Title
Device for limiting swivel of a front wheel of a stroller

International Patent Classification(s)
B62B 9/08 (2006.01)

Application No: 2006201773  Date of Filing: 2006.04.28

Priority Data

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>200520127825.6</td>
<td>2005.11.02</td>
<td>CN</td>
</tr>
</tbody>
</table>

Publication Date: 2007.05.17
Publication Journal Date: 2007.05.17

Applicant(s)
Wonderland Nurserygoods Co., Ltd

Inventor(s)
Chen, Shun-Min

Agent / Attorney
Chrysiliou Law, 15-19 Parraween Street, CREMORNE, NSW, 2090
ABSTRACT

Title: DEVICE FOR LIMITING SWIVEL OF A FRONT WHEEL (33) OF A STROLLER (3)

A device for limiting swivel of a wheel (33) of a stroller (3) includes a fork (31) mounted with the wheel (33), a swivel-limiting unit (4), and a quick release unit (5). The swivel-limiting unit (4) includes a connecting seat (41) adapted to be disposed fixedly on a frame unit of the stroller (3), a limiting seat (42) connected fixedly to the fork (31), and a control member (43) disposed on the connecting seat (41) and operable to extend into the limiting seat (42) so as to prevent rotation of the fork (31) relative to the connecting seat (41). The quick release unit (5) includes a base (51) disposed fixedly on the connecting seat (41), and a movable member (52, 55, 56) disposed movably on the base (51) and operable to move on the base (51) so as to allow for removal of the fork (31) from the swivel-limiting unit (4). (Figure 5)
Name of Applicant: WONDERLAND NURSERYGOODS CO., LTD
Actual Inventor: Shun-Min CHEN
Address for Service:

Chrysiliou Law
Patent and Trade Mark Attorneys
15-19 Parraween Street
Cremorne Sydney NSW 2090

Invention Title: Device for Limiting Swivel of a Front Wheel of a Stroller

The following statement is a full description of this invention, including the best method of performing it known to me/us:

\server\docs\patents\applications\5153.docx
DEVICE FOR LIMITING SWIVEL OF A FRONT WHEEL OF A STROLLER

This invention relates to a device for limiting the swivel of a front wheel, and more particularly to a device for limiting the swivel of a stroller front wheel, which is easy to operate and assemble/disassemble.

Referring to Figs. 1 and 2, a conventional front wheel assembly 11 for a stroller includes two wheels 111, a coupling block 112 journalled between the wheels 111, and a post 113 extending upwardly from a center of the coupling block 112 and formed with an annular groove 114. A front frame 12 of the stroller is provided with a fixed upright sleeve 13, which has a lower end recess 131 for insertion of the post 113 thereinto. The sleeve 13 further has a transverse hole 133 formed in a lower end portion thereof and communicated with the recess 131. A generally elliptical retaining ring 14 is sleeved on the sleeve 13 and has two opposite operable portions 141, a hole 142, and a projection 143 opposite to the hole 142 and extending into the annular groove 114 of the post 113. A bolt 144 extends through the hole 142 in the retaining ring 14, and engages a threaded hole in the sleeve 13.

When it is desired to remove the front wheel assembly 11 from the sleeve 13, the operable portions 141 are pressed toward each other so as to remove the projection 143 of the retaining ring 14 from the annular groove 114 of the post 113, as shown in Fig. 3. This allows for removal of the front wheel assembly 11 from the sleeve 13. However,
a significant force must be applied by the user so that the operable portions 141 are displaced by an amount sufficient to remove the projection 143 from the annular groove 114. Furthermore, there is no swivel-limiting structure for the front wheel assembly 11. Such a configuration results in random rotation of the front wheel assembly 11 when moving on an uneven road surface, thereby increasing difficulties with respect to controlling the stroller.

The object of this invention is to provide a device for limiting the swivel of a stroller front wheel, which can be easily mounted to and removed from a stroller frame.

