Dec. 24, 1940. S. KROLL ET AL 2,226,000

COLLAPSIBLE CARRIAGE

Filed Nov. 10, 1939 2 Sheets-Sheet 1

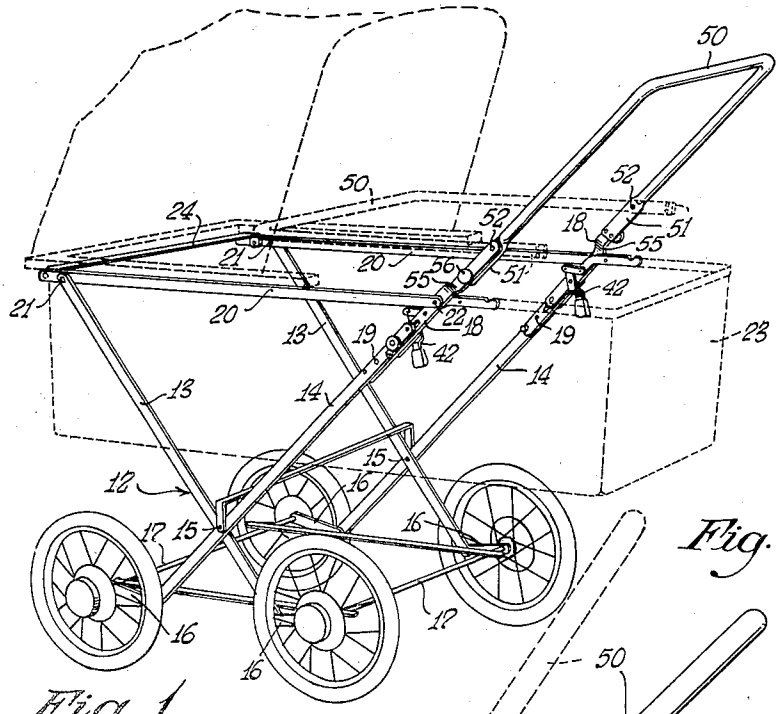


Fig. 1.

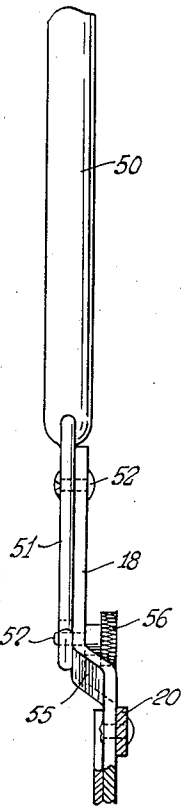


Fig. 3.

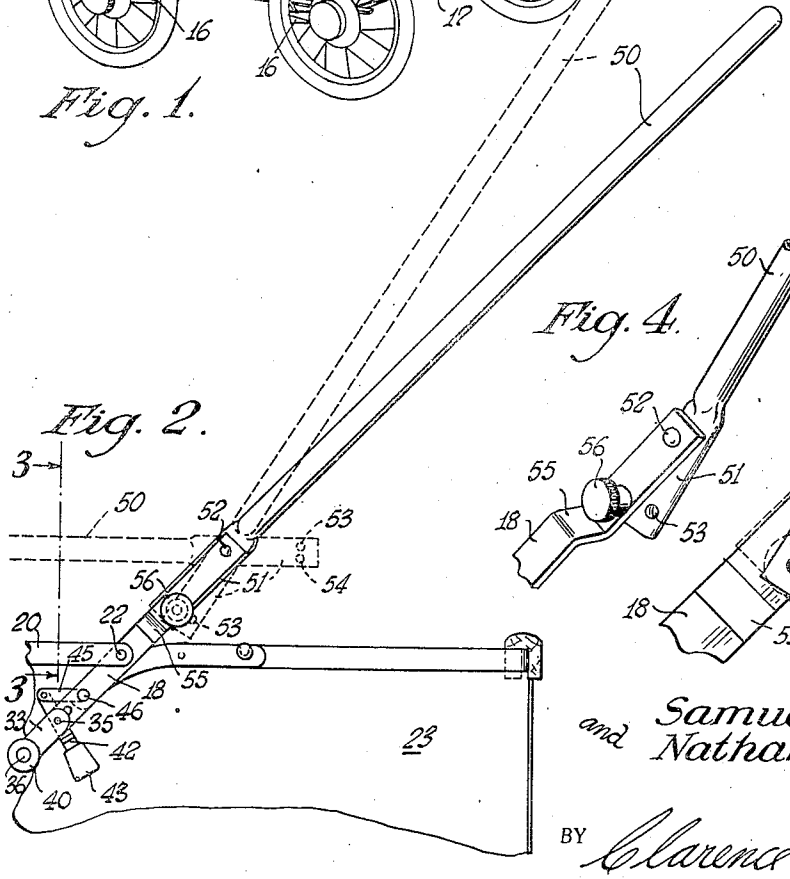


Fig. 2.

