portion cooperatively with the first tubular member and the second tubular member. The carrier frame further includes a folding unit. The folding unit includes a pivot frame, a first rod, a linkage rod and a second rod. The pivot frame is hinged to the second tubular member. An end of the first rod is pivoted to the pivot frame at a first pivot point. Another end of the first rod is pivoted to the pivot frame at a second pivot point. An end of the linkage rod is pivoted to the first tubular member. Another end of the linkage rod is pivoted to the pivot frame at a third pivot point. An end of the second rod is pivoted to the third tubular member. Another end of the second rod is pivoted to the linkage rod at a fourth pivot point. The second pivot point, the third pivot point and the fourth pivot point are located at the same pivot axis. A folding of the first tubular member relative to the third tubular member drives the second rod via the linkage rod to be folded relative to the pivot frame, so as to fold the third tubular member relative to the second tubular member.

Compared with the prior art, the carrier frame of the present invention has the folding unit disposed thereon. The folding unit includes the pivot frame, the first rod, the linkage rod and the second rod. The pivot frame is pivoted to the second tubular member. The end of the first rod is pivoted to the pivot frame at the first pivot point, and another end of the first rod is pivoted to the pivot frame at the second pivot point, so that the pivot frame and the first rod can cooperatively form a quadrilateral structure. The end of the linkage rod is pivoted to the first tubular member, and another end of the linkage rod is pivoted to the pivot frame at the third pivot point. The end of the second rod is pivoted to the third tubular member, and another end of the second rod is pivoted to the linkage rod at the fourth pivot point. The second pivot point, the third pivot point and the fourth pivot point are located at the same pivot axis, so as to make the pivot frame, the first rod and the second rod cooperatively form a linkage structure. Via the design in which the linkage rod drives the second rod to be folded relative to the pivot frame by the folding of the first tubular member relative to the third tubular member, the third tubular member can be folded relative to the second tubular member simultaneously, so as to achieve the purpose that the folding of the first folding tubular member relative to the third tubular member can drive the third tubular member to be folded relative to the second tubular member. In such a manner, the carrier frame of the present invention can be released and folded synchronously and have advantages that the carrier frame is easy to fold, has a simple structure, and is convenient to operate.

Preferably, the pivot frame includes a third rod connected to a fourth rod, the fourth rod connected to a fifth rod, and the fifth rod. The first rod is pivoted to the third rod at the first pivot point. The first rod is pivoted to the fifth rod at the second pivot point..

Preferably, the second tubular member is connected to a joint where the fourth rod is connected to the fifth rod.

Preferably, the pivot frame and the first rod cooperatively form a trapezoid structure.

Preferably, the linkage rod has a recess.

Preferably, the carrier frame further includes a guiderail. The guiderail is connected to the linkage rod, and the guiderail forms an upward handle structure when the first tubular member, the second tubular member and the third tubular member are folded relative to each other.

Preferably, the carrier frame further includes a first locking device for locking a rotation of the first tubular member relative to the third tubular member, and the first locking device is disposed on the pivot portion.

Specifically, the carrier frame further includes a fourth tubular member pivoted to the first tubular member, and a folding of the fourth tubular member relative to the first tubular member releases the first locking device.

Specifically, the first locking device includes a first pulling member, a pushing member, a first mounting base, a second mounting base and a locking member. The first tubular member is connected to the first mounting base. The third tubular member is connected to the second mounting base. The first mounting base is pivoted to the second mounting base. The locking member is movably disposed between the first mounting base and the second mounting base. The pushing member is located between the first mounting base and the locking member. The pushing member and the locking member abut against each other. An end of the first pulling member is connected to the pushing member, and when the first pulling member pulls the pushing member, the pushing member pushes the locking member to release the first mounting base from the second mounting base.

Specifically, a protrusion extends from the first mounting base toward the pushing member, and a ramped surface is formed on the pushing member corresponding to the protrusion. The end of the first pulling member is wound on the

The embodiments of the present invention will now be described with reference to the accompanying drawings.

