May 16, 1939. S. I. BERGER 2,158,052

TOY

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FIG. 1.

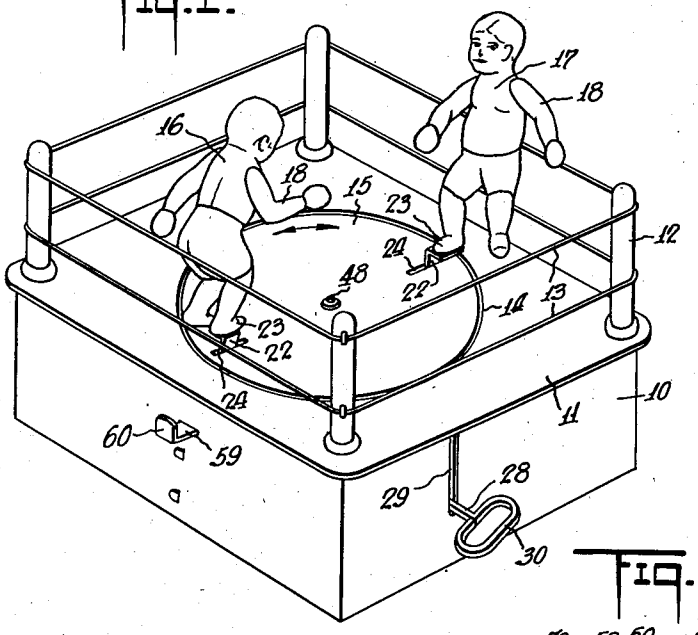


FIG. 3.

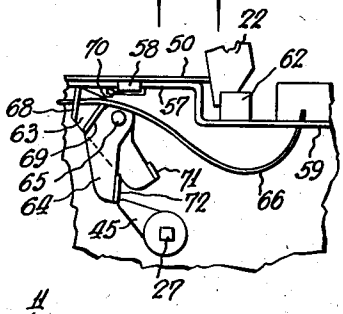
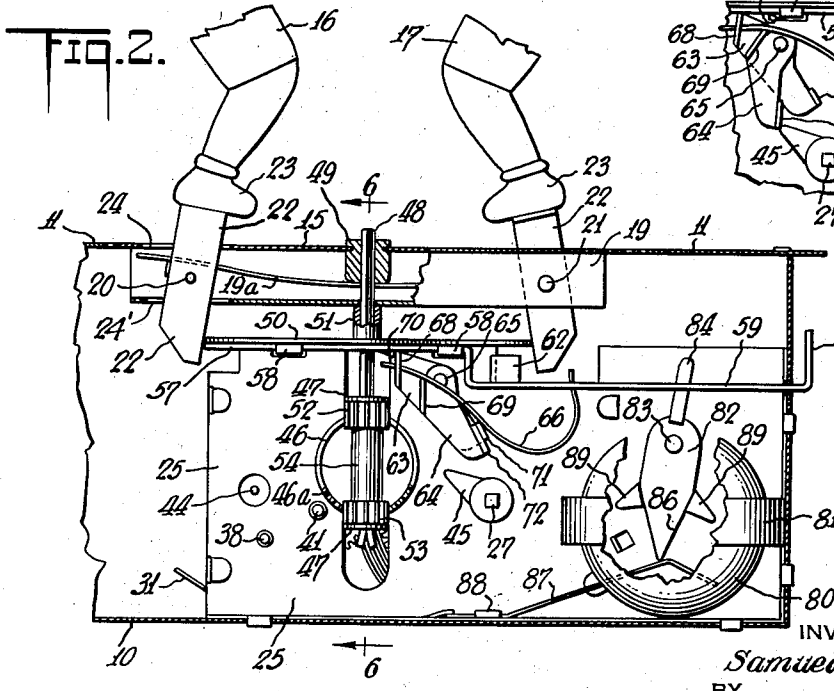


FIG. 2.



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FIG. 4.

