Aug. 5, 1952 H. SEBEL 2,605,585

STEERABLE MECHANICAL WALKING TOY

Filed Dec. 14, 1948 2 SHEETS—SHEET 1

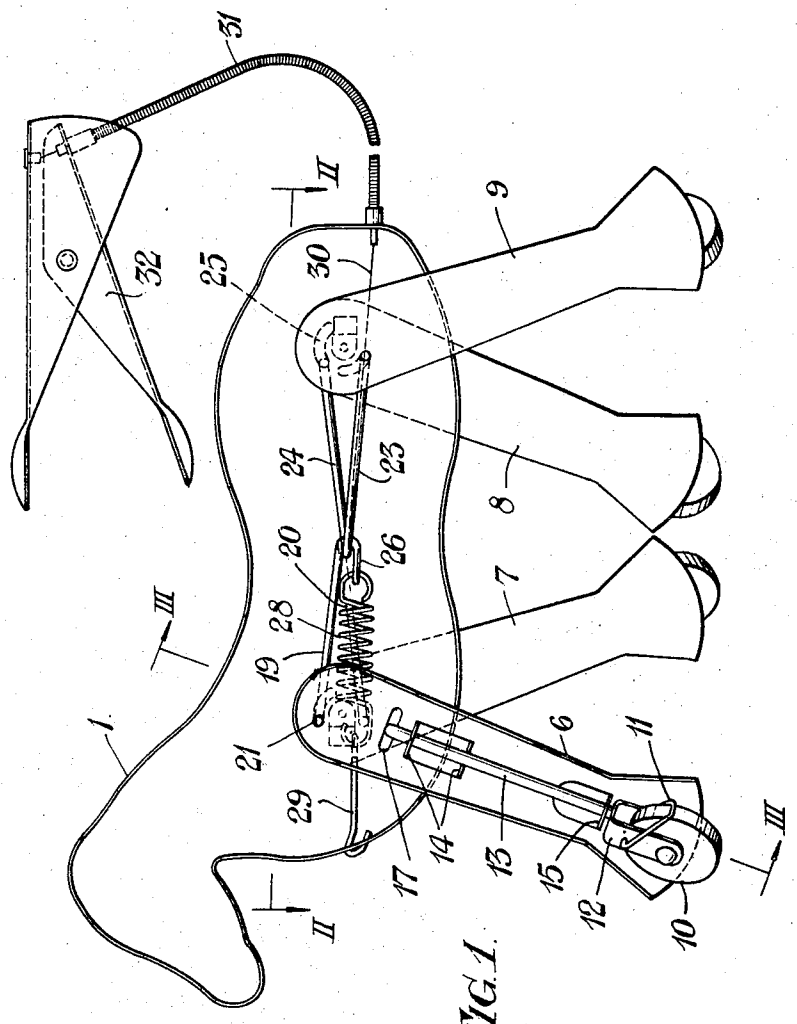


FIG. 1.

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FIG. 2.

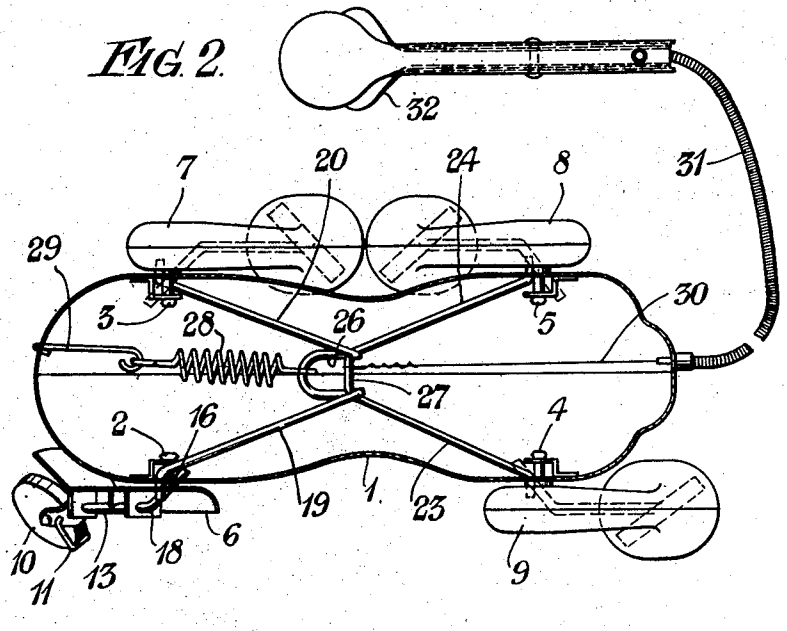
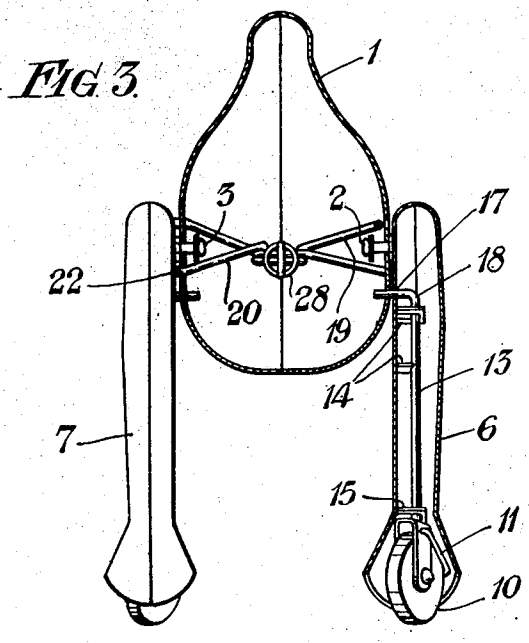