Please refer to FIGS. 1-7. A carrier frame 100 provided by the present invention includes a first tubular member 1, a second tubular member 2, and a third tubular member 3. The first tubular member 1 is pivoted to the second tubular member 2 to be foldable relative to the second tubular member 2. The second tubular member 2 is pivoted to the third tubular member 3 to make the third tubular member foldable relative to the second tubular member 2. The first tubular member 1, the second tubular member 2 and the third tubular member 3 are pivoted at the same point to cooperatively form a pivot portion 10. The carrier frame 100 further includes a folding unit 4. The folding unit 4 includes a pivot frame 41, a first rod 42, a linkage rod 43, and a second rod 44. The pivot frame 41 is hinged to the second tubular member 2. The pivot portion 10 and a pivot point between the pivot frame 41 and the second tubular member 2 are spaced away from each other. An end of the first rod 42 is pivoted to the pivot frame 41 at a first pivot point a, and another end of the first rod 42 is pivoted to the pivot frame 41 at a second pivot point b. The first pivot point a and the second pivot point b are spaced away from each other to make the pivot frame 41 and the first rod 42 cooperatively form a quadrilateral structure. An end of the linkage rod 43 is pivoted to the first tubular member 1, and another end of the linkage rod 43 is pivoted to the pivot frame 41 at the third pivot point. The linkage rod 43 is a sheet-like structure and has a recess 431 to prevent interference between the linkage rod 43 and the pivot frame 41 to make each component of the carrier frame 100 more compact. An end of the second rod 44 is pivoted to the third tubular member 3, and another end of the second rod 44 is pivoted to the linkage rod 43 at a fourth pivot point. The second pivot point b, the third pivot point and the fourth pivot point are located at the same pivot axis, so as to make the pivot frame 41, the first rod 42 and the second rod 44 cooperatively form a linkage structure. Via a folding of the first tubular member 1 relative to the third tubular member 3, the linkage rod 43 can fold the second rod 44 relative to the pivot frame 41, so as to fold the third tubular member 3 relative to the second tubular member 2. As such, the purpose that the folding of the first tubular member 1 relative to the third tubular member 3 can synchronously drive the third tubular member 3 to be folded relative to the second tubular member 2 is achieved. When the carrier frame 100 is folded, a rotation of the first tubular member 1 relative to the third tubular member 3 can simultaneously drive the second tubular

member 2 and the third tubular member 3 to approach each other for completing the folding operation of the carrier frame 100. Thus, since a user just needs to rotate the first tubular member 1 and then the third tubular member 3 can be folded relative to the second tubular member 2 synchronously, there is no need to further perform a folding of the second tubular member 2 and the third tubular member 3, so as to improve the use convenience of the carrier frame 100. The carrier frame 100 of the present invention is suitable for a foldable device, such as a scaffold, a folding ladder, a folding wheelchair and a stroller, but not limited thereto. More detailed description for an embodiment that the carrier frame 100 is applied to a stroller as shown in FIGS. 1-19 is provided as follows. In this embodiment, the first tubular member 1 of the carrier frame 100 is a handle of the stroller, the second tubular member 2 is a front leg of the stroller, and the third tubular member 3 is a rear leg of the stroller. As such, the user can rotate the handle to move the front leg and the rear leg close to or away from each other for folding or expanding the carrier frame 100. That is to say, the user can just operate the handle to complete the folding or expanding operation of the carrier frame 100, so as to solve the prior art problem that the user must bend over to fold the front leg and the rear leg of the stroller. Thus, the operational convenience of the stroller is improved.

