March 13, 1951 G. V. GLUMER ET AL 2,545,231

CHILD'S RIDING TOY

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Fig. 1.

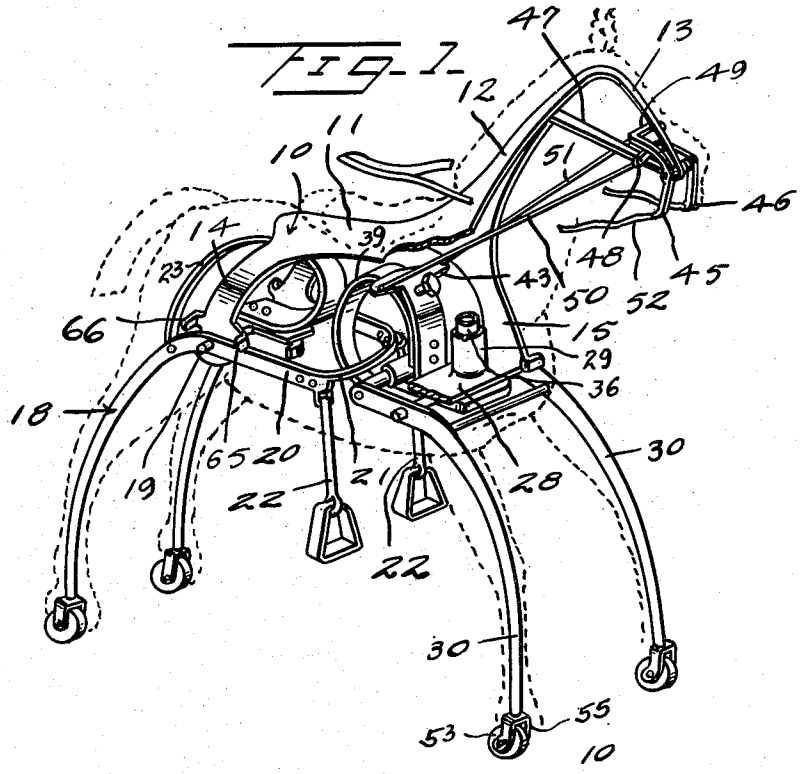


Fig. 5

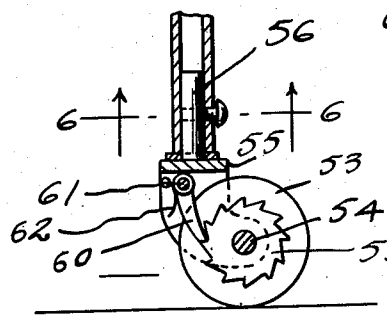


Fig. 7.

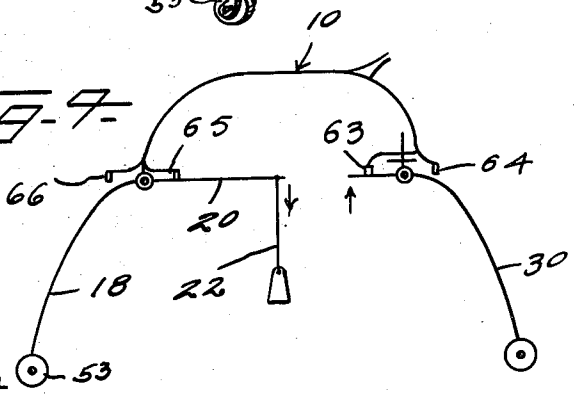


Fig. 6.



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Fig. 2.

