(19) **United States**

(12) **Patent Application Publication** (10) Pub. No.: **US 2005/0127640 A1**

Worth et al. (43) **Pub. Date:** **Jun. 16, 2005**

(54) **FOLDING STROLLER**

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(21) Appl. No.: **10/963,037**

(22) Filed: **Oct. 11, 2004**

Related U.S. Application Data

(63) Continuation of application No. 09/977,611, filed on Oct. 15, 2001, now Pat. No. 6,802,514, which is a continuation of application No. 09/447,153, filed on Nov. 23, 1999, now Pat. No. 6,302,412, which is a continuation of application No. 08/552,595, filed on Nov. 3, 1995, now Pat. No. 6,189,914, which is a continuation-in-part of application No. 08/130,319, filed on Oct. 1, 1993, now Pat. No. 5,499,831.

Publication Classification

(51) Int. Cl.^{7} **B62B 7/00**
(52) U.S. Cl. **280/642**

(57) **ABSTRACT**

A stroller that accepts and supports various types of child's car seats is easily converted from its operational state to its storage state by actuating a latching mechanism. The stroller includes a lever which facilitates the removal of the child's car seat. A seat assembly can be attached to the stroller to convert the stroller from a child's car seat carrier to a toddler stroller. The seat assembly remains in the upright position when the stroller is converted from the storage state to the operational state.
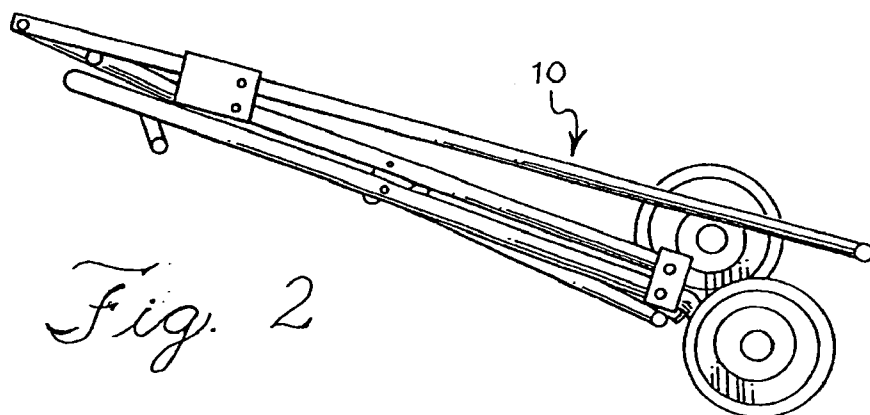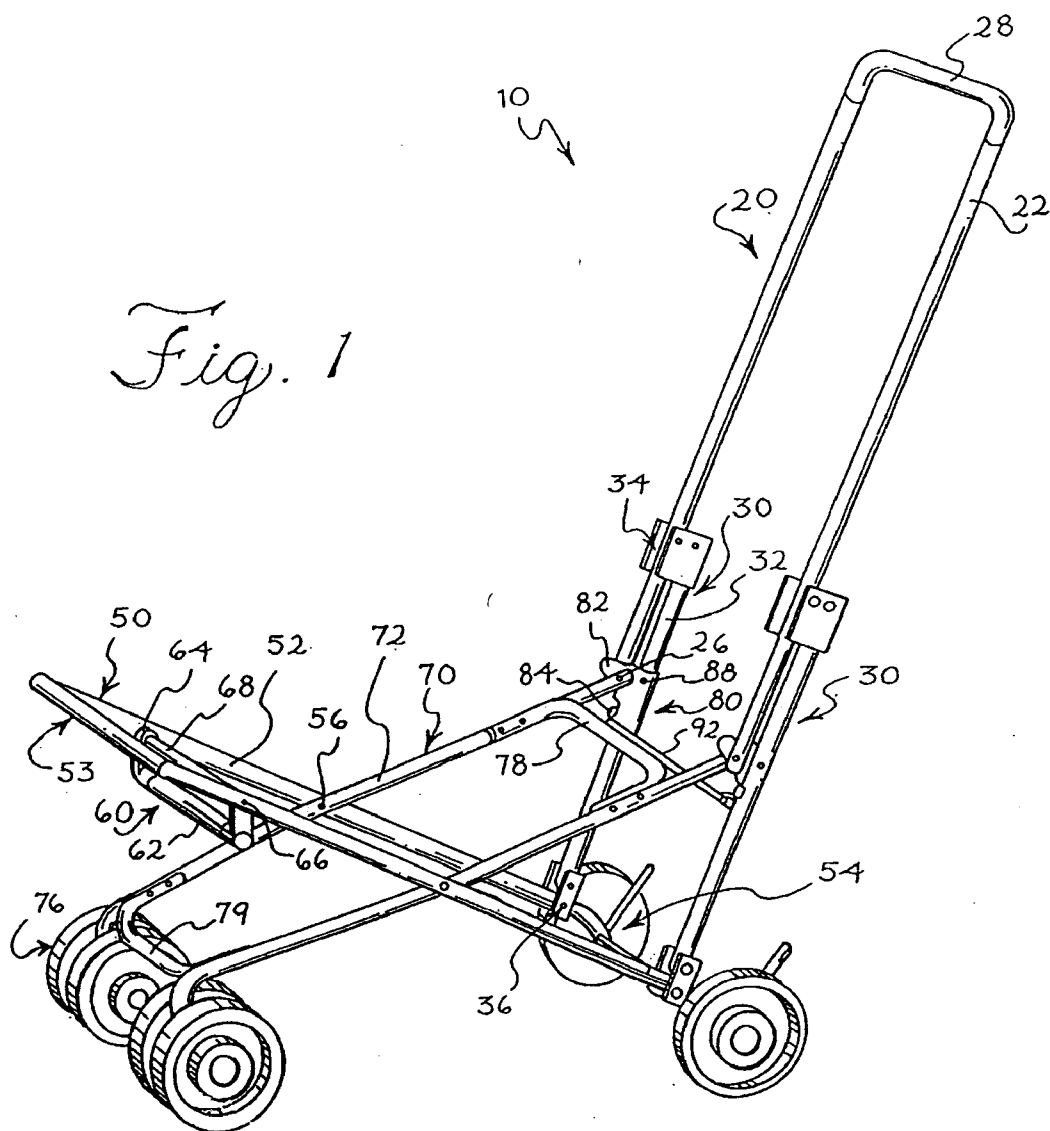
Fig. 1

Fig. 2
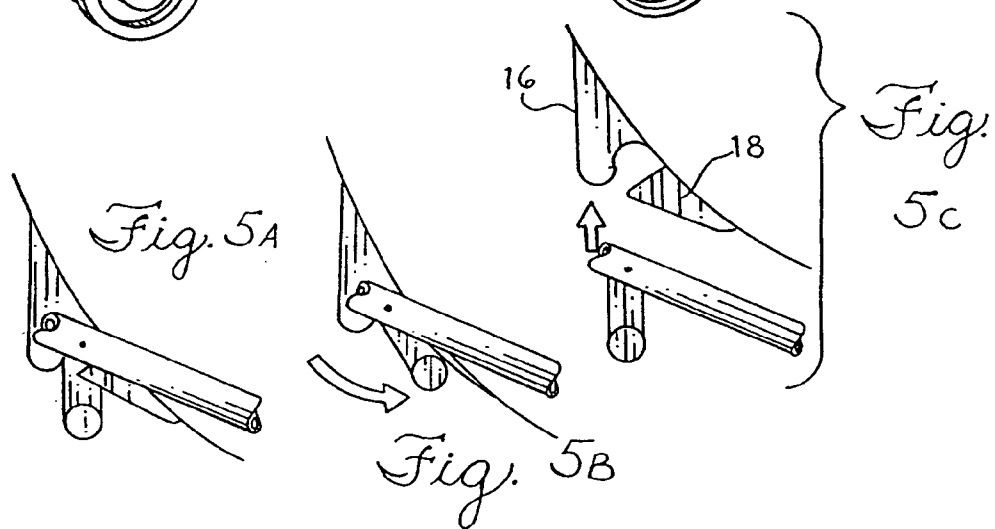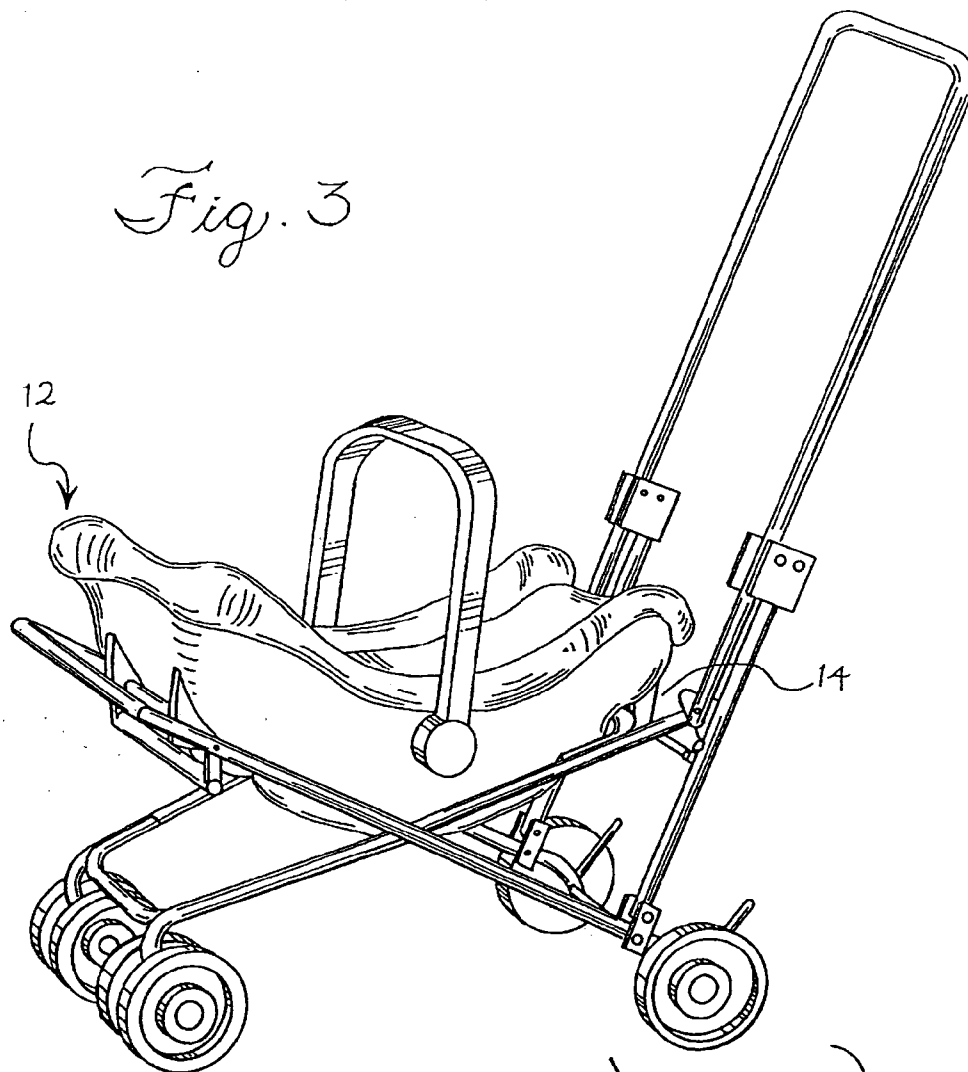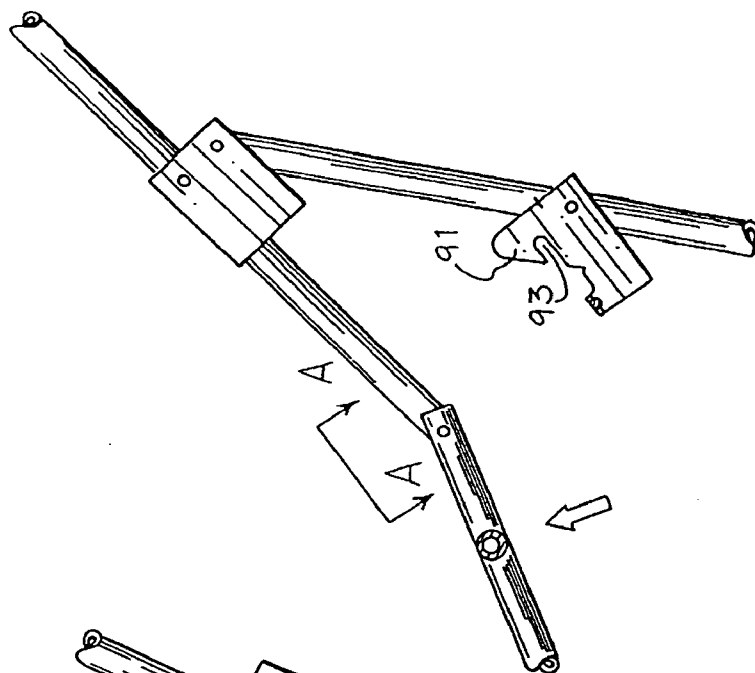
Fig. 3

