July 28, 1936. S. A. YOUNG 2,049,345

TOY CAR

Filed July 22, 1935 2 Sheets-Sheet 1

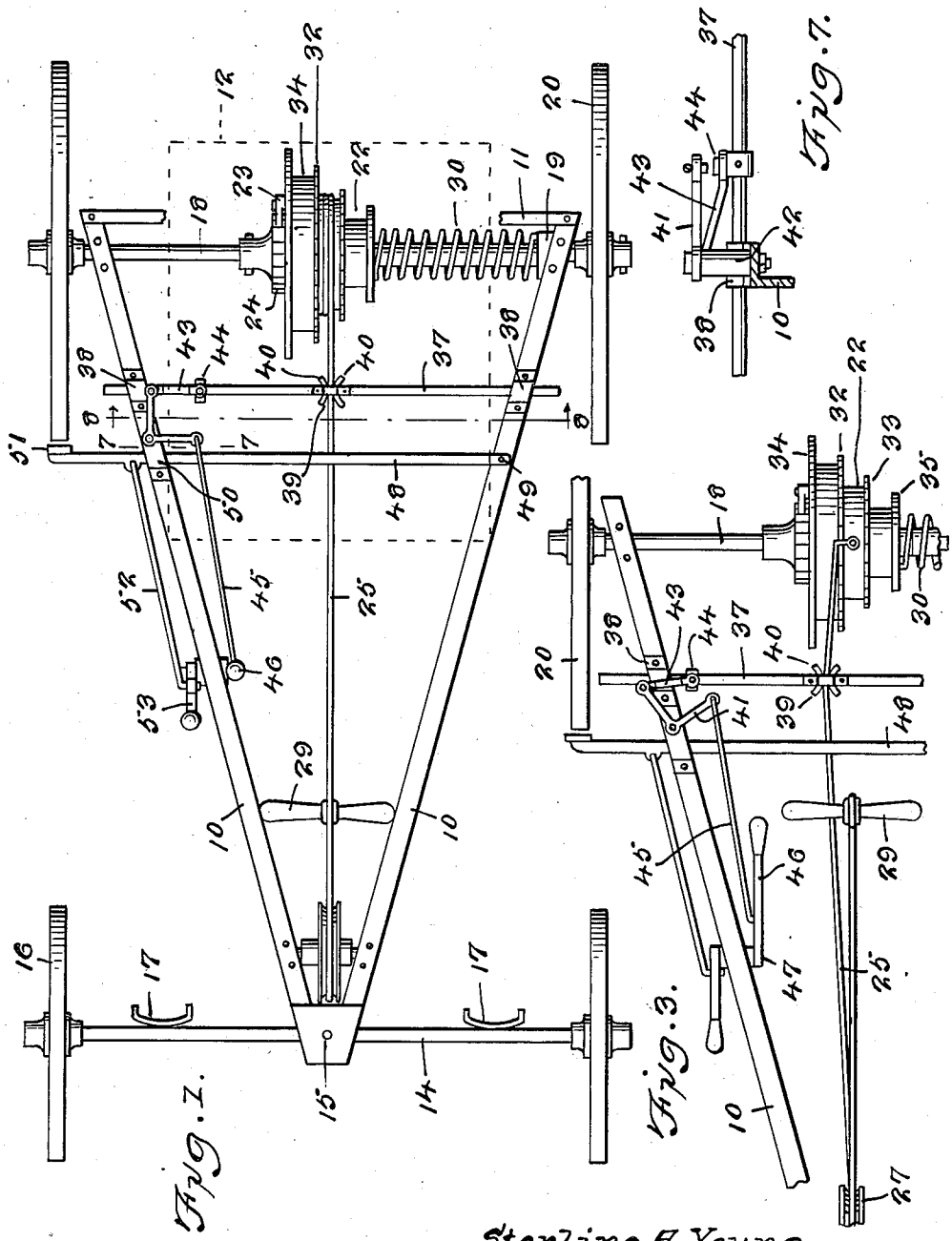


Fig. 1.