FIG. 3.



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STEERABLE MECHANICAL WALKING TOY

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3 Claims. (Cl. 46—105)

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The present invention relates to mechanical toys and more particularly to a wheeled toy which may be made to move and to be steered by a person remote from the toy. An object of the present invention is to provide a mechanical toy in which a toy mounted upon wheels carried upon legs pivoting about a substantially horizontal axis may be made by remote control means to move along under the control of the user and also to be steered by the person operating the toy.

Broadly the invention comprises a wheeled toy which is supported upon four legs pivoting about substantially horizontal axles, means for rocking the legs about their axles, means for preventing the rearward movement of the feet of the legs and for permitting a forward movement, and means for simultaneously rocking said legs about their pivots, said means incorporating a remote control device.

In a preferred construction the legs are linked together so that the front and back legs on each side rock towards and away from one another and this movement is alternate and opposite on each side. The linkage for effecting this movement may comprise tie bars which connect the front legs one above its axle and the other below its axle with tie bars which in turn operate on the rear legs one above the axle and one below the axle. These tie bars are linked together and may be operated by any suitable remote control means such as a Bowden cable which permits the linkage to be moved backwards and forwards. Conveniently the linkage may be connected to a stationary part of the body or chassis of the toy by a spring which pulls the linkage in one direction, the Bowden cable operating to pull the linkage in the opposite direction.

To facilitate steering of the toy wheels having a unidirectional rotation only are mounted upon spindles free to turn about their axis, these spindles being turned automatically with the rocking of the leg, as the legs rock. The wheels upon the front legs will turn inwardly in their forward position and outwardly in their rear position as also will the rear wheels. Thus by operating the toy to bring the legs from one extent of their rocking to a position mid-way in their swing and by repeating this action the toy may be made to move to the left or to the right according to the initial position of the legs.

The invention will now be described with reference to the accompanying drawings in which,

Figure 1 shows a side elevation skeleton fashion of a toy animal constructed in accordance with the present invention,

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Figure 2 shows a plan of the toy shown in Figure 1 with he upper part of the body broken away, and

Figure 3 shows a front end view of the toy with the body portion removed.

In the drawings a toy according to the present invention is illustrated in which the body 1 is represented as a pressing or moulding formed conveniently in two parts and representing a horse. Only the outline is shown in the drawings and this but diagramatically.

The body supports on horizontally placed axles 2, 3, 4 and 5 the front and back legs respectively. The legs 6, 7, 8 and 9 respectively comprise pressings or mouldings formed in two pieces. Each leg is carried upon a wheel 10 provided with a bail 11 which prevents the wheel from rotating rearwardly and for this purpose at least the tire or rim of the wheel is made of rubber or other material having a good binding action upon the bail. The wheel 10 is carried in a wheel fork 12 which is fixed to the lower end of a spindle 13 rotatably mounted within the leg moulding. Conveniently the bearings for the spindle 13 may comprise portions of the inner wall of the leg cut and turned inwards and apertured to receive the spindle 13 as at 14 and 15. The top of each spindle 13 is turned inwards and engages an aperture 16 in the body 1 so that as each leg is pivoted about its respective axle the spindle and the wheel 10 is caused to rotate to and fro. A slot 17 is formed in each leg to allow free movement of the turned over portion 18 of each spindle 13.

Mounted inside the body 1 are two sets of linkages. The first set comprises a V-shaped member formed from two legs 19 and 20, the outer ends of these legs being turned outwardly to engage in the leg pressing or moulding 6 and 7, respectively. These outwardly turned ends pass through arcuate slots in the body 1 to allow the V member to be moved to and fro. The leg 19 engages in an aperture 21 in the leg 6 above its axle 2, whereas the turned out end of the leg 20 engages the leg 7 in an aperture 22 which is below the axle 3.

