

STROLLER

BACKGROUND OF THE INVENTION

Field of the Invention

5 The present invention relates to a folding stroller and, more particularly, to a three-folding stroller capable of being locked in a two-folded state.

Description of the Related Art

10 A generally known folding stroller has a body frame consisting of front and back structures which can be pulled toward each other so that the folding stroller is folded in a compact state and the longitudinal dimension of the folding stroller is reduced. Hereinafter, this type of a folding stroller will be referred to as a two-folding stroller.

15 Another generally known folding stroller has a body frame consisting of front and back structures which can be pulled toward each other so that the longitudinal dimension of the folding stroller can be reduced and can be further folded inward so that the lateral dimension of the folding stroller

20 is reduced to further facilitate carrying the folding stroller. Hereinafter, this type of a folding stroller will be referred to as a three-folding stroller.

 The foregoing known three-folding stroller is provided with a locking mechanism capable of locking the folding

25 stroller only in a three-folded state, and is not provided with any locking mechanism for locking the three-folding stroller in a two-folded state. Thus, this three-folding stroller cannot be held in a two-folded state.

 Therefore, it is difficult for a person to fold the known

30 folding stroller by one hand with the other hand holding a baby, and it is possible that the folding stroller unfolds accidentally when the folding stroller is folded temporarily in two to carry the folding stroller up or down stairs, because the folding stroller is not provided with any locking mechanism

35 capable of locking the folding stroller in a two-folded state.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a three-folding stroller capable of surely remaining in a two-folded state.

5 According to one aspect of the present invention, a stroller comprises, as principal components: a pair of rear legs; and a handle connected to the pair of rear legs; wherein the pair of rear legs can be moved relative to the handle to folding positions for folding, and locking means provided
10 between the handle and the pair of rear legs, for maintaining the stroller in a folded state where the pair of rear legs are in the folding positions relative to the handle.

 In the stroller according to the present invention, the rear legs and the handle are connected by brackets.

15 In the stroller according to the present invention, each of the locking means includes a locking member slidably mounted on an end part of the handle, and a holding member capable of turning together with the bracket relative to the handle, and the locking member and the holding member are provided
20 with first stopping parts, respectively, and the first stopping parts are engaged to each other when the stroller is folded.

 In the stroller according to the present invention, the holding member turns together with the bracket relative to
25 the handle when the pair of rear legs are moved for folding relative to the handle, and the respective first stopping parts of the holding member and the locking member are engaged to each other when the pair of rear legs are folded relative to the handle.

30 In the stroller according to the present invention, the locking member and the bracket are provided with second stopping parts, respectively, and the second locking parts are engaged to each other when the stroller is unfolded.

 In the stroller according to the present invention, the
35 locking member is urged toward the holding member by an elastic member.

 In the stroller according to the present invention, the

holding member has a working part capable of moving the locking member against force exerted by the elastic member while the holding member is being turned.

5 In the stroller according to the present invention, armrests are joined pivotally to the handle, and the pair of rear legs are joined pivotally to the armrests, respectively.

10 In the stroller according to the present invention, the handle has a middle section and opposite side sections capable of being turned inward relative to the middle section, and the handle can be folded in three.

15 In the stroller according to the present invention, front legs are connected to the rear legs by side connecting bars, and the holding members are fixed to rear end parts of the side connecting bars, respectively.

20 According to another aspect of the present invention, a three-folding stroller comprises: a pair of rear legs; and a handle connected to the pair of rear legs, the handle having opposite side parts turnable forward; wherein the pair of rear legs can be moved relative to the handle to folding positions for folding, and locking means provided between the handle and the pair of rear legs, for maintaining the stroller in a folded state where the pair of rear legs are in the folding positions relative to the handle.

25 According to a third aspect of the present invention, a stroller includes a pair of front legs, a pair of rear legs, a handle connected to the pair of rear legs, a pair of side connecting bars respectively connecting the right front leg and the right rear leg, and the left front leg and the left rear leg, and a stay connecting the side connecting bars; wherein a bottom included in a seat is supported on the stay.

30 In the stroller according to the present invention, the stay is provided with seat support members longitudinally extending in opposite directions from the stay.

