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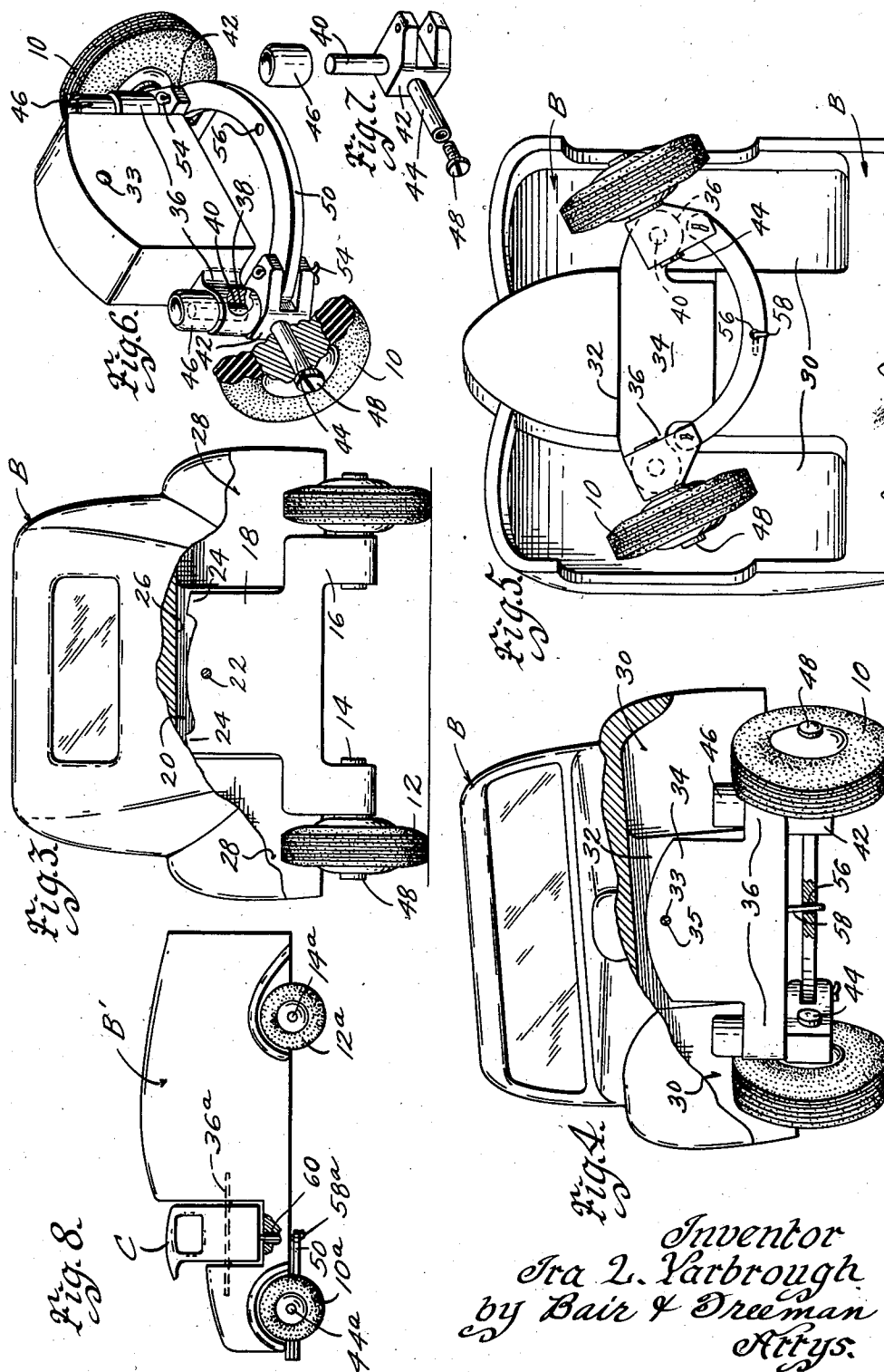
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**2,386,745**

STEERABLE TOY

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## UNITED STATES PATENT OFFICE

2,386,745

## STEERABLE TOY

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5 Claims. (Cl. 46—201)

This invention relates to a steerable toy such as an automobile or the like, wherein steering is accomplished by merely tilting the toy to the right or the left.

