April 20, 1937. O. E. BARTHEL 2,077,543

CHILD'S WAGON

Filed Nov. 18, 1935 3 Sheets-Sheet 1

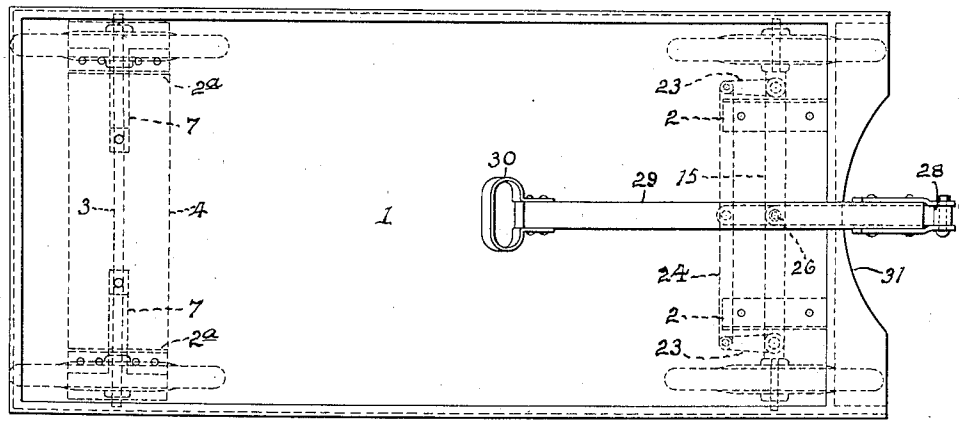
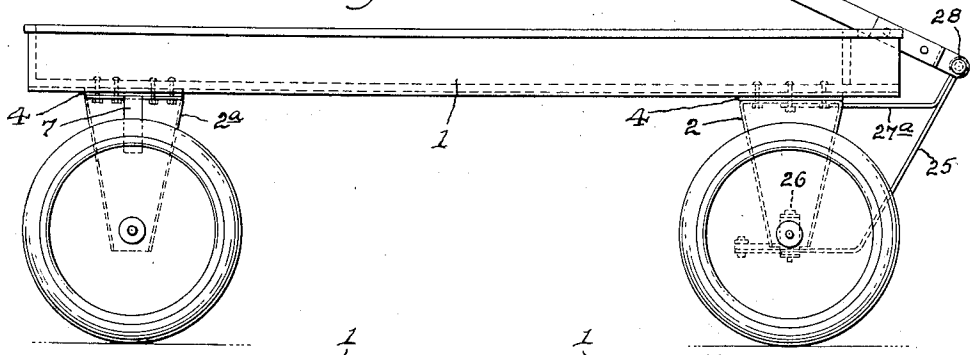


Fig. 1.



Fig. 2.



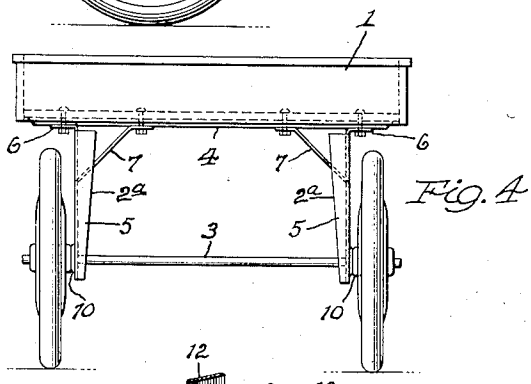


Fig. 4

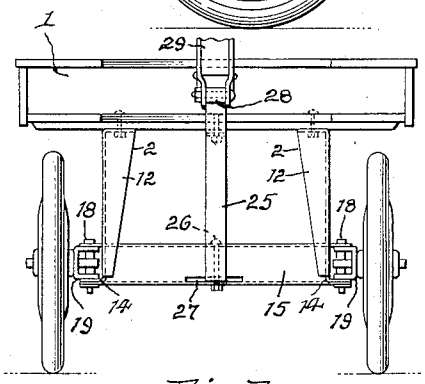


Fig. 3.

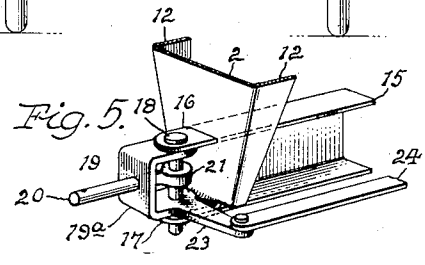


Fig. 5.

