Sept. 26, 1939. S. KROLL ET AL 2,174,268

CARRIAGE

Filed July 11, 1938 2 Sheets-Sheet 1

Fig. 3.

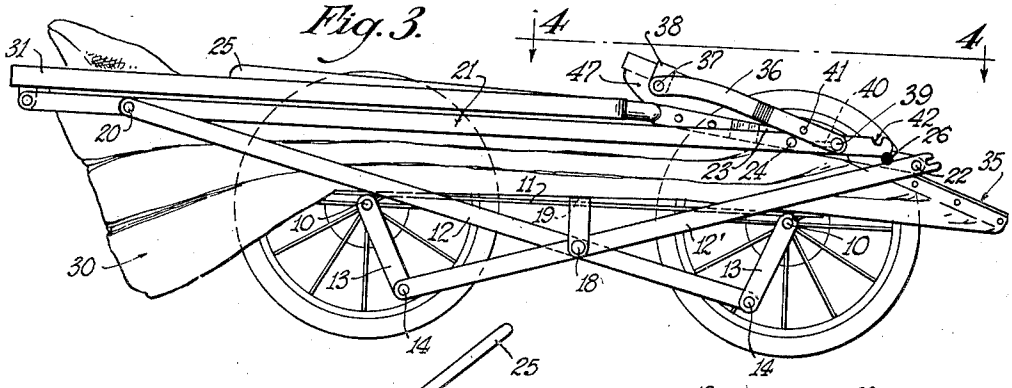


Fig. 2.

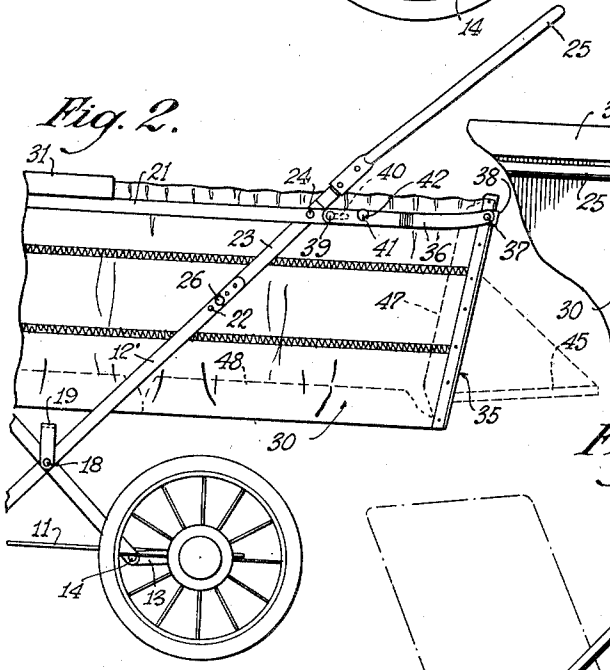


Fig. 4.

