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Davidson

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[54] **MAGNET OPERATED TOY**

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[51] **Int. Cl.** **A63h 33/26**

[58] **Field of Search** 46/236, 238, 239, 46/242

[56] **References Cited**

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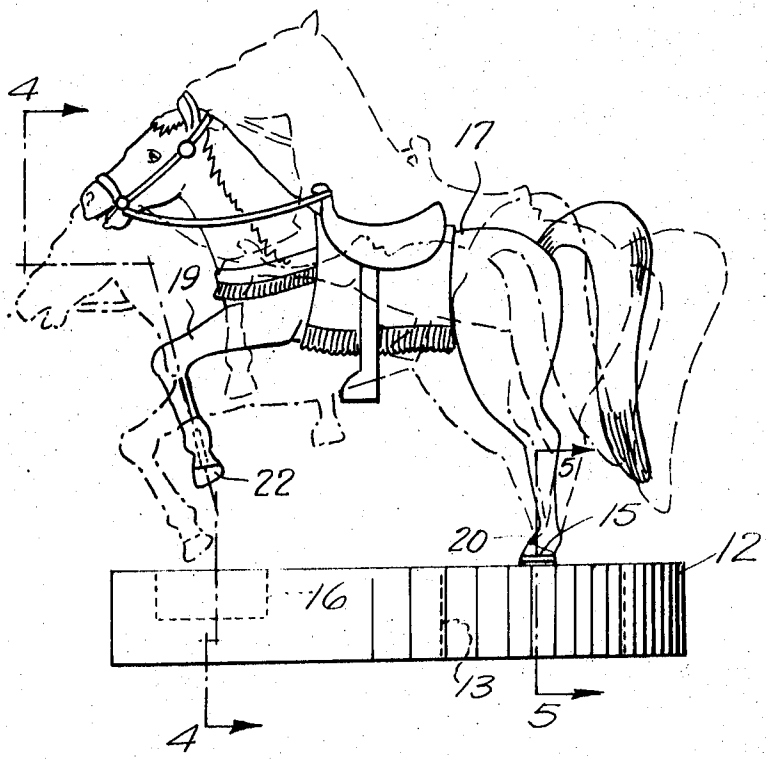
Primary Examiner—Louis G. Mancene

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[57] **ABSTRACT**

A toy consisting of a base with an aperture across which is tightly stretched a string or wire. A simulated animal has notches in its rear hooves supportingly engaged in the string or wire. The front hooves of the animal consist of permanent magnets and the base has mounted thereon subjacent said front hooves a permanent magnet of a polarity which opposes the polarity of the magnets forming the front hooves of the simulated animal. Thus, when the animal is initially pivoted on the stretched string or wire and then released, the opposing magnets produce a spring bouncing effect which causes the simulated animal to rock or oscillate.

10 Claims, 7 Drawing Figures



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SHEET 1 OF 2

FIG. 1.

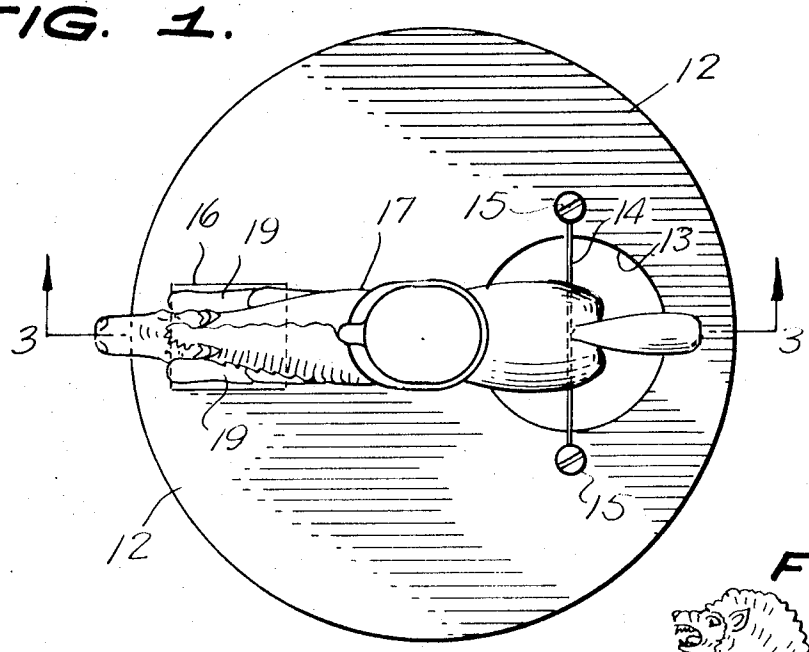


FIG. 6.

