PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Improvements relating to perambulators and the like

We, LINES BROS, LIMITED, a British Company, of Tri-Ang Works, Morden Road, Merton, London, S.W.19, and Walter Lines, a British subject, of the Company's address, do hereby declare the nature of this invention to be as follows:—

This invention relates to frameworks of the type used in baby-carriages, perambulators, folding furniture and the like, wherein the members are pivotally connected so that the framework may be folded up or collapsed in order to reduce the amount of space taken up by the baby-carriage or the like. Our object is to provide an improved type of framework which in its collapsed state occupies relatively little space and which can be readily and easily put into the erect position.

According to this invention the handle and the top of the body of a baby carriage or the like are connected at each side by a pair of pivoted links of unequal length, the two links of each pair being pivoted to different points on both the handle and the top of the body so in effect a quadrilateral linkage is formed at each side. When the framework is erected the two links make a small angle with one another at the lower end of the handle and hold the handle in an inclined position. In moving into the collapsed position the links swing through obtuse angles to bring the handle close to and just above the top of the body. In the preferred construction the handle and the top of the body are of substantially the same length; the longer link extends between the end of the body member and a point a little way up the handle; the shorter link extends between a point a little away from the end of the body member and the end of the handle; and the distance between the pivot points on the body member is greater than that between those on the handle by the difference between the lengths of the links. The result is that when the framework is caused to collapse the handle is brought to lie exactly above the top of the body and in contact or nearly in contact with it.

More broadly stated the invention comprises a folding framework in which two frame members are interconnected by two links of unequal length, each pivoted to each of the two members with the distance between the two pivot points on the one member greater than that on the other by an amount substantially equal to the difference in length of the two links whereby the two frame members can swing between a position in which they are relatively close and substantially parallel to one another and another position in which the links are inclined at a small angle to one another and in consequence one of the frame members is inclined at an angle to the other and spaced apart from it by the links.

It is desirable to ensure that the framework cannot collapse accidentally when it is in the erect position. This is done according to the invention by providing a metal ring which can slide on the handle and when the framework is erected slides downwards over the upper end of the longer inclined link. The lowermost position into which the ring can move is determined by its diameter and the extent to which the two links diverge from one another. This ring in effect forms the base of a triangle, the sides of which are constituted by the upper end of the longer link and the bottom of the handle. To release the framework it is only necessary to pull the ring upwards. The framework can be held locked in the erect position by a ring at one side only but preferably there is one at each side. The ring may be replaced by a non-circular band but as the handle is most conveniently made of steel tubing a ring slightly larger in diameter than the tubing is preferred.

To be effective the ring must form one side of a rigid triangle when it is in the locking position. It is therefore desirable to limit the extent to which the links can swing in moving into the erect position. This may conveniently be done by making the pivot

[*Price* 2/8d.]

Price 3s. 0d.

pin between the shorter link and the handle extend axially to come into contact with the edge of the longer link.

This provision of a ring or the equivalent which slides under gravity over the pivot point between the two moving frame members to form with them a rigid triangle and so to prevent the members from opening out from one another about the pivot point after they reach the desired position is an important feature of the invention.

The preferred baby carriage is of the kind in which the child sits upright with its feet on a rest and faces the person pushing the carriage, and the seat is in the form of a rigid board suspended from the top of the body by an easily collapsible material such as leather-cloth or canvas.

In this preferred baby carriage the longer link at each side is extended downwards beyond the top of the body and its lower end is pivotally connected to the upper end of one of a pair of crossed rods which are pivoted together and the lower ends of which are pivoted to the two axles. The upper end of the second of these crossed members is connected to the top of the body.

The baby carriage is erected by pulling the free end of the handle upwards so that it swings about the connecting links until it is in alignment with the shorter link when further movement is prevented by the abutting of the pivot at the end of the handle against the longer link. At the same time the extension of the longer link opens out the two crossed members by virtue of its swinging movement and so erects the lower half of the framework while moving the axles towards one another.

When the framework is erected, the ring slides down over the handle and the longer link to stop in a position short of the end of the handle, and so to lock the two members.

In order to collapse the framework, it is necessary only to slide the metal ring upwards past the pivot on the handle and then to move the top of the handle downwards, at the same time pushing it forwards. The links then swing as described above to carry the handle into position above the body and at the same time the crossed members are flattened and the axles spread apart.

Dated this 25th day of June, 1951

For the Applicants:
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51/52 Chancery Lane, London, W.C.2.

COMPLETE SPECIFICATION.

Improvements relating to perambulators and the like

We, LINES BROS. LIMITED, a British Company, of Tri-Ang Works, Morden Road, Merton, London, S.W.19, and Walter Lines, a British subject, of the Company's address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to four-wheeled perambulators and the like in which the handle and the remainder of the frame can be folded so that the perambulator can be stored in a small space. Our object is to provide a perambulator which can be folded and unfolded in an easy movement, which can be readily locked in its erected position and which occupies an unusually small space when folded.