According to this invention, a device for limiting swivel of a wheel of a stroller includes a fork mounted with the wheel, a swivel-limiting unit, and a quick release unit. The swivel-limiting unit includes a connecting seat adapted to be disposed fixedly on a frame unit of the stroller, a limiting seat connected fixedly to the fork, and a control member disposed on the connecting seat and operable to extend into the limiting seat so as to prevent rotation of the fork relative to the connecting seat. The quick release unit includes a base disposed fixedly on the connecting seat, and a movable member disposed movably on the base and operable to move on the base so as to allow for removal of the fork from the swivel-limiting unit.

These and other features and advantages of this invention will become apparent in the following detailed
description of the preferred embodiments of this invention, with reference to the accompanying drawings, in which:

Fig. 1 is a partly sectional view of a conventional front wheel assembly for a stroller;

Fig. 2 is a fragmentary sectional view of the conventional front wheel assembly, illustrating how a sleeve and a post are interconnected by a generally elliptical retaining ring;

Fig. 3 is a fragmentary sectional view of the conventional front wheel assembly, illustrating how the retaining ring is operated so as to allow for removal of the post from the sleeve;

Fig. 4 is a perspective view of a stroller mounted with the first preferred embodiment of a device for limiting the swivel of a front wheel according to this invention;

Fig. 5 is an exploded perspective view of the first preferred embodiment;

Fig. 6 is a partly sectional view of the first preferred embodiment;

Fig. 7 is a partly sectional, exploded perspective view of an extension tube and a rotating sleeve of the first preferred embodiment;

Fig. 8 is a partly sectional view of the first preferred embodiment, illustrating how a locking rod is removed from a limiting groove in a limiting seat so as to allow for rotation of a front fork relative to a connecting seat and, thus, a footrest tube;
Fig. 9 is a partly sectional view of the first preferred embodiment, illustrating how the locking rod is inserted into the limiting groove so as to prevent rotation of the front fork relative to the connecting seat;

Fig. 10 is a fragmentary top view of the first preferred embodiment, wherein an outer housing is removed for better illustration of a base and a movable plate and wherein a touch control button is not actuated;

Fig. 11 is a fragmentary top view of the first preferred embodiment, wherein the outer housing is removed and wherein the touch control button is operated so as to allow for removal of the front wheel from the connecting seat;

Figs. 12 and 13 are schematic views illustrating how a projection is positioned at outer and inner axial ends of a curved connecting shoulder of the first preferred embodiment;

Fig. 14 is an exploded perspective view of the second preferred embodiment of a device for limiting the swivel of a front wheel of a stroller according to this invention;

Fig. 15 is a fragmentary top view of the second preferred embodiment when a touch control button is not actuated, wherein an outer housing is removed for better illustration of a base and a movable plate;

Fig. 16 is a fragmentary top view of the second preferred embodiment, wherein the outer housing is removed and wherein the touch control button is operated;

Fig. 17 is an exploded perspective view of the third
preferred embodiment of a device for limiting the swivel of a front wheel of a stroller according to this invention:

Fig. 18 is a sectional view of the third preferred embodiment; and

Fig. 19 is a fragmentary perspective view of the third preferred embodiment.

Before the present invention is described in greater detail in connection with the preferred embodiments, it should be noted that similar elements and structures are designated by like reference numerals throughout the entire disclosure.

