H. J. HEIDER.

COASTER WAGON.

APPLICATION FILED MAR. 31, 1919.

1,385,946.

Patented July 26, 1921.

2 SHEETS—SHEET 1.

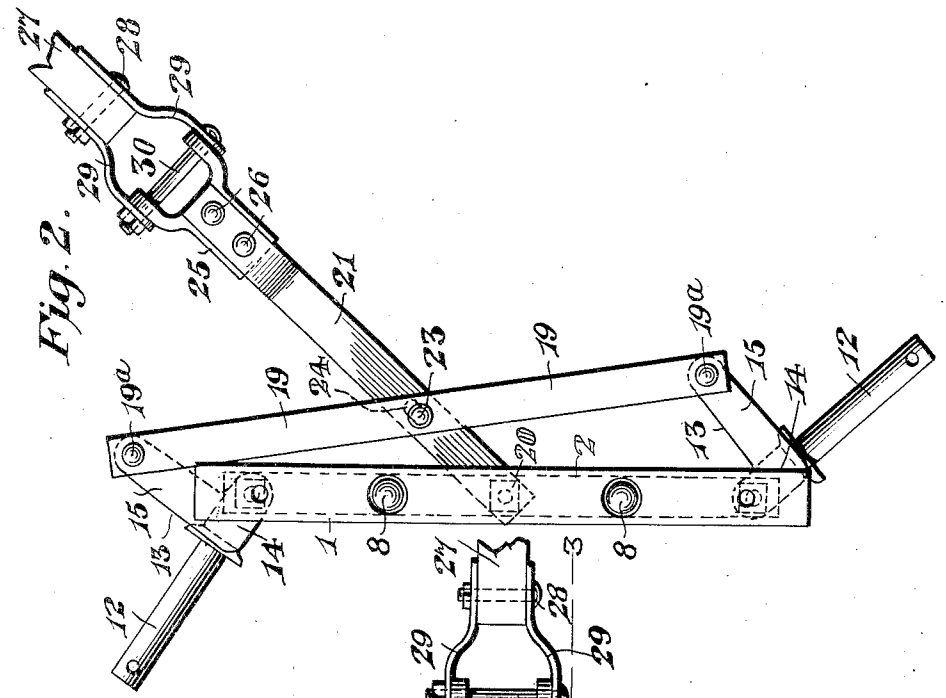


Fig. 2.

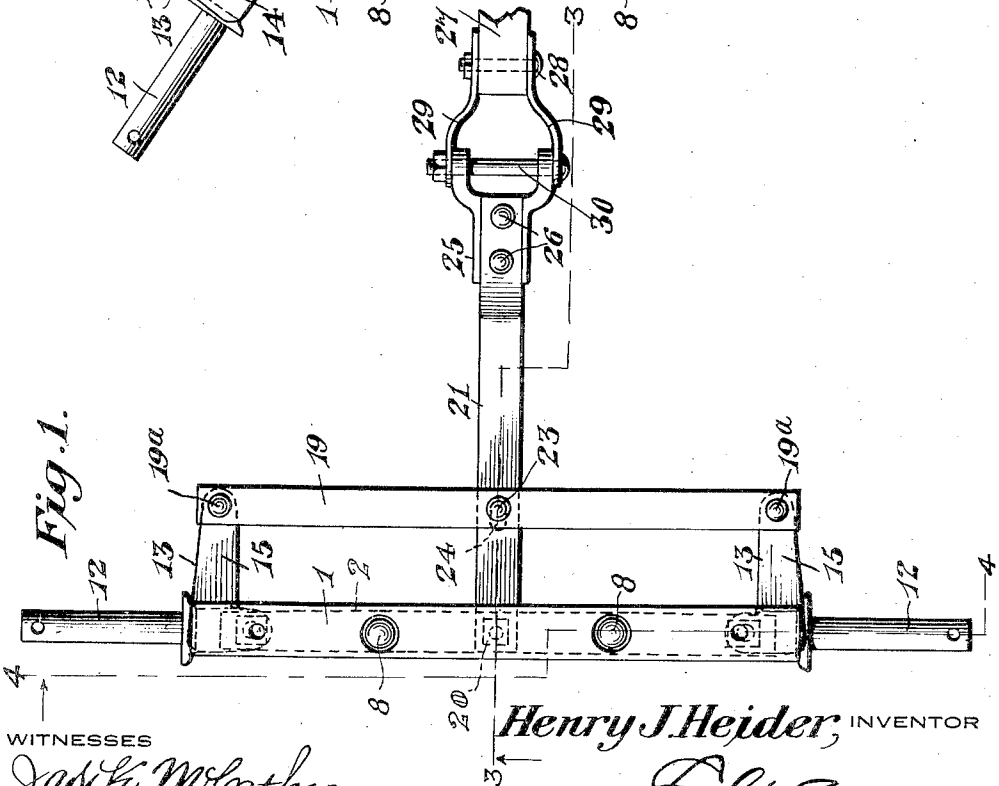


Fig. 1.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 5.

