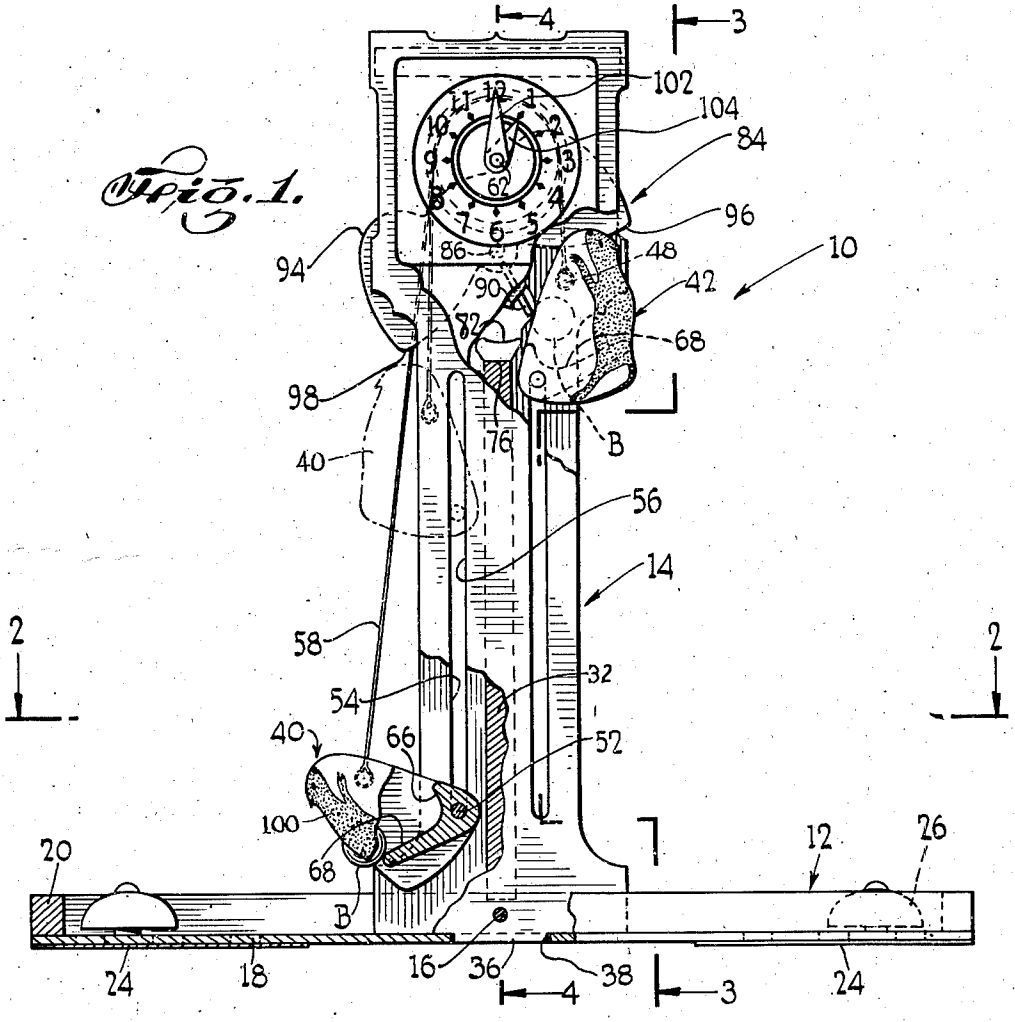
Dec. 4, 1945. O. F. LARSEN, JR 2,390,442

BALL-OPERATED TOY

Filed Dec. 23, 1944 2 Sheets-Sheet 1

Fig. 1.



