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ONE-MOTION COLLAPSIBLE CARRIAGE

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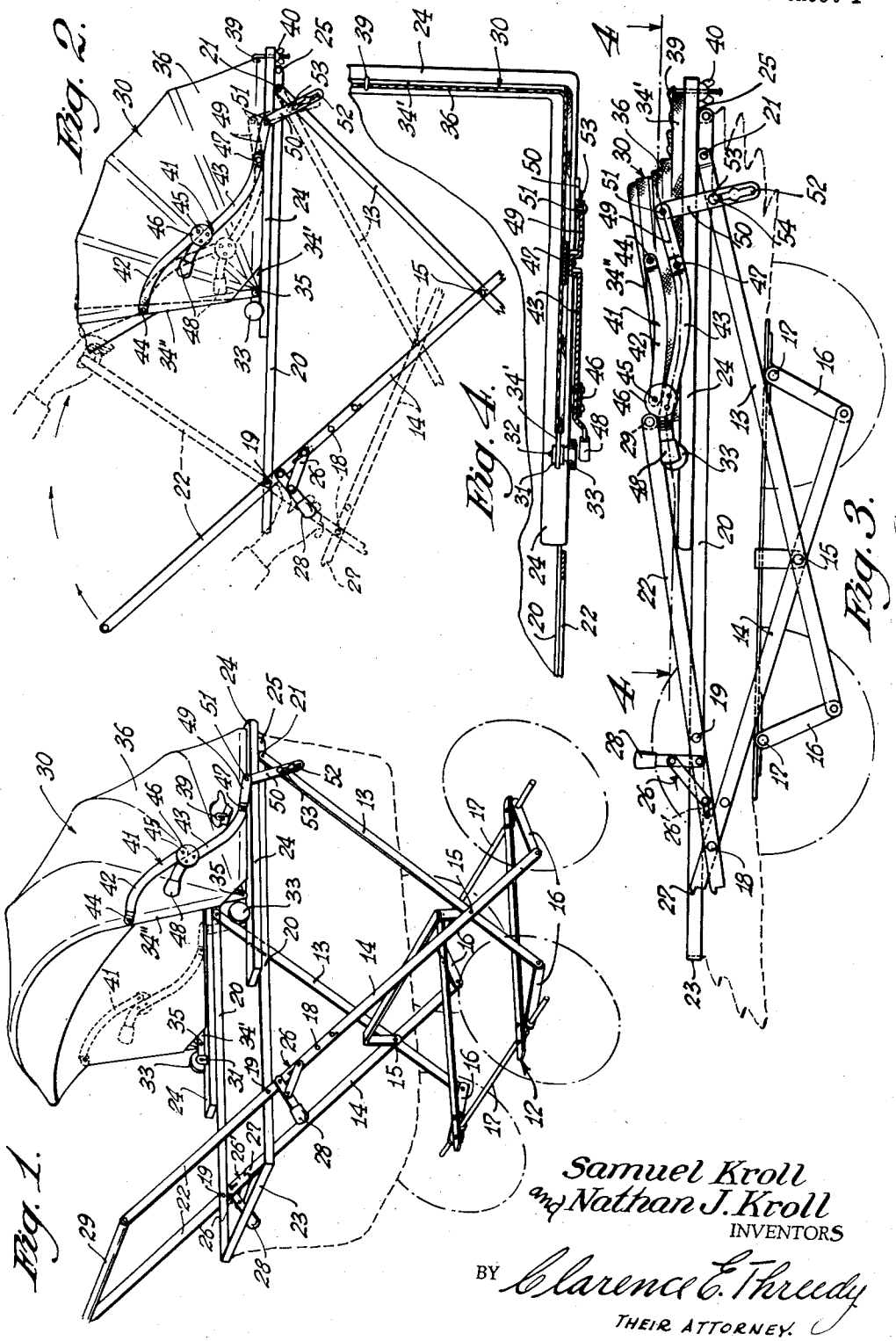


Fig. 2.

Fig. 4.

Fig. 3.

Fig. 1.