Referring to Figs. 4 and 5, the first preferred embodiment of a device 2 according to this invention is adapted for limiting the swivel of a front wheel 33 of a frame unit of a stroller 3. The device 2 is disposed between the front wheel 33 and a footrest tube 32 of the stroller 3, and includes a front fork 31 having a connecting portion 311 mounted with the front wheel 33, and a retaining portion 312 disposed above and connected fixedly to the connecting portion 311. Alternatively, the device 2 may be disposed between the front wheel 33 and a leg (not shown) of the stroller 3. The retaining portion 312 has an upper end portion that is formed with an annular groove to define a neck 313 and a head 314 disposed above the neck 313. The footrest tube 32 includes a fixed sleeve 321 having open upper and lower ends. An annular lower end edge of the sleeve 321 is formed with a notch 322.
The device 2 further includes a swivel-limiting unit 4, a quick release unit 5, and an outer housing 6. The swivel-limiting unit 4 includes a connecting seat 41, a limiting seat 42, and a control member 43. With further reference to Figs. 6 and 7, the connecting seat 41 is tubular, and has an annular outer surface that is formed with an extension tube 411 connected fixedly thereto. The connecting seat 41 is sleeved on and is connected fixedly to the sleeve 321 of the footrest tube 32 by a screw 71. The extension tube 411 extends through the notch 322 in the sleeve 321. With additional reference to Figs. 7, 8, and 9, the extension tube 411 is formed with an outer surface including a first slideway area 418', a second slideway area 418" having an outer diameter smaller than that of the first slideway area 418', and a curved connecting shoulder 412 defined between the first and second slideway areas 418', 418". The curved connecting shoulder 412 has opposite inner and outer axial ends 413, 414, at each of which the extension tube 411 is formed with a stop edge 415 and a recess 415'. The connecting seat 41 is further formed with a passage unit 416 aligned and communicated with the extension tube 411. The extension tube 411 has an inner surface that is formed with a stop surface or shoulder 417. The limiting seat 42 has a receiving space 421 for extension of the retaining portion 312 of the front fork 31 therethrough and a periphery formed with a limiting groove 422. The retaining portion 312 of the front fork
31 is connected fixedly to the limiting seat 42 by a rivet 72.

The control member 43 includes a locking rod 431, a resilient member 432, and a rotating sleeve 433. The locking rod 431 is formed with a stop portion 434 in the form of a radially and outwardly extending flange, and is movable within the extension tube 411 between a locking position shown in Fig. 9 and a release position shown in Fig. 8. In the locking position, the locking rod 431 is inserted into the limiting groove 422 in the limiting seat 42 so as prevent rotation of an assembly of the limiting seat 42 and the front fork 31 relative to an assembly of the connecting seat 41, the sleeve 321, and the footrest tube 32. In the release position, the locking rod 431 is removed from the limiting groove 422 so as to allow for rotation of the assembly of the limiting seat 42 and the front fork 31 relative to the assembly of the connecting seat 41, the sleeve 321, and the footrest tube 32. The resilient member 432 is configured as a coiled compression spring, and is sleeved on the locking rod 431 between the stop surface 417 of the extension tube 411 and the stop portion 434 of the locking rod 431. As such, the locking rod 431 is biased toward the locking position. The rotating sleeve 433 is sleeved on an end of the extension tube 411. An end of the locking rod 431 extends into and is connected fixedly to the rotating sleeve 433 by a rivet 73 so as to allow for synchronous rotation and movement.
of the rotating sleeve 433 and the locking rod 431 relative to the extension tube 411. The rotating sleeve 433 is formed with a pair of interconnected annular first and second inner surfaces 437', 437" having different inner diameters. The first inner surface 437' is adjacent to the extension tube 411, and is formed with an axially extending stop rib 435 at an end thereof adjacent to the second inner surface 437". The stop rib 435 is movable on the first slideway area 418' of the outer surface of the extension tube 411 between the stop edges 415 (only one is shown in Fig. 7). Therefore, the rotational angle of the rotating sleeve 433 is limited. The second inner surface 437" has an inner diameter smaller than that of the first inner surface 437', and is formed with a projection 436 movable along the curved connecting shoulder 412 of the extension tube 411. The resilient member 432 biases the projection 436 to contact the curved connecting shoulder 412. As such, the rotating sleeve 433 is operable to rotate about the extension tube 411 so as to move the projection 436 along the curved connecting shoulder 412, thereby moving the locking rod 431 to the locking position. Hence, an end of the locking rod 431 engages the limiting groove 422 in the limiting seat 42. This prevents rotation of the front fork 31 relative to the connecting seat 41, and therefore limits the swivel of the front wheel 33.

When the projection 436 moves to the inner or outer axial ends 413, 414 of the curved connecting shoulder 412, it
engages the corresponding recess 415', and the rib 435 comes into contact with the corresponding stop edge 415. As such, positioning of the projection 436 at the inner and outer axial ends 413, 414 can be maintained.