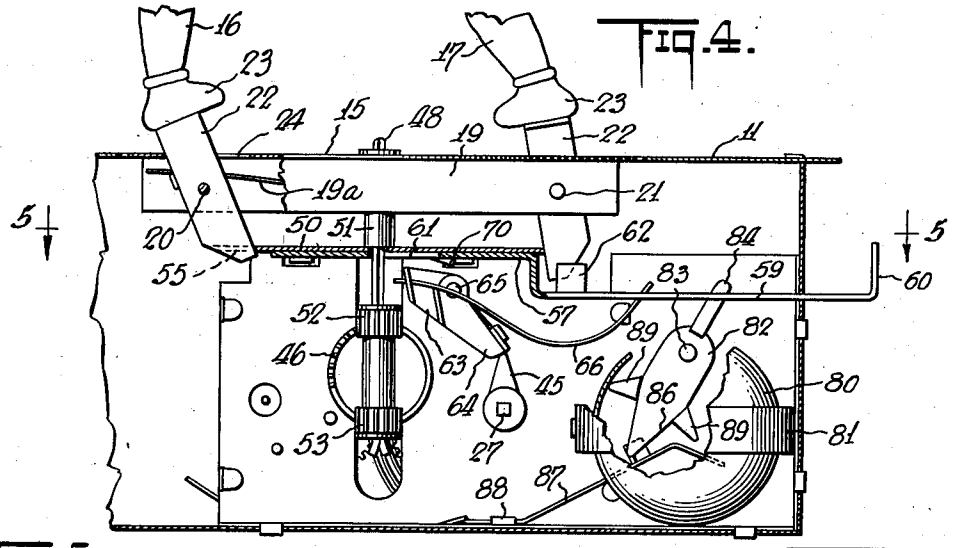


FIG. 5.

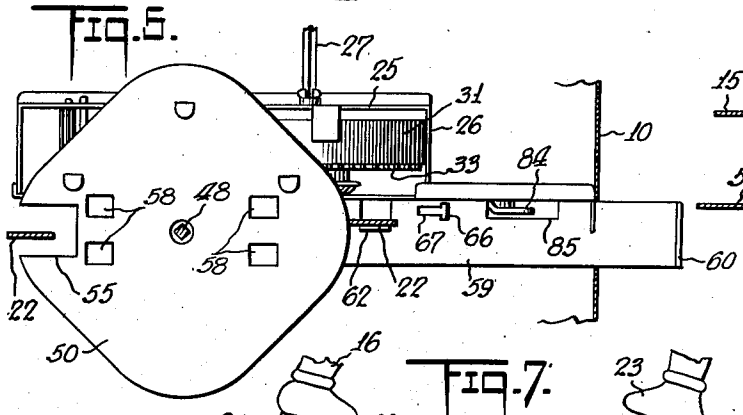


FIG. 6.

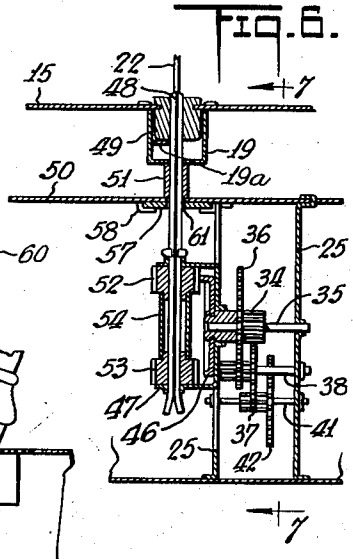


FIG. 7.

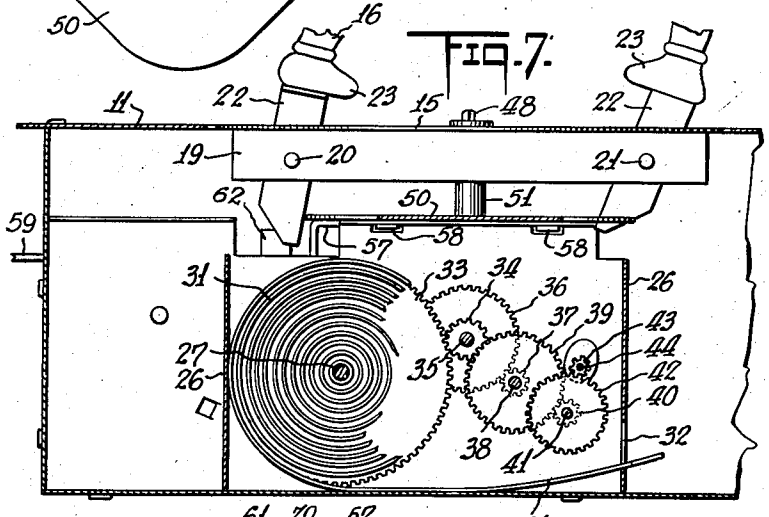
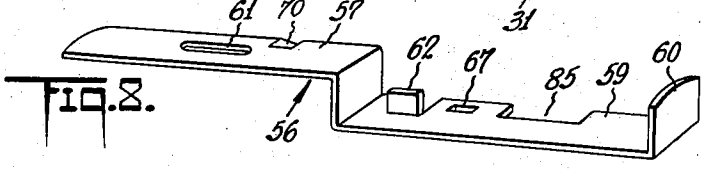


FIG. 8.