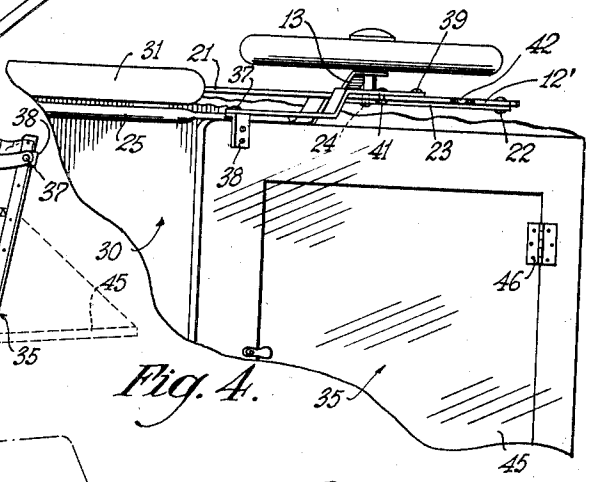
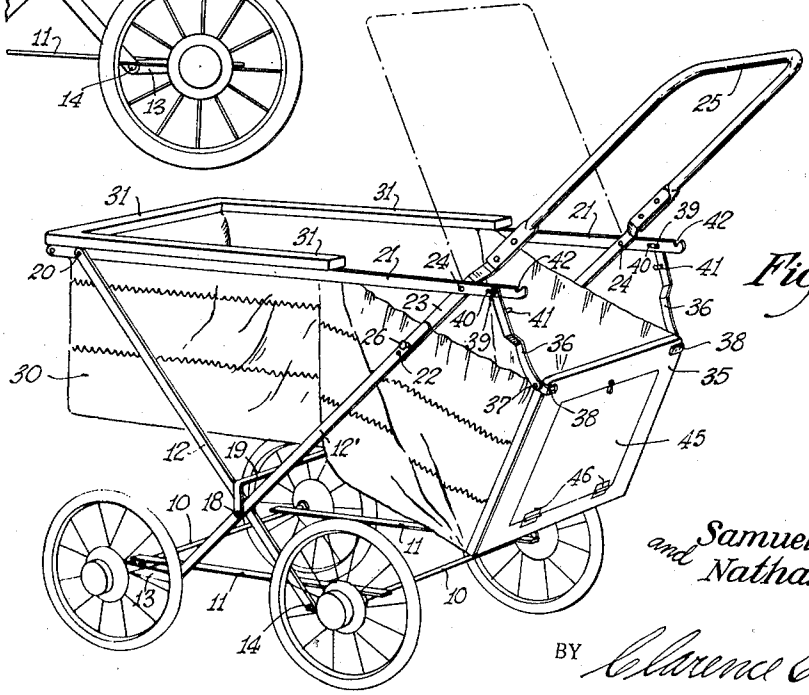


Fig. 1.



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Fig. 6.

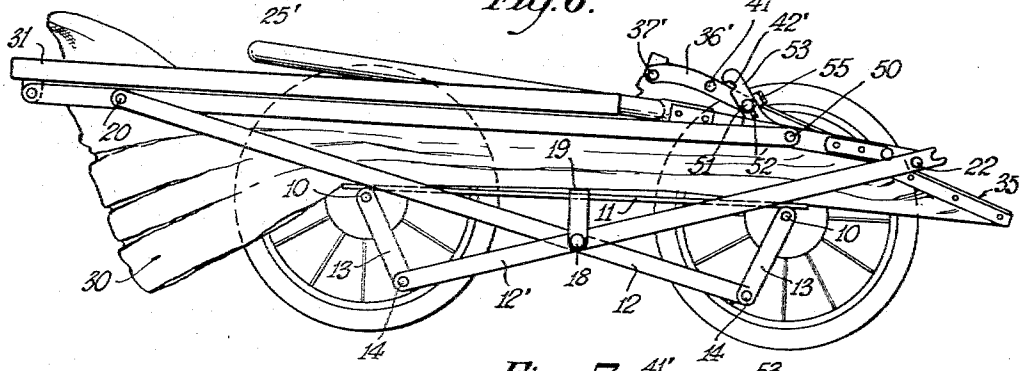


Fig. 7.

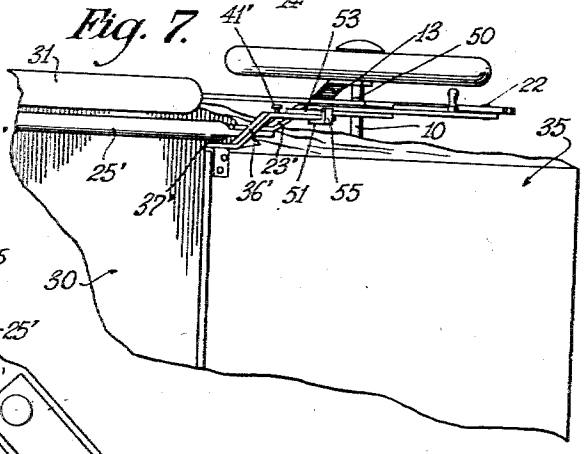


Fig. 5.

