

W. SADTLER.
TOY.

APPLICATION FILED JUNE 10, 1911.

1,041,677.
Fig. 1.

Patented Oct. 15, 1912.
3 SHEETS—SHEET 1.

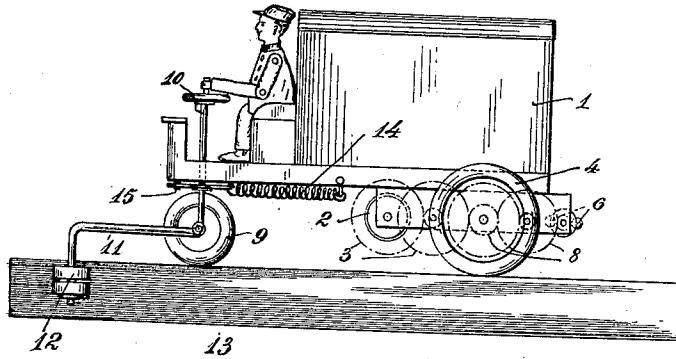
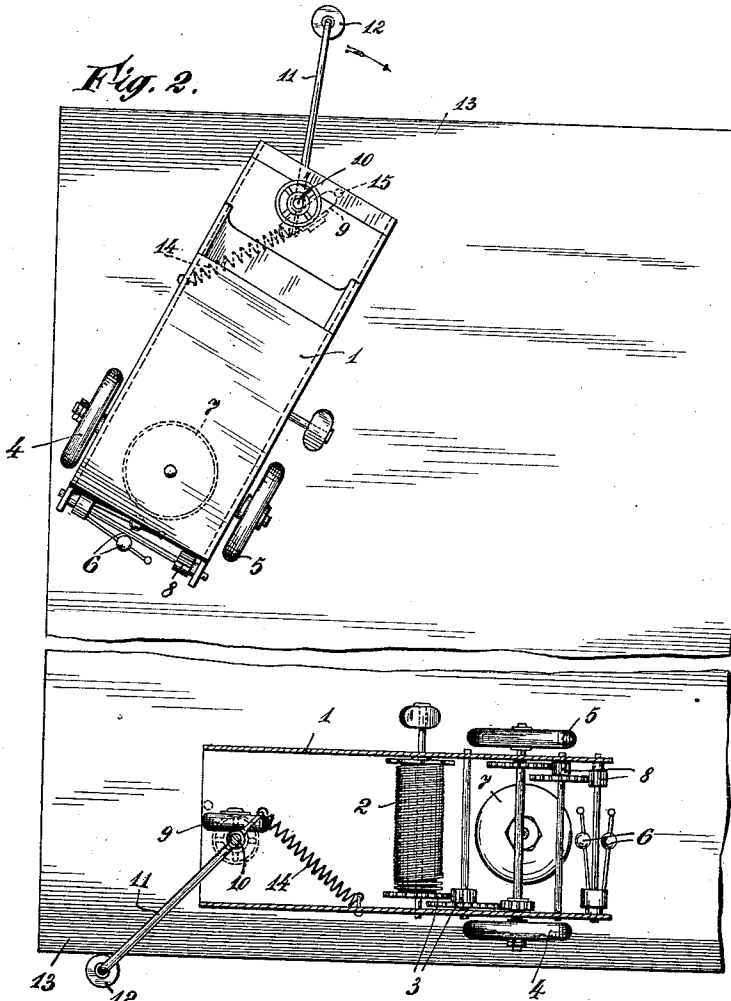


Fig. 2.



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E. O. Niedebrand
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Inventor:
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3 SHEETS—SHEET 2.

Fig. 3.