The quick release unit 5 includes a base 51, a movable member 52, and a return member 53 in the form of a curved reed spring. The base 51 is disposed above and connected fixedly to the sleeve 321 by a screw 74, and has a hole 510 for extension of the retaining portion 312 of the front fork 31 therethrough. A top surface of the base 51 is formed with two spaced-apart parallel guide rails 511. The movable member 52 includes a touch control button 521 operable to move horizontally on the base 51, and a movable plate 522 driven by the touch control button 521 to move horizontally on the base 51 when the touch control button 521 is operated. The movable plate 522 is disposed between the guide rails 511, and has two opposite wing portions 523 in slidable contact with the guide rails 511, respectively. Thus, the movable plate 522 is guided to move on the base 51 along a direction. The movable plate 522 is formed with a hole 524 that engages the neck 313 of the front fork 31 and that has a wide hole portion 525 and a narrow hole portion 526. The wide hole portion 525 is sized so as to allow for movement of the head 314 of the front fork 31 therethrough. The narrow hole portion 526 is sized so as to prevent movement of the head 314 of the front fork 31 therethrough. The return member 53
biases the movable plate 522 to a position whereat the neck 313 of the front fork 31 engages the narrow hole portion 526, as shown in Fig. 10, so as to prevent removal of the front fork 31 from the swivel-limiting unit 4. The touch control button 521 is operable to move the movable plate 522 on the base 51 so as to engage the neck 313 with the wide hole portion 525 of the hole 524 in the movable plate 522, as shown in Fig. 11, thereby allowing for removal of the front fork 31 from the swivel-limiting unit 4.

The outer housing 6 has a hole 61 formed therethrough. The swivel-limiting unit 4 and the quick release unit 5 are disposed within the outer housing 6 such that the touch control button 521 is disposed within the hole 61 in the outer housing 6.

During assembly, first, the resilient member 432 is sleeved on the locking rod 431 such that an end of the resilient member 432 abuts against the stop portion 434. An assembly of the resilient member 432 and the locking rod 431 is inserted into the passage unit 416 in the connecting seat 41 and the extension tube 411 such that an end of the locking rod 431 extends from the extension tube 411. Thus, the resilient member 432 is disposed between the stop portion 434 and the stop surface 417. The rotating sleeve 433 is sleeved on the end of the locking rod 431, and is connected fixedly to the same by the rivet 73. As such, the rib 435 and the projection 436 are located respectively on the first and second slideway areas 418'.
418" of the outer surface of the extension tube 411. The limiting seat 42 is sleeved on and connected fixedly to the retaining portion 312 of the front fork 31 by the rivet 72, and subsequently is placed upwardly into the connecting seat 41. An assembly of the connecting seat 41, the limiting seat 42, and the front fork 31 is placed upwardly into the sleeve 321 of the footrest tube 32 such that the extension tube 411 engages the notch 322 in the sleeve 321. The connecting seat 41 is connected fixedly to the sleeve 321 by the screw 71. The retaining portion 312 of the front fork 31 is inserted through the hole 524 in the movable plate 522. The base 51 is placed downwardly into and connected fixedly to the sleeve 321 by the screw 74. Finally, the outer housing 6 is sleeved on an upper end of the sleeve 321 such that the touch control button 521 is disposed within the hole 61 in the outer housing 6.

Referring to Fig. 8, when the locking rod 431 does not engage the limiting groove 422 in the limiting seat 42, rotation of the front fork 31 (see Fig. 5) and the front wheel 33 (see Fig. 4) relative to the footrest tube 32 (see Fig. 5) is allowed. In this state, the resilient member 432 is not compressed.

Referring to Fig. 9, when the locking rod 431 engages the limiting groove 422 in the limiting seat 42, rotation of the front fork 31 (see Fig. 5) and the front wheel 33 (see Fig. 4) relative to the footrest tube 32 (see Fig. 5) is prevented. In this state, the resilient member 432
is compressed.

Referring to Figs. 7, 10 and 12, when the touch control button 521 is not actuated, a wall of the movable plate 522 defining the narrow hole portion 526 engages the neck 313, the rib 435 and the projection 436 engage respectively the stop edge 415 and the recess 415' that are disposed at the outer axial end 414 of the curved connecting shoulder 412.

