

BABY CARRIAGE

The present invention relates to a baby carriage and more particularly to improvements in the seat of a baby carriage.

5 Baby carriages of chair type construction having a seat with a back rest are in widespread use. When a baby is placed in such a baby carriage, the baby's legs may be allowed to hang down or a foot rest may be provided to support them.

10 Some baby carriages of chair type construction have back rests which are adapted to be reclined. In this case, the seat assumes a bed form when the back rest is reclined. If then the baby's legs still hang down or are placed on the foot rest,
15 the baby may be uncomfortable.

 Therefore, it has been proposed to provide an arrangement which makes it possible to selectively extend the front end of the seat of the baby carriage. When the front end of the seat is
20 extended as described above, the baby's legs are

supported which makes him feel more comfortable.
In the conventional arrangement, a seat extension
is rotatably attached to the front end of the seat
base and is so arranged that, when rotated to assume
5 a substantially horizontally extending position,
it forms part of the seat base to provide an
elongated seat. This conventional seat extension,
however, has the disadvantage that a support bar
attached to the baby carriage frame is required to
10 maintain the horizontal state of the seat extension,
which makes the construction and operation of the
carriage complicated. Further, the addition of a
special part, such as the support bar, to the baby
carriage is undesirable because it increases the
15 cost of the product.

The present invention provides a baby carriage
in which a seat extending function is obtained by
a much simpler mechanism than in the conventional
construction.

20 According to the invention, there is provided
a baby carriage having a seat of flexible
material, a ^{flexible} seat extension hanging from the front
of the seat and selectively movable from the

hanging condition to a seat extending condition,
and means for supporting the seat extension when
in the seat extending condition, the supporting means
comprising sliders, each inserted into a respective
5 tubular guide rod and arranged so as to be slidable
into a support position, and a reinforcing member
connected to the sliders.

In a preferred embodiment of the invention,
the guide rods and the sliders are respectively
10 provided in pairs. A further reinforcing member
may be connected between the pair of slide guide
rods for supporting the seat.

In a further preferred embodiment of the
present invention, the baby carriage is foldable,
15 and as it is folded and unfolded, the guide rods
and the sliders are respectively moved toward
and away from each other.

In such an arrangement, the first mentioned
and further reinforcing members may be formed
20 of flexible material.

In a still further preferred embodiment of the present invention, a third reinforcing member is provided which is connected between the first reinforcing member and the further reinforcing member.

5 The third reinforcing member may serve to define the limit of the extension of the sliders.

Accordingly, the present invention provides a baby carriage which may be of simple construction and nevertheless have a seat extension function.

10 The present invention also provides a baby carriage, wherein the seat can be extended in a simple operation.

The present invention will be described further, by way of example, with reference to the accompanying

15 drawings, in which

Fig. 1 is a side view of a baby carriage embodying the present invention;

Fig. 2 is a perspective view of the middle region of the baby carriage of Fig. 1;

Fig. 3 is a perspective view of first and second connecting rods of a reclining mechanism for a back rest of a seat of the baby carriage;

Fig. 4 is a perspective view of a locking member used in combination with the first and second connecting rods of Fig. 3;

Fig. 5 is a perspective view of a cover to receive the connected portions of the first and second connecting rods of Fig. 3;

Fig. 6 is a section through the connected portions of the first and second connecting rods of Fig. 3;

Fig. 7 is a side view showing a back rest retaining rod for the back rest of the seat, the back rest retaining rod being in a raised state;

Fig. 8 is a side view showing the back rest retaining rod in a lowered state;

Fig. 9 is a detail of a portion of Fig. 7;

Fig. 10 is a detail of a portion of Fig. 8;
and

Fig. 11 is a perspective view of parts of the
baby carriage enabling extension of the seat of the
5 carriage.

Fig. 1 is a side view of a baby carriage
according to the invention. Fig. 2 is a perspective
view of the principal portion of the baby carriage
of Fig. 1.