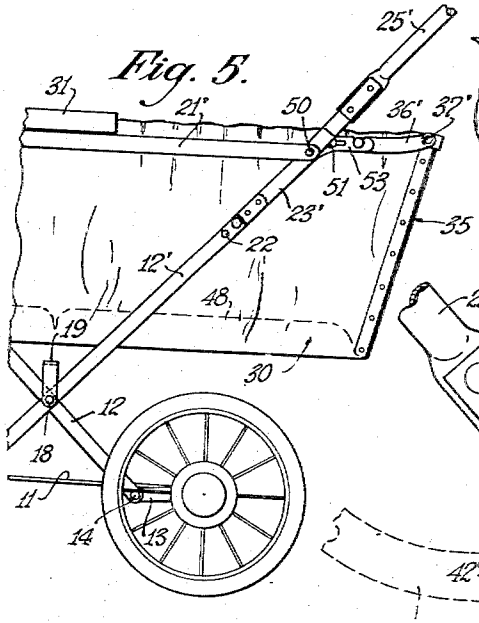


Fig. 8.

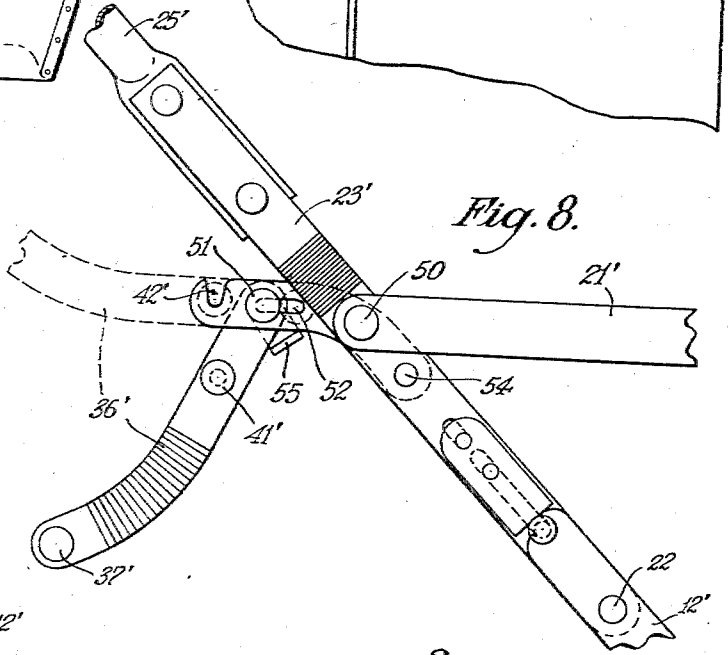
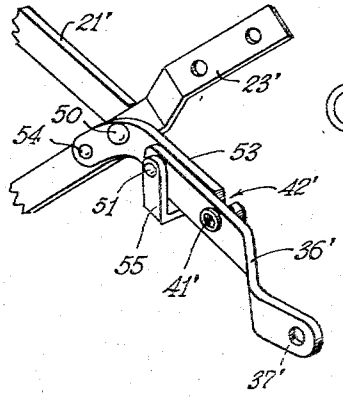


Fig. 9.



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Patented Sept. 26, 1939 2,174,268

UNITED STATES PATENT OFFICE

2,174,268

CARRIAGE

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

Application July 11, 1938, Serial No. 218,584

16 Claims. (Cl. 280—41)

This invention relates to improvements in perambulators, baby carriages, and the like, and has as one of its principal objects the provision of the folding type of carriage with a carriage well or cradle of flexible or foldable material and having a rigid end wall or dashboard for the cradle, and mechanism for folding the end wall inwardly when the carriage structure is collapsed.

Viewed from another aspect, it is an object of the invention to provide a folding carriage including a collapsible frame with a fabric carriage well or cradle mounted on the frame, the cradle being preferably, though not necessarily, provided with a relatively rigid bottom wall portion, and the carriage being provided with a rigid end wall member for the cradle, and lever means cooperable with the carriage frame for folding the end wall automatically into reclining position against the remainder of the carriage well structure when the carriage is collapsed.

