Aug. 30, 1932. H. MÜLLER 1,875,109

WHEELED TOY

Filed Aug. 18, 1930

Fig. 1.

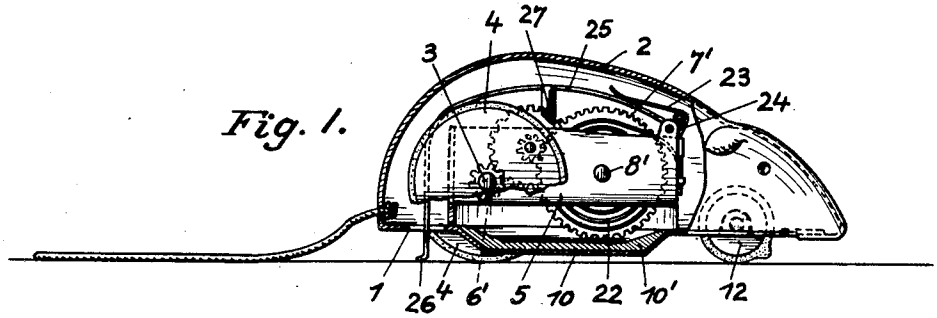


Fig. 2.

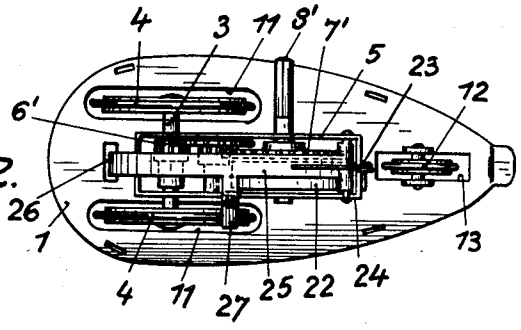
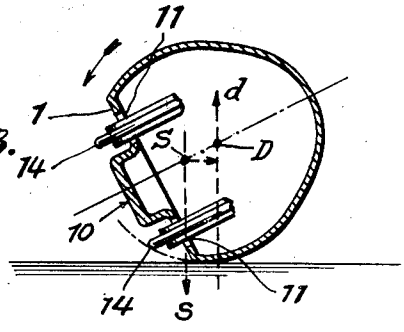


Fig. 3.



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UNITED STATES PATENT OFFICE

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WHEELED TOY

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This invention relates to wheeled toys, and more especially to toys of the kind which are equipped with driving means either in the form of a fly-wheel or in the form of a spring or the like.

My present invention consists essentially therein that the center of gravity of the wheeled toy is located at such a low point of the body of the toy—which may be done either by properly distributing the masses or by imparting a proper weight to the under parts of the toy—with the result that the wheeled toy, when placed or thrown on the ground or when normally traveling thereon will tumble over and again come into its initial position on its wheels in the manner of a so-called standing-up or self-erecting figure.

My new toy is represented in the accompanying drawing in the form of a wheeled toy which is driven by action of spring power. In the drawing I have shown my present toy as being of the form of a mouse, it is, however, evident, that any other form of animal or human figure may be given to the toy.

Fig. 1 is a side-view of the toy partly in cross-section, and Fig. 2 a top-view of the base-plate or bottom of the toy comprising the wheels and the spring-power actuated driving works, and Fig. 3 a partial transverse section through the toy showing in particular the position of the center of gravity of the body of the toy permitting said toy to again come up its wheels after tumbling.

A principal feature of the construction of the toy shown in the drawing consists therein that the masses of the body of the toy are properly arranged or distributed to permit automatic erection of the toy after tumbling. Such stand-up or self-erecting figures as known are of a conformation having the under side of the figure rounded to a smaller or greater extent, the center of gravity being at the same time positioned below the center of rotation and at such a distance from the latter that the figure will automatically erect itself no matter in which way it had been set or thrown on a surface, such as the ground.

In my new wheeled toy, now more particularly, the center of gravity S is placed at such a point below the center of rotation of the toy and at such a distance from the latter that said center of gravity will be placed as much as possible in proximity to the under part of the toy, that is to the base-plate 1, or if necessary, still further below said base-plate, while the center of rotation of the toy is positioned above its center of gravity.