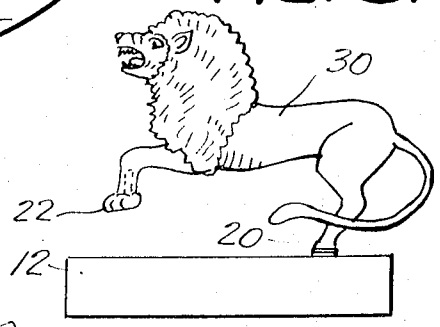


FIG. 2.

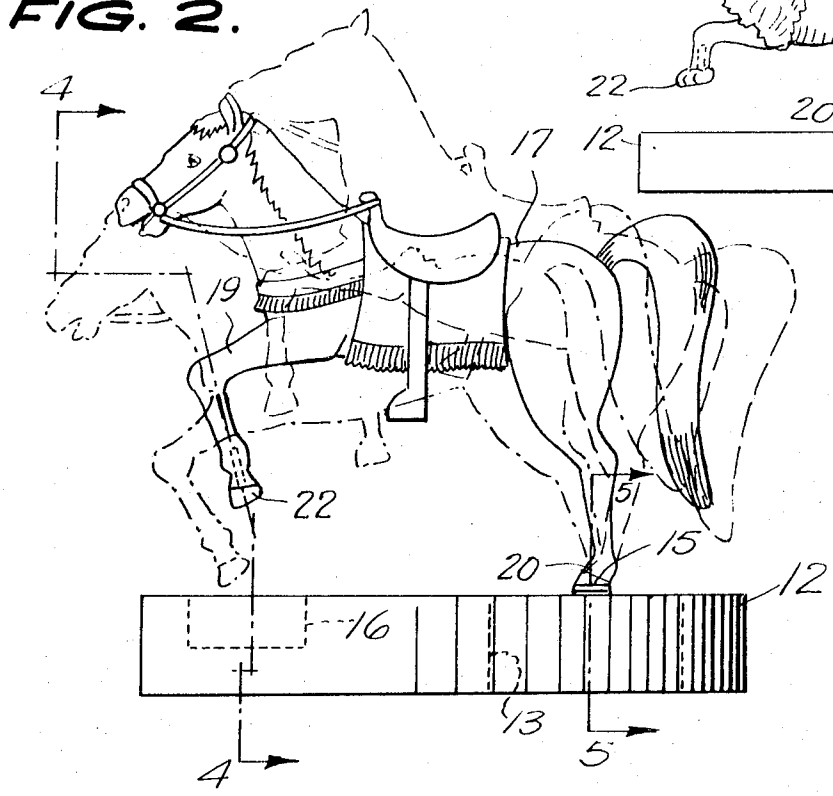


FIG. 3.