12

14

16

18

Fig. 5A

Fig. 5B

Fig. 5C

Fig. 4C

Fig. 4B

Fig. 4A

Fig. 6

98

86

26

97

53   99

96

60'

80'

94

76

72

22   24   72
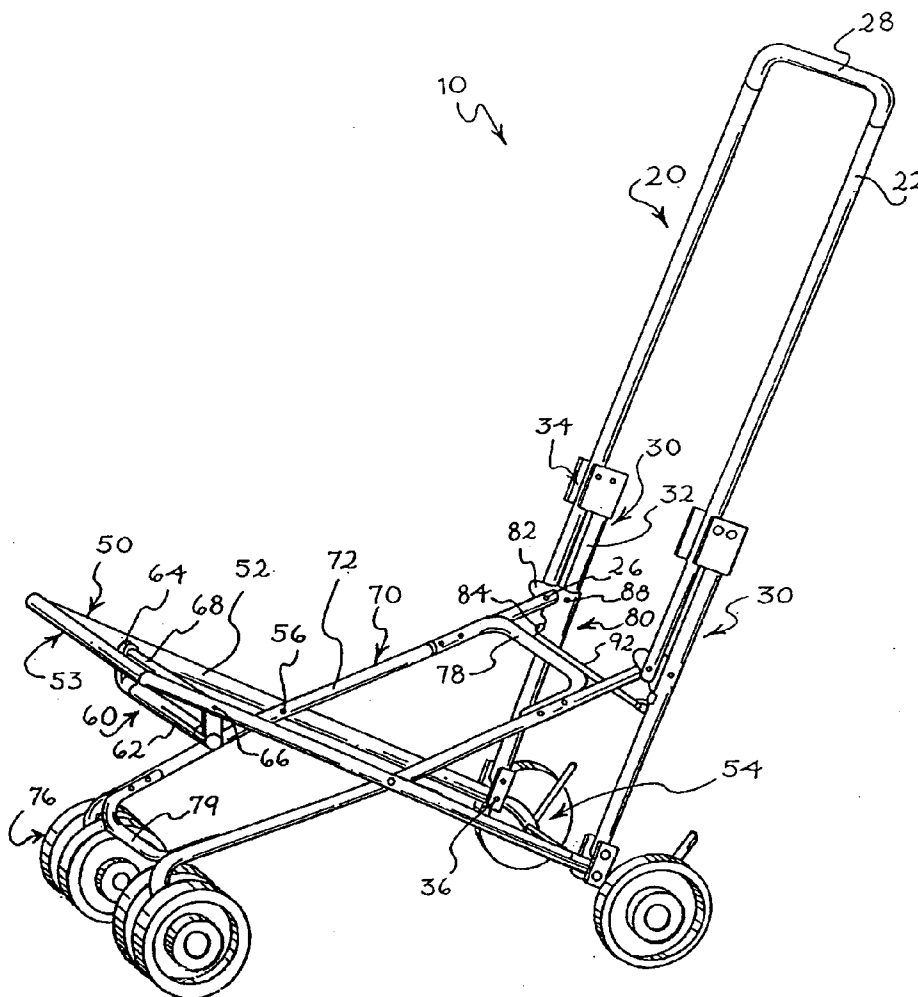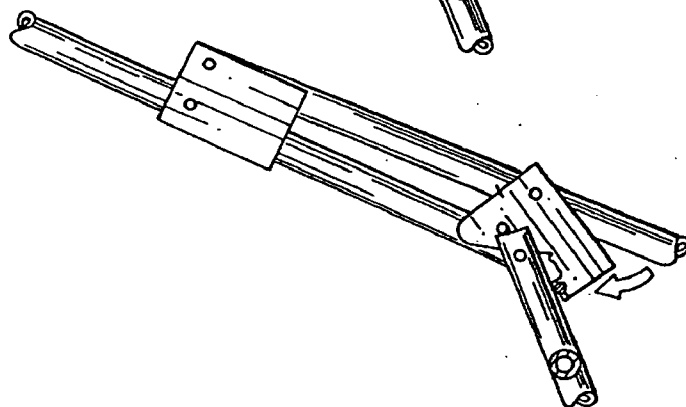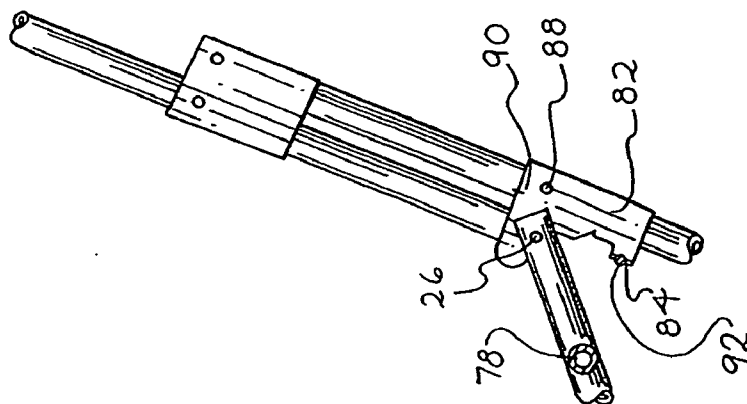
26
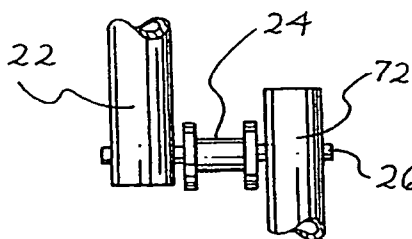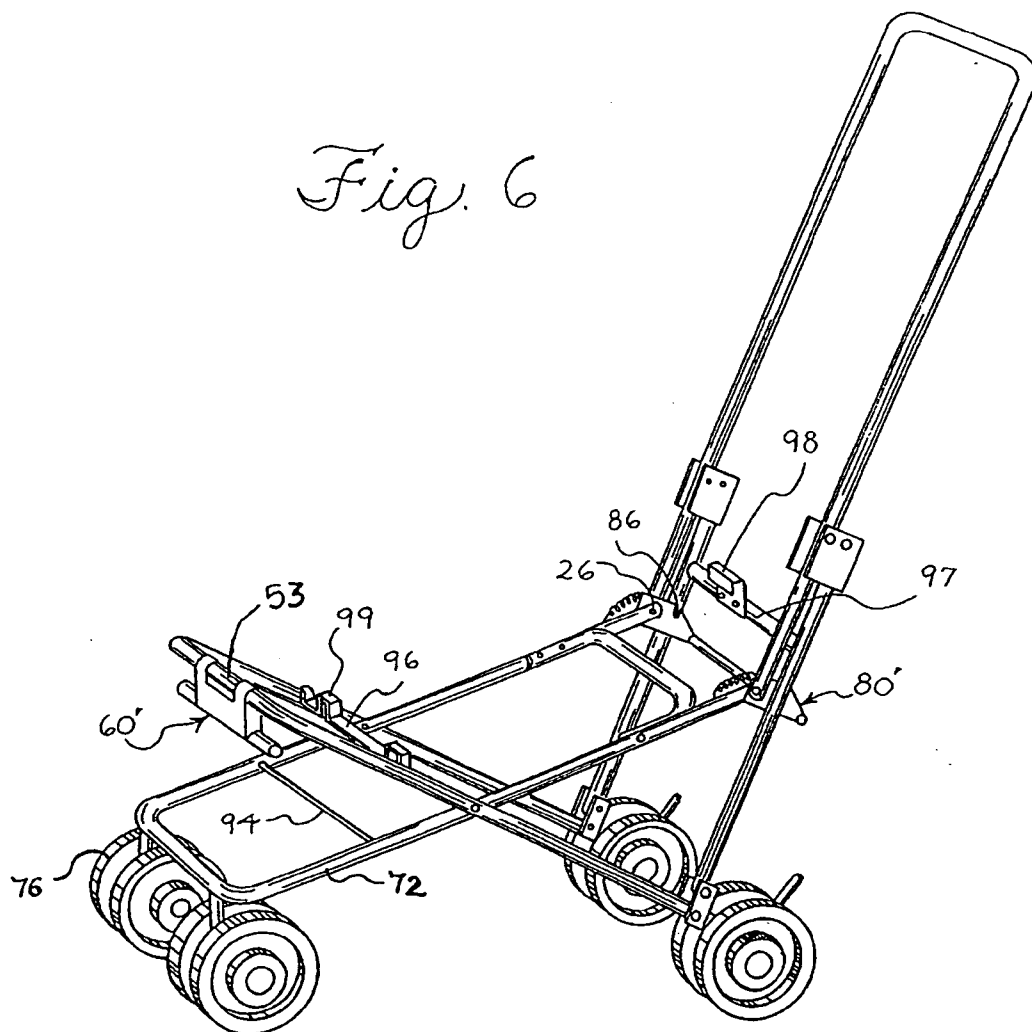
Fig. 7