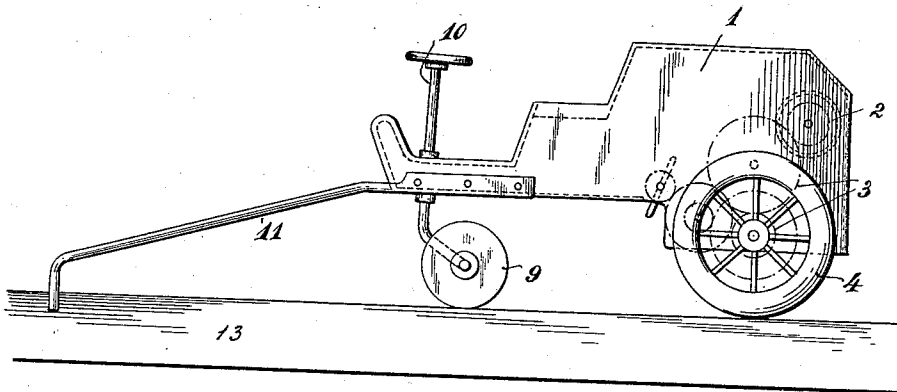
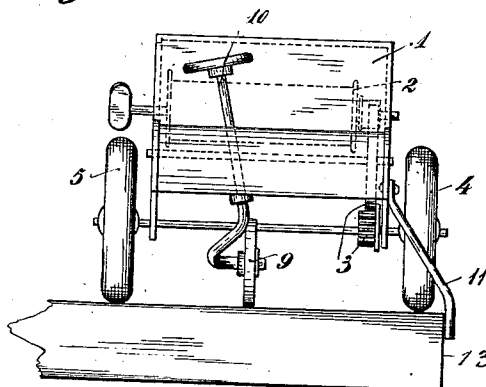


Fig. 4.



Witnesses:
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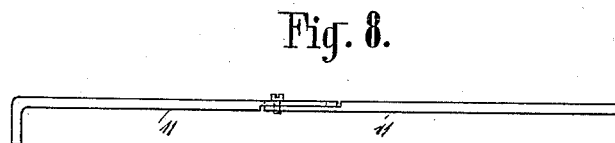
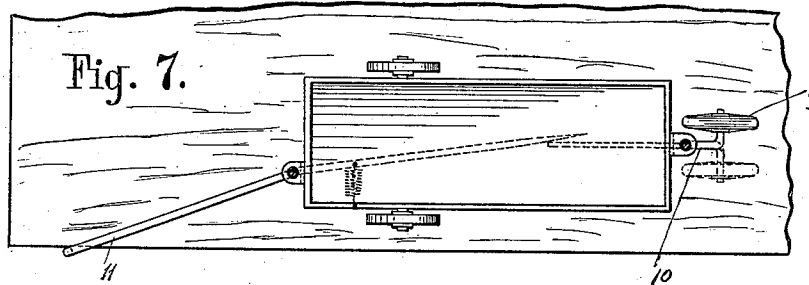
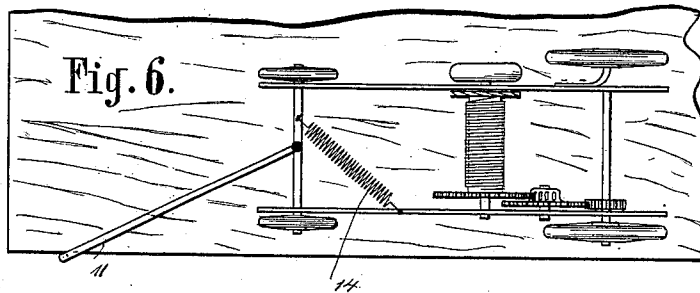
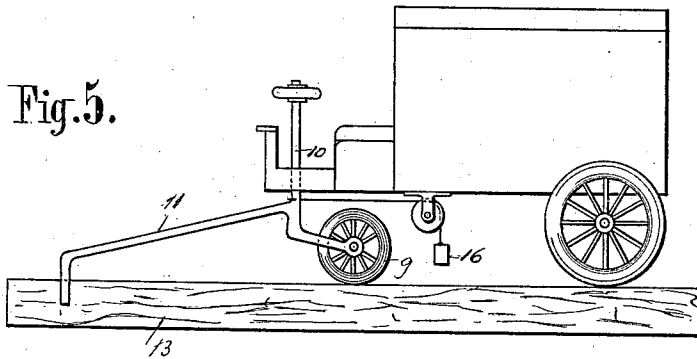
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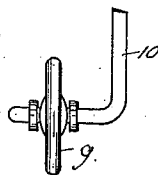
3 SHEETS—SHEET 3.



