

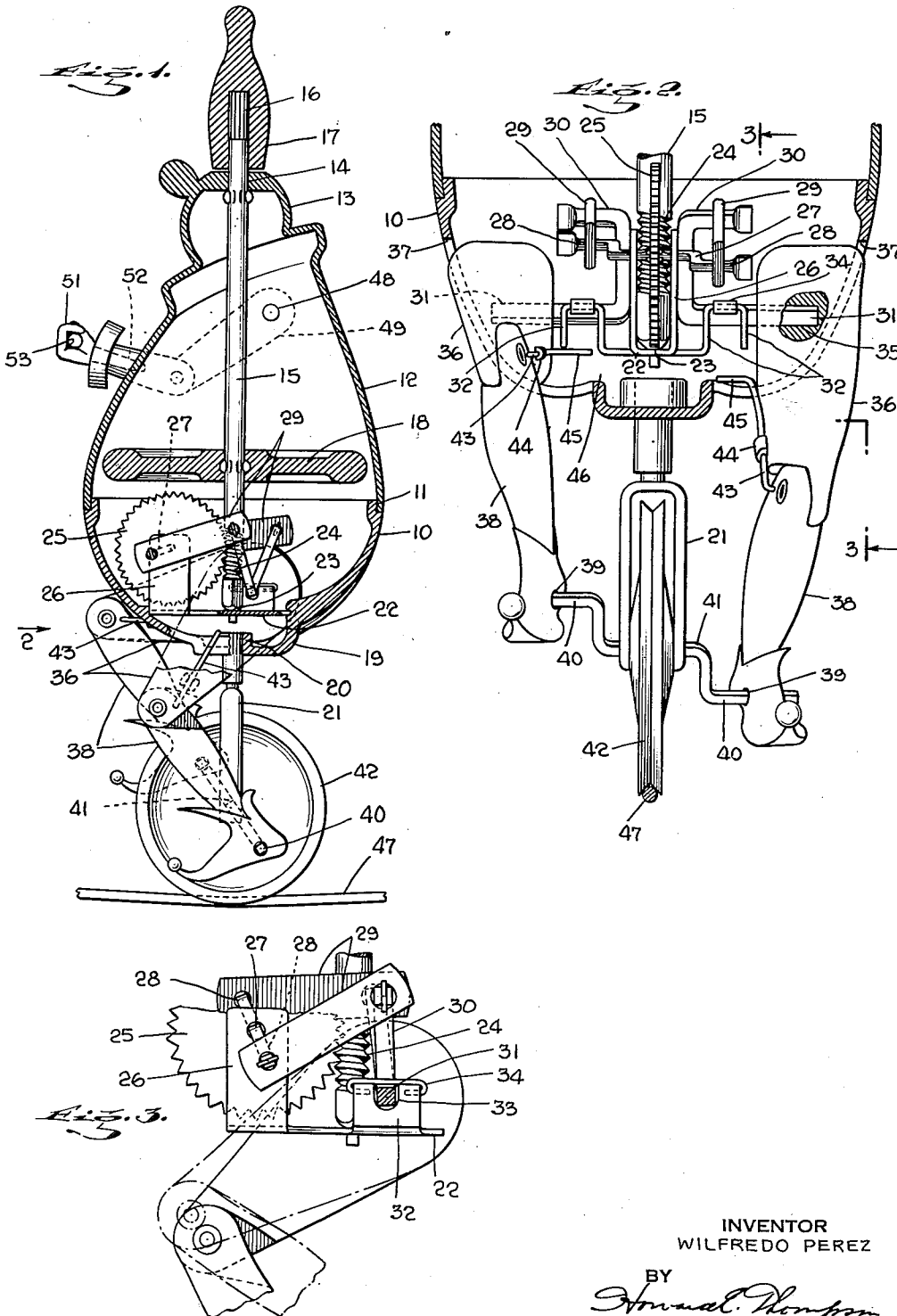
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W. PEREZ
GYROSCOPIC TOY