According to the invention the frame at each side includes a substantially horizontal member supporting a body and two crossed members carrying the wheels and forming an X frame, one crossed member being pivoted to the horizontal member and the other to the lower end of a link which crosses the horizontal member and at its upper end is pivoted directly to the handle. Preferably a second link is pivoted to the handle and the horizontal member and serves as a stay which when the chair is erect determines both the inclination of the first link to the horizontal member and the inclination of the limb of the handle to the first link. When the frame is erect the handle may be held in fixed angular relation to the horizontal member by a lock above the horizontal member. By the use of this construction the X frame forming the lower part of the push chair can be held in the erect position by a locking device which is at a higher level than the X frame and so more readily reached.

It will be seen that the links (each of which in itself is rigid) form a pivotal linkage which can be locked in an erect position by a locking device above the horizontal member and is pivoted to the X frame.

Preferably when the frame is erect two members at each side are held at an acute angle by a stop which prevents the angle decreasing and a ring which is slid over the two members to prevent the angle increasing. For example in a frame with a U-shaped handle, this handle is connected at each side by two links to the horizontal member, one of the links at each side is extended and pivoted to one of the two crossed members forming the X frame, and the chair is locked when erected by two rings which each slide down one limb of the U-shaped handle and over the upper end of one of the links.

pin between the shorter link and the handle extend axially to come into contact with the edge of the longer link.

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The preferred baby carriage is of the kind in which the child sits upright with its feet on a rest and faces the person pushing the carriage, and the seat is in the form of a rigid board suspended from the top of the body by an easily collapsible material such as leather-cloth or canvas.

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When the framework is erected, the ring slides down over the handle and the longer link to stop in a position short of the end of the handle, and so to lock the two members.

In order to collapse the framework, it is necessary only to slide the metal ring upwards past the pivot on the handle and then to move the top of the handle downwards, at the same time pushing it forwards. The links then swing as described above to carry the handle into position above the body and at the same time the crossed members are flattened and the axles spread apart.

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This invention relates to four-wheeled perambulators and the like in which the handle and the remainder of the frame can be folded so that the perambulator can be stored in a small space. Our object is to provide a perambulator which can be folded and unfolded in an easy movement, which can be readily locked in its erected position and which occupies an unusually small space when folded.

According to the invention the frame at each side includes a substantially horizontal member supporting a body and two crossed members carrying the wheels and forming an X frame, one crossed member being pivoted to the horizontal member and the other to the lower end of a link which crosses the horizontal member and at its upper end is pivoted directly to the handle. Preferably a second link is pivoted to the handle and the horizontal member and serves as a stay which when the chair is erect determines both the inclination of the first link to the horizontal member and the inclination of the limb of the handle to the first link. When the frame is erect the handle may be held in fixed angular relation to the horizontal member by a lock above the horizontal member. By the use of this construction the X frame forming the lower part of the push chair can be held in the erect position by a locking device which is at a higher level than the X frame and so more readily reached.

It will be seen that the links (each of which in itself is rigid) form a pivotal linkage which can be locked in an erect position by a locking device above the horizontal member and is pivoted to the X frame.

Preferably when the frame is erect two members at each side are held at an acute angle by a stop which prevents the angle decreasing and a ring which is slid over the two members to prevent the angle increasing. For example in a frame with a U-shaped handle, this handle is connected at each side by two links to the horizontal member, one of the links at each side is extended and pivoted to one of the two crossed members forming the X frame, and the chair is locked when erected by two rings which each slide down one limb of the U-shaped handle and over the upper end of one of the links.

* C L M S *

The push chair which is shown by way of example in the accompanying drawings is the form of perambulator which we prefer. In these drawings:—

Figure 1 is a side view of the push chair in the erected position;

Figure 2 is a side view showing the push chair in the completely folded position;

Figure 3 is a side view showing the position of the parts during the folding operation; and

Figure 4 is a view seen along the arrow IV in Figure 1 and is on a larger scale.

The push chair illustrated has a body which consists of a substantially horizontal U-shaped frame member 1 from which a seat 2 is suspended by canvas or like flexible material 3. The baby sits in this body facing to the left, as seen in Figure 1, with its feet on a foot rest 4. The push chair is, of course, symmetrical about the longitudinal centre line, and for ease of description only the side shown will be described.

