LATCH MECHANISM FOR FOLDING BODY SUPPORTS ON BABY CARRIAGE CHASSIS

Filed July 20, 1939
My present invention relates to improvements in baby carriages having a folding chassis and bassinet or body supports, and more particularly, the invention relates to latch mechanism for holding the body supports in operative positions.

Considerable difficulty has been experienced in latches or latch mechanism for holding body supports relative to a folding baby carriage chassis, for the reason that unless certain predescribed movements of the body supports, relative to the opening and closing of the chassis, were followed, the latch mechanism would intercept such movements, with the result that certain parts of the chassis or body supports were either broken or bent in attempting to move the body supports relative to the chassis.

The principal object of this invention is to provide an extremely simple and highly efficient latch mechanism that will not interfere with the movements of the body supports relative to the chassis, irrespective of the order in which the movements of the body supports are made relative to the chassis during folding or unfolding thereof.

Other objects of the invention will be apparent from the following description, reference being had to the accompanying drawing.

To the above end, the invention consists of the novel devices and combinations of devices hereinbefore described and defined in the claims.

In the accompanying drawing, which illustrates the invention, like characters indicate like parts throughout the several views.

Referring to the drawing:

Fig. 1 is a side elevation of a baby carriage chassis and body supports having the invention embodied therein, some parts being removed and other parts being shown in different positions by means of broken lines;

Fig. 2 is a rear elevation of the parts shown in Fig. 1, with some parts shown in different positions by means of broken lines;

Fig. 3 is a fragmentary detail view, on an enlarged scale, of the rear latch mechanism and associated parts of the chassis and body support;

Fig. 4 is a fragmentary detail view, partly in side elevation and partly in section taken on the line 4—4 of Fig. 3;

Fig. 5 is a view in side elevation of the parts shown in Fig. 4, with the exception that the body support is partly folded; and

Fig. 6 is a detail view in section taken on the line 6—6 of Fig. 4.

The baby carriage chassis includes a pair of parallel longitudinal tubular side bars 8, each of which has front and rear stub axles 9 rigidly fixed thereto and projecting outwardly therefrom. Wheels 13 are journaled on the axles 9. The end portions of each side bar 8, outwardly of the axles 9, are turned upwardly and outwardly in diverging relation and afford joint members 11. Each joint member 11 is in the form of a channel that is U-shape in cross-section.

A bassinet or body support 12, at each end of the chassis, comprises a pair of tubular bars 13, in upwardly converging relation, and a handle member 14. The bars 13, at their lower end portions, extend into the joint members 11, at the respective end of the chassis, and are connected to the sides thereof by pivot pins 15. Said pivot pins 15 hold the body supports 12 for folding movements onto the chassis, as shown by broken lines in Fig. 1.

To permit folding movement of the body supports 12, the joint members 11, at their backs, are notched at 16, and the faces of said joint members are open to permit movement of the bars 13, below the pivot pins 15, into and out of the joint members 11. The joint members 11 hold the bars 13 aligned therewith and against lateral movement in all directions except through the open faces of said members when the latches 25 are released. The body supports 12 are stopped upon reaching their operative positions during unfolding thereof by the engagement of the lower end portions of the bars 13 with the backs of the joint members 11.

The chassis further includes toggle joints 17 that afford the end members thereof and indirectly connect the side bars 8. The members of the toggle joints 17, at their outer ends, are connected by pivot pins 18 to the bars 12 below the pivot pins 15. These toggle joints 17 are arranged to fold upwardly, substantially in the planes of the body supports 12, and thereby fold the chassis, as shown by broken lines in Fig. 1. One of the members of each toggle-joint 17, at its inner end portion, is extended beyond the pivot 18 connecting the members of said toggle joint and offset over the other of said members to afford a stop lug 20. This stop lug 20 is arranged to position the pivot 19 slightly below a dead center and thereby prevents the toggle-joint 17 from folding accidentally.