To be more specific, please refer to FIGS. 4-7. The pivot frame 41 includes a third rod 411, a fourth rod 412, and a fifth rod 413. The first rod 42 is pivoted to the third rod 411 at the first pivot point a, the first rod 42 is pivoted to the fifth rod 413 at the second pivot point b, and the second tubular member 2 is pivoted to a joint where the fourth rod 412 is connected to the fifth rod 413. In such a manner, the first rod 42, the second rod 44, the third rod 411, the fourth rod 412, and the fifth rod 413 can cooperatively form a linkage mechanism. As such, the folding of the first tubular member 1 relative to the third tubular member 3 can drive the third tubular member 3 to be folded relative to the second tubular member 2 synchronously. Preferably, the pivot frame 41 could form a trapezoid structure cooperatively with the first rod 42. In this embodiment, the pivot frame 41 and the first rod 42 cooperatively form a right-trapezoid-like structure.

Please refer to FIGS. 1-4, the carrier frame 100 provided by the present invention further includes a guardrail 6. The guardrail 6 is connected to the linkage

a rotation of the driving member 77 can drive the first pulling member 71 to pull the pushing member 72, such that the pushing member 72 can push the locking member 75 to move along the pivot shaft between the first mounting base 73 and the second mounting base 74. When the engaging tooth structure 751 is pushed by the pushing member 72 to overcome the elastic force to be disengaged from the first tooth structure 732 and then completely engaged with the second tooth structure 741, the engaging tooth structure 751 no longer constrains a position of the first tooth structure 732 relative to the second tooth structure 741 to make the first mounting base 73 rotatable relative to the second mounting base 74, so as to achieve free rotation of the first tubular member 1 relative to the third tubular member 3. The folding of the first tubular member 1 relative to the third tubular member 3 can drive the second rod 44 to be folded relative to the pivot frame 41 via the linkage rod 43, so as to fold the third tubular member 3 relative to the second tubular member 2. In such a manner, the purpose that the folding of the first tubular member 1 relative to the third tubular member 3 can synchronously drive the third tubular member 3 to be folded relative to the second tubular member 2 is achieved.

In summary, the carrier frame 100 of the present invention has the folding unit 4 disposed thereon. The folding unit 4 includes the pivot frame 41, the first rod 42, the linkage rod 43 and the second rod 44. The pivot frame 41 is pivoted to the second tubular member 2. The end of the first rod 42 is pivoted to the pivot frame 41 at the first pivot point a, and another end of the first rod 42 is pivoted to the pivot frame 41 at the second pivot point b, so that the pivot frame 41 and the first rod 42 can cooperatively form the quadrilateral structure. The end of the linkage rod 43 is pivoted to the first tubular member 1, and another end of the linkage rod 43 is pivoted to the pivot frame 41 at the third pivot point. The end of the second rod 44 is pivoted to the third tubular member 3, and another end of the second rod 44 is pivoted to the linkage rod 43 at the fourth pivot point. The second pivot point b, the third pivot point and the fourth pivot point are located at the same pivot axis, so as to make the pivot frame 41, the first rod 42 and the second rod 44 cooperatively form the linkage structure. Via the design in which the linkage rod 43 drives the second rod 44 to be folded relative to the pivot frame 41 by the folding of the first tubular member 1 relative to the third tubular member 3, the third tubular member 3 can be folded relative to the second tubular member 2 simultaneously, so as to achieve the purpose that the folding of the first folding tubular member 1 relative to the third tubular

Claims

1. A carrier frame (100) comprising:

a first tubular member (1);

a second tubular member (2) pivoted to the first tubular member (1);

a third tubular member (3) pivoted to the second tubular member (2) to form a pivot portion (10) cooperatively with the first tubular member (1) and the second tubular member (2); and characterized by:

a folding unit (4) comprising:

a pivot frame (41) hinged to the second tubular member (2) respectively;

a first rod (42), an end of the first rod (42) being pivoted to the pivot frame (41) at a first pivot point (a), another end of the first rod (42) being pivoted to the pivot frame (41) at a second pivot point (b);

a linkage rod (43), an end of the linkage rod (43) being pivoted to the first tubular member (1), another end of the linkage rod (43) being pivoted to the pivot frame (41) at a third pivot point; and

a second rod (44), an end of the second rod (44) being pivoted to the third tubular member (3), another end of the second rod (44) being pivoted to the linkage rod (43) at a fourth pivot point,