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Fig. 9.



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UNITED STATES PATENT OFFICE.

WILHELM SADTLER, OF HOMBURG-VOR-DER-HÖHE, GERMANY, ASSIGNOR TO THE FIRM
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TOY.

1,041,677.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed June 10, 1911. Serial No. 632,469.

To all whom it may concern:

Be it known that I, WILHELM SADTLER, a subject of the King of Prussia, residing at No. 28 Brendelstrasse, Homburg-vor-der-Höhe, Prussia, Germany, have invented new and useful Improvements in Toys, of which the following is a specification.

My invention relates to an improved toy of the class, which is adapted to move on upon any supporting surface by the impulsion of any motive power, such for instance as a spring-barrel and a train of wheels carried by the toy, or a motor of any kind, or by impulsions derived from a source of power outside the toy, normally following the direction or course prescribed to it by the impulsion and by its own *vis inertiae*.

The object of my invention is to automatically deflect the toy from its normal course by the aid of steering means controlled by guiding surfaces encountered by the toy in its path of motion, the steering of the toy, thereby, being not obtained by steering means actuated by the driving power of the toy, but by steering mechanism, which, though carried by the toy, is made operative by guiding means outside of the toy. The said guiding or deviating means may be of various kinds, they may consist of projecting webs, ledges, rails or flanges or may be formed by a downward extending side or edge or a groove, recess or excavation of the supporting surface upon which the toy is placed to move about. The means to transmit steering motion from the said guiding surface or surfaces to the steering means carried by the toy consists of an arm or feeler connected to the toy, which arm or feeler, having a bearing contact with the guiding surface in its path of motion, is caused to follow said guiding surface through any angular or curved deviations from the straight line, and through said arm or feeler the toy will be steered in conformity with the guiding surface encountered by it. By this means movable toys may be steered along the edges of a rectangular or polygonal, or oval or circular table or supporting board or surface of any kind, always following the edges of said supporting surface and automatically turning round any corners or curves of the same.

To make my invention perfectly understood, I have illustrated the same by the accompanying drawings, in which:

Figure 1 is a side-elevation of a toy-car embodying the features of my invention according to one modification of the same. Fig. 2 is a plan or top-view of the same, showing a portion of a rectangular supporting surface or table with the toy-car in two different positions while traveling along the edges and corners of said table. Figs. 3 and 4 are, respectively, a side elevation and a front elevation of the traveling toy-car according to another modification of this invention. Fig. 5 is a side-elevation of a toy-car showing another modification of this invention; Fig. 6 is a plan of the car-frame of a toy, showing a further modification of this invention; Fig. 7 is a similar plan view of a toy-car, showing a further modification according to this invention; Fig. 8 shows in side-elevation a modified construction of the feeler forming part of this invention. Fig. 9 is an end-view of a steering-wheel mounted upon an angularly bent portion of its axle.

The toy-car 1 of any shape and construction is supposed to be driven by a spring-barrel 2 and a train of wheels 3, and it has been found preferable to transmit rotating motion to one only of the two hind-wheels, 4, the other one of said pair of wheels being loosely mounted on its shaft or trunnion. To reduce and control the speed of motion imparted to the toy by the driving gear, a centrifugal pendulum 6, actuated by a pinion 8, may be employed, and such pendulum may be adapted to strike, while rotating, against a bell 7 or the like. Referring to Figs. 1 and 2, the front portion of the toy is supported by a single steering wheel 9, connected to an upright shaft 10 adapted to turn in bearings of the toy-frame. The upper end of said shaft 10 may carry a steering wheel, which, however, only serves to mark the resemblance with an actual motor-car but has no function at all in the present invention. The said upright shaft is made integral with or connected to an arm 11 extending at or about at right angles with relation to said shaft 10, the free forward end of said arm 11 being bent down and carrying, if desired, a guide roll or rollers 12, adapted to freely turn on the bent portion of said arm 11. The said roll or rollers 12 are adapted to bear against the side 13 of the supporting table or surface and the position of the arm 11 with relation to the axis of the wheel 9 is so calcu-

lated, that, when the guide-roll or rollers 12, or the bent front-end of the arm 11 is moving along a straight guiding face, such as the straight side of the supporting table, the wheel 9 will be kept parallel to the plane of the hind-wheels 4 and 5, thereby causing the toy to move on in a straight direction.