35

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic perspective view of a stroller

in a first embodiment according to the present invention in an unfolded state;

Fig. 2 is a perspective view of a locking mechanism included in the stroller shown in Fig. 1, as viewed from the inner side of the stroller shown in Fig. 1;

Fig. 3 is a perspective view of the locking mechanism, as viewed from the outer side of the stroller shown in Fig. 1;

Fig. 4 is a perspective view of a locking member;

Figs. 5(a) and 5(b) are skeletal side elevations of the stroller shown in Fig. 1 in an unfolded state and in a folded state, respectively;

Fig. 6 is a fragmentary side elevation of the stroller in an unfolded state of assistance in explaining the locking operation of the locking mechanism;

Fig. 7 is a fragmentary side elevation of the stroller of assistance in explaining the locking operation of the locking mechanism, showing the holding member pushing up the locking member;

Fig. 8 is a fragmentary side elevation of the stroller in a folded state of assistance in explaining the locking operation of the locking mechanism;

Fig. 9 is a perspective view of a conventional three-folding stroller in an unfolded state;

Fig. 10 is a front elevation of the stroller shown in Fig. 9 in a folded state;

Fig. 11 is a perspective view of an important part of a stroller in a second embodiment according to the present invention; and

Fig. 12 is a perspective view of the stroller in the second embodiment.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

First Embodiment

An outline of a stroller will be explained.

Fig. 9 is a perspective view of a three-folding stroller in an unfolded state, namely, a working state, and Fig. 10

is a view of the same stroller folded in three, and a locking mechanism included in the stroller. A folding operation for folding the unfolded stroller in the unfolded state shown in Fig. 9 in three as shown in Fig. 10 will be described with
5 reference to Figs. 9 and 10.

Referring to Fig. 9, operating wires, not shown, are extended from an operating device 7. Sliders, not shown, are moved by operating the operating wires so as to raise locking members 6 to disengage the locking members 6 from corresponding
10 brackets 4 holding the stroller in an unfolded state, so that the stroller is unlocked.

Then, the stroller is held by the opposite side sections C of a handle 5, front wheels or armrests 3 are raised and turned toward a backrest B as indicated by the arrow X (a
15 first folding step). The longitudinal dimension of the stroller can be reduced by folding thus the stroller in two. Then, the opposite side sections C of the handle 5 are bent forward in the direction of the arrows Y (a second holding step). The lateral dimension of the stroller can be reduced
20 by thus folding the stroller in three.

The stroller has a seat bottom divided into right and left sections, and a mating mechanism D including mating members respectively connected to inner end parts of the right and left section. When the stroller is thus folded in three
25 as shown in Fig. 10, the mating members are engaged to each other to lock the stroller in a three-folded state.

A folding stroller in a first embodiment according to the present invention will be described with reference to Figs. 1 to 8.

30 Fig. 1 shows the three-folding stroller in the first embodiment in an unfolded state in a perspective view. The stroller has right and left rear legs 1. Rear wheels 2 are supported for rotation on lower end parts of the rear legs 1, respectively. The rear wheels 2 are combined with wheel
35 stoppers, not shown, respectively. The wheel stoppers restrain the rear wheels 2 from rotation to park the stroller for a time in a desired place. Upper end parts of the rear

legs 1 are joined pivotally to substantially middle parts of armrests 3, respectively.

Referring to Fig. 2, an L-shaped bracket 4 (connecting member) has one end pivotally connected to the outer side of a substantially middle part of each rear leg 1 by a pin 60, and the other end pivotally connected to the lower end of the side section of the handle 5 having the shape of an inverted letter U by a pin 70. A second stopping part 4a and a first stopping part 4b (Fig. 8) are formed in the bracket 4. The stopping parts 4a and 4b are spaced a predetermined angular interval apart from each other. The second stopping part 4a is able to engage with a second stopping part 6a formed in a locking member 6. When the second stopping part 4a and the second stopping part 6a are engaged, the stroller is held in an unfolded state. The first stopping part 4b is a recessed part of the bracket 4.

Referring again to Fig. 1, the locking member 6 is connected to the operating device 7 mounted on the middle section of the handle 5 by the wire, not shown, extended through the handle 5. The locking member 6 is moved longitudinally upward along the side section of the handle 5 by operating the operating device 7 to disengage the second stopping part 6a of the locking member 6 from the second stopping part 4a of the bracket 4. The locking member 6 is pushed always toward the bracket 4 by a spring 5a placed inside the handle 5.

