Dec. 10, 1940. A. J. MIDDLER ET AL 2,224,689

TOY HORSE

Filed Dec. 3, 1938 2 Sheets-Sheet 1

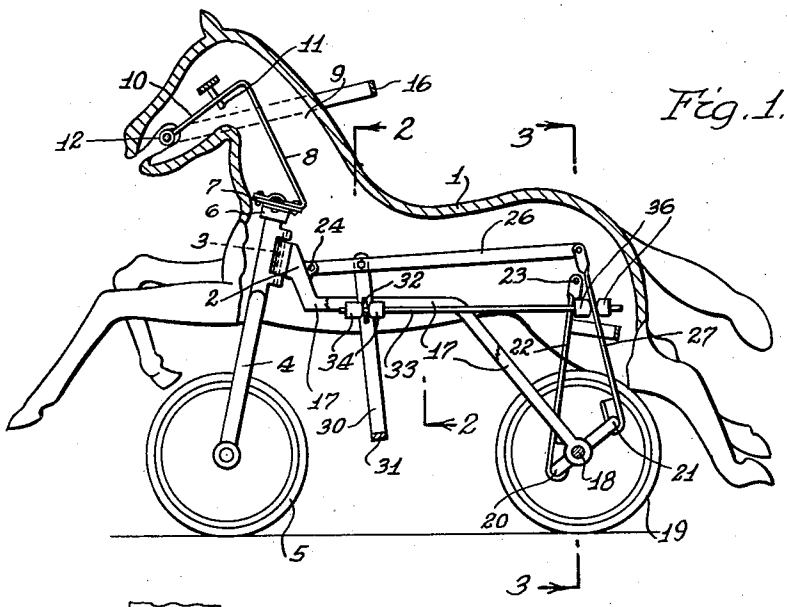


Fig. 1.

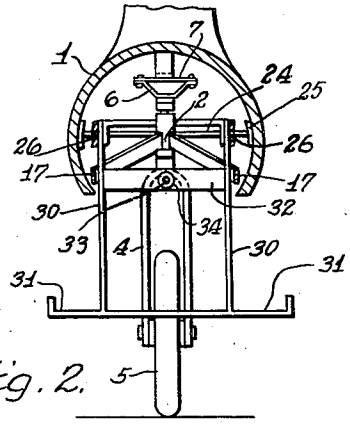


Fig. 2.

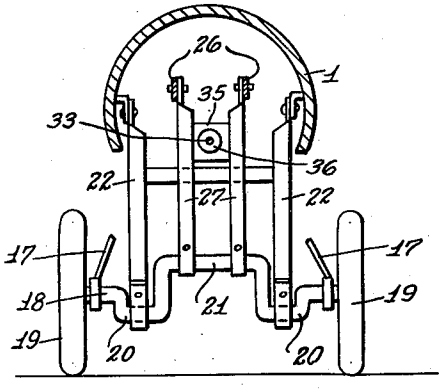


Fig. 3.

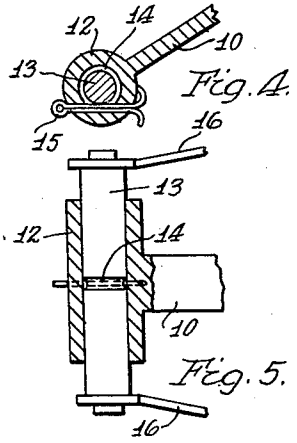


Fig. 4.

Fig. 5.

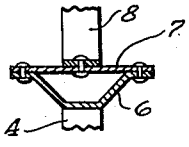


Fig. 6.

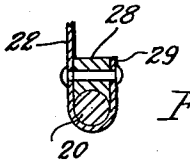


Fig. 7.

INVENTORS
Alexander J. Middler
George L. Barton

BY J. Lindsay Davis
ATTORNEY.

