

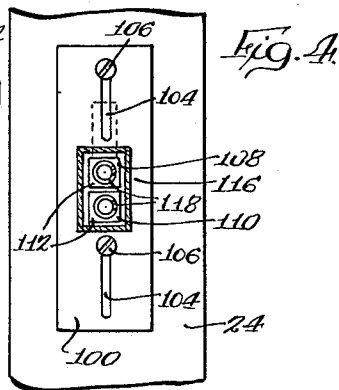
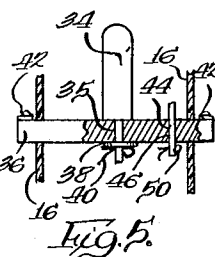
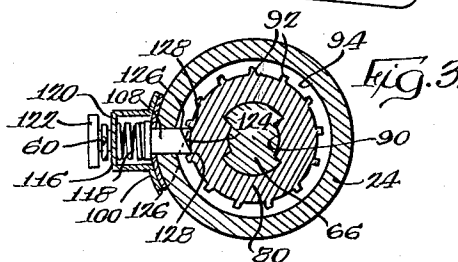
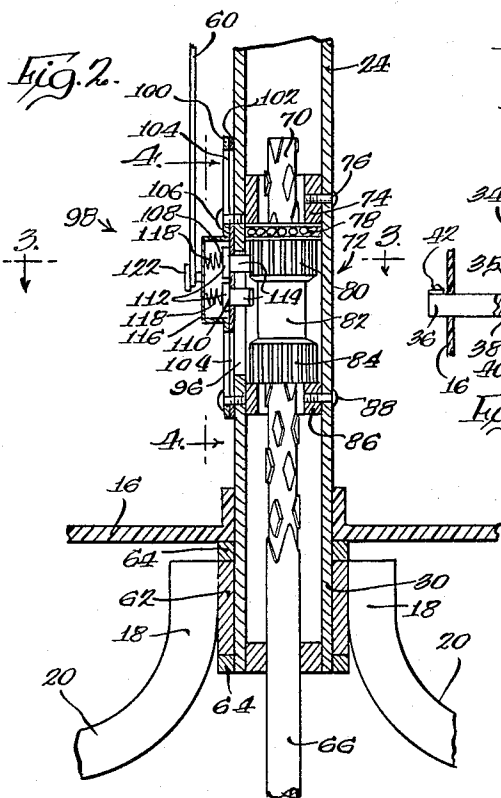
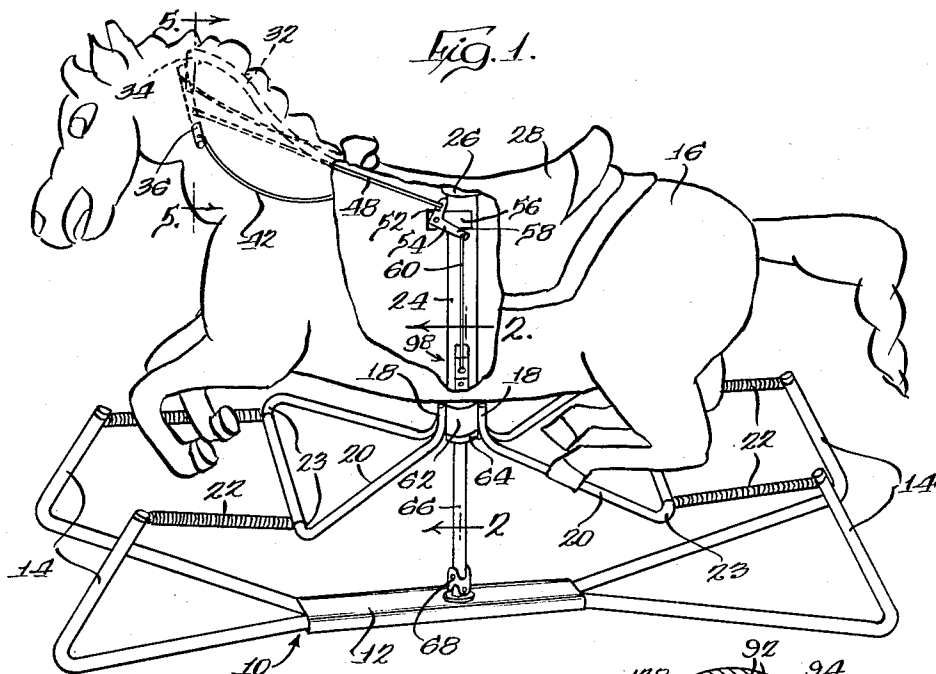
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D. K. LAWRENCE