Fig. 3.

Fig. 7.

Sterling A. Young INVENTOR

BY Victor J. Evans & Co.

ATTORNEY

July 28, 1936. S. A. YOUNG 2,049,345

TOY CAR

Filed July 22, 1935 2 Sheets-Sheet 2

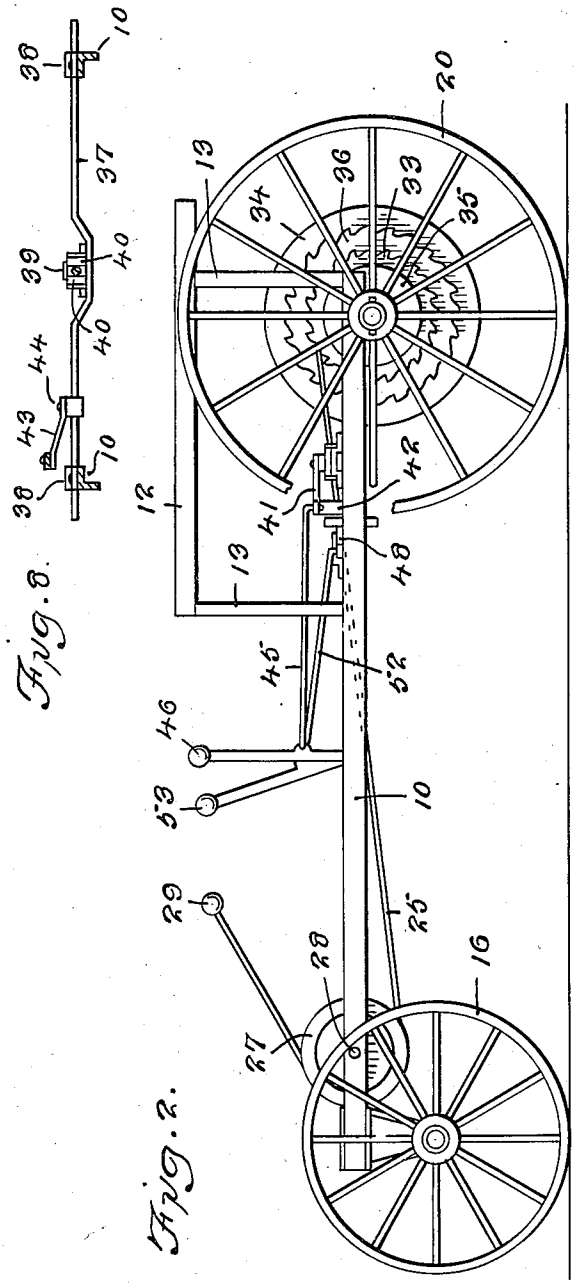


Fig. 2.

Fig. 3.

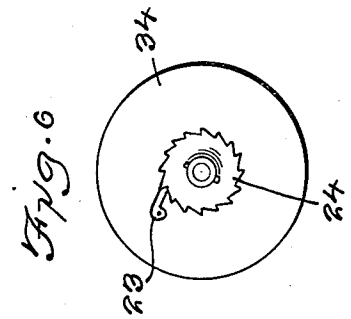


Fig. 6.

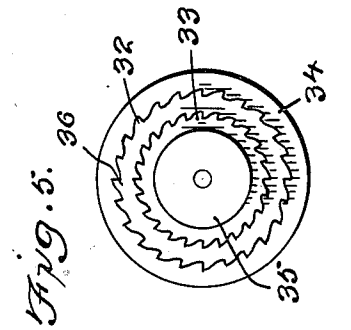


Fig. 5.