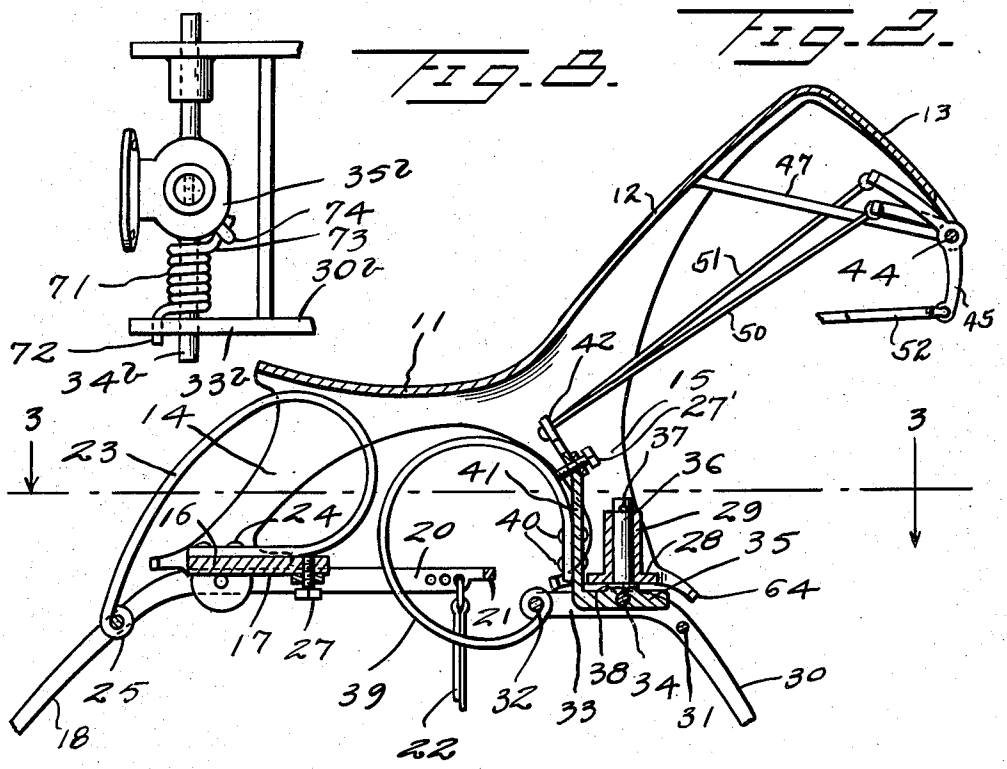


Fig. 3.

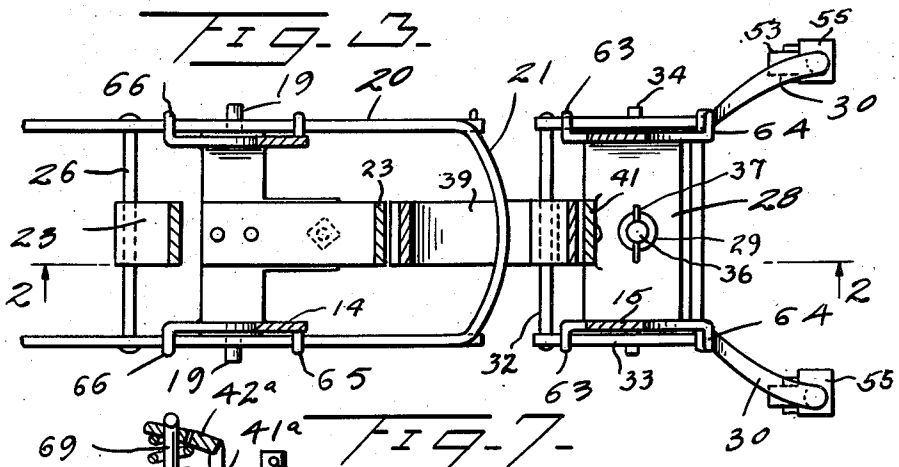
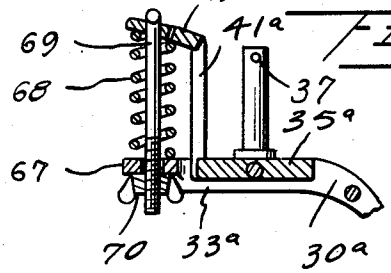


Fig. 7.



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CHILD'S RIDING TOY

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5 Claims. (Cl. 280—1.183)

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This invention relates to certain new and useful improvements in mechanical riding toys, which comprise a body structure and supporting frame, improvements in the mechanical means for the more complete utilization of the rider's movements and directional front legs, which combined provide a mechanical riding toy of more efficient design and construction.

Known mechanical riding toys lack a body structure providing adequate support of the leg frames, resilient means and body shell, said designs comprising pivotally mounted legs which spread apart when the child bounces down and springs to return the legs to their normal position. The mechanism is designed to operate by the difference in the spring tension and the weight of the child bouncing down, lacking any means for multiplying and further utilizing the child's force, as well as steering the assembly, by the displacement of the front legs.

This invention comprises a new combination of mechanical means to provide the riding toy with an efficient steering system, and lever means which multiply the child's force, allowing a perfect control of the movement of the toy.

An object of this invention is to provide a riding toy with a front drive comprising its own resilient means, independent of the frame structure, and rotatably mounted with the front leg frames.