Fig. 8
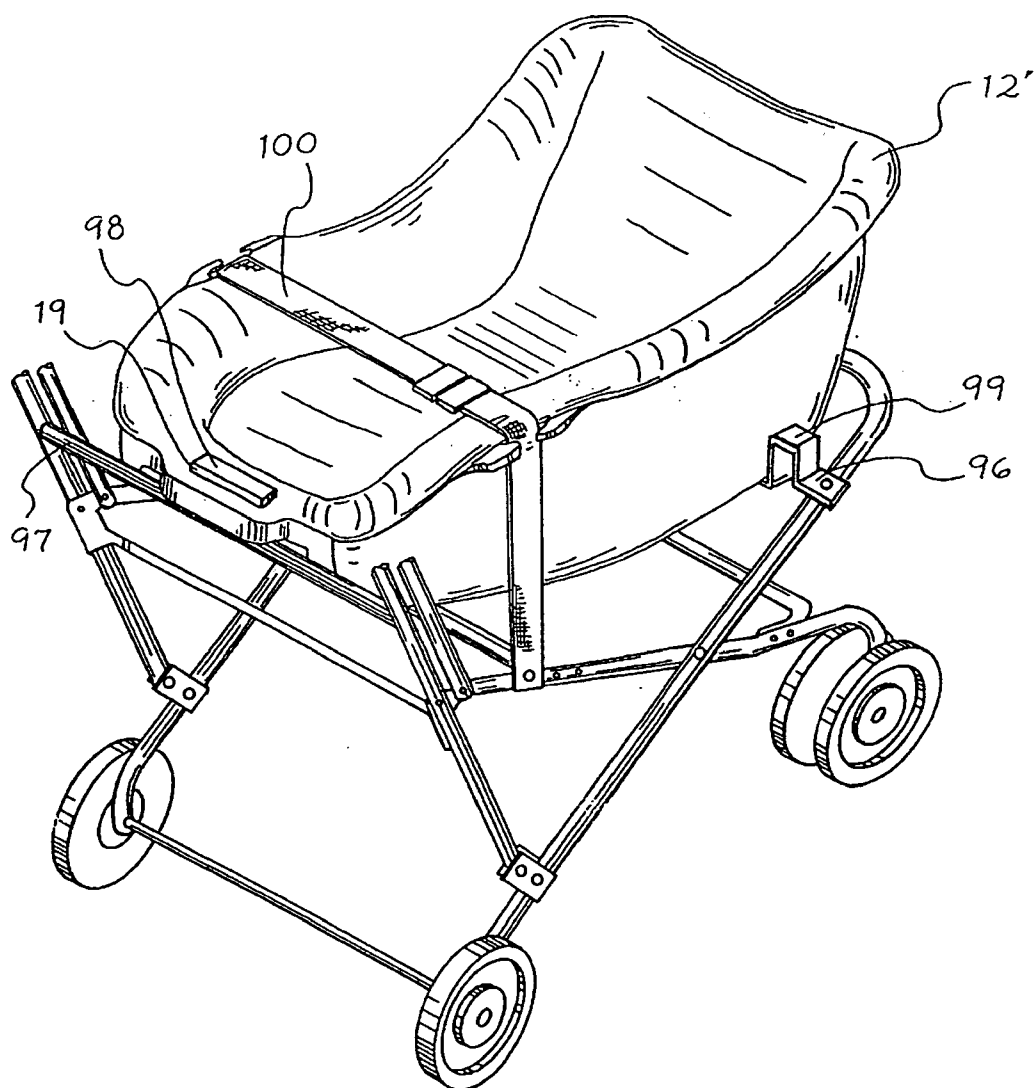
Fig. 9A

Fig. 9B

Fig. 9C

Fig. 10A

Fig. 10B
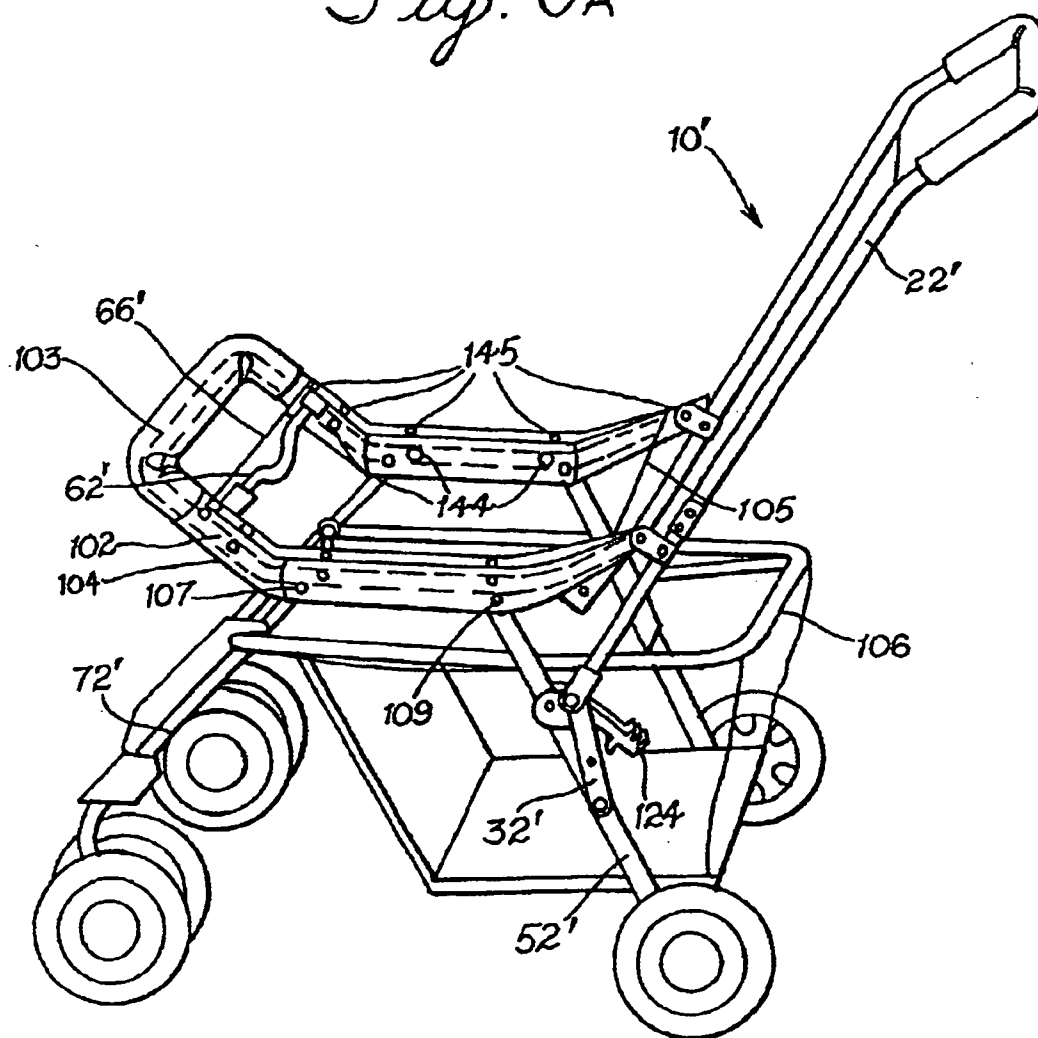
Fig. 10C

Fig.11

Fig.12

Fig.13

Fig.14

*Fig. 15*A

*Fig. 15*B

*Fig. 15*C

Fig. 16

FOLDING STROLLER

[0001] This application is a continuation-in-part of application Ser. No. 08/130,319, filed Oct. 1, 1993, the disclosure of which is hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] The field of invention relates generally to a stroller and particularly to a child's stroller with an easy folding frame that quickly receives or releases conventional child car seats and which can be converted into a toddler stroller.

