April 14, 1959 W. F. DEADY 2,882,050

RESILIENTLY SUPPORTED RIDER-ACTUATED APPARATUS

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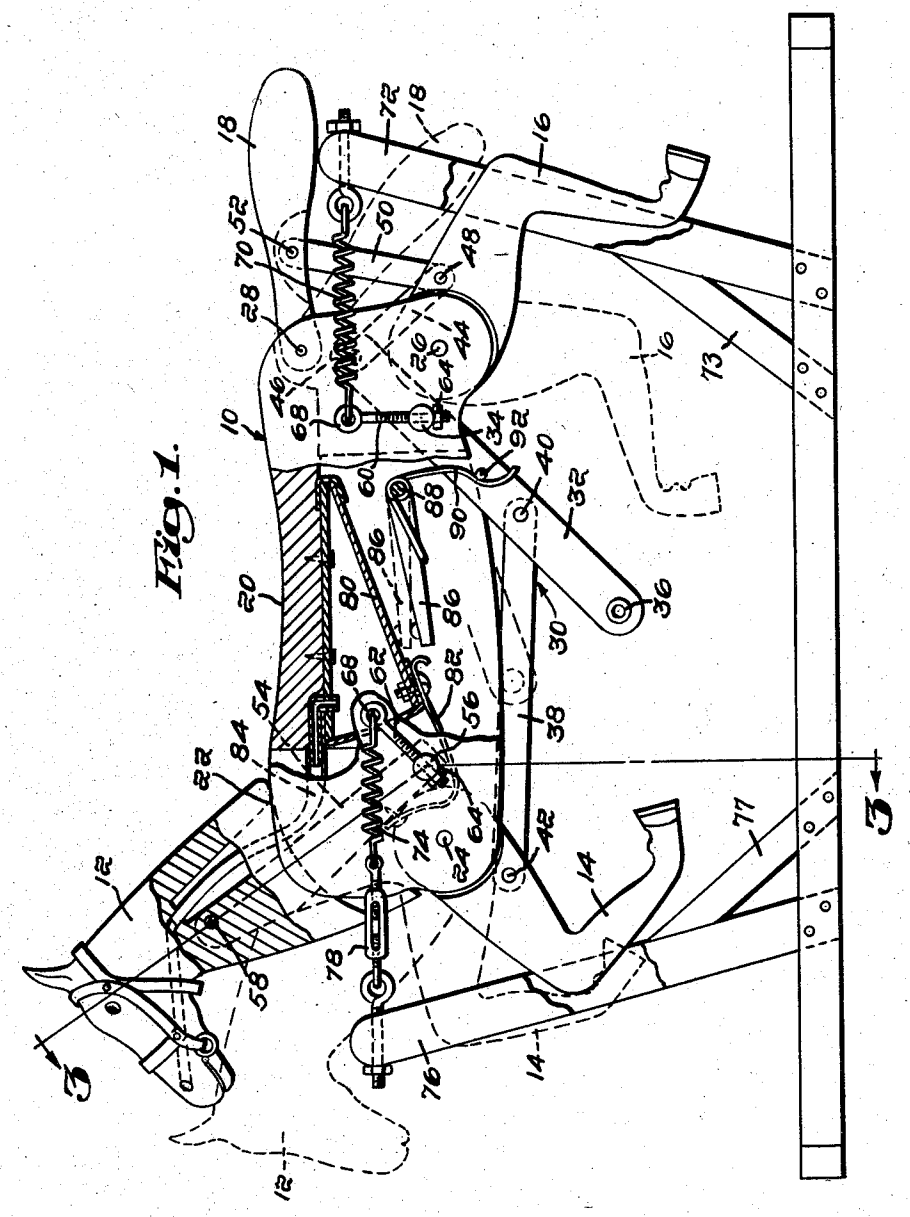

Fig. 1.

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Fig. 2.

