July 14, 1942. E. S. ALT 2,289,331

TOY VEHICLE

Filed Feb. 11, 1941 2 Sheets-Sheet 1

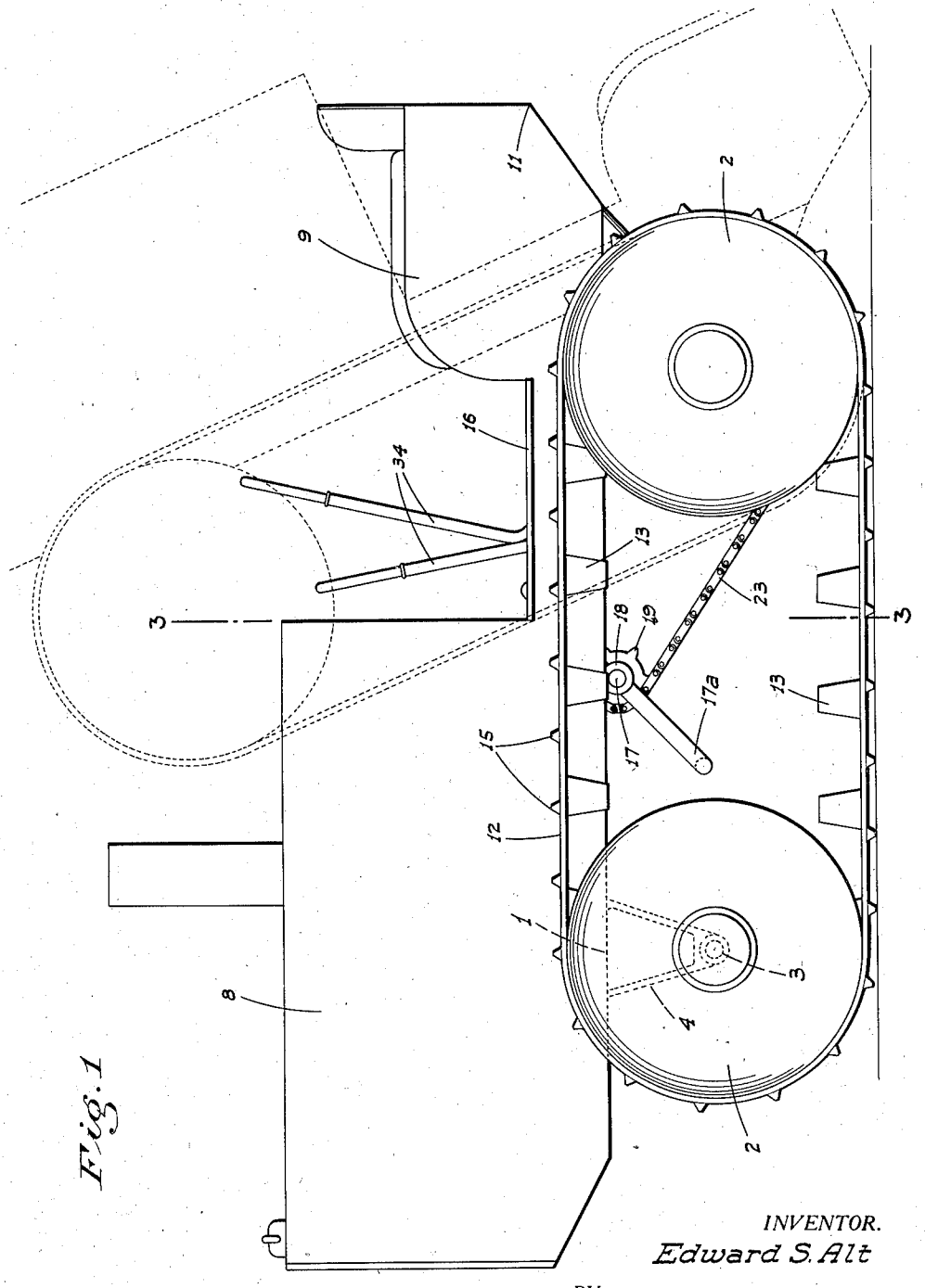


Fig. 1

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Fig. 2

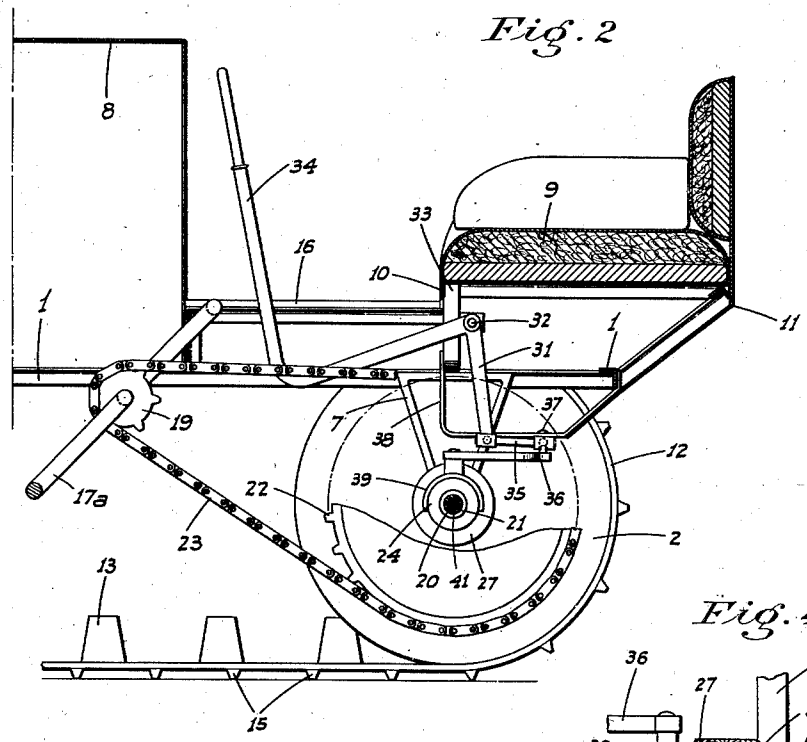


Fig. 4

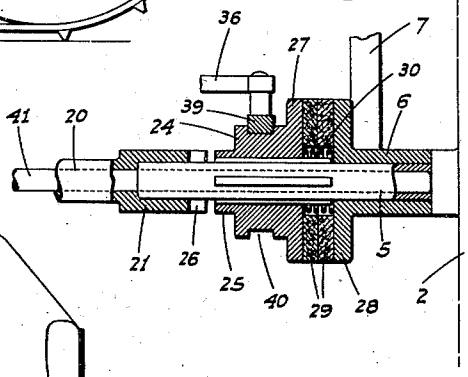
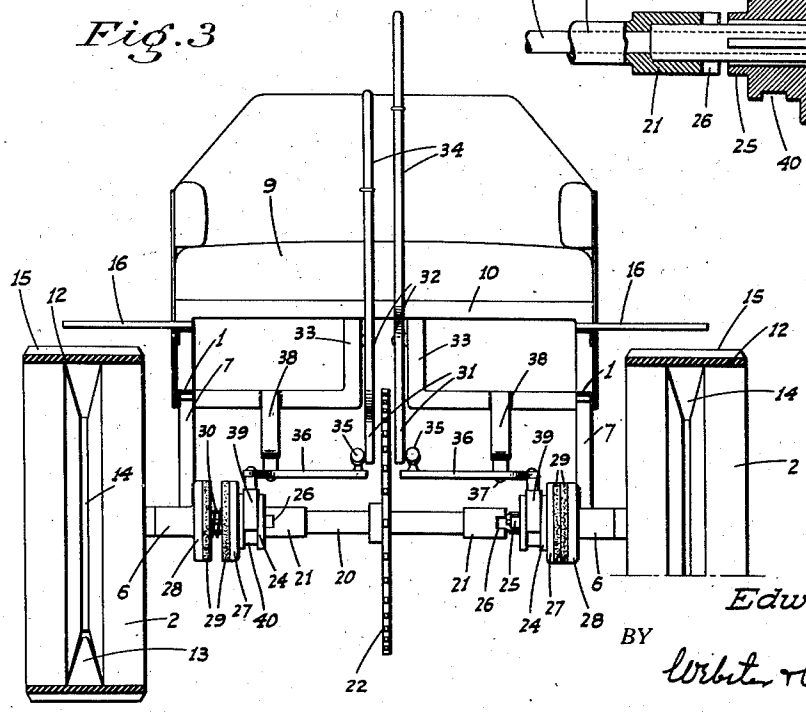


Fig. 3



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UNITED STATES PATENT OFFICE

2,289,331

TOY VEHICLE

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9 Claims. (Cl. 280—1.11)

This invention relates in general to a toy vehicle for children, and in particular the invention is directed to, and it is my principal object to provide, an occupant-propelled toy vehicle constructed to simulate a tractor of the endless track type.

Another object of the invention is to provide a toy vehicle as above which is pedal-propelled and includes novel means to control turning movement of the vehicle in one direction or the other.

It is also an object of the invention to provide the toy vehicle with a frame constructed so that the vehicle cannot upset backward should the child attempt to run the vehicle over a relatively large and high object, upstairs, or the like.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of the toy vehicle.