[0003] Although child's strollers that receive or convert into child's car seats are well known in the prior art, there are still many problems inherent with the existing designs. Some inventions, such as described in U.S. Pat. No. 4,822, 064 issued to Hunter, describe a child's car seat that converts from a car seat into a stroller. The frame assembly and the wheel assembly in this type of design are attached to the car seat, which acts to increase the total weight of the apparatus even when the wheel assembly is not in use. A further disadvantage inherent in this type of design is that any dirt or mud acquired while using the device as a stroller is subsequently deposited in the car when the device is converted and used as a child's car seat.

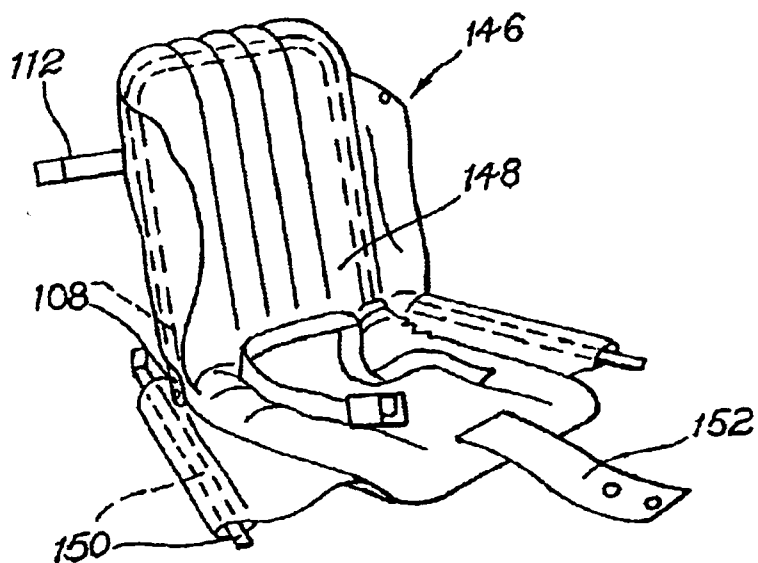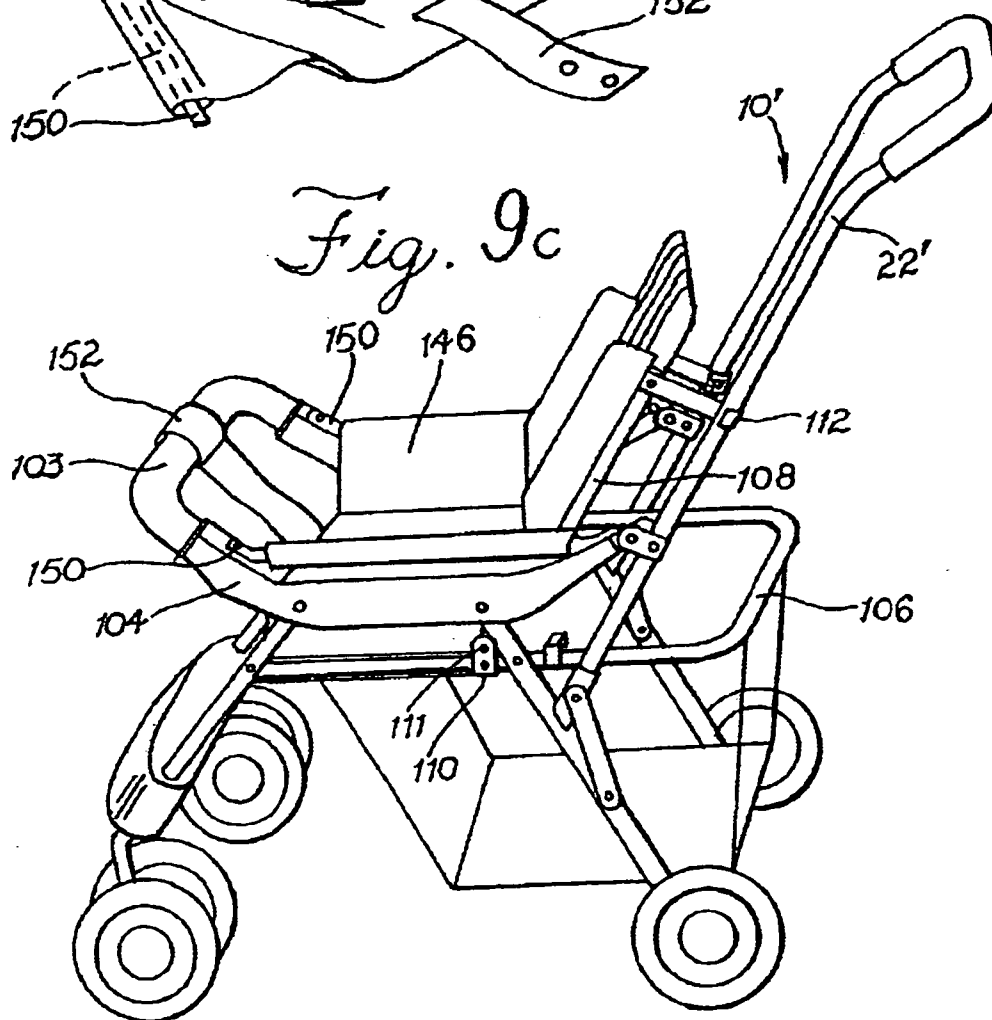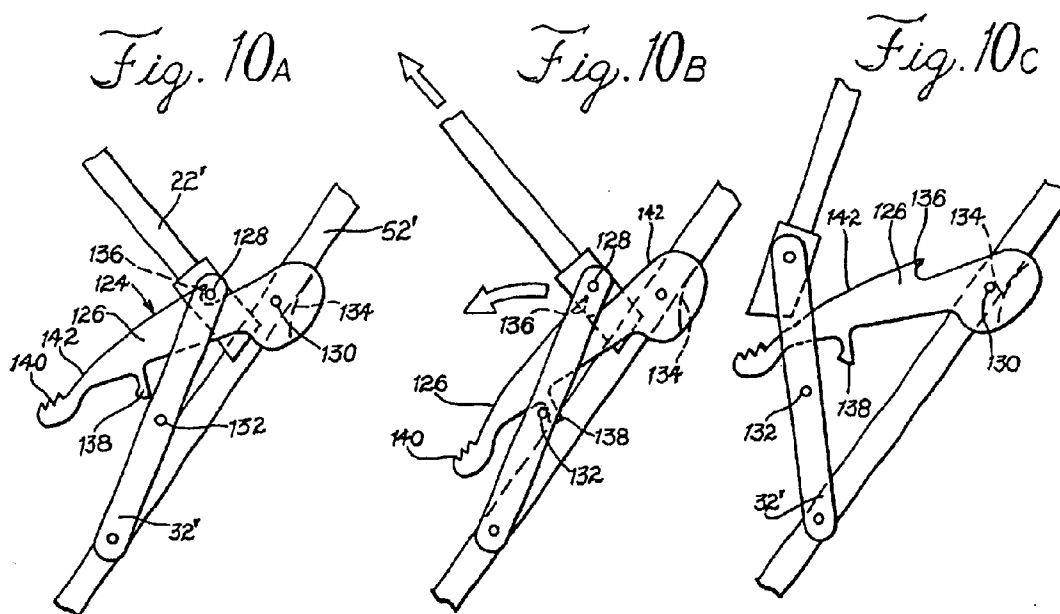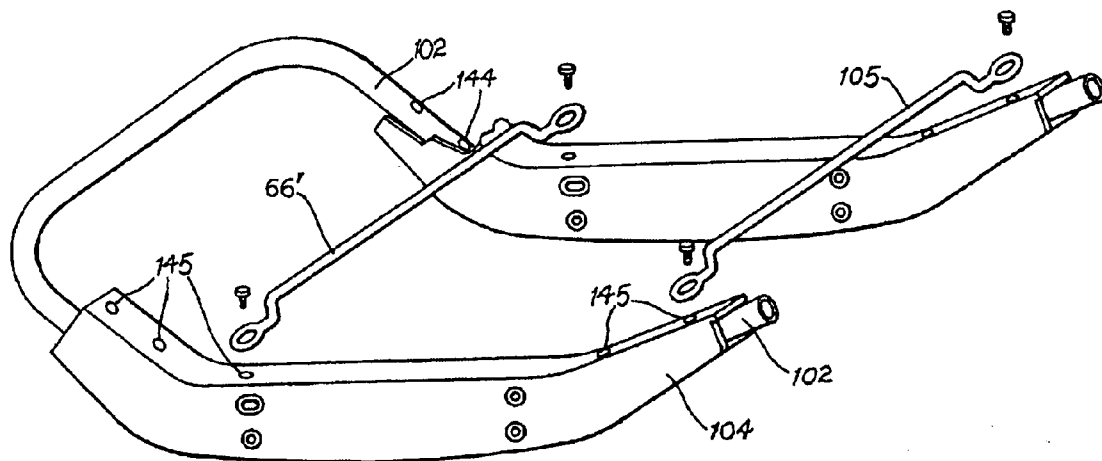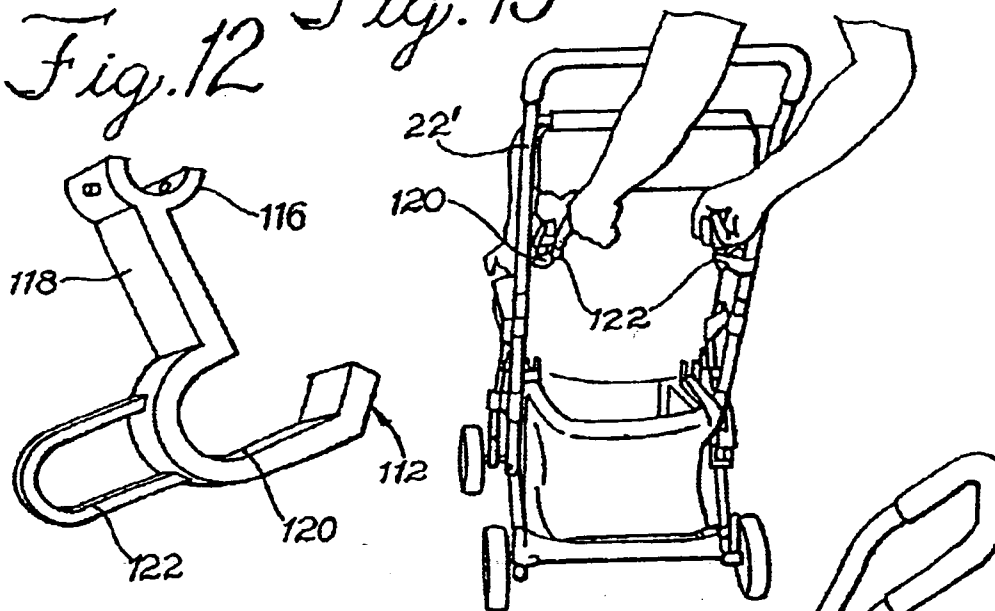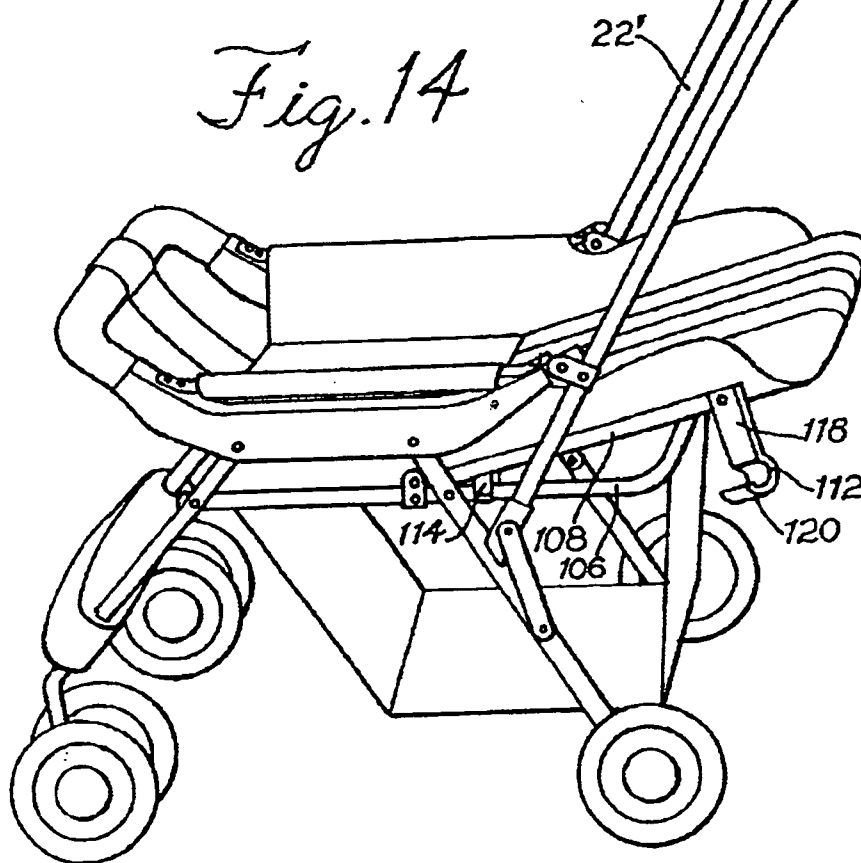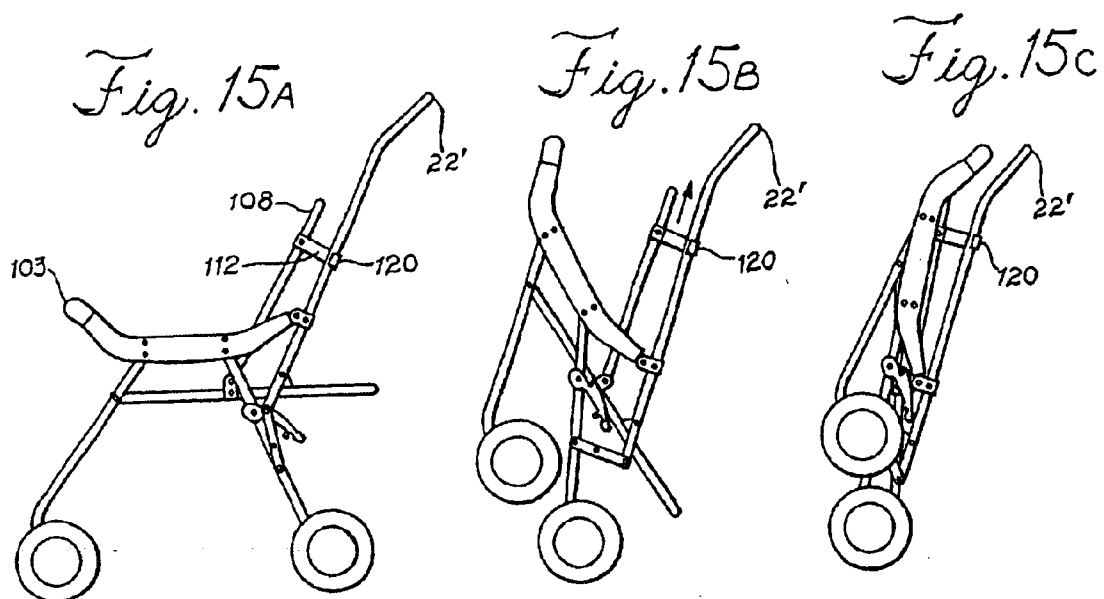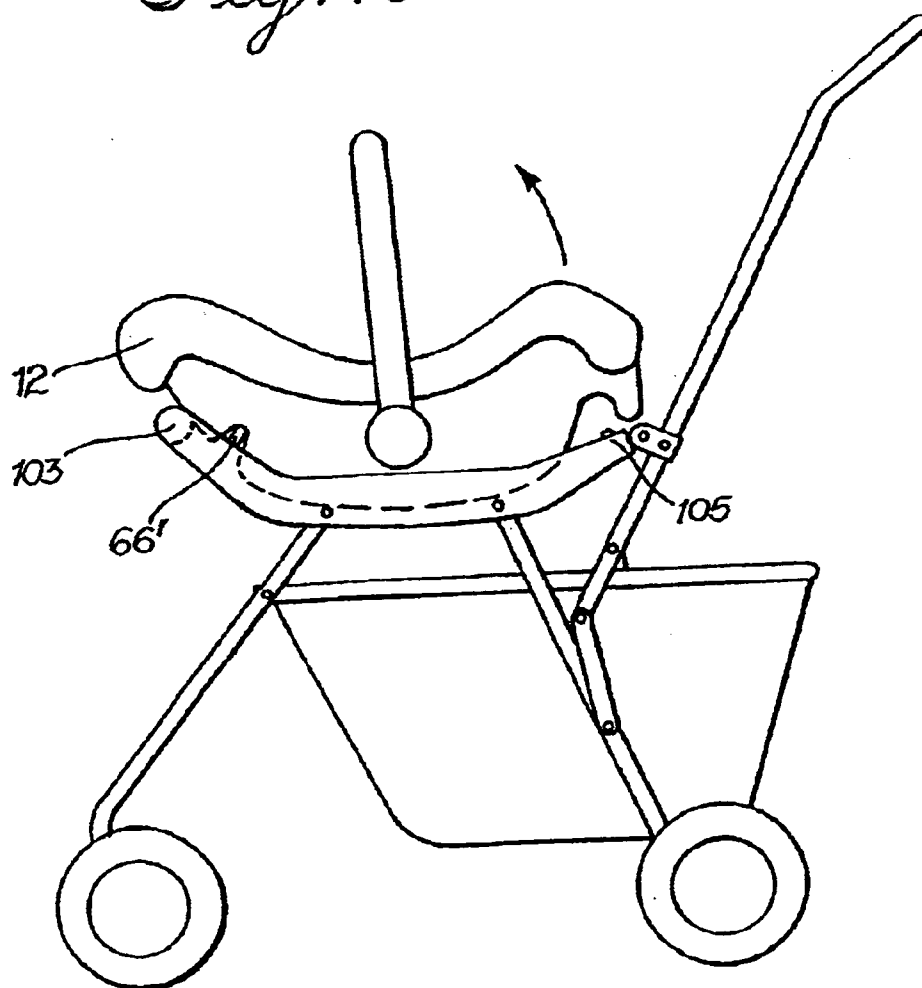[0004] The prior art also includes child's strollers in which the seat may be removed and used as a child's car seat. However, these inventions, such as described in U.S. Pat. No. 4,768,795 issued to Mar, utilize car seats that must have specialized designs to enable their use on both a stroller and in an automobile. Also, inventions utilizing this type of technology, such as described in U.S. Pat. No. 4,921,261 issued to Sadler, Jr., are difficult to convert from child's stroller to the child's car seat, making the conversion impractical in inclement weather.

