Nov. 8, 1955 A. E. JULIEN 2,722,771

TOY KNOCKDOWN VEHICLE

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FIG. 1

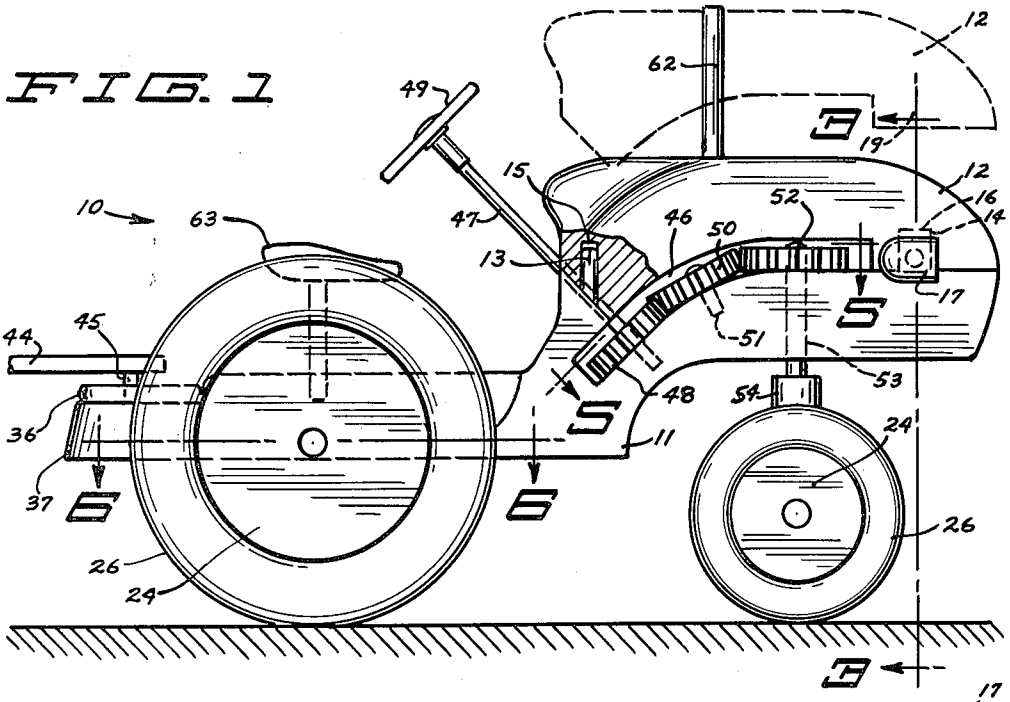


FIG. 2

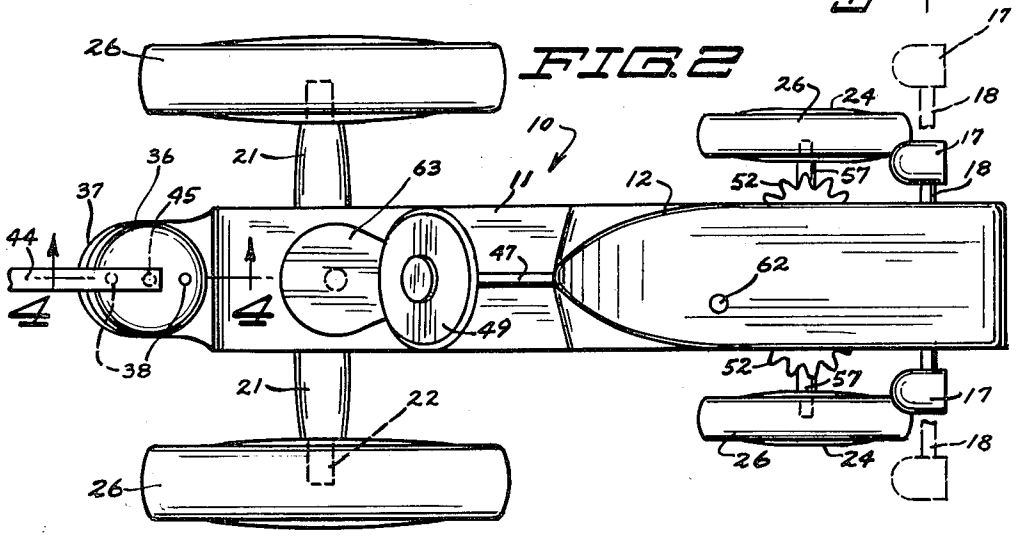


FIG. 3

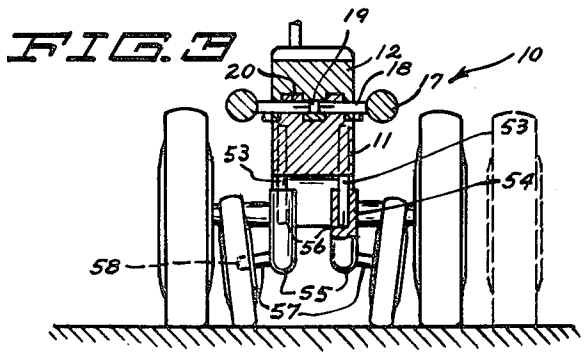
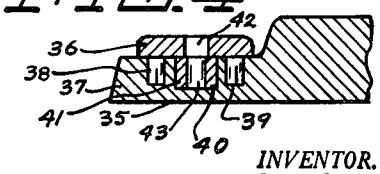


FIG. 4



INVENTOR.
ALBERT E. JULIEN