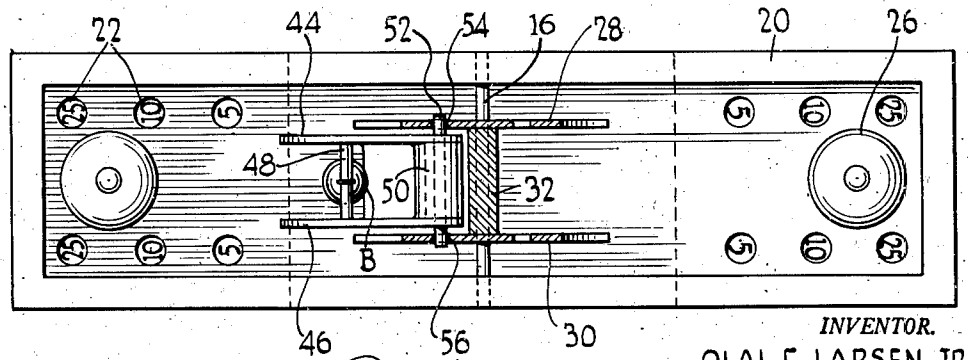


Fig. 2.

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Fig. 3.

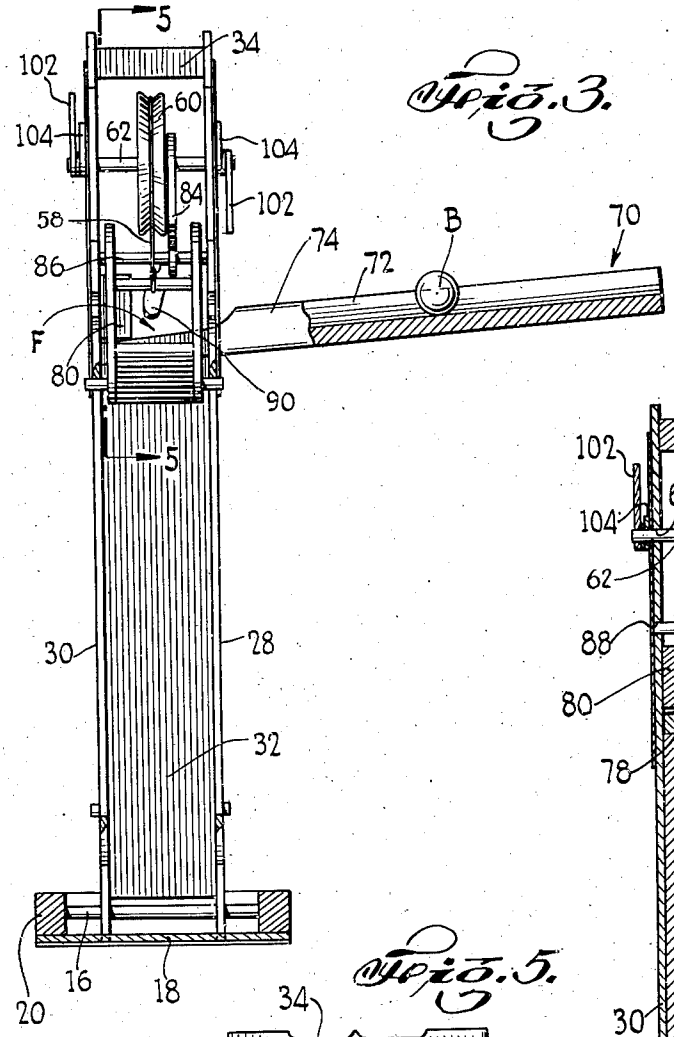


Fig. 4.