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April 20, 1937. O. E. BARTHEL 2,077,543

CHILD'S WAGON

Filed Nov. 18, 1935 3 Sheets-Sheet 2

Fig. 6.

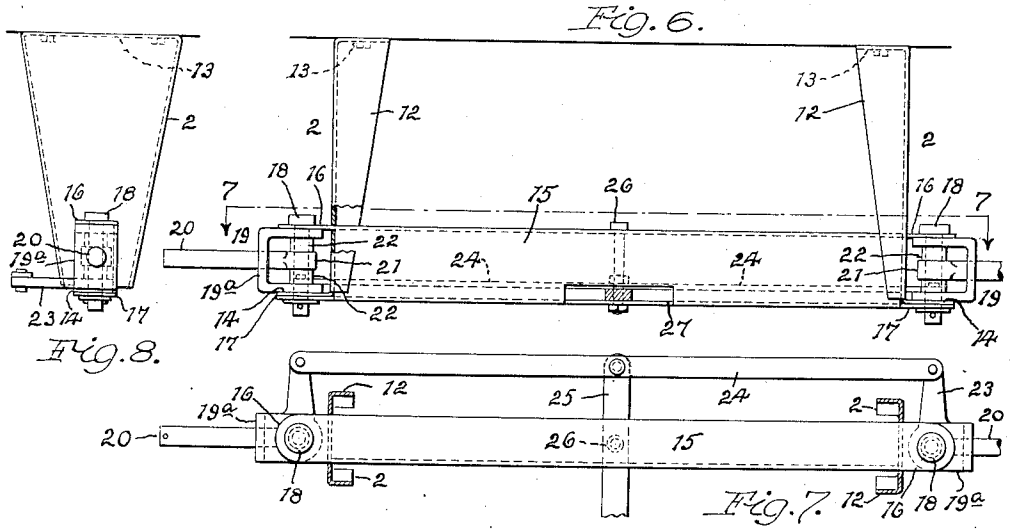


Fig. 8.

Fig. 7.

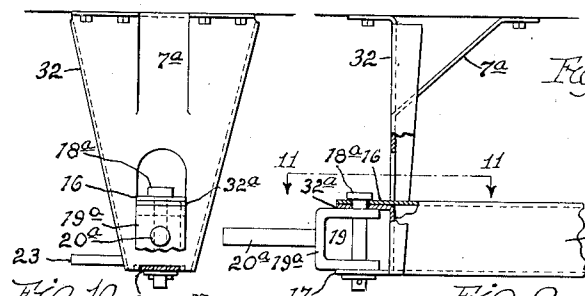


Fig. 10.

Fig. 9.

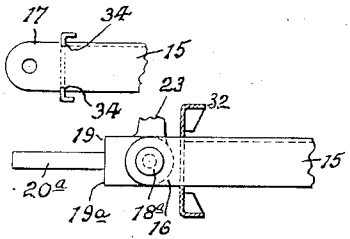


Fig. 12.

Fig. 11.

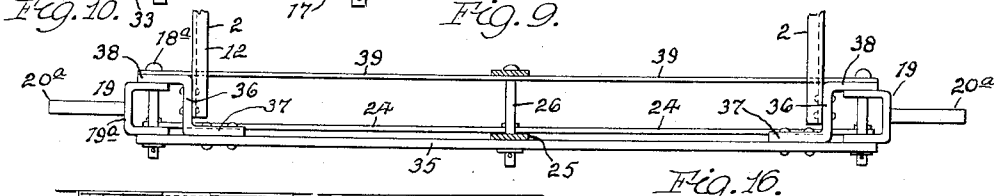


Fig. 16.

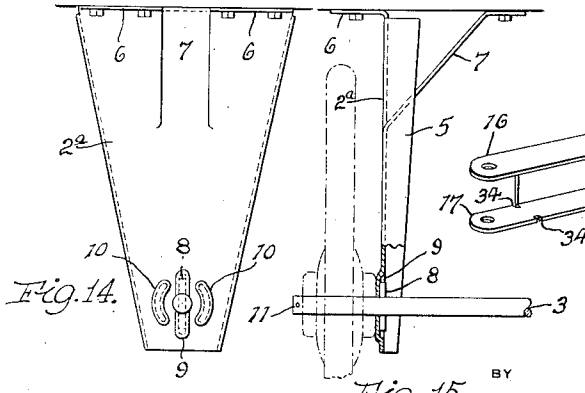


Fig. 14.