Dec. 10, 1940. A. J. MIDDLER ET AL 2,224,689

TOY HORSE

Filed Dec. 3, 1938 2 Sheets-Sheet 2

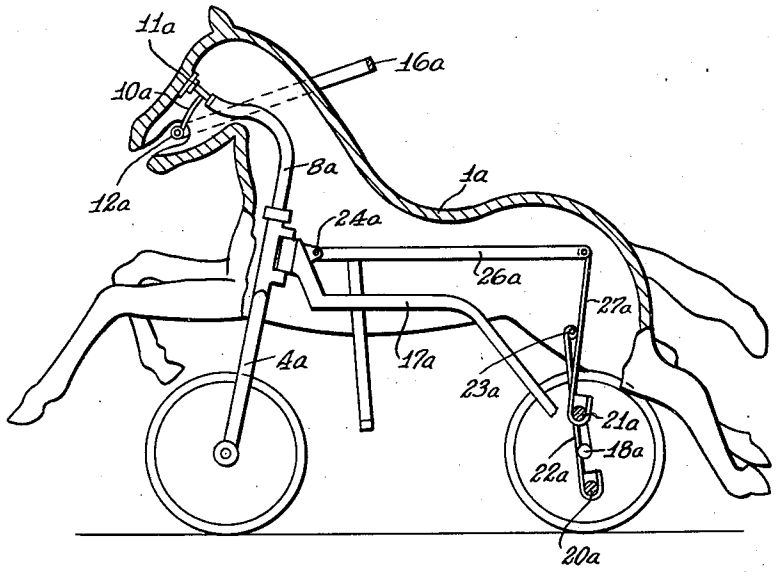


Fig. 8.

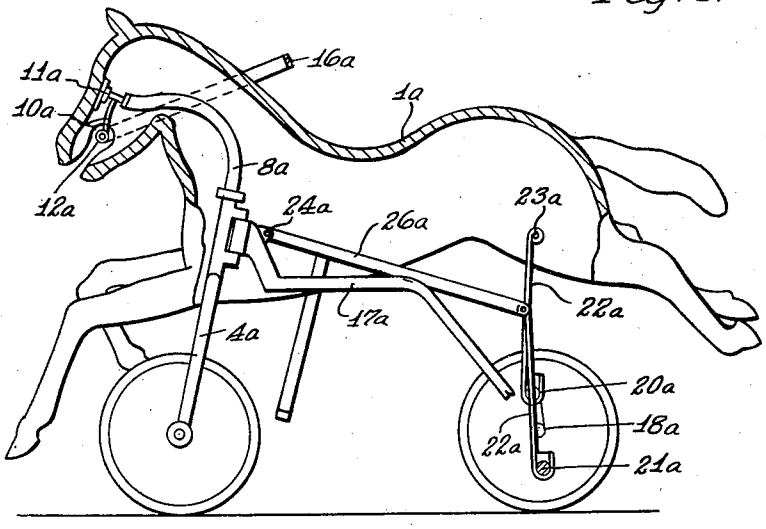


Fig. 9.

INVENTORS
Alexander J. Middler
George L. Barton

BY J. Henderson Davis
ATTORNEY.

Patented Dec. 10, 1940

2,224,689

UNITED STATES PATENT OFFICE

2,224,689

TOY HORSE

Alexander J. Middler and George L. Barton,
Detroit, Mich.

Application December 3, 1938, Serial No. 243,691

10 Claims. (Cl. 280—1.13)

This invention relates to toy vehicles embodying means actuated by the rider for propelling the same and has for its primary object to provide toy vehicle propelling means which is operated by shifting of the weight of a rider to and from seat and foot rest members alternately.

Another object is to provide a wheeled toy having the appearance of an animal, preferably a horse, and propelling means therefor actuated by alternately subjecting the body and the stirrups to the weight of the rider.

Another object is to provide a toy with crank actuated propelling wheels having one crank actuated by placing the weight of the rider on a seat member and another crank actuated by placing the weight of the rider on a foot rest.

Another object is to provide a toy vehicle having crank actuated propelling wheels, as above mentioned, and means operable by movement of the foot rest for moving the cranks from a dead center position, in order that movement of the toy may be initiated without pushing the same, as by the foot on the floor.

Another object is to provide a toy having a steer wheel and means extending through the neck and terminating in a bit-like element at the mouth of a horse simulating body for actuating the steering wheel for steering purposes. More particularly, the steering wheel is supported by a fork, and the body of the toy moves relative to the fork upon actuation of the propelling means. The head and neck portions are rigid with respect to the main body portion, and in order to provide steering means operable from the head portion in the presence of such body movements, it is necessary to provide a flexible connection between the fork and the bit-like element. Accordingly, a further object is to provide a simple and inexpensive flexible connection for this purpose.

Other objects and advantages will become more fully apparent as reference is had to the accompanying drawings wherein our invention is illustrated, and in which:

Fig. 1 is a vertical section of the present toy,

Figs. 2 and 3 are sections taken respectively on the lines 2—2 and 3—3 of Fig. 1,

Figs. 4 and 5 are sections illustrating the bit-like steering actuator,

Fig. 6 is a section of the flexible connection,

Fig. 7 is a section illustrating the crank and connecting rod connection, and

Figs. 8 and 9 are vertical sections illustrating a modified propelling means.