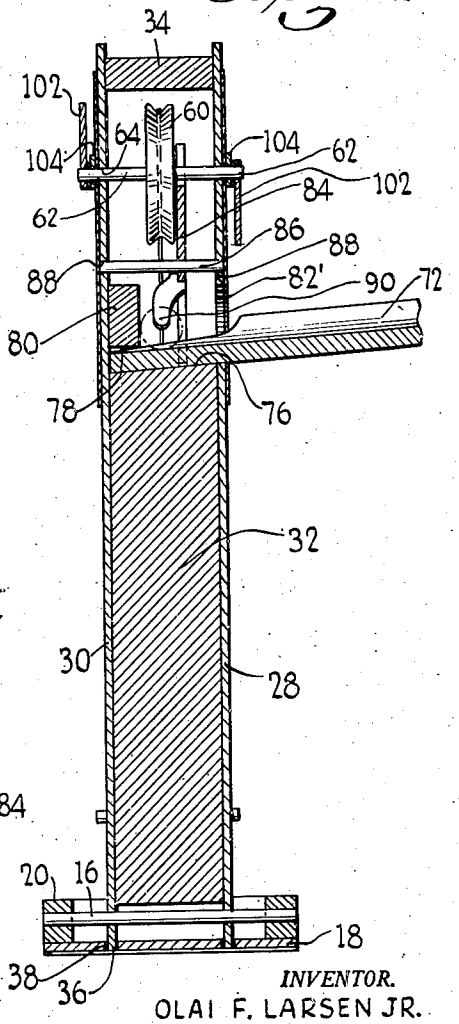
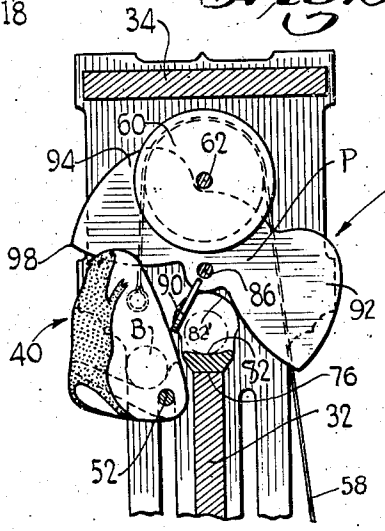


Fig. 5.



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UNITED STATES PATENT OFFICE

2,390,442

BALL-OPERATED TOY

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Application December 23, 1944, Serial No. 569,533

16 Claims. (Cl. 46—42)

This invention relates to ball-operated toys.

One of the objects of the invention is to provide a simple, rugged and inexpensive toy having a series of ball carriers continuously ascending and descending in a timed relationship which is governed by the descent of balls.

Another object of the invention is to provide a toy of the character described having a novel mechanism for feeding the balls to the ball carriers.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the claims.

In the accompanying drawings, in which is shown one of the various possible embodiments of this invention,

Fig. 1 is a front view, partly broken away, of a toy embodying my invention;

Figs. 2, 3 and 4 are sectional views taken substantially along the lines 2—2, 3—3 and 4—4, respectively, of Fig. 1; and

Fig. 5 is a sectional view taken substantially along the line 5—5 of Fig. 3.

In general, I carry out my invention by providing a toy with a structural element such as a tower which has a base, and an elevated station where balls are adapted to be fed alternately into a pair of balanced ball carriers. These carriers are mounted for travel toward and away from the feeding station, being interconnected in such fashion that approach of one carrier causes the other carrier to recede from said station. A ball-propelling mechanism at the feeding station is actuated by a carrier coming near said station to sweep a ball from said station into the approaching carrier. As this is being accomplished, the receding carrier dumps its ball, so that the carrier being loaded at the feeding station ceases to approach and starts to recede, causing the other carrier (now empty) to approach the feeding station and receive another ball. Thus the toy will continue in operation as long as balls are supplied to the feeding station.

Referring now in detail to the figures, 10 denotes a toy embodying my invention and comprising a base 12 and tower or post 14, which are detachably secured to each other by a dowel pin 16 to facilitate disassembly and shipping of the toy.

The base includes a base board 18 having a rim 20 and is provided with a plurality of apertures 22 on either side of the tower. These apertures are closed at the bottom by plates 24 of sheet material. A bell 26 may also be provided at each end of the base board. The purpose of the apertures and bell will be described later in detail.