Fig. 15.

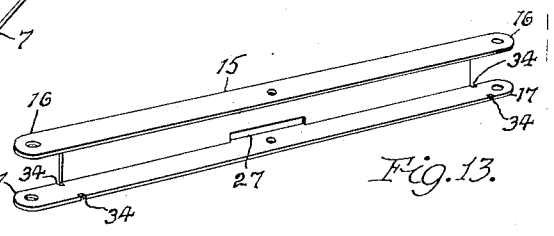


Fig. 13.

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April 20, 1937. O. E. BARTHEL 2,077,543

CHILD'S WAGON

Filed Nov. 18, 1935 3 Sheets-Sheet 3

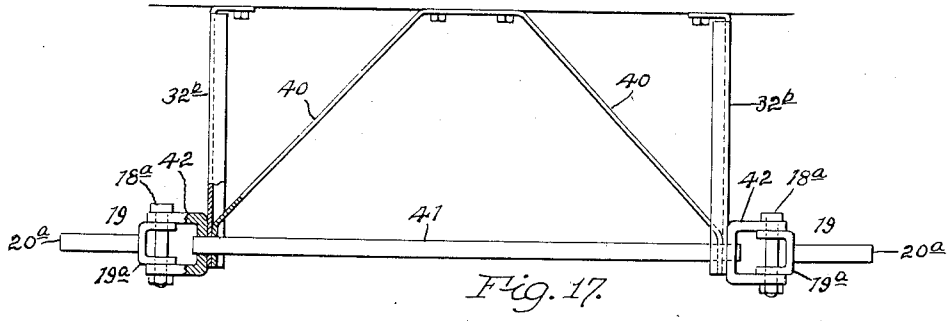


Fig. 17.

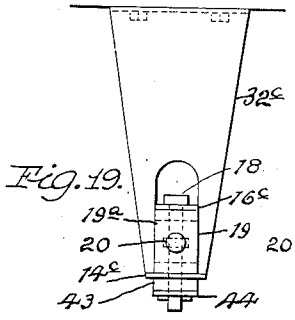


Fig. 19.

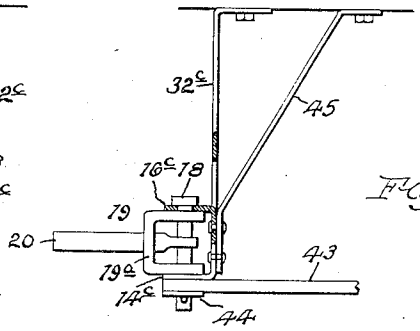


Fig. 18.

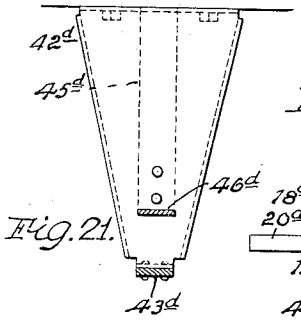


Fig. 21.

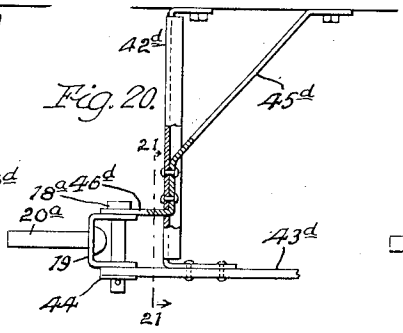


Fig. 20.

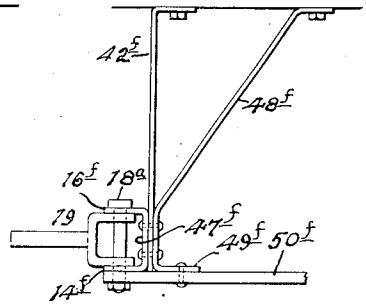


Fig. 24.