BY
Bradbach and Braddock
ATTORNEYS

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FIG. 5

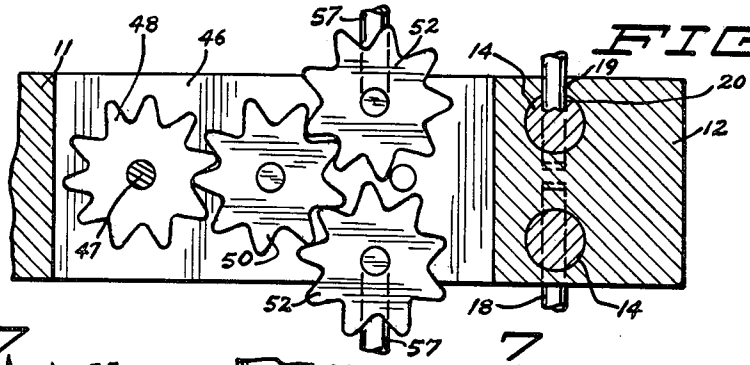


FIG. 6

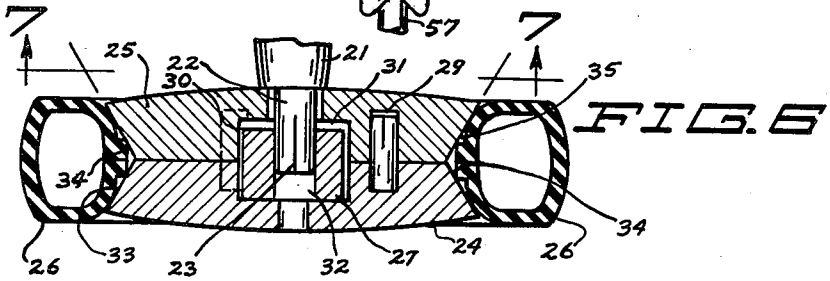


FIG. 7

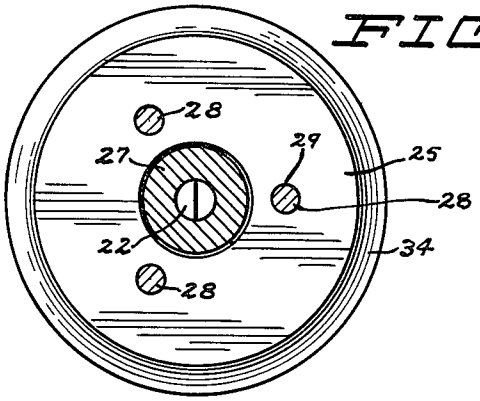


FIG. 8

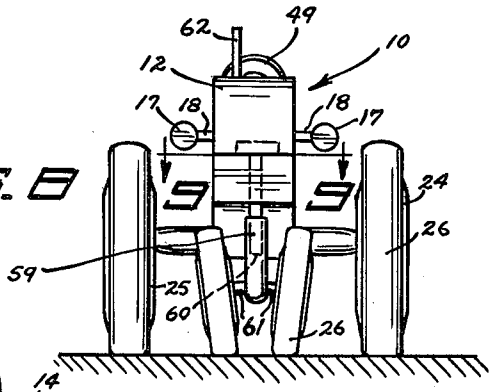
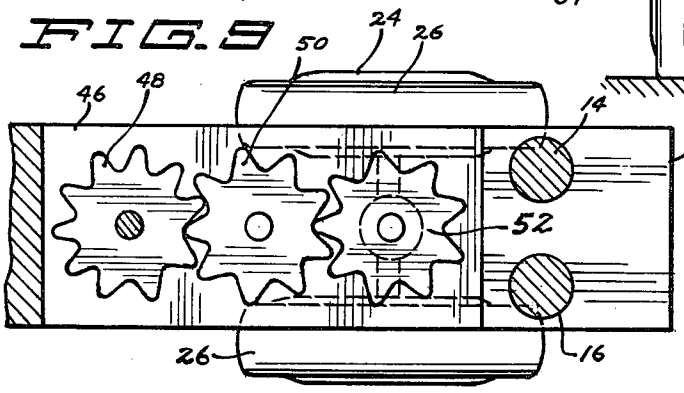