2,588,040

Filed April 11, 1950

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

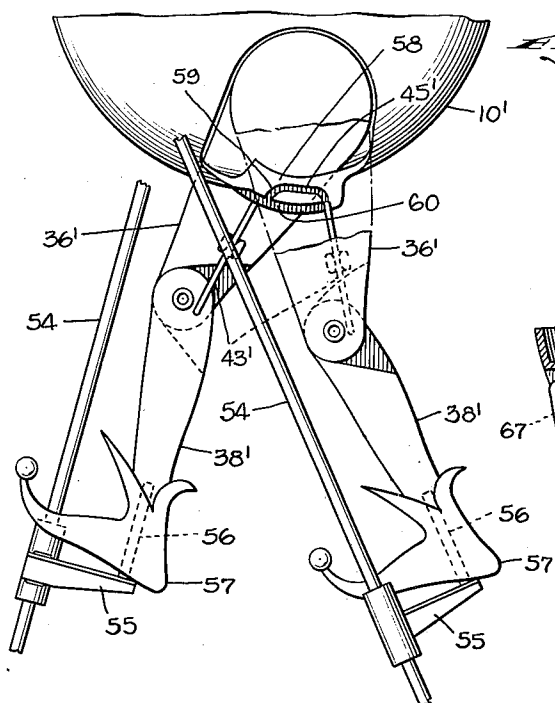


Fig. 4.

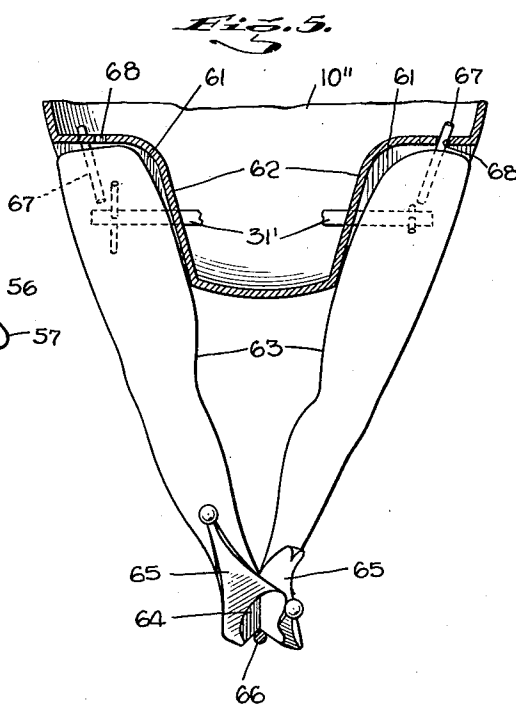


Fig. 5.

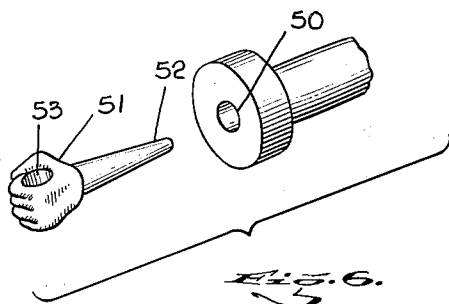


Fig. 6.

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GYROSCOPIC TOY

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17 Claims. (Cl. 46—22)

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This invention relates to what are generally referred to as mechanical toys and, particularly, to toys employing a gyroscopic element for maintaining a balance or stability in the toy to facilitate its movement over a wire or cord, as well as on the flat surface. More particularly, the invention deals with a toy of the character described, wherein the upper part of the body portion, as well as the leg members and base are detachable with respect to a movement casing, thus facilitating interchanging of different leg and other elements with a standard casing unit.

The novel features of the invention will be best understood from the following descriptions, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Fig. 1 is a sectional view through a toy made according to my invention with parts of the construction broken away.

Fig. 2 is a view looking in the direction of the arrow 2 of Fig. 1, showing part of the construction in section and on an enlarged scale.

Fig. 3 is a partial section on the line 3—3 of Fig. 2 with parts in a different position.

Fig. 4 is a view similar to Fig. 1 showing only the lower portion of a toy and illustrating a modification.

Fig. 5 is a view similar to Fig. 2 showing a modified form of construction and illustrating only the leg mounting; and

Fig. 6 is a bracketed perspective view of hand and socket portion of a toy detached.