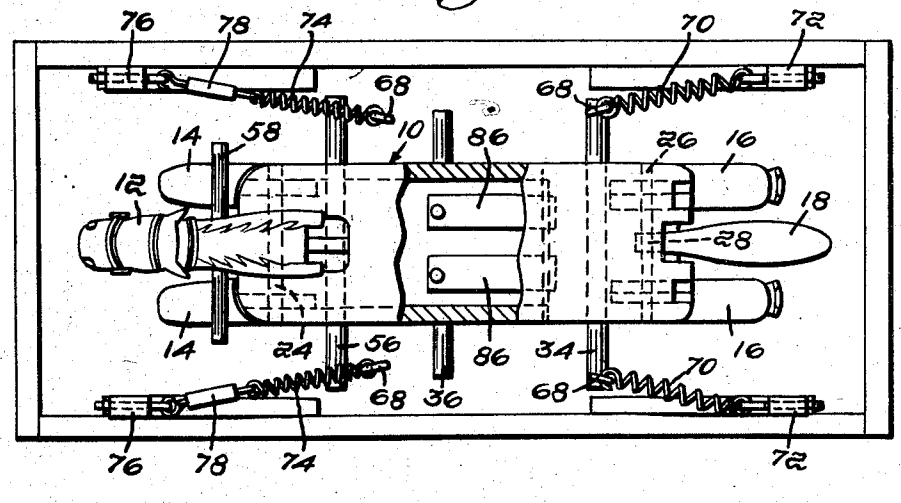


Fig. 3.

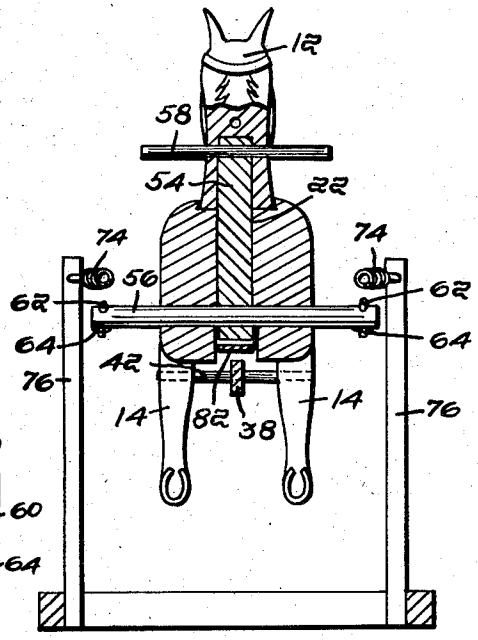
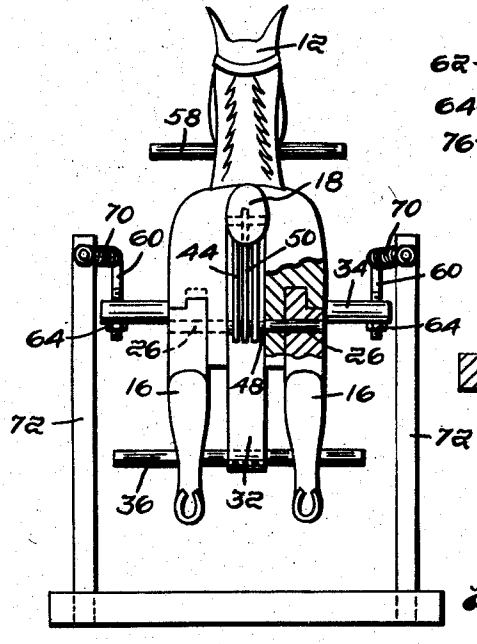


Fig. 4.



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United States Patent Office 2,882,050 Patented Apr. 14, 1959

2,882,050

RESILIENTLY SUPPORTED RIDER-ACTUATED APPARATUS

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Application January 31, 1956, Serial No. 562,493

5 Claims. (Cl. 272—52.5)

The present invention relates to improvements in resiliently supported rider-actuated apparatus and, more particularly, to such apparatus wherein a resiliently supported and movable body may have any of numerous forms and shapes for accommodating a rider who may be mounted on or seated within the movable body. For example, the movable body may be a simulated horse or other animal, a boat, an airplane, or other vehicle. The invention provides improvements in the resilient support for such movable bodies, and improved means for rider-actuation of such bodies and of particular parts of such bodies when it may be desirable, for example to simulate actual movements of portions of the bodies, such as the head, legs or tail of a simulated animal.

An object of the present invention is to provide a rider-actuated, resiliently supported body wherein a novel suspension and actuation system is characterized by a shaft extending through and journaled in the supported body, there being arms affixed to and pivotable with the shaft at its opposite ends with means for resiliently biasing the shaft against rotation whereby the biasing means automatically continues movement of the body which may have been initiated by a rider.

Another object of the invention is to provide a rider-actuated resiliently supported body wherein resilient means may serve the dual function of resiliently supporting the body and of actuating separately movable elements of the body in response to initial rider-actuation of the said elements.

A further object of the invention is to provide a rider-actuated resiliently supported body wherein the resilient means may be either within or exteriorly of the body.

