C. F. STICH.

WAGON.

APPLICATION FILED APR. 8, 1919.

1,391,083.

Patented Sept. 20, 1921.

3 SHEETS—SHEET 1.

Fig. 1.

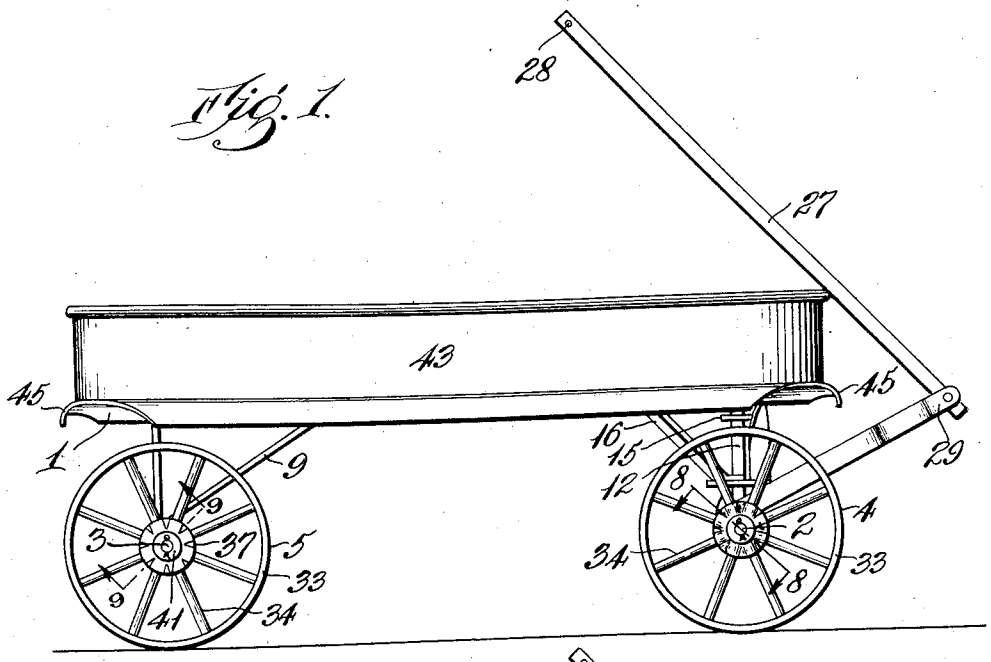
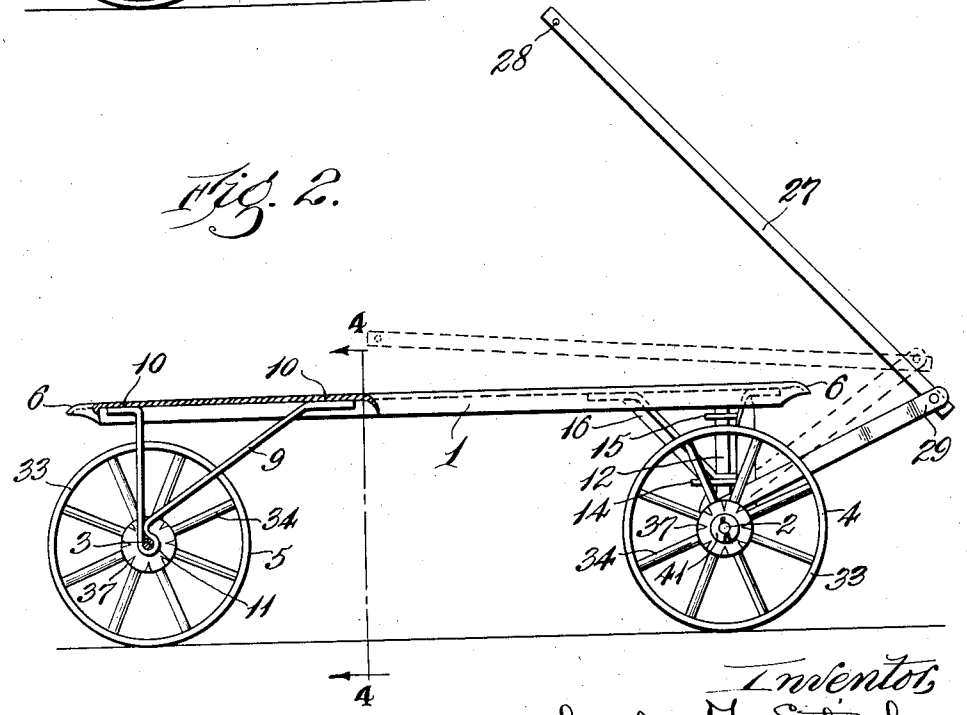


Fig. 2.