The foot rest 4 is secured to an axle 5 to which the lower end of one member 6 of a pair of crossed frame members is connected, the other member 7 of this pair being connected at its lower end to a second axle 8. The axle 5 carries a wheel 9 and the axle 8 a wheel 10, and it will be understood that there are similar wheels at the other side. The upper end of the frame member 6 is pivotally connected at 11 to the frame member 1 and the upper end of the frame member 7 is pivotally connected at 21 to the lower end of a link 14 which is pivotally connected at 17 to the end of the horizontal member 1. The crossed members 6 and 7 are pivotally connected at 12 and relative movement of them about this pivot results in the wheels 9 and 10 being moved apart into the position shown in Figure 2. The parts so far described form an X frame.

In push chairs of this general kind it is usual to provide a U-shaped handle. In the present push chair the handle is shown at 13 and at each side one limb is connected by the link 14 and a link 15 to the frame member 1. The link 14 runs from a pivot point 16 a little above the lower end of the handle through the pivot point 17 to the pivot point 21. The link 15 is shorter than the link 14 and it runs from a pivot point 18 close to the free end of the handle to a pivot point 19 on the member 1. The links 14 and 15 are of unequal length. The pivot points 17 and 19 are separated by a distance greater than that between the pivot points 16 and 18 and the difference between these two distances is substantially the same as the difference in the lengths of the link 15 and the part of the link 14 above the horizontal member.

As a result of the construction described the handle can swing from a folded position in which it lies close and substantially parallel to the horizontal frame member to an erected position in which it is inclined to and spaced apart from the horizontal member by the links, which are then themselves inclined at an acute angle to one another. As the handle is swung the lower end of the link 14 moves and thus the X frame is erected and folded at the same time as the handle. When the frame is folded the transverse part of the handle, that is to say the base of the U which is gripped by a user, lies at the same end of the chair as when the frame is erect. Accordingly the frame can be erected by an easy upward pull on the handle. This construction in which the frame at each side includes three members which are pivoted together and movable between an erect position in which they extend consecutively in a straight line from the front axle to a transverse handle and a folded position in which they form a shallow "Z" with the members substantially parallel to a plane containing the axles is described and claimed in our Application No. 19559/48 (Serial No. 681,542) of even date herewith.

When the frame is erect the linkage formed by the links 14 and 15 is locked by one of two rings 20. These each slide down one limb of the handle 13 over the pivot point 16 and so embrace the upper end of the link 14 and prevent the angle between that link and the handle increasing. Decrease of the angle is prevented by the pivot pin 18 which after passing through the link 15, a washer 22, and the handle 13 is enlarged at 24 as a stop to engage the link 14.

When the push chair is to be folded the rings 20 are slid up the limbs of the handle and then downward pressure on the transverse part of the handle causes the frame to pass from the shape shown in Figure 1, through that shown in Figure 3 to that shown in Figure 2. It will be noted that the member 7, the link 14 and the side limbs of the handle 13 are of substantially the same length, and the sides of the member 1 are also of this length. Thus the frame when folded is very compact.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A folding four-wheeled perambulator or the like in which the frame at each side includes a substantially horizontal member supporting a body, a link crossing the horizontal member and pivoted to it, two crossed members pivoted to the horizontal member and the lower end of the link respectively and forming an X frame carrying the wheels, and one limb of a handle pivoted directly to the upper end of the link.

2. A perambulator or the like according

to claim 1 in which a second link is pivoted to the handle and the horizontal member and serves as a stay which when the chair is erect determines both the inclination of the first link to the horizontal member and the inclination of the limb of the handle to the first link.

3. A perambulator or the like according to claim 1 or claim 2 with a handle which when the frame is erect is held in fixed angular relation to the horizontal member by a lock above the horizontal member.

4. A folding four-wheeled perambulator or the like in which at each side a body is supported by a substantially horizontal member, and one limb of a handle is indirectly connected to the horizontal member by a pivotal linkage which can be locked in an erect position by a locking device above the horizontal member and is pivoted to an X frame which carries the wheels, and the handle is held erect by locking the linkage.

5. A perambulator or the like according to claim 4 in which when the frame is erect two members at each side are held at an acute angle by a stop which prevents the angle decreasing and a ring which is slid over the two members to prevent the angle increasing.

6. A folding four-wheeled perambulator or the like in which a U-shaped handle is connected to a substantially horizontal member by two links at each side each pivoted to the handle and the horizontal member, one of the links at each side is extended and pivoted to one of two crossed members forming an X frame carrying the wheels, and the handle is locked when erected by two rings which each slide down one limb of the U-shaped handle and over the upper end of one of the links.

7. A perambulator or the like according to claim 1 in which at each side a second shorter link is also pivotally connected to the handle and the horizontal member, the distance between the pivot points of the two links on the horizontal member being greater than that between their pivot points on the handle by an amount substantially equal to the difference in the length of the links above the horizontal member.

Dated this 26th day of June, 1951.

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