March 19, 1957 W. J. KOOISTRA, SR 2,785,504

SPHERICAL WEIGHT ACTUATED TOY

Filed Oct. 14, 1954 2 Sheets-Sheet 1

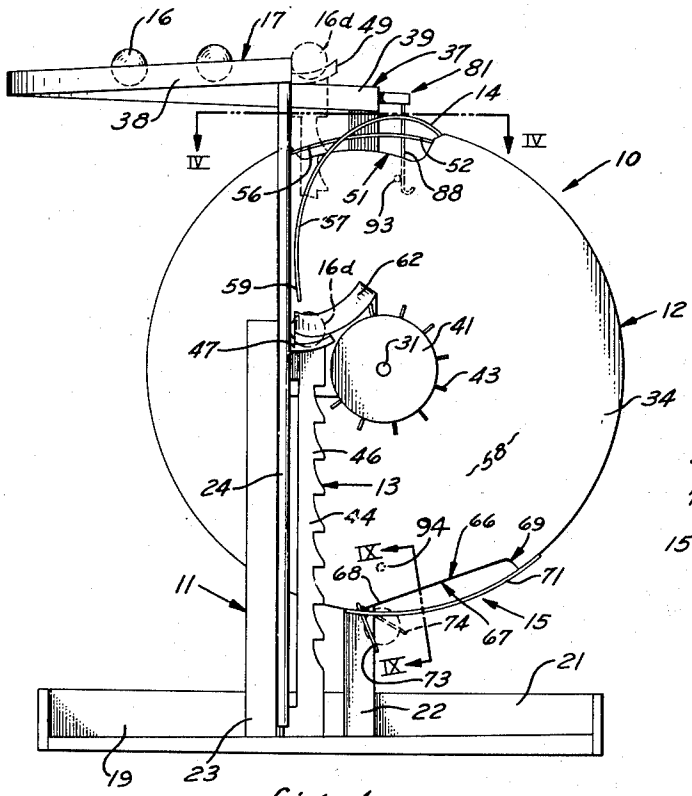

fig. 1

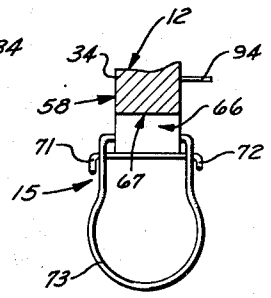

fig. 9

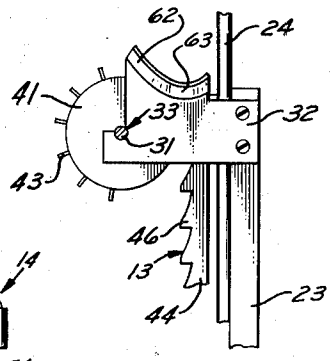

fig. 3

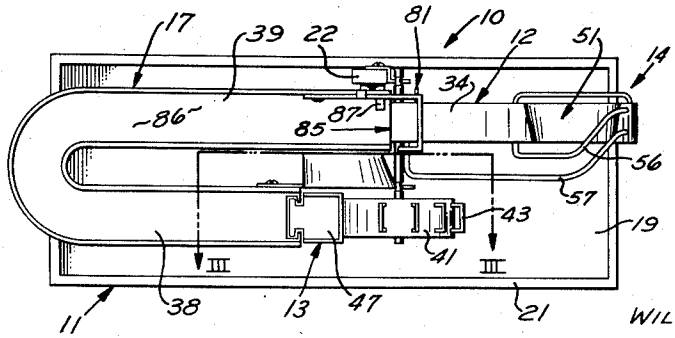

fig. 2

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SPHERICAL WEIGHT ACTUATED TOY

