March 15, 1927. 1,620,772

H. E. McCOY

MECHANICAL TOY

Filed Feb. 2. 1924 2 Sheets-Sheet 1

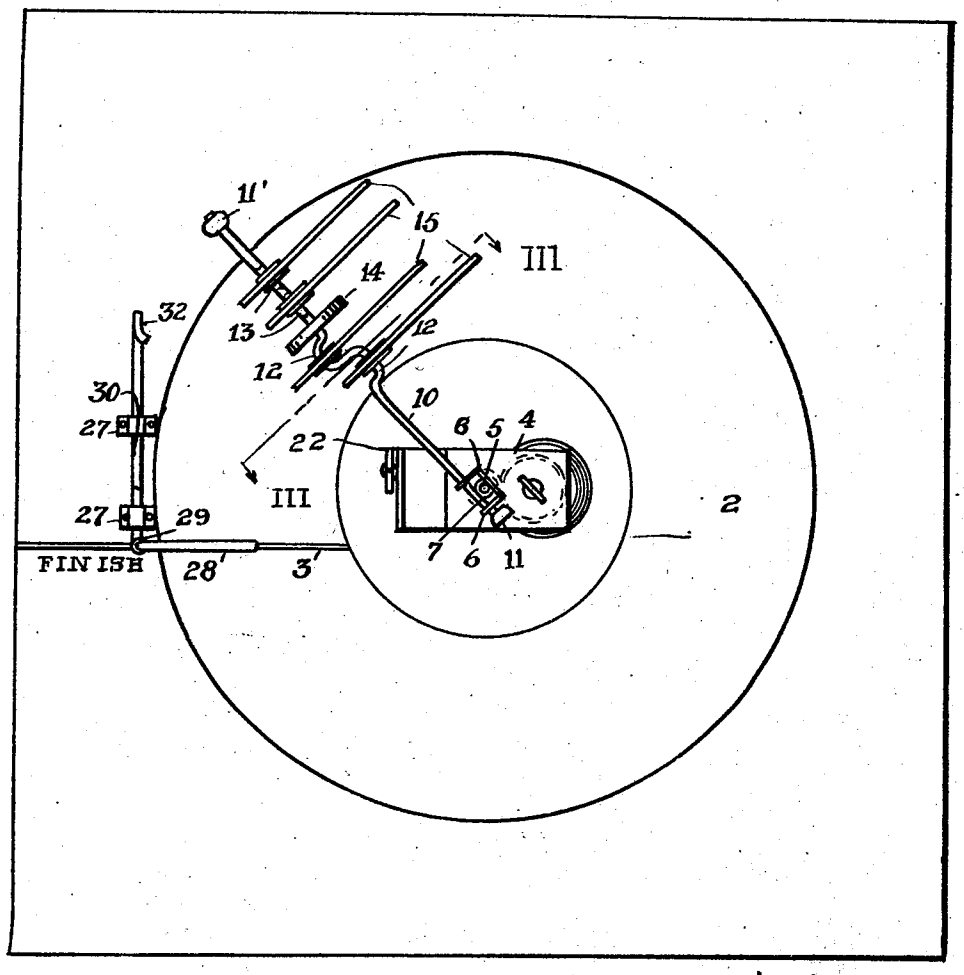

Fig. 1

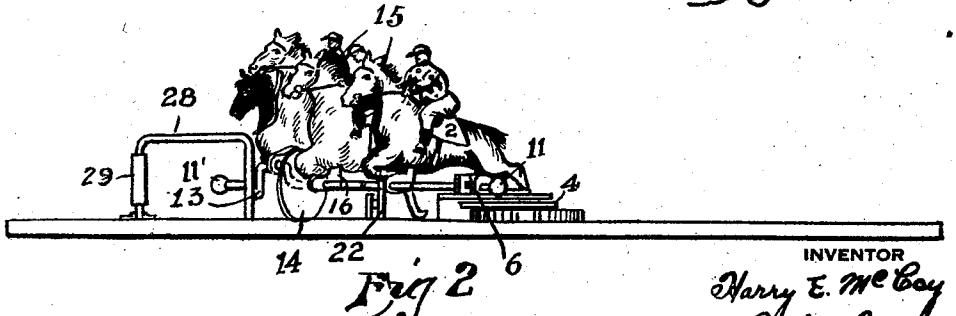

Fig 2

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Fig 3

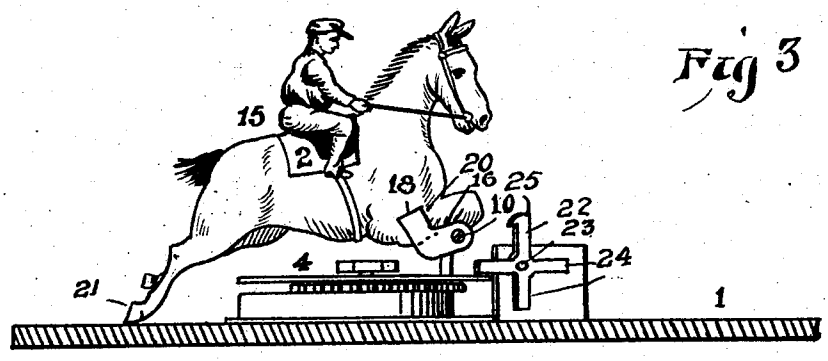


Fig 4

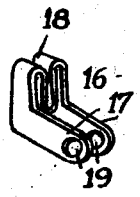


Fig 5

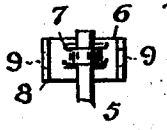
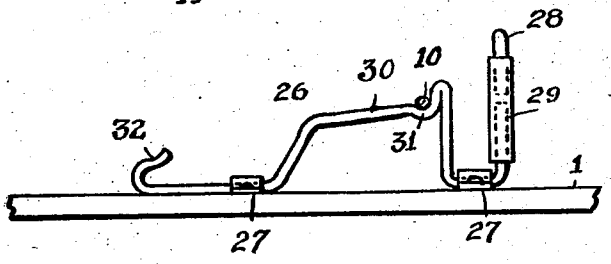


Fig 6



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Patented Mar. 15, 1927. 1,620,772

UNITED STATES PATENT OFFICE.

HARRY E. McCOY, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE McDOWELL MANUFACTURING COMPANY, OF MILLVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

MECHANICAL TOY.

Application filed February 2, 1924. Serial No. 690,264.

This invention relates to a mechanical toy and important objects thereof are to provide a spring operated mechanical toy which is characteristic of a horse running race, which embodies interchangeable figurative horses mounted for operative movement imitable of running horses which includes novel structural features permitting of the determination of a winner of a race, and which is capable of adjustment to regulate the number of turns to be made around the track.

Further objects of the invention are to provide a toy of the type stated, in a manner hereinafter set forth, which is simple in its construction and arrangement, strong, durable and efficient in its use, entertaining, compact, attractive in appearance and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing forming a portion of this specification and wherein like numerals of reference designate corresponding parts throughout the several views:—

Figure 1 is a top plan view of a mechanical toy in accordance with this invention.

Figure 2 is a side elevation thereof.

Figure 3 is a sectional view on line III—III, Figure 1.

Figure 4 is a perspective view of figure securing clamp.

Figure 5 is a detail view of the shaft support.

Figure 6 is an enlarged detail view of the barrier element.

Referring in detail to the drawing 1 denotes a large flat rectangular base having its top face printed or otherwise marked to represent a circular race track 2 including a transversely extending finish line mark 3.

A spring drive motor 4 is fixedly mounted, in any suitable manner, on the base 1, and includes a vertically extending drive shaft 5, disposed at the diametric center of the circular race track 2.