the second pivot point (b), the third pivot point and the fourth pivot point being located at the same pivot axis;

wherein a folding of the first tubular member (1) relative to the third tubular member (3) drives the second rod (44) via the linkage rod (43) to be folded relative to the pivot frame (41), so as to fold the third tubular member (3) relative to the second tubular member (2),

wherein the pivot frame (41) comprises a third rod (411) connected to a fourth rod (412), the fourth rod (412) connected to a fifth rod (413), the first rod (42) is pivoted to the third rod (411) at the first pivot point (a), the first rod (42) is pivoted to the fifth rod (413) at the second pivot point (b), and the second tubular member (2) is pivoted to a joint where the fourth rod (412) is connected to the fifth rod (413).

2. The carrier frame (100) of claim 1, characterized in that the pivot frame (41) and the first rod (42) cooperatively form a trapezoid structure.

3. The carrier frame (100) of claim 1, characterized in that the linkage rod (43) has a recess (431) for preventing interference between the linkage rod (43) and the pivot frame (41).

4. The carrier frame (100) of claim 1, characterized in that the carrier frame (100) further comprises a guiderail (6), the guiderail (6) is connected to the linkage rod (43), and the guiderail (6) forms an upward handle structure when the first tubular member (1), the second tubular member (2) and the third tubular member (3) are folded relative to each other.

5. The carrier frame (100) of claim 1, characterized in that the carrier frame (100) further comprises a first locking device (7) for locking a rotation of the first tubular member (1) relative to the third tubular member (3), and the first locking device (7) is disposed on the pivot portion (10).

6. The carrier frame (100) of claim 5, characterized in that the carrier frame (100) further comprises a fourth tubular member (5) pivoted to the first tubular member (1), and a folding of the fourth tubular member (5) relative to the first tubular member (1) releases the first locking device (7).

7. The carrier frame (100) of claim 6, characterized in that the first locking device (7) comprises a first pulling member (71), a pushing member (72), a first mounting base (73), a second mounting base (74) and a locking member (75), the first tubular member (1) is connected to the first mounting base (73), the third tubular member (3) is connected to the second mounting base (74), the first mounting base (73) is pivoted to the second mounting base (74), the locking member (75) is movably disposed between the first mounting base (73) and the second mounting base (74), the pushing member (72) is located between the first mounting base (73) and the locking member (75), the pushing member (72) and the locking member (75) abut against each other, an end of the first pulling member (71) is connected to the pushing member (72), and when the first pulling member (71) pulls the pushing member (72), the pushing member (72) pushes the locking member (75) to release the first mounting base (73) from the second mounting base (74).

8. The carrier frame (100) of claim 7, characterized in that a protrusion (731) extends from the first mounting base (73) toward the pushing member (72), a ramped surface (721) is

formed on the pushing member (72) corresponding to the protrusion (731), the end of the first pulling member (71) is wound on the pushing member (72), the first pulling member (71) pulls the pushing member (72) to rotate for making the protrusion (731) abut against the ramped surface (721), and the protrusion (731) abuts against the ramped surface structure (721) to make the pushing member (72) push the locking member (75) to move.

9. The carrier frame (100) of claim 8, characterized in that the ramped surface (721) is a spiral surface structure formed on the pushing member (72).

10. The carrier frame (100) of claim 8, characterized in that a first winding slot (722) is formed on the pushing member (72), and the first pulling member (71) is wound on the first winding slot (722).

11. The carrier frame (100) of claim 7, characterized in that the first locking device (7) further comprises a first elastic member (76) disposed between the second mounting base (74) and the locking member (75).

12. The carrier frame (100) of claim 11, characterized in that the locking member (75) has an engaging tooth structure (751), a first tooth structure (732) is formed on the first mounting base (73), a second tooth structure (741) is formed on the second mounting base (74), the first elastic member (76) pushes the engaging tooth structure (751) thereby for the engaging tooth structure (751) to be engaged with the first tooth structure (732) and the second tooth structure (741) to lock the first mounting base (73) and the second mounting base (74).