Inventor,
Charles F. Stich.
By Brochan Hyde
Attys.

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3 SHEETS—SHEET 2.

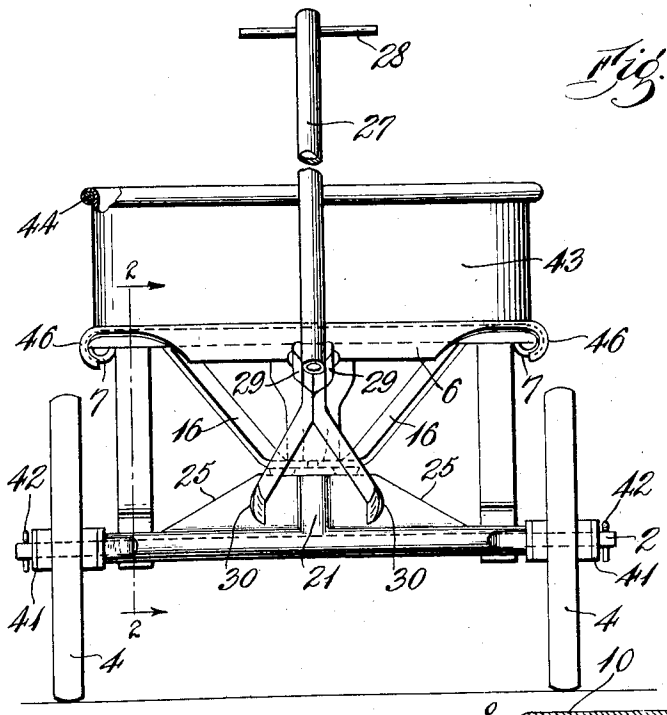


Fig. 3.

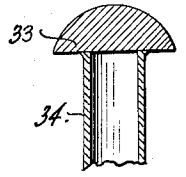


Fig. 15.

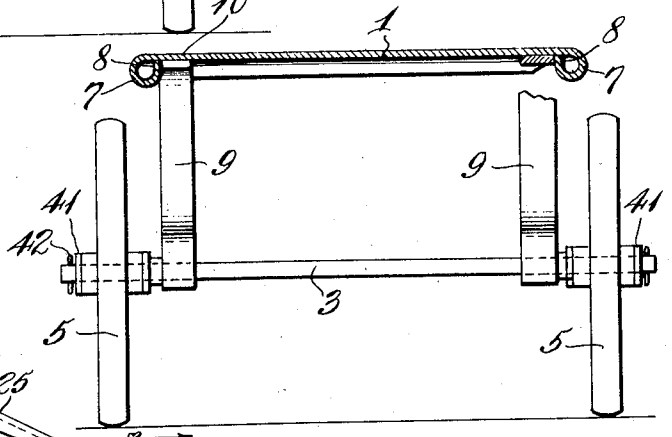


Fig. 4.

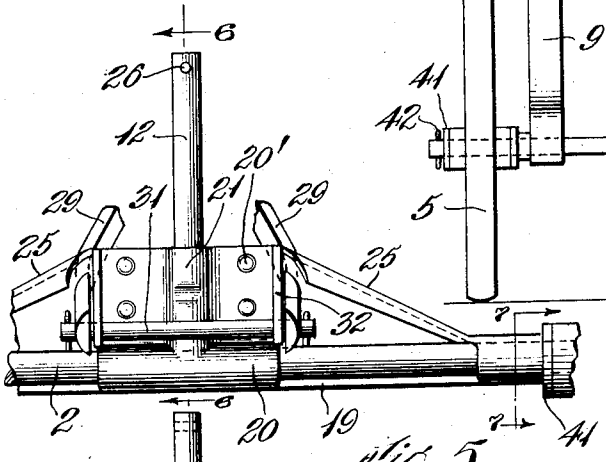


Fig. 5.



Fig. 7.