Another object of this invention is to provide front directional means which support the resilient means used for the operation of the front legs, said means and legs rotatably mounted on the frame structure.

Another object of this invention is to provide front steering means combined with the front rollers in the leg frames.

A further object of this invention is to provide the means to steer the riding toy by rotatably mounted roller housings, with a lateral displacement limited by stop pins operating in the front leg structure.

Another object of this invention is to provide a combination of pivotally mounted leg structures which comprise a leverage system which multiplies all the force developed by the child's vertical displacement.

A further object of this invention is to provide a combination of pivotally mounted leg structures and resilient means acting on said structures, which provide a smooth and easy movement of the legs and displacement of the riding toy.

Still a further object of this invention is to provide in a riding toy, mechanical steering means controlled and operated by the reins of the toy,

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further enhancing the imitation of the natural riding actions.

With the above and other objects in view, our invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a perspective view, partly broken away and in section, of the skeleton frame structure for a riding toy constructed according to an embodiment of this invention,

Figure 2 is a fragmentary vertical section of the frame structure taken substantially on the line 2—2 of Figure 3,

Figure 3 is a fragmentary sectional view taken on the line 3—3 of Figure 2,

Figure 4 is a schematic view of the device,

Figure 5 is a fragmentary vertical section of the lower end of a leg,

Figure 6 is a sectional view taken on the line 6—6 of Figure 5,

Figure 7 is a fragmentary vertical section of the front portion of a modified form of this invention,

Figure 8 is a fragmentary plan view of the front portion of another modification of this invention.

Referring to the drawings and first to Figures 1 to 6 inclusive, the numeral 10 designates generally a frame or chassis structure which includes a substantially V-shaped horizontally disposed body member 11 forming the back of the device. The V-shaped body 11 is extended upwardly as indicated at 12, to provide the neck support and the extension or neck forming member 12 at its upper end is bent downwardly and forwardly to provide a head frame or supporting member 13.

The body 11 at its rear end is formed with a pair of outwardly extending and downwardly curved arms 14 and is formed at its forward end with a pair of outwardly extending and downwardly curved arms 15. A connecting plate 16 is fixed between the lower ends of the arms 14 and the plate 16 is formed in its central portion with a forwardly extending arm 17.

A pair of rear legs 18 are rockably mounted on a pair of pivot members 19 which are carried by the lower ends of the arms 14, and the legs 18 are extended forwardly from the pivot members 19, as indicated at 20. The extensions 20 are connected together by means of a connecting bar 21, and a pair of stirrups 22 are dependingly secured to the forward end portions of the extensions or arms 20.

The legs 18 which are adapted to rock in unison

are yieldably mounted by means of a bowed spring 23 which is secured as at 24 to the upper side of the plate 16. The spring 23 is formed at its rear lower end with a tube 25 through which a bolt 26 which extends between the legs 18 is adapted to engage. A spring tensioning bolt 27 is threaded through the extension 17 and engages against the lower side of the spring 23 forwardly of the securing bolts or members 24.

The forward arms 15 of the body 11 are connected together by a connecting plate 28, and the plate 28 has extending upwardly from the center thereof a bushing 29. A pair of front legs 30 are connected together by means of a pair of connecting bolts or bars 31 and 32, the latter bolt being connected to the rear ends of the leg extensions 33. The legs 30 are rockably mounted on a shaft 34 which is connected between the extensions 33, and the shaft 34 engages through a plate 35 which is loosely disposed between the leg extensions 33.

The plate 35 has extended upwardly therefrom a pivot shaft or stud 36 which loosely engages in the bushing 29. A pin 37 is extended through the upper portion of the stud 36 for holding this stud against downward movement with respect to the bushing 29, and a thrust washer member 38 is interposed between the upper side of the plate 35 and the lower side of the connecting plate 28.

The legs 30 are yieldably urged to normal position by means of a bowed spring 39 which at one end is mounted on the bolt or connecting member 32, and at the other end is secured by fastening members 40 to an upstanding plate 41 carried by the plate 35. The plate 41 has extending obtusely and rearwardly therefrom a plate 42 which is formed with oppositely extending ears 43. A spring tensioning bolt 27 is threaded through plate 42 and engages spring 39 for tensioning this spring. The head forming member 13 has mounted through the forward lower end thereof a shaft 44 on which a pair of bellcranks 45 and 46 are rockably mounted.