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REVOLVING ROCKING HORSE

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INVENTOR.
Donald H. Lawrence
BY
B. Gordon Allet
Atty

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REVOLVING ROCKING HORSE

Donald K. Lawrence, 531 W. Addison St., Chicago, Ill.

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My invention relates to an improvement in a rocking horse, and more specifically to a rocking horse of the character in which the body of the horse may be caused to rotate during the course of a child's play thereon.

My invention has for a particular and major objective the provision of a rocking horse having such capability of movement incorporated in it and the mechanism whereby such movement is provided. The presence or absence of such movement and the direction of it is immediately under the control of a child riding the horse, and the medium of control is the reins, normally used, so that the simulation of reality is of a high order. My invention is particularly notable not only for these features, but also, in the mechanism itself, for the simplicity and inexpensiveness thereof, for the fashion in which the need for members of great strength is avoided and for the enclosure of moving or otherwise dangerous parts which might offer a hazard to a child playing on or with the toy.

These and other objects and advantages of my invention will be apparent from the following description and drawings, of which:

FIG. 1 is a perspective view of a rocking horse incorporating my invention, broken away in part to illustrate interior details;

FIG. 2 is a section taken substantially along the line 2—2 of FIG. 1 looking in the direction of the arrows;

FIG. 3 is a section taken substantially along the line 3—3 of FIG. 2 looking in the direction of the arrows; and

FIG. 4 is a section taken substantially along the line 4—4 of FIG. 2 looking in the direction of the arrows; and

FIG. 5 is a section taken substantially on the line 5—5 of FIG. 1 looking in the direction of the arrows.

In FIG. 1, I show a rocking horse of a type commonly seen on today's toy market. The type consists of a supporting frame 10 made of lengths of tubing which are joined side-by-side at the central sections thereof, as by a clip 12, and diverge at each end beyond the clip. The extremities are turned upward as at 14.

The belly of a molded horse body 16 has a post extending downwardly therefrom to which are secured an apex 18 of a pair of triangular spring brackets 20 extending fore and aft of the horse body. Springs 22 interconnect the outer apices 23 of the spring brackets 20 to the adjacent upturned ends 14 of the frame 10.

In normal practice the post is rigidly connected to the horse body and extends well up inside its interior to provide support for the saddle portion of the molding. A shaft extends forward from the upper end of the post inside the horse's neck for a handle mount to steady the child and to prevent rotation of the horse body on the post. The structure as thus far described is entirely conventional and well known.

The mechanism whereby the above-described rotation of the horse body relative to the frame 10 on which it rests is obtained consists of substituting a tube 24 for the above-described post. The tube mounts a saddle support 26 at its upper end to underlie and support the saddle 28 of the molding. The tube is open at its lower end, the lower end 30 extending below the horse body. The neck support or arm 32 extends forward from the saddle support 26 to a point generally behind or within the head of the horse directly under the crest and bends generally vertically downward at its forward end as at 34. The

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saddle and neck supports may be integral and formed, for instance, of appropriately bent rod. The saddle support 26 may be welded to the top of the tube 24.

In the illustrated embodiment, the forward tip 35 of the neck support is of reduced diameter and mounts a bar 36 hereafter referred to as the bit. The bit has a hole through its center to receive the reduced end of the neck support and is secured in place for pivotal movement by a washer 38 and cotter pin 40. The bit extends out through a flexible resilient neck portion of the body equally on each side, and reins 42 are riveted to the outwardly extending ends. Immediately inside the body 16 on one side of the pivot 35, a vertical hole 44 is bored through the bit to receive the downturned end 46 of a rearwardly extending rod 48. The tip 46 is secured within the hole 44 by a cotter pin 50. The hole 44 is substantially spaced from the pivot 35.