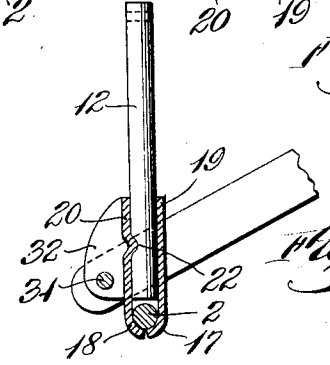


Fig. 6.

Inventor,

Charles F. Stich

By Brock & Hyde

Attys.

C. F. STICH.

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3 SHEETS—SHEET 3.

Fig. 10.

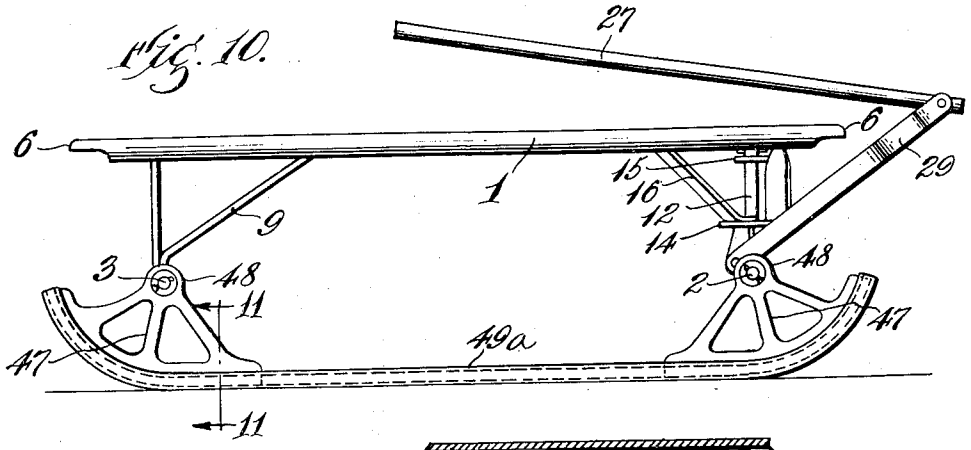


Fig. 12.

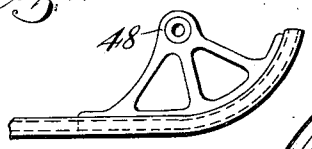


Fig. 13.

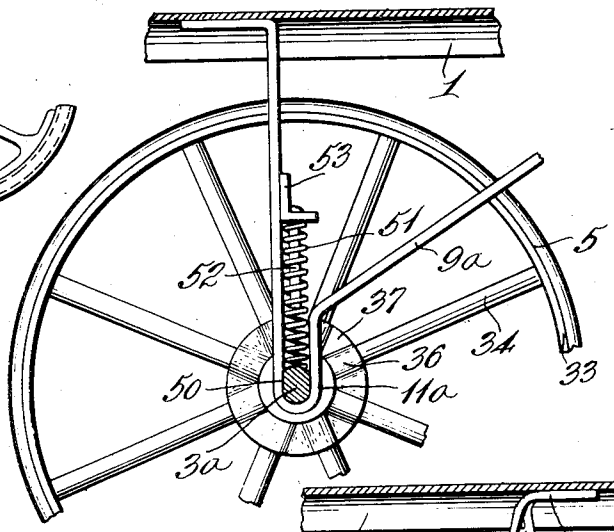


Fig. 11.

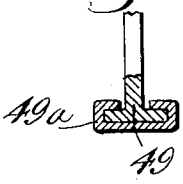


Fig. 8.

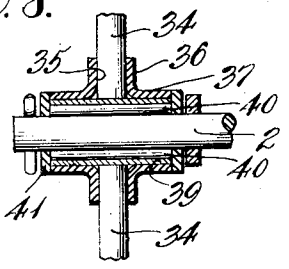


Fig. 14.

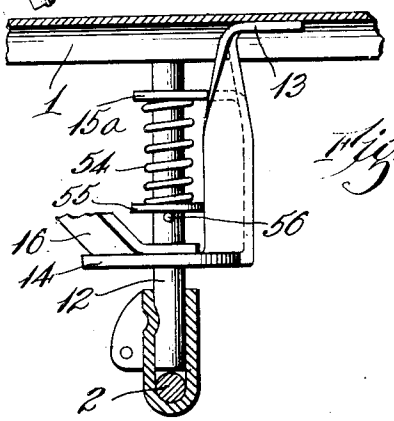
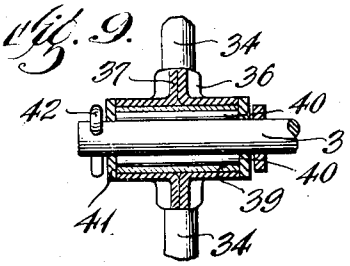


Fig. 9.