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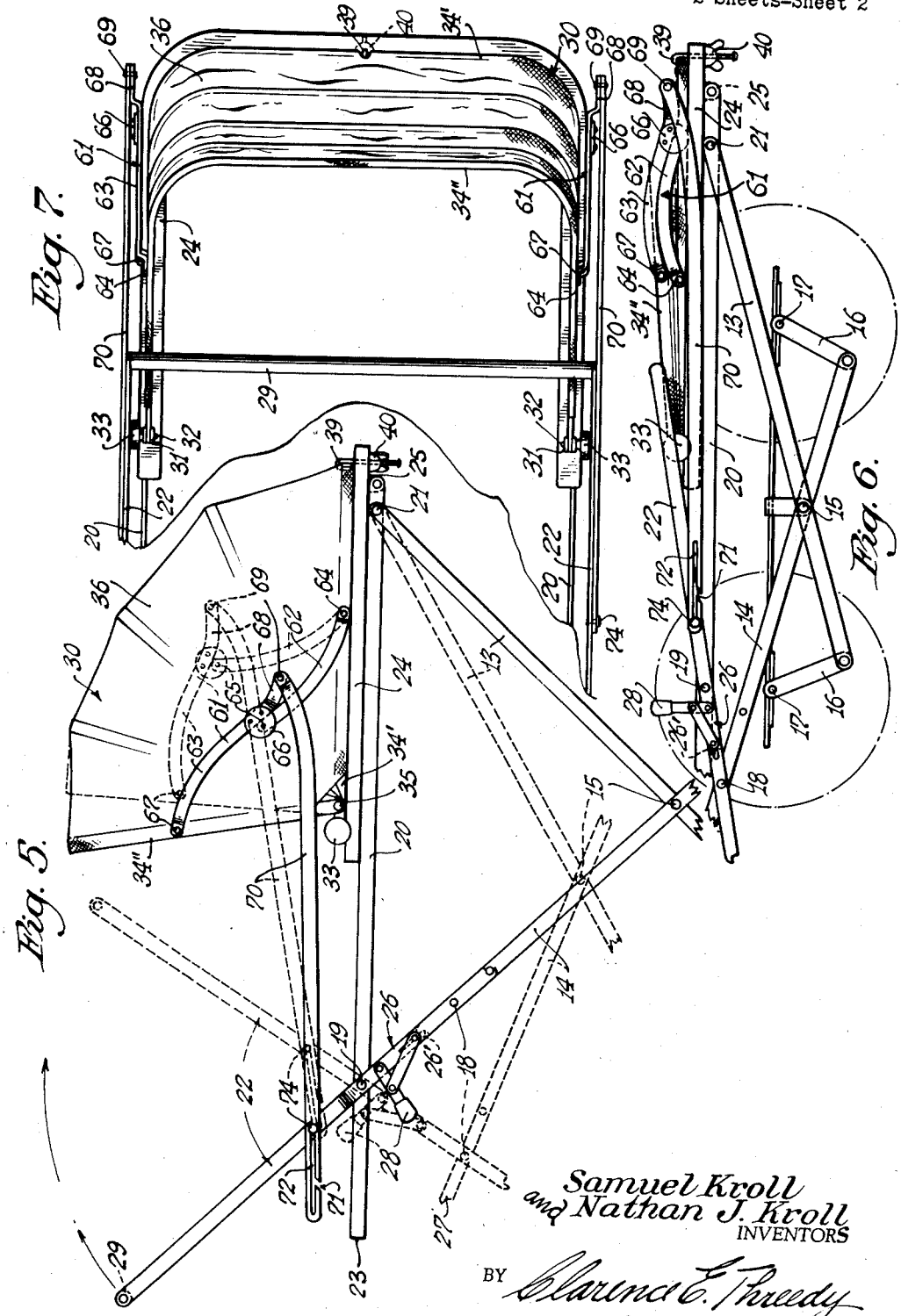


Fig. 7.

Fig. 6.

Fig. 5.

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ONE-MOTION COLLAPSIBLE CARRIAGE

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10 Claims. (Cl. 280—41)

This invention relates to improvements in collapsible carriage structures and has as its object the provision of an improved one-motion collapsible baby carriage which will be simple in construction, economical in manufacture and highly efficient in use.

Another object of this invention is the provision of a folding carriage structure including a hood which is collapsible simultaneous with the collapsing of the folding carriage structure.

A further object of this invention is the provision in folding carriages of a removable collapsible hood structure which is adapted, when assembled on the carriage, to be collapsible along with the folding operation of the carriage.

Still another object of our invention is the provision in improved collapsible baby carriages of toggle brackets for a hood structure and adapted to receive a thrust imparted by the collapsing carriage so as to break the toggle brackets and fold the hood structure.