A construction of this kind is represented in Fig. 3. It will be seen that a couple of forces Ss and Dd will tend to keep the toy in its normal position and to come to stand again upon its wheels or legs, as the case may be, after tumbling. This erection of the toy is due to the tendency of these forces to rotate the toy, irrespective of the fact whether the toy is thrown towards the side during its normal forward motion on the ground or whether it has been placed or thrown on the ground in oblique position prior to its normal travel on the ground. In order to displace the center of gravity of my present wheeled toy as much as possible to a point below the center of rotation the entire operating mechanism of the toy, that is the driving means which consist of a spring, as well as of the wheels of the toy are mounted upon the base-plate 1 which forms the bottom of the hollow or cap-shaped body of the mechanism, and serves as a support for the entire driving and running toy. The masses of the toy are so distributed that the center of gravity of the entire toy body is positioned at a point as low as possible.

The driving wheels 4 which project downwardly from the base-plate 1 are carried through slots 11 provided in the latter. A running wheel 12 is mounted at the rear part of the base-plate 1, said running wheel projecting from said base-plate through the slot 13 therein. The axle of the running wheel 12 may be positioned obliquely to the axle of the rear or driving wheels 4, if it is desired for instance, to have the toy travel along a circular line.

Evidently, the aforedescribed wheeled toy which is shown as having three wheels may also be equipped with any desired greater number of driving as well as running wheels.

A further novel feature of the construction of the running wheel 12 consists therein that it is provided with a nose or lug as shown in Fig. 1 which nose or lug will have the effect that the toy during travel will be periodically tossed upward to simulate the jumping motion of an animal. I am aware that it is known to impart a wave-shaped upward and downward motion to wheeled toys by means of eccentric gears or wheels forming part of the driving mechanism; the so effected motion, however, will be more or less unnatural in connection with wheeled toys and in addition to this will not give a pleasing impression to a child playing with the toy. Such a lug or nose 17 evidently may also be provided at the driving wheels. By reason of the fact that the driving wheels consist of an elastic middle member in the form of a disk or ring mounted within lateral plates, the adhesion to the running surface will be greatly increased. A wheeled toy constructed according to my invention will run very easily and practically noiseless over its running surface. The base-plate 1 together with the driving mechanism mounted thereon may be connected in any suitable manner with the hollow body 2 of the toy, for instance, by providing tongues on said body 2, said tongues being inserted into proper slots in the base-plate 1 and then bent around the under surface thereof. As a matter of course, the connection between the base-plate 1 and the body 2 of the toy may also be made in any desired other way. In case the body of the toy is given the form of a mouse as shown in the drawing, a tail preferably with a knot at its front end is jammed in between the body 2 and the base-plate 1 as shown in Fig. 1 when assembling the toy. The tail is preferably made of a very elastic material, for instance, a rubber cord, a rubber hose, a helically wound wire spring or the like. By this the effect is obtained that the toy when placed upon a running surface after having the spring wound up and keeping the toy fixed by gripping the rear end of the tail with the hand, the toy although having the tendency of moving forward will be prevented against doing this, with the effect that the toy will jump up and down on the running surface thus simulating most naturally the hopping or similar motion of a mouse. In case the toy travels at relatively high speed over its running surface, it may frequently happen that it will hit against some obstacle which will cause it to tumble over to the side or to even turn about to make a full somersault. Since according to my present invention the center of gravity of the toy is placed so low that the toy will have the properties of a self-erecting figure, the toy will always again come to stand upon its wheels and may now continue its forward straight or circular travel as the case may be.

It is evident, that the cross-sectional conformation of the body of the toy needs not necessarily to follow a circular line, it being only necessary that the under part of the cross-section of the figure is properly rounded towards the inside or of a conformation resembling a circular line in order to safely effect self-erection of the toy after tumbling. The body of the toy, therefore, may be of any desired cross-sectional form and also of relatively large height. In order to bring about self-erection of the toy after tumbling, the body of the toy must be of such cross-sectional conformation that during tumbling it will move in such a manner towards the side that it will come to lie upon the more or less circularly formed and inwardly directed sides of the body of the toy, whereupon the latter will erect itself and come to stand again upon its wheels which is due to the low center of gravity of the toy as above described.