Other objects and advantages of the invention reside in certain details of construction and operation of the carriage frame, folding cradle structure, and cooperating lever means, all of which will be particularly specified as the following description proceeds in view of the annexed drawings, in which:

Fig. 1 is a perspective view of a preferred embodiment of the novel carriage structure;

Fig. 2 is a fragmentary side elevation;

Fig. 3 is a side elevation showing the carriage collapsed;

Fig. 4 is an enlarged fragmentary top plan view of the collapsed end wall;

Figs. 5, 6, and 7 are views respectively similar to Figs. 2, 3, and 4 except that the former include the modified footwell mechanism of Figs. 8 and 9;

Fig. 8 is an enlarged side elevation of a modified footwell attaching and operating mechanism; while

Fig. 9 is a perspective detail of the modified footwell mechanism in raised condition.

For purposes of illustration, we have chosen the type of folding carriage described and claimed in our U. S. Patent 2,111,974 for a Carriage, it being understood, however, that the invention herein may be applied to other forms of collapsible or folding carriage, as will be more fully pointed out hereinafter.

In the illustrative carriage structure of Fig. 1, there is provided a wheel chassis including wheel bearing axles 10 mounted on cross bearers 11 to provide a relatively rigid wheel base.

A collapsible frame structure, including two pairs of scissors or cross arms 12 and 12', is attached on opposite sides of the chassis by means of shackles 13 (see also Fig. 3), the latter having pivotal connection at one end on the axles 10 and at their opposite ends 14 with the lower extremities of the scissor arms. Each pair of the so-called scissors or cross arms is pivotally joined as at 18 between the respective ends of the arms, there being a cross bracket 19 extended from the pivoted connection to give added rigidity to the structure.

The upper ends of the main cross arms 12 are pivotally attached as at 20 to horizontal rails 21, while the companion arms 12' of each pair are pivotally connected as at 22 (Fig. 2 also) to the lower ends of pivot arms 23 arranged on opposite sides of the carriage top rails 21 and pivotally attached as at 24 between their ends to these horizontal top rails 21. The upper ends of the pivot arms 23 are respectively connected to the free end portions of a handle structure 25.

By manipulation of the handle 25 about the connecting points 24 as an axis, the carriage frame may be collapsed or raised relative to the chassis. When the handle is pushed toward the left (Fig. 1) the leverages are such that the frame members tend to pivot into the collapsed condition illustrated in Fig. 3 and vice versa.

In order to prevent accidental collapsing of the carriage when the same is in use, there is provided a detent means 26 on the main frame arms 12' adjacent the pivotal connections 22 and so arranged as to effect automatic latching engagement between the pivot arms 23 and the main frame arms 12' (not illustrated in detail) to prevent relative pivotal movement of the frame parts for the purpose aforesaid. If desired, the pin and slot arrangement of our aforesaid patent may be employed in place of the detent means 26.

A foldable carriage well or cradle 30, made from canvas or any other suitable and analogous material, and of substantially rectangular form, is swung from the top rails 21 by any usual means, there being a trimming rail 31 secured on the top rails 21 to dress the attachment of the cradle to the frame and also provide a suitable contact surface for the carriage occupant. The carriage well or cradle fabric is attached to the horizontal frame rails only along one end wall and partially through the length of the adjoining side walls, the points of attachment corresponding to the length of the trimming rail 31, so that the top horizontal edges of the cradle at one end are left free for movement in a substantially vertical sense relative to the top rails 21, the purpose of this being to permit freedom of movement so that this portion

of the cradle may be lowered into the position seen in Fig. 1 to provide a footwell, the carriage thus being convertible into a stroller.

One of the important features of the invention is the provision in the footwell portion of the cradle of a relatively rigid end wall or dashboard **35** to which the vertical and horizontal bottom edge portions of the cradle fabric are securely attached by any suitable means.

