April 14, 1953 J. O. HAHS 2,634,975

MECHANICAL HOBBYHORSE

Filed Aug. 20, 1951 2 SHEETS—SHEET 1

Fig. 1.

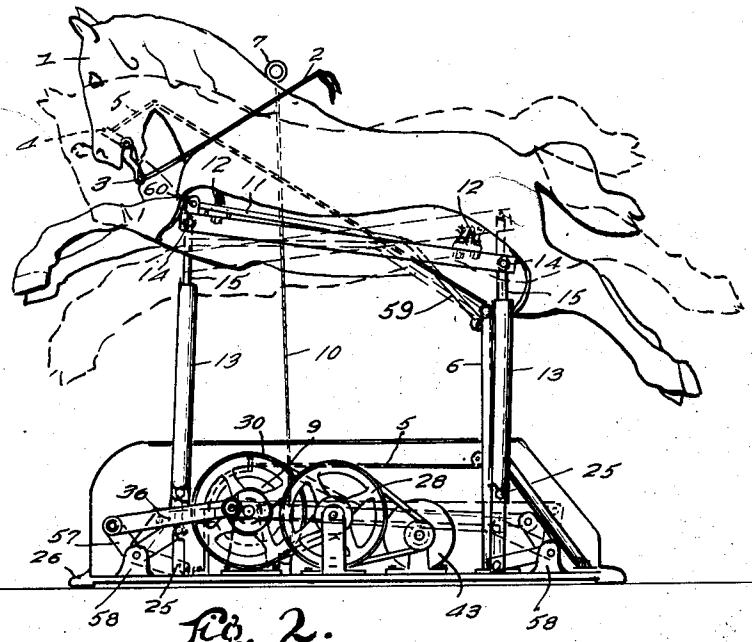


Fig. 2.

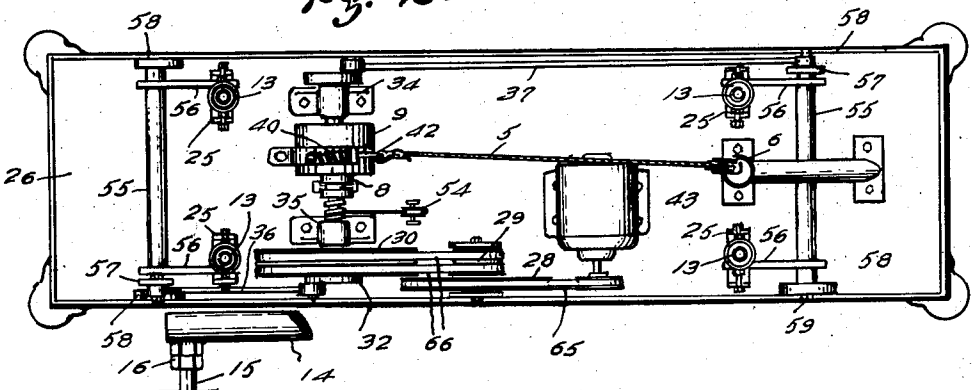
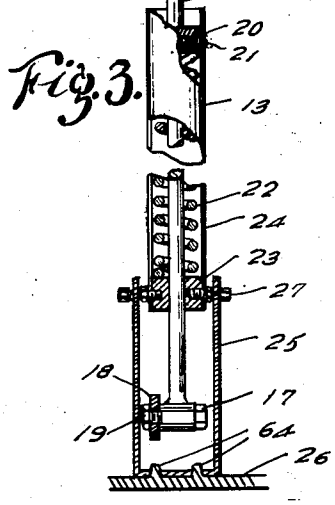


Fig. 3.



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Fig. 4.