[0005] Another drawback of existing strollers that receive or convert into child's car seats are their limited useful life as the child becomes a toddler. In existing child's strollers, when a child becomes a toddler, a new stroller must be used to transport the toddler.

[0006] The present invention allows the use of existing, commercially available child's car seats, thus reducing the overall cost, especially for families that have already purchased a child's car seat. The present invention is also designed for quick and easy removal of the child's car seat and a simple one-hand conversion of the stroller from an operative state to a storage state.

[0007] The present invention also allows the stroller in the child's car seat carrier mode to be converted into a toddler stroller by removing the cross bars and attaching a seat assembly. Once converted, the seat assembly can be utilized in an upright seat position or in a reclining position.

SUMMARY OF THE INVENTION

[0008] In view of the above-mentioned disadvantages inherent in the prior art for child's strollers, the present invention provides a child's stroller that contains all of the advantages of the prior art while including none of the disadvantages.

[0009] It is a primary object of the present invention to provide a stroller which accepts and supports existing child car seats. The stroller is made up of a simple, yet sturdy frame which will have low manufacturing costs and still provide the strength necessary to support a child's car seat and a child.

[0010] It is another object of the present invention to provide a stroller that accepts several existing child car seats, reducing the cost to the consumer who may have previously purchased a child's car seat.