The tower is constructed from two side boards 28, 30 of the same outline, which are secured to each other in spaced parallel relationship by a central strip 32 and a top board 34. The strip 32 extends from slightly above the pins 16 to an elevated feeding station F located at a point well below the top board 34 so as to provide sufficient space beneath said top board to accommodate a ball-propelling mechanism hereinafter described. The bottom edges of both side boards have short, wide, downward extensions 36 which are slidably received in matching apertures 38 in the base board 18 to prevent rocking of the tower 14. It will be appreciated that the foregoing specific construction of the tower and base board are given merely by way of example and that any other arrangement of parts which will provide a stable elevated feeding station can be satisfactorily employed in conjunction with the practice of my invention.

The toy is provided with a pair of balanced ball carriers, such as the cars 40, 42, and, optionally, with means on the tower to guide the cars for movement between predetermined upper and lower positions. A satisfactory arrangement is to have the cars suspended from opposite ends of a cable which runs over an element disposed near the feeding station, so that when one of the cars receives a ball it will descend, overbalancing the other car (which is empty) and raising it up in the air.

In the illustrated embodiment of my invention, each of said cars includes two side plates 44, 46 secured in spaced parallel relationship by an upper horizontal bar 48 and a body 50. A horizontal dowel pin 52 in the body adjacent the bottom thereof projects laterally on both sides of the car, the projecting extending portions being received in aligned vertical slots 54, 56 in the tower side boards 28, 30, thus guiding the cars during their vertical ascent and descent. The cars are connected to each other by a string 58, the ends of which are tied to the upper bars 48 at approximately the center thereof, so that the cars will hang levelly from the string. The string runs over a sheave 60 carried on a shaft 62 rotatably mounted near the top of the tower in apertures 64 in the side boards 28, 30.

It will be appreciated that with the foregoing construction, as one car is caused to descend it will raise the other. It will also be appreciated that although I have shown the cars as rising and falling vertically, an inclined ascent and descent on a stationary ramp or on a teeter board is also within the scope of my invention. It will further be understood that said cars may be so arranged as to go up and down on the same side of the tower.

As mentioned above, the cars, either independently or in conjunction with the guide means therefor, must be so operable that upon reaching their lowermost position they will act to dump the balls carried thereby. This may be accomplished by providing a dump bottom actuated by a stationary member positioned in the path of travel of each car and near its lowermost position. Alternatively, each car may, as shown, be so arranged that it will overbalance upon reaching its lowermost position and discharge its ball. To effect this latter operation, the bodies **50** of the cars each has an interior surface comprising two walls **66, 68** so positioned in the car that when the car is suspended by the string from the upper bar **48**; both of said walls will slope upwardly from their juncture. Owing to this construction, the cars dangling at the ends of the string are able to retain balls. Preferably, the balance of the suspended car is such and the juncture between the two side walls, where a ball will naturally rest, is so disposed relative to the upper bar **48** that the center of gravity of a ball deposited in a car will be vertically beneath the upper bar **48** without the car appreciably shifting from its empty position. However, in no case should the side walls and disposition of the juncture therebetween be such that deposit of a ball of a size and weight normally used in the toy will cause either wall, and particularly the outwardly extending wall **68** to slant downwardly from the juncture away from the horizontal. The inner wall **66** may be rather short, as shown, if the car is designed to ride close to the center rib **32**, although such length of the inner wall is not characteristic of the toy.

During downward descent of a car, the extending portions of the pin **52** are adapted to simultaneously strike against the bottoms of the slots **54, 56** before the pin on the other car reaches its uppermost position. This will cause the descending car, which was previously in stable equilibrium, while suspended from the string, to assume a condition of unstable equilibrium, since it will now only be supported on the two ends of the pin. Said pin is offset toward the rib **32** from the combined center of gravity of the car and ball. Therefore, when the car reaches the bottom of the slots **54, 56**, it will tip to a position where the outer wall **68** slopes downwardly below the horizontal from the juncture between the two walls **66, 68**, causing the ball to be discharged. As the lowermost car tilts, it will raise the ascending car.