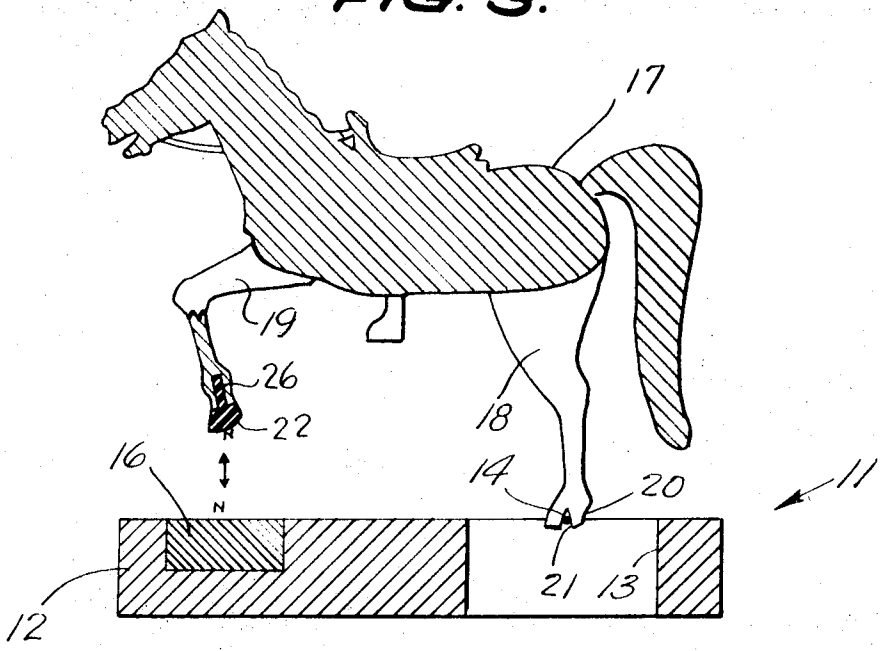
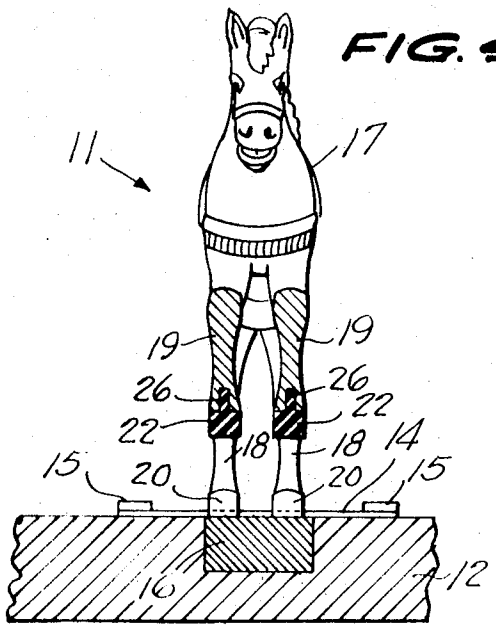


FIG. 4.



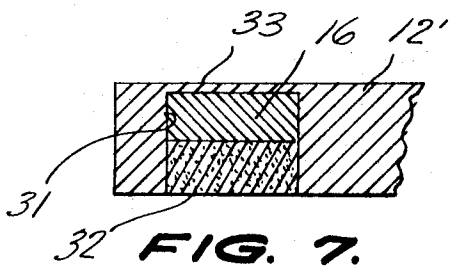
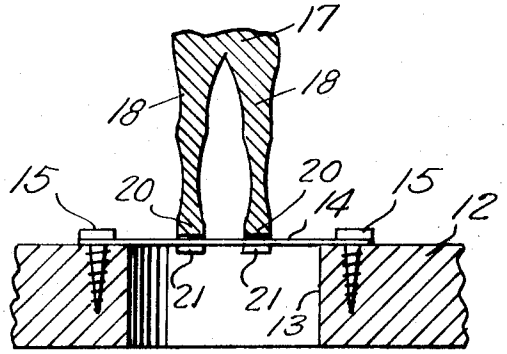


FIG. 7.

FIG. 5.



MAGNET OPERATED TOY

This invention relates to toys, and more particularly to a motion toy of the type including a simulated animal which provides the appearance of rocking or galloping action.

A main object of the invention is to provide a novel and improved motion toy which is relatively simple in construction which is very simple to operate, and which provides an oscillating rocking action simulating the appearance of a galloping animal without requiring the use of visible springs or other complicated oscillating mechanisms.

A further object of the invention is to provide an improved action toy producing the appearance of a galloping animal, the toy being relatively rugged in construction being inexpensive to manufacture, being attractive in appearance, and providing a long period of motion after once having been set into action.