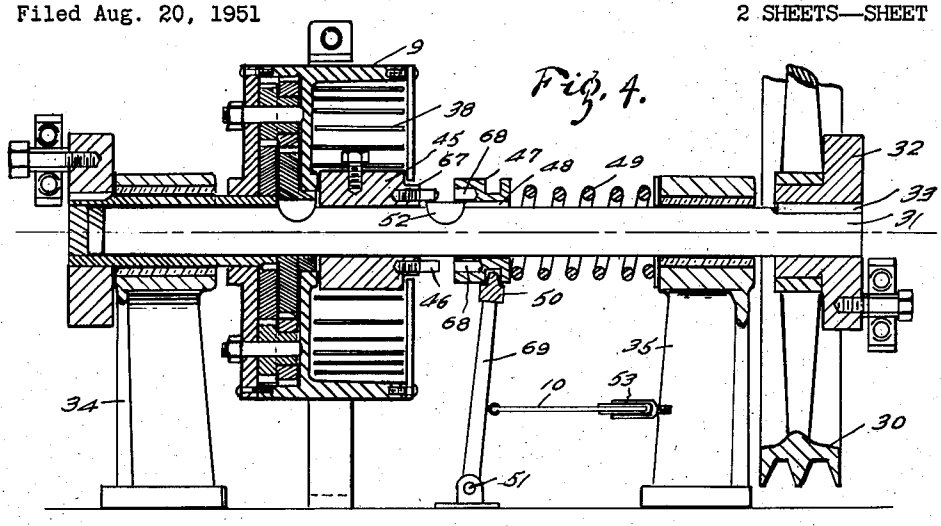


Fig. 5.

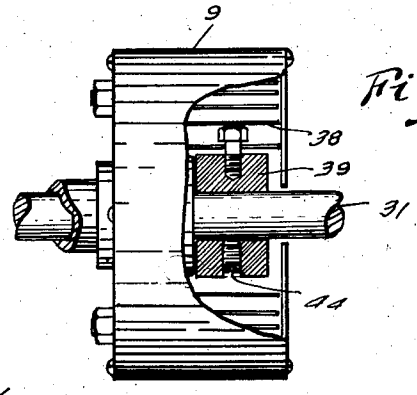
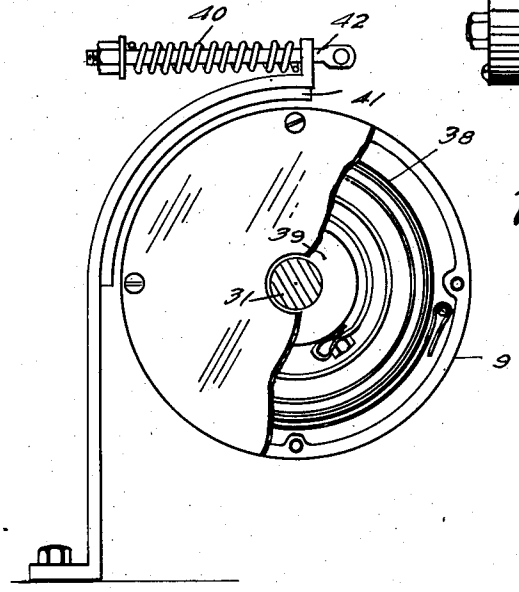


Fig. 6.



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UNITED STATES PATENT OFFICE

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MECHANICAL HOBBYHORSE

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Application August 20, 1951, Serial No. 242,653

5 Claims. (Cl. 272—53.1)

1

This invention relates to a mechanical hobby-horse.

This invention is an improvement over the mechanical hobby-horse shown and described in my Patents Nos. 1,863,012, and 1,888,763.

According to the arrangement shown and described in my Patent No. 1,888,763, the movement of the hobby-horse is controlled and the gait selected by means of a brake band which is operated by the rider through the medium of the bridle reins. Thus, by pulling on the reins, the brake band is held against the differential housing which controls the movement of the differential driving mechanism to thereby cause the speed of the crank which controls the rear of the horse to be retarded. Thus, the relation of the crank that controls the front of the horse and the crank that controls the rear is constantly changing so that the gait or the amount of rocking movement is also constantly changing. Therefore, by releasing the brake band, the differential gears do not operate and this results in the cranks operating in the same relation with respect to each other at the same speed until the brake band is again held against the housing by the rider through the medium of the bridle reins to thereby cause the horse to change gaits again.

It is, therefore, an object of the present invention to provide a mechanical hobby-horse which is constructed so that a quicker return from a maximum or rough gait to a minimum or easy gait can be obtained without the necessity of going through the entire cycle of gaits to get to the minimum or easy gait, this arrangement being especially suitable when the mechanical hobby-horse of the present invention is being used in locations where small children are riding the horse. Thus, the differential mechanism can be set to return to the minimum or easiest gait or a very slight rocking movement permanently by the manufacturer whereas previously it was necessary for a small child to pull on the reins until the horse was at its most violent rocking movement which sometimes frightened the child and caused the child to let go of the reins, while the horse would remain in the maximum or roughest gait, giving the child a scare and a thorough shaking.

Another object of the invention is to provide a mechanical hobby-horse which is constructed so that the rider can select the gait that he or she wants the horse to return to when the reins are released, such construction being especially convenient when the horse is being used by adults in locations such as gymnasiums and health resorts or when the horse is being used as an exercising mechanism.