10 First, the general construction of the frame
of the baby carriage will be briefly described.

The baby carriage has a pair of front legs 1
and a pair of rear legs 2 rotatably connected to
a pair of arms 3. Push rod supports in the form of
15 angle bars 4 are rotatably connected to the middle
region of each rear leg 2 by pivot pins 5. Upper
ends of the angle bars 4 have push rods 6 foldably
attached thereto. Each push rod 6 and a respective
arm 3 are rotatably connected together by a pivot
20 pin 7. A respective folding operative connecting
rod 8 is rotatably connected at its opposite ends

to each front leg 1 and the associated push rod support angle bar 4. The connections between the folding operative connecting rods 8 and the front legs 1 are obtained by attaching brackets 9 formed
5 on the folding operative connecting rods 8 to the front legs 1 by means of pivot pins.

A foldable handle 11 is provided between upper ends of the pusher rods. Further, foldable connecting rods 12, 13 and 14 are connected between
10 the front legs 1, between the rear legs 2 and between the folding operative connecting rods 8, respectively.

The baby carriage described above is foldable. That is, the front legs 1, rear legs 2, arms 3,
15 push rods 6 and folding operative connecting rods 8 are foldable into a substantially vertical condition while the handle 11, connecting rods 12, 13 and 14 are foldable to bring two halves of each toward each other.

20 In addition, a foldable torso guard 15 may be connected between front ends of the arms 3.

The arrangement of a seat of flexible material mounted on the basic frame of the baby carriage will now be described. The seat comprises a seat base 21 and a back rest 22. The back rest 22 has side plates 23 at both sides and is therefore not fully shown in Fig. 1. The seat base 21 is formed to extend substantially horizontally on the folding operative connecting rods 8 and the connecting rod 14. The back rest 22 is formed to rise from the rear end of the seat base 21 and is held by back rest holding rods 24. The back rest holding rods 24 are pivotally connected by pivot pins 26 to connecting members 25 fixed to lower ends of the push rods 6. The back rest 22 can be brought into a reclined state by rotating the back rest holding rods 24.

The operation of the back rest reclining mechanism will now be described with reference to Figs. 3 to 10. For simplicity, the portion of the mechanism at one side only of the carriage will be described.

Fig. 3 is a perspective view of first and second connecting rods of the mechanism; Fig. 4

is a perspective view of a locking member of the mechanism; Fig. 5 is a perspective view of a cover of the mechanism; Fig. 6 is a sectional view of connected portions of the first and second connecting rods; Fig. 7 is a side view of one of the back rest holding rods 24 when holding the back rest in a raised condition; Fig. 8 is a side view of the back rest holding rod when holding the back rest in a reclined condition; Fig. 9 is a diagrammatic side view of parts shown in Fig. 7; and Fig. 10 is a diagrammatic side view of parts shown in Fig. 8.

Referring to Fig. 3, one end of a first connecting rod 101 and one end of a second connecting rod 102 are pivotally connected together by a pivot pin 103 so that they are foldable relative to each other. The free ends of the first and second connecting rods 101 and 102 are provided with through holes 104 and 105, respectively. The first and second connecting rods 101 and 102 are connected as shown in Fig. 1 between the push rod 6 and the back rest holding rod 24, the through holes 104 and 105 shown in Fig. 3 being used for connecting the first and second connecting rods 101 and 102

28

to the push rod 6 and the back rest holding rod 24. Thus, the first and second connecting rods are pivotally supported by the back rest holding rod 24 and push rod 6 through pivot pins 109 and 110 inserted in the through holes 104 and 105, respectively.

The first connecting rod 101 is formed with a projection 111 having a through hole 112. The second connecting rod 102 is angled and is formed with first and second locking portions 113 and 114. The first locking portion 113 is simply a flat surface extending from the second locking portion 102, but, in fact, it provides a locking function as will be understood from the description given later. The second locking portion 114 is defined by a notch.

Referring to Fig. 4, a locking member 115 is formed in the shape of a U. It is provided with through holes 116 and 117 at its opposite ends.