Fig. 4.

Fig. 5.

Samuel Kroll
and Nathan J. Kroll
INVENTORS

BY Clarence E. Threedy
THEIR ATTORNEY.

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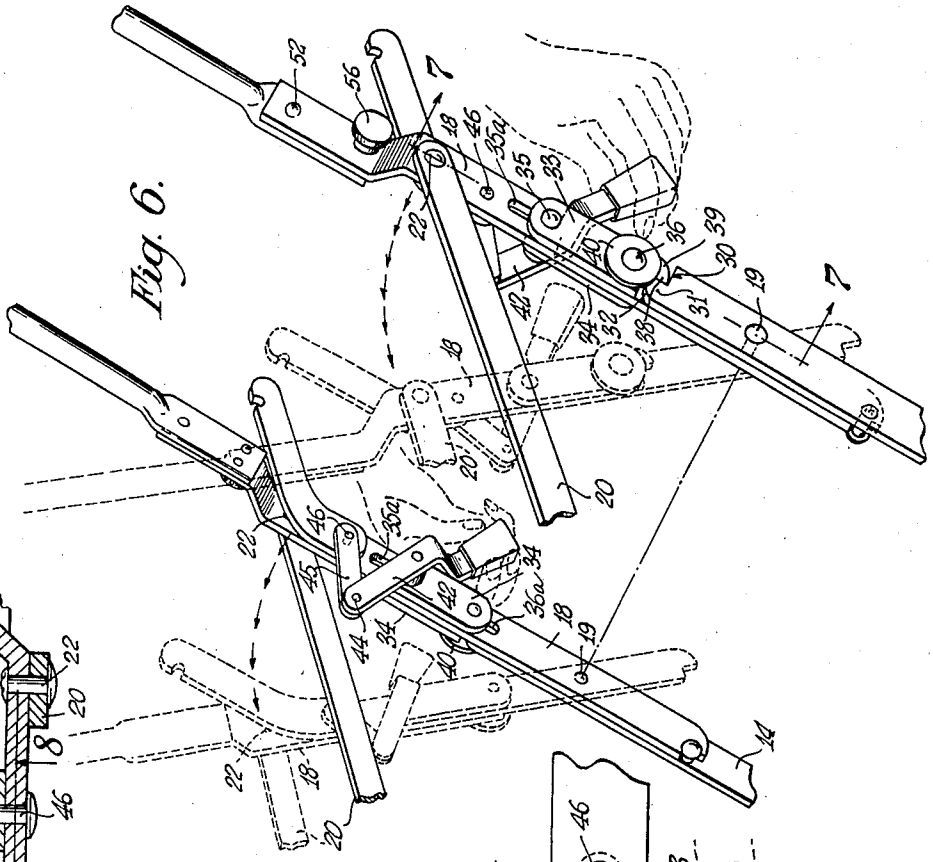


Fig. 6.

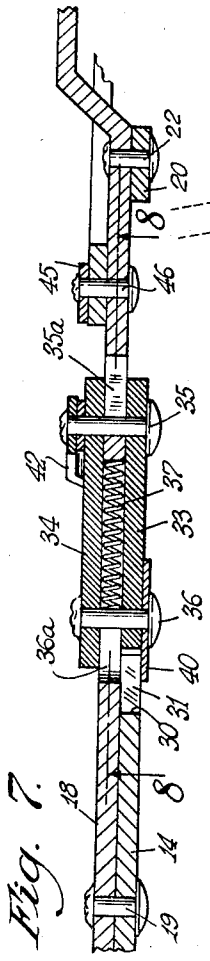


Fig. 7.