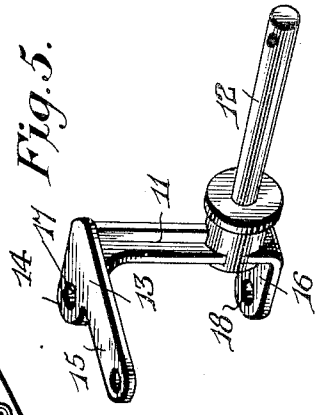


Fig. 3.

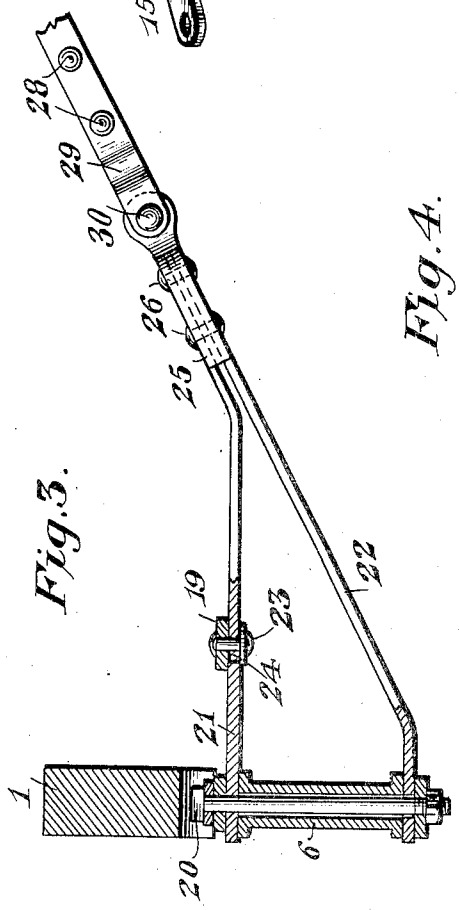
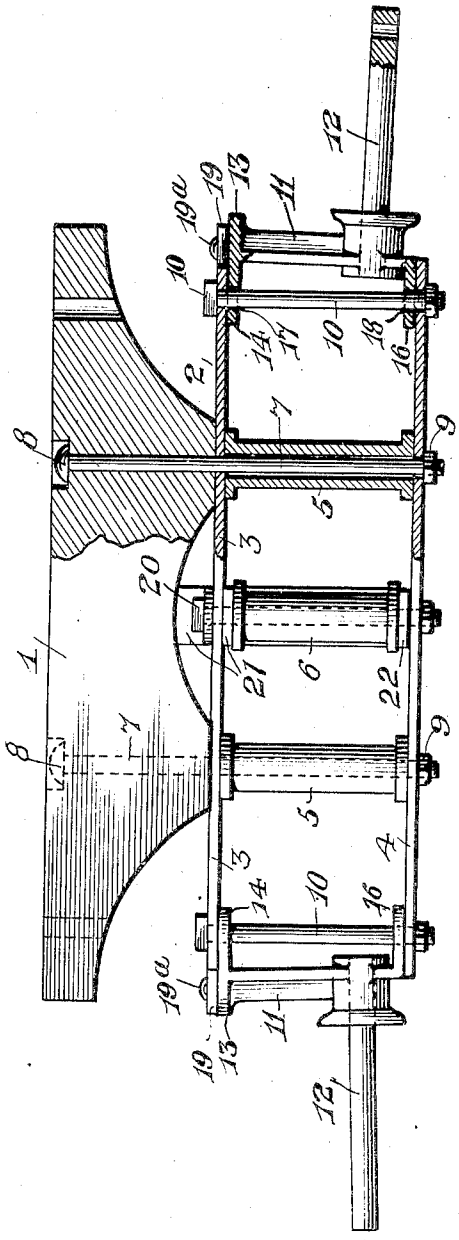


Fig. 4.



WITNESSES

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HENRY J. HEIDER, OF CARROLL, IOWA, ASSIGNOR TO HEIDER MANUFACTURING COMPANY, OF CARROLL, IOWA, A CORPORATION OF IOWA.

COASTER-WAGON.

1,385,946. Specification of Letters Patent. Patented July 26, 1921.