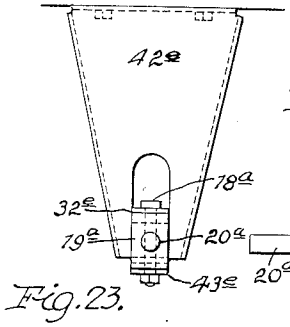


Fig. 23.

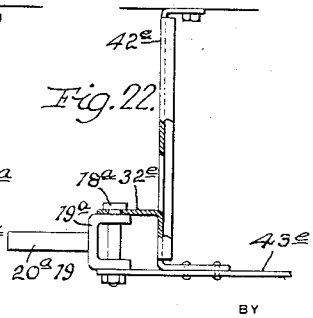


Fig. 22.

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Patented Apr. 20, 1937 2,077,543

UNITED STATES PATENT OFFICE

2,077,543

CHILD'S WAGON

Oliver E. Barthel, Detroit, Mich.

Application November 18, 1935, Serial No. 50,330

9 Claims. (Cl. 280—87.5)

This invention relates to small wagons or carts designed primarily for use by children, and an object of the invention is to facilitate manufacture, decrease cost of production and provide a very strong, rigid and durable structure by forming the running gear mainly of metal stampings.

A further object is to decrease the weight of the structure without sacrificing strength, by providing brackets and front axle formed of sheet metal and strap iron stampings so as to insure increased rigidity, strength and long life, and facilitate manufacture and assembly.

It is also an object to provide certain new and useful features in the construction, arrangement and combination of parts, all as hereinafter more fully described and as shown in the accompanying drawings, wherein

Figure 1 is a plan view of a wagon illustrative of an embodiment of the present invention;

Fig. 2 is a side elevation of the wagon;

Fig. 3 is a front end elevation;

Fig. 4 a rear end elevation;

Fig. 5 is a perspective detail of one end of the front axle;

Fig. 6 is an enlarged front elevation of the front axle and brackets or hangers for attaching said axle to the body;

Fig. 7 is a sectional view substantially upon the line 7—7 of Fig. 6;

Fig. 8 is an end elevation of Fig. 6;

Fig. 9 is a detail of one end of the front axle and adjacent bracket, showing a slightly modified construction;

Fig. 10 is an end elevation of Fig. 9 with portions in section to disclose the construction;

Fig. 11 is a sectional detail substantially upon the line 11—11 of Fig. 9;

Fig. 12 is an inverted plan view of one end of the axle shown in Fig. 9;

Fig. 13 is a perspective detail of a sheet metal front axle detached;

Fig. 14 is an end elevation of a sheet metal bracket or hanger for the rear axle;

Fig. 15 is an edge view of Fig. 14 with parts shown in section to disclose the construction;

Fig. 16 is a front elevation of a front axle showing a modified construction;

Fig. 17 is a rear elevation of the rear axle and brackets for supporting the same, parts being broken away and in section to disclose the construction;

Fig. 18 is a detail showing in front elevation, one end portion of a front axle of modified construction with parts of the supporting bracket in section;

Fig. 19 is an end elevation of Fig. 18;

Fig. 20 is an elevational detail similar to Fig. 18 and showing a modified construction, parts being broken away and shown in section to disclose the construction;

Fig. 21 is an end elevation of Fig. 20 and in section upon the line 21—21 of Fig. 20;

Fig. 22 is a detail similar to Fig. 20 and showing a modified construction;

Fig. 23 is an end elevation of Fig. 22, and

Fig. 24 is a detail of one end of the front axle and a bracket therefor showing the same in front elevation and disclosing a further modified construction.