Means attaching the rigid end wall to the carriage frame for cooperative folding movement with the latter includes a pair of lever arms **36**, each of which is pivotally attached as at **37** to one upper corner part of the rigid end wall member **35** as by means of brackets **38**, the opposite ends of the levers **36** being pivotally attached to the top rails **21** by pin means **39** (Figs. 2 and 3) horizontally slidable in slots **40** formed in the rails **21**.

Each of the lever arms **36** is provided with a headed seating pin **41** spaced inwardly from the mounting pins **39** and adapted to seat in notches **42** formed near the upper edge extremities of the rails **21**.

When the carriage is in use as a stroller, as illustrated in Fig. 1, the footwell may be raised by grasping the end wall **35** and moving the same toward the right, the pins **39** sliding in the slots **40** so as to dispose the seating pins **41** in advance of the extremities of the top rails **21** to clear the latter, whereupon the end wall **35** may be pushed slightly to the left so that the pins **41** will fall into the notches **42** in which condition the carriage will appear as in Fig. 2.

The end wall member or dash **35** may be constructed of wood or analogous material and is preferably provided with a utility pocket in the form of a door **45** attached by hinge means **46** to the end wall member and movable from a normally latched position in a recess in the end wall or dash member into the dotted-line position illustrated in Fig. 2. Preferably the inner side of the end wall **35** is provided with the cushion means **47** indicated in Figs. 2 and 3, the bottom of the carriage well or cradle likewise being provided with a relatively inflexible cushion means **48**, which, while soft enough to provide adequate comfort for the carriage occupant, nevertheless lends some rigidity to the bottom of the carriage well. This latter feature, while not essential, and apart from any considerations of comfort, tends to render the collapsing operation of the carriage cradle consistently uniform.

The lever means **36** is so arranged and constructed with relation to its form and attachment to the end wall member **35** and folding frame structure **12—21**, etc., that the collapsing and erecting movements of the carriage frame effect corresponding movements of the end wall or dash, with the result that when the carriage is collapsed by release of the detent means **26** and movement of the handle **25** (toward the left) and the carriage frame folds into the condition viewed in Fig. 3, the novel end wall **35** will pivot with positive movement into reclining position, neatly folded back against the cradle as it rests on the chassis as illustrated in Fig. 3.

In this latter operation, the descending movement of the top rails **21** when the carriage is collapsed from the condition seen in Fig. 2 ultimately effects a counterclockwise movement of the lever arms **36** about their pivotal connections **39** with a consequent tilting of the end wall **35** toward the left and into collapsed condition on top of the folded cradle. When the carriage is erected, the reverse operation occurs and the end wall or dash is automatically raised into erect position and will generally be latched by the pin and notch means **41—42** without further attention, it being occasionally necessary, however, to grasp the member **35** and give it a slight push toward the right to effect seating of the pins **41**.

The employment of a relatively rigid end wall or dash **35** results in a much more satisfactory footwell structure, not only from the standpoint of automatic positioning of the footwell in lowered condition (so that the otherwise flexible cradle fabric will positively assume an appropriate shape and position), but also from the standpoint of comfort to the occupant, a rigid support having obvious advantages over the relatively unstable support afforded by the ordinary cradle bag when the latter is lowered as a footwell. In addition, the appearance of the carriage is greatly improved and the utilitarian feature of the pocket or shelf means **45** is further made possible.

In place of the footwell mechanism **36—39—40—41—42** of Fig. 1, we may employ the arrangement particularly shown in Figs. 8 and 9, wherein the rail **21'** is pivotally attached as at **50** to the link **23'**, and the link **36'**, instead of being attached to an extension of the top rail, is pivotally connected by pin means **51** working in a horizontal slot **52** in a curved arm **53**, which is secured by the pivot pin **50** and a rivet **54** to the link **23'**.

The links **36'** are mounted on the inner sides of their respective arms **53** at opposite sides of the carriage. Each link **36'** has a notch **42'** near its free end and into which the pin means **41'** on the link fits when the footwell is raised, as exemplified in Figs. 5 and 9. The outer ends of the links **36'** are pivotally connected to the footwell as at **37'**, similarly to the arrangement of Fig. 1.