A spring 14 attached by its rear end to the toy-frame, has its forward end connected to a pin or hook projecting from the shaft 10, or it might as well be from the arm 11, thereby tending to draw said arm 11 in the direction of the arrow indicated in the upper portion of Fig. 2. In the lower portion of said Fig. 2, the toy is shown traveling parallel to the side 13 of the supporting table in a straight direction. It will be seen, that, as soon as the roll or rollers 12 of the arm 11 proceed beyond the corner of the table, they lose their bearing support against the side 13 of the table and the arm or feeler 11 will become free to be swung round the corner by the traction of said spring 14, as clearly shown in the upper portion of Fig. 2. The steering wheel 9, being connected to the shaft 10 and arm 11, will be turned along with the said arm 11 and shaft 10, thereby being caused to take a position no more parallel but angular with relation to the hind-wheels 4, 5, of the toy, as indicated by dotted lines in the upper part of Fig. 2, and, accordingly, the said steering wheel 9 will cause a change in the direction of motion of the toy, steering the toy away from the corner of the table and enabling the same to round the corner, without anywhere running beyond the edge. As soon as the roll 12 has again come into bearing contact with the side 13 of the supporting board or table, the steering wheel 9 will again take its straight or central line parallel to the hind-wheels, and the toy will again proceed parallel to the straight edge. A stop 15 projecting from the lower side of the toy-frame prevents the arm 11 and shaft 10 from being turned in excess to the due limit which ascertains the true relative position between the steering-wheel 9 and hind-wheels 4, and 5. It should be observed, that the tension of the said spring 14 must not be strong enough to overcome the weight of the toy, but sufficient to turn the steering wheel 9 and parts connected thereto, otherwise the traction of said spring might throw the toy aside while the arm 11, bearing against the unyielding side 13 of the table, resists the traction of the spring and causes the same to work its full power upon the toy-frame.

It will be obvious, that the function of the steering mechanism will be the same, if the supporting surface or table will be round, or oval or of any other shape, instead of being rectangular, as shown. It will equally be understood, that the tractional force of the spring, tending to throw the steering-

wheel 9 into another position, might as well be replaced by any other means adapted to work a traction or pressure as soon as the resistance offered to the arm or feeler 11 bearing against a guiding surface be released.

A weight 16 suspended by a cord, for instance, might be employed to replace the spring by furnishing the required traction for controlling the position of the steering wheel 9 as shown in Fig. 5.

Instead of employing a single steering wheel under control of the feeler or arm 11, two wheels mounted on a common shaft, or on separate shafts, might be employed as shown in Fig. 6 in a manner generally known in steering cars and vehicles of various kind. Also, the invention would be materially the same, if as shown in Fig. 7 one or both of the hind-wheels were employed as steering wheels and the front-wheel or wheels would be driven by the motive power of the toy. The said arm or feeler 11 may be made of two or more pieces adjustably secured to each other as shown in Fig. 8 to increase or reduce the length of said arm according to the guiding surface to be encountered by it.

Instead of rigidly securing the said arm or feeler 11 to the vertical axis 10 and wheel 9, the said arm 11 might be either directly or indirectly connected to the steering wheel 9 by suitable gearing or leverage to increase or diminish the amount of throw transmitted by the said feeler 11 to the steering device, according to a predetermined proportion, as will be well understood, the means for transmitting motion from the arm 11 to the steering wheel or wheels being, generally, of a known kind and may be chosen by the constructor according to the existing circumstances.

In some cases it may be found sufficient to rigidly secure the feeler 11 to the toy-frame, instead of to the axle 10 or wheel 9. In this case the steering wheel requires no traction or pressure to be shifted into an angular position with relation to the hind-wheels, but has a normal tendency of its own to take such angular position as long as it is not kept in its straight or central position with relation to the hind-wheels by the arm or feeler 11 in bearing contact with the guiding surface. A toy-car constructed according to this modification is illustrated by Figs. 3 and 4, Fig. 3 being a side-elevation and Fig. 4 a front-elevation of the toy-car.