Rod 48 is connected at its rearward end to one arm 52 of a vertically oriented bell crank 54 which is pivotally mounted as to a plate 56 secured to the top of the tube 24. The other arm 58 of the bell crank has a downwardly extending rod 60 secured thereto.

To fulfill the purposes of my invention, the horse body 16 must rotate relative to the frame 10. To this end a tubular bearing 62 is rotatably mounted on the exterior of the lower end 30 of the tube 24 and contained between rings 64 which are secured to the lower end 30 of the tube 24. The apices 18 of the spring brackets 20 are secured to the exterior of the bearing 62. The rings 64 and bearing 62, as is evident, lie below and outside the body of the horse 16.

A shaft 66 is mounted by a universal joint 68 to the top of the clip 12 in a position vertically under the tube 24. The shaft extends well up inside the tube and at its upper end 70 is reverse threaded. In other words, as illustrated here, there is a left and a right hand double spiral thread superimposed on each other. The shaft has a diameter considerably less than the internal diameter of the tube 24. The universal joint permits an inclination of the shaft in any direction, but prohibits any rotation thereof.

A driving assembly 72 is engaged on the reverse threaded portion of the shaft 66 and secured within the inside of the tube 24 to effect interengagement between these members and cause the horse to rotate as desired. Reading down from the top, the assembly consists of a top retainer ring 74 secured as by rivets or set screws 76 to the wall of the tube 24, a ball bearing ring 78, an upper driver 80, a spacer 82, a lower driver 84 and a lower retainer ring 86, again secured by rivets or set screws 88 to the wall of the tube. The spacer 82 is independent of the drivers 80 and 84. The upper retainer ring 74 and the ball bearing ring 78 stand clear of the shaft 66. The upper driver ring 80 is an annular member interiorly threaded as at 90 (FIG. 3) to engage the right hand threads of the threaded end 70 of the shaft 66. The driver is provided with a plurality of vertical ribs 92 on its external surface. The ribs 92 approach closely the inside surface 94 of the tube 24. The spacer 82 stands free of both the tube and the shaft. The lower driver 84 is identical with the upper driver except that its internal threading engages the left hand threads of the upper end of the shaft 66. The lower retainer ring 86 stands clear of the shaft 66.

The tube 24 has a vertical slot 96 formed in the wall thereof extending over and between the drivers 80 and 84, and a sliding shift assembly 98 is secured over the slot.

The shift assembly includes a pair of plates 100 and 102 mounted together face-to-face. The plates have aligned longitudinal slots 104, and headed screws 106 extend through the slots and into the tube at either end of the tube

slot 96 to mount the two plates for vertical sliding movement over the tube slot 96. The two plates mount an upper and a lower pawl 103 and 110 having square heads 112 and square shanks 114. The shanks of the pawls extend through the tube slot 96 and into the interior of the tube in a position to engage the drivers 80 and 84.

The mounting of the pawls is achieved by providing square holes in the generally flat, or transversely curved—to conform to the curvature of the tube—inner plate 102 fitting closely the shanks 114 of the pawls. The outer plate 100 has a boxlike outer projection 116 formed thereon as by stamping which encloses the heads of the pawls. The interior width of the projection 116 fits closely the heads 112 of the pawls. Compression springs 118 are contained between the top 120 of the projection 116 and the heads 112 of the pawls to urge the pawls inwardly into seated position with the heads of the pawls against the inner plate 102. The exterior of the outside of the box has a button 122 mounted thereto to which the lower end of rod 60 is secured.

It will be appreciated from the confinement of the shanks of the pawls in the square holes in the inner plate 102 and the sides of the pawl heads 112 within the boxlike projection 116 that the pawls are held securely against rotation. The inner ends of the pawl shanks are vertically beveled, as at 124, to provide a heel 126 and a toe 128 parallel with the ribs 92 of the drivers. When the pawls are properly seated with the heads against the inner plate 102, the heels clear the ribs 92 and the toes 128 engage the ribs. As illustrated, the upper pawl 103 has its toe pointed in the counterclockwise direction and the lower pawl has its toe pointed in the clockwise direction. In the position illustrated where the upper pawl is engaged with the upper driver 80, it will be apparent that the pawl prohibits clockwise rotation of the driver with respect to the tube 24 but permits counterclockwise movement. The tube slot 96 and the slots 104 in the plates 100 and 102 permit a movement of the shift assembly from the illustrated position where the upper pawl engages the upper driver to a central position where neither pawl is engaged and to a lower position where the lower pawl 110 engages the lower driver 84.