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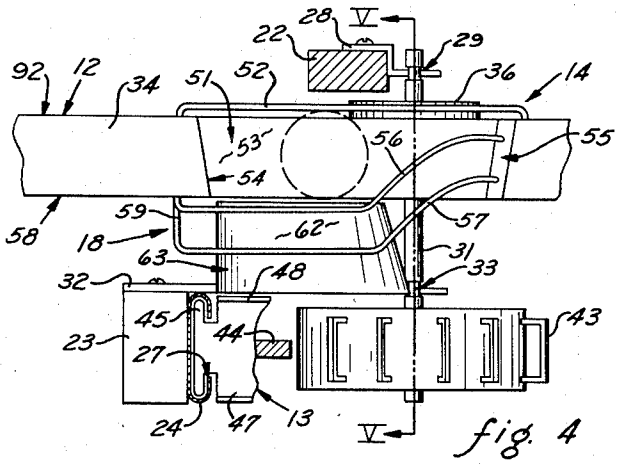

fig. 4

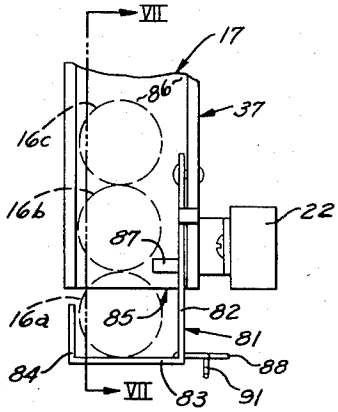

fig. 6

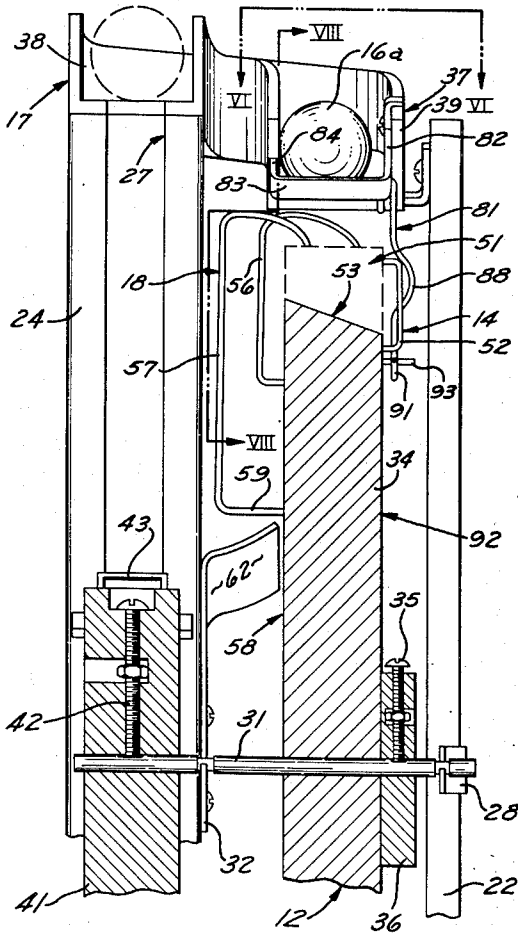

fig. 5

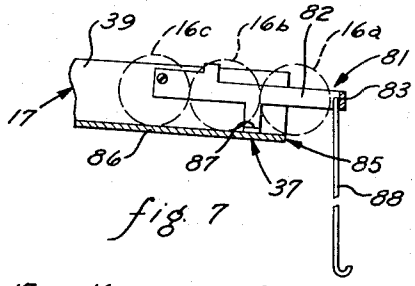

fig. 7

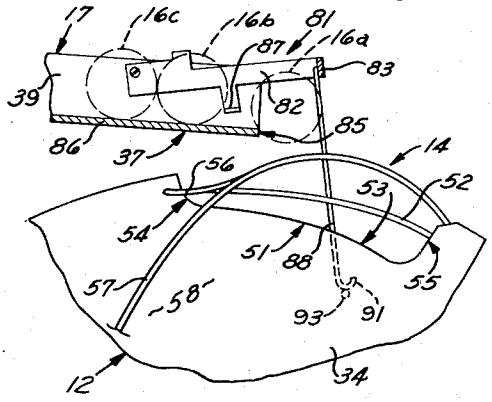

fig. 8

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United States Patent Office 2,785,504 Patented Mar. 19, 1957

2,785,504

SPHERICAL WEIGHT ACTUATED TOY

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Application October 14, 1954, Serial No. 462,316

5 Claims. (Cl. 46—42)

This invention relates in general to a mechanical toy operated by spherical weights, and more particularly to a type thereof having an elevator which is raised and then released by means responsive to the rotation of a member which is in turn rotated by said spherical weights.