As shown in Figs. 1 to 4 inclusive, the wagon includes a body or box 1 preferably of rectangular form and to the bottom of which body the running gear of the wagon is secured, said body being preferably formed of sheet metal as shown, but may be formed of wood or any other suitable material having sufficient strength for the attachment thereto of the running gear which comprises four suitable brackets, two front brackets 2 and two rear brackets 2*a*, arranged in pairs and each pair forming a support or bearing for an axle, so that the body itself forms a part of the running gear and a connection between the front and rear axles. The rear axle comprises a rod or shaft 3, this shaft as shown in Figs. 14 and 15, being mounted at its ends rigidly within a pair of brackets 2*a* which are secured rigidly in any suitable manner to the bottom of the body 1, as by providing a reinforcing strip 4 extending transversely of the body against its bottom with the brackets 2*a* rigidly riveted or otherwise secured to this reinforcing strip and to the bottom wall of the body. As clearly shown in Figs. 14 and 15, each bracket 2*a* comprises a sheet metal stamping of downwardly tapering form with side edge flanges 5 turned inwardly at right angles to the outer face of the bracket to lend strength and rigidity to the bracket and the upper end of each bracket is formed with a flange or flanges 6 by means of which the bracket is secured by bolts or rivets to the body 1. To brace the bracket, a portion of the sheet metal stamping is struck out from the upper end of the outer face of the bracket and bent inwardly of the body as at 7 with its inner end riveted or bolted to the body, thus forming a diagonal brace integral at its lower end with the body of the bracket and extending upwardly and inwardly therefrom to the point where it is secured to the bottom of the body. To mount the axle shaft 3 at its ends within the lower ends of the brackets and hold

the same against rotation, said shaft is bored transversely to receive a pin 8, the wall of the bracket being pierced to permit the shaft 3 to pass therethrough and where it passes through the wall of the bracket, this wall is formed with a depression or recess 9 to receive and form a seat for the pin 8. This recess and pin thus forms a bearing for the shaft and upon the outer ends of which shaft the rear wheels of the wagon are mounted for free rotation with the inner end of the hub of each wheel abutting the outwardly bossed metal of the hanger or bracket which depression is for the purpose of receiving the pin 8 and this wall of the bracket is also bossed outwardly by forming semi-circular depressions 10, one at each side of the vertical rib or boss formed by the depression 8. Therefore the inner end of the hub of each rear wheel bears against the outer sides of the three bosses 8 and 10 formed by the depressing or striking outwardly of the metal and thus the surface contact between hub and bracket surface is reduced in area and the end of the hub spaced from the outer face of each bracket wall. The rear wheels are secured in place upon the ends of the shaft 3 in any suitable manner, as by pins 11 passing through openings in the ends of the shaft.

The front axle shown in detail in Figs. 6 to 8 inclusive, is attached to the bottom of the body 1 by means of a pair of brackets 2 similar to those for mounting the rear axle, these brackets being formed in a manner similar to the rear brackets with integral braces 7a as shown in Figs. 9 and 10 or they may be formed as shown in Figs 6 to 8 inclusive with integral side edge flanges 12 corresponding to the flanges 5 for strengthening each bracket against inward bending and also to serve to brace each bracket, the upper end of the sheet metal stamping being turned inwardly as at 13 to provide an end flange between the flanges 12 for rigidly securing each bracket to the bottom of the body 1 adjacent its forward end, and if found desirable this bottom of the body may be reinforced by a transverse strip similar to the strip 4 with the rivets or bolts for securing the brackets to the body passing through the end flanges 13 and through this reinforcing strip and bottom wall of the body. These brackets for mounting the front axle are also of downwardly tapering form and the outer wall of each at its lower end is turned outwardly to form an ear 14 integral with the lower end of the bracket, this ear forming a place of attachment for a pivot knuckle upon which the front wheels of the vehicle are mounted for steering purposes.

The front axle proper as shown in Figs. 6 to 8 inclusive, consists of a sheet metal stamping 15 which is of U-shape in cross section and of substantially rectangular form with the upper and lower side flanges of this U-shaped channel axle extended beyond the end of the vertical wall of the channel which wall abuts the wall of each bracket between the side flanges 12 of the bracket, said bracket wall being formed with an opening or slot through which the extended end of the upper wall of the axle projects in the form of an ear 16 and the projecting ends of the lower wall of the axle form ears 17 to lie beneath and against the outturned ears 14 on the lower ends of the brackets. The ears 14, 16 and 17 are formed with openings to receive a vertical pivot pin 18 for connecting the steering knuckles to the ends of the axle, each steering knuckle being indicated as a whole by the numeral 19 and comprising an open U-shaped bracket 19a having an opening in its outer end wall through which the pintle 20 extends and upon which pintles the front wheels are mounted for free turning movement, and the inner end of this pintle 20 is formed with an eye 21 to receive the pivot pin 18, suitable collars 22 being interposed between the sides of the eye and the arms of the U-shaped member 19a to hold the knuckle in place and permit its free swinging movement upon the end of the axle in steering the vehicle, the rotation of the steering knuckle in steering the vehicle, being effected through the provision of an arm 23 integral with the lower arm of each member 19a, these arms 23 extending rearwardly of the axle and being connected by a cross connecting bar 24, said bar being pivotally connected at its ends to the rear ends of the arms 23 and being pivotally connected intermediate its ends to a steering lever 25 which is pivotally attached to the axle 15 by means of a pivot pin 26, said pin extending through openings in the upper and lower flanges of the axle member and through said steering lever, which lever extends forwardly through a slot 27 in the forward vertical wall of the axle adjacent its lower side or flange.