Inventor,
Charles F. Stich
By Woodruff & Hyde
Attys.

UNITED STATES PATENT OFFICE.

CHARLES F. STICH, OF CLEVELAND, OHIO, ASSIGNOR TO THE JOHNS MACHINE AND STAMPING WORKS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

WAGON.

1,391,083. Specification of Letters Patent. Patented Sept. 20, 1921.

Application filed April 8, 1919. Serial No. 288,439.

To all whom it may concern:

Be it known that I, CHARLES F. STICH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Wagons, of which the following is a specification.

This invention relates to wagons and more particularly to toy wagons of a size suitable for use by children.

The object of the invention is to provide an improved toy wagon which is very strong and durable and will successfully withstand the rough usage ordinarily given to such wagons by children; which is made entirely of metal without the use of any bolts, nuts, nails, rivets, or screws, and has no loose parts liable to become lost or misplaced; which is strongly reinforced at all of the usual weak points and is therefore firm and rigid; which has no exposed sharp edges, points or projections such as might injure the hands or clothing; whose front axle and fifth wheel construction are of simple form and nevertheless unusually strong for a wagon of this type; which is so arranged as to enable it to be readily converted by the average child into any one of three forms, to-wit, an ordinary express wagon, a coaster or flat topped wagon, or a sled; whose extra parts required for the conversion of the wagon from one form into another are of comparatively large size with no loose pieces attached thereto such as might become lost or misplaced; and finally, a wagon which can be made at low cost and by ordinary mechanical operation.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawings, Figure 1 represents a side elevation of one form of wagon embodying the invention; Fig. 2 is a similar view, partly in section on the line 2—2, Fig. 3, and showing the wagon modified into coaster form; Fig 3 is a front view, on a larger scale, of the wagon shown in Fig. 1; Fig. 4 is a cross section on the line 4—4, Fig. 2, looking in the direction of the arrows; Fig. 5 is a detail rear elevation, on a larger scale, of the front axle and king pin structure; Fig. 6 is a sectional elevation on the line 6—6, Fig. 5; Fig. 7 is a similar section on the line 7—7, Fig. 5; Fig. 8 is a detailed section of the central portion of one of the wagon wheels, the section being taken on the line 8—8, Fig. 1; Fig. 9 is a similar section on the line 9—9, Fig. 1; Fig. 10 is a side elevation, showing the wagon modified into sled form; Fig. 11 is a detail section on the line 11—11, Fig. 10; Fig. 12 illustrates a modified form of sled runner; Fig. 13 is a longitudinal section, illustrating the rear axle and a portion of the body of a spring wagon embodying the invention; Fig. 14 is a longitudinal section, illustrating the front axle and king pin of the spring wagon; and Fig. 15 is a detail view of the tubular spoke attached to the rim.

The wagon shown in the drawings, in its simplest form, comprises a floor or platform 1 supported upon front and rear axles 2 and 3 to which are connected the front wheels 4 and rear wheels 5. The platform 1 is a sheet of metal having its front and rear edges bent downwardly on a gradual curve, as at 6, so as to leave no sharp edges, while its two longitudinal side edges are bent or rolled into substantially tubular form as shown at 7, Fig. 4, the inner edge portions of the rolled metal abutting the under surface of the sheet and lying in planes perpendicular thereto, as at 8. This arrangement forms two smooth rod-like hand grips extending along both sides of the platform and also thoroughly reinforces said platform against bending strains.

Beneath the rear portion of the platform, one on each side, are two brackets 9 having their end portions suitably secured, as by spot welding at the points 10, to the under surface of the platform, the intermediate portions of said brackets being bent to form loops or eyes 11 to receive the rear axle. These brackets are made of strong strap metal not likely to become bent or distorted and serve as rigid braces for the back of the vehicle.