In Fig. 1 of the drawing, I have shown at 10 the lower portion of the body of a toy which I will refer to as the casing portion of the toy, in which most of the drive mechanism is arranged. This casing is open at the top and has a circumferential groove 11 in which the upper body portion 12 of the toy is adapted to fit. The body of the toy has, at its upper end, a head 13 which forms a bearing and support, as at 14, for a vertical shaft 15. Pressed by hand onto the shaft and fixedly keyed thereto, as at 16, is a detachable cap 17 suitably formed to facilitate winding of a cord therearound to spin or rotate the shaft 15. Keyed to the shaft 15, within the body 12, is a gyroscopic element 18 which is adapted to provide stability to the toy, as in other devices of this kind.

The casing 10 has a downwardly offset portion 19 having centrally thereof a bearing 20 for support of a fork 21. At the top of the offset por-

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tion 19 is a plate 22 forming a thrust bearing support for the lower end of the shaft 15, as seen at 23. The shaft adjacent the lower end is threaded, as seen at 24, forming thereof a worm 25 to engage a gear 25 pivoted in upwardly extending bearing portions 26 of the plate 22.

The gear 25 has a crank shaft 27, to the crank ends 28 of which are pivoted links 29. Coupled with the other ends of the links 29 are substantially U-shaped links 30, the lower long arm portions 31 of which having bearing U-shaped portions 32 of the plate 22, as clearly seen at 33 in Fig. 3 of the drawing. The long arm portions 31 are held against displacement from the U-shaped bearing portion 32 by metal straps, as seen at 34. The long arm portions 31 extend into and are keyed in sockets 35 of upper leg members 36, upper ends of these leg members operating in cutout or socket portions 37 in the casing 10, as clearly illustrated in Fig. 2.

Pivoted to the lower portions of the upper leg members 36 are lower leg members 38 having sockets 39 in the foot portions thereof to receive crank ends 40 of the crank 41 of a grooved wheel 42. The wheel 42 rotates in the lower end of the fork 21, as will be apparent. Upon detaching upper and lower leg members 36 and 38 from 31 and 40, the wheel unit comprising fork 21 and wheel 42 can be removed from bearing 20.

Pivoted to the upper portion of the lower leg members 38 adjacent the pivots with the upper leg members is a link 43 which slidably passes through a bearing 44 fixed on the upper leg members 36, the link 43 having an offset upper end 45 freely movable in the lower portion of the casing and passing through the opening 37. The links 43 serve to maintain the upper and lower leg portions in driving relationship to each other in the pedaling action of the leg members to rotate the grooved wheel 42, so as to operate the toy over a surface or along a wire or strand 47, as indicated in Figs. 1 and 2 of the drawing. In other words, the links 43 provide a definite knee action between the leg members; the offsets 45 engage the casing in the lower position of the leg members 38 to check relative movement of said leg members. The body portion 12 also preferably includes arms, one of which is seen pivoted, at 48 in Fig. 1 of the drawing, an arm being indicated at 49, and the free end of the arm has a socket, as at 50, note Fig. 6, for adjustable support of a hand 51, the socket 50 being conical in form and the hand having a conical wrist portion 52 rotatably clamped in the socket 50.

The hand 51 also preferably has a transverse

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bore 53 in which a rod, stick or the like may be supported, for example, a balance rod, such as used by tightrope walkers, particularly with a toy of the kind indicated in Figs. 1 and 2 of the drawing. However, the same hands may be utilized to receive and support upper ends of stilt rods 54 shown in Fig. 4 of the drawing. The rods 54 have stilt blocks 55 with upwardly extending dowels 56 thereon adapted to enter suitable sockets in the lower feet 57 of lower leg members 38', generally similar to the leg members 38. At 36' are indicated the upper leg members and at 43' are the rods or links coupling the two leg members together for controlled movement. In Fig. 4 of the drawing, 10' generally outlines the lower portion of a casing, similar to the casing 10 and which would have the same mechanism or movement therein for reciprocating the upper leg members 36', the same as operating the leg members 36 in Figs. 1 and 2.