One object of the invention is to provide a simple yet rugged support for a body on front and rear wheels and a connection between the body and two of the wheels which are steerable, which connection imparts a steering movement to the steerable wheels by a mere tilting of the body.

Another object is to provide a toy which can be pushed across the floor and conveniently steered, all by one hand, and by a natural movement consisting of tilting the body of the toy toward the right when it is desirable to turn right hand and tilting it to the left when it is desirable to make a left hand turn.

A further object is to provide a relatively simple construction for steerable wheels and for a mechanism to steer them, the steering means being coupled with a vehicle body which body is tiltably mounted relative to the wheels so that steering can be readily effected by a slight tilting of the body as the vehicle is pushed along the floor.

Another object is to provide steering means which is operated by tilting the entire body or only a portion thereof as desired.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of a steerable toy embodying my invention with portions broken away and other portions shown in section to illustrate the construction.

Figure 2 is a bottom plan view thereof.

Figure 3 is a rear elevation partly in section.

Figure 4 is a front elevation partly in section and showing the body tilted and the steerable wheels thereby steering toward one side.

Figure 5 is a bottom plan view of the front portion of the toy likewise showing the body tilted and the wheels thereby steering toward one side.

Figure 6 is a perspective view of the steering mechanism with parts broken away.

Figure 7 is an exploded perspective view of a portion of the steering mechanism, and

Figure 8 is a side elevation of a modified form of construction wherein only a part of the body is moved for steering.

On the accompanying drawings I have used the

reference character B to indicate in general a body of a vehicle, an automobile body being shown merely by way of illustration. The body B is supported by front wheels 10 and rear wheels 12, the rear wheels being journalled on stub axles 14 which are supported in downwardly extending ears 16 of a bolster 18.

The bolster 18 is mounted in a notch 20 in the underside of the body B and is pivotally related to the body as by means of a pivot pin 22 formed of a nail or the like. The body B may be limited in its tilting movement relative to the rear wheels 12 and the bolster 18 as by means of stops 24 (see Figure 3) engageable with the bottom 26 of the notch 20. The notch 20 is enlarged at its ends as at 28 to accommodate the wheels 12.

The body B may be carved from wood or molded from wood material or plastic, or if desired may be formed of metal. The body B has a pair of cavities 30 with a notch 32 extending between the front wheels 10 to receive a front bolster 34. The front bolster 34 like the rear bolster 18 is pivotally mounted as on a nail 35.

The front wheels 10, unlike the rear wheels 12, are steerably mounted. This is accomplished in a simple manner by providing the front bolster 34 with a pair of bosses 36 which are provided with vertical bores 38 to receive spindles 40. The spindles 40 are rigidly secured in steering arms 42 and each steering arm is provided with a stub axle 44 on which the front wheels 10 are journalled. The spindles 40 may be formed of wood or metal and are capped by caps 46. The caps 46 may be of wood glued onto the spindles 40 or if made of metal may be screwed onto the spindles. The stub axles 44 as well as the stub axles 14 may have the wheels 10 and 12 secured thereon as by screws 48.

The steering arms 42 are operably connected together by a tie rod 50, the ends of which are received in slots 52 of the steering arms and may be pivoted relative thereto as by cotter keys 54. The tie rod 50 has a perforation 56 substantially at its center and through this perforation a steering pin 58 extends and is anchored in the body B. The perforation 56, as will be noted in Figure 4, is somewhat larger than the diameter of the steering pin 58 for a purpose which will hereinafter appear.

In Figure 8 I show a modified form of the invention wherein the body B' does not tilt relative to the front and rear wheels. In this form of invention only a portion of the body may tilt as for instance the cab C which is tiltably mounted on an axis 36a. The steering pin 58a may ex-

tend downwardly through a slot 60 in the body B and connects with the tie rod 50a in the same manner as illustrated in the previous figures. The front and rear wheels 10a and 12a in this form of the invention may be mounted on axles 44a and 14a rigidly supported with respect to the body B' and thus eliminate the necessity for making the bolsters 34 and 18 tiltable.