A support 6 is mounted adjacent to the upper end of the motor drive shaft 5, and is connected to the latter by frictional engagement only, as indicated at 7, to cause the rotation of the support 6 with the drive shaft 5, and at the same time permit of its ready detachment therefrom for the purpose to be described.

The support 6 is formed with a pair of spaced parallel disposed ears 8, each of which is provided with a relatively aligned aperture 9. One end of the horizontally disposed crank shaft 10 is rotatably mounted in the support 6 by extending through the apertures 9 of the ears 8. The crank shaft 10 is preferably maintained in the support 8 by means of a collar 11 which is frictionally mounted on the end of the crank shaft 10 to facilitate its removal therefrom. A similar collar 11′ is mounted on the outer end of the crank shaft 10 for the purpose to be described.

The outer portion of the crank shaft 10 is formed to provide a plurality of cranks which latter are disposed directly over the race track 2. While the embodiment of four cranks are illustrated in the drawing and herein described, it will be understood that the number may be varied if desired. The two inner cranks 12 are diametrically opposed relatively to each other, and the two outer cranks 13 are also diametrically opposed relatively to each other, however, the two outer cranks 13 extend at right angles relatively to the two inner cranks 12, thereby providing an angular disposition for each of the cranks which is either diametrically opposed or disposed at right angles with respect to any other of the cranks 12 and 13.

A disk wheel 14 is fixedly mounted on the crank shaft 10 and is disposed thereon intermediate the outer cranks 13 and the inner cranks 12. The disk wheel 14 travels on the approximate center of the race track 2 and supports the outer end of the crank shaft 10. The function of the disk wheel 14 is to impart rotation to the crank shaft 10 when the latter swings around over the race track 2 during the operation of the device.

A figure 15 representative of a running horse with jockey is connected to each of the cranks 12 and 13 by means of a spring clip 16. The latter is substantially L-shaped, one portion of which consists of a pair of spaced parallel disposed free arms 17, while the

other portion thereof is formed to provide a substantially U-shaped clamp 18, as clearly shown in Figure 4, of the drawing.