Other advantages and novel aspects of our invention will appear more fully as the description thereof proceeds in view of the accompanying drawings in which:

Fig. 1 is a perspective view of a folding baby carriage gear embodying our invention and with the wheels and body in phantom;

Fig. 2 is a fragmentary side elevational view of the baby carriage gear of Fig. 1 illustrating the initial movement in the folding operation thereof;

Fig. 3 is a side elevation of the carriage gear of Figs. 1 and 2, at slightly larger scale and in totally collapsed condition;

Fig. 4 is a fragmentary plan view, partly in section as seen substantially along line 4—4 in Fig. 3;

Fig. 5 is a fragmentary side elevational view of a modified form of our invention;

Fig. 6 is a side elevational view of our modified form shown in collapsed condition; and

Fig. 7 is a fragmentary top plan view of our modified form of the invention as seen from above in Fig. 6.

As shown in the drawings, one of the salient objects of our invention is to provide in collapsible carriages a folding hood structure which is so arranged on the carriage as to comprise a part of the entire collapsible structure. In accomplishing this result there is provided a collapsible carriage gear wherein an element thereof is movable toward and away from the normal hood position.

The particular carriage gear illustrated has been found adaptable to the function intended and is that gear structure which is disclosed described and claimed in our United States Letters Patent No. 2,226,000 issued December 24, 1940.

For the purpose of clarity 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 this running gear 12 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 a folding lever structure 22 having pivotal connection adjacent its lower end, as at 18, with the upper end of the short arm 14 and also having pivotal connection as at 19 with a top rail 20 at the point of convergence therewith.

The top rail 20 is pivotally connected as at 21 with the upper end of the longer arm 13 on each side of the carriage, while the lever structure 22 forms an extension for the short arm 14 and is pivotally connected to the top rail 20 on each side of the carriage. The top rails 20 on each side are held in spaced relation, as shown, by a suitable rail 23. A U-shaped frame element 24 overlies the opposite ends of the top rail 20, which ends are attached to the underside of the frame 24 by angle clips 25.

A suitable latch means 26 is provided on each of the folding levers 22, which latch means is so arranged and constructed as to include a sliding latch bolt 26′ spring-urged into latched engagement with the free end 27 of the short arms 14. Such a latch structure is shown, described and claimed in our aforementioned Letters Patent and includes a hand grip 28 linked to the sliding bolt 26′ so as to permit manual release of the bolt from the latch in order that the scissors frame may collapse by its own weight.

The upper ends of the folding lever structure 22 are joined by a tubular member 29 which facilitates a handle whereby the carriage may be pushed in perambulator fashion. Mounted upon the U-shaped frame 24 is a hood structure generally indicated at 30. There is provided on each side of the carriage, upon the parallel legs of the frame member 24, a supporting angle clip 31 which is adapted to receive a stud screw 32 having an ornamental head 33 with a knurled edge to facilitate hand operation of the stud screw 32. The hood 30 is constructed by providing a plurality of bows 34 having their free ends pivotally

joined as at 35 on each side of the hood. The bight portions of these bows are attached to a fabric covering 36 and are so arranged as to support the covering 36 in the form shown in the drawings and to permit collapsibility of the hood. The lowermost bow 34' has an end portion 38 on each of its leg elements extending beyond the pivotal joint 35 of the several bows and adapted to be pivotally supported on the angle clips 31 by means of the stud screws 32.

The lowermost bow 34' is clamped down upon the U-shaped frame element 24 by means of a hook 39 and wing nut 40. The wing nut 40 is threadably arranged on the shank of the hook 39 after the shank has been inserted through a hole formed in the medial portion of the frame 24. The book end 39 is then disposed over the bight portion of the lower bow 34' and the wing nut screwed tightly upon the shank, thus urging the bow 34' downwardly upon the top surface of the frame 24. This hook and wing nut assembly, in conjunction with the clip and stud 31—32, provides a means for detachably fastening the hood to the carriage. Coincidentally to fastening the hood to the carriage, the hook and wing nut cause the fabric seam on the lower bow 34' to press firmly down upon the top surface of the frame 24 to provide a weather seal which prevents infiltration of air as well as snow and rain. This fastening means has a further function in holding the hood firm with respect to the carriage gear 12, and that function is to assist in the collapsibility of the hood jointly with respect to the carriage gear as will now be explained.