Each handle member 14 is formed of a single round rod bent to form a horizontally elongated loop in the plane of the respective pair of bars 13. The end portions of the rod forming the handle member 14, are on the underside of said member at the longitudinal center thereof, and
bent downwardly to afford a pair of hinge members 21. The bars 12, at their upper ends, are connected by pivots 22 to the hinge members 21 and permit the required folding movement of said bars.

A girdle 23 of sheet metal surrounds the hinge members 21 and the connected end portions of the bars 13, and is rigidly secured to said members by welding or otherwise. A wooden handle 24 is secured to the rear handle member 14.

Hooks 25 on the girdle 23 are provided for holding a bassinet or body, not shown, suspended therefrom.

A pair of latches 26 or latch mechanism is provided for holding each body support 12 in an operative position relative to the chassis, and each latch of said pair holds one of the respective bars 13. Each latch 26 includes a flat lock bolt 27 slidably mounted in a U-shaped keeper member 28 which extends transversely across the open face of the respective joint member 11. The sides of the keeper members 28 are in the planes of the sides of the joint members 11 and are formed as parts thereof. The lock-bolt 27 is further held for straight line endwise sliding movement by a thimble-like spring cap 29 slidably mounted in the respective joint member 11. This spring cap 29 is rigidly secured to the back of the lock bolt 27, at the longitudinal and transverse centers thereof. A coiled spring 30 is compressed between the spring cap 29 and the closed lower end of the joint member 11.

The lock-bolts 27 of each pair, at their upper end portions, extend in front of the lower end portions of the bars 13 of the respective body support 12, and hold the same from turning on the pivot pins 18. These lock bolts 27 normally engage the lower longitudinal edges of the members of the toggle joint 17, directly below the pivot pins 18, as stops to limit the spring-projected movements of said lock bolts. On the lower ends of the lock bolts 27 are stop flanges 31 arranged to engage the keeper members 28 and limit the projecting movements of the lock bolts 27 when the body supports 12 are folded, as shown in Fig. 6. The lower ends of the bars 13, at the backs thereof, are beveled to afford cam surfaces 32 arranged to engage the lock bolts 27, during movement of the body supports 12 into operative position, and move said lock bolts 27 against the tension of the springs 30, out of the paths of movement of said bars 13 and permit the same to enter the joint members 11. Obviously, as soon as the bars 13 have passed the lock bolts 27, the springs 30 will project said lock bolts 27 in front of the bars 13 and thereby hold the body supports 12 in operative positions.

The ends of the members of the toggle joints 17, outwardly of the pivot pins 18, are shaped to form cam surfaces 33 arranged to engage the lock bolts 27, at their outer ends, during buckling movements of the toggle joints 17, and move said lock bolts into positions to release the bars 13 and permit the body supports 12 to be folded onto the chassis.

From the above description, it is evident that a person, by successively placing his foot under the toggle joints 17 and pressing upwardly thereon, may buck said joints and thereby fold the chassis, as shown by broken lines in Fig. 2.

This buckling of the toggle joints 17 will also automatically operate the latches 26 to release the bars 13 and permit the body supports 12 to be folded onto the chassis, as shown by broken lines in Fig. 1.

It is highly important to note that the latches 26 will permit the body supports 12 to be unfolded either before or after the chassis is unfolded. In case the latches 26 have been released by the toggle joints 17 before the body supports 12 are unfolded, said latches will be operated as previously described, by the engagement of the cam surfaces 32 therewith and permit the bars 13 to pass the same.

From the foregoing, it will be understood that the invention described is capable of various modifications within the scope of the invention herein disclosed.

What I claim is:

1. The combination with a folding chassis having a pair of separate and independent side members, an upright body support attached to said side members for folding movement upon itself transversely of the chassis and for bodily folding movement onto the chassis longitudinally thereof, of a toggle joint transversely connecting said side members, and latch mechanism for holding the body support in an operative position, said toggle joint being arranged to automatically release the latch mechanism during buckling of the toggle joint to fold the chassis.