It is, moreover, my purpose and object generally to improve the structure and operative effectiveness of rider-actuated resiliently supported bodies, and especially such a body on or within which a rider may selectively control and vary the movements of particular parts of the body and/or of the body in its entirety.

The invention accordingly comprises the apparatus possessing the construction, combination of elements and arrangement of parts which are exemplified in the following detailed disclosure, and the scope of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the present invention, reference should be had to the following detailed description taken in connection with the accompanying drawings wherein:

Fig. 1 is a side elevation, partly broken away, of a rider-actuated resiliently supported apparatus embodying features of my present invention;

Fig. 2 is a top plan, partly broken away, of the apparatus of Fig. 1;

Fig. 3 is a sectional view, taken substantially along the line 3—3 of Fig. 1;

Fig. 4 is a rear elevation, partly broken away, of the apparatus of Fig. 1.

Generally, the hobbyhorse of Figs. 1 through 4 is characterized by a novel suspension and actuation system in

which each of a pair of shafts, journaled in the body of the animal, is connected to a lever by which the rider can initiate movement of members of the animal with respect to its body, and carries arms that are connected to helical springs for the dual purpose of suspending the body for limited movement in all directions and for automatically continuing the movement of the members with respect to the body.

The illustrated hobbyhorse includes a body 10, a head and neck 12, a pair of forelegs 14, 14, a pair of hindlegs 16, 16 and a tail 18. Body 10 is in the form of an inverted channel, the horizontal top of which is medially indented at 20 to provide a saddle for a rider and notched at 22 to receive the inner end of the neck. The upper ends of forelegs 14, 14 project into the channel and are pivoted on a shaft 24 extending through the channel's depending sides at the forward or shoulder portion of body 10. The upper ends of hindlegs 16, 16 project into the channel and are pivoted on a shaft 26 extending through the channel's depending sides at the rearward or hind portion of body 10. The inner end of tail 18 also projects into the channel and is pivoted on a shaft 28 extending through the channel's depending sides at the hind portion of body 10.

A linkage, generally designated by 30, interconnects forelegs 14, 14, hind legs 16, 16 and tail 18. This linkage includes a lever 32 affixed to the center of a shaft 34 the ends of which extend through and are journaled in the depending sides of the channel at the hind portion of body 10. The forward end of lever 32 is provided with a rod 36 extending therethrough to provide at its opposite ends stirrups for the feet of the rider. A link 38 is pivoted at one of its ends to lever 32 by a journal 40, located between shaft 34 and rod 36, and is pivoted at the other of its ends to forelegs 14, 14 by a shaft 42, which extends from one of the forelegs through link 38 to the other of the forelegs. The rearward end of lever 32 is pivoted to one end of a link 44 by a journal 46. The other end of link 44 is pivoted to a shaft 48 which extends from one of the hindlegs through link 44 to the other of the hind legs. A link 50 is pivoted at one end to shaft 48 and at its other end to tail 18 by a journal 52. A rider bearing against the opposite ends of rod 36 with his feet may cause forelegs 14, 14, hind legs 16, 16 and tail 18 to simulate those of a galloping horse.

Secured within head and neck 12 is a lever 54. The lower end of this lever is affixed to the center of a shaft 56 the opposite ends of which extend through and are journaled in the depending sides of the channel at the forward portion of the body. The upper end of lever 54 is provided with a rod 58 extending therethrough and through opposite sides of the neck to provide at its opposite ends a bridle for the hands of a rider. A rider pulling the opposite ends of rod 58 may cause head and neck 12 to simulate those of a galloping horse.

In accordance with the present invention, the hobbyhorse is suspended and actuated by a system of coil springs now to be described. At the opposite ends of shafts 34 and 56 are pairs of arms 60, 60 and 62, 62, each arm being in the form of a threaded bolt. One end of the bolt is turned into an opening at an extremity of one of the shafts to which it is secured by a lock nut 64. The other end of this bolt is provided with an eye 68. A pair of springs 70, 70 are connected between the eyes 68, 68 of bolts 60, 60 and a pair of standards 72, 72. A pair of springs 74, 74 are connected between the eyes 68, 68 of bolts 62, 62 and a pair of standards 76, 76. Tension in the entire system of springs may be adjusted by turn couples 78, 78. In conventional fashion standards 72, 72 and 76, 76 converge inwardly from top to bottom and are reinforced by buttresses 73 and 77, respectively. The operation of the spring system is such

that when the rider initiates movement of the members of the animal, this movement is reversed automatically by springs **70**, **70** and **74**, **74** under the weight of the horse and rider. The rider, by rocking lever **32** with his feet and, by rocking head and neck **12** with his hands, can produce a surprising amount of animation with minimum effort. In addition, the rider can increase the overall motion of body **10** by bouncing motion in the saddle.