[0011] It is another object of the present invention to allow the transfer of a child in a child's car seat from an automobile to a stroller without removing the child from the child's car seat.

[0012] It is another object of the present invention to provide a stroller with a locking mechanism that can be quickly folded into its storage state in a single one-handed movement, or unfolded into its operative state again in a single movement.

[0013] It is another object of the present invention to provide a stroller that will allow the quick and easy removal of the child's car seat using one hand to release the child's car seat from the stroller and the other hand to simultaneously remove the child's car seat from the stroller.

[0014] It is another object of the present invention to provide a stroller that can be converted into a toddler stroller using a seat assembly. The seat assembly can be utilized in an upright seat position or in a reclining motion.

[0015] It is another object of the present invention to provide a stroller with a seat assembly that will remain in an upright seat position when the stroller is converted from its storage state to its operational state.

[0016] It is another object of the present invention to provide a stroller with a latching mechanism that will facilitate the conversion of the stroller from the operational state to the storage state.

[0017] Further objectives and advantages of this invention will become apparent on examination of the following description with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] FIG. 1 is a perspective view of a preferred embodiment of a stroller according to the present invention in its operative state;

[0019] FIG. 2 is a perspective view of the stroller of FIG. 1 after conversion to its storage state;

[0020] FIG. 3 is a perspective view of the stroller of FIG. 1 after receiving a child's car seat;

[0021] FIGS. 4A, 4B, and 4C are exploded views of the locking hinge assembly as the stroller of FIG. 1 moves from its operational state towards its storage state;

[0022] FIGS. 5A, 5B and 5C are exploded views of the lever assembly on the stroller of FIG. 1 as the lever assemble rotates to allow easy removal of the child's car seat;

[0023] FIG. 6 is a perspective view of alternative embodiments of a stroller according to the present invention in its operative state;

[0024] FIG. 7 is a detailed front view taken along line A-A of FIG. 4C;

[0025]   FIG. 8 is an perspective view of the stroller of FIG. 6 after receiving a child's car seat.

[0026]   FIG. 9A is a perspective view of another alternative embodiment of a stroller prior to receiving a child's car seat.

[0027]   FIG. 9B is a perspective view of a seat assembly used to convert the stroller of FIG. 9A from the child's car seat carrier mode to the toddler stroller mode.

[0028]   FIG. 9C is a perspective view of the stroller of FIG. 9A after receiving the seat assembly of FIG. 9B.

[0029]   FIGS. 10A, 10B and 10C are exploded views of a latching mechanism as the stroller of FIG. 9A moves from its operational state to its storage state.

[0030]   FIG. 11 is a detailed view of a side cover used on the stroller of FIG. 9A.

[0031]   FIG. 12 is a detailed view of a recline latch used on the stroller of FIG. 9A.

[0032]   FIG. 13 is a rear view of the stroller in FIG. 9C in the upright seat position.

[0033]   FIG. 14 is a perspective view of the stroller in FIG. 9C in the recline position.

[0034]   FIG. 15A is a detailed view of a U-shaped seat bar of FIG. 9C in the upright seat position.

[0035]   FIG. 15B is a side view of the stroller in FIG. 9C after being converted to the storage state.

DETAILED DESCRIPTION OF THE
PREFERRED EMBODIMENTS

[0036]   One preferred stroller apparatus 10 of the present invention, shown in FIG. 1 in its operative state, is made up of a handle frame section 20, two back bar sections 30, a rear wheel frame section 50, and a front wheel frame section 70. The stroller apparatus 10 is shown in FIG. 2 in its storage state. The term stroller is used to define a child's stroller or a child's carriage. The preferred embodiment of the stroller apparatus is symmetrical left to right. Unless otherwise specified, the left side of the stroller will be described. It should be appreciated that the right side of the stroller would be described in the same manner as the left side.

[0037]   FIG. 1 shows a handle frame section 20 which consists of a U-shaped bar 22, a handle grip 28, a latch hinge pin 26 and a latch bushing 24 (see FIG. 7). At the midsection of the U-shaped bar 22 is the handle grip 28 which is utilized to move the stroller. Opposite the handle grip 28, at the end of the U-shaped bar 22 is the latch hinge pin 26 and the latch bushing 24. The latch hinge pin 26 fastens the front wheel frame section 70 to the handle frame section 20. The latch bushing 24 allows for a space between the front wheel frame section 70 and the handle frame section 20 for the latch hinge 82 to attach when the stroller 10 is in the operative state. Between the handle grip 28 and the latch hinge pin 26 is attached the top hinge assembly 34. The handle frame section provides support for the stroller while also providing an interface between the stroller and the user.

[0038]   Also shown in FIG. 1 is the back bar section 30. The back bar section 30 includes a back bar 32 with a top hinge assembly 34 attached at the top end. At the opposite end of the back bar section 32 is attached the bottom hinge

assembly 36. Between the top hinge assembly 34 and the bottom hinge assembly 36 is a pivot pin 88. The pivot pin 88 is utilized to hold the locking hinge assembly 80 while allowing the locking hinge assembly 80 the freedom to rotate about the pivot pin 88.

[0039]   The locking hinge assembly 80, as shown in FIGS. 1, 4 and 7, is actuated to lock the stroller into its operative state. The locking hinge assembly 80 consists of two locking hinges 82, each having a chamfer 91, an indenture 93, and a restricting tab 84, a pivot pin 88, a spring 90 and a locking hinge bar 92, which is used to unlock the locking hinge assembly 80. The locking hinge assembly 80 is attached to the back bar 32 by the pivot pin 88. The pivot pin 88 allows the locking hinge 82 to rotate freely. The locking hinge assembly 80 locks when the indenture 93 engages the latch bushing 24 which is attached to the latch hinge pin 26. The helical spring 90 forces the locking hinge 82 around the pivot pin 88, while the restricting tab 84 limits the travel of the locking hinge 82. The restricting tab 84 positions the locking hinge 82 in such a manner that when the stroller 10 is converted from the storage state to the operational state the chamfer 91 automatically slides as a cam against the latch bushing 24 which rotates the locking hinge until the indenture 93 slides over the latch bushing 24. The indenture 93 is oriented in such a way that it locks onto the latch bushing 24, which prohibits rotation of the handle frame section 20 about the top hinge assembly 34, thereby locking the stroller in the operational position.

[0040]   Returning to FIG. 1, the rear wheel frame section 50 consists of a rear wheel frame 52, rear wheel assembly 54, a scissors hinge pin 56 and a lever assembly 60. Attached near one end of the rear wheel frame 52 is the bottom hinge assembly 36 and the rear wheel assembly 54. While, near the opposite end of the rear wheel frame 52, is the lever assembly 60. The lever assembly 60 consists of two pivoting caps 64, a release lever 62, a hinge rod 66 and a hinge rod sheath 68. The hinge rod 66 is attached to the rear wheel frame 52. The release lever 62 is rotatively connected, via the pivoting caps 64 to the hinge rod 66. The hinge rod sheath 68 covers over the hinge rod 66 enlarging the overall circumference of the hinge rod 66 thereby creating a better fit between the hinge rod 66 and the child's car seat 12 when the child's car seat is placed on the stroller 10. The release lever 62, as will be seen later, is actuated to easily remove the child's car seat.

[0041]   The front wheel frame section 70 consists of the front wheel frame 72, the front wheel assembly 76, the upper support bar 78 and the lower support bar 79. The front wheel assembly 76 is attached at one end of the front wheel frame 72 such that the front wheel assembly 76 will fold compactly when the stroller is converted to its storage state. The latch hinge pin 26 attaches the other end of the front wheel frame 72 to the end of the handle frame 20 opposite the handle grip 28. Near the front wheel assembly 76 is located a lower support bar 79, and near the opposite side of the front wheel frame section 70 is located an upper support bar 78. The support bars 78, 79 are used to support the stroller 10. Also, upper support bar 78 is utilized to support a child's car seat 12 when received by the stroller 10, and as a handle to assist in converting the stroller from the operational position to the storage position. The front wheel frame 72 is shaped in such

a way as to inset the front wheel assembly **76** for compact folding inside the rear wheel assembly **54** in the storage state.

[0042] The handle frame section **20** is connected to the back bar section **30** via the top hinge assembly **34**. Furthermore, the back bar section **30** is attached to the rear wheel frame section **50** by the bottom hinge assembly **36**. Finally, the front wheel frame section **70** and the rear wheel frame section **50** are connected approximately mid-way between by the scissors hinge pin **56**, allowing each section to move in a scissors-like motion with respect to the other section.

[0043] In accordance with the above-described stroller apparatus **10**, the four hinges; the latch hinge pin **26**, the top hinge assembly **34**, the bottom hinge assembly **36** and the scissors hinge pin, along with the U-shaped bar **22**, back bar **32**, rear wheel frame **52** and the front wheel frame **72**, comprise a four-bar linkage which allows the stroller to fold compactly, as will be described later, into its storage state.

[0044] The stroller design allows for easy conversion from its operational state to its storage state using one hand in a single motion. Refer to **FIG. 2**, a side view of the stroller **10** in its storage state, and **FIGS. 4A, 4B** and **4C** a sequence showing the locking hinge assembly **80** in three stages of the disengagement process.

[0045] **FIGS. 4A, 4B, 4C** show the conversion of the stroller from the operative state to the storage state. To begin the conversion to the storage state, the user grasps both the locking hinge bar **92** and the upper support bar **78** with one hand.

[0046] As shown in **FIG. 4B**, the user then moves the locking hinge bar **92** towards the upper support bar **78**, thereby stretching the spring **90** and rotating the locking hinge **82** around the pivot pin **88**. As the locking hinge **82** rotates, the indenture **93** in the locking hinge **82** will disengage the latch bushing **24**, unlocking the locking hinge **82** and allowing the stroller **10** to begin converting to its storage state.