Referring to Fig. 5, a cover 118 is substantially cup-shaped and cylindrical. The side wall of the cover 118 is formed with a cutout 119

extending through about 180°. The base wall of the cover 118 is formed with a recess 120. A through hole 121 is formed in the base wall in the recess 120 at a position to one side of the recess.

5 Referring to Figs. 6 to 10, the assembly of said first and second connecting rods 101, 102, locking member 115 and cover 118 will now be described. The first step is to align the through hole 112 in the first connecting rod 101, the
10 through holes 116 and 117 in the locking member 115 and the through hole 121 in the cover 118. In this condition, the cover 118 shown in Fig. 5 has been turned over from the illustrated position. A pivot pin 122 is then inserted into the through
15 holes 112, 116, 117 and 121. One limb of the locking member 115 now fits in the recess 120 of the cover 118, so that the locking member 115 and cover 118 are rotatable as a unit. The first and second connecting rods 101 and 102 extend out through the
20 cutout 119 in the cover 118.

By comparing Figs. 7 and 9 with Figs. 8 and 10, the operation of the reclining mechanism will now be described. In Figs. 7 and 9, the first and

second connecting rods 101 and 102 are in a first folded condition, in which they are folded by a maximum amount, and the locking member 115 engages the locking portion 113. In this condition, the
5 first and second connecting rods 101 and 102 are fixed by the locking member 115 so as not to open any further, and the back rest holding rod 24 is fixed substantially parallel to the push rod 6, i.e., with the back rest 22 of the seat upright.

10 When it is desired to bring the back rest 22 of the seat into a reclining condition, the locking member 115 is turned clockwise to disengage it from the first locking portion 113. This operation may be performed by utilizing the cover 118 as a
15 knob since if it is turned clockwise the locking member 115 is turned integrally therewith. With the locking member 115 disengaged, the back rest holding rod may be lowered to establish a second folded condition in which the first and second
20 connecting rods 101 and 102 are straightened to their fullest extent. Even if the hand is then removed from the cover 118, the locking member 114 will be automatically engaged by the locking portion 114. This is because since the cover 118

and locking member 115 are pivotally supported on the offset pivot pin 122, and the force of gravity tends to turn the same counterclockwise at all times. The manner of engagement between the locking member 115 and the second locking portion 114 is shown in Figs. 8 and 10.

In this condition, the back rest 22 of the seat is in a reclining condition. When it is desired to return the back rest 22 of the seat into an upright condition, the cover 118, serving as a knob, is turned clockwise to release the engagement between the locking member 115 and locking portion 114, and the back rest holding rod 24 is raised. In the final stage of this raising operation, as shown in Figs. 8 and 10, the force of gravity on the locking member 115 and cover 118 produce a counterclockwise turning movement on the locking member 115 to automatically engage it with the first locking portion 113.

Instead of utilizing gravity, a spring may be used.

The first cover 118 has been described primarily as an operating knob, but it goes without saying

- 14 -

that the cover, in itself, provides a safeguard by covering the connected portions of the first and second connecting rods 101 and 102.

Next, the seat extending function which forms
5 the subject matter of the invention will now be described.

Fig. 11 is a perspective view of parts of the baby carriage, including the folding operative connecting rods 8 shown in Fig. 1, enabling extension
10 of the seat. These folding operative connecting rods 8 are tubular. Each folding operative connecting rod 8 has a bar slider 31 slidably inserted therein. Thus, the folding operative connecting rods 8 function as slide guide rods. The front
15 end of each slider 31 is formed with a head 32 to enable the operator with his finger to draw out the slider 31 or push it with his hand back to its retracted position.

A reinforcing belt 33 is stretched between
20 the front ends of the two sliders 31. Further, a reinforcing belt 34 is also stretched between the two folding operative connecting rods 8 forwardly

of the connecting rod 14. A web 35 extending in a direction which crosses the belts 33 and 34 is fixed to the belts 33, 34 and connecting rod 14. The belts 33, 34 and web 35 are formed of flexible material. When the sliders 31 are not drawn out, a portion 36 of the web 35 sags. The length of the web 35 is determined such that, when the sliders 31 are drawn out, the portion 36 is straightened out and no longer sags. The seat base 21 described above is supported on the belts 33, 34 and web 35 on the connecting rod 14 between the two folding operative connecting rods 8.