2

Still another object of the invention is to provide a mechanical hobby-horse which includes an improved means for actuating the brake band through the bridle bit instead of through the martingale as shown and described in Patent No. 1,888,763, whereby the manufacturer will be able to use a more picturesque and realistic martingale on the horse and also the rider will be provided with additional leverage and the rider will not have to pull as hard to change the gait and further this will result in a more neater arrangement.

Still another object of the invention is to provide a mechanical hobby-horse which includes an improved means for supporting the horse body and wherein two of the previously used crank disks are eliminated so that the body can be molded in one piece and a more realistic horse body can be used, the horse of the present invention being constructed so that a smoother action and more uniform load on the motor is assured.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same;

Figure 1 is a side elevational view of the mechanical hobby-horse, constructed according to the present invention, and with parts broken away and in section;

Figure 2 is a top plan view looking down on the base, with the horse and base cover removed;

Figure 3 is a cutaway view showing one of the supporting members and showing the operation of the counterbalance mechanism;

Figure 4 is an enlarged sectional view showing the spring housing, shaft, tube, pulley, and gait selector mechanism;

Figure 5 is an elevational view of the differential gear and spring housing, and with parts broken away and in section;

Figure 6 is an end elevational view of the gear and spring housing looking down the middle of the shaft on the spring side, and with parts broken away and in section.

Referring in detail to the drawings, the numeral 1 designates the body of the horse which is mounted on a steel angle iron frame 11 by bolts that extend through the frame and into engagement with supports 12 that may be casted inside the body of the horse. The body 1 is hollow and the under portion of the body is open or cutaway to permit the body to be placed over the frame 11. The frame 11 is connected to the upright assemblies 13 by two tubes 14, Figure 1. In Figure 3,

a part of one of the tubes 14 is shown and rods 15 are arranged in threaded engagement with nuts which are welded on each end of the tube 14 and are locked in place by a jam nut 16, Figure 3.

The upright assembly rods 15, Figures 1 and 3, each have a bearing pressed into the tube that is welded on the lower end thereof. Extending through the bearing on the lower end of the rod 15 is a bolt 17, and the bolt 17 is arranged in threaded engagement with a rocker arm 18, there being a lock nut 19 for maintaining these parts in assembled relation. The counterbalance portion of the upright assemblies includes a set collar 20, Figure 3, which is fastened to the upright rod 15 by means of an Allen head set screw 21. Also, there is provided a compression spring 22 which fits loosely around the rod 15 allowing the rod to pass freely up and down within the spring 22. Thus, when the horse comes down, the spring 22 is compressed and this helps the motor 43 when the horse starts up again. A spring housing 24 is provided, and a collar 23 is supported by a U-shaped stand 25, Figure 3. The stand 25 is provided with slots in the top of each leg and these slots provide a cradle for bolts 27. The stand 25 sets on studs 64 which may be formed integral with the base 26 so that the stand 25 will be maintained in an upright position and will not accidentally rotate or topple over. In Figure 1 there is shown a side elevational view of one of the U-shaped straps or stands 25.

The driving mechanism is shown in detail in Figures 1 and 2. Thus, there is provided a motor 43 which is connected by suitable belts to a large jack shaft pulley 29, and the pulley 29 is connected by suitable belts to a main drive pulley 30. The belt for connecting the motor 43 to the pulley 29 is indicated by the numeral 65, while the numeral 66 indicates the belts for connecting the pulley 29 to the main drive pulley 30. The drive pulley 30 is keyed to a transmission shaft 31 by means of a key 33, Figure 4, and the transmission shaft 31 is rotatably supported by a pair of pillow blocks 34 and 35, Figures 2 and 4.

The differential gearing functions in the same manner for changing the gait of the horse as explained in Patent No. 1,888,763 except for the addition of the spring unwinding mechanism and the gait selector. Also, the structure of the gear housing has been changed in order to facilitate the operation of the spring mechanism. In Figure 4, there is shown the structure of the mechanism including the gait changer selector that is controlled by the rider. The function of the spring in returning the horse to the desired easy gait which is set by the manufacturer will be explained first. In Figure 5 there is shown a cutaway view of the differential housing showing the spring 38 and the hub 39 which is used for permanently setting the gait to which the horse immediately returns when the brake is released.