#### *Practical operation*

Heretofore steerable toys have been made provided with a steering wheel or handle, for instance located above the cab of a truck with a steering shaft or column extending downwardly through the cab to a position below the body of the truck. The steering shaft is connected at its lower end with the steerable wheels of the truck, but a toy of this character does not lend itself readily to one-hand operation as by a child on the floor and pushing the vehicle around with one hand. It is very awkward to push the vehicle with one hand and steer with the other or, if only the steering handle is grasped for both steering and propelling the vehicle, the point at which the propelling force is applied is too high to be efficient. Other toys have been made for pushing around the floor with one hand but they have not been steerable and thus are not as flexible in operation as a child would desire. A very natural tendency is to push a non-steerable toy toward the right or the left depending on which way it is desired to steer it and this results in actually sliding the wheels sidewise across the floor.

I take advantage of this tendency by making the body of the toy tiltable with respect to the wheels and then use the tilting of the body as a means to effect steering of the wheels with the degree of tilt determining the angle of steering. I accomplish this by operatively connecting the steerable wheels to the body at a point that is pendulous with respect to the tilting axis so that upon tilting, the steering mechanism is automatically changed in its position to correspond to the direction and magnitude of tilting. This considerably simplifies the steering mechanism as distinguished from the kind where, instead of the steering pin 58, a steering shaft and a steering wheel or handle are provided. At the same time my arrangement permits very easy and natural steering with one hand by merely tilting the body.

Instead of tilting the entire body, only a portion thereof need be tilted if desired as illustrated in Figure 8. This figure shows the cab C tiltable whereas any other part of the body may be tiltable mounted in a similar manner and used for the purpose of steering. Substantially the same steering action is had as the movable part of the body is tilted instead of the entire body and the direction of tilt and degree thereof determines the direction and degree of steering action.

From the foregoing specification it will be obvious that I have provided a steerable toy wherein the steering mechanism is very simple and it is automatically operable in a natural manner. The steering pin 58 and the body move in a pendulum-like manner which gives the desired movement of the steering pin relative to the bolster 34 and the front wheels 10 to impart steering move-

ment thereto. I have illustrated the front and rear wheels as individual units whereas they may, if desired, be combined into a single unit and the body tiltable mounted relative to such unit, or a single wheel may be used in conjunction with the two wheels at the front, thus eliminating the necessity of a pivoted bolster at the rear.

Changes of the character just mentioned and others as well may be made without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope without sacrificing any of the advantages thereof.

I claim as my invention:

1. In a steerable toy, a body, front and rear wheels for supporting said body, said body being tiltable mounted relative to said wheels on a fore and aft axis, said front wheels being steerable on vertical axes relative to said body, steering arms for said front wheels, a tie rod connecting said steering arms together, and a connection between said body and said tie rod to move the tie rod and thereby impart steering movement to front wheels as a result of tilting of said body relative to said wheels.

2. In a steerable vehicle, a body, two pairs of wheels for supporting said body, said body being mounted to pivot relative to said wheels on a horizontal axis, one of said pair of wheels being steerable relative to said body and having a laterally movable element to impart steering movement thereto, and a pivotal connection between a portion of said body spaced from said horizontal axis, and said element to impart steering movement thereto as a result of pivoting of said body relative to said wheels.

3. In a steerable vehicle, a body, supporting wheels adjacent opposite ends of said body, the wheels at one end being steerable, at least a portion of said body being tiltable relative to said steerable wheels, said steerable wheels having steering arms, and an operative connection between said arms and said portion of said body to impart steering movement to said wheels by the tilting of said body portion relative thereto.

4. A steerable vehicle comprising a body, supporting wheels therefor, some of said wheels being steerable and having a steering element movable laterally relative to said body, a portion of said body being tiltable on a horizontal axis relative to said steerable wheels, and an operative connection between said steering element and a portion of said body portion spaced from said horizontal axis to impart steering movement to said element and thereby said wheels by tilting movement of said portion.

5. A steerable vehicle comprising a body, front and rear supporting wheels therefor, said front wheels being steerable, and means for steering said wheels comprising at least a portion of said body being tiltable relative to said steerable wheels, said portion having a connection to said steerable wheels which is spaced from the tilting axis for imparting steering movement to the vehicle by the tilting of said portion of said body.

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