The free arms 17, of the clip 16, are provided with apertures 19 transversely aligned with respect to each other. A clip 16 is pivotally mounted on each of the cranks 12 and 13 by extending the pins of the latter through the apertures 19 of the free arms 17. This is readily accomplished by pressing the free arms 17 flatly together while slipping the clip 16 over the outer end of the crank shaft 10 to respective cranks 12 and 13. The spaced relation of the free arm 17 will eliminate any tilting action of the clip 16 when mounted in position on the cranks 12 and 13.

The figures 15 are rigidly held in the upright position by forcing the lower forward ends thereof into the U-shaped clamps 18 of the clips 16, as clearly illustrated at 20, in Figure 3, of the drawing. The rear ends 21 of the figures 15 contact with and are drawn along the race track.

The operation of the spring motor 4 will cause the travel of the horizontally disposed crank shaft 10 around over the race track 2 in the counter clockwise direction. The inner end of the crank shaft 10 being rotatably mounted in the support 6, the traction of the disk wheel 14 upon the base 1, will at the same time rotate the crank shaft 10. As the figures 15 are pivotally connected at their front ends, by means of the clips 16, to the cranks 12 and 13, the operation of the latter will transmit a bobbing movement, typical to running horses, to the figures 15.

A regulator 22 vertically mounted for frictional rotation as at 23, to the frame of the motor 4, is provided to regulate the number of laps of the race to be run. The regulator 22 consists of a plurality of radially disposed straight arms 24, one of which is formed with a hooked end 25, constituting a stop arm. The regulator 22 is disposed in the path of travel of the crank shaft 10, which latter actuates the regulator 22 when contacting with the arms 24 thereof during the operation of the device. As the crank shaft 10 sweeps around in the counter clockwise direction it will cause the intermittent actuation of the regulator 22 in the clockwise direction. The regulator 22 is adjusted by positioning one of the arms 24 in the vertical position to be engaged by the first sweep of the crank shaft 10. The number of arms 24 disposed intermediate of the one positioned for the first engagement, as stated, and the stop arm 25 will determine the number of laps which will be made before the crank shaft 10 and associated figures 15, are automatically brought to a stop, as the hooked end 25 of the stop arm engages the crank shaft 10 and secures the latter against further rotation.

The regulator is so positioned with respect to the finish line mark 3, that its operation, as above stated, will bring the figures 15 to a stop with the front end or nose of winner in close proximity to a vertical line from the finish mark 3.

A barrier element is mounted at the side of the race track 2 and is positioned adjacent to the finish line mark 30.

The barrier element comprises a support 26 which is pivotally connected to the base 1 by means of a pair of bearings 27. A barrier arm 28 provided with an angularly disposed supporting portion 28′, is attached to the support 26 by means of the sleeve 29. The arm 28, due to the pivotal connection of the support 26, may be shifted to either the vertical position or to the horizontal position as shown in Figure 1 and in Figure 2. To facilitate such shiftable movement of the arm 28 the rear end of the support is formed to provide an operating lever 32. The support 26 is formed with an angularly disposed member 30 formed with a depression 31 in its forward end for the reception and elevation of the outer end of the crank shaft 10 when in the stopping position for the purpose to be described.

In practice the operation of the mechanical toy is as follows:—When the device is in the inoperative position the outer end of the crank shaft 10 is manually positioned in the depression 31 of the support 26, thereby elevating the crank shaft 10 sufficiently to allow the wheel disk 14 to clear the base 1. The crank shaft 10 is now revolved by the manipulation of the collar 11′ to inadvertently position the cranks 12 and 13, together with respective figures 15 mounted thereon in such a manner that they will not stop in the same positions as in the previous race.

The regulator 22 is adjusted in the manner hereinbefore described for the number of laps desired. By shifting the barrier arm 28 from the horizontal to the vertical position, the depression 31 will be released from the crank shaft 10, and the action of the spring motor 4 will swing the crank shaft 10 and figures 15 around over the race track representation 2 on the base 1. When a predetermined number of laps have been made the stop arm 25 of the regulator 22 will engage the crank shaft 10 and lock the same against further rotation. During the travel of the crank shaft 10 around the track 2, as above stated, the disk wheel 14, due to its contact with the base 1, will cause the rotation of the crank shaft 10, and thereby impart a bobbing action to the figures 15 pivotally connected to respective cranks 12 and 13. As all the cranks 12 and 13 vary in disposition relatively to each other on the crank shaft 10 the winning figure 15 is the one that is connected to the crank in most forward position when the crank shaft 10 is brought to a stop in the manner above described.