The arm or feeler 11, being rigidly secured to the toy-frame 1, is guided along the margin or edge of the supporting table or surface with its forward free end bent downwards, as shown, to which a roll or rollers may be applied as shown in Figs. 1 and 2, but such roll or rollers may be dispensed

with. The normal tendency of the steering wheel 9 to take an angular position relative to the hind- or driving wheels is obtained in the construction represented by Figs. 3 and 4 by arranging the shaft 10 in an inclined position, as clearly shown in Fig. 4, thereby causing the wheel 9 to normally hold a corresponding angular position and, thereby, steer the toy away from the straight line. As long as the forward end of the feeler 11 is running along the straight side of the supporting table, the steering wheel 9 is prevented from taking its normal, angular position because the toy-frame 1 is held by the said arm 11 against being steered by its steering wheel. But as soon as the said arm 11 will reach the corner of the table or be caused to deviate from the straight path by the guiding surface against which it has a bearing contact, the said steering wheel will at once regain its normal, angular position and steer the toy in that direction determined by the temporary position of said steering wheel.

Though it will be easily seen, that the steering wheel 9 may be made to normally steer the toy into a course deviating from the straight position without a tractional or pressing power acting upon said steering wheel, the normal angular position of said steering wheel may as well be obtained by the same means as described with reference to Figs. 1, and 2, or by any other known means, such for instance as by placing the steering wheel 9 at the side of a vertical or inclined shaft as shown in Fig. 9 whereby the weight of the toy car will cause the toy to normally travel in a direction deviating from the straight line.

The two modifications of the toy, in the main, only differ in that, with the former modification described with reference to Figs. 1 and 2, the steering wheel or wheels normally tend to steer the toy in the straight direction and are controlled by an arm or feeler, which, by encountering a guiding surface raised or sunk in its path of motion, is made to turn, according to the angular or curved line of said guiding surface, whereby the steering wheel and toy is made to deviate from its straight course according to the degree of displacement of the feeler, while, with the other modification described with reference to Figs. 3 and 4, the arm or feeler is rigidly secured to the frame of the toy and the steering wheel normally tends to steer the toy away from the straight path of motion, but is prevented to perform such deviations by the said rigid feeler encountered by a guiding surface or surfaces, the steering being obtained by the constant

tendency of the steering wheel to regain its angular position, under control of the feeler and the shape of the guiding surface encountered by it.

I claim as my invention:

1. In a traveling toy, the combination, with steering mechanism carried by said toy, of a feeler controlling the position of said steering mechanism in accordance with guiding surfaces encountered by said feeler in its path of motion, substantially as and for the purpose set forth.

2. In a toy, the combination, with steering mechanism carried by said toy, of a feeler pivotally connected to said toy and controlling the said steering mechanism in accordance with guiding surfaces encountered by said feeler in its path of motion, substantially as and for the purpose set forth.

3. In a toy, the combination, with steering mechanism carried by said toy and normally tending to steer its course in a predetermined direction, of a feeler carried by the toy adapted to control the steering mechanism in accordance with guiding surfaces encountered by said feeler in its path of motion, substantially as and for the purpose set forth.

4. In a traveling toy, the combination, with steering mechanism carried by the toy and tending to steer the same in a predetermined direction, of a feeler carried by the said toy to control the position of said steering mechanism, and means arranged to secure permanent contact between the said feeler and the guiding surfaces encountered by it in its path of motion.

5. In a traveling toy, in combination, with a steering mechanism carried by said toy and tending to steer the same in a predetermined direction, of a feeler rigidly connected to said toy and arranged to temporarily prevent the said steering mechanism from taking its normal position.

6. In a traveling toy, the combination, with mechanism carried by said toy and adapted to give motion to said toy, of steering mechanism tending to steer the same in a predetermined direction, a feeler adapted to change the path of motion of the toy in accordance with guiding surfaces encountered by said feeler, and means for keeping said feeler in contact with such guiding surfaces.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILHELM SADTLER.

Witnesses:

JEAN GRUND,
CARL GRUND.