Each armrest 3 has one end pivotally joined to the handle 5 and the other end pivotally joined to front legs 8. Front wheels 9 are connected to lower end parts of the front legs 8 by swivel mechanisms, not shown. The swivel mechanisms enables the smooth turning of the stroller to change the moving direction. The swivel mechanisms can be locked and unlocked as the occasion demands.

Referring to Fig. 3, a holding member 10 is pivotally connected to the inner side of the lower end of each side section of the handle 5 by the pin 70 opposite to the bracket 4 with respect to the handle 5. The holding member 10 has a first stopping part 10a capable of engaging a first stopping

part 6b, diametrically opposite to the second stopping part 6a, of the locking member 6 as shown in Fig. 4. Each of the stopping parts 6a and 6b has a recess of a fixed width formed in the lower end of the locking member 6.

5 Referring to Fig. 3, each of side connecting bars 11 has a rear end attached to the holding member 10. As shown in Fig. 1, a hook 12 and a ring 13 are hinged on middle parts of the right and the left front leg 8, respectively. Front ends of the side connecting bars 11 are attached to the hook 12 and the ring 13, respectively. When the stroller is folded in three, the hook 12 and the ring 13 are engaged to hold the stroller in a folded state.

15 Connecting bars 14a, 14b and 14c are extended between the pair of front legs 8, between the pair of side connecting bars 11 and between the pair of rear legs 1, respectively. Each of the connecting bars 14a, 14b and 14c are divided into substantially equal three sections, and the adjacent sections are joined by two joints, respectively. The middle section of the handle 5, similarly to the connecting bars 14a, 14b and 14c, is divided into substantially equal three sections, and the adjacent sections are joined pivotally by two joints, respectively. The joints of the connecting bars 14a, 14b and 14c and the middle section of the handle 5 are aligned substantially in two parallel lines, respectively, so that 25 the body of the stroller can be folded in a U-shape.

The pair of front legs 8, the pair of side connecting bars 11, the pair of rear legs 1, the armrests 3 and the connecting bars 14a, 14b and 14c are essential members of the stroller and are assembled in a frame having a rectangular shape in a plane. A guard 15 is extended between the front ends of the armrests 3 to protect a baby seated on the seat of the stroller and to prevent the child from falling forward off the seat.

A folding operation for folding the stroller will be 35 described hereinafter. Figs. 5(a) and 5(b) show the stroller shown in Fig. 1 in an unfolded state and in a folded state, respectively. The operating device 7 is operated so as to

raise the locking members 6 along the side sections of the handle 5 to disengage the locking members 6 from the brackets 4. Then, the armrests 3 are turned relative to the handle 5 in the direction of the arrow A about a point a. Consequently, the upper ends of the rear legs 1 are moved toward the handle 5, and the brackets 4 are turned in the direction of the arrow B about a point b. As the brackets 4 are thus turned in the direction of the arrow B, the front legs 8 are raised and are turned in the direction of the arrow C about a point c. Thus, the stroller is folded in the so-called two-folded state with the rear legs 1 and the front legs 8 being moved toward a substantially middle part of the handle 5 as shown in Fig. 5(b).

The locking operation of the locking mechanism of the folding stroller in the first embodiment will be described with reference to Figs. 6 to 8. Fig. 6 shows the locking mechanism in a state where the stroller is unfolded, Fig. 7 shows the locking mechanism in a state in a state where the holding member 10 has been turned through an angle of about 30° from a position for the unfolded state and the locking member 6 is raised by a working part 10b of the holding member 10, and Fig. 8 shows the locking mechanism in a locking state where the stroller is folded.

Referring to Fig. 6, when the stroller is in the unfolded state, the second stopping part 4a of the bracket 4 is engaged with the second stopping part 6a of the locking member 6 to retain the stroller in the unfolded state. In Fig. 6, a line 100 indicates the position and angle of the side connecting bar 11.