It is a recognized fact that perpetual motion machines are physical impossibilities. However, machines which have characteristics of perpetual motion combined with interesting movements have long been sought after because of their entertainment qualities, particularly for children. Among such toys are a great variety of mechanisms which are operated by weights of various types. However, insofar as I am aware, none of these mechanisms combines a rotary member with a vertically reciprocable element whereby parts of the weights used to operate the rotary member are automatically transferred from the rotary member to the vertically reciprocable element for re-utilization in rotating said rotary member.

Accordingly, a primary object of this invention is the provision of a children's toy operated by spherical weights and so constructed that a portion of the weights utilized in operating the toy are automatically returned by a vertically reciprocable element coordinated with said member to a position where they can effect continued operation of said toy, thereby giving said toy the apparent characteristics of a perpetual motion machine without, in fact, being such.

A further object of this invention is the provision of a toy, as aforesaid, which produces a considerable amount of relatively complicated movements in a manner which will intrigue and entertain small children and keep them occupied for long periods of time.

A further object of this invention is the provision of a toy, as aforesaid, which is mechanical in operation and which is operated without any external force, other than the weight of said spherical weights being moved by the machine.

A further object of this invention is the provision of a mechanical toy, as aforesaid, which is inexpensive to manufacture, simple to operate, requires very little action by the person operating the toy and which is, therefore, an ideal toy for persons who are restricted in their movements.

Other objects and purposes of this invention will become apparent to persons familiar with this type of equipment upon reading of the following specification and examination of the accompanying drawings in which:

Figure 1 is a side elevation view of an apparatus embodying my invention.

Figure 2 is a top plan of such apparatus in a slightly different position.

Figure 3 is a fragmentary, sectional view taken along the line III—III of Figure 2 and rotated 180 degrees into an upright position.

Figure 4 is a sectional view substantially as taken along the line IV—IV of Figure 1.

Figure 5 is a sectional view substantially as taken along

the line V—V of Figure 4 and rotated 90 degrees clockwise.

Figure 6 is an enlarged fragment of Figure 2 indicated by the cutting line VI—VI associated with Figure 5.

Figure 7 is a sectional view taken along the line VII—VII of Figure 6.

Figure 8 is a sectional view taken along the line VIII—VIII of Figure 5.

Figure 9 is a sectional view taken along the line IX—IX of Figure 1.

In meeting the objects and purposes set forth above, as well as others related thereto, I have provided a mechanical toy 10 (Figures 1 and 2) having a frame 11 supporting a rotary member 12 for rotation about a horizontal axis, and a vertically reciprocable element 13 which is raised by means responsive to rotation of said rotary member. Said rotary member is provided with a pair of receptacles for receiving spherical weights 16 from the low end of an inclined trough 17. Weight guide means 18 extends from one of said receptacles, here the reloading receptacle 14, to a point near the lower end of the vertical travel of the vertical reciprocable element 13 whereby the spherical weights are transferred from said one receptacle onto said element for return to a position where they can again be deposited into either of said receptacles. The other discharging receptacle is arranged to discharge its spherical weight near the low point in its rotational path. Thus, where two receptacles are provided, half of the original charge of weights is automatically returned to the trough 17 by the toy.

For convenience in description, the terms "upper," "lower," "left," "right," "front," "rear" and derivatives thereof are used herein with reference to the toy 10 as appearing in Figure 1. The terms "inner," "outer" and derivatives thereof have reference to the geometric center of said toy.