The second linkage comprises another V-shaped member having limbs 23 and 24. The outer end of the limb 23 is turned out to engage, through an arcuate slot 25 in the body, the rear leg pressing 9 below its axle 4, whereas the outwardly turned end of the limb 24 engages the leg pressing 8 through a corresponding slot in the body 1 above the axle 5.

The two linkages are connected centrally in

the body conveniently by turning and looping the base 26 of the front linkage over the base 27 of the rear linkage. To the base 26 there is hooked a tension spring 28 the other end of which is secured to a hook 29 anchored in the body 1. The base 27 is connected to the wire 30 of a Bowden cable, the sheath 31 of which bears against the tail end of the body 1.

The Bowden cable is operated by a scissor grip 32 so as to cause the two linkages to move to and fro. This in turn causes the legs on each side to rock about their axles so as to move towards and away from one another, the legs being so set that as the pair on one side pivot away, that is to say diverge, the legs on the other side pivot to converge. At the same time, in the manner described above, the wheels 10 are caused to pivot about their spindles 13 so as to turn inwards in their forward position and outwards in their rearward position.

Provided the remote control is operated so as to pivot the legs evenly about their mid-way position the mechanism will move in a straight line. To cause the mechanism to turn to the left or to the right the control is operated so as to pivot the legs towards and away from their mid-way position on one side or other of the aforesaid mid-way position according to which direction it is desired to steer the toy.

Whilst in the embodiment described the head and tail are shown in fixed relation with the body, these or other portions of the body may be flexibly or pivotally connected to the body or to the legs so as to effect a movement on operation of the toy.

What I claim is:

1. A steerable walking toy, comprising a body, four legs pivoted at their upper ends to said body, four spindles, each journaled in a leg and extending longitudinally thereof, wheels rotatably mounted on the lower ends of the spindles, means for preventing reverse rotation of said wheels, each spindle having adjacent its upper end an arm extending laterally and engaging said body at a fixed point spaced from the pivot of its associated leg, so that a swinging movement of the legs causes a rotation of the spindles and a corresponding change in the direction of said wheels, said wheels being supported on the spindles so as to be directed longitudinally of the toy when the legs are in the middle position of their swinging stroke, each said arm being effective when its associated leg is forward of said middle position to direct the wheel toward one side and when said associated leg is rearward of said middle position to direct the wheel toward the other side, and means operable through a stroke of variable length for swinging opposite pairs of wheels alternately forward to cause a forward walking movement of the toy, said means being operable by limitation of the swinging stroke to keep each leg on one side or the other of its middle position to steer the toy selectively to right or left during said forward movement.

2. A steerable walking toy, comprising a body, four legs pivoted at their upper ends to said body, four spindles, each journaled in a leg and extending longitudinally thereof, wheels rotatably mounted on the lower end of the spindles, means for preventing reverse rotation of said wheels, each spindle having adjacent its upper end an arm extending laterally and engaging said body at a fixed point spaced from the pivot of its associated leg, so that a swinging movement of the legs causes a rotation of the spindles, and a corresponding change in the direction of said wheels, said wheels being supported on the spindles so as to be directed longitudinally of the toy when the legs are in the middle of their swinging stroke, a linkage connecting said legs so that the diagonally opposite pairs of legs move forward alternately, a spring biasing said linkage to a position wherein one of said diagonally opposite pairs of legs is moved forward, and means operable from a remote point for moving said linkage in opposition to said spring so as to swing the other pair of legs forward, said linkage moving means being effective when alternately moved through its full stroke and released to cause a forward walking movement of said toy along a substantially straight path, said linkage moving means also being effective when alternately moved through the first half of its stroke and released to cause a forward walking movement of the toy along a path curving to one side, and effective when alternately moved through the second half of its stroke and released to cause a forward walking movement of the toy along a path curving to the other side.

3. A steerable walking toy, comprising a body, means for movably supporting said body including at least one leg pivoted to said body adjacent its upper end, a spindle journaled in said leg and extending longitudinally thereof, a wheel mounted on the lower end of said spindle for rotation about a horizontal axis, means for preventing reverse rotation of said wheel, an arm on said spindle adjacent its upper end extending laterally and engaging the body at a fixed point spaced from the pivot of the leg, means operable through a stroke of variable length for swinging said leg alternately forward and backward with respect to the body to produce a walking movement of the toy, said arm being effective during said swinging of the leg to rotate the spindle and change the direction of the wheel, said wheel being supported on the spindle so as to be directed forward when the leg is substantially in the middle position of its swinging stroke, said arm being effective when the leg is forward of said middle position to direct the wheel to one side and when the leg is rearward of said middle position to direct the wheel to the other side, so that by limiting the stroke of the leg to one side or the other of said middle position, the leg may be steered selectively to right or left during said forward movement.

HARRY SEBEL.

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