FIG. 9



INVENTOR.
ALBERT E. JULIEN
BY
Braddock and Braddock
ATTORNEYS

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2,722,771

TOY KNOCKDOWN VEHICLE

Albert E. Julien, Grand Rapids, Minn.

Application August 13, 1954, Serial No. 449,741

2 Claims. (Cl. 46—17)

This invention has relation to toys and more particularly to toy wheeled vehicles of the type that can be assembled and disassembled.

A toy vehicle made according to the present invention consists of a plurality of parts which are designed to be held together by pegs attached to certain parts fitting into holes in other parts. The wheeled toy includes wheels which are free to rotate on their axes and a steering wheel which is operative to cause the front wheels of the vehicle to turn on a vertical axis.

While as disclosed in the drawings, the wheeled vehicle takes the form of a tractor, it is to be understood that blocks of differing shapes could be provided so that vehicles made according to the invention could take on many other forms.

In the drawings,

Fig. 1 is a side elevational view of a toy vehicle made according to the invention with parts in section and parts broken away;

Fig. 2 is a top plan view of the vehicle as seen in Fig. 1;

Fig. 3 is a vertical sectional view taken on the line 3—3 in Fig. 1;

Fig. 4 is an enlarged vertical sectional view taken on the line 4—4 in Fig. 2;

Fig. 5 is an enlarged generally horizontal sectional view taken on the line 5—5 in Fig. 1;

Fig. 6 is an enlarged horizontal sectional view taken on the line 6—6 in Fig. 1;

Fig. 7 is a reduced, vertical sectional view taken on the line 7—7 in Fig. 6;

Fig. 8 is a front elevational view of the toy with the parts assembled in a manner differing from that disclosed in Figs. 1, 2 and 3; and

Fig. 9 is an enlarged horizontal sectional view taken on the line 9—9 in Fig. 8.

Referring to the drawings and the numerals of reference thereon, the toy vehicle 10 includes a main frame 11, a hood 12 adapted to be removably positioned on the main frame 11 through the instrumentality of rear frame pegs 13, 13 and front frame pegs 14, 14. The front and rear frame pegs are permanently mounted in the main frame 11 and extend upwardly therefrom. The hood 12 is provided with a pair of rear hood peg holes 15, 15 in position to receive said rear frame pegs 13, 13 and a pair of front hood peg holes 16, 16 in position to receive front frame pegs 14, 14. A pair of headlights each has a headlight peg 18 fixedly mounted therein and extending outwardly therefrom. Headlight peg holes 19 are provided in the hood 12 to receive the headlight peg 18 and headlight peg holes 20 are provided in each of the front frame pegs 14, 14 to receive said headlight pegs.

A stationary rear axle 21 extends outwardly from both sides of a rear portion of the main frame 11. Each of the outer end portions of said rear axle is constituted as a rear axle peg 22. As best seen in Fig. 6, these rear axle pegs consist of round dowel-like pieces and have a longitudinal slot 23 at the outer end thereof passing through the axis of the peg. This outer end portion of the peg is rounded so that it will be easily alined with a corresponding rear axle peg hole.

Each of the pegs shown and described herein is constructed in this manner.