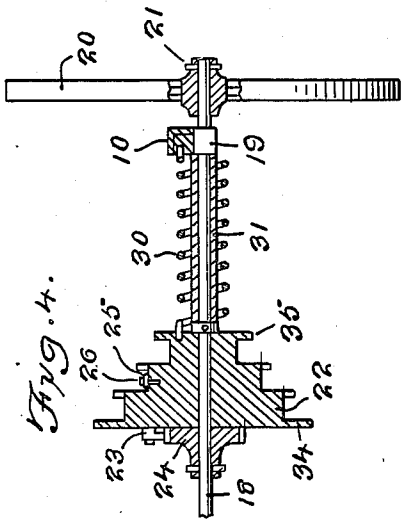


Fig. 4.

Sterling A. Young
INVENTOR

BY Victor J. Evans & Co.
ATTORNEY

Patented July 28, 1936

2,049,345

UNITED STATES PATENT OFFICE

2,049,345

TOY CAR

Sterling A. Young, Pana, Ill.

Application July 22, 1935, Serial No. 32,635

2 Claims. (Cl. 208—38)

This invention relates to toy cars or vehicles of the type in which the child pulls on a propelling cable to actuate the driving wheels.

An object of the invention is to provide a simplified and improved change speed mechanism which may be readily operated by the operator from his seat.

A further object is to provide a light, strong, compact toy vehicle which will be formed of a few simple and inexpensive parts which may be easily manufactured, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming a part of this specification:

Figure 1 is a plan view of a toy vehicle constructed in accordance with the invention.

Figure 2 is a side elevation of the vehicle shown in Figure 1.

Figure 3 is a fragmentary plan view showing the propelling cable shifted to a selected step of the driving drum.

Figure 4 is a detail cross sectional view showing the driving drum, and cable rewinding spring and rachet mechanism for propelling the toy vehicle.

Figure 5 is a side elevation of the drum showing the notched flanges thereof.

Figure 6 is a side elevation of the drum showing the rachet connection with the rear axle.

Figure 7 is a detail cross sectional view taken on the line 7—7 of Figure 1.

Figure 8 is a detail cross sectional view taken on the line 8—8 of Figure 1.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, the main frame of the vehicle includes rearwardly divergent side rails 10 connected at the rear ends by a cross brace 11 upon which, and the side rails, a seat 12 is secured in elevated position by standard 13 rising from the side rails and brace.

The dirigible front axle 14 is centrally pivoted at the apex of the frame by means of a pivot pin 15, and carries wheels 16 which turn freely on the axle. Foot rests 17 are secured to the axle on opposite sides of the pivot pin, against which the operator may bear to steer the vehicle.

The rear axle 18 is revolubly mounted in suitable bearings 19 carried by the rear end of the side rails and the rear wheels 20 are fixed to the axle by means of pins 21 or other suitable connectors, and form driving wheels.

A stepped drum 22 is loosely mounted on the axle and is provided on one side with a pivoted dog 23 which engages a rachet gear 24 fixed to the axle to operatively connect the drum for rotating the axle when the drum is revolved in a counter clockwise direction. The drum preferably is provided with three steps graduated in diameter to change speed. A propelling cable 25 is terminally connected at the rear end to the intermediate step by means of a pin 26 passed through an eye in the cable and secured to the step, or other equivalent fastening means may be employed.

A number of convolutions of the cable are wound upon the drum. The cable is trained over a loose pulley 27 the shaft 28 of which is journaled in suitable bearings on the front ends of the side rails 10, and the free end of the cable is equipped with a grip 29 which the rider may intermittently pull upon to unwind the cable from the drum and impart a succession of impulses to the rear wheels and vehicle, but during the operation the motion of the vehicle after being started is continuous.

A stout helical spring 30 surrounds the rear axle and one end of the spring is secured stationary to one of the side rails 10, as best shown in Figure 4, while the opposite end is secured to the pulley 22. A tubular housing 31 may be disposed on the axle axially within the spring. The spring stores up energy as the drum is rotated anticlockwise by unwinding of the cable therefrom to rotate the drum clockwise after each operation and rewind the cable on the drum.