2. The structure defined in claim 1 in which the body support is constructed and arranged to automatically release the latch mechanism during movement of the body support into an operative position.

3. The combination with a folding chassis having a pair of separate and independent side members, a body support including a pair of upright members pivotally connected at their upper ends for swinging movement toward or from each other transversely of the chassis, the members of said body support being pivotally connected at their lower ends, one to each of said side members for folding movement onto the chassis longitudinally thereof, of a toggle joint transversely connecting said side members, the members of the toggle joint being pivotally one to each of the members of the body support, and a pair of latches for holding the members of the body support in an operative position, said toggle joint being arranged to automatically release the latches during buckling of the toggle joint.

4. The structure defined in claim 3 in which the members of the body support are arranged to engage and release the latches during movement of the body support into an operative position.

5. The combination with a folding chassis having a pair of separate and independent side members, a body support including a pair of upright members pivotally connected at their upper ends for swinging movement toward or from each other transversely of the chassis, the members of said body support being pivotally connected at their lower ends, one to each of said side members for folding movement onto the chassis longitudinally thereof, of a toggle joint transversely connecting said side members, the members of the toggle joint being pivotally one to each of the members of the body support, and a pair of latches for holding the members of the body support in an operative position, each latch including a spring-projected lock bolt normally extending in the path of movement of the respective member of the body support, the members of the toggle joint having cam surfaces arranged to engage the lock bolts during buckling of said toggle joint and move the same out of the paths of movement of said members.
6. The structure defined in claim 5 in which the members of the body support have cam surfaces arranged to engage the lock bolts during movement of the body support into an operative position and move the lock bolts out of the path of movement of said members.

7. The combination with a folding chassis having a pair of side members, each side member having at one end a channeled joint member, a body support including a pair of upright members pivoted at their upper ends for swinging movement toward or from each other transversely of the chassis, the lower end portions of the members of the body support being mounted in the joint members and pivoted thereto for folding movement onto the chassis longitudinally thereof, a toggle joint, the members of the body support being connected by the toggle joint, a keeper member on each joint member and extending transversely over the channel therein, a lock bolt slidably mounted in the keeper member, and a spring cap on each lock bolt and slidably mounted in the joint member, a coiled spring compressed between the spring cap and the joint member, said lock bolt normally extending in the path of movement of the member of the body support in said joint member, the members of the toggle joint having on their ends cam surfaces arranged to engage the lock bolts and retract the same during buckling movement of the toggle joint to release the members of the body support in the joint members.

8. The structure defined in claim 7 which further includes cam surfaces on the lower ends of the members of the body support arranged to engage the lock bolts during movement of the body support into operative position and retract said lock bolts to permit the members of the body support to enter the joint members.

9. The combination with a folding chassis having a pair of side members, each side member having at one end a channeled joint member, a body support including a pair of upright members pivoted at their upper ends for swinging movement toward or from each other transversely of the chassis, the lower end portions of the members of the body support being mounted in the joint members and pivoted thereto for folding movement onto the chassis longitudinally thereof, a toggle joint, the members of the body support being connected by the toggle joint, a keeper member on each joint member and extending transversely over the channel therein, a lock bolt slidably mounted in the keeper member, and a spring cap on each lock bolt and slidably mounted in the joint member, a coiled spring compressed between the spring cap and the joint member, said lock bolt normally extending in the path of movement of the member of the body support in said joint member, the members of the toggle joint having on their ends cam surfaces arranged to engage the lock bolts and retract the same during buckling movement of the toggle joint to release the members of the body support in the joint members.

10. The structure defined in claim 9 which further includes cam surfaces on the lower ends of the members of the body support arranged to engage the lock bolts, during movement of the body support into an operative position, and retract said lock bolts to permit the members of the body support to enter the joint members.

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