The construction of each of the wheels is identical with that of the other wheels. Each of the wheels consists of an outside wheel plate 24, an inside wheel plate 25, a tire 26, and a wheel bearing sleeve 27. The outside wheel plate 24 and the inside wheel plate 25 are removably attached to each other by wheel pegs 28 which are permanently fixed in the outside wheel plate and extend into wheel plate holes 29 which are provided in the inside wheel plate. An opening 30 is provided in the inside wheel plate 25 to have diameter greater than the diameter than its corresponding axle peg. Portions of the outside and inside wheel plates adjacent each other are cut away to provide a wheel bearing compartment 31 which is slightly larger than the wheel bearing sleeve 27 and in which this sleeve can freely rotate. An axle peg hole 32 is provided in the wheel bearing sleeve 27 to be in alinement with the axis of the wheel. The axle peg hole is tapered very slightly and has its largest dimension at the end thereof through which the peg enters. This taper is provided so that when an axle peg is inserted into its corresponding axle peg hole, the outer end of the peg will be compressed to close the longitudinal slot 23 therein. This insures that there will be a firm friction contact between the sides of the peg and the peg hole so that the wheel bearing sleeve 27 and the axle will be held in positive fixed relationship to each other until force is exerted in alinement with the axis of the peg to pull them apart.

Each of the peg holes shown and described herein is constructed to have a similar taper. This construction has the advantage that as the sides of the peg hole and the peg wear away, the outer split ends of the peg will still be held against the sides of the peg hole and a good firm contact between the parts will be maintained.

As will best be seen in Fig. 6, tapered edge surface 33 of the outside wheel plate 24 and tapered edge surface 34 of the inside wheel plate 25 serve to hold the tire 26 in fixed position with respect to the remainder of the wheel. Wheel bearing compartment 31 extends around and rotatably supports the wheel bearing sleeve 27 so that it is freely rotatable with respect to the wheel. This means that the wheels will each be freely rotatable about their axle pegs.

At a rear portion of the trailer is situated a trailer hitch 35 which consists of a hitch plate 36 supported on a rear portion of the main frame 11 by means of hitch pegs 38 which are fixedly supported in said hitch plate and extend into hitch peg holes 39 in the rear portion 37 of the main frame. Said rear portion 37 of the main frame is cut away to provide a hitch bearing compartment 40 therein. A hitch bearing sleeve 41 is rotatably supported therein. A hitch plate opening 42 is provided in the hitch plate 36, and a trailer tongue peg hole 43 having a diameter less than the diameter of said hitch plate opening is provided in the hitch bearing sleeve 41. As best seen in Figs. 1 and 2, a trailer tongue 44 from a trailer (not shown) having a trailer tongue peg 45 can be attached to the vehicle by pushing the trailer tongue peg 45 into the trailer tongue peg hole 43 of the hitch bearing sleeve 41. The trailer tongue will then be fixedly positioned with respect to the trailer hitch bearing sleeve 41 and consequently the trailer will move with the vehicle but will be free to turn as the vehicle turns since the hitch bearing sleeve 41 is free to turn with respect to the rear portion 47 of the main frame 11 of the vehicle.

The main frame 11 and the hood 12 of the vehicle 10 are cut away to provide a gear box compartment 46 therebetween. A steering column 47 is rotatably supported with respect to said main frame and said hood

to extend through said gear box compartment **46**. A steering gear **48** is fixedly positioned on said steering column as is a steering wheel **49**. An intermediate gear **50** is fixedly mounted on an intermediate gear shaft **51** to be rotatable with respect to the main frame **11**. As seen in Figs. 1, 2, 3 and 5, a pair of wheel control gears **52** are rotatably mounted on wheel control shafts **53** to be rotatable with respect to said main frame. Wheel control shafts **53** extend downwardly and portions thereof extending below main frame are constituted as wheel control pegs **54**. A pair of housings **55** are provided with wheel control peg holes **56** for receiving the wheel control pegs **54** and have front axles **57** permanently attached thereto and extending outwardly therefrom. Outer ends of the front axles are constituted as front axle pegs **58**. These front axle pegs **58** are designed to fit into the wheel bearing sleeves **27** of the front wheels.

In Figs. 8 and 9, one of the wheel control gears **52** and wheel control shafts **53** have been removed and the remaining wheel control gear has been positioned as seen in Fig. 9 to have its corresponding wheel control shaft **53** extending downwardly from a central portion of the main frame **11**. A housing **59** having a wheel control peg hole **60** is substituted for housing **55**. This housing **59** has two front axles **61** fixedly mounted therein and extending outwardly therefrom to rotatably support both of the front wheels.

Both when the vehicle is assembled as in Figs. 1, 2, 3 and 5 and when the vehicle is assembled as in Figs. 8 and 9, the upper end of the wheel control shaft **53** bears against the under surface of the hood **12**. This means that the thrust of the weight of the vehicle on the front wheels is against this under surface of the hood. Since the headlight pegs **18** extend through the headlight peg holes **19** in the hood and also through headlight peg holes **20** in the front frame pegs, this upward thrust by the wheel control shafts will not dislodge the hood from its position. In order to remove the hood, it is obvious that the headlight pegs **18** must first be removed from the headlight peg holes **20** which extend through the front frame pegs **14**.