A bracing bar 47 is connected between the forward end of the head forming member 13 and the upper portion of the neck member 12. The bellcranks 45 and 46 have oppositely extending rear end members 48 and 49 respectively and the extension 48 is connected to one of the ears 43 by means of a connecting rod 50, whereas the extension or lever 49 is connected to the opposite ear 43 by means of a connecting rod or link 51. The lower ends of the bellcrank members 45 and 46 have secured thereto a flexible member 52 comprising the rein and providing the means by which the toy may be steered.

In order to provide for forward movement of the device by rocking of the legs 18 and 30, the lower ends of each leg have mounted thereon wheels or rollers 53. The rollers 53 are mounted on a shaft 54 carried by a U-shaped member 55, and the U-shaped member 55 which is disposed in inverted position has extending upwardly therefrom a shank or stud 56 engaging within the lower end of a tubular leg.

A set screw 57 is threaded into the shank or stud 56 and the lower end of the leg is formed with an arcuate slot 58 so that the shank 56 may have limited turning movement.

The wheel 53 is adapted to be progressively rotated in one direction upon rocking of the legs by means of a ratchet wheel 59 which is fixed relative to the wheel 53. A pawl 60 is pivotally mounted on a pivot 61 extending between the arms of the U-shaped member 55 and is constantly urged to ratchet engaging position by means of a spring 62.

The front arms 15 of the body frame have extending from the front and rear edges thereof stop members 63 and 64 which are adapted to engage the front legs 30 so as to limit the rocking movement of these legs. The rear arms 14 have extending outwardly therefrom front and rear stop members 65 and 66 respectively which engage the upper ends of the legs 18 to limit the rocking movement of these legs in opposite directions.

Referring now to Figure 7 there is disclosed a modified form of this invention wherein the plate 35*a* has extending upwardly from the rear portion thereof an arm 41*a* and an extension 42*a* extends angularly and rearwardly from the upper end of the arm 41*a*. A connecting bar 67 is connected between the rearwardly extending arms or levers 33*a* of the front legs 30*a* and a coil spring 68 is interposed between the bar 67 and the extension 42*a*. A spring tensioning bolt 69 having a nut 70 threaded on the lower end thereof extends between the bar 67 and the extension 42*a*.

Referring now to Figure 8 there is disclosed another modification of this invention wherein the front legs 30*b* have disposed therebetween a plate 35*b* and the plate 35*b* has extending from opposite ends thereof trunnions 34*b*. A coil spring 71 is disposed about one of the trunnions 34*b* and is formed with a laterally extending end 72 engaging beneath one of the front leg extensions or arms 33*b*. The opposite end 73 of the spring 71 is engaged with a lug 74 which is carried by the plate 35*b*.

In the use and operation of this toy, the child or other person will seat on the covering for the body frame 10, it being understood that this covering will engage over the body and the legs may also be enclosed in a suitable covering which may be of flexible construction so as to be formed integral with the body covering. The rider will place his feet within the stirrups 22 and when the rider's weight is shifted forwardly so that the weight is carried substantially entirely by the stirrups 22 the extensions or levers 20 will be rocked downwardly about the pivots 19. This will cause the rear legs 18 to rock downwardly at their upper ends, and at the same time the forward shifting of the rider's weight will cause the front leg extensions 33 to rock downwardly with upward and forward movement of the front legs 30.

The unidirectional wheels 53 will hold the rear legs 18 against rearward movement whereas the front wheels 53 may freely roll forwardly thereby effecting forward movement of the front legs without movement of the rear legs 18. When the rider's weight is shifted from the stirrups to the rear of the body the springs 23 and 39 will tend to raise the body relative to the legs. As the body is raised by the springs 23 and 39 the unidirectional wheels 53 will prevent rearward movement of the lower ends of the front legs 30 while the lower ends of the rear legs 18 are permitted to move forwardly. In this manner the alternate shifting of the weight from the stirrups will effect up and down movement of the body and also effect the spreading and contracting of the legs with forward movement provided through the unidirectional wheels.

The device may be steered by pulling on either of the bellcrank members 45 or 46 which will turn the front legs 30. This device will provide a toy

simulating the movement of a horse or other animal and this toy can be readily moved forwardly by up and down movement of the rider which may be accelerated by pressure on the stirrups 22. The device may be steered as hereinbefore described so that the toy may be moved forwardly and turned as may be desired by the rider.