As best shown in Fig. 1, the seat base 21 has a ^{flexible} seat extension 37 hanging from the front end thereof.

The seat extension 37 is intended to be used mainly when the back rest 150 of the seat is lowered into a reclining form, as shown in phantom lines in Fig. 1. It is more comfortable for the baby to straighten its legs when reclining, and if the sliders 31 are then drawn out by means of the heads 32, the seat extension 37 is supported by the sliders 31 and the first belt 33 and the front end of the web

- 16 -

35 and extends horizontally. This allows the baby to straighten its legs on the seat extension 37.

If the back rest 22 of the seat is raised into an upright condition, the seat extension 37 may become unnecessary. In this case, if the sliders 31 are pushed in by means of the heads 32, the seat extension 37 is brought into its hanging state, thus allowing the baby to lower its legs or place its feet on a foot rest which can be easily attached by utilizing the connecting rod 12.

However, even when the seat assumes the chair-like state with the seat extension 37 hanging down, the seat extension 37 may still offer advantages. More particularly, for a young baby whose legs do not reach the foot rest, the seat extension 37 effectively acts as a wall for supporting the baby's legs from the rear. This is because the seat extension 37, though not fixedly supported, is formed of a sufficiently rigid material to support the baby's legs from the rear. In such case, the extension cushions the baby's legs. Further, the seat extension 37, when hanging down, performs the function of a guard to protect

the baby's legs against danger. It also provides protection against cold. Thus, the seat extension 37 performs a variety of functions both when it hangs down and when it assumes a horizontal position.

5 As has been described, the present invention provides a slide mechanism for the seat extension is so that the seat can be extended in a simple operation. Further, since the slide guide rods for slidably guiding the sliders may be existing
10 members already provided in the carriage for supporting the seat, the seat extending function can be obtained by adding a simple mechanism to the conventional construction.

 In the embodiment described above, the invention
15 is applied to a foldable baby carriage, but it will be understood that it may likewise be applied to a baby carriage which is not foldable. In that case, the first and second belts 33 and 34 need not be flexible and may be made of any suitable material.

20 Further, although the back rest 22 is reclinable in the above embodiment, this is not essential. If the baby is so young that its legs cannot reach

- 18 -

the foot rest and instead hang down, there may be cases where it is more comfortable for the baby to be allowed to extend its legs by using a seat extension.

37



- 19 -

CLAIMS:

1. A baby carriage having a seat of flexible
material, a ^{flexible} seat extension hanging from the front of
the seat and selectively movable from the hanging
5 condition to a seat extending condition, and means
for supporting the seat extension when in the seat
extending condition, the supporting means comprising
sliders, each inserted into a respective tubular guide
rod and arranged so as to be slidable into a support
10 position, and a reinforcing member connected to
the sliders.

2. A baby carriage as claimed in claim 1,
further comprising a second reinforcing member
connected to the guide rods for supporting the
15 seat.

3. A baby carriage as claimed in claim 2,
which is foldable and wherein, as the carriage is
folded and unfolded, the guide rods and the sliders
are arranged respectively to move toward and away
20 from each other.

4. A baby carriage as claimed in claim 2 or
3, wherein the first and second reinforcing members

are formed of flexible material.

5. A baby carriage as claimed in claim 2, 3 or 4, further comprising a third reinforcing member³⁵ connected between the first reinforcing member
5 and the second reinforcing member, the length of the third reinforcing member defining the limit of the extension of the sliders.

6. A baby carriage as claimed in any of claims 1 to 4, wherein the seat has a back rest
10 which is reclinable.

7. A baby carriage substantially as herein particularly described with reference to and as illustrated in the accompanying drawings.