Detailed construction

As shown in Figures 1 and 2, the mechanical toy 10 has a frame 11 comprised of a base or tray 19 having a side rail 21 therearound. A pair of parallel, upright support posts 22 and 23 (Figures 1, 2 and 4) are secured at their lower ends in any convenient, conventional manner upon the tray 19 near the center thereof. The front post 23 is preferably disposed leftwardly of the the rear post 22 and has a substantially vertical elevator guide 24 secured to the rightward side thereof. The guide 24 is provided with a vertical, undercut slot 27 opening out of its right side. In this particular embodiment, the guide 24 extends above the support post 23 where its upper end engages and supports the high end of the inclined trough 17. Said trough 17 may be a channel member having a front section 38 which extends leftwardly and downwardly from the upper end of the rail 24 and then curves around and reverses its direction by means of a sloping rear section 39 disposed alongside of said front section 38. The lower or rightward end 37 of the rear section 39 is supported upon the rear post 22 near the upper end thereof. Thus, as appearing in Figure 2, the trough 17 has a U-shaped plan view. It will be apparent that the means supporting the trough 17 and, in fact, the shape of the trough 17 may be varied within the scope of this invention, providing said trough is generally inclined from the rail 24 down to the rear post 22.

A bearing bracket 28 is mounted upon, and extends rightwardly from, the rear post 22 approximately midway between the upper and lower ends thereof. The bracket 28 is provided with an upwardly opening notch 29 for supporting one end of a horizontal shaft 31 upon which the rotary member 12 is mounted. Said shaft 31 is supported near the other end thereof by a bearing bracket 32 secured to, and extending rightwardly from, the front

post 23 and having a notch 33. As shown in Figure 4, the notches 29 and 33 are co-axial and the brackets 28 and 32 are on opposite sides of the member 12.

The rotary member 12 is, in this particular embodiment, comprised of a circular disk 34 co-axially supported upon the shaft 31 and releasably secured thereto by means of a set screw 35 extending radially through a hub 36 secured to one side of said disk 34, as shown in Figure 5. The periphery of the disk 34 and the shaft 31 are preferably disposed directly below the lower end of the trough 17 and the rear section 39 of said trough preferably extends for at least a short distance in the rotational plane of said disk. The side walls of the disk 34 are spaced from the posts 22 and 23 and the shaft 31 is preferably provided with annular grooves engageable with the notches 29 and 33 in the bearing brackets 28 and 32 to prevent axial movement of the disk 34 with respect to the bearing brackets.

As shown in Figures 1, 3, 4 and 5, the shaft 31 extends forwardly of the front bracket 32 where it supports a gear 41 secured to the shaft 31 by the radially disposed set screw 42. The gear 41, rack 44 and disk 34, as well as the frame 11 and trough 17, may be fabricated from any convenient, conventional materials such as wood, metal or plastic. The shaft 31 and bearing brackets 28 and 32 are advantageously, but not necessarily made of metal. Said gear 41 rotates in a plane parallel with, and passing through, the slot 27 of the guide 24 and has teeth 43 which may be wire loops, as shown in Figure 4. The periphery of the gear 41 is spaced from the guide 24 a sufficient distance to permit the interposition of a vertically reciprocable rack 44 therebetween. Said rack 44 has a pair of spaced T-shaped flanges 45 along one edge slidably receivable within the slot 27 for controlling the vertical movement of the rack 44. Said rack 44 has teeth 46 on the opposite edge thereof engageable with the teeth 43 of the gear 41 whereby rotation of said gear 41 in a clockwise direction, as appearing in Figure 1, will effect a raising of the rack 44. The gear teeth 43 are omitted from the periphery of the gear 41 along approximately one third of its circumferential length, which permits a release, and resulting drop due to gravity, of the rack 44 after having been raised by interengagement of the gear and rack teeth. An elevator platform 47 is secured in any convenient, conventional manner upon the upper end of the rack 44 to provide with said rack 44 the vertically reciprocable element 13. Said platform 47 may be provided with a low rail 48 around the edges thereof to retain thereon a spherical weight 16*d*. The platform 47 is shown in solid lines in its lowered position (Figure 1) and is shown in broken lines 49 in its raised position. Rotation of the rotary member 12 results in a corresponding rotation of the gear 41 thereby raising and lowering the vertically reciprocable element 13 during each revolution of the rotary member 12.