Each side of the hood 30 is provided with a folding bracket 41 which comprises two essential parts in the form of struts 42 and 43 joined to provide a central breaking point in the bracket. The strut 42 has its free end pivotally connected as at 44 to the leg portion of the foremost bow 34'' while the opposite end of the strut 42 is pivotally connected as at 45 to a disc 46 and eccentrically with respect thereto. The other strut 43 is fastened at one end to the disc 46 so as to move in unison therewith and has pivotal connection as at 47 near its opposite end with the leg portion of the lowermost bow 34'. The arrangement is such that when the hood structure 30 is opened as shown in the drawing, there is a tendency for the fabric cover 36 to be stretched and consequently to draw the pivoted bows toward a collapsed condition. However, the bracket 41 when placed in condition to hold the hood in opened condition, is so constructed as to be sprung into opened or straightened condition by the force held in the bracket 41 by action of the constant tendency of the fabric to urge the hood toward closed condition. This is so because the two struts 42—43 have their pivot points 44 and 47 respectively disposed less than 180° (on that side of the disc 46 nearest the pivot mounting 32 for the hood 30) distance from each other relative to the pivot 45. In order to break the bracket 41 so as to permit folding of the hood 30, a hand grip 48 is provided on each of the brackets 41. This hand grip 48 is a portion of the strut 43 extending obliquely from the disc 46 in the form shown in Figs. 1 and 2 such that downward pressure on the hand grip 48 will pivot the bracket at 45, thus breaking the bracket and permitting the hood to fall into collapsed condition.

Means are provided for operatively connecting the hood brackets 41 to the scissors frame 12. Such means includes an extended arm 49 on the strut member 43, which arm 49 extends beyond the pivotal connection 47. A link member 50 is pivotally connected to the free end of the arm 49 as at 51 and has formed adjacent its opposite end an elongated slot 52. Centrally with respect to the length of slot 52, there is an enlarged annular opening through which is passed the head end 53 of a pivot pin 54 carried on the long arm 13 of the scissors frame. The arrangement is such that when the folding carriage gear 12 is open and the hood 30 is in raised condition, the link 50 will be forced downwardly with the upper end of the slot bearing down upon the pin 54.

As will be seen in Fig. 2, the carriage is released for folding operation by merely raising the handles 28 upwardly to release the latches 26 on each of the short arms 14. Upon release of the latches 26 the weight of the carriage body (shown in phantom) as well as that of the hood, rail and frame will weigh down on the scissors arms, causing the latter to collapse toward the horizontal. The rotation of the scissors arms 13 clockwise about the pivot 21 (Fig. 2) imparts an upward thrust against the link 50, thus raising the extended arm 49 counterclockwise about the pivot 47. It will be remembered that while the pivot 47 is on a movable element, i. e. the lowermost bow 34', this element 34 is held in fixed relation with respect to the carriage frame 12 and therefore constitutes a fixed pivot. The anticlockwise movement thus imparted to the arm 49 will cause a like rotation of the strut member 43, thereby breaking the straight line condition of the folding bracket 41, whereupon the hood 30 will fall into a collapsed condition as shown in Fig. 3. Thus, it is seen that each time the carriage gear 12 is folded, the hood 30 will collapse simultaneously therewith upon the single folding operation of the carriage.

In the modified form of our invention shown in Figs. 5 to 7 inclusive, the folding carriage gear 12 and hood structure 30 are identical. Like reference numerals therefore indicate like elements on the two forms of disclosure. The folding bracket 61 of our modified form is reversed from that shown in Figs. 1 to 4 inclusive and is adapted to break in a direction away from the hood mounting clips 31.

The brackets 61 are composed of two elements in the form of struts 62 and 63 joined at a central breaking point 65. The lowermost strut 62 is pivotally connected as at 64 to the leg portion of the lowermost bow member 34' of the hood structure. The opposite end of strut 62 is pivotally connected as at 65 to a disc 66, and eccentrically with respect thereto. The remaining strut 63 of the bracket 61 which is affixed to the disc 66, extends upwardly and has its free end pivotally connected as at 67 to the leg portions of the foremost bow member 34''. This bracket 61, like the bracket 41, is adapted to be forced into a straight line condition and to cooperate with the elasticity of the fabric covering 36 to maintain the hood 30 in opened condition.