Figure 2 is a fragmentary sectional elevation showing the drive and steering mechanism.

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

Figure 4 is an enlarged, fragmentary section of one of the clutch and brake units.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 indicates a rigid substantially rectangular frame disposed horizontally above the ground and supported front and rear by pairs of spaced wheels 2; the front wheels being mounted on spindles 3 projecting from brackets 4, while the rear wheels are fixed on stub axles 5 which extend through bearing sleeves 6 on the lower end of brackets 7. Both brackets 4 and 7 are of V-shape and depend in rigid relation from the frame 1.

The frame forwardly of a point substantially centrally of its ends supports an upstanding shell 8 which is formed to simulate the hood of an actual tractor, the rear end of such shell being open to provide leg room for the child. A seat and arm rest assembly 9 is disposed above the frame 1 and mainly rearwardly of the axis of the rear wheels 2. This seat assembly is supplied by a framing arrangement indicated generally at 10. The rearmost and back edge of the seat assembly, as indicated at 11, is disposed at such height from the ground and at such radial distance from the axis of the rear wheels 2 that should the toy vehicle lift up at the front, such edge will engage the ground before the vehicle can turn over backward, as indicated by dotted lines in Fig. 1.

Flat, endless belts or tracks 12 of flexible material engage about and extend between corresponding front and rear wheels 2; these wheels having a wide face or tread to correspond with the width of the tracks 12. In order to prevent the tracks from throwing off the wheels, longitudinally spaced lugs 13 are formed with the tracks and project inwardly from the longitudinal median line thereof; such lugs being tapered in a transverse plane (see Fig. 3) and riding in V-shaped annular grooves 14 in the wheels. The exterior surface of the tracks is formed with longitudinally spaced transverse cleats 15. Protective or step plates 16 project laterally from the frame of the vehicle in overhanging relation to tracks 12 between hood 8 and seat assembly 9.

The drive and steering mechanism for the toy vehicle comprises the following:

A cross shaft 17 having opposed, transversely spaced pedal cranks 17a, is journaled at its ends, as at 18, on the frame 1 some distance ahead of seat assembly 9; there being a small sprocket 19 fixed on said cross shaft between the pedal cranks 17a.

A central shaft 20 extends between the stub shafts 5 which are fixed with the rear wheels, and said central shaft has sockets 21 on its ends into which sockets the inner end of stub shafts 5 turnably project, thus supporting said central shaft. A relatively large sprocket 22 is fixed on central shaft 20, and an endless chain 23 connects sprockets 19 and 22 in driving relation.

Sliding collars 24 are splined on the stub shafts 5 inwardly of brackets 7 and these collars are formed on one end with projecting clutch fingers 25 which normally engage in corresponding notches 26 in the adjacent end of sockets 21, connecting stub shafts 5 and central shaft 20 in driving relation.

At the end opposite fingers 25 collars 24 are formed with radial brake discs 27 which face like discs 28 integral with the inner ends of sleeves 6 and surrounding shafts 5. These discs are fitted on adjacent faces with friction brake lining 29; there being compression springs 30 surrounding shafts 5 between adjacent discs, and such springs normally maintain the lined discs

separated and fingers 25 engaged in notches 26.

With the parts of the driving mechanism in position as above, the toy vehicle moves forward or backward when a child seated in the vehicle actuates pedals 17*a*, and as driving action is imparted to both rear wheels and both the endless tracks, the vehicle moves in a straight line.

To turn the vehicle to right or left, the following mechanism is employed:

A pair of inverted closely spaced bell cranks 31 are pivoted intermediate their ends, as at 32, on L shaped brackets 33 fixed with the seat frame and projecting laterally in opposite directions from their adjacent ends which are spaced apart somewhat. The upper arms of these bellcranks extend forwardly and normally downwardly on opposite sides of but close to the upper reach of chain 23, and an upstanding hand lever 34 is formed with each bell crank at its forward end. Swivel play links 35 connect between the lower ends of the depending bellcrank arms and adjacent ends of horizontally disposed L shaped levers 36. Levers 36 are pivoted intermediate their ends at 37 on rigid elements 38 depending from brackets 33. Clutch forks 39 are pivoted on and depend from the free ends of levers 36 and cooperatively engage in annular grooves 40 in collars 24. It will be seen that when either hand lever 34 is drawn backward such motion effects a movement of the corresponding lever 36 in a direction to slide the adjacent collar in a direction to uncouple the clutch (fingers 25 and notches 26) and engage the lined discs in non-rotatable relation. This prevents further rotation of corresponding rear wheel 2 and its endless track, and with continued driving of the other endless track, the toy vehicle turns to the side on which the track is motionless. When the lever 34 is released the vehicle again moves straight ahead.