An exhaust pipe **62** is removably mounted in the hood and a tractor seat **63** is removably mounted in the main frame.

When a child is young, he will play with this toy vehicle by pushing it over the floor and turning the steering wheel to cause the vehicle to turn. As he grows older and can coordinate his movements better, he will want to attach other vehicles to this one so that they can be pulled behind this one as he pushes it and steers it across the floor. For this reason, the trailer hitch **35** was incorporated. He will next begin to take the vehicle apart and put it back together.

In order to make this toy simple enough so that children can take it apart and put it back together, each of the pegs is permanently mounted to one of the parts of the vehicle at one end. In this way, the chance of losing a peg or of getting the parts into the wrong positions is reduced. For this reason, the steering gear **48** and the steering wheel **49** are permanently attached to the steering column **47**; the intermediate gear shaft **51** is permanently attached to the intermediate gear **50**; and each of the wheel control shafts **53** is permanently attached to its wheel control gear **52**.

To disassemble the toy, a child may first remove the headlights indicated in dotted lines in Fig. 2. The hood may then be removed as indicated in dotted lines in Fig. 1. The wheel housings may then be removed as well as the gears. The rear wheels come off as indicated in dotted lines on Fig. 3 and the front and rear wheels may be completely disassembled as explained previously.

To assemble, the reverse order may be followed.

When a child has mastered the art of assembling and disassembling the toy, he will want to be able to vary the problem. For this reason, a separate housing having two front axles thereon is also provided as previously indicated.

Although the toy vehicle herein described and disclosed in the drawings is a tractor, it is obvious that other vehicles such as stock cars, trucks and sports cars could be made within the spirit of the invention and the scope of the claims which follow.

What is claimed is:

1. A toy vehicle comprising a main frame, a hood, a steering column rotatably mounted with respect to said main frame, an intermediate gear shaft rotatably mounted with respect to said main frame, a wheel control shaft rotatably mounted in said main frame, a steering gear fixed on said steering column, an intermediate gear fixed on said intermediate gear shaft, a wheel control gear fixed on said wheel control shaft, said steering gear, intermediate gear and wheel control gear forming a gear train located between said hood and said main frame, rear wheels rotatably mounted with respect to said main frame, a front wheel, means for rotatably mounting said front wheel with respect to said wheel control shaft, an upper end of said wheel control shaft bearing against a lower surface of said hood, means for maintaining said hood in position adjacent said main frame including a pair of front frame pegs fixedly mounted in said main frame and extending upwardly therefrom, said hood being provided with a pair of front peg holes having walls positioned to be in surrounding, contiguous, holding relationship to said front frame pegs when said hood is in position adjacent said main frame, a pair of simulated headlights, a pair of headlight pegs each extending outwardly from one of said headlights, said hood and each of said front frame pegs being provided with headlight peg holes having walls positioned to be in surrounding, contiguous, holding relationship to each of said headlight pegs when said headlights are positioned adjacent said hood.

2. A toy vehicle comprising a main frame, a hood, a steering column rotatably mounted with respect to said main frame, an intermediate gear shaft rotatably mounted with respect to said main frame, a wheel control shaft rotatably mounted in said main frame, a steering gear fixed on said steering column, an intermediate gear fixed on said intermediate gear shaft, a wheel control gear fixed on said wheel control shaft, said steering gear, intermediate gear and wheel control gear forming a gear train located between said hood and said main frame, rear wheels rotatably mounted with respect to said main frame, a front wheel, means for rotatably mounting said front wheel with respect to said wheel control shaft, an upper end of said wheel control shaft bearing against a lower surface of said hood, means for maintaining said hood in position adjacent said main frame including a pair of front pegs fixedly mounted in a first of said main frame and said hood and extending outwardly therefrom, a second of said main frame and said hood being provided with a pair of peg holes having walls positioned to be in surrounding, contiguous, holding relationship to said front pegs when said frame and said hood are in position adjacent each other, a pair of simulated headlights, a pair of headlight pegs each extending outwardly from one of said headlights, said second of said main frame and said hood and each of said pegs being provided with headlight peg holes having walls positioned to be in surrounding, contiguous, holding relationship to each of said headlight pegs when said headlights are positioned adjacent said main frame and said hood.

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