A still further object of the invention is to provide an improved action toy employing a simulated animal which can be easily set into motion by simple manipulation and which continues its motions for a relatively long period of time, the toy having a minimum number of parts, employing permanently magnetized elements which do not substantially deteriorate over a long period of time, and providing a high degree of entertainment and amusement for children using the toy.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

FIG. 1 is a top plan view of one form of animal action toy constructed in accordance with the present invention.

FIG. 2 is a side elevational view of the action toy of FIG. 1.

FIG. 3 is a longitudinal vertical cross-sectional view taken substantially on the line 3—3 of FIG. 1.

FIG. 4 is a transverse vertical cross-sectional view taken substantially on the line 4—4 of FIG. 2.

FIG. 5 is a fragmentary transverse vertical cross-sectional view taken substantially on the line 5—5 of FIG. 2.

FIG. 6 is a side elevational view, to a reduced scale, of another form of animal action toy in accordance with the present invention.

FIG. 7 is a fragmentary longitudinal vertical cross-sectional view taken through a portion of the base of an action toy according to the present invention and showing a modification of the structure thereof.

Referring to the drawings, and more particularly to FIGS. 1 to 5, 11 generally designates a typical action toy constructed in accordance with the present invention. The toy 11 comprises a base block 12 of any suitable shape, for example, of circular shape as illustrated, the block 12 being made of suitable non-magnetic material, such as molded plastic material, or the like.

At one side portion thereof, the block 12 is formed with a circular aperture 13, and secured substantially diametrically across the aperture 13 is a taut filamentary member 14 which may comprise a tightly stretched string or wire. The ends of the taut filamentary member 14 are suitably secured to the block 12, for example, by headed fastening screws 15,15 engaged in diametrically opposite portions of the block 12 with respect to the circular aperture 13. As will be seen in FIG. 1, the aperture 13 is located on a diameter of the circular block 12 and adjacent one side edge of the block. Embedded in the block 12 on the same diameter on which the circular opening 13 is located is a permanent magnet 16 located adjacent the opposite side edge of the block. Thus, the permanent magnet 16 is diametrically aligned with the aperture 13 and the taut filamentary member 14 extends transverse to the diameter containing permanent magnet 16 and aperture 13.

Designated at 17 is a simulated animal, which may be in the form of a galloping horse, the animal having rear legs 18,18 and having appropriately bent front legs 19,19. The rear legs 18 are formed with simulated hooves 20,20 and said hooves are formed with downwardly facing transversely extending notches 21 engageable on the stretched taut filamentary member 14 in the manner clearly indicated in FIGS. 3 and 5 so as to pivotally support the simulated animal 17 for rocking action around the taut filamentary member 14. The front legs 19 of the simulated animal 17 are provided with permanently magnetized hooves 22,22 located above the permanent magnet 16.

The simulated hooves 22 may be of any suitable permanently magnetized material, for example, may be of rubber or rubber-like material containing a quantity of permanently magnetized iron particles, whereby the simulated hooves 22,22 have a high degree of resiliency but nevertheless have the properties of permanent magnets. The hooves 22 are magnetized so that they present poles of similar polarity to the uppermost pole of the base-embedded permanent magnet 16. For example, if the permanent magnet 16 presents a North Pole at its top surface, the hooves 22 present North Poles at their bottom surfaces. As shown in FIG. 3, the hooves 22 are located directly above the permanent magnet 16, and being of opposing polarity thereto are normally urged away from the permanent magnet 16 by magnetic repulsion. Thus, the simulated animal 17, being relatively light in weight, is normally supported in a position similar to that illustrated in FIG. 3, with its hooves 22 elevated a substantial distance above the subjacent permanent magnet 16.

In operation, when the simulated animal 17 is moved out of its normal position, for example, is either depressed or elevated, and is then released, it oscillates around the pivotal axis defined by the taut filamentary member 14 and continues to rock up and down for a substantial period of time, creating the illusion of a galloping action. The coacting opposing magnetic forces between the hooves 22 and the permanent magnet 16 thus provide a spring or bouncing effect which continues until the initial energy inserted into the system is completely dissipated by friction at the notches 21 or by the torsional flexure energy dissipation developed in the taut supporting filamentary member 14.