The rotary member 12 is provided with a pair of receptacles 14 and 15 (Figures 1, 4, 5, 8 and 9) which are preferably disposed on diametrically opposite sides of the disk 34. As shown in Figures 4, 5 and 8, the reloading receptacle 14 is comprised of a circumferentially elongated notch 51 in the periphery of the disk 34 having an arcuate inner wall 53 which may, as shown herein, be sloped axially of the disk toward the shaft 31. An arcuate bar 52 is disposed along the rearward side of the notch 51 to retain the spherical weights 16 within said notch due to the slope in the wall 53 thereof. Thus, spherical weights 16, such as marbles, discharged from the low end 37 of the trough 17 will strike the wall 53 of the notch 51 and, due to the slope in said floor, move over against the bar 52 extending along said notch 51. The wall 53 of the notch 51 also preferably slopes from the trailing end 54 to the leading end 55 thereof with respect to the direction of rotation of said notch 51, which is clockwise as appearing in Figure 1. The depth of the notch 51 at said leading end 55 is approximately equal to the diameter of the spherical weights 16.

The weight guide means 18, which may be part of the receptacle 14, is comprised of a pair of guide bars 56 and 57 (Figures 4 and 5) secured at one end of each to the disk 34 substantially at the point intersection of the leading end 55 of the notch 51 and the periphery of the disk 34. The rear guide bar 56 has an outwardly bowed part which extends from said notch end 55 toward the trailing end 54 while curving frontwardly to a point beyond the front side 58 of the disk 34. Said bar 56 then extends parallel with said side 58 past the trailing end 54 of said notch 51 where it is secured to the disk 34. The front guide bar 57 extends parallel with, and spaced frontwardly from, the rear guide bar 56 to said point in front of said side 58. Thereafter, the front guide bar 57 continues to curve in a smooth arc parallel with said disk 34 toward said shaft 31 and is secured at its inner end 59 to the side 58 of the said disk 34, about midway between the shaft 31 and the periphery of the disk 34, in this particular embodiment. Thus, a spherical weight 16, disposed adjacent to the leading end 55 of the notch 51 during downward movement of the notch, may move onto the parallel guide bars 56 and 57 and, as the notch 51 moves upwardly, follow said guide bars until said weight moves past said point after which it will be guided by the front guide bar 57 and the adjacent front side 58 of the disk 34.

A loading chute 62 is secured to, and extends upwardly from, the front bearing bracket 32 intermediate the front post 23 and the notch 33 between the vertically reciprocable element 13 and the front side 58 of the disk 34. Said chute 62, which may be an integral part of the front bracket 32 (Figures 3, 4 and 5) has its front edge disposed slightly above the lower, solid line position of the elevator platform 47 shown in Figure 1, and slopes upwardly and rearwardly toward the disk 34 adjacent thereto. Said chute 62 curves upwardly both at its leftward and rightward ends and is so disposed that the inner 59 of the bar 57 passes close to the leftward receiving end 63 of the chute 62.

The curvature of the bar 57 and chute 62 is such that the spherical weight will move with the rotation of the disk 34 onto the elevator platform 47. The gear 41 is so positioned upon the shaft 31 that its teeth 43 will be disengaged from the rack teeth 46 just before the inner end 59 of the guide bar 57 discharges its spherical weight into the loading chute 62 and, therefore, in sufficient time for the elevator platform 47 to reach its lower, solid line position shown in Figure 1. It will be apparent that the vertical position of the loading chute 62, the maximum inward extent of the bar 57, the amount of toothed surface on the gear 41 and the distance which the elevator platform 47 may be moved by said gear 41 are all functions of each other which must be carefully worked out for any particular arrangement of the toy. However, it will be equally apparent that variations in these functions may be made within the scope of this invention.