[0047] Next, as shown in **FIG. 4C**, the user, in the same motion and using the same hand, lifts upwardly on the upper support bar **78**. Lifting the upper support bar **78**, in conjunction with the force of gravity, causes the handle grip **28** of the handle frame section **20** to move in a downward motion, while bringing the upper end of the rear wheel frame **52**, where the lever assembly is attached, upwards and towards the support bar **78**. The user simultaneously releases the locking hinge bar **92** which springs back until restrictive tab **84** hits the back bar **32**, thereby positioning the locking hinge **82** for automatic locking the next time the stroller **10** is converted back to the operative state. As the upper support bar **78** moves higher the stroller **10** continues to collapse until it reaches its storage state. Although the left side is shown here, the same procedure is simultaneously taking place on the right side. Furthermore, it can be appreciated that a locking hinge assembly can be effectuated utilizing only one side of the stroller.

[0048] **FIG. 3** shows the stroller **10** in the present invention in its operative state after receiving a child's car seat **12**. The child's car seat **12** shown in **FIG. 3** is similar to the Century **590** child's car seat which includes a stationary flange **14**, along with stationary tabs **16** and movable tabs **18**

(only one shown). The stationary and movable tabs **16, 18** act to lock the child's car seat **12** around any object that fits in between the tabs.

[0049] The child's car seat **12** is prevented from rotating around the hinge rod sheath **58** by the rear wheel frame mid-section **53**, thus preventing the child's car seat **12** from accidentally flipping over the front of the stroller **10**.

[0050] The stroller **10**, in its operational state, receives a child's car seat **12** by the user placing the child's car seat **12** such that the hinge rod sheath **68** slides between the stationary t§b **16** and the movable tab **18** of the child's car seat **12**. This action will lock the child's car seat **12** to the stroller. At the same time, is the stationary flange **14** on the child's car seat **12** will hook over the upper support bar **78**, which provides support for the child's car seat **12**.

[0051] Removal of the child's car seat **12** from the stroller **10** is greatly simplified by the lever assembly **60**. This device, operable with one hand, can simultaneously depress both movable tabs, leaving the user with a free hand to lift the child's car seat **12** off the stroller **10**. The left and right movable tabs are relatively far apart, and both movable tabs must be depressed simultaneously to release the child's car seat **12**. Without the lever assembly **60**, it is very difficult to release the left and right movable tabs and simultaneously lift the child's car seat **12** off the stroller **10**.

[0052] **FIGS. 5A, 5B** and **5C** show the actuation of the lever assembly **60** when the child's car seat **12** is to be removed from the stroller **10**. As described above and shown in **FIG. 5A**, when the child's car seat **12** is received by the stroller **10** the stationary tabs **16** and movable tabs **18** act to lock the child's car seat **12** in place on the hinge rod sheath **68**. To remove the child's car seat **12**, the release lever **62** is rotated around the hinge rod **66** in the direction of the left and right movable tabs **18**. As the release lever **62** contacts both movable tabs **18**, the movable tabs will move toward the child's car seat **12** thereby allowing the child's car seat the freedom to be released from the stroller as shown in **FIG. 5B**. Although only one tab **18** is shown, it can be appreciated that the two tabs **18** located on the child's car seat **12** are simultaneously depressed to release the child's car seat **12**. Finally, as shown in **FIG. 5C**, the child's car seat **12** can be lifted with the other hand upwardly away from the hinge rod sheath **68** and away from the stroller **10**. Once the child's car seat **12** is removed, the stroller **10** can be converted from its operational state to its storage state.

[0053] The locking hinge assembly **80** is automatically activated when the stroller **10** is converted from its storage state to its operational state (refer to **FIG. 4** and **FIG. 7**). As the stroller **10** is being converted to its operational state, the chamfer **91** on the locking hinge **82** comes in contact with the latch bushing **24**, causing the locking hinges **82** to pivot about the pivot pin **88**, which stretches the spring **90** (**FIG. 4B**). When the latch bushing **24** is adjacent to the indenture **93**, the spring **90** causes the locking hinge **82** to pivot such that the indenture **93** engages the latch bushing **24** (**FIG. 4A**), preventing the stroller **10** from converting to its storage state.

[0054] There are two alternative embodiments of the present invention that allow the stroller **10** to adapt to other types of child's car seats. **FIG. 6** shows these two alternative embodiments, along with several other alternative embodiments discussed later.

[0055] The first alternative embodiment of the present invention allows the stroller to adapt to any child's car seat with a hand grip opening, such as the Evenflo Joy Ride. Refer to **FIG. 8**, which shows this alternative embodiment after receiving a child's car seat. In **FIG. 8** the handle frame section **20** and back bars **32** are cut away for clarity.

[0056] By attaching a main support bar **96**, a handle support bar **97** with an attached handle support bar post **98**, and a seat belt **100** to the stroller **10**, any child's car seat with a hand grip opening **19** can be secured to the stroller **10**. In this alternative embodiment, the user attaches the child's car seat **12'** by placing it onto the main support bar **96** and the handle support bar **97** such that the handle support bar post **98** protrudes through the hand grip opening **19** as shown, then fastening the seat belt **100**. The main support bar **96** supports the weight of the child's car seat **12'**, while the two main support bar tabs **99** restrict unwanted side to side movement of the head end of the child's car seat **12'**. The handle support bar **97** supports the weight of the child's car seat **12'**, while the handle support bar post restricts unwanted side to side movement of the foot end of the child's car seat **12'**. The handle support bar post also restricts unwanted front to back movement of the child's car seat **12'**. The seat belt **100** holds the child's car seat **12'** firmly down on the main support bar **96** and the handle support bar **97** so that the child's car seat **12'** cannot move in any direction even if the stroller **10** is jarred. The user removes the child's car seat **12'** by releasing the seat belt **100** and lifting the child's car seat off the stroller.

[0057] The second alternative embodiment of the present invention shown in **FIG. 6**, allows the stroller **10** to adapt to any child's car seat with an integral locking mechanism that is easily released by the user, such as the Fisher Price infant car seat (not shown). By attaching a stationary bar **94** to the front wheel frame **72**, near the front wheel assembly **76**, any such child's car seat can be secured to the stroller. In this alternative embodiment, the user attaches the child's car seat by locking the integral locking mechanism onto the stationary bar **94** and setting the opposite end of the child's car seat onto the upper support bar **78**. The user removes the child's car seat by unlocking the integral locking mechanism and lifting the child's car seat off the stroller.

[0058] The child's car seat is prevented from rotating around the stationary bar **94** by the rear wheel frame mid-section **53**, thus preventing the child's car seat from accidentally flipping over the front of the stroller **10**.

[0059] It can be appreciated that the stationary bar **94** can span the left and right sides of the stroller at other locations depending on the exact geometry of the child's car seat, thus allowing the stroller to adapt to any number of existing child's car seats with integral locking mechanisms. It can also be appreciated that the stationary bar **94** can be used in conjunction with the handle support bar **97**, and the handle support bar post **98** for child's car seats that have both an integral locking mechanism and a hand grip opening **19**.

[0060] Still another alternative embodiment can be seen in **FIG. 6**. The locking hinge assembly **80'** can be attached to the intersection between the handle frame section **20** and the front wheel frame section **70**. In this embodiment, the locking hinge **82** would rotate freely around the latch hinge pin **26** and, instead of a pivot pin **88**, the back bar **32** would have a locking tab **86** to engage the indenture **93** of the

locking hinge **82**. As the stroller **10** converted from its operative state to its storage state, the locking hinge assembly **80** would travel upwardly with the intersection of the handle frame section **20** and the front wheel frame section **70**.

[0061] Also, the lever assembly **60'** could be mounted at the end of the rear wheel frame section **50** thereby acting as both a support for the rear wheel frame section **50** and a support for the child's car seat **12** received by the stroller **10**.

[0062] Another alternative embodiment of the present invention will allow the stroller which accepts car seats to convert to a conventional child's and toddler stroller. This embodiment is seen in **FIG. 9A** (in its car seat carrier mode), **9B** (the seat assembly), and **9C** (the stroller after conversion to a child/toddler stroller). As seen in **FIG. 9A**, the frame of the stroller **10'** consists of a U-shaped handle bar **22'** which is connected at each end to two rear wheel frames **52'** by a back bar **32'**. The U-shaped handle bar **22'** also connects to each end of a U-shaped side bar **102** (dotted line) which is covered by side covers **104**. Two front wheel frames **72'** are connected to the side covers **104** using front pivoting hinge holes **107** near the front of the U-shaped side bar **102**. The two rear wheel frames **52'** are connected to the side covers **104** using rear pivoting hinge holes **109** near the back of the U-shaped side bar **102**. Alternatively, the two front wheel frames **72'** and the two rear wheel frames **52'** can be connected to the U-shaped side bar **102** using a pivoting hinge (not shown). A U-shaped basket bar **106** is connected at its ends to each of the front wheel frames **72'** and in two places to the U-shaped handle bar **22'**.

[0063] It can be seen that two-four bar linkages are utilized. The first four bar linkage consists of the U-shaped handle bar **22'**, the U-shaped side bar **102**, the rear wheel frame **52'** and the back bar **32'**. The second four bar linkage consists of the U-shaped basket bar **106**, the U-shaped handle bar **22'**, the U-shaped side bar **102** and the front wheel frame **72'**.

[0064] The locking hinge assembly **80** from the previous embodiments has been replaced by a latching mechanism **124**. A close up of the latching mechanism **124** can be seen in **FIG. 10A**. The latching mechanism **124** is used to lock the stroller **10'** in the operational state and prevent the stroller **10'** from converting to the storage state during normal use. The latching mechanism **124** uses a catch for holding a latch **126** in a position such that the stroller **10'** can be converted from its operational state to its storage state. In the preferred embodiment, the latching mechanism **124** consists of a latch **126**, a latch pin **128**, a pivot pin **130** and a holding pin **132**. The latch **126** is a single piece of plastic which consists of a cantilever latch spring **134** (dotted line), a latch hook **136**, a holding-hook **138**, a foot pedal **140** and a cam surface **142**.

[0065] The latch **126** is connected to the rear wheel frame **52'** by a pivot pin **130**. The latch pin **128** is located near the end of the U-shaped handle bar **22'** where the U-shaped handle bar **22'** meets the back bar **32'**. The holding pin **132** is located near the middle of the back bar **32'**.