Application filed March 31, 1919. Serial No. 286,452.

To all whom it may concern:

Be it known that I, HENRY J. HEIDER, a citizen of the United States, residing at Carroll, in the county of Carroll and State of Iowa, have invented a new and useful Coaster-Wagon, of which the following is a specification.

This invention has reference to coaster wagons, and its object is to provide a pivot or automobile axle for coaster wagons whereby liability of upsetting either in coasting or hauling loads is practically eliminated.

In the ordinary type of fifth wheel wagons a short turn causes the front axle to move toward alinement with the longitudinal center line of the wagon, thereby greatly reducing the spread of the supporting base of the wagon, wherefore, the wagon very easily upsets. In accordance with the invention stub axles are provided at the ends of a rigid bolster structure and these stub axles are so constructed and mounted that when the wagon makes a turn they move out of parallelism so that there is compensation for the difference in turning movement or travel of the two wheels. The result is that the wheel base crosswise of the wagon is not materially shortened when the wagon is making a turn and the stability of the wagon remains constant whether moving straight ahead, or making the shortest turn of which the wagon is capable. This is an important consideration in coaster wagons because such wagons are customarily used by children in their play and children are liable to be hurt by the upsetting of their wagons. Also, when the wagon is used for conveying loads upsetting is not infrequent in making short turns.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings: —

Figure 1 is a plan view of the front bolster, with the invention applied and the parts positioned for straight forward travel.

Fig. 2 is a view similar to Fig. 1 but showing the front wheel spindles turned to about the limit of their adjustment.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is a perspective view of one of the wheel spindles and its pivotal bracket.

Referring to the drawings, there is shown a bolster 1 of a type used in toy wagons, which bolster may conveniently, though not necessarily, be made of wood. Fast to the bolster 1 is a skeleton sub-bolster 2 shown in the drawings as composed of flat bars 3, 4 respectively, separated by spacer sleeves 5, 6, the spacers 5 being arranged in spaced relation to each other on opposite sides of the center of the sub-bolster, thus being on opposite sides of the central spacer 6, which latter may be shorter than the spacers 5 to accommodate certain parts.

Traversing the bolster 1 from top to bottom and also traversing the bars 3 and 4 and the spacers 5 are long bolts 7 provided at one end with heads 8 and at the other end with nuts 9. The bolts 7 serve to rigidly connect the bolster 1 and sub-bolster 2 so that these two structures together effectively constitute a single bolster.

Extending between the end portions of the bars 3 and 4 are upright bolts 10 constituting pivots for brackets 11 each having an outstanding wheel spindle 12 thereon. The brackets 11 may be in the form of castings or forgings of a length to extend from the bar 3 to the bar 4, and each casting 11 has at one end an angle extension 13 comprising two arms 14 and 15 at substantially right angles to each other. At the other end of the bracket 11 is another arm 16 extended in the same direction as the arm 14. The arms 14 and 16 have registering perforations 17 and 18 respectively, which, in the assembled structure, are traversed by the pivot 10 connecting the bracket 11 with the bars 3 and 4 of the sub-bolster 2, so that the bracket 11 may turn about the bolt 10 as a pivotal support. In the assembled structure the arms 15 project in a

generally forward direction and are joined by a link 19 at the front of the bolster so that the two arms 15 together with the brackets 11 and spindles 12 are constrained to move simultaneously in one direction or the other. The junction between the link 19 and the arms is by way of pivots 19ª.

The spacer 6 is mounted between the bars 3 and 4 by means of a bolt 20 which also serves to hold the corresponding ends of two straps 21, 22 to the sub-bolster between the spacer 6 and the bars 3 and 4. The link 19 is also held to the strap 21 by means of a pivot pin 23 having a certain amount of play lengthwise of the strap 21 by reason of a longitudinal slot 24 formed in the strap 21 and traversed by the pivot pin 23. The straps 21 and 22 extend forwardly of the structure, the strap 22 rising toward the strap 21 and the two straps being joined at their forward ends to a yoke 25 introduced between them, rivets 26 serving as the fastening means. A pole or handle 27 is pivoted by a bolt 28 to other straps 29, in turn connected to the arms of the yoke 25 by a pivot bolt 30. Thus the pole or handle 27 is flexibly connected to the yoke 25 with the latter rigidly connected to the straps 21 and 22. The straps 21 and 22, constituting a steering bracket, are movable about the bolt 20 as an axis and such movement is imparted to the wheel brackets 11 simultaneously, whereby to impart steering movements to the front wheels.