The discharging receptacle 15 (Figures 1 and 9) is comprised of a circumferentially elongated notch 66 having a substantially flat, straight inner wall 67 which intersects the periphery of the disk 34 at its leading end 68 and engages a trailing end wall 69 at its other end. A pair of substantially parallel retaining bars 71 and 72 extend between the opposite ends of the notch 66 and are spaced laterally therefrom for reception of a spherical weight 16 therebetween. As shown in Figure 9, a loop 73 of relatively stiff bar stock is pivotally supported upon the disk 34 adjacent to the leading end 68 of the notch 66 for movement about an axis parallel with the shaft 31 between the broken line and solid line positions shown in Figure 1. Thus, a spherical weight 16 discharged from the lower end 37 of the trough 17 into the notch 66 will move forwardly therealong as the disk 34 is rotated until it is received into the loop 73 where it remains until said loop reaches the position

approximately as shown in Figure 1 where the weight 16 will drop from the loop 73 into the tray 19. As the loop 73 passes beneath the trough 17, it will be moved back into the broken line position 74 prior to engagement by another spherical weight 16. The loop 73 prevents early dislodgement of the weight from the notch 66 and also moves the center of gravity of the spherical weight 16 a little further away from the shaft 31. Thus, said loop 73 may under some circumstances be omitted provided the notch 66 has some other, similar means of preventing dislodgement of the spherical weight from its leading end until said leading end reaches the position shown in Figure 1.

As shown in Figures 5, 6, 7 and 8, a metering device 81 is mounted upon the trough 17 near the low end 37 thereof, for the purpose of discharging one spherical weight 16 at a time from said trough upon appropriate actuation of the metering device by means on the disk 34. The metering device 81 is comprised of an elongated lever arm 82 pivotally supported upon one side wall of the trough 17 near said end 37 thereof, the other end of said lever 82 extending rightwardly beyond said lower end 37. A cross bar 83 is secured to, and extends perpendicularly from, the right end of the lever 82 transverse of the trough 17. A side bar 84 is secured to, and extends from, the free end of the cross bar 83 back toward the trough 17 substantially parallel with the lever 82. The side bar 84 is spaced from the lever 82 a distance sufficient to permit a spherical weight 16 to pass therebetween. The cross bar 83 is sufficiently close to the edge 85 of the trough bed 86 when the lever 82 is in its lower position (Figure 7) to prevent a said spherical weight 16 from passing therebetween. A downwardly and forwardly extending foot 87 is secured to the lever 82 at a point near to the edge 85 of the trough bed 86 and extends toward the center of said trough bed 86. When the lever arm 82 is in said lower position (Figures 6 and 7), the foot 87 rests upon the trough bed 86 and does not obstruct the passage of the spherical weights 16 along the trough 17. However, when the right end of the lever 82 is in its raised position (Figure 8) weight 16*a* is released from the trough 17 and the foot 87 intercepts the spherical weight 16*b* immediately following the spherical weight 16*a*. Lowering of the lever 82 permits weight 16*b* to take the position adjacent to the cross bar 83 just vacated by weight 16*a*.

A lift rod 88 is pivotally supported at its upper end upon the arm 82 adjacent to the cross bar 83 which limits the forward pivotal movement of said rod to a position substantially perpendicular to the arm 82, as shown in Figure 7. The lower end of said rod 88 is provided with a rightwardly curving hook 91 which extends substantially parallel with and adjacent to the rear side 92 of the disk 34 (Figures 5 and 8). A pair of pins 93 and 94 are secured to, and extend from, the disk rear side 92 near to the notches 51 and 66, respectively, and are spaced slightly rearwardly of the leading ends 55 and 68 thereof. Said pins are equi-distant from the shaft 31 and so located that they will engage the lower end of the rod 88 during rotation of the disk 34 and cause said rod, hence said arm 82, to be raised upwardly to a position permitting the release of the first spherical weight 16*a* from the end of the trough 17 (Figure 8) into a receptacle 14 or 15, respectively.

Operation

In a preferred embodiment of my invention, the mechanical toy is arranged so that the rotary element 12 will rotate in a clockwise direction when viewed from the front side thereof as appearing in Figure 1. A plurality of spherical weights 16, such as the spheres 16*a*, 16*b* and 16*c* shown in Figures 6, 7 and 8, are loaded into the inclined U-shaped trough 17, which trough may be transparent. The spherical weights may be colored marbles to add to the attractiveness, but must be substantially uniform in weight and diameter, said diameter being limited by the size of the trough 17, the receptacles 14 and 15 and the vertically reciprocable element 13.