In the illustrated embodiment, the animation is enhanced by the sound of snorting produced by a bellows **80** that is actuated by a resilient cantilever **82**, affixed to the lower end of lever **54**, and that is connected to openings at the nostrils of the horse's head by a tube **84**. This animation is further enhanced by a pair of hammers **86**, **86** for producing the sound of hoof beats by striking the lower face of bellows **80** in sequence. These hammers are pivoted on a shaft **88** that extends through the depending side pieces in the saddle portion of body **10**. They are actuated by cam arms **90**, **90**, which are affixed to the hammers. Cam arms **90**, **90**, under gravity bias, follow the opposite ends of a rod **92** which extends through lever **32**.

In operation, the forelegs, hindlegs and tail are actuated by the feet of a rider, bearing against the opposite ends of rod **36**, and the head and neck are actuated by the hands of the rider pulling against the opposite ends of rod **58**. When these movements of the hands and feet of the rider are accompanied by the slight bouncing movement of the rider's body normally associated with horse back riding, the body and members of the hobby-horse are animated to produce the feel of a galloping horse. Different motions can be produced by varying the strength and sequence of the forces exerted by the rider's feet, hands and body, as well as by varying the tension in the spring system by means of turn couples **78**, **78**. If the rider is careful to strike the critical frequency of oscillation of the overall suspension system, he can produce a great deal of motion merely by intermittently bearing against rod **36** with his feet and/or intermittently pulling on rod **58** with his hands.

The present invention thus provides a novel actuation and suspension sysem capable of imparting realistic movement to simulated objects of great variety.

Since certain changes may be made in the above process and device without departing from the scope of the invention herein involved, it is intended that all matter contained in the above description and shown in the accompanying drawing shall be interpreted in an illustrative and not in a limiting sense.

I claim as my invention:

1. A rider-actuated apparatus having a body and members thereon movable with respect to said body, said body being provided with a suspension and actuation system comprising a shaft rotatably journaled in said body, a lever connected to said shaft, means operatively connecting said lever to said movable members of said body, said lever being actuatable to initiate movement of said members with respect to said body, arms affixed to opposite ends of said shaft, supporting means, and helical springs connected between said arms and said supporting means for resiliently suspending said body for limited movement in all directions and for automatically continuing said movement of said members wth respect to said body.

2. A rider-actuated body and members thereon movable with respect to said body, said body being provided with a suspension and actuation system, comprising a first shaft rotatably journaled in said body, a second shaft rotatably journaled in said body, a first pair of arms affixed to opposite ends of said first shaft, a second pair of arms affixed to opposite ends of said second shaft, a support, a first pair of springs connected between said first pair of arms and said support, a second pair of springs connected between said second pair of arms and said support, actuating means pivotally connected to at least one of said members and operatively connected to said first shaft and actuatable in response to rotations of said first shaft, a second actuating means pivotally connected to at least another of said members and operatively connected to said second shaft and actuatable in response to rotations of said second shaft, said actuating means and second actuating means being actuatable to effect the said rotations of said shafts.

3. A simulated four-legged animal having a body and a head movably mounted on the body, a pair of forelegs and a pair of hindlegs movable with respect to said body, said animal being provided with a suspension and actuation system comprising a first shaft journaled in said body, a second shaft journaled in said body, a first pair of arms affixed to opposite ends of said first shaft, a second pair of arms affixed to opposite ends of said second shaft, a support, a first pair of springs connected between said first pair of arms and said support, a second pair of springs connected between said second pair of arms and said support, a first lever one end of which is affixed to said first shaft and the other end is provided with an abutment for the foot of a rider, a linkage connected between said lever and said forelegs and said handlegs, a second lever one end of which is affixed to said second shaft and one end of which is affixed to said head for moving said head relative to said body in response to rotations of said second shaft.

4. The rider-actuated apparatus of claim 1 wherein said body is a simulated animal having a head with nostril openings therein, and there is a bellows mounted on the body of the simulated animal, means operatively connecting said lever to said bellows, and a tube communicating between said bellows and said nostril openings, whereby compressed air from said bellows simulates the sound of breathing when said lever is actuated.

5. The simulated animal of claim 3 comprising a pair of hammers pivotally mounted on said body, and means operatively connecting said hammers to said first lever for noise-making coaction when said first lever is actuated, thereby to simulate the sound of hoof beats.

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