Means for joining the hood structure and carriage gear for simultaneous operation upon collapsing of the carriage includes a hand grip 68 which extends from the strut 63 in a direction away from the disc 66 and opposite to the direction of extension of the strut 63. The free end of this hand grip 68 has pivotally arranged thereon as at 69 a link member 70. The opposite end of the link member 70 has connection with a part of the scissors frame, particularly that part which extends upwardly from the short arm 14 of the scissors and comprises the lever structure 22.

This connection is a loosely mounted connection and includes an elongated slot 72 formed in the link 70. An oblique passage 71 is cut into the bottom edge of the slot 72 through the surrounding portion of the link 70, thus permitting passage of a pin element 74 carried by the lever arm 22.

The arrangement is such that when the latches 26 are released and the carriage gear 12 commences to collapse as hereinbefore explained, the lever structure 22 will pivot at 19, with respect to the horizontal rail 20, in a clockwise direction. The pin 74 will bear against the end of the slot 72 and urge the link 70 toward the rear of the carriage while the opposite end of the link 70 will exert on upward, rearward pressure on the hand grip 68 of the bracket 61 to break the latter and permit the hood structure to assume a collapsed condition as shown in Fig. 6.

It is particularly pointed out that in both forms shown the hood 30 may be removed from the carriage proper without use of tools, since both the links 70 and 50 are free to move out of assembled relation with respect to the pins 74—54 respectively. The hood 30 is otherwise removable by loosening the stud screws 32 and the wing nut 40.

From the foregoing it is apparent that we have provided a one-motion collapsible baby carriage which is simply constructed and is easily handled to accomplish the folding operation.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

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

1. In a folding carriage, means providing a collapsible frame including a rectangular shaped horizontal top rail, a hood structure mounted upon said top rail and adapted to be opened and closed at the option of the user, folding bracket means arranged on each side of said hood structure and adapted to be sprung into hood extending condition to maintain the latter in opened condition, and link means between said collapsible frame and said folding brackets and adapted when the former is folded into collapsed condition to exert pressure upon said folding bracket to break the latter and permit closing of said hood structure.

2. In a folding carriage, means providing a collapsible frame including a rectangular shaped horizontal top rail, a hood structure mounted upon said top rail and adapted to be opened and closed at the option of the user, folding bracket means arranged on each side of said hood structure and adapted to be sprung into hood extending condition to maintain the latter in opened condition, and link means between said collapsible frame and said folding brackets and adapted when the former is folded into collapsed condition to exert pressure upon said folding bracket to break the latter and permit closing of said hood structure, simultaneously with the collapse of the frame as aforesaid.

3. In a folding carriage, a carriage gear including a pair of scissors arms pivotally connected between their ends, the lower ends of said scissors arms having connection with an axle structure, a horizontal top rail at each side of the carriage and supported at the upper ends of said scissors arms, a hood structure arranged for pivotal movement upon the upper surface of said top rail, means fastening said hood structure on said top rail, folding bracket means for said hood structure and adapted to be sprung over center into a straight line bracket, and link means connecting said folding bracket with one of said scissors arms on each side of the carriage whereby to impart a thrust against said folding bracket when the scissors arms are pivoted into collapsed condition.

4. In a folding carriage, a carriage gear including a pair of scissors arms pivotally connected between their ends, the lower ends of said scissors arms having connection with an axle structure, a horizontal top rail at each side of the carriage and supported at the upper ends of said scissors arms, a hood structure arranged for pivotal movement upon the upper surface of said top rail, means fastening said hood structure on said top rail, folding bracket means for said hood structure and adapted to be sprung over center into a straight line bracket, link means connecting said folding bracket with one of said scissors arms on each side of the carriage whereby to impart a thrust against said folding bracket when the scissors arms are pivoted into collapsed condition, and means releasably holding said scissors arms for folding action as aforesaid.

5. In a one-motion collapsible baby carriage, a folding carriage gear including a pair of long scissors arms and a pair of short scissors arms and means pivotally connecting one of each of the latter with the former, the lower ends of said scissors arms having shackle connection with an axle gear structure, a horizontally disposed top rail for said carriage, means pivotally connecting the upper end of said long scissors arms to said top rail, a handle structure comprising a pair of parallelly disposed lever arms, pivot means connecting said lever arms on said top rail intermediate their ends, means pivotally connecting the lowermost ends of said lever arms with the upper ends of said short scissors arms, latch means for supporting said short scissors arms in alignment with said lever arms when said carriage is in unfolded condition, a folding hood structure, means supporting said hood structure on said top rails, folding bracket means for said hood structure and including a pair of strut members pivotally connected adjacent their ends and having their opposite ends connected to the foremost and lowermost edges of said hood structure and adapted to assume a relatively straight line when sprung over center in one direction to maintain the hood open and to fold back upon itself when sprung over center in an opposite direction to permit folding of the hood, an extension on the lowermost one of said strut members, a connecting rod between said extension and the long scissors arm whereby when said latch means is released to collapse the carriage the pivotal action of said long scissors arms will exert a thrust against the extension on said strut member to spring said folding bracket back upon itself for the purpose aforesaid.