As stated in Patent No. 1,888,763, fourteen revolutions are required with the brake held on for the horse to go through the complete cycle. That is, starting with both cranks on top of their respective crank disks, fourteen revolutions are required for one disk to gain one revolution on the other. Therefore, seven revolutions are required for the horse to go from the minimum buck to the maximum buck and the rider has to hold the reins back for seven more revolutions before the horse will be back to the minimum buck. As explained earlier in this application, this is undesirable since an instant return to the easy gait is desirable.

The spring 38 is long enough to allow the transmission shaft 31, Figure 6, to make seven revolutions which will allow the horse to go from the minimum to the maximum buck. The collar 39 is set for the spring to be unwound on the easiest gait by means of the set screw 44. The rider by holding back the reins, 2, connected at 3—4 to a pull cable 5 in turn connected to a brake rod 42 of the brake assembly 41, holds the brake against the differential housing to thereby cause the housing to stand still and the spring to start winding around the collar. When the horse reaches the maximum buck, the compression spring 40 on the brake band assembly 41, Figure 6, is not strong enough to hold the housing still after the spring 38 is completely wound up. This permits the housing to turn but it is strong enough to keep the spring 38 from unwinding so that the horse is caused to stay on the roughest gait as long as the rider holds tightly on the reins.

If the rider releases the reins slightly, he can get any desired gait between minimum or easy and maximum buck or rough providing he holds sufficient tension to keep the spring from unwinding past the gait that he desires. If the rider completely releases the tension on the reins, the spring unwinds instantly and the horse is instantly returned to the easy gait.

Referring to Figure 6 of the drawings, there is shown a portion of the shaft 31 and the spring 38 which is arranged so that the spring 38 will wind up when the brake band 41 is held against the differential housing 9. Also, it will be seen from Figure 6 that the spring is fastened to the housing and to the collar that is set tightly on the shaft 31.

The previous discussion has dealt with the method of returning the spring to the gait set by the manufacturer. There is also provided a mechanism for permitting the rider to select the gait to which he wants the horse to return and the rider can do this from the saddle with the gait selector assembly shown in Figure 4. Thus, there is provided a collar 45, Figure 4, which is used instead of the collar 39, Figure 5, when the gait selector is installed on horses that will be used by adults and larger children. Also, it is to be noticed that the collar 45 fits loosely on the shaft 31, Figure 4, and the collar 45 includes a smaller portion or shoulder 67 that protrudes through the spring housing cover, there being three dowel pins 46 screwed into the collar 67. Circumposed on the shaft 31 is a sleeve 47 and the sleeve 47 slides freely on the shaft 31 and over a key 52. A keyway 48 is provided and the keyway 48 is loose enough on the key 52 to allow free movement. The sleeve 47 is provided with three holes 68 into which the dowels 46 slide freely. When the rider pulls on the selector ring 7, Figure 1, the yoke 50 is pulled back by means of a cable 10 which is fastened to the yoke arm 69, the collar 45 being free to turn independently of the shaft 31 due to the fact that the sleeve 47 is pulled back and the dowels 46 are withdrawn from the openings 68. The rider then pulls the reins to thereby cause the brake band 41 to be held against the gear housing so that the horse will start to change gaits. When the horse gets to the gait that the rider desires it to return to when he releases the reins, the rider releases the selector ring 7, Figure 1, so that the sleeve 47 slides over the dowels 46 and the key

52 to thereby cause the collar 45 to be rotated by the shaft 31. If the rider releases the reins, the horse will stay in this gait.

When the rider pulls the reins, the brake band 41 will be held against the housing to thereby cause the housing to stand still and the shaft 31 will continue to rotate. This will cause the winding spring 38 to be wound as the gait is changing. When the rider releases the reins, the horse quickly goes back to the gait at which the spring is relaxed. In other words, it goes back to the gait set by the rider. In this way, the rider can set the gait so he will have to hold it back to get the easy gait and he will get the rough gait when he gives the horse its reins. Or, the rider can set the horse to return to any gait he desires. The cable 10 in Figure 4 is fastened to the yoke arm 69 and passes through a sheave 53 and from the sheave 53 it goes back through a sheave 54 which can be located as shown in Figure 2 or else it can be located on a stabilizer tube. In the latter instance, the cable will go up through the tube in the same manner as the cable 5 which is the gait changing cable. The selector cable 10, Figure 1, is drawn schematically to avoid confusing the two cables.