The drum is provided with integral notched flanges 32 and 33 at the ends of the intermediate step and is provided with smooth flanges 34 and 35 at the outer ends of the terminal steps, these flanges forming stops to hold the cable in position on the drum. As best shown in Figure 5 the flanges 32 and 33 are notched on the peripheral edge to provide teeth 36. The purpose of the notched flanges is to anchor the end of the cable 25 to a selected step, as best shown in Figure 3, when the cable is shifted laterally of the drum, and when so positioned, the cable can be rewound on said selected step.

The shift mechanism comprises a shift rod 37 which is mounted for endwise sliding movement in guides 38 aligned transversely of the side rails

10. The rod is disposed substantially parallel with the rear axle in advance of the drum 22 and is provided with a staple like guide 39 fixed at the center of the rod and having arcuate legs 40 between which the cable 25 is trained, as best shown in Figure 8. A bell crank lever 41 is pivotally mounted in a bearing 42 on one of the side rails 10, as shown in Figure 7, one leg of the lever being connected by a link 43 to stud 44 on the shift rod 37 and the other leg being connected to a link 45 which is connected to a manually operable shift lever 46 pivoted on the side rail of the frame, as shown at 47.

Movement of the shift lever 46 slides the shift rod 37 endwise transversely of the frame to train the cable onto a selected step of the drum, the secured end of the cable during this movement being deformed to pass across the lateral notched flange of the selected step and disposed so as to be rewound on the selected step, as best shown in Figure 3. Thus three speed changes are provided according to the diameter of the step upon which the cable is wound.

A brake bar 48 is pivoted at one end on one of the side rails 10, as shown at 49 in Figure 1, and the opposite end loosely passes through a keeper 50 on the other side rail and is terminally equipped with a brake shoe 51 adapted to engage the associated rear wheel. A link 52 connects the free end of the brake bar with a manually operable brake lever 53 which is pivoted on the side rail contiguous to the shift lever 46. Movement of the brake lever applies the brake shoe as will be understood.

In use the rider customarily sits on the seat 12 and stretches his legs forward with his feet lodged upon the foot rest 17. By pressure of one foot or the other the front axle is turned to guide the vehicle in the desired direction. The grip 29 is then intermittently pulled upon to unwind the cable from the spring controlled drum thereby imparting a succession of impulses to the rear wheels and vehicle. Should a change of speed be desired the rider may shift the change speed lever 46 to train the propelling cable onto a selected step of the drum having a greater or less diameter whereupon when the grip 29 is again pulled with the same strain as before, the surface velocity of the drum, and consequently the speed of the vehicle will be altered to correspond whether the selected step is of greater or less diameter than the normal or center step of the drum.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. The combination in a toy vehicle of a frame, front and rear axles having respective steering and driving wheels, a stepped driving drum, a ratchet means operatively connecting the drum to the rear axle, a propelling cable terminally connected to a step of the drum and wound on the step for rotating the drum in one direction, a spring for rewinding the cable on the drum, notched flanges between the steps of the drum, a shift rod slidably mounted transversely of the frame, a manually operable shift lever pivoted on the frame, an operative connection between the lever and the rod for shifting the rod endwise, and a guide on the rod for training the cable onto a selected step of the drum across one of said notched flanges to change speed, said notched flange anchoring the cable to the selected step.

2. The combination in a toy vehicle of a frame, a dirigible front axle, a driving rear axle, wheels on the axles, a stepped driving drum loose on the rear axle, notched flanges on the ends of one of the steps of the drum, a propelling cable terminally connected to the last named step, a spring fixed at one end to the drum and fixed at the other end to the rear axle for winding the cable upon the drum, a ratchet gear on the rear axle, a dog on the drum engaging the ratchet gear to rotate the axle when the cable is unwound from the drum, a shift rod slidably mounted transversely of the frame, a manually operable shift lever pivoted on the frame, an operative connection between the lever and the rod for shifting the rod endwise, and a guide on the rod for training the cable onto a selected step of the drum across one of said notched flanges, said notched flange anchoring the cable to said selected step.

STERLING A. YOUNG.