13. The carrier frame (100) of claim 12, characterized in that the pushing member (72) pushes the engaging tooth structure (751) to overcome an elastic force of the first elastic member (76) thereby for the engaging tooth structure (751) to be disengaged from the first tooth structure (732), to release the first mounting base (73) from the second mounting base (74).

14. The carrier frame (100) of claim 7, characterized in that the locking member (75) is movable along a pivot shaft between the first mounting base (73) and the second mounting base (74).

15. The carrier frame (100) of claim 7, characterized in that the pushing member (72) is movable along a pivot shaft between the first mounting base (73) and the second mounting base (74).

16. The carrier frame (100) of claim 7, characterized in that the first locking device (7) further comprises a driving member (77) disposed through the first tubular member (1) and the fourth tubular member (5) and engaged with the fourth tubular member (5), another end of the first pulling member (71) is wound on the driving member (77), and the folding of the fourth tubular member (5) relative to the first tubular member (1) allows the driving member (77) to rotate and pull the first pulling member (71).

17. The carrier frame (100) of claim 16, characterized in that a second winding slot (771) is formed on the driving member (77), and the first pulling member (71) is wound on the second winding slot (771).

18. The carrier frame (100) of claim 16, characterized in that the carrier frame (100) further comprises a locking structure (8) locking the first tubular member (1) and the fourth tubular member (5) in a folded state.

19. The carrier frame (100) of claim 18, characterized in that the locking structure (8) comprises a torsional spring (81), an end of the torsional spring (81) is mounted on the driving member (77), another end of the torsional spring (81) has an engaging hook (811), a fixing pillar (11) extends outward from the first tubular member (1), and when the fourth tubular member (5) is folded on the first tubular member (1), the driving member (77) drives the engaging hook (811) for the engaging hook (811) to be engaged with the fixing pillar (11).

20. The carrier frame (100) of claim 19, characterized in that an insertion slot (772) corresponding to the torsional spring (81) is formed on the driving member (77).

21. The carrier frame (100) of claim 6, characterized in that the carrier frame (100) further comprises a second locking device (9) disposed between the first tubular member (1) and

the fourth tubular member (5) for locking a rotation of the fourth tubular member (5) relative to the first tubular member (1).

22. The carrier frame (100) of claim 21, characterized in that the second locking device (9) comprises a second pulling member (91), an engaging member (92), a mating member (93), a first fixing member (94), a second fixing member (95) and an operating member (96), the first tubular member (1) is connected to the first fixing member (94), the fourth tubular member (5) is connected to the second fixing member (96), the first fixing member (94) is connected to the second fixing member (95), the mating member (93) is connected to the first fixing member (94), the engaging member (92) is slidably disposed on the second fixing member (95), the engaging member (92) is engaged with the mating member (93) to lock the first tubular member (1) and the fourth tubular member (5) in an expanded state, an end of the second pulling member (91) is connected to the operating member (96), another end of the second pulling member (91) is connected to the engaging member (92), and the operating member (96) is operated to disengage the engaging member (92) from the mating member (93) via the second pulling member (91).

23. The carrier frame (100) of claim 22, characterized in that the fixing member (94) and the second fixing member (95) are fitted with each other and pivoted to each other.

24. The carrier frame (100) of claim 22, characterized in that the second locking device (9) further comprises a second elastic member (97), and the second elastic member (97) provides an elastic force for the engaging member (92) to be engaged with the mating member (93).

25. The carrier frame (100) of claim 20, characterized in that a pillar extends from the engaging member (92) toward the mating member (93), and an engaging hole structure is formed on the mating member (93) corresponding to the pillar.

26. The carrier frame (100) of claim 6, characterized in that when the fourth tubular member (5) is folded on the first tubular member (1), the first tubular member (1) and the fourth tubular member (5) cooperatively form a support foot structure.