The body 2 of the toy may be made of any desired material, for instance, sheet metal, pressed pasteboard, celluloid or also of sheet-metal bodies having a coating which may consist of cloth, felt, velvet or the like.

According to my invention furthermore, the driving works are equipped with an automatically acting locking mechanism which serves for keeping the driving works in operation only during travel of the toy and locking said driving works as soon as the wheels of the toy come out of contact with the ground. This locking mechanism, therefore, will prevent the driving mechanism from rotating. The locking mechanism on the other hand will be released and unlock the sping actuated driving mechanism, while the wheels of the toy are in contact with the ground and in all other conditions of the toy, especially during motion of tumbling.

The bottom or base-plate 1 is provided with a downwardly curved portion 10 filled up with a heavy mass 10′ or in some other way properly weighted for the purpose of placing the center of gravity of the figure of the toy as near as possible to the running surface. Mounted upon the base-plate 1 is a frame 5 which serves for the reception of a spring actuated driving mechanism, the axle for winding up said driving mechanism being shown at 8′. This winding-up axle is connected to one end of a spiral spring 22 and carries in known manner a driving gear 7 which by the aid of a train of intermediary gears acts upon a small gear or pinion 6′ fixedly mounted upon the axle 3 carrying the driving wheels 4, said latter axle being mounted likewise within said frame 5. The driving wheels 4 project at their under periphery through slots 11 in the base-plate 1. The base-plate 1 is further provided at its front end with a supporting or running wheel 12 preferably provided with a nose or lug. The frame 5 is further equipped at its front end with two

oppositely positioned bearings 24 in which an adjusting lever 25 is mounted swingably in upward and downward direction. The lever 25 is under the action of the pressure spring 23 having the tendency to move the lever in downward direction. The lever 25 projects with its rear free end 26 between the driving wheels 4 in downward direction and passes through an aperture in the base-plate 1 so that it will point towards the running surface or ground upon which the toy travels. The lever 25 is further provided with a lateral arm 27 forming the locking member proper which engages either with the driving works or which acts as shown in the construction according to Figs. 1 and 2, in the manner of a brake against the periphery of one of the driving wheels whenever these are out of contact with the ground and whenever the lever 25 is pressed towards the outside that is towards below by action of the pressure spring 23. From this it follows that the lateral arm or locking member proper 27 will be lifted out of engagement with the driving mechanism permitting proper operation of the latter, whenever the toy rests upon the driving wheels. On the other hand, the arm or locking member 27 will lock the driving mechanism in every other position of the toy especially during tumbling towards the side. It is noted that the locking mechanism forming part of my present invention will act fully automatically in both ways, viz: when locking the driving mechanism as well as when releasing it to bring it into operative connection with the driving wheels.

The base-plate 1 together with the frame 5 and the spring actuated driving and locking mechanism is covered up by the hollow body 2 of the figure of the toy. An aperture on the side of the base-plate 1 permits insertion of a key permitting to wind-up the driving works.

I claim:

1. A wheeled toy, comprising in combination, a hollow body consisting of a relatively light material and having the form of a cap, a base plate therefor, driving means including a driving spring mounted upon said base plate in the hollow space between said body and the base plate and driving wheels operatively connected with said spring, a locking mechanism adapted to unlock said driving means during contact of the driving wheels with the ground and to lock them in other conditions of the toy, especially during condition of tumbling, and a weight carried by the said base plate and being located at the under portion of the hollow body for placing the centre of gravity of the toy as near as possible to the ground whereby to cause erection of the toy after tumbling.

2. A wheeled toy as specified by claim 1 comprising in combination with the elements stated, and arranged as in said latter claim, a spring-actuated control lever for the locking mechanism, said lever projecting with one of its ends from the figure of the toy and pointing towards the ground or running surface and being adapted to be kept raised by contacting with the ground to release said driving means whenever said driving wheels are in contact with the ground or running surface, a lateral arm projecting forth from said lever and constituting said locking mechanism and being in engagement with the periphery of one of the driving wheels to act as a brake thereon.

In testimony whereof I affix my signature.

HEINRICH MÜLLER.