Means for limiting the movement of the footwell relative to the link **36'** includes a U-shaped stop **55** pivotally attached at the juncture of the link with the arm **53** by the pivot pin **51**. The stop **55** permits pivotal movement of the link **36'** only limited amounts in opposite directions.

In operation, the footwell linkage shown in Figs. 5 through 9, works much the same as the arrangement of Fig. 1, but, whereas in the arrangement of Fig. 1 the footwell is positively folded back as a result of its contact with already folded and underlying portions of the cradle as the latter are bedded down onto the chassis when the handle **25** is lowered, in the arrangement of Fig. 6, the arm **53** begins to pivot positively in an anticlockwise direction (clockwise in Fig. 8) as soon as the handle **25'** begins its lowering movement, with the result that the footwell likewise begins its folding movement at the same time, the link **55** assisting when the footwell is in raised position.

While the foregoing illustration of the invention has been specific with respect to certain details of construction and operation and while we have illustrated our invention in conjunction with a particular type of folding frame structure, it will be understood that various changes in form, location, and operation of the specifically described parts may be made without departing from the broad spirit of the disclosure and improvement, it being contemplated that the invention may be utilized with any form of collapsible carriage frame which includes a chassis or its equivalent and supports including top rail members or their equivalent arranged to be folded

down onto the chassis, the novel end wall structure having connection by means equivalent to the means 36, 37, 38, 39, 40, 41, 42, etc., to the carriage well frame, substantially in the manner and for the purpose set forth and as broadly defined in the claims appended hereto.

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

1. In a carriage having a wheel chassis, a collapsible frame structure and a foldable carriage cradle supported by said structure, and all arranged to be folded down upon said chassis, means including a rigid end wall member for said cradle and lever means having connection with said frame structure and said end wall member, said lever means being constructed and arranged so that collapsing and erecting movements of said frame structure will automatically effect positive movement of said end wall member in a direction down upon and up from said chassis correspondingly into and out of folded and erected position.

2. A carriage including a wheel chassis, a collapsible frame structure having a support on said chassis, a flexible carriage cradle attached to said frame structure and having a relatively rigid end wall at an end thereof, lever means having connection with said end wall on opposite sides of said frame structure and arranged and constructed to automatically effect positive tilting movement of said end wall into and out of collapsed condition back upon remaining portions of the cradle in a direction down upon the chassis responsive to corresponding movements of said frame structure.

3. In a carriage, a wheel chassis, a collapsible frame structure having support on said chassis, a flexible cradle bag attached to said frame structure in such manner as to leave one endwise portion of the cradle free for relatively vertical movement to provide a footwell, said footwell having a rigid end wall, a pair of lever arms each having pivotal connection at one end to opposite sides of said frame structure near the ends thereof adjacent said footwell, said arms each having pivotal connection near their respective opposite ends to the upper side extremities of said end wall whereby the latter may be lowered into a predetermined position when said footwell portion of the cradle is lowered to provide a footwell, said end wall being movable into raised position to align the footwell with the remainder of the cradle, means for securing said arms to maintain said end wall in raised position as aforesaid, said arms being arranged and constructed to automatically rock said end wall into and out of collapsed condition back upon said chassis responsive to corresponding movement of the frame structure.

4. In a carriage, a wheel chassis having a collapsible supporting frame thereon, a flexible cradle attached to said frame and having a portion movable into and out of relatively raised and lowered position to provide a footwell, said footwell having a rigid end wall attached to said cradle and lever means attached to said supporting frame and end wall and arranged and constructed for pivotal movement relative to said supporting frame to effect lowering movement of the end wall to dispose said footwell in a predetermined position, means for securing said lever means against movement relative to said supporting frame to dispose said footwell in raised position, said lever means being further arranged and constructed to effect tilting movement of said end wall in a direction back upon or upwardly from said chassis into and out of collapsed condition with said cradle responsive to corresponding movements of said supporting frame.