As will be readily understood, any slight vibration will start the animal 17 slowly rocking up and down. For example, by employing the metal portion of a pencil or any other object containing magnetic material and moving it slowly forwardly adjacent the simulated animal's front legs 19,19, the simulated animal will appear to become violently disturbed and will rock up and down at a relatively rapid rate. Thus, since the toy can be placed in motion without actually touching the simulated animal 17, a high degree of entertainment to children is provided since they are enabled to make the simulated animal move without touching it.

The rubber-like permanently magnetized hoof portions **22** may be secured to the lower ends of the front legs **19,19** in any suitable manner, for example, by providing retaining recesses in the legs and employing stem portions on the rubber-like permanently magnetized hooves **22**, such as are shown at **26,26**, which are frictionally engaged in the recesses provided therefor in the legs **19,19.**

FIG. **6** illustrates a modified form of the invention wherein the galloping simulated animal consists of a simulated lion **30** in place of a simulated horse shown in FIGS. **1** through **5.**

Obviously, any desired type of simulated animal may be employed as the moving element of the toy.

In the modification illustrated in FIG. **7**, the permanent magnet **16** may be secured in a suitable recess **31** formed in the supporting block, shown at **12** , the permanent magnet **16** being locked in place by the provision of a mass of suitable nonmagnetic filling material **32** adhesively secured in the lower portion of the recess in the manner illustrated in FIG. **7.** The recess **31** has a depth slightly less than the total depth of the block **12** , whereby to define a relatively thin top wall portion **33** above the permanent magnet **16.** Since the top wall **33** is of non-magnetic material and is relatively thin, it does not in any significant way impair the magnetic cooperation of the permanent magnet **16** with the permanently magnetized hoof elements **22** located directly thereabove. Thus, in the embodiment shown in FIG. **7**, the permanent magnet **16** is completely hidden and is not visible to the child using the toy, thereby rendering the action even more mysterious.

It will be understood that there are other well known types of transverse pivotal or hinge connections that may be substituted for the pivot connection at **20,21** within the spirit of the present invention. However, the pivot connection above described and illustrated in the drawings is advantageous in that it allows the simulated animal **17** to be readily removed, and also allows a different type of simulated animal or figure to be readily substituted in place thereof.

While a specific embodiment of an improved magnetic toy has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the present invention may occur to those skilled in the art. Therefore it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. A toy comprising a supporting base, a simulated animal, means pivotally mounting one portion of the simulated animal on the base for rotation around a fixed transverse axis substantially coplanar with the base, a first permanent magnet fixedly mounted on the base subjacent a second portion of the simulated animal spaced from said one portion, and a second permanent magnet mounted on said second portion and being poled so as to be repelled by the first magnet, whereby the repulsion between the magnets provides a spring action between the base and the simulated animal when the simulated animal rotates, enabling the simulated animal to oscillate up and down around said transverse axis.

2. The toy of claim **1** and wherein the simulated animal has rear legs and front legs and the pivotal mounting means is located at said rear legs.

3. The toy of claim **1,** and wherein the second magnet is mounted on said front legs.

4. The toy of claim **3** and wherein said second magnet comprises a simulated hoof of a front leg.

5. The toy of claim **4,** and wherein said second magnet comprises resilient material containing permanently magnetized particles.

6. The toy of claim **2,** and wherein said supporting base is formed with an aperture subjacent the rear legs of said simulated animal and said pivotal mounting means comprises a transverse bridging member secured across said aperture, said rear legs having bottom notches pivotally receiving and frictionally engaging said transverse member.

7. The toy of claim **6,** and wherein said transverse bridging member comprises a taut filamentary element.

8. The toy of claim **7,** and wherein said base has a recess in which said first magnet is received.

9. The toy of claim **8,** and wherein said recess has a relatively thin top wall portion covering said first magnet.

10. The toy of claim **2,** and wherein said magnets comprise respective permanent magnets, one being mounted in the base and the other being mounted on the lower end of a front leg of the simulated animal and located above said one permanent magnet, the permanent magnets having poles of like polarity facing each other to provide repulsion therebetween.

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