[0066] To convert the stroller from the operational state to the storage state, pressure is applied to the foot pedal **140**, to overcome the force of the cantilever latch spring **134** forcing the latch **126** downward until the holding hook **138** engages

the holding pin **132**. The resulting position of the latch **126** is shown in **FIG. 10B**. At this point, the latch hook **136** is disengaged from the latch pin **128**. There is no need to continue placing pressure on the foot pedal **140** because the holding hook **138** will remain engaged with the holding pin **132** even after pressure is removed from the foot pedal **140**. The stroller **10'** can now be converted from the operational state to the storage state by moving the U-shaped side bar mid-section **103** up towards the middle of the U-shaped handle bar **22'** (see **FIGS. 15A, 15B, 15C**). As the stroller **10'** converts from its operational state to its storage state, the holding pin **132**, which is connected to the back bar **32'**, and the holding hook **138** of latch **126**, which is connected to the rear wheel frame **52'**, disengage due to the action of the four bar linkage (see arrow on **FIG. 10B**). The latch spring **134** then forces the latch **126** back into its original position, as seen in **FIG. 10C**.

[0067] When the stroller is converted from its storage state to the operational state, the U-shaped side bar mid-section **103** is moved away from the middle of the U-shaped handle bar **22'**. During this action, the cam surface **142** of the latch **126** slides against the latch pin **128**, forcing the latch **126** to pivot about the pivot pin **130**, thus energizing the latch spring **134**, until the latch hook **136** moves beyond the latch pin **128**. At that point, the latch spring **134** springs back and the latch hook **136** engages the latch pin **128**. As seen in **FIG. 10A**, the stroller **10'** is now locked in its operational state. Other embodiments can be achieved using variations or modifications, including placing the latching mechanism **124** on the U-shaped handle bar **22'** and engaging and disengaging the rear wheel frame **52'**.

[0068] **FIG. 11** shows the side covers **104** that are mounted over the U-shaped side bar **102**. The U-shaped side bar **102** has multiple accessory mounting holes **144** (some not shown) for converting the stroller **10'**, and allowing the stroller **10'** to accept different child's car seats. This is accomplished by mounting cross bars (the hinge rod **66'** and the rear cross bar **105**, among others) to selected accessory mounting holes **144** depending on the type of child's car seat to be supported by the stroller **10'**. For example, **FIG. 11** shows how cross bars are screwed to a set of accessory mounting holes **144** on the U-shaped side bar **102**, through a set of accessory through holes **145** on the side cover **104**, in order to accommodate one of many types of infant car seats. **FIG. 9A** shows another configuration where the hinge rod **66'** (with release lever **62'** attached) and rear cross bar **105** are attached to the U-shaped side bar **102** using a different set of accessory mounting holes **144** in order to accommodate another type of child's car seat.

[0069] As seen in **FIG. 16**, once the child's car seat **12** has been attached to stroller **10'**, the child's car seat **12** is prevented from unwantingly rotating around the hinge rod **66'** by the U-shaped side bar mid-section **103**, thus preventing the child's car seat **12** from accidentally flipping over the front of the stroller **10'**.

[0070] As shown in a previous embodiment, (see **FIGS. 5A, 5B** and **5C**) when certain child's car seats are located on the stroller **10'** of **FIG. 9A**, by rotating the release lever **62'** around the hinge rod **66'**, a plurality of tabs located on the child's car seat **12** may be disengaged from is the hinge rod **66'**and the child's car seat can be easily removed from the stroller **10'**.

[0071] To convert the stroller **10'** to its conventional child/toddler stroller mode (**FIG. 9C**) from its car seat carrier mode (**FIG. 9A**) the user removes the hinge rod **66'**, the release lever **62'** and the rear cross bar **105**, and installs the seat assembly **146** (**FIG. 9B**). The seat assembly **146** comprises a cloth seat cover **148** attached to a U-shaped seat bar **108**, two arm rest bars **150**, a strap **152**, and two recline latches **112** attached to the U-shaped seat bar **108**. To install the seat assembly **146** to the stroller **10'**, the user attaches the ends of the U-shaped seat bar **108** to the U-shaped basket bar **106** using a pivoting hinge **110** and a hinge pin **111**. The user then screws two arm rest bars **150** to a set of accessory mounting holes **144** on the U-shaped side bar **102** (through the side covers **104**). The user then fastens the strap **152** to the U-shaped side bar mid-section **103**. In this embodiment of the conventional child/toddler stroller **10'**, the U-shaped side bar mid-section **103** functions as a restraint to keep the child in the stroller **10'**.

[0072] The U-shaped seat bar **108** also has on each side a recline latch **112** which is used to convert the stroller between an upright seat position and a full recline position.

[0073] As seen in **FIG. 12**, the recline latch **112** consists of a base **116**, a neck **118**, a hook **120** and a pull ring **122**. As seen in **FIG. 15A** the hook **120** hooks around the U-shaped handle bar **22'** to hold the U-shaped seat bar **108** in the upright seat position. As explained below, the recline latch **112** allows a stroller **10'** to be converted from its operational state to its storage state and back to its operational state while still in the upright seat position.

[0074] As can be seen in **FIGS. 13 and 14**, to convert the stroller **10'** from the upright seat position to the full recline position, the user pulls the left and right pull rings **122** toward each other until the two hooks **120** are completely disengaged from the U-shaped handle bar **22'**. Then, while still holding the pull rings **122**, the user gently lets the U-shaped seat bar **108** pivot downward until it rests on the recline stops **114**, which are located on each side of the U-shaped basket bar **106**, and limit movement of the U-shaped seat bar **108** during the reclining action.

[0075] To convert the stroller **10'** from the recline position to the upright seat position, the user continuously pushes up on the U-shaped seat bar **108** which pivots upward. As the neck **118** of the recline latch **112** contacts the U-shaped handle bar **22'**, it bends in a cantilever fashion to fit through the U-shaped handle bar **22'** opening. Once the neck **118** moves completely beyond the U-shaped-handle bar **22'**, it springs back and the hook **120** engages around the U-shaped handle bar **22'**.

[0076] As can be seen in **FIG. 15A** (side view of operational state, upright seat position, shown without seat cloth **148** and armrest bars **150** for clarity), **15B** (intermediate state), and **15C** (storage state) when the stroller **10'** is converted from the operational state to the storage state with the U-shaped seat bar **108** in the upright seat position, the hook **120** of the recline latch **112** slides up along and remains engaged with the U-shaped handle bar **22'** (see arrow). As the stroller **10'** is subsequently converted from the storage state to the operational state, the hook **120** slides down along and remains engaged with the U-shaped handle bar **22'**; thus maintaining the upright seat position.

[0077] It can be seen that the objects of the invention have been achieved by the structures and methods described

above. It is to be understood that the present invention is not limited to the described embodiments, but may apply to modifications and variations obvious to a person having ordinary skill in the art.

We claim:

1. A stroller capable of accepting and supporting multiple types of child's car seats and capable of converting from an operational state to a storage state comprising:

(a) a handle bar,

(b) a rear wheel frame,

(c) a back bar pivotally connected at one end to said handle bar and pivotally connected at another end to said rear wheel frame, and

(d) a latching mechanism located on said rear wheel frame, such that said latching mechanism engages said handle bar when said stroller is in said operational state and said latching mechanism is disengaged from said handle bar prior to converting said stroller from said operational state to said storage state.

2. The stroller of claim 1 wherein said latching mechanism comprises a catch for holding the latching mechanism in a position where said stroller can be converted from said operational state to said storage state.

3. The stroller of claim 1 wherein said latching mechanism comprises a latch, a latch pin, a pivot pin and a holding pin, said latch being connected to said rear wheel frame by said pivot pin, said latch pin being located on said handle bar, and said holding pin being located on said back bar.

4. The stroller of claim 3 wherein said latch comprises a latch hook and a holding hook.

5. The stroller of claim 4 wherein said latch further comprises a foot pedal located at the end of said latch.

6. The stroller of claim 1 further comprising a hinge rod connected to said stroller and a release lever rotatively connected to said hinge rod such that said release rod can rotate around said hinge rod.

7. The stroller of claim 1 further comprising a basket bar, a side bar and a seat assembly, said seat assembly comprising a seat cloth, a seat bar and a recline latch, said seat bar being pivotally mounted to said basket bar, such that said seat bar can detachably connect to said handle bar using said recline latch.

8. The stroller of claim 7 wherein said side bar comprises a plurality of accessory mounting holes for the mounting of a plurality of cross bars.

9. The stroller of claim 7 further comprising a side cover, said side cover being connected to said side bar, said side cover having through holes and a rear pivoting hinge hole for connecting said rear wheel frame.

10. The stroller of claim 7 wherein said recline latch comprises a base, a neck, a hook and a pull ring, said hook being capable of slidably engaging said handle bar and maintaining said engagement when said stroller converts from the storage state to the operational state.

11. The stroller of claim 1 further comprising a side bar and a hinge rod such that said side bar prevents unwanted rotation of said child's car seat about said hinge rod.

12. A stroller capable of converting from an operational state to a storage state comprising:

(a) a handle bar,

(b) a seat bar,

(c) a recline latch connected to said seat bar capable of slidably engaging said handle bar and maintaining engagement with said handle bar when stroller converts from the sturage state to the operational state.

13. The stroller defined in claim 12 wherein said recline latch comprises a base, a neck, a hook and a pull ring.

14. A method of converting a stroller from an operational state to a storage state, said stroller being capable of accepting and supporting multiple types of child's car seats and comprising a side bar, a handle bar, a foot petal, a latch hook, a latch pin, a holding hook and a holding pin; which method comprises the steps of:

(a) placing pressure on said foot pedal thereby disengaging said latch hook from said latch pin, and engaging said holding hook with said holding pin;

(b) removing pressure from said foot pedal;

(c) moving said side bar upwardly and towards said handle bar thereby disengaging said holding hook from said holding pin.

*   *   *   *   *