5. In a device of the class described, means providing a collapsible frame structure, a foldable cradle mounted in said structure for movement into and out of collapsed condition responsive to corresponding movements of the frame structure, means providing a rigid end wall for said cradle, lever arms having pivotal connection with said end wall and said frame structure and arranged for pivotal movement from a normal position relative to the frame structure into a lowered position to dispose the end wall and attached portions of the cradle into lowered position to provide a footwell, manually operable means for securing said lever arms in said normal position, said lever arms being mounted for pivotal movement from said normal position to move said end wall into and out of collapsed condition against adjoining portions of said cradle when said frame structure is collapsed or erected.

6. In a device of the class described, means attached to a wheel chassis and providing a collapsible carriage frame including opposite horizontal top rails which may be folded down upon said chassis, a foldable cradle attached to said frame and having an endwise portion arranged for lowering movement relative to said top rails to provide a footwell, a rigid end wall member attached to said endwise portions of the cradle, a pair of lever arms each having sliding pin and slot connection with the endwise portions of said top rails adjacent the footwell portion of the cradle, the opposite ends of said arms having pivotal connection with the corresponding upper end portions of said end wall whereby the latter may be moved into predetermined lowered position to dispose said endwise portions of the cradle as a footwell, said lever arms being pivotable into normally raised position substantially parallel with said top rails, coacting means arranged on said arms and top rails to secure the arms in normally raised position, said arms being pivotable in a direction opposite to their lowering movement when said frame is collapsed to fold said end wall back against the cradle in a direction down upon said chassis.

7. In a device of the class described, means providing a collapsible frame, a foldable cradle attached to said frame, said frame including a pair of opposite horizontal top rails, said cradle having an endwise portion arranged for lowering movement relative to said top rails to provide a footwell, and end wall member attached to said endwise portions of the cradle to provide a dash for said footwell, lever arms each having sliding pin and slot engagement with the endwise portions of said top rails nearest said footwell and each having pivotal connection at their opposite ends with said end wall, said lever arms being pivotable into lowered position relative to said top rails to dispose said endwise portion of the cradle and the end wall portion thereof into lowered position to provide a footwell, means on said lever arms engageable with said top rails to hold said arms in normal position substantially parallel with said top rails to secure said footwell in raised position, said lever arms being pivotable into raised position by collapsing movement of said frame whereby to fold said end wall back against the cradle, and means constructed and arranged to automatically pivot said lever arms back into

said normal position when the frame is erected.

8. A carriage having a collapsible frame and a foldable cradle arranged and constructed so that one end portion thereof is movable into and out of lowered position to provide a footwell, a relatively rigid panel arranged at the end of said footwell to provide a dash for the latter, and lever means having connection with said end wall and said frame and arranged and constructed for pivotal movement in opposite directions to lower said endwise portion of the cradle into position as a footwell or dispose said footwell in a raised normal position, said lever means further being arranged and constructed to effect movement of said end wall into and out of reclining position back against said cradle when said frame is moved into and out of collapsed condition.

9. A carriage including a collapsible frame having a pair of parallel top rails and a foldable cradle having support on said top rails with an endwise portion arranged for movement into and out of lowered position relative to the top rail to provide a footwell, said footwell having a substantially rigid end wall, and means including lever members arranged on opposite sides of said frame and pivotally connected to said rigid end wall to tilt the latter automatically into and out of collapsed position back against the cradle responsive to corresponding movements of said frame, and said lever means being further arranged for manual movement from a normal position into a lowered position to dispose said endwise portion of the cradle as a footwell.

10. A carriage having a wheel chassis and a collapsible frame and cradle arranged to be folded in a direction down upon said chassis, said cradle having a rigid end wall and means pivotally connecting said end wall with said frame for automatic movement in directions back against or away from said wheel chassis correspondingly into and out of collapsed condition responsive to corresponding movement of the frame.