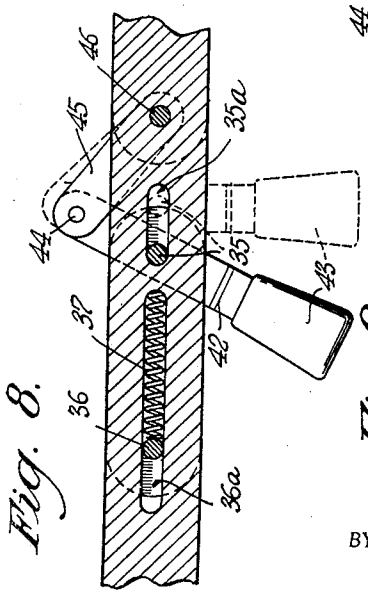


Fig. 8.

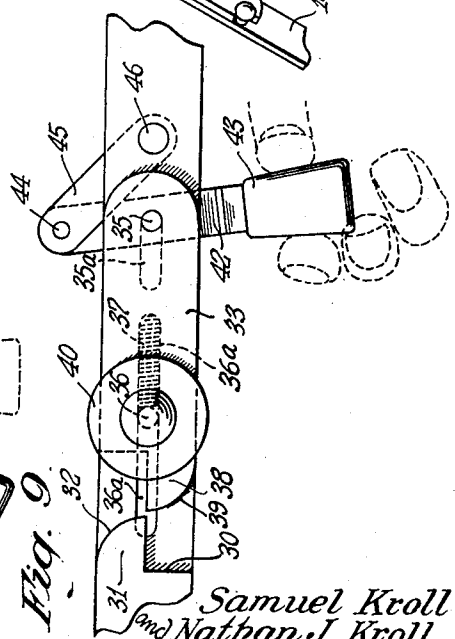


Fig. 9.

Samuel Kroll
and Nathan J. Kroll
INVENTORS

BY Clarence E. Threedy
THEIR ATTORNEY.

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COLLAPSIBLE CARRIAGE

Samuel Kroll and Nathan J. Kroll, Chicago, Ill.

Application November 10, 1939, Serial No. 303,790

5 Claims. (Cl. 280—41)

This invention relates to folding baby carriages and has as its principal object the provision of improved means for locking a collapsible frame structure in extended condition.

A further object is the combination with a folding carriage structure of the type which includes a pair of pivoted braces adapted to move into a certain pivotal relationship when the carriage is erected and to secure the carriage in such condition provided said members are prevented from pivoting relative to each other, of means for automatically locking said pivotable members against pivotal movement when the carriage is erected and manually operable lever means for releasing the locking means to permit collapsing or folding of the carriage.

A further object is the provision of adjustable handle means coacting with foldable carriage frame members and means for locking the handle in positions of adjustment so that the carriage may be positioned in a confined space with the handle out of obstructing position, and for the further purpose of disposing the handle in convenient positions of engagement.

Other objects, advantages and novel aspects of the invention reside in certain details of construction as well as the cooperative relationship of the component parts of the illustrative embodiment described hereinafter in view of the annexed drawings, in which:

Fig. 1 is a perspective view of the carriage in erected condition;

Fig. 2 is an enlarged fragmentary side elevational view of the automatic latching means;

Fig. 3 is a sectional view through the latching means looking in the direction of line 3—3 of Fig. 2;

Fig. 4 is a fragmentary perspective of the handle securing means;

Fig. 5 is an inside elevational fragment of the handle latching means of Fig. 4;

Fig. 6 is a fragmentary perspective of the frame structure illustrating the operation of the latching means;

Fig. 7 is a section through the latching means along line 7—7 of Fig. 6;

Fig. 8 is a section through the latching means along line 8—8 of Fig. 7;

Fig. 9 is an enlarged elevational fragment showing the outer side of the latching means.

For the purposes of illustration, there is shown in Fig. 1 a type of folding carriage structure which includes a wheel chassis or running gear generally indicated at 12, upon which are mounted opposite pairs of scissors arms each including a longer arm 13 and a shorter arm 14, the arms of each pair being joined by a scissors pivot 15, and the lower end of each arm being connected to a shackle 16 which is, in turn, pivotally connected to an axle 17. The general carriage structure is completed by the provision of short folding links or arms 18, each pivoted as at 19 (see Fig. 6 also) to the upper end portion of one of the shorter scissors arms 14.