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2,158,052

TOY

Samuel I. Berger, Newark, N. J.

Application July 2, 1936, Serial No. 88,498

17 Claims. (Cl. 46—143)

While the principles of the present invention might be embodied in various toys the invention finds its preferred embodiment in a spring-motor driven toy which simulates the action of a pair of figures engaged in combat, typically a pair of pugilists.

An object of the invention is to provide a toy of this character in which toy figures representing boxers, fencers, or the like are caused to perform a series of realistic maneuvers which closely simulate the actions of actual contestants.

Two toy figures are caused to circle about each other, bob and weave and throw punches with utter abandon for a predetermined period of time. The movement of the figures is in part controlled by the motor and in part chance determined. Preferably the figures are so arranged that after they have sparred for a short period of time a bell sounds for the end of a round and simultaneously with, or shortly after the sounding of the bell one of the contestants appears to be knocked against the ropes and rendered hors de combat.

The toy figures with loosely hung arms have certain freedom of movement on a turn table which is alternately rotated in opposite directions so that the figures seem to be circling about each other. A cam mechanism controls to some extent the forward and backward movements of the figures and the rapidity with which the turn table is moved and its direction of movement reversed causes the arms of the figures to flail the air in an apparent effort to wreak great physical violence upon each other.

Preferably the turn table forms part of a toy representation of a boxing ring, the lower portion of the ring concealing the motor, and other actuating mechanism.

Preferably after the motor has been wound it will be stopped at regular intervals by a timing mechanism and coincidental with the stopping of the motor or the thrust of the opening handle to start the motor a gong is rung indicating the end or the beginning of a round, as the case may be.

Other and more general objects of the invention are to provide a toy of simple, rugged, durable, practical construction; a toy which is intriguing to watch because of the realistic actions made by the toy figures and a toy in which all of the vulnerable parts of the motor and other mechanism are thoroughly protected from tampering by a child.

The invention may be more fully understood from the following description in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view of a toy embodying the invention.

Fig. 2 is a vertical sectional view through the motor casing showing most of the operating mechanism.

Fig. 3 is a detail showing the manner in which one section of the trip lever is movable independently of the other section to permit winding of the motor.

Fig. 4 is a view similar to Fig. 2 but showing the position of the operating parts when the motor is stopped and the figures at rest.

Fig. 5 is a plan view on the line 5—5 of Fig. 4.

Fig. 6 is a vertical sectional view on the line 6—6 of Fig. 2.

Fig. 7 is a vertical sectional view on the line 7—7 of Fig. 6, and

Fig. 8 is perspective view of the slide bar which is manually operated to start the motor and automatically operated to stop it.

In the drawings, 10 represents a motor casing or box the top 11 of which simulates the floor of the ring. From the floor rise the ring posts 12 connected by ropes 13. The center of the floor has a circular opening 14 therein and a turn table 15 disposed in this opening affords a movable floor section upon which the toy figures 16 and 17 representing boxers are mounted in a manner to be more fully hereinafter described. The arms 18 of these figures pivot freely at the shoulders.

Secured to the underside of the turn table is an upwardly facing, diametrically extending channel member 19 which near its ends mounts a pair of cross pins 20 and 21. Pivoted on these cross pins are levers 22. To the upper end of each lever, which ends project above the surface of the turn table, is secured one foot portion 23 of the figures 16 and 17 respectively. Slots 24 and 24' arranged in the turn table and in the bottom of the channel piece 19 respectively limit the rocking movement of the levers 22.

Disposed vertically within the box 10 and spaced from each other are a pair of plates 25, the ends of which are connected by bridging pieces 26. Plates 25 afford bearings for most of the shafts of the spring motor. The motor or at least that portion thereof which is confined between the plates 25, 25 may be of substantially conventional construction.

It includes a main shaft 27 journaled in the plates 25, 25 and having an extension 28 which

extends outwardly through a slot 29 in one wall of the box and terminates in a handle 30 which may be turned to wind the main spring of the motor. The convolute main spring has one end extending through a slot 32 in one of the plates 26 and reacting against the bottom of the slot. The other end of the coil spring 31 is anchored to the main shaft 27. A gear 33 fixed on the main shaft drives a pinion 34 on a countershaft 35. Gear 36 on the shaft 35 drives a pinion 37 on a second countershaft 38. Gear 39 on shaft 38 drives a pinion 40 on another countershaft 41 and a gear 42 on the shaft 41 drives a pinion 43 on a shaft 44. All of the shafts 35, 38, 41, 43 have bearings in the plates 25. Fixed upon the end of the main shaft 27 is a triangular shaped crank arm 45. Fixed upon the end of the shaft 35 is a mutilated crown gear 46. The additional shafts 38, 41 and 43 with their gears and pinions merely provide a governor action.