However, in Fig. 4, the upper offset portions 45' operate in cam members 58 formed on the wall of casing 10 to provide an upward lift motion to the legs 38' in manipulating the stilts over the ground. The cam members have lift grooves 59 in which the offset portions 45' of the links or rods 43' operate, said offset portions also passing over the lower rounded surface 60 of the cam in one movement of the leg members.

In Fig. 5 of the drawing, I have shown a slight modification in the structure of the casing 10, as seen in Figs. 1 and 2, in which a casing 10'' is shown, having leg sockets 61, the inner walls 62 of which are contracted toward each other in the manner illustrated in order to dispose one-piece leg members 63 in an angular position to each other so that grooved portions 64 of the feet 65 of the leg members can come into alignment with each other to engage a taut strand or wire 66 so that the toy will imitate a tightrope walker.

At 31' is indicated the long end of the drive links, similar to the long ends 31 of Fig. 2 for imparting reciprocating motion to the leg members 63. The leg members also have guide pins 67 which operate in suitable laterally offset slots 68 in the casing 10'' to control slight side swinging motion of the leg members as they pass each other in movement along the wire or rope 66. In this connection it will be understood that rotary oscillation of the leg members lifts the leg members intermittently from the wire, and then swings them outwardly and inwardly onto the wire. The sockets 61 are of such contour as to facilitate the above described leg movement.

It will be understood that, in each instance, the casing employed includes the drive or motor mechanism actuated from the shaft driven by the gyroscopic element. Any type of body structure can be arranged upon the casing to produce or represent figures or characters of any type or kind, including animals and, in like manner, the form and contour of the respective leg members can be changed, as well as the base accessory, as and when the same is employed, such for example, as the single wheel 42. With my construction, it will be apparent that, in addition to maintaining stability through action of the gyroscopic element which maintains the toy in the perpendicular position, the action of this element as a motive power drives the mechanism for actuating leg members or the like in contributing motion or movement to the toy either upon a surface, or along a strandlike support.

From the foregoing, it will be apparent that the toy can be produced and merchandised in sets

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which would include one of the motor drive units and a series of associated parts detachably with respect to this unit in the production of a series of different types and kinds of toys. In other words, rather complete sets can be produced, for each toy will perform its independent function. In the different uses of the toy movement herein defined it will be apparent that the cap 17 is first forcibly pulled off from its support 16 after which the body 12 can be removed from 10 and 15 and as when the leg structure is modified, 36 is removed from 31 and 38 from 40. When desired, the wheel unit can be removed from the bearing as previously stated.

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

1. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, and a body portion detachable with the casing and enclosing said element.

2. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, and a cap detachably fixed to the projecting end of said shaft portion.

3. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, a cap detachably fixed to the projecting end of said shaft portion, said cap providing means for rotating said element, and said body portion including arms terminating at their ends in hands.

4. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, a cap detachably fixed to the projecting end of said shaft portion, said cap providing means for rotating said element, said body portion including arms terminating at their ends in hands, and said hands being rotatably adjustable with respect to the arms.

5. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive

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mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, a cap detachably fixed to the projecting end of said shaft portion, said cap providing means for rotating said element, said body portion including arms terminating at their ends in hands, and said leg members comprising upper and lower leg parts hingedly coupled.

6. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, a cap detachably fixed to the projecting end of said shaft portion, said cap providing means for rotating said element, said body portion including arms terminating at their ends in hands, said leg members comprising upper and lower leg parts hingedly coupled, a grooved wheel unit detachable with and protruding from the lower end of the casing, said wheel unit having pedals, and the feet of the lower leg members being apertured to receive the pedals.

7. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, a cap detachably fixed to the projecting end of said shaft portion, said cap providing means for rotating said element, said body portion including arms terminating at their ends in hands, said leg members comprising upper and lower leg parts hingedly coupled, and means independent of the pivotal coupling of said leg members for additionally coupling the leg members together to guide relative movement of said leg members.

8. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, a cap detachably fixed to the projecting end of said shaft portion, said cap providing means for rotating said element, said body portion including arms terminating at their ends in hands, said leg members comprising upper and lower leg parts hingedly coupled, means independent of the pivotal coupling of said leg members for additionally coupling the leg members together to guide relative movement of said

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leg members, and the casing having cam portions, and said last named means having parts engaging the cam portions in controlling definite movement of the leg members.