The lever 25 is bent at a point forwardly of the front axle and extends upwardly to a point above the bottom of the body 1, where it is bent backwardly upon itself and then extended rearwardly beneath the body as at 27a to a point of pivotal connection with the body in the vertical plane of the axis of the pivot pin 26 as shown in Fig. 2. A steering lever is thus provided which projects forwardly of the front end of the body and to this forward end where the lever is bent backward upon itself, is pivotally attached as at 28, a tongue 29 having a hand hold 30 at its free end so that the wagon may be drawn about by means of this tongue, or the tongue may be swung backwardly over the front end of the body so that a child while pushing the wagon along with one foot on the ground, may steer the vehicle by grasping the handle 30, the front end of the body 1 being cut away in a semi-circle as at 31 to provide for such swinging movement of the tongue 29 and to permit the tongue to swing downwardly to a position above the body where it may be conveniently manipulated by the child.

A slight modified construction of front brackets 32 for the support of the front axle, is shown in Figs. 9 to 12 inclusive wherein the lower end of the front wall of the bracket is stamped out and the stamped portion turned outwardly to form an ear 32a integral with the wall of the bracket and to lie over and form a bearing for the steering knuckle, the extended upper wall of the axle 15 which is extended to form the ear 16 projects through the opening formed by the striking out of the ear 32a and this ear 16 lies upon said ear 32a, forming a double support or bearing for the pintle 18a which passes downwardly through openings in the arms of the knuckle bracket 19a and through an opening in the ear 17 which is a projection of the bottom flange or wall of the axle 15. The axle is thus firmly connected to and centered relative to the bracket by the ear 16 projecting through the opening in the bracket wall formed by the outturning of the ear 32a and by notching the extreme lower end of the bracket wall as at 33 to permit the ear 17 to pass therethrough and by notching the sides of the ear where it connects to the bottom flange of the axle, as at 34, the lower side of the axle is centered and held in proper relation to the lower end of the bracket.

A further modified construction of front axle is shown in Fig. 16, this axle comprising a comparatively rigid heavy bar **35** to which attaching members **36** are rigidly secured at a short distance from the ends of said bar, each of said members being bent to form a flange or foot **37** which is riveted or otherwise secured rigidly to the bar **35** and has an upwardly extending portion and an outwardly extending end or flange **38**, the intermediate or vertical portion of each member **36** being rigidly riveted or otherwise secured to the lower end of each of the brackets **2**, these members **36** being connected at their upper ends by means of a transverse bar **39** extending parallel with the bar **35** and connected to the upper end flange **38** of each member **36** by the pivot pin or pintle **18***a* of the steering knuckle **19**. Between the outturned ears **38** of the members **36** and the projecting ends of the bar **35**, the steering knuckle **19** is pivotally supported upon the pin **18***a* and these knuckles are connected by the connecting bar **24** and are turned through the medium of the bar **25** which is pivotally attached to the axle by means of the pivot pin **26** passing through the connecting strip or member **39** and through an opening in the bar **35**.

A further modified construction of front axle is shown in Fig. 17 wherein the sheet metal brackets **32***b* are formed with comparatively narrow side flanges to strengthen the same and instead of these brackets being formed with integral bracing members **7***a* as are the brackets **32** of Figs. 9 and 10, a separate bracing strip **40** is provided to extend longitudinally of the axle and is bent upwardly intermediate its ends and rigidly secured to the bottom of the body **1**. The lower ends of the brackets **32***b* are each formed with an opening as is also the lower ends of the brace member **40**, to receive a round rod **41** which is thus supported at its ends by the brackets and projects beyond the same where outwardly open U-shaped supporting members **42** are secured to the projecting ends of the rod **41** in any suitable manner, as by welding, brazing or otherwise, the vertical portions of these members **42** being preferably welded to the wall of the lower end of each bracket to thus form a rigid axle provided with these outwardly open U-shaped end members **42** between the arms of which the steering knuckles **19** of any desired construction are mounted for a free turning movement in steering the vehicle.