The string **58** is of such length as to limit the tilting of the discharging car by abutment of the extending portions of the pins of the rising car with the top of the slots **54, 56** on the opposite side of the tower. Such limited position of the discharging car is shown by the car **40** in Fig. 1. As soon as the contents of the car is discharged, the car will be righted by the balancing weight of the opposite car, said opposite car thereupon descending somewhat from its uppermost position shown in Fig. 1.

It may be further pointed out with respect to the construction of the cars and sheave that the various portions thereof may be so relatively dimensioned and assembled that as the cars dangle at the end of the string, the extending portions of the pins **52** do not bear too heavily, if at all, on the edges of the slots **54, 56**, thus reducing the friction impeding the fall and rise of the cars.

The toy is operated by a plurality of balls B which are led to the feeding station F. The toy is so constructed, as will soon be seen, that it will continue to run as long as balls are fed to it. Accordingly, I provide a magazine for the balls and a chute leading from the magazine to the feeding station. As shown here, said magazine, chute and feeding station may comprise different portions of a trough **70** having an end secured within the tower and the balance extending therefrom. The trough has two inclined side walls **72, 74** which will maintain the balls in linear position, said trough being inclined so that the balls will roll toward the tower under gravity. The end of said trough which is disposed within the tower lies on the inclined top edge **76** of the central rib **32** and is caught between said edge and the bottom edge **78** of a stop **80** secured to the side board **30** opposite to the side board **28** through which the trough extends. Said interiorly disposed end of the trough has the side walls **72, 74** materially cut away to leave only a slight groove **82** (Fig. 5) which, although it will serve to keep in position the foremost ball resting against the stop **80**, will not substantially hinder its lateral displacement when a sidewise thrust is applied to said ball.

The trough, however, is not cut away sufficiently to permit the ball in back of said foremost ball to be displaced laterally when such a sidewise thrust is applied to said foremost ball. In addition, the side board **28** is so disposed relative to the ball immediately in back of the foremost ball as to prevent appreciable sidewise movement of said following ball. Said side board **28** is provided with an aperture **82'** at the point where the trough extends therethrough, thereby to permit balls B to run freely into the toy.

The cut-away portion of the trough occupied by the foremost ball comprises the feeding station, the portion of the trough occupied by the immediately next following ball constitutes the chute, and the balance of the trough constitutes the ball magazine.

Pursuant to my invention, I provide a mechanism for propelling the ball at the feeding station into whichever car is approaching said station. Said mechanism comprises a propelling element and means to operate said element in such timed relationship to the movement of the cars that as each car approaches the feeding station a ball will be forced from the feeding station into said ascending car to reverse the direction of travel thereof and cause the same to recede from the feeding station.

More specifically, said operating means comprises a pair of abutment elements connected to said propelling element in such fashion that when said propelling element is disposed to one side of a ball at the feeding station, a car moving to one of its extreme positions will strike one of said abutment elements and cause it to move the propelling element to the other side of the feeding station, and in the process sweep said ball into the car approaching said station. Such movement of the propelling element is accompanied by movement of the other abutment element to a position to be struck subsequently by the other car, thereby to return the propelling

element to its first named position and at such time sweep the next ball at the feeding station into the other car approaching the same.

As shown herein, said propelling mechanism includes a weight 84 (the operating means) in the form of a plate P mounted on a shaft 86 which is journaled at its opposite ends in apertures 88 in the side boards 28, 30. Said plate supports a propelling arms 90 which is adapted to sweep in a path crossing the position of the ball at the feeding station. The plate 84 is of such construction that when the propelling arm is near vertical position, pointing downwardly from the shaft 86, said weight is in unstable equilibrium.