The operation of my device will be evident from the foregoing description. A child mounts the horse in the usual fashion. His weight will be sufficient to depress the horse against the tension of the springs 22 connecting it to the frame 10. The tube 24 will partially collapse telescopically on the shaft 66. Let it be assumed that the bit 36 is in a transverse position with respect to the axis of the horse body. In such case the bell crank 54 will occupy a central position and the shift assembly 98 also a central position with the pawls 103 and 110 opposite the spacer 82 and disengaged from the driving members 80 and 84. In the course of such initial settling movement, the upper driver will rotate in a clockwise direction and the lower driver in a counterclockwise direction, but since the pawls are disengaged, there will be no communication of this rotation to the tube 24. The child may bounce up and down on the horse, and the drivers will follow their respective threading in the course of such up and down movement without influencing the tube 24 and therefore the orientation of the horse. There may be sufficient frictional engagement between the bearing 62 and the lower end 30 of the tube to prevent any unwanted rotation.

Assuming now that the child wishes the horse to start rotating to the right, he will pull on the right rein. The bit will be pivoted to move rod 48 forward, thereby rocking the bell crank 54 to raise rod 60 to move the shift assembly 98 upward to the position illustrated in FIG. 2 and FIG. 3, with the upper pawl 103 engaging the upper driver 80. As the child now bounces the horse downward, the upper driver 80 will be rotated clockwise, and the pawl, being engaged with the driver, will compel similar rotation of the tube 24 carrying the horse body with it.

Upon the rebound the horse body, the upper driver will of course be driven in the counterclockwise direction. The hell 126 of the upper pawl, however, will permit the passage of the ribs 92 thereunder and so permit a free rotation of the driver independent of the horse body. Each successive downward bounce therefore will cause the horse to migrate to the right as long as the bit is held in the described position.

Similarly, pulling the left rein will move rod 48 to the rear to swing the bell crank to move the rod 60 downwardly and cause the lower pawl 110 to engage the lower driver 84. Thereafter, upon a downward bounce, the lower driver will rotate in a counterclockwise fashion (looking down on it), and the toe of the lower pawl will compel the tube 24 to follow.

It will be appreciated from the foregoing description that my invention is capable of innumerable modifications. The horse may be caused to rotate on the rebound rather than on the downward bounce by simply reversing the direction of the pawls 103 and 110. The bit, as illustrated, extends out through appropriate holes in the horse's neck or head. Since the body is formed of molded rubber or a rubberlike material, the body itself provides a restoring force for the bit to move it to the central position. Also, when the bit is moved away from the central position, the horse's head will follow, which will enhance the illusion of reality. On the other hand, the bit may be confined in slots in the body molding for free movement, and other resilient bit restoring means may or may not be provided. The bit may be located in the horse's mouth unless the linkage operating the shift assembly 98 becomes too complex. The bit, or its equivalent, may be situated for foot operation. Entirely other operating means such as a push rod or a push button may be employed to move the shift assembly. The shift assembly might conceivably be located outside the horse's body and operated directly.

The shaft 66 and tube 24 may be reversed in position with the shaft constituting the upper member and the tube the lower. More basically, other means for translating up and down movement into rotational movement will undoubtedly suggest themselves.

In the meantime it will be readily appreciated that the rocking horse of my invention achieves its purpose excellently. By the manipulation of the reins a child may bounce up and down, or indeed in any direction as long as there is a lengthening and shortening of the telescopic link, and the horse may turn to the left, turn to the right, or maintain its straight ahead position. The mechanism by which this is achieved is relatively simple and inexpensive. The forces imposed on the mechanism are slight, and the need for excessively heavy members is therefore avoided. For instance, it is not desired that the horse spin violently around but migrate around relatively slowly as the child bounces. The thread therefore may be gradual and the conversion of the linear movement into rotational movement achieved without great mechanical stress. The tube 24 and shaft 66 have no other load bearing functions.

