 6 depicts the folding mechanism (5) when the chassis is in folded position.

Drawing No. 7 depicts the folding mechanism (5) when the chassis is in open position.
Drawing No. 8 depicts the folding method of the playpram (10).

Drawing No. 9 depicts the folding method of the playpram (100).

Drawings Nos. 10-14 depict the playpram with the folding seat (7).

Drawings Nos. 15-16 depict the playpram with the mattress (8).

Drawing No. 17 depicts the playpram with the folding cover (9).

Drawing No. 18 depicts the baby car seat holder (100).
Claims

What is claimed is:

1. A folding playpram for babies that comprises a top frame, a bottom frame, and two main uprights, each of which is equipped with a folding mechanism, such that each of the said uprights comprises of two parts that are joined together by means of an axial joint; whereby the top of the uprights is attached to the top frame by means of an axial joint and their bottom is attached to the bottom frame by means of an axial joint; and whereby the said folding mechanism is located in the middle of the said uprights.

2. The playpram mentioned in Claim No. 1 whereby the said folding mechanism is built as follows: (a) The bottom of the top part of each of the said uprights has an inner space that contains a flat, vertical, rectangular pin guide; the pin guide can move up and down relative to the said uprights and in its normal position it is in down position due to the force applied to it; the pin guide can move upward due to the force (pull) applied to it by a tension cable; (b) The top of the bottom part of each of the said uprights has one or more
holes into which the locking pins are inserted; (c) The said pin guide has diagonal slits to which the locking pins are attached and which serve to guide the locking pins; the number of slits in the pin guide corresponds with the number of locking pins; (d) Such that when the pin guide is in down position, the locking pins are inserted into the holes in the bottom part of the upright as well as in the top part of the upright and the upright is in open and locked position and cannot fold in two; and such that in order to fold the upright in two, the pin guide is pulled upward by pulling the said cable, so that the locking pins are extracted from the holes in the bottom part of the upright and the upright may be folded.

3. The playpram mentioned in Claim No. 1 whereby the top frame can be folded to the sides such that the right-hand side of the top frame folds down to the right and the left-hand side of the top frame folds down to the left; and whereby the bottom frame can also be folded to the sides such that the right-hand side of the bottom frame folds down to the right and the left-hand side of the bottom frame folds down to the left.
4. The playpram mentioned in Claim No. 1 whereby the top frame can be folded such that one half of the top frame folds approximately one half of a revolution so that it overlaps with the other half of the top frame; and such that a half of the bottom frame folds upward approximately one quarter of a revolution.

5. The playpram mentioned in Claim No. 1 whereby it is also equipped with a detachable folding seat that is made up of three rectangular flat sections that are attached to each other in a serial manner by means of hinges. The three sections are referred to as the head section, the middle section and the feet section. The head and middle sections each have a pair of folding legs so that when the folding seat is in flat position, the legs are parallel to the surface of the section and enable the folding seat to be flat on the floor of the playpram, and when the folding seat is in folded position and ready for use by a baby, the said legs are perpendicular to the surface of the said sections.
6. The playpram mentioned in Claim No. 1 whereby it is also equipped with a detachable upper mattress that can be attached by means of straps to the playpram's circumferential frame and serve as a mattress for the baby.

7. The playpram mentioned in Claim No. 1 whereby it is also equipped with a detachable, folding cover that can be installed on the playpram's circumferential frame and is designed to serve as a shade for the playpram. The size of the cover corresponds to that of the playpram's upper circumferential frame and it has one or more fabric-covered arcs whose ends are attached by means of hinges to a point close to the middle of the base frame.

8. The playpram mentioned in Claim No. 1 whereby it is equipped with a detachable baby car seat holder that is attached to the playpram's upper frame.
מנבעות מיאב פחודה

פטות ביס מונגנו

מעביר פנים

פט מיאב פחודה

תפס ביצ כבל

נויל כבל

הכבל יעבר דרכ פרופיל האלומיניום אל צידו השני של העגולה

Fig 6
## INTERNATIONAL SEARCH REPORT

**International application No.**
PCT/IL 11/00144

### A. CLASSIFICATION OF SUBJECT MATTER

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<th>B60G 5/00</th>
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**USPC** - 280/658

According to International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

**Minimum documentation searched**

- Classification system followed by classification symbols
- USPC: 280/658

**Documentation searched other than minimum documentation**

- To the extent that such documents are included in the fields searched
- IPC: B60G 5000; USPC: 280/29, 638, 639, 642, 643, 644, 647, 651, 657, 658; 593.1, 932.2, 99.1, 101, 102, 103 (keyword limited; terms below)

**Electronic data base consulted during the international search**

- Name of data base and, where practicable, search terms used
- PubMed, USPTO, IPC, Google Scholar, Google Patents, Thomson Innovations

**Keywords:** play pram; frame; top; bottom; uprights; axial joint; locking pin; mattress; seat; cover; car seat; adapter; guide; crib; bassinet, cart, bed, child, baby, infant

### C. DOCUMENTS CONSIDERED □ BE RELEVANT

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<td>US 5,761,754 A (CHENG) 09 June 1998 (09.06.1998), entire document, especially:</td>
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<td>US 6,516,823 B1 (GLOVER et al.) 11 February 2003 (11.02.2003), entire document; especially</td>
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**Further documents are listed in the continuation of Box C.**

- **A** document defining the general state of the art which is not considered to be of particular relevance
- **E** earlier application or patent but published on or after the international filing date
- **L** document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- **O** document referring to an oral disclosure, use, exhibition or other means the priority means
- **P** document published prior to the international filing date but later than the priority date claimed
- **T** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- **X** document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- **Y** document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- **G** document member of the same patent family

**Date of the actual completion of the international search**

16 June 2011 (16.06.2011)

**Date of mailing of the international search report**

08 JUL 2011

**Name and mailing address of the ISA/US**

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