At the front of the vehicle is located a bracket or support for the king pin 12 hereafter referred to. Said bracket comprises a wide sheet metal member having its upper end portion bent forwardly to form a flange 13 secured by spot welding to the platform 1, while its lower end portion is bent rearwardly and trimmed to substantially circular form to form the fifth wheel 14. An intermediate portion of the bracket is punched out from its center and bent down to form the horizontal upper king pin bear-

ing 15. Two metal straps 16 are also secured by spot welding to the fifth wheel 14 and the under surface of the platform 1, said strips extending rearwardly and outwardly from the king pin, as shown by comparison of Figs. 2 and 3. This triangular three point support is very rigid and avoids transmission of bending strain to the body, as is the case when the straps 16 are attached to the body at the sides or forwardly of the king pin.

The front axle 2 is a rod or shaft held solidly between the bent lips 17 and 18 of front and rear plates 19 and 20. Said plates also have vertically channeled or bent portions 21 forming a cylindrical cavity to receive the king pin 12, which may also be provided with a depression 22 into which a portion of the metal of one of said plates, such as the rear plate 20, is forced, to prevent turning of the king pin in its support and to hold such pin in the front axle brace. The two plates 19 and 20 are assembled together on the axle and king pin and secured by spot welding at one or several points, as desired, or by rivets 20'. Front plate 19 extends outwardly toward the ends of the axle and entirely surrounds the same at the ends of said plate, as shown in Fig. 7. The axle may also be flattened on one or two sides, as shown at 24, and the plate metal pressed against the axle to prevent it from turning therein. The upper edges of the front plate 19 are also bent or rolled over, as shown at 25, to form substantially two diagonal reinforcing ribs. The plates 19 and 20 when secured together form a front axle brace which possesses great strength.

The king pin 12 is journaled in alined openings in the fifth wheel 14 and upper bearing plate 15, as shown in Fig. 2, and is held from dropping out by a cotter pin 26 passing through a transverse opening in the upper end of the king pin. The fifth wheel 14 rests directly upon the upper edges of the two plates 19 and 20, which are cut off square as shown in Fig. 5, and form an efficient support for the vehicle body.

The wagon tongue 27 is a metal tube or pipe having a handle 28 at its outer end and at its inner end being jointed to the hounds 29, which are metal rods welded to each other near the tongue. The rear portions of the hounds diverge and pass through slots or openings 30 in the front plate 19, as shown in Fig. 3. The hounds are secured to the front axle structure by a cross pin 31 passing through alined openings in the two hounds and ears 32 extending rearwardly from the rear plate, the pin 31 being held from escaping by cotter pins, as shown in Fig. 5.

The front and rear wheels 4 and 5 are of like construction so that description of one thereof will suffice for the purposes of this application. Each wheel consists of a rim 33 which may be channeled to receive a rubber tire or may be plain or crowned, the latter form being shown in the drawings. The rim is suitably secured, preferably by welding, to the outer square ends of tubular spoke members 34. After this welding operation the inner end portion of the spokes are held in recesses 35 between the transverse web members 36 of hub sleeves 37, the portions of said webs between spokes being pressed toward each other and into contact, as indicated in Fig. 9. The hub sleeves and spokes are then secured permanently to each other by a welding operation which may weld the hub sleeves to the spokes or may weld the hub sleeves to each other or both, as desired. When the hub has been secured to the spokes, as described, a bushing 39 is inserted within said hub, in which is placed a series of anti-friction members, such as the rollers 40, which are prevented from escaping by washers 41 located at the ends of the hub. Each wheel is held on its axle by a cotter pin 42.

The wagon so far described serves as an efficient coaster, as shown in Fig. 2. Its platform or body is essentially flat with smooth hand grips along its edges, so that the boy may lie upon the flat wagon platform. The holes 30 through which the hounds 29 extend, are elongated slightly in the vertical direction. Consequently said hounds have slight vertical motion from the position shown in full lines to that shown in dotted lines Fig. 2, and the tongue 27 may be drawn down close to the body and serve as a steering member.