11. A carriage having a collapsible frame including a pair of horizontal rails each pivotally connected to a folding arm member, a foldable cradle attached to said frame and having an end portion movable into and out of lowered position to provide a footwell, said end portion having a substantially rigid end wall, and means pivotally attaching said end wall to said carriage frame and including a pair of arms each attached to said frame at the juncture of one of said rails with the corresponding folding arm member, each arm of said pair projecting in a substantially horizontal direction and each having a link attached thereto for both pivotal and shifting movement, said links each having pivotal connection with an upper side portion of said end wall, and adjustable means on said links cooperable with the arms to which the links are attached to prevent lowering movement of the links.

12. A carriage having a collapsible frame structure including a pair of opposite horizontal rails each having pivotal connection to a supporting arm forming part of said structure, a folding cradle supported by said rails and having an end portion movable into raised and lowered position to provide a footwell, a substantially rigid end wall for said footwell, a bracket arm arranged to extend substantially parallel with each of said rails in the region of the juncture of the latter with said supporting arms, a link having a pivotal connection with each of said bracket arms, said pivotal connection being arranged to permit shifting movement of the links substantially in the direction of the length of said rails, means on each of said links engageable with means of said bracket arms for holding the links in raised position, means for limiting the pivotal movement of each of said links relative to the corresponding bracket arms, the end portions of said links opposite the first-mentioned and pivotally attached ends thereof each being pivotally connected with an upper vertical edge portion of said end wall.

13. In a device of the class described, means for attaching a rigid end wall section to a folding carriage frame, said means including a pair of bracket arms each attached to opposite sides of said frame and each extending in a substantially horizontal direction toward said end wall section, an elongated link having pin and slot connection with each of said bracket arms, said connection permitting both pivotal and horizontally shifting movement, pin means on each of said links engageable with pin-receiving means on the corresponding bracket arms to maintain said links in substantially horizontally extending condition, the end region of said links opposite the aforesaid pivotal connections thereof with the bracket arms being pivotally attached to the upper side portions of said end wall, said connecting means being constructed and arranged to fold said end wall in a direction back upon said carriage when the latter is collapsed.

14. In a folding carriage, opposite pairs of scissor arms, a wheel structure having attachment to the lower portions of said scissor arms, a pair of horizontal top rails each pivotally connected near its opposite ends to the upper portions of each scissor arm of one of said pairs, one scissor arm of each of said pairs having a pivoted section, one of the pivotal connections of the corresponding top rail being made to said pivoted section, a folding cradle having support on said top rails, said cradle having a relatively rigid end wall at its end nearest said pivoted section, a bracket arm extending in a substantially horizontal direction from each of said pivoted sections in the region of the connection of the same with the corresponding top rail, a link attached to each bracket arm for both pivotal and horizontally shifting movement and each pivotally connected with an upper side portion of said end wall, each of said bracket arms having a slot in an upper edge portion thereof spaced toward said end wall from the pivotal connection of the corresponding link with said bracket arm and each link having pin means receivable in the slot in the corresponding bracket arm when the links are shifted toward said pivoted sections, whereby the links are supported in horizontally raised position to support said end wall in raised condition.

15. A carriage including a wheel chassis, a collapsible frame structure arranged to fold down onto the chassis, a flexible cradle supported by said frame, a rigid end wall at one end of said cradle and lever means having pivotal connection with said end wall near the upper extremity thereof and pivotally connected with said frame structure for operation to fold said end wall in a direction back and down upon said chassis about a substantially horizontal axis when the frame structure is folded down upon the chassis.

16. In a carriage, a wheel chassis, a collapsible frame structure adapted to be folded down upon the chassis, a foldable cradle supported by said frame and adapted to be folded down upon the chassis with the latter, said cradle having a rigid

end wall and lever means pivotally connecting said end wall with said frame structure such that the end wall will be tilted in a direction back against said cradle and chassis when the frame structure is folded as aforesaid, and a shelf section hinged to said end wall for movement about a substantially horizontal axis near the bottom of the end wall from a normally raised closed condition up against said end wall to an approximately horizontally lowered position, said shelf hingedly folding from a lowered position inwardly into normal position with respect to said end wall when the latter is tilted as aforesaid upon folding of the frame structure.

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