Referring to Figs. 7, 9, and 13, when it is desired to limit the swivel of the front wheel 33 (see Fig. 4), the rotating sleeve 433 is rotated about the extension tube 411 so as to engage the rib 435 and the projection 436 with the stop edge 415 and the recess 415' that are disposed at the inner axial end 413 of the curved connecting shoulder 412. Hence, the locking rod 431 engages the limiting groove 422 in the limiting seat 42.

Referring to Figs. 4, 5, and 11, when it is desired to remove the front wheel 33 from the footrest tube 32, a push force is applied to the touch control button 521 to move the movable plate 522 on the base 51 against the biasing action of the return member 53 so as to engage the neck 313 with the wide hole portion 525 of the hole 524 in the movable plate 522, thereby allowing for removal of the front wheel 33. When the push force is released, the return member 53 returns the movable plate 522 and the touch control button 521 to the positions shown in Fig. 10.

Fig. 14 shows the second preferred embodiment of this
invention, which includes a modified quick release unit 5. The modified quick release unit 5 includes a base 51 and a movable member 55. The movable member 55 includes a movable plate 551 and a touch control button 553 that are formed integrally with each other. The base 51 has a top surface that is formed with two guide rails 511, each of which has a curved front rail portion 512 and a straight rear rail portion 513. The movable plate 551 has two curved integral arms 552 extending respectively from two sides thereof and serving as reed springs, and two wing portions 554 extending respectively from two opposite sides of an intermediate portion of the movable plate 551. The arms 552 are in slidable contact with the curved front rail portions 512, respectively. The wing portions 554 are in slidable contact with the straight rear rail portions 513, respectively.

When the touch control button 553 is not actuated, the arms 552 engage respectively front ends of the curved front rail portions 512, as shown in Fig. 15. This prevents removal of the front fork 31. A push force can be applied to the touch control button 553 so as to move the arms 552 to contact intermediate portions of the curved front rail portions 512, as shown in Fig. 16. As such, removal of the front fork 31 is allowed, and the arms 552 deform so as to store a restoration force. Subsequently, when the push force is released, the restoration force of the arms 552 returns the movable plate 551 and the touch control button...
Referring to Figs. 17, 18, and 19, the quick release unit 5 and the outer housing 6 can be replaced with an assembly of a base 51, a movable member 56, and a top cap 7. The base 51 includes a top wall 514 formed with a hole 515, and an annular surrounding wall 516 extending integrally and downwardly from a periphery of the top wall 514 and disposed around a portion of the connecting seat 41. The surrounding wall 516 has an annular lower end edge formed with a notch 517 that engages fittingly the extension tube 411 of the connecting seat 41. A guide block 54 is disposed fixedly on the top wall 514 of the base 51, and has a tapered guiding portion 541. The movable member 56 is configured as a clip defining a neck-confining space 560. The neck-confining space 560 engages the neck 313, and has a wide portion 561 sized to allow for movement of the head 314 of the front fork 31 therethrough, and a narrow portion 562 sized to prevent movement of the head 314 of the front fork 31 therethrough.

The tapered guiding portion 541 of the guide block 54 engages fittingly a portion of the neck-confining space 560 so as to bias the movable member 56 to a position whereat the neck 313 engages the narrow portion 562 of the neck-confining space 560 and where the neck 313 abuts against the guide block 54 so as to prevent removal of the front fork 31 from the connecting seat 41. A top cap 7 has a lower end surface that is formed with a hole 71'.
retaining portion 312 of the front fork 31 extends through the hole 515 in the base 51, and has a top end press fitted within the hole 71' in the top cap 7. The top cap 7 cooperates with two aligned straight ends 563 of the movable member 56 so as to prevent removal of the movable member 56 from the guide block 54. The straight ends 563 of the movable member 56 are spaced apart from each other by a distance that is smaller than the diameter of the neck 313 so as to prevent movement of the neck 313 through a space between the straight ends 563.