Due to the fact that the distance of the connection between the stirrup 22 on the arms 20 and pivot 19 is greater than the distance of the connection between spring 23 and pivot 19, the force developed by the child is multiplied several times. The movement of the leg structures resembles the movement of a galloping horse, with its peculiar alternating movement of the front and rear leg structures.

We do not mean to confine ourselves to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claims.

What we claim is:

1. A riding toy simulating a horse or other quadruped comprising a body frame, fixed neck and head frames projecting from said body frame, a pair of rear legs, pivot means rockably securing said rear legs to said body frame, arms fixed relative to said rear legs and extending forwardly of said pivot means, stirrups dependingly carried by said arms at the forward ends thereof, a spring connected at one end to said legs rearwardly of said pivot means and at its other end to said body frame, a pair of front legs, a plate disposed between said front legs, horizontal pivot means for said front legs carried by said plate, an upstanding stud fixed to said plate and rotatably engaging said body frame, a spring connected at one end to the rear ends of said front legs rearwardly of said horizontal pivot means and at its other end to said plate, steering means carried by said head frame connected with said plate for turning the latter about said stud, and unidirectional wheel means mounted on each of said legs whereby vertical rocking of said legs will effect linear movement in one direction.

2. A riding toy simulating a horse or other quadruped comprising a body frame, fixed neck and head frames projecting from said body frame, a pair of rear legs, pivot means rockably mounting the upper ends of said legs on the rear of said body frame, arms fixed to said rear legs and extending forwardly of said pivot means, stirrups dependingly carried by said arms, a spring connected at one end to said rear legs rearwardly of said pivot means and connected at its other end to said body frame, a swingable plate pivotally carried by the front portion of said body frame for rotation about a vertical axis, a pair of front legs, means rockably mounting said front legs on said plate, rearwardly projecting extensions carried by said front legs, a spring connected at one end to said extensions and at its other end to said plate, means connected between said head frame and said plate for turning the latter about said vertical axis, and unidirectional wheels carried by the lower ends of said front and rear legs.

3. A riding toy simulating a horse or other quadruped comprising a body frame, fixed neck and head frames, projecting from said body frame, a pair of rear legs rockably carried on a pivot of said body frame, arms fixed relative to said rear legs and extending forwardly of said pivot, stirrups dependingly carried by said arms at the forward end thereof, a spring connected at one end to said rear legs, rearwardly of said pivot and at its other end to said body frame, a vertical stud at the forward end of said body frame, a horizontal plate pivotally engaging said stud, a pair of front legs, pivot means rockably mounting said front legs on said plate, a spring connected between said front legs and said plate, means carried by said head frame and connected to said plate for turning said plate about said stud, and means for tensioning both of said springs.

4. A riding toy simulating a horse or other quadruped comprising a body frame, fixed neck and head frames projecting from said body frame, a pair of rear legs rockably carried on a pivot of said body frame, arms fixed relative to said rear legs and extending forwardly of said pivot, stirrups dependingly carried by said arms at the forward end thereof, a spring connected at one end to said rear legs rearwardly of said pivot and at its other end to said body frame, a vertical stud at the forward end of said body frame, a horizontal plate pivotally engaging said stud, a pair of front legs, pivot means rockably mounting said front legs on said plate, a spring connected between said front legs and said plate, means carried by said head frame and connected to said plate for turning said plate about said stud, means for tensioning both of said springs, and stop means carried by said body frame for limiting the rocking of said front and rear legs about said pivots.

5. A riding toy simulating a horse or other quadruped comprising a body frame, fixed neck and head frames projecting from said body frame, a pair of rear legs rockably carried on a pivot of said body frame, arms fixed relative to said rear legs and extending forwardly of said pivot, stirrups dependingly carried by said arms at the forward end thereof, a spring connected at one end to said rear legs rearwardly of said pivot and at its other end to said body frame, a vertical stud at the forward end of said body frame, a horizontal plate pivotally engaging said stud, a pair of front legs, pivot means rockably mounting said front legs on said plate, a spring connected between said front legs and said plate, means carried by said head frame and connected to said plate for turning said plate about said stud, means for tensioning both of said springs, stop means carried by said body frame for limiting the rocking of said front and rear legs about said pivots, rollers carried by said front and rear legs, pawl and ratchet means for limiting rotation of said rollers in the forward direction upon rocking of said front and rear legs, a vertical pivotal connection between said rollers and said front and rear legs, and means limiting the turning of said rollers about the vertical axis of said connection.

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