If desired the barrier element may be employed for a stopping medium. It will only be necessary to shift the barrier element from the vertical to the horizontal position when it is desired to bring the crankshaft 10 to a stop. When in the horizontal position, the crank shaft 10 will contact with the angular member 30 of the support 26 and slide into the depression 31 thereof, thereby bringing the crankshaft to a full stop.

It will be noted that the construction and arrangement of the collars 11 and 11' on the crank shaft 10, of the clips 16 and figures 15 mounted thereon, and of the provision of the sleeve 29 for connecting the support 26 to the barrier arm 28, facilitate the disassembly of the device to reduce the latter to a more compact form for convenience in transportation and storage.

What I claim is:

1. A toy comprising a base having its surfaces marked to represent a circular race track, a crank shaft extending over said track and provided with a plurality of cranks, a figurative object pivotally connected with each of said cranks, a motor including a drive shaft mounted on said base, said drive shaft disposed at the diametric center of said track and connected to said crank shaft for swinging the latter around over said track, and means for rotating the said crankshaft during the swinging of said crankshaft around over said track.

2. A toy comprising a base having its surfaces marked to represent a circular race track, a crank shaft extending over said track and provided with a plurality of cranks, a figurative object pivotally connected with each of said cranks, a motor including a drive shaft mounted on said base, said drive shaft disposed at the diametric center of said track and connected to said crank shaft for swinging the latter around over said track means for rotating the said crankshaft during the swinging of said crank shaft around over said track, and means for regulating the number of turns of said crankshaft around over said track.

3. A toy comprising a base having its surfaces marked to represent a circular race track, a crank shaft extending over said track and provided with a plurality of cranks, a figurative object pivotally connected with each of said cranks, a motor including a drive shaft mounted on said base, said drive shaft disposed at the diametric center of said track and connected to said crank shaft for swinging the latter around over said track and means carried by said crank shaft and traveling on said base for rotating said crankshaft during the swinging of said crankshaft around over said track.

4. A toy comprising a base having its surfaces marked to represent a circular race track, a crank shaft extending over said track and provided with a plurality of cranks, a figurative object pivotally connected with each of said cranks, a motor including a drive shaft mounted on said base, said drive shaft disposed at the diametric center of said track and connected to said crank shaft for swinging the latter around over said track and means carried by said crank shaft and traveling on said base for rotating said crankshaft during the swinging of said crankshaft around over said track, and means for regulating the number of turns of said crankshaft around over said track.

5. In combination, a toy comprising a base having its surface marked to represent a circular race track, a crank shaft provided with a plurality of cranks, a figurative object pivotally connected with each of said cranks, a spring operated motor including a drive shaft mounted on said base, said drive shaft vertically disposed at the diametric center of said track, a support mounted on said drive shaft to rotate therewith, said support pivotally connected with said crank shaft to swing said crankshaft around over said track during the rotation of said drive shaft, and means for rotating said crankshaft to impart a bobbing movement to said figurative objects, during the swinging of said crankshaft around over said track.

6. In combination, a toy comprising a base having its surface marked to represent a circular race track, a crank shaft provided with a plurality of cranks, a figurative object pivotally connected with each of said cranks, a spring operated motor including a drive shaft mounted on said base, said drive shaft vertically disposed at the diametric center of said track, a support mounted on said drive shaft to rotate therewith, said support pivotally connected with said crank shaft to swing said crankshaft around over said track during the rotation of said drive shaft, means for rotating said crankshaft to impart a bobbing movement to said figurative objects, during the swinging of said crank shaft around over said track, and means for regulating the number of turns of said crankshaft around over said track.

7. In combination, a toy comprising a flat base having its surface marked to represent a circular race track, a spring operated motor including a vertical drive shaft mounted on said base, said drive shaft vertically disposed at the diametric center of said race track, a support detachably mounted on the upper of said drive shaft, a horizontally extending crankshaft pivotally mounted at its inner end in said support, said crank shaft including two pairs of cranks disposed over said race track, one of each pair of cranks diametrically opposed with respect to the other crank of said pair and one pair of

cranks extending at right angles relatively to the other of said pair of cranks, a detachable clip pivotally connected with each of said cranks, a figurative object detachably connected to each of said clips at its forward end, a disk wheel fixed on said crankshaft and travelling on said base for rotating said crankshaft, means for regulating the number of rotations of said drive shaft, and a barrier element shiftable to elevate said disk wheel from said base, substantially as described and for the purpose set forth.

8. A toy comprising a base having a circular race track, a crank shaft disposed transversely of the said track and provided with a plurality of cranks, a figurative object connected with each of said cranks, and having a bobbing movement imparted to it by the same, a motor, means actuated by the motor and connected with the crank shaft for swinging the latter around the track, and means for rotating said crank shaft during the swinging of said crank shaft around the said track.

In testimony whereof I affix my signature.

HARRY E. McCOY.