A further modified construction of front axle and front axle brackets is shown in Figs. 18 and 19 wherein the front wall of the sheet metal bracket is turned outwardly at its lower end to form the ear **14***c* as in Fig. 6 and this wall is also formed with an opening from which is struck an ear **16***c* as shown in Fig. 9, the steering knuckle **19** being supported between these ears and to form the axle for connecting the lower ends of the two brackets, a bar **43**, preferably of strap iron lies against the lower sides of the ears **14***c* at its ends and is secured in place by the pivot pintle **18** which extends through openings adjacent the ends of the bar and is secured therein in any suitable manner as by providing a transverse pin extending through the lower end of the pintle with a suitable washer between the pin and lower side of the bar as shown at **44**. In the construction of bracket **32***c* as shown in Fig. 18, instead of the edges of the sheet metal being turned at right angles to reinforce the bracket, the bracket is braced by means of a separate brace **45** which is riveted at its lower end to the lower end of the bracket proper and at its upper end is bolted or otherwise secured to the bottom of the body **1** to brace the bracket against lateral or inward bending.

A slightly modified form shown in Fig. 20 is the same as that shown in Fig. 18 with the exception that the lower end of the brace **45***d* is turned outwardly to project through a slot in the wall of the bracket **42***d* and provide an ear **46***d* between which and the projecting end of the bar **43***d*, the steering knuckle **19** is pivotally supported, the lower end of the wall of the bracket being turned inwardly instead of outwardly as in Fig. 18 and this inturned end is riveted to the bar **43***d* to rigidly attach the bar to the bracket.

A lighter and less rigid construction of front axle is shown in Figs. 22 and 23, this construction being usable in connection with small and light wagons, the wall of the bracket **42***e* being extended at its lower end and turned inwardly to form a foot flange for the securing of a transverse tie bar **43***e* similar to the bar **43** to the lower end of the brackets and the ends of this bar are extended to form ears for the steering knuckle **19**, the upper ear **32***e* forming the upper bearing for each knuckle being struck out from the body of the bracket similar to the construction shown in Fig. 9, the bracket being very light in construction and also the bar **43***e* being made of comparatively thin strap iron to lessen the weight of the vehicle where such weight is material in the formation of a small wagon for use by small children, but is strong enough for use in connection with larger wagons in many instances.

The modification shown in Fig. 24 is quite similar to that shown in Fig. 18, the difference being that the ears **14***f* and **16***f* between which the steering knuckle **19** is mounted on the bracket **42***f*, are formed integral or are the lateral extending arms of a U-shaped member **47***f*, the connecting portion of which is riveted securely against the outer side of the lower end of the bracket, and in this instance the brace member **48***f* is riveted to the opposite side of the lower end of the bracket and has an inturned lower end **49***f* which is riveted to the axle bar **50***f* which connects the lower ends of the brackets and extends beyond said ends to provide strengthening and supporting means for the lower ear **14**, said end of the bar being formed with an opening to receive the pivot pin **18***a* which is secured therein by a nut on its lower end.

By forming the several parts or members of the running gear from sheet metal stampings and bar iron a very strong and rigid construction is provided and one which is of much less weight than where these parts are in the form of castings. Further the different parts which go to make up, particularly the front axle and the several brackets, are made to interlock in most cases so that the assembly is greatly facilitated and the cost of the structure lessened thereby. Also the parts may be stamped out and shipped in knocked down condition, the several parts of the running gear being placed within the body in shipping the wagons. The several forms shown provide for the making up of wagons varying in price and the use of a hollow or U-shaped sheet metal axle secures the minimum of weight with maximum of strength, as is also the forming of all of the brackets for supporting both axles, from sheet metal having turned edges to reinforce and brace the bracket, the form of these brackets also greatly facilitating the assembly and the rigid attachment of the axles thereto.

Having thus fully described my invention what I claim is:

1. A child's wagon including a body member, an

axle, a pair of brackets for attaching said axle to said body member, said axle being formed of sheet metal of channel shape in cross section with the upper and lower flanges of said channel at the ends of said axle extended beyond the ends of the connecting web of the channel to form end ears at the ends of said axle for the pivotal support therebetween of steering knuckles, the ends of said axle being secured to said brackets with said ears projecting beyond the outer face of said brackets.