The bellcranks and levers are disposed somewhat close together, so that they will be between the legs of the occupant in convenient and clearance relation thereto, and permit a child to get in and out of the vehicle with ease.

In order to tie the alined shaft sections together and brace them against deflection, a floating interior shaft 41 extends continuously through the shafts or axles 5 and shaft 20 the full distance between rear wheels 2.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. A toy vehicle comprising a frame, a body on the frame and including a seat, endless track units disposed on opposite sides of the frame and mounted to support the latter, occupant actuated drive means connected with said units and including a normally engaged clutch for each unit, a separate normally inactive brake for each unit, and manually actuated means to selectively disengage said clutches and simultaneously apply the corresponding brake; said manually actuated means including a pair of upstanding levers disposed ahead of the seat within reach of the occupant and relatively close together centrally between the sides of the vehicle.

2. In a toy vehicle, a frame, a body on the frame having a seat, endless track units mounted on opposite sides of the frame, and occupant actuated drive means connected with said units and including a normally engaged clutch for each unit; manually actuated means to selectively disengage the clutches, said occupant actuated drive means including a cross shaft having transversely spaced pedal cranks, said shaft being mounted some distance ahead of the seat and in a lower plane; said manually actuated means including a pair of upstanding levers disposed ahead of the seat within reach of the occupant and between the occupant's legs when the feet are on the pedal cranks.

3. A toy vehicle comprising a frame, a body on the frame and including a seat, endless track units on opposite sides of and supporting the frame, said units including rear wheels, stub shafts fixed on and projecting inwardly from said wheels, the frame being fitted with journals through which said shafts extend, a central shaft disposed between and alined with said stub shafts, normally engaged clutch units mounted between adjacent ends of said stub shafts and central shaft, occupant actuated drive means connected with said central shaft in driving relation, and manually actuated means to selectively disengage either clutch.

4. A toy vehicle as in claim 3 in which the ends of the central shaft have sockets into which adjacent ends of the stub shafts turnably engage; each of said clutch units including a slide collar splined on the stub shaft, separate clutch elements on the collar and the adjacent socket, and a spring normally holding said elements in engagment, said manually actuated means being operative to slide the collar in a direction to separate said elements.

5. A toy vehicle as in claim 3 in which each of the clutch units includes a slide collar splined on the corresponding stub shaft, a concentric brake disc on said collar, and another concentric brake disc fixed on the adjacent journal for said stub shaft, and normally spaced from said first named disc, said collar moving in a direction to engage said discs and to brake the corresponding endless track unit upon disengagement of the clutch unit by said manually actuated means.

6. In a toy vehicle, a frame, a body on the frame and including a seat, endless track units disposed to the sides of and supporting the frame, a shaft assembly between said units adjacent their rear end, said assembly including a sprocket; a cross shaft journaled on the frame ahead of the seat, said cross shaft including spaced pedal cranks, a sprocket on the cross shaft between the pedal cranks, and an endless chain connecting said sprockets.

7. A toy vehicle as in claim 6 in which the shaft assembly includes a normally engaged clutch unit for each endless track unit, a pair of pivotally mounted levers upstanding ahead of the seat, said levers being closely spaced and the upper reach of the chain passing therebetween, and clutch releasing connections between said levers and said clutch units.

8. A toy vehicle as in claim 6 in which the shaft assembly includes a normally engaged clutch unit for each endless track unit, inverted bell cranks disposed on opposite sides of the chain but close thereto, said bell cranks being pivoted intermediate their ends for swinging

movement in a plane of the vehicle, hand levers projecting upwardly ahead of the seat and from the end of one of the arms of said bellcranks, separate clutch releasing levers pivoted intermediate their ends adjacent the clutch units and connected at one end therewith, and swivel play links connected between the ends of the other arms of the bell cranks and the other end of said horizontal levers.

9. A toy vehicle as in claim 6 in which the shaft assembly includes a normally engaged clutch unit for each endless track unit, inverted bellcranks disposed on opposite sides of the chain but close thereto, said bellcranks being pivoted intermediate their ends for swinging movement in a plane lengthwise of the vehicle, hand levers projecting upwardly ahead of the seat and from the ends of one of the arms of said bellcranks separate clutch releasing levers pivoted intermediate their ends adjacent the clutch units for swinging movement in a horizontal plane, the clutch units including forks secured on one end of said clutch releasing levers, and swivel play links connected between the ends of the other arms of the bellcranks and the other ends of said horizontal levers.

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