A push force can be applied to the movable member 56 so as to move on the top wall 514 of the base 51, thereby engaging the neck 313 with the wide portion 561 of the neck-confining space 560. This allows for removal of the front fork 31 from the connecting seat 41. When the push force is released, the movable member 56 returns to the position shown in Fig. 19 by the biasing action thereof. As such, the front fork 31 can be easily mounted to and removed from the connecting seat 41.
The claims defining the invention are as follows:

1. A device for limiting swivel of a wheel of a stroller, the stroller including a frame unit, the device for limiting swivel comprising:
   a fork adapted to be mounted with the wheel;
   a swivel-limiting unit including
   a connecting seat adapted to be disposed fixedly on the frame unit,
   a limiting seat connected fixedly to the fork,
   and
   a control member disposed on the connecting seat and operable to extend into the limiting seat so as to prevent rotation of the fork relative to the connecting seat; and
   a quick release unit including
   a base disposed fixedly on the connecting seat, and
   a movable member disposed movably on the base and operable to move on the base so as to allow for removal of the fork from the swivel-limiting unit.

2. The device for limiting swivel as claimed in Claim 1, wherein the movable member includes a touch control button operable to move horizontally on the base, and a movable plate driven by the touch control button to move horizontally on the base when the touch control button is operated.

3. The device for limiting swivel as claimed in Claim 1,
wherein the connecting seat of the swivel-limiting unit is tubular, and has an annular outer surface that is formed with an extension tube, the control member including a locking rod movable within the extension tube between a locking position and a release position, a resilient member sleeved on the locking rod so as to bias the locking rod to the locking position to thereby prevent rotation of the fork relative to the connecting seat, and a rotating sleeve sleeved rotatably on the extension tube and operable to move the locking rod to a selected one of the locking position and the release position.

4. The device for limiting swivel as claimed in Claim 3, wherein the fork has a connecting portion mounted with the wheel, and a retaining portion disposed above and connected fixedly to the connecting portion, the limiting seat having a receiving space adapted to permit extension of the retaining portion of the fork therethrough, and a periphery formed with a limiting groove, the locking rod being inserted into the limiting groove in the limiting seat when the locking rod is disposed in the locking position, the locking rod being removed from the limiting groove in the limiting seat when the locking rod is disposed in the release position.

5. The device for limiting swivel as claimed in Claim 3, wherein the locking rod is formed with a stop portion, the connecting seat having a passage unit and a stop
surface, the extension tube extending into and fixed within the passage unit in the connecting tube, the resilient member being disposed between the stop portion of the locking rod and the stop surface of the connecting seat.

6. The device for limiting swivel as claimed in Claim 3, wherein the extension tube is formed with an outer surface including a first slideway area, a second slideway area having an outer diameter smaller than that of the first slideway area, and a curved connecting shoulder defined between the first and second slideway areas and having opposite inner and outer axial ends, the rotating sleeve being formed with a pair of interconnected annular inner surfaces having different inner diameters, one of the annular inner surfaces of the rotating sleeve being formed with a stop rib movable on the first slideway area of the outer surface of the extension tube, the other one of the annular inner surfaces of the rotating sleeve being formed with a projection movable along the curved connecting shoulder of the extension tube.

7. The device for limiting swivel as claimed in Claim 6, wherein, at each of the inner and outer axial ends of the curved connecting shoulder, the extension tube is formed with a stop edge for contact with the rib, and a recess for engagement with the projection, so as to maintain positioning of the projection of the rotating
sleeve at the inner and outer axial ends of the curved connecting shoulder and so as to limit a rotational angle of the rotating sleeve relative to the extension tube.

8. The device for limiting swivel as claimed in Claim 4, wherein:

- the retaining portion of the fork has an upper end portion that is formed with an annular groove to define a neck and a head disposed above the neck, the base having a hole for extension of the retaining portion of the fork therethrough; and

- the movable plate is formed with a hole that engages the neck of the fork and that has a wide hole portion sized so as to allow for movement of the head of the fork therethrough, and a narrow hole portion sized so as to prevent movement of the head of the fork therethrough, the movable plate being biased to a position whereat the neck engages the narrow hole portion so as to prevent removal of the fork from the swivel-limiting unit, the touch control button being operable to move the movable plate on the base so as to engage the wide hole portion of the hole in the movable plate with the neck, thereby allowing for removal of the fork from the swivel-limiting unit.