When the vehicle is going straight ahead the wheel spindles 12 are in substantial alinement crosswise of the vehicle (Fig. 1) but have a slight slant downwardly toward their outer ends (Fig. 4) because of the difference in length of the arms 14 and 16. This is advantageous in making the vehicle steer easier than if the wheels stood upright and parallel.

When the vehicle is turning to one side or the other, the spindle on the inside of the turn has a different turning radius from that on the outside of the turn. In order to cause the proper turning of the wagon the inside spindle, that is the one on the side toward which the wagon is turning, is moved about its axis of turning to a greater extent than the outside spindle, since the outside spindle is further away from the center of a given circle of turning than the inside spindle and consequently requires a longer radius to follow the line of circle truly. This produces movements in turning carrying the link 19 out of parallelism with the bar 3 in front of which it is located and it is for this reason that the slot 24 is provided to allow for the lack of parallelism between the parts in turning.

A feature of the invention in which it distinguishes from other devices is the turning of the spindles simultaneously to different extents upon their axes so that the wheel toward the inner side of the turn has a shorter radius of turning than the outside wheel. The structure provides for the maintenance of a broad basic support in turning, thereby preventing the narrowing of the basic support and the lack of stability inherent in fifth wheel types of front axles. Another feature is the arrangement of the tongue pivoted at the rear to the front bolster in the longitudinal center line of the vehicle and extending forwardly and there connected to steering mechanism controlling both front wheels for steering so as to move the inside wheel to a greater extent than the outside wheel in the turn, while the joint in the tongue permits the use of the tongue for drawing the wagon or for steering the wagon by an occupant thereof, with the steering in either instance of such stability that there is no danger even at high speeds of the wagon upsetting sidewise on making a relatively sharp turn. The joint in the tongue is sufficiently far in advance of the front wheels to provide for the steering of the wagon solely by swinging the steering bracket to one side or the other, at the same time providing for pulling the wagon by means of the outer end of the tongue.

What is claimed is:—

1. A wagon having separate spindles, a supporting device for each spindle having three arms projecting therefrom in different angular relations, one of the arms of each supporting device being situated on the spindle side of the other two arms, said other arms being pivoted at the ends remote from the spindle with the upper of the two arms the longer, whereby the spindle slants downwardly.

2. A wagon having a main bolster, a skeleton bolster consisting of an upper and lower bar, spacers between the bars, bolts traversing the main bolster and certain of the spacers for holding the main and skeleton bolsters together, brackets at opposite ends of the bars, each bracket provided with arms offset therefrom, pivots connecting the offset arms and the bars with the brackets tilted out of the vertical, wheel spindles outstanding from the brackets and slanting downwardly, other arms each outstanding from a respective bracket in a forward direction, a link connecting the outer ends of the last-named arms, said link causing the wheel spindles to move simultaneously in opposite directions, and steering means pivoted to a mid-portion of the skeleton bolster and having a slidable pivot connection with the link whereby when said steering means is moved the link assumes a position out of parallelism with the bolster.

3. A wagon having a main bolster, a skeleton bolster consisting of an upper and lower bar, spacers between the bars, bolts travers-

ing the bolster and certain of the spacers for holding the main and skeleton bolsters together, with the skeleton bolster arranged below the main bolster, brackets at opposite ends of the bars, each bracket provided with arms offset therefrom, pivots connecting the offset arms and the bars, wheel spindles outstanding from the brackets, other arms each outstanding from a respective bracket in a forward direction, a link connecting the outer ends of the last-named arms, said link causing the wheel spindles to move simultaneously in opposite directions, a strap pivoted to the top of the skeleton bolster and to said link, a second strap pivoted to the bottom of the skeleton bolster and rigidly connected at its other end to the first-mentioned strap in advance of the link, and a tongue pivotally connected to the said straps at the point where they are rigidly connected to each other.

4. In a wagon, a bolster, brackets mounted at each end of the bolster and carrying wheel spindles, each spindle being disposed at right angles to the main body of the bracket to which it is joined and extending from near the lower end thereof, a pair of arms of unequal length at the upper end of the bracket, the shorter of these two arms extending in a direction substantially opposite to the direction of the wheel spindle, the longer arm projecting forwardly of the vehicle as it moves straight ahead, a third arm provided at the lower end of the bracket and extending in a direction opposite to that of the spindle, said third arm having a length less than the shorter of the two arms first mentioned, pivot means passing through the bolster and the two shorter arms near the ends thereof whereby the bracket is held in a position inclined out of the vertical to swing on a vertical axis, a pivoted tongue, and means connecting the outer ends of said forwardly-projecting arms to said tongue.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

HENRY J. HEIDER.

Witnesses:
CHLORIS BEITER,
F. B. QUINN.