A pair of ears 47 extending laterally from one plate 25 provide mountings for a vertically disposed square shaft 48 the upper end of which fits within a square hub 49 at the center of the turn table. The shaft 48 extends freely through a cam 50 secured upon the tops of the two plates 25 and the channel piece 19 is spaced above the cam by a sleeve 51 on the shaft 48.

Between the ears 47 a pair of pinions 52 and 53 are keyed to shaft 48, these pinions being spaced apart by a spacer sleeve 54. As the mutilated gear 46 rotates, the teeth 46*a* thereof alternately engage pinions 52 and 53 to effect an alternating rotary motion of the shaft 48 and consequently of the turn table 15 which is keyed to the shaft. The toy figures 16 and 17 normally tend to overbalance in a rearward direction and thus urge the lower ends of the levers 22 against the perimeter of the cam 50. This action may be assisted by a spring 19*a* housed in channel 19 and urging the lower ends of the lever 22 against the cam.

Cam 50 at one point has a notch 55 therein which may be entered by one of the levers 22 and as the lever enters this notch the toy figure which is supported on the lever will overbalance readily and will appear to fall against the ropes. Simultaneously, the motion of the turn table will be stopped since the engagement of lever 22 with the fixed cam 50 prevents further rotation of the turn table 15, the shaft 48 and the entire train of shafts and gears and pinions which drive the shaft 48.

With the parts in the position of Fig. 4 it will be observed that the left hand lever 22 has engaged in slot 55 of the cam and even though the spring of the motor be under tension it is blocked against unwinding.

The mechanism for kicking the lever 22 out of the slot 55 and permitting the motor to unwind includes a manually manipulable slide bar indicated generally in Fig. 8 at 56. This bar includes a horizontal section 57, slidable in guide ways 58 (Fig. 6) provided at the under face of the cam 50. It also includes a horizontal section 59 downwardly offset from section 57. Section 59 extends through a slot in the box 10 and terminates in an upstanding handle piece 60. A slot 61 in the bar section 57 accommodates the shaft 48. An upstanding lug 62 on the bar section 59 moves into position under the cam 50 when the bar 56 is thrust inwardly as in Fig. 2 but when the bar springs outwardly to the position of Fig. 4 the lug 62 is disposed in the path of one of the levers 22 and cooperates with the slot 55 of the cam in locking the turn table against further rotation.

A composite trip lever consisting of the two sections 63 and 64 is pivoted upon a pin 65 secured to one of the plates 25. A flat spring 66 has one end passed through a slot 67 in the section 59 of the bar 56 and its other end passed through an inwardly turned ear 68 carried by one end of the trip lever section 63. The spring rests upon a corresponding ear 69 formed at the upper end of the trip lever section 64. The spring 66 serves the two-fold purpose of tending to shift the bar 56 to the right from the position of Fig. 2 to the position of Fig. 4 and tending to move the composite trip lever in a clockwise direction about its pivot so that the lug 68 is disposed in the path of a downstruck lug 70 integral with the section 57 of the bar 56. The lower end of the trip lever section 63 is provided with a lug 71 resting against a somewhat longer lug 72 on the trip lever section 64. The purposes of this construction are (1) to assure movement of trip lever section 64 in a clockwise direction with the section 63 under the impetus of the spring 66; (2) to insure movement of the section 63 with the section 64 under the impetus of the crank arm 45, when this arm is turning in a clockwise direction and (3) to permit independent movement of the section 64 by the crank arm 45 when this arm is turned in a counterclockwise direction.

In winding the main spring the motor shaft 27 is turned counterclockwise and at each revolution it will tilt the trip lever section 64 independently of the section 63 thereby preventing release of the latch 70 from the lug 68. After the spring has been wound, however, and the parts are in the position of Fig. 2, the unwinding of the spring moves the crank arm 45 in a clockwise direction and as this crank arm engages the section 64 of the trip lever both sections of the trip lever will be moved in a counterclockwise direction until lug 68 moves out of the path of the lug 70 and permits the spring 66 to snap the bar 56 from the position of Fig. 2 to the position of Fig. 4.