Means is also provided to limit the rotary movement of the shaft, weight and propelling arm. Said means may comprise a stop on a stationary part of the toy, which is adapted to cooperate with abutment members carried by the arm, shaft or weight. In the instant embodiment of the invention, said motion-limiting means includes a pair of spaced lobes 92, 94 whose upper edges are adapted to abut alternately the shaft 62 on which the sheave 60 is mounted. Said lobes are so positioned that when either one abuts said shaft, the propelling arm is clear of the ball at the feeding station being disposed to one side or the other thereof.

The plate is additionally provided with abutment elements, engageable by either car as it approaches the feeding station, to urge said plate to a position in which its center of gravity is on the side of the shaft 86 opposite to that on which the ascending car is disposed. Such abutment elements comprise the nodes 96, 98 on the lower edge of the plate 84, which are of such configuration that the node which is disposed lowermost at any given time will lie in the path of travel of the horizontal bar 48 of an ascending car. Said nodes, furthermore, are so dimensioned that as the car reaches its uppermost position, the plate will be pushed over far enough to cause the propelling member 90 to topple a ball from the feeding station F into the ascending car. At such time the center of gravity of the plate may have already crossed to the side of the shaft 86 opposite to that on which the car is ascending or the momentum of the plate will carry it to such position. Thereupon the plate, being in unstable equilibrium, will continue to turn until halted by abutment of one of its lobes 92, 94 against the pulley shaft 62. In this position the propelling member will clear the feeding station so as to allow the next ball to gravitate to said station and will be in proper position upon the next actuation of the plate to sweep said ball into the car ascending the opposite side of the tower.

The toy operates in the following manner:

A number of balls are deposited in the magazine. The foremost ball will run down the trough, past the chute, coming to rest against the stop 80 at the feeding station. The next ball will likewise run down the trough until it strikes the ball resting against the stop, so that the second ball will be disposed in the chute. The remaining balls will be located in the magazine, ready to roll down as the toy operates—first to the chute, and then to the feeding station. At least two, and preferably many more, balls should be inserted in the trough before the toy is put into operation. To start the toy going, one of the cars is brought down into its lowermost vertical position with the extending portions of the pin 52 resting against the lower ends of the slots 54, 56. The car which is brought down is on the side of the tower from which the propelling arm 90 extends. For example, if the propelling arm were in the position shown in Fig. 1, the toy can be started by bringing down the car 42. This will first raise the car 40 to a position shown by the dot-and-dash lines in Fig. 1 when the car 42 reached its lowermost vertical position. Then the car 42 is tilted outwardly about the pin 52, further raising the car 40. During this last phase of its movement, the bar 48 of the car 40 will engage the bottom edge 98 of the plate 84 and move the propelling arm into contact with the ball resting against the stop 80 and topple said ball into the ascending car 40. The top-heavy plate will then swing over to its other extreme position on the opposite side of the tower, breaking engagement between the bar 48 and edge 98, placing the edge 96 in position to be engaged by the bar 48 of the car 42 when it next ascends, and moving the propelling member to a position clearing the feeding station so as to permit the next ball to run down against the stop 80.

When the ball falls into the car 40, said car will overbalance the car 42 so that the car 40 will descend, raising the car 42. When the extending ends of the pin 52 in the car 40 strike the bottom ends of the associated slots 54, 56, the momentum of the car and ball and the fact that the center of gravity of said car and ball is disposed slightly outwardly of the pin 52, will cause the car to tilt outwardly about said pin until the wall 68 slopes downwardly, whereupon the ball will be discharged on to the base board. The ball will run toward and possibly strike the bell 26. The ball may also find its way into one of the holes 22, a possible object of the operation of the toy being to obtain scores depending into which holes one or more of the balls fall.

As the car 40 is tilting to discharge its contents, it will cause the horizontal bar 48 of the car 42 to engage and raise the edge 96 of the plate 84. As a result, the propelling arm will sweep in an opposite direction to force the next ball, which was formerly in the chute and is now against the stop, into the car 42. The car 42 will then descend, raising the car 40, and the cycle of operation will be repeated as long as a ball is at the feeding station.