When the operating device 7 is operated by a predetermined operation, such as an operation of pushing a button, to raise the locking member 6 along the side part of the handle 5 with the stroller in the unfolded state, the locking member 6 is disengaged from the bracket 4 to enable the rear leg 1 to turn. Then, the handle 5 is held by the opposite side parts thereof, the front wheels 9 are lifted up, or the armrests 3 are turned backward. Consequently, the

bracket 4 is turned together with the turning rear leg 1, and hence the holding member 10 supported on the pin 70 is turned as shown in Fig. 7.

Then, the working part 10b of the holding member 10 raises the locking member 6. Upon the arrival of the stopping part 10a of the holding member 10 at a predetermined position, the locking member 6 is lowered by the resilience of the spring 5a, and the stopping part 6b of the locking member 6 and the stopping part 10a of the holding member 10 are engaged to fold completely the stroller in two. When the stopping part 6b of the locking member 6 and the stopping part 10a of the holding member are engaged, a part of the locking member 6 engages in the stopping part 4b of the bracket 4 to restrain the bracket 4 and the holding member 10 from turning relative to the handle 5. Thus, the stroller is locked in the two-folded state. The stopping part 6b of the locking member 6, and the stopping part 10a of the holding member 10 constitute the locking mechanism.

The two-folded stroller is further folded in three in a U-shape in a plane. The opposite side parts of the handle 5 (Fig. 1) is turned forward. Since each of the handle 5 and the connecting bars 14a, 14b and 14c has the pivotal joints at positions dividing the length thereof substantially in three equal sections as mentioned above, the pivotal joints of the handle 5, and the connecting bars 14a, 14b and 14c are aligned substantially in two parallel lines. Therefore, when the opposite side sections of the handle 5 is turned forward, the side sections of the connecting bars 14a, 14b and 14c are turned forward accordingly. Consequently, the stroller can be folded in three in a U-shape in a plane as shown in Fig. 10.

When the stroller is thus folded in the U-shape to reduce the width thereof, the front ends of the side connecting bars 11 extended between the front legs 8 and the holding members 10 approach each other. Since the hook 12 and the ring 13 are connected to the front ends of the connecting bars, respectively, the hook 12 and the ring 13 are engaged

automatically when the front ends of the side connecting bars 11 approach each other to hold the stroller surely in the three-folded state.

When it is desired to unfold the three-folded stroller,
5 the hook 12 and the ring 13 are disengaged by a user, and the reverse steps of the above steps shown in Figs. 6 to 8 are carried out.

As mentioned above, according to the above embodiment, the stroller can be securely folded and maintained in the
10 two-folded state by the above simple manner, since the holding member 10 has the stopping part 10a engaged with the locking member 6. In addition, since the stroller is maintained in the two-folded state, the stroller can be easily carried in the two-folded state.

15 Although the invention has been described as applied to the three-folding stroller, the present invention is not limited thereto in its practical application and it goes without saying that the present invention is applicable also to two-folding strollers.

20 Although the locking member 6 engages in the first stopping part 4b of the bracket 4 to hold the stroller in the two-folded state in the stroller in the first embodiment, the bracket 4 does not need necessarily to be provided with the first stopping part 4b.

25 As apparent from the foregoing description, the folding stroller according to the present invention comprises the plurality of component members assembled in the frame of the rectangular shape in a plane, and the handle connected to one set of the component members among the plurality of
30 component members by the connecting members, and the opposite side sections of the handle and the parallel component members can be turned forward. Since the stopping means is formed on the base parts of the handle to hold the component members in a state where the component members are moved toward the
35 handle, and the stopping members holds the stroller in the two-folded state, the stroller can be easily folded and the accidental unfolding of the stroller can be prevented.

Second Embodiment

A stroller in a second embodiment according to the present invention will be described with reference to Figs. 11 and 12. Fig. 12 is a partly cutaway perspective view of a stroller provided with a suspended seat. The stroller has a body including right and left front legs 112 provided with front wheels 111, right and left rear legs 114 provided with rear wheels 113, a substantially U-shaped handle 115, and right and left armrests 116. A detachable guard 117 is extended between the armrests 116. The handle 115 has right and left side pipes 118. Rear ends of the armrests 116 are joined pivotally to parts of the side pipes 118 near the lower ends of the same. Upper ends of the front legs 112 are joined pivotally to the front ends of the armrests 116, respectively. The upper ends of the rear legs 114 are joined pivotally to middle parts of the armrests 116, respectively. Lower ends of L-shaped brackets 119 are joined pivotally to middle parts of the rear legs 114, respectively. The lower ends of the side pipes 118 are joined pivotally to middle parts of the brackets 119, respectively. When the stroller is unfolded, locking members 120 axially slidably mounted on lower end parts of the side pipes 118 engage stopping parts formed in the upper ends of the brackets 119 to hold the stroller in an unfolded state.