6. In a one-motion collapsible baby carriage, a folding carriage gear including a pair of long scissors arms and a pair of short scissors arms and means pivotally connecting one of each of the latter with the former, the lower ends of said scissors arms having shackle connection with

an axle gear structure, a horizontally disposed top rail for said carriage, means pivotally connecting the upper end of said long scissors arms to said top rail, a handle structure comprising a pair of parallelly disposed lever arms, pivot means connecting said lever arms on said top rail intermediate their ends, means pivotally connecting the lowermost ends of said lever arms with the upper ends of said short scissors arms, latch means for supporting said short scissors arms in alignment with said lever arms when said carriage is in unfolded condition, a folding hood structure, means supporting said hooked structure on said top rails, folding bracket means for said hood structure and including a pair of strut members pivotally connected adjacent their ends and having their opposite ends connected to the foremost and lowermost edges of said hood structure and adapted to assume a relatively straight line when sprung over center in one direction to maintain the hood open and to fold back upon itself when sprung over center in an opposite direction to permit folding of the hood, a hand grip on one of said strut members and adapted when forced upwardly to spring said folding bracket for folding action, a connecting rod between said hand grip and the lever arms whereby when said latch means is released to collapse the carriage the pivotal action of said lever arms will impart an upward thrust on said hand grip for the purpose aforesaid.

7. In a one-motion collapsible baby carriage including a folding carriage gear of the scissors type and a folding hood structure having a pair of toggle brackets adapted to assume a relatively straight line to provide a hood expanding bracket and adapted to be sprung over center at its mid point to permit hood folding, the combination of lever means formed integrally with said toggle bracket and adapted when upward pressure is applied thereto to spring said bracket over center for the purpose aforesaid, and means operatively connecting said lever means with said folding carriage gear and adapted to transmit upward pressure from the latter to the former.

8. In a one-operation collapsible baby carriage including a folding carriage gear having collapsible scissors arms for supporting a frame element in horizontal condition and a folding hood structure arranged on said frame element and including folding brackets on each side of said hood structure and adapted to assume a relatively straight line when maintaining the hood in expanded condition and adapted to be sprung over center at its mid point to permit hood folding, the combination of means for folding said hood structure simultaneously with the folding operation of said folding carriage, said means including a lever formed on said folding bracket and adapted to receive a thrust to spring the latter over center for the purpose aforesaid, a link means pivotally connected to said lever, a slot formed in the opposite end of said link means, means on one of said scissors arms on each side of the carriage and adapted to be disposed in said slot and to bear against said link means to impart a thrust to the latter and said lever when the scissors arms are collapsed.

9. In a one-operation collapsible baby carriage including a folding carriage gear having collapsible scissors arms for supporting a frame element in horizontal condition and a folding hood structure arranged on said frame element and including folding brackets on each side of said hood structure and adapted to assume a relatively straight line when maintaining the hood in expanded condition and adapted to be sprung over center at its mid point to permit hood folding, the combination of means for folding said hood structure simultaneously with the folding operation of said folding carriage, said means including a lever formed on said folding bracket and adapted to receive a thrust to spring the latter over center for the purpose aforesaid, a link means between said lever and a portion of said collapsible scissors arms, and adapted to impart a thrust to said lever when the scissors arms are collapsed to fold the carriage.

10. In a folding carriage structure including a collapsible scissors frame and means for collapsing the same together with a folding hood structure affixed to said frame and having toggle brackets for maintaining the hood structure in opened condition, the combination of means for simultaneously folding said hood structure with said folding carriage, said means including an arm extending from said toggle bracket and adapted to receive a thrust to urge the latter over center for folding action, a bar pivotally connected to the end of said arm, means removably connecting said bar to one arm of said scissors frame and adapted to receive a thrust from the latter when being collapsed and to impart said thrust to said arm for the purpose aforesaid.

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