A top rail 20 is pivotally connected as at 21 with the upper end of the longer arm 13 on each side of the carriage, and is pivotally connected as at 22 at its opposite end with one of the links 18. A carriage cradle 23, as indicated in dotted lines, is attached to the rails 20 and to a cross rail 24, the cradle being of a foldable fabric adapted to collapse with the frame structure down onto the wheel chassis.

If the link arms 18 are free to pivot about points 19 relative to their respective shorter scissors arms 14, the entire frame structure may be collapsed and lowered onto the running gear (not illustrated). However, if the structure has been erected and member 18 is locked against pivotal movement about the point 19, it will be apparent that the rails 20 will prevent pivotal movement of the scissors arms and it will be impossible to collapse the carriage.

The present invention has as one of its principal objects the provision of manually releasable means for automatically latching the link arms 18 against pivotal movement relative to the shorter scissors arms 14 to which they are pivotally attached.

Referring to Fig. 6, the improved latching means includes the provision of a notch 30 at the upper end of the shorter scissors arms 14, which provides a locking lug 31, the outer edge 32 of which is rounded to provide a cam edge (see Fig. 9 also). Mounted for reciprocation on each of the links 18 opposite the lugs 31 is a detent slide 33, this mounting being effected by providing a companion slide 34 (Fig. 7 also) on the inner side of the links 18 and connected with the detent slide by means of pins 35 and 36 projecting through elongated slots 35a and 36a formed in the link arms.

The slots 36a are sufficiently elongated to accommodate a compression spring 37, one end of which bears against the end of the slot nearest the shorter slot, while the opposite end bears against the pin 36 and in consequence urges the pair of slide straps or bars 33 and 34 in a direction toward the upper extremity of the scissors arm 14 and the locking lug 31. Each of the de-

tent straps or slides **33** is notched (Fig. 9) to provide a detent lug **38** having a rounded cam edge **39** and positioned to fit into the notch portion **30** at the upper end of the corresponding scissors arm.

Referring to Fig. 6, it will be apparent that when the link arms **18** are swung to the right from their dotted line positions about the pivots **19**, the cam edges **39** will ride on cam edges **32** and cause the detent slides **33** to be moved against the tension of their springs **37** so that the detent or locking lugs **38** will be in position to snap into the notches **30** when the link arms **18** are pivoted to fully extended position as illustrated in full lines in Figs. 1 and 6, for example, whereby to lock the frame structure in erected condition. Large finish washers **40** are provided on pins **36** to overlie a portion of the interfitted locking lugs **31** and **38** to prevent accidental pinching of the fingers.

Means for effecting release of the detent slides includes the provision of a releasing lever **42** (Figs. 6, 8 and 9) pivoted on the pins **35** at each side of the carriage, the lower ends of these levers being provided with rubber handle portions **43**, while the upper ends thereof are pivotally connected as at **44** to short links **45** which are, in turn, pivoted as at **46** to the scissors links **18**.

By grasping the handle portions of each of the releasing levers **42** as illustrated in the full line showing of Fig. 6, and pivoting the levers with a sort of lifting action about their respective pivots **35** (anticlockwise), the detent plates **33** are withdrawn to disengage the locking lugs **38** thereof from abutting relationship with lugs **32** at the upper ends of the corresponding scissors arms, thus freeing the scissors links **18** for pivotal movement in a direction toward the dotted line position for purposes of collapsing the entire carriage structure.

A further feature of the invention is the provision of an adjustable handle structure including a substantially U-shaped handle **50** (Figs. 1 and 2) preferably in the form of a bent tube having opposite flattened end portions **51** (Figs. 4 and 5) each of which is pivotally connected as at **52** to the upper end portion of one of the scissors links **18**. Each flattened end portion **51** of the handle is provided with two or more locking holes **53** and **54** spaced concentrically of the corresponding pivot **52** in the region between the pivot pins **52** and the extremity of the flattened end portion.

The upper end portion of each of the scissors links is offset toward the other as at **55** and is provided with a knurled locking screw **56** threaded therein close to the offset, each set screw having an end portion **57** adapted to project into one or the other of the locking openings **53** or **54** (Fig. 3) to secure the handle in one of the adjusted positions indicated in dotted and full lines in Figs. 2 and 5. While more than two locking openings **53**, **54** may be provided, it has been found that the arrangement shown is satisfactory for most purposes.