In Figure 2, there is shown the rocker arm assemblies 55 which may be made of steel tubing, and the arms 56 and crankarms 57 may be welded to the tubes. Suitable bearings which may be made of bronze or other metal are pressed into the ends of the tubes 55 and suitable pivot bolts extend through brackets 58 on each side of the rocker tubes. Jam nuts may be provided for locking these parts in their assembled relation.

In Figures 1 and 2, there is shown a stabilizer which is indicated by the numeral 6. The stabilizer 6 has its lower end secured as by bolts to the base, while a stabilizer arm 59 is pivotally connected to the upper end of the stabilizer tube 6. The other end of the arm 59 is pivotally connected to a lug 60 which projects from the frame 11, Figure 1. The purpose of the stabilizer 6 and stabilizer arm 59 is to hold the horse and prevent the horse from falling forward or backward.

From the foregoing, it is apparent that a mechanical hobby-horse has been provided wherein the rider will be able to return the horse to a definite gait immediately. Thus, the differential mechanism can be set to return to the easiest gait or a very slight rocking movement permanently by the manufacturer. Previously, it was necessary for a small child to pull on the reins until the horse was at its most violent rocking movement and then the child might get scared and let go of the reins. The horse would remain in the roughest gait, giving the child a scare and a thorough shaking. The present invention eliminates this because the horse automatically returns to the easiest gait or the gait that is set as the desired gait for the horse to return to, when the reins are released. Also, the rider can select the gait to which the horse returns when the horse is used by adults. Further, an improved method has been provided for actuating the brake band so that the martingale is not needed whereby the manufacturer can put on a more picturesque and realistic martingale on the horse. Also, the rider is given additional leverage and he does not have to pull so hard to change the gait. Further, the construction is more neater than the previously described constructions in my patents, because the cable which pulls the brake band against the gear housing is concealed from view in the body of the horse. Further, a more desirable method of supporting the horse body is provided since the body can be molded in one piece and a more realistic horse body can be used. Further, the four supporting members are also counterbalance units that give the horse a smoother action and put a more uniform load on the motor. In Figure 5, the differential gear and spring housing is cut away to show the spring hub which is used when the gait to which the horse returns is set by the manufacturer. This mechanism is set and held in place by a set screw 44. The set screw may be loosened and the hub adjusted in a different position with respect to the shaft 31 to effect contraction or expansion of the spring 38 for the desired gait. This setting can be easily accomplished by a service mechanic.

Having thus described my invention what I claim as new and desire to protect by Letters Patent is:

1. In combination, a hobby horse, means for mounting said horse for rocking movement, a gait selector for said horse comprising a transmission shaft actuated by said rocking means, a differential housing, a differential gear assembly within said housing and operatively related to said transmission shaft, a collar fixed to the shaft, a coil spring within said housing having one end secured thereto and the other end secured to the collar, and a braking means for the housing comprising a spring-pressed brake engageable with said housing.

2. In combination, a hobby horse, means for mounting said horse for rocking movement, means for rocking said horse, a gait selector for said rocking means comprising a transmission shaft, a differential housing, a differential gear assembly within said housing and operatively related to said transmission shaft, a coil spring within said housing and embracing said shaft and having one end secured to the housing and an opposite end to the shaft, and a braking means for the housing.

3. In combination, a hobby horse, means for mounting said horse for rocking movement, means for rocking said horse, a gait selector for said rocking means comprising a transmission shaft, a differential housing, a differential gear assembly within said housing and operatively related to said transmission shaft, a coil spring within said housing and embracing said shaft and having one end secured to the housing and an opposite end to the shaft, a braking means for the housing comprising a spring-pressed brake engageable with said housing, and means for manually actuating said brake.

4. In combination, a hobby horse, means for mounting said horse for rocking movement, a gait selector for said horse comprising a transmission shaft actuated by said rocking means, a differential housing, a differential gear assembly within said housing and operatively related to said transmission shaft, a collar fixed to the shaft, a coil spring within said housing having one end secured thereto and the other end secured to the collar, a braking means for the housing comprising a spring-pressed brake engageable with said housing, and manual means operated by a rider on said horse for actuating said braking means.

5. In combination, a hobby horse, means for mounting said horse for rocking movement, means for rocking said horse, a gait selector for

said rocking means comprising a transmission shaft, a differential housing, a differential gear assembly within said housing and operatively related to said transmission shaft, a coil spring within said housing and embracing said shaft and having one end secured to the housing and an opposite end to the shaft, a braking means for the housing, and manual means operated by a rider on said horse for actuating said braking means.

JAMES OTTO HAHS.

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