A front connecting bar 121 is extended between the right and the left front legs 112. A rear connecting bar 122 is extended between the right and the left rear legs 114. Side connecting bars 123 have front ends pivotally joined to middle parts of the front legs 112, respectively, and rear ends pivotally joined together with the brackets 119 to the lower ends of the side pipes 118, respectively. A stay 124 is extended between middle parts of the right and the left side connecting bars 123.

The stroller is held in an unfolded state for use by engaging the locking members 120 mounted on the lower end parts of the side pipes 118 with the stopping parts formed in the upper end parts of the brackets 119. When the locking

members 120 are disengaged from the brackets 119 by operating an operating device 125 mounted on the handle 115, the armrests 116 and the side connecting bars 123 can be turned on pins pivotally supporting the armrests 116 and the side connecting bars 123, the front legs 112 and the rear legs 114 are turned so as to extend substantially parallel to each other, and the stroller can be thus folded to facilitate carrying the same.

Each of the handle 115, the front connecting bar 121, the rear connecting bar 122 and the upper connecting bar 124 is divided into three sections, and the three sections are joined by a pair of pivotal joints. The pairs of pivotal joints of the handle 115, the front connecting bar 121, the rear connecting bar 122 and the upper connecting bar 124 are included in two vertical planes, respectively. When the opposite side pipes 118 are turned forward after setting the front legs 112 and the rear legs 114 in parallel to each other, the opposite side sections of the handle 115, the front connecting bar 121, the rear connecting bar 122 and the stay 124 are turned forward, so that the stroller can be folded in three.

A seat 126 is supported on the right and the left side pipe 118 and the side connecting bars 123. The backrest of the seat 126 is connected to the side pipes 118, and the bottom 126b of the seat 126 is attached to the right and the left side connecting bars 123 to suspend the seat 126 like a hammock. The stay 124 supports the bottom 126b thereon.

The condition of the seat 126 on the stroller will be described with reference to Fig. 11 showing major parts of the stroller. The front ends of the side connecting bars 123 are joined pivotally to the middle parts of the front legs 112, respectively, and the rear ends of the side connecting bars 123 are joined pivotally, together with the brackets 119 pivotally joined to the rear legs 114, to the lower ends of the side pipes 118, respectively. The stay 124 is extended between the middle parts of the right and the left side connecting bar 123. The stay 124 is divided into three sections, and the three sections are connected by two pivotal joints

124a and 124b. Thus, the opposite side sections of the stay 124 are able to turn on the pivotal joints 124a and 124b, respectively. Seat support members 130 for supporting the seat 126 extend longitudinally from the front to the rear
5 outside the pivotal joints 124a and 124b, respectively. When the seat 126 is installed on the body of the stroller, the bottom 126b, particularly, a core 126a combined with the bottom 126b is supported by the stay 124 and the seat support members 130.

10 Since the bottom 126b of the seat 126 is supported on the longitudinally extending seat support members 130, the seat 126 is unable to swing on the stay 124 and the stability of the bottom 126b can be improved.

15 As apparent from the foregoing description, the stay connecting the side connecting bars connecting the front legs and the rear legs is provided with the longitudinal seat support members, and the bottom of the seat suspended like a hammock is supported on the longitudinal seat support members. Thus, the bottom of the seat is restrained from swinging on the
20 stay and longitudinal movement. Consequently, the stability of the bottom can be improved, and the baby riding in the stroller can enjoy improved comfortableness.

What is claimed is:

1. A stroller comprising:

a pair of front legs;

a pair of rear legs;

a handle connected to the pair of rear legs;

a pair of side connecting bars respectively connecting the right front leg and the right rear leg, and the left front leg and the left rear leg;

a stay connecting the side connecting bars;

wherein a bottom included in a seat is supported on the stay, and wherein

the stay is provided with seat support members longitudinally extending from the front side to the rear side in opposite directions from the stay.