From an examination of Fig. 2, it will be apparent that when the handle **50** is in lowered, full line, condition, it projects beyond the end of the cradle bag **23**, a greater distance than when it is in the raised, dotted line position and since it is frequently desirable to move the carriage into a corner or other confined quarters, the adjustability of the handle to raised position facilitates this and has the further advantage of disposing the upper or bight portion of the handle in relative raised and lowered positions for convenient grasp by persons of different height. This construction also permits pivoting the handle into fully lowered or horizontal position, as illustrated in Fig. 2, for purposes of disposing the carriage in confined quarters while otherwise erected.

The various advantages and objects of the invention may be accomplished by modifications of the particular embodiment specifically described herein, and it is intended that the appended claims shall include all equivalent arrangements fairly coming within their call.

Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. In a folding carriage structure including opposite pairs of scissors arms and interconnecting frame means, one scissors arm of each pair being pivotally connected with a link which is pivotally connected to said frame means, latching means including the provision on each of said links of a detent slidable toward and away from an end portion of the corresponding scissors arm, each of said end portions being notched to provide a locking lug, each detent having a cooperating locking lug, spring means normally urging said detent into a position for locking engagement with the corresponding locking lug when the links are pivoted into a predetermined erected relationship relative to their scissors arms, cam means on said detents and lugs cooperable to effect movement of the detents into unlatched position to permit movement of the links into said predetermined position when the carriage is erected, manually operable release means in the form of a lever pivotally connected with each detent at a point between the ends of the lever, each lever being pivotally connected to a link which is in turn pivotally connected to said first-mentioned link, said levers being pivotable to retract the detents from latching position against the tension of the corresponding spring means.

2. In a folding carriage structure of the class described, the combination with a scissors arm and a link pivotally connected thereto and to a frame member such that the link is moved into a predetermined position relative to the scissors arm when the carriage is erected and will prevent collapsing of the carriage if relative pivotal movement of the link and scissors arm is prevented, of automatic latch means including a detent plate mounted for sliding movement on said link by means of a pair of pins extended through the plate and through elongated slots in the link, said slots extending in the direction of the length of the link toward said scissors arm when the link is in said predetermined position, that one of the slots which is nearer the scissors arm being longer than the other slot, spring means disposed in the longer slot and bearing against the corresponding pin means to urge said detent plate toward the end of said scissors arm when the link and arm are in said predetermined position, the end of said plate nearer said end of the scissors arm being notched to provide a locking lug, said end of the scissors arm being notched to provide a cooperating locking lug engaged by the lug on the detent when the link and scissors arm are in said predetermined position, each of said lugs having a cam edge cooperable with the cam edge of the other to effect movement of the detent plate to permit the locking lug on the latter to pass the locking lug on the scissors arm in moving into said predetermined position.

3. In a folding carriage including opposite pairs of scissors arms each having a link pivotally connected thereto, each link having a free end portion and each link being pivotally connected with a rail between said free end portion and its connection with the corresponding scissors arm, each rail having pivotal connection with the remaining scissors arm of the corresponding pair, the combination with said links of an adjustable handle comprising a U-shaped handle member having flats at its free ends, each flat being pivotally connected with the free end portion of one of said links, each flat being provided with a plurality of locking holes disposed concentrically of its pivotal connection, and a set screw threaded into the free end portion of each link for projection into one of said locking holes to secure said handle in positions of pivotal adjustment.

4. In combination, a carriage comprising a collapsible carriage frame including a top rail and opposite pairs of scissor arms each including arms of different lengths, means pivotally connecting the rail to the longer of said arms, a link pivotally connected to the shorter of said arms, a latch notch provided by an end of each shorter arm, a spring-urged detent slidable lengthwise upon said link and adapted to engage said latch notch, a hand-operated means for moving said detent from engagement with the latch notch, said means including a member having one end pivoted to the link, a lever having an end pivoted to the other end of the said member, and means providing a connection between the detent and said lever, substantially as described.

5. In combination, a latch structure for an arm of a collapsible carriage including a latch head formed on the said arm, a link pivotally connected to the arm for position extensive therewith, a spring-urged detent slidable lengthwise upon said link and adapted to engage said latch head, a hand-operated means for moving said detent lengthwise with respect to the link and from engagement with the latch head, said means including a member having one end pivoted to the link, a lever having an end portion pivotally connected to the other end of the said member, and means providing a connection between the detent and said lever, substantially as described.

SAMUEL KROLL.
NATHAN J. KROLL.