The mechanism by which rotation is achieved is housed substantially entirely within the tube 24, and the tube portion containing it is entirely enclosed within the horse body, protecting positively a playing child from injury from it.

I therefore desire that my invention be regarded as being limited only as set forth in the following claims.

I claim:

1. A rocking horse comprising a supporting frame, a horse body, means including resilient and rotatable means interconnecting said body and said frame to support said body in a position above said frame for rotation about a vertical axis, said body being resiliently displaceable from said position, said rotatable means including a telescoping link extending between said frame and said body including a first member secured against rotation to said frame

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and a second member secured against rotation to said body, and means operatively interconnecting said members to convert relative axial movement between said members in one direction into relative rotary movement, said means being inoperable in the other direction.

2. The combination as set forth in claim 1 wherein the connection of said first member to said frame includes a universal joint.

3. The combination as set forth in claim 1 wherein the connection of said means including resilient means to said body includes a tubular bearing about said second member confined against longitudinal displacement therealong.

4. The combination as set forth in claim 1 wherein said means operatively interconnecting said members comprises means providing a spiral surface on one of said members and a follower for said surface on the other of said members, said follower disengaging said surface upon movement in said other direction.

5. A rocking horse comprising a supporting frame having upturned ends, a horse body, means including resilient means connected to said ends and to said body to support said body above said frame and rotatable means interconnecting said body and said frame for rotation of said body about a vertical axis, said rotatable means including a telescoping link extending between said frame and said body including a first member secured against rotation to said frame and a second member secured against rotation to said body, and means operatively interconnecting said members to convert relative axial movement between said members in one direction into relative rotary movement optionally in either direction, said means being inoperative in the other axial direction, and means for selecting the rotary direction.

6. A rocking horse comprising a supporting frame, a horse body, means including resilient and rotatable means interconnecting said body and said frame to support said body in a position above said frame, said body being resiliently displaceable from said position, said rotatable means including a telescoping link extending between said frame and said body including a first member secured against rotation to said frame and a second member secured against rotation to said body, the first member being disposed within the second member, the inner of said members having a spiral thread thereon, a driving member engaged on said thread, means confining said driving member against longitudinal displacement with respect to the outer of said members, and means for permitting rotation, with respect to said outer member, of

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said driving member in one direction and prohibiting rotation in the other.

7. A rocking horse comprising a supporting frame, a horse body, means including resilient and rotatable means interconnecting said body and said frame to support said body in a position above said frame for rotation about a vertical axis, said body being resiliently displaceable from said position, and a telescoping link extending between said frame and said body including a first member secured against rotation to said frame and a second member secured against rotation to said body, the first member being disposed within the second member, the inner of said members having oppositely handed sets of spiral threads formed thereon, a pair of drivers within the outer of said members, said drivers each engaging one of said sets of threads, means securing said drivers against longitudinal displacement within the outer of said members, and pawl means adapted to engage said drivers to permit rotation in one direction and prohibit rotation in the other relative to said outer member, said pawl means being selectively engageable with each of said drivers.

8. A rocking horse comprising a supporting frame, a horse body, means including resilient and rotatable means interconnecting said body and said frame to support said body in a position above said frame for rotation about a vertical axis, said body being resiliently displaceable from said position, a vertical tube secured against rotation to said body and opening downwardly thereof, a shaft secured against rotation to said frame and extending upward into said tube in telescopic relation therewith, said shaft having oppositely handed sets of threads thereon, a pair of drivers within said tube and secured against longitudinal movement therewithin, said drivers each engaging one of said sets of threads, pawl means adapted to engage said drivers to permit rotation in one direction and prohibit rotation in the other relative to said tube, a rod pivotally mounted in the area of the head of said horse body for movement about an axis, the ends of said rod extending outwardly beyond said horse body, and linkage means secured to said rod away from said axis for selectively engaging each of said pawls with one of said drivers.

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RICHARD C. PINKHAM, *Primary Examiner*,