With the tower vertical and the cars on opposite sides thereof, the action of this toy resembles the well-known nursery rhyme "Hickory-dickory-dock." Such resemblance can be enhanced by placing the facsimiles 100 of a mouse on the sides 44, 46 of the cars. To further carry out this resemblance, the exterior surfaces of the side boards 28, 30 around the pulley shaft 62 may be provided with numerals or the like in the same manner as the dial of a clock, and said shaft 62 may protrude from said side boards and carry arms 102, which are secured thereto so as to turn with the shaft when the shaft is rotated by passage of the string 58 around the same upon up-and-down movement of the cars. If desired, a second hand 104 may be provided on each of said shafts, one to either side thereof. These hands, however, may be rotatable relative to said shafts, so that they can either always be pointing downwardly or be fixed at some other hour, for example, one o'clock.

It will thus be seen that there is provided a toy in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made

of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A ball-operated toy comprising a feeding station having one entrance and two discharge points, means to support the station in elevated position, a ball magazine, means to lead balls from said magazine to said feeding station, a ball-propelling mechanism mounted to sweep back and forth through the space occupied by a ball at said station whereby to engage a ball at said station and push the same out of one or the other discharge point, and means operable by a ball descending from either of the discharge points to actuate said ball-propelling mechanism so as to force a ball from the feeding station out of the other discharge point, whereby balls will be forced alternately out of the discharge points.

2. A ball-operated toy comprising a feeding station, means to support the station in elevated position, a pair of balanced ball carriers mounted for travel toward and away from the feeding station and each adapted to move from near said station to a lower level away from said station when containing a ball while the other carrier is empty, means to interconnect said carriers so that approach of either carrier to said station causes the other carrier to recede therefrom, a ball magazine, means to lead balls from said magazine to said feeding station, a ball propelling mechanism mounted to sweep back and forth through the space occupied by a ball at said station whereby to engage a ball at said station and push the same in either one of two directions away therefrom, said propelling mechanism being actuable by a carrier approaching said station to sweep a ball from said station into the approaching carrier, and means to discharge a ball from either carrier as the other carrier approaches the station, whereby a car after receiving a ball when near the feeding station will recede therefrom causing the other car to approach the station and receive a ball while the ball is dumped from the first car so that the cycle will be repeated as long as balls are led to the feeding station.

3. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight mounted for movement toward and away from the top of the post, means operable to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, means operable by either carrier as it approaches its uppermost position to actuate said propelling member so as to push a ball off said support into said ascending carrier, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

4. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, means operable to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, means operable by either carrier as it approaches its uppermost position to actuate said propelling member so as to push a ball off said support into said ascending carrier, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

5. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said tower between an uppermost and a lowermost position, means operable to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth between two extreme positions through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, means operable by either carrier, as it approaches its uppermost position, to actuate said propelling member in such direction as to push a ball off said support into said ascending carrier, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

6. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, means operable to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support

and push the same in either one of two directions off the support, means associated with said propelling member and lying in the path of travel of either carrier as it approaches its uppermost position and movable by said ascending carrier to actuate said propelling member in such direction as to push a ball on said support into said ascending carrier and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other car in position to actuate the propelling member to push a ball into the latter car, and said cycle will be repeated as long as balls are led to said support.

7. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, means operable to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, a second member associated with said propelling member and movable from either of two extreme positions, upon actuation by either carrier as it approaches its uppermost position, toward the other extreme position, causing said propelling member to push a ball on said support into said ascending carrier, means automatically operable after a ball has been pushed into said ascending carrier to dispose said second member in the extreme position wherein it would be actuated by the other carrier as said other carrier approaches its uppermost position, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the second member to cause a ball to be pushed into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

8. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, means operable to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, means operable by either carrier, as it approaches its uppermost position, to actuate said propelling member in such direction as to push a ball off said support into said ascending carrier, means automatically operable after a ball is pushed into an ascending carrier to continue moving said propelling member in the same direction to a position wherein it clears the path of the next ball led to said support, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

9. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, a cable interconnecting said carriers to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, means operable by either car, as it approaches its uppermost position, to actuate said propelling member in such direction as to push a ball off said support into said ascending carrier, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

10. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, a cable interconnecting said carriers, said cable passing over a guide disposed above the uppermost positions of said carriers, whereby descent of one of said carriers will raise the other of said carriers, said cable being of such length that as one of said carriers approaches its lowermost position the other carrier will approach its uppermost position, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, means operable by either carrier, as it approaches its uppermost position, to actuate said propelling member in such direction as to push a ball off said support into said ascending carrier, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

11. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal

weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, a cable interconnecting said carriers, said cable passing over a sheave disposed above the uppermost positions of said carriers, whereby descent of one of said carriers will raise the other of said carriers, said cable being of such length that as one of said carriers approaches its lowermost position the other car will approach its uppermost position, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, means operable by either carrier, as it approaches its uppermost position, to actuate said propelling member in such direction as to push a ball off said support into said ascending carrier, and means to discharge a ball from either car as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

12. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, means operable to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, a top-heavy member mounted in unstable equilibrium for movement about an axis, said member being movable between two extreme positions in which its center of gravity is on opposite sides of said axis, said top-heavy member being engageable by means associated with either carrier as it approaches its uppermost position to shift the center of gravity of said top-heavy member from one side to the other of said axis, said top-heavy member and said propelling member being so interconnected that as the center of gravity of said top-heavy member is shifted, said propelling member will push a ball on said support into said ascending carrier, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

13. A ball-operated toy as set forth in claim 12 wherein the top-heavy member is movable between two extreme positions and disengages from the gravity-shifting means on a carrier as said top-heavy member approaches one of its extreme positions.

14. A ball-operated toy as set forth in claim 12 wherein the top-heavy member is movable between two extreme positions and disengages from the gravity-shifting means on a carrier as the center of gravity of said top-heavy member shifts from one side of its axis to the other side thereof.

15. A ball-operated toy comprising a base, a post, a pair of ball carriers of approximately equal weight, means to guide each of said carriers up and down said post between an uppermost and a lowermost position, means operable to raise either of said carriers when the other descends, a ball magazine, a ball stop, means to support a ball resting against said stop, means to lead balls one at a time from said magazine to said ball support, means to maintain a ball on said support in such manner that the ball can be pushed off said support to either side thereof, a propelling member mounted to sweep back and forth through the space occupied by a ball on said support whereby to engage a ball on said support and push the same in either one of two directions off the support, a top-heavy member mounted for oscillation about an axis above the center of a ball on said support, said propelling member being supported from said top-heavy member and movable therewith, means on said carriers to engage said top-heavy member as either carrier approaches its uppermost position and to cause movement of said top-heavy member in such direction as to actuate said propelling arm to push a ball off said support into said ascending carrier, said top-heavy member continuing its movement after a ball has been pushed off said support, so as to cause the propelling member to permit another ball to be led to said support, and so as to be in position to be engaged by the other of said carriers as it ascends, and means to discharge a ball from either carrier as it approaches its lowermost position, whereby a carrier after receiving a ball in its raised position, will descend to unload its contents, and at the same time raise the other carrier in position to actuate the propelling member to push a ball into the latter carrier, and said cycle will be repeated as long as balls are led to said support.

16. A ball-operated toy comprising a feeding station, means to support said station in elevated position, a ball magazine, means to lead balls from said magazine to said feeding station, and a ball-propelling member mounted to sweep through the space occupied by a ball at said station, said member being operable by a descending ball to engage and push a ball from said feeding station and to subsequently clear said station and allow another ball to be fed thereto.

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