The operation of the toy 10 preferably commences with the loading receptacle 14 in the top position, the discharging receptacle 15 in the bottom position and the pin 93 associated with the notch 51 disposed leftwardly of the lift rod 88, as appearing in Figure 1. At this moment, the vertically reciprocable element 13 is in its lower position, as shown in solid lines in Figure 1, with a spherical weight 16*d* disposed thereon. The open space in the gear teeth 43 on the gear 41 is disposed adjacent to the rack 44 with said gear teeth positioned to engage the rack teeth 46 upon slight clockwise rotation (Figure 1). The disk 34 is manually rotated in said clockwise direction until the pin 93 engages the rod 88 and thereby raises the lever arm 82 from its Figure 7 position to its Figure 8 position to release the spherical weight 16*a* into the notch 51. In this particular embodiment, the spherical weights 16 are released from the lower end 37 of the trough 17 over the downwardly moving portion of said disk 34. The spherical weight 16*a* moves toward, and engages, the leading end 55 of the notch 51 thereby causing the disk 34 to be rotated in a clockwise direction, as appearing in Figure 1. As the notch 51 approaches and reaches the lower end of its rotational path, the spherical weight 16*a* moves from the inner wall 53 onto the leading end wall 55 and then upon the guide bars 56 and 57.

About when the notch 51 is completely inverted and the spherical weight 16*a* moves onto the guide bars 56 and 57 of guide means 18, the pin 94 associated with the notch 66 engages the rod 88 thereby causing the metering device 81 to release the spherical weight 16*b* into the notch 66 in substantially the same manner as the spherical weight 16*a* was released into the notch 51. The momentum of the disk 34 causes it to continue its rotation until the spherical weight 16*b* moves along the inner wall 67 of notch 66 to the leading end 68 thereof. The loop 73 is moved from its broken line position 74 into its solid line position (Figure 1) to receive the spherical weight 16*b* therewithin and the disk 34 is rotated by the weight 16*b*. During the movement of the notch 66 from its high position to its low position, the spherical weight 16*a* moves first along the parallel guide bars 56 and 57 and then along and between the guide bar 57 and the front side 58 of the disk 34 until the said weight 16*a* rolls off the inner end 59 of the bar 57 into the leftward end 63 of the loading chute 62. The loading chute 62 then directs the spherical weight 16*a* into and upon the elevator platform 47 which is in its lowered position.

It will be observed that during the initial movement of the notch 51 from its Figure 1 position around to a position where the spherical weight 16*a* is deposited, as above recited, into the elevator platform 47, said elevator platform has made a complete vertical reciprocation from its solid line position (Figure 1) to its broken line position at 49 and return. When in the raised, broken line position, the weight 16*d* is deposited into the upper end of the trough 17 whereupon it rolls toward the lower end 37 of said trough. Accordingly, during the rotation of the disk 34 from its Figure 1 position where it receives the weight 16*a* to the position where said spherical weight 16*a* is deposited upon the platform 47, the spherical weight 16*d* is removed from the platform and said platform is returned to its lowered position ready to receive said spherical weight 16*a*. When the loop 73, hence the notch 66, reaches its lower position (Figure 1), the spherical weight 16*b* disposed therein is discharged into the tray 19 and must, therefore, be manually lifted into the trough 17. This completes one cycle of operation of my toy.

It will be seen that each spherical weight discharged from the trough 17 into the receptacle 14 will be returned by the guide bars 56 and 57 of the guide means 18 and by

the vertically reciprocable element 13 to the trough 17. Each spherical weight discharged into the receptacle 15 will be deposited into the tray 19, this particular receptacle being provided for the primary purpose of rotating the disk 34. As long as the weights 16 discharged from the notch 66 into the tray 19 are manually returned into the trough 17, the mechanical toy 10 will continue to operate indefinitely. As in the case of the initial cycle of operation, additional cycles commence with the elevator 47 in its lowered, solid line position (Figure 1) and the receptacle 14 in its high position (Figure 1) with the pin 93 about to engage the rod 88 for the purpose of tripping the metering device 81 and thereby releasing a spherical weight 16 into the notch 51.