It will be observed that as the bar is thrust inwardly its extreme inner end engages the lever 22 which has been disposed in the slot 55 of the cam 50 and moves this lever out of the slot so that the motor is free to turn. Movement of this lever out of the slot is simultaneous with the movement of the lug 62 out of the path of the opposite lever 22.

As above suggested a more realistic effect is obtained by ringing a gong at the beginning and end of each round (in other words every time that the motor is manually started or automatically stopped). With this end in view a gong 80 is mounted on a carrier strip or bracket 81 within the box. A striker 82 is pivotally connected as at 83 to one of the plates 25 and this striker is provided with a tail piece 84 extending upwardly into an elongated notch 85 in the section 59 of the bar 56. The lower end of this striker 82 is pointed as indicated at 86 and rests adjacent the apex of a generally V-shaped spring 87, which spring has one end anchored at 88 to the floor of the box 10 and at its other free end is provided with the V-portion.

Projecting laterally from the body 82 of the striker are fingers 89 which serve to contact the gong 80 every time that the pointed end 86 of the striker shifts from one side to the other of the past-center spring 87. Upon movement of the bar 56 from either extreme position toward

the other the end wall of the notch 85 engages the tail piece 84 of the striker 82 and moves the striker to a position beyond a dead center position with respect to the spring 87 whereupon the spring completes the movement of the striker and causes one of the fingers 89 to hit the gong.

In other words the spring 87 is the real actuating means for the striker and the bar 56 merely shifts the striker to tension the spring and moves the striker beyond the dead center position where it can be actuated by the spring.

I claim:

1. A toy including a motor, a movable platform actuated by the motor, a pair of toy figures representing combatants each having a downward extension with a horizontal pivot below the platform and a cam for displacing said extensions and thereby operating the toy figures as the platform is actuated.

2. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table.

3. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, said figures having limited freedom of movement with respect to the turn table and cam means concealed below the turn table for moving the figures.

4. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, said figures having limited freedom of movement with respect to the turn table and cam means concealed below the turn table for moving the figures, levers upon which said figures are mounted and including portions extending through the turn table and engaging the cam means.

5. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, means normally locking the turn table and motor against movement and manually shiftable to release the turn table and permit actuation thereof by the motor.

6. A toy of the class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, means normally locking the turn table and motor against movement and manually shiftable means to release the turn table and permit actuation thereof by the motor, and spring means for automatically restoring said locking means to locking position after the motor has turned a predetermined number of revolutions.

7. A toy of the class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, a latch normally locking the turn table and motor against movement and manually shiftable means to release the latch and permit actuation of the turn table by the motor said last means being also operated by the motor.

8. A toy of the class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, means normally locking the turn table and motor against movement and manually shiftable means to release the turn table and permit actuation thereof by the motor, and spring means for automatically restoring said locking means to locking position after the motor has turned a predetermined number of revolutions, and an audible signal operated each time that the motor is stopped.

9. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, means normally locking the turn table and motor against movement and manually shiftable to release the turn table and permit actuation thereof by the motor, and spring means for automatically restoring said locking means to locking position after the motor has turned a predetermined number of revolutions, and an audible signal operated each time that the motor is stopped or started.

10. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, means whereby one of said figures is caused to assume a position as if it had been knocked out.

11. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, means whereby one of said figures is caused to assume a position as if it had been knocked out, and means for simultaneously sounding a gong to indicate the end of round.

12. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, means for manually starting and automatically stopping the motor.

13. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, means for manually starting and automatically stopping the motor, a gong, and means for sounding the gong to signal the beginning or end of a round each time the motor is started or stopped.

14. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, a simulation of a boxing ring including a box like lower portion housing the motor the top of said box representing the floor of the ring and said turn table constituting a movable section of the ring floor.

15. A toy of class described including a spring motor, a turn table, means connecting the motor and turn table for imparting an alternating rotary motion to the latter, toy figures representing boxers mounted on the turn table and including freely swinging arm portions actuated by reversal of the direction of movement of the turn table, a simulation of a boxing ring including a box like lower portion housing the motor the top of said box representing the floor of the ring and said turn table constituting a movable section of the ring floor, corner posts rising from the floor and ropes connecting the corner posts and means for causing one of the figures to fall against the ropes when the motor stops.

16. A toy including a pair of figures simulating boxers, means for causing said figures to circle about each other alternately in opposite directions, means to cause said figures to bend back and forth and means to cause the arms of said figures to flail.

17. A toy including a pair of figures simulating boxers, means for causing said figures to circle about each other alternately in opposite directions, means to cause said figures to bend back and forth and means to cause the arms of said figures to flail, the movement of said figures being in part mechanically effected and in part chance determined.

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