9. The device for limiting swivel as claimed in Claim 8, wherein the quick release unit further includes a curved reed spring disposed between the base and the movable plate so as to bias the movable plate to a position
whereat the neck engages the narrow hole portion of the hole in the movable plate, the base having a top surface that is formed with two spaced-apart parallel guide rails, the movable plate being disposed between the guide rails and having two opposite wing portions in slidable contact with the guide rails, respectively, so as to guide movement of the movable plate on the base along a direction.

10. The device for limiting swivel as claimed in Claim 2, further comprising an outer housing having a hole formed therethrough, the swivel-limiting unit and the quick release unit being disposed within the outer housing such that the touch control button being disposed within the hole in the outer housing.

11. The device for limiting swivel as claimed in Claim 2, wherein the base has a top surface that is formed with two guide rails, the movable plate being formed integrally with the touch control button and having two curved integral arms extending respectively and outwardly from two opposite sides thereof and serving as reed springs, the arms of the movable plate being in slidable contact with the guide rails, respectively, so as to guide movement of the movable plate on the base in a swivel, the arms biasing the movable plate to a position whereat the neck engages the narrow hole portion of the hole in the movable plate.

12. The device for limiting swivel as claimed in Claim 8,
wherein the base includes:

a top wall;

an annular surrounding wall extending integrally and downwardly from a periphery of the top wall and disposed around a portion of the connecting seat, the surrounding wall having an annular lower end edge formed with a notch that engages fittingly the extension tube of the connecting seat; and

a guide block disposed fixedly on the top wall and having a tapered guiding portion;

the movable member being configured as a clip defining a neck-confining space which engages the neck and which has a wide portion sized to allow for movement of the head of the fork therethrough, and a narrow portion sized to prevent movement of the head of the fork therethrough, the tapered guiding portion of the guide block engaging fittingly a portion of the neck-confining space so as to bias the clip to a position wherein the neck engages the narrow portion of the neck-confining space so as to prevent the fork from the connecting seat, the clip being operable to move on the base so as to engage the neck with the wide portion of the neck-confining space, thereby allowing for removal of the fork from the connecting seat.

13. The device for limiting swivel as claimed in Claim 12, further comprising a top cap having a lower end surface that is formed with a hole, the top wall of the base is
formed with a hole, the retaining portion of the fork extending through the hole in the top wall and having a top end press fitted within the hole in the top cap so as to prevent removal of the clip from the guide block.

14. A device for limiting swivel of a wheel of a stroller, the stroller including a frame unit, the device for limiting swivel comprising:

- a fork adapted to be mounted with the wheel;
- a connecting seat adapted to be disposed fixedly on the frame unit;
- a limiting seat connected fixedly to the fork and disposed with the connecting seat; and
- a control member disposed on the connecting seat and operable to extend into the limiting seat so as to prevent rotation of the fork relative to the connecting seat.

15. The device for limiting swivel as claimed in Claim 14, wherein the connecting seat is tubular, and has an annular outer surface that is formed with an extension tube, the control member including a locking rod movable within the extension tube between a locking position and a release position, a resilient member sleeved on the locking rod so as to bias the locking rod to the locking position to thereby prevent rotation of the fork relative to the connecting seat, and a rotating sleeve sleeved rotatably on the extension tube and operable to move the locking rod to the release position.
16. The device for limiting swivel as claimed in Claim 15, wherein the fork has a connecting portion mounted with the wheel, and a retaining portion connected fixedly to the connecting portion, the limiting seat having a receiving space adapted to permit extension of the retaining portion of the fork, and a periphery formed with a limiting groove, the locking rod being inserted into the limiting groove in the limiting seat when the locking rod is disposed in the locking position, the locking rod being removed from the limiting groove in the limiting seat when the locking rod is disposed in the release position.

17. The device for limiting swivel as claimed in Claim 15, wherein the locking rod is formed with a stop portion, the connecting seat having a hole and a stop surface, the extension tube extending into and fixed within the hole in the connecting tube, the resilient member being disposed between the stop portion of the locking rod and the stop surface of the connecting seat.