9. A toy of the character described comprising a casing means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, a cap detachably fixed to the projecting end of said shaft portion, and said leg members terminating in feet having grooves on the lower surface thereof.

10. A toy of the character described comprising a casing, means supporting a gyroscopic element for rotation in the casing, a crank type drive mechanism in the casing and in operative engagement with said element, a pair of leg members detachable with respect to the casing and coupled with said drive mechanism to be actuated thereby, a body portion detachable with the casing and enclosing said element, said element including a shaft portion extending upwardly through said body portion and projecting thereabove, a cap detachably fixed to the projecting end of said shaft portion, said leg members terminating in feet having grooves on the lower surface thereof, and means imparting lateral movement to said leg members.

11. A toy movement with which accessory members are detachably coupled, said movement comprising a casing, a vertical shaft in the casing to which is fixed a gyroscopic element, a pair of links, with which body members are detachably coupled, and means in said casing driven by said shaft and coupled with said links for imparting reciprocating motion to the links for actuating body members coupled therewith.

12. A toy movement with which accessory members are detachably coupled, said movement comprising a casing, a vertical shaft in the casing to which is fixed a gyroscopic element, a pair of links, with which body members are detachably coupled, means in said casing driven by said shaft and coupled with said links for imparting reciprocating motion to the links for actuating body members coupled therewith, said links extending into recessed sides of the casing, and the recesses of said casing sides being adapted to receive body members.

13. A toy movement with which accessory members are detachably coupled, said movement comprising a casing, a vertical shaft in the casing to which is fixed a gyroscopic element, a pair of links, with which body members are detachably coupled, means in said casing driven by said shaft and coupled with said links for imparting reciprocating motion to the links for actuating the body members coupled therewith, said links extending into recessed sides of the casing, the recesses of said casing sides being adapted to receive said body members, said casing having two cam portions at said recessed sides, and means on said body members operatively engaging the cam portions and coupled with said body members for imparting predetermined movement to said body members.

14. A toy movement with which accessory members are detachably coupled, said movement

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comprising a casing, a vertical shaft in the casing to which is fixed a gyroscopic element, a pair of links, with which body members are detachably coupled, means in said casing driven by said shaft and coupled with said links for imparting reciprocating motion to the links for actuating the body members coupled therewith, said links extending into recessed sides of the casing, the recesses of said casing sides being adapted to receive said body members, said casing having two cam portions at said recessed sides, means on said body members operatively engaging the cam portions and coupled with said body members for imparting predetermined movement to said body members, and means detachable with the upper end of said shaft for imparting rotary movement thereto.

15. A toy movement with which accessory members are detachably coupled, said movement comprising a casing, a vertical shaft in the casing to which is fixed a gyroscopic element, a pair of links, with which body members are detachably coupled, means in said casing driven by said shaft and coupled with said links for imparting reciprocating motion to the links for actuating body members coupled therewith, said last names means comprising a worm on said shaft, a gear operatively engaging said worm, and crank driven links actuated by said gear and coupled with said first named links.

16. A toy movement with which accessory members are detachably coupled, said movement comprising a casing, a vertical shaft in the casing to which is fixed a gyroscopic element, a pair of links, with which body members are detachably coupled, means in said casing driven by said shaft and coupled with said links for im-

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parting reciprocating motion to the links for actuating body members coupled therewith, said last named means comprising a worm on said shaft, a gear operatively engaging said worm, crank driven links actuated by said gear and coupled with said first named links, and a body member detachable with said casing and encircling said shaft and element.

17. A toy movement with which accessory members are detachably coupled, said movement comprising a casing, a vertical shaft in the casing to which is fixed a gyroscopic element, a pair of links, with which body members are detachably coupled, means in said casing driven by said shaft and coupled with said links for imparting reciprocating motion to the links for actuating body members coupled therewith, said last named means comprising a worm on said shaft, a gear operatively engaging said worm, crank driven links actuated by said gear and coupled with said first named links, a body member detachable with said casing and encircling said shaft and element, and a wheeled accessory detachable with and protruding from the lower end of said casing.

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