The wagon is also provided with a box body shown applied thereto in Figs. 1 and 3. This box body consists of a sheet metal wall 43 having its upper edge reinforced by rolling the metal around a strengthening rod 44. The lower edge of the box body, at its ends, is bent downwardly on a gradual curve, as at 45, to pass the corresponding end portions of the platform. The side lower edges of the box body are bent outwardly, downwardly and inwardly into semi-cylindrical form, as shown at 46, Fig. 3. With this arrangement the channel at one lower side edge of the box body can be hooked around the roll of the platform and by pulling outwardly upon the opposite side wall of the box and pressing downwardly can be snapped or sprung past the roll of the platform into gripping relation therewith, as in Fig. 3. This is a quick attachable and detachable connection which can be manipulated by the boy, which has no loose parts except the box body itself, which is so large as not to be easily lost.

Each wagon may also be provided with sled runners, as shown in Fig. 10. Each runner comprises two body members 47 of

partial spider form having a hub member 48 of proper form to take the place of the wheel on the axle. The outer portion of each body member is of T-shape in cross section, as shown at 49, Fig. 11, and is held within the sheet metal runner member 49^a which extends between the two body members and serves to rigidly connect the two axles, prevent the front axle from turning, and provides the sled with two side runners. The sheet metal members 49^a of said runners are, however, slightly flexible so as to enable the sled to mount uneven obstacles without injury. If desired short runners of the form shown in Fig. 12 may be attached to the front and rear axle members, both of said runners facing in the same direction, thus converting the wagon into a bob sled capable of steering by turning the front axle.

Figs. 13 and 14 show a modified form of the invention. Referring to Fig. 13, which illustrates the rear axle structure, the rear axle 3^a is flattened off at 50 so that it can slide vertically but without turning movement between the side walls of the eyes 11^a of the rear axle braces 9^a. Above the rear axle is a compression spring 51 whose upper end surrounds a pin 52 on a bracket 53 carried by the bracket 9^a. Fig. 14 represents the front axle structure. In this case the upper bearing member 15^a surrounding the king pin lies above a compression spring 54 whose lower end is supported by a washer or collar 55 supported by a cross pin 56. The arrangement shown in Fig. 13 enables the rear portion of the body to be depressed relative to the axle, while the structure shown in Fig. 14 enables the front portion of the vehicle to be depressed in the same way. By embodying one or both of these features in the wagon with other features as before described it may be cushioned against blows or injuries, but this spring arrangement is not essential and may be omitted.

The wagon described is very strong and rigid, can be readily manipulated by the average boy and converted readily from any one of its forms to any other, is not liable to cause injury to the hands or clothing and can be made and sold at low cost. Other advantages will be apparent to those skilled in the art.

What I claim is:

1. A wagon, comprising rear wheels, front wheels, and a sheet metal platform mounted upon said wheels, the metal of said platform being rolled under along its side edges to form hand grips, the extreme edge portions of the metal lying in planes normal to the platform to reinforce the same.

2. A wagon, comprising rear wheels, front wheels, a platform mounted upon said wheels, and a body band formed of resilient material and having springing engagement with said platform.

3. A wagon, comprising wheels, a platform mounted thereon, and a body wall having grooved lower edges adapted to hook over the edges of the platform.

4. A wagon, comprising wheels, a platform mounted thereon and having curved edge portions, and a body wall channeled at its lower edge and formed of resilient material and adapted to be sprung into engagement with said platform.

5. A wagon, comprising wheels, a platform mounted thereon and having curved end and side edge portions, and a body wall having the lower edges of its end portions curved to pass the platform edges and the lower edges of its side portions bent into channeled form to hook over the side edges of the platform.

6. A front axle structure for toy wagons, comprising an axle, two plates secured to each other and having lips surrounding said axle, and a king pin immovably held between said plates.

7. A front axle structure for toy wagons, comprising an axle, two plates secured to each other and having lips surrounding said axle, a king pin immovably held between said plates, and hounds extending through openings in one plate and secured to the other plate.

8. A front axle structure for toy wagons, comprising an axle, two plates secured to each other and having lips surrounding said axle, and a king pin immovably held between said plates, one of said plates having its upper edges bent to form reinforcing ribs extending longitudinally of the axle.

9. In a toy wagon, a body, rear wheels supporting the same, and a front axle structure therefor, comprising a brace, an axle carried thereby, wheels mounted on said axle, a fifth wheel, a fifth wheel bracket supporting the same, a king pin secured to the axle bracket and passing through the fifth wheel, an upper king pin bearing bracket receiving the king pin, and a spring arranged between the king pin and the king pin bearing bracket and forming a yielding mounting for the front axle.

In testimony whereof I affix my signature.

CHARLES F. STICH.