2. A child's wagon including a body member, an axle, and a pair of brackets for attaching said axle to said body member, said brackets being formed of sheet metal providing a wall having an opening adjacent its lower end, said wall being also formed with an outwardly projecting ear, said axle being formed of sheet metal of channel form in cross section with ears projecting from its ends, with one of the ears at one end of the axle projecting through said opening in said bracket wall and the other of said ears engaging the outturned ear on the bracket wall, said ears being formed with openings to receive a pintle for the pivotal support between said ears of a steering knuckle.

3. A child's wagon including a body member, an axle, and a pair of brackets for attaching said axle to said body member, each of said brackets being formed of sheet metal providing a wall having an opening from which the metal of the wall is struck outwardly to form a member integral with the wall, said axle being formed from sheet metal and of channel shape in cross section with integral end ears one of which is adapted to project through the opening in said bracket, and the other to project beyond the lower end of the bracket, said ears together forming a place of pivotal support for a steering knuckle.

4. A child's wagon including a body member, an axle, and a pair of brackets for attaching said axle to said member, said axle being formed of sheet metal and of channel shape in cross section with the ends of the flanges at the upper and lower sides of said channel extended beyond the connecting web of said channel to form parallel end ears, each of said brackets being formed with an opening to receive one of said ears, and means for pivotally supporting steering knuckles between said ears at each end of said axle and outside of said brackets.

5. A child's wagon including a body member, an axle, and a pair of brackets for attaching said axle to said body member, each of said brackets being formed of a sheet metal wall with the side edges of said wall turned laterally to provide edge flanges, said wall of each bracket being also formed with an outwardly turned integral ear at its lower end and with an opening adjacent said end, said axle being formed of sheet metal of channel form in cross section with the ends of the upper and lower flanges of said channel extended to provide ears with one of said ears extending through said opening in said bracket wall and the other ear engaging the ear on the bracket wall, and steering knuckles pivotally supported between the projecting ears at the ends of said axle.

6. A child's wagon including a body member, an axle, and brackets secured to the bottom of said body member for attaching the ends of the axle to said member, said brackets being each formed from a single sheet of metal and said axle being formed of sheet metal and of rectangular form in cross section with integral parallel ears projecting from the ends thereof, steering knuckles pivotally supported between the ears of each pair at each end of said axle, each knuckle having a laterally extending arm, a connecting bar connecting the ends of said arms, a lever pivotally connected to said bar at one end and projecting through an opening in the wall of said axle and pivotally connected intermediate its ends to said axle and projecting forwardly therefrom, and a tongue pivotally attached to the forward end of said lever and adapted to be swung rearwardly over the forward end of said body member.

7. A child's wagon including a body member, an axle and brackets for attaching said axle to said body member, the ends of said axle and the lower end portion of each of said brackets being formed with outwardly projecting ears, said ears being spaced apart to form therebetween a bearing for a steering knuckle at each end of the axle outside of said brackets, each of said brackets being formed of sheet metal with said ears integral with the wall thereof, and bracing means for each of said brackets.

8. A child's wagon including an axle and a pair of brackets for supporting the ends of said axle, each of said brackets being formed of sheet metal with a portion of the wall thereof struck outwardly from an opening therein to form an ear integral therewith, said axle being secured adjacent its ends to the lower ends of said brackets with end portions of said axle projecting beyond said brackets in parallelism with said ears, and steering knuckles at the ends of said axle pivotally supported between said ears and projecting ends of said axle.

9. A child's wagon including a pair of brackets each formed of sheet metal forming a wall having an opening adjacent its lower end and a notch in its lower end, a member connecting said brackets and to which they are secured at their upper ends, an axle formed from sheet metal with upper and lower flanges connected by a vertical web, the ends of said upper flange being extended beyond the ends of said web and inserted through said openings in said bracket walls and the ends of the lower flange of said axle being extended and engaged within said notches in the lower ends of said brackets, said projecting ends of said flanges forming parallel ears at each end of said axle projecting beyond said brackets, and a steering knuckle pivotally supported between said ears at each end of said axle.

OLIVER E. BARTHEL.