More particularly, 1 designates a hollow body shaped to resemble the body of a horse. Within the hollow body is a frame comprising a bracket 2 supporting a substantially vertical pivot pin 3 upon which a fork member 4 is mounted. In the lower end of the fork 4 is rotatably mounted a wheel 5, and fixed to the upper end is a substantially U-shaped bracket 6 which forms part of a flexible connection. Secured to and extending between the two arms of the U-shaped bracket is a flexible strip 7, preferably formed of leather, and secured to the leather strip 7 is a metal bar 8.

The metal bar 8 extends upwardly through the neck portion 9 of the body and is bent forwardly at 10 whereby it extends through the head portion to a point adjacent the mouth. The forwardly extending portion 10 loosely engages a pivot pin 11 and at its forward end has a tubular element 12 rigidly secured thereto. A pin 13, similar to a bit, is grooved between its ends as at 14 and is retained in the tubular portion by a cotter pin 15. The reins 16 are attached to opposite ends of the pin 13.

Extending rearwardly from the bracket 2 are two frame members 17 which rotatably support the rear axle 18 upon which the two rear wheels 19 are mounted. The rear axle 18 has two cranks 20 and a central crank 21, the two cranks 20 being connected by rods 22 to the body 1 by pivot pins 23.

Extending transversely of the body 1 is a rod 24, supported by the bracket 2, and upon which the body 1 is pivoted by brackets 25. Also pivoted upon the rod 24 are two rearwardly extending bars 26 whose rear extremities are connected by the rods 27 to the crank 21. The means for securing the rods 22 and 27 to their respective cranks is identical, and is shown in Fig. 7. As shown, the rod 22 is bent about the crank 20 and a fiber block 28 is secured between the bent end 29 and the main portion of the rod.

Depending from the bars 26 are two links 30 which support stirrups 31, the two links being united by a cross member 32. A rod 33, connected to the cross piece 32 by rubber pads 34 is connected to a similar cross piece 35 on the connecting rods 27 by similar rubber pads 36. Obviously, springs of other forms may be substituted for the rubber pads 34 and 36 if desired.

In operation, the weight of a rider placed upon the body 1 is transmitted through the connecting rods 22 to the cranks 20, thus moving the cranks 20 to their lower dead center and the crank 21 to its upper dead center. The rider then pushes forwardly on the stirrups 31 and through the rod 33 a forward thrust is exerted on the con-

necting rods 27 to move the crank 21 over dead center. The weight of the rider is then placed on the stirrups and is transmitted through the pivoted bars 26 and connecting rods 27 to exert a downward thrust on the crank 21. As the crank 21 moves downwardly, the body 1 pivots upwardly about the rod 24, and as the cranks 20 pass their upper dead center the rider again shifts his weight to the body 1. After the toy is in motion, alternate shifting of the weight of the rider from the body to the stirrups sustains such movement.

The crank actuating means illustrated in Figs. 8 and 9 is such that when the crank operated by the body is in its lowermost dead center position, the crank operated by the stirrups has passed its upper dead center, and when the crank operated by the stirrups is in its lowermost dead center position the crank connected to the body has passed its upper dead center position.

In Figs. 8 and 9 the body 1*a* and the stirrup supporting links 26*a* are supported by a common pivot pin 24*a* carried by the frame 17*a*. The outer end of the link 26*a* is connected by a connecting rod 27*a* to a crank 21*a* on the crankshaft 18*a*. The body 1*a* is connected by a connecting rod 22*a* to a crank 20*a*, the point of attachment 23*a* between the body and the rod 22*a* being the same distance from the pivot 24*a* as is the distance between the pivot and the point of attachment of the connecting rod 27*a* to the link 26*a*. The connecting rods 22*a* and 27*a* are of equal length.

As shown in Fig. 8, movement of the body 1*a* to its lowermost position results in movement of the crank 20*a* to its lowermost dead center position, at which time the crank 21*a* is moved past its upper dead center. In Fig. 9 the link 26*a* is shown in its lowermost dead center position, at which time the crank 20*a* has passed its upper dead center.

A modified form of steering mechanism is also shown in Figs. 8 and 9, in which a bit-like element 12*a*, having reins 13*a* connected thereto is pivoted on the element 11*a* in the head portion of the body. A flexible shaft 8*a* connects the element 10*a* with the front wheel fork 4*a*.

It is apparent, of course, that the propelling mechanism above described may readily be employed in conjunction with other types of toy vehicles, but it has particular utility in the type of toy here described. In alternately shifting the weight from the body to the stirrups, the rider of the toy simulates the movements of an equestrian, with the result that the appeal of the toy to a juvenile is greatly enhanced.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various changes may be made within the scope of the appended claims without departing from the spirit of the invention and such changes are contemplated.