18. The device for limiting swivel as claimed in Claim 15, wherein the extension tube is formed with an outer surface including a first slideway area, a second slideway area having an outer diameter smaller than that of the first slideway area, and a curved connecting shoulder defined between the first and second slideway areas and having opposite inner and outer axial ends, the rotating sleeve being formed with a pair of
interconnected annular inner surfaces having different inner diameters, one of the annular inner surfaces of the rotating sleeve being formed with a stop rib movable on the first slideway area of the outer surface of the extension tube, the other one of the annular inner surfaces of the rotating sleeve being formed with a projection movable along the curved connecting shoulder of the extension tube.

19. The device for limiting swivel as claimed in Claim 18, wherein, at each of the inner and outer axial ends of the curved connecting shoulder, the extension tube is formed with a stop edge for contact with the rib, and a recess for engagement with the projection, so as to maintain positioning of the projection of the rotating sleeve at the inner and outer axial ends of the curved connecting shoulder and so as to limit a rotational angle of the rotating sleeve relative to the extension tube.

20. A quick release unit for a stroller, the stroller including a frame unit, the quick release unit comprising:

a base disposed fixedly on the connecting seat; and

a movable member disposed movably on the base and operable to move on the base so as to allow for removal of the fork from the swivel-limiting unit, the movable member including a touch control button operable to move horizontally on the base, and a movable plate driven by the touch control button to move horizontally on the base.
21. The quick release unit as claimed in Claim 20, wherein the fork has a connecting portion mounted with the wheel, and a retaining portion connected fixedly to the connecting portion, the base having a hole for extension of the retaining portion of the fork therethrough, the movable plate being biased to a position wherein the neck engages the narrow hole portion so as to prevent removal of the fork from the swivel-limiting unit, the touch control button being operable to move the movable plate on the base so as to engage the neck with the wide hole portion of the hole in the movable plate, thereby allowing for removal of the fork from the swivel-limiting unit.

22. The quick release unit as claimed in Claim 20, wherein the quick release unit further includes a curved reed spring disposed between the base and the movable plate so as to bias the movable plate to a position wherein the neck engages the narrow hole portion of the hole in the movable plate, the base having a top surface that is formed with two spaced-apart parallel guide rails, the movable plate being disposed between the guide rails and having two opposite wing portions in slidable contact with the guide rails, respectively, so as to guide movement of the movable plate on the base along a direction.

23. The quick release unit as claimed in Claim 21, wherein...
the base has a top surface that is formed with two guide rails, the movable plate being formed integrally with the touch control button and having two curved integral arms extending respectively and outwardly from two opposite sides thereof and serving as reed springs, the arms of the movable plate being in slidable contact with the guide rails, respectively, so as to guide movement of the movable plate on the base in a swivel, the arms biasing the movable plate to a position whereat the neck engages the narrow hole portion of the hole in the movable plate.

24. The quick release unit as claimed in Claim 20, further comprising an outer housing having a hole formed therethrough, the swivel-limiting unit and the quick release unit being disposed within the outer housing such that the touch control button is disposed within the hole in the outer housing.

25. The device for limiting swivel as claimed in Claim 23, wherein the base includes:

a top wall;

an annular surrounding wall extending integrally and downwardly from a periphery of the top wall and disposed around a portion of the connecting seat, the surrounding wall having an annular lower end edge formed with a notch that engages fittingly the extension tube of the connecting seat; and

a guide block disposed fixedly on the top wall and
having a tapered guiding portion;

the movable member being configured as a clip defining a neck-confining space, which engages the neck and which has a wide portion sized to allow for movement of the head of the fork therethrough, and a narrow portion sized to prevent movement of the head of the fork therethrough, the tapered guiding portion of the guide block engaging fittingly a portion of the neck-confining space so as to bias the clip to a position whereat the neck engages the narrow portion of the neck-confining space so as to prevent removal of the fork from the connecting seat, the clip being operable to move on the base so as to engage the neck with the wide portion of the neck-confining space, thereby allowing for removal of the fork from the connecting seat.
FIG. 4