It should be apparent from the above disclosure of my invention that details in mechanical structure may be varied substantially providing only that there is a rotary member having at least two receptacles thereon, one of which acts primarily to rotate the rotary member whereas the other moves the spherical weight deposited therein from a trough to the platform of a vertically reciprocable element which in response to rotation of the rotary member lifts the spherical weight back into said trough.

Accordingly, although a particular, preferred embodiment of my invention has been disclosed herein for illustrative purposes it will be understood that modifications thereof which lie within the scope of such invention are fully contemplated unless specifically stated to the contrary in the appended claims.

I claim:

1. A toy operable by a plurality of spherical weights, comprising: a frame and an inclined trough supported thereon; a rotary member mounted upon said frame for rotation entirely by said weights about a horizontal axis beneath the low end of said trough; a vertically reciprocable element supported upon said frame near said member for receiving a weight from said member; means responsive to rotation of said member for raising said element to a position adjacent to the upper end of said trough and depositing said weight in said upper end; first receptacle means on said member for receiving a weight from said low end of said trough and discharging same near the bottom of its rotary path onto means other than said element; second receptacle means on said member for receiving a weight from said low end of said trough and discharging same upon said element below said position, said member continuing to rotate as long as said receptacles receive weights.

2. A toy operable by a plurality of spherical weights, comprising: a frame and an inclined trough supported thereon; a rotary member mounted upon said frame for rotation entirely by said weights about a horizontal axis beneath the low end of said trough; a vertically reciprocable element supported upon said frame near said member for receiving a weight from said member; means responsive to rotation of said member for raising said element to a position adjacent to the upper end of said trough and depositing said weight in said upper end; a pair of spaced receptacle means on said member for releasing and receiving weights from said low end of said trough, one receptacle discharging its weight near the bottom of its rotary path onto means other than said element and the other receptacle discharging its weight upon said element below said position, said member rotating automatically as long as said receptacles receive weights of adequate mass.

3. A toy operable by a plurality of spherical weights, comprising: a frame; a rotary member having a pair of spaced receptacles on its periphery and mounted upon said frame for rotation entirely by said weights about a horizontal axis; a vertically reciprocable element supported on said frame near to said member for receiving a weight from said member; means responsive to a partial rotation of said member for raising and releasing said element; an inclined trough on said frame with its high end adjacent to one position of said element for receiving said weight from said element and its low end above said member on the downwardly moving side thereof for discharging said weight into one of said receptacles; means actuated by said member for releasing a weight into each receptacle as it passes the low end of said trough, one receptacle discharging its weight near the bottom of its rotational path onto means other than said element; and a weight guide extending from the other receptacle to another, lower position of said element for discharging a weight from said other receptacle onto said element, said member continuing to rotate automatically as long as said receptacles receive weights from said trough.

4. A toy operable by a plurality of spherical weights, comprising: an upright frame; an inclined trough supported on said frame; a circular member supported upon said frame for rotation by said weights about a horizontal axis disposed below the low end of said trough, said member having a pair of substantially diametrically disposed, receptacles on its periphery for receiving weights from said trough; an elevator supported upon said frame near one side of said member for substantially vertical movement; means responsive to rotation of said member for raising and lowering said elevator, during less than a full rotation of said member, between a low position and a high position adjacent the high end of said trough, a said weight being received by said elevator in its low position from one said receptacle and being discharged by said elevator in its high position into said trough; a metering device actuated by said member for releasing one weight into each receptacle as it passes said low end of said trough, the weight being discharged from the other receptacle near the bottom of its rotational path; a weight guide extending from the one receptacle to said low position of said elevator, said guide having one part mounted upon said member and the other part mounted upon said frame.

5. A toy operable by a plurality