What is claimed is:

1. A wheeled toy comprising a body adapted to support a person and stirrups for receiving the feet of a person, a crank shaft having opposed cranks connected to at least one wheel of the toy, means connecting one crank on said shaft to said body for actuation by a weight on said body, and means connecting said stirrups to another crank on said shaft for actuation by a weight on said stirrups, said two means being correlated to operate alternately, and means actuated by said stirrups for moving said cranks past dead center.

2. A toy vehicle comprising a frame, wheels supporting said frame, a crank shaft connected to at least one of said wheels, a seat member pivotally mounted on said frame and having its swinging end connected to one of the cranks on said crank shaft, a foot rest, and a support for said foot rest, said support having one end pivotally connected to said frame for swinging movement about an axis coaxial with the pivot of said body and its other end connected to a crank on said crank shaft.

3. A toy vehicle comprising a frame, wheels supporting said frame, a crank shaft connected to at least one of said wheels, a seat member pivotally mounted on said frame and having its swinging end connected to one of the cranks on said crank shaft, a foot rest, a support for said foot rest, said support having one end pivotally connected to said frame and its other end connected to a crank on said crank shaft, the connections of the seat member and the foot rest with the cranks being correlated to provide alternate operation thereof, and means operable by movement of said foot rest for moving said cranks past dead center.

4. A toy vehicle comprising a frame, wheels supporting said frame, a crank shaft having opposed cranks connected to at least one of said wheels, a body mounted on said frame and adapted to receive a rider, means connecting said body with one of said cranks whereby a weight thereon tends to move said crank, stirrups mounted on said frame, means connecting the stirrups to the other crank whereby a weight thereon tends to move said crank, said two means being correlated to operate alternately, and means operable by said stirrups for moving said cranks over dead center.

5. A toy vehicle comprising a frame supported by wheels, a crank shaft connected to at least one of said wheels, a body pivoted on said frame, means connecting the swinging end of said body with one of the cranks on said shaft, a lever pivoted on said frame with its pivot co-axial with the body pivot, means connecting the free end of said lever to another crank on said shaft, and stirrups connected to said lever.

6. A toy vehicle comprising a frame supported by wheels, a crank shaft connected to at least one of said wheels, a body pivoted on said frame, means connecting the swinging end of said body with one of the cranks on said shaft, a link pivoted on said frame with its pivot co-axial with the body pivot, means connecting the free end of said link to another crank on said shaft, stirrups pivotally connected to said link, and a resiliently extensible connection between said stirrups and said last named means for pivoting said last named means to move the crank to which it is attached past dead center.

7. A vehicle having wheels, a crank shaft having opposed cranks attached to at least one of said wheels, a foot rest member pivoted on said vehicle, a connecting rod connecting said foot rest with one of said cranks, a body pivoted on said vehicle in coaxial relation with the pivot of said foot rest, and a connecting rod connecting said body with the other crank, said second connecting rod disposed at an angle such that its crank is at lower dead center when the first crank has passed upper dead center.

8. A vehicle having wheels, a crank shaft having opposed cranks attached to at least one of said wheels, a foot rest member pivoted on said vehicle, a connecting rod connecting said foot rest with one of said cranks, a body pivoted on

said vehicle, and a connecting rod connecting said body with the other crank, said second connecting rod disposed at an angle such that the normal weight of said body rotates the crank shaft to position the first crank past dead center.

9. A toy vehicle comprising a frame having a wheel mounted for steering movement and a shaft having cranks and wheels thereon, the cranks on said shaft being 180° apart, a toy body pivotally mounted on said frame, a link having one end pivotally connected to said body at a point remote from the point where the body is pivotally mounted on the frame and having its other end connected to one of said cranks, a lever pivotally connected to said frame and swingable about an axis coaxial with the body pivot, a link having one end connected to the swinging end of said lever and having its other end connected to the other of said cranks, the distance from the body and link pivots to the points of connection of respective links being substantially equal, and a foot rest connected to said lever.

10. A toy vehicle comprising a frame having a wheel mounted for steering movement and a shaft having cranks and wheels thereon, the cranks on said shaft being 180° apart, a toy body pivotally mounted on said frame, a link having one end pivotally connected to said body at a point remote from the point where the body is pivotally mounted on the frame and having its other end connected to one of said cranks, a lever pivotally connected to said frame and swingable about an axis coaxial with the body pivot, a link having one end connected to the swinging end of said lever and having its other end connected to the other of said cranks, the distance from the body and link pivots to the points of connection of respective links being such and the length of said links being such that when either crank is in its lower dead center position the line of action of the link connected to the other crank passes in front of the point of contact of the wheel with the ground to provide a turning movement sufficient to propel the vehicle, and a foot rest connected to said lever.

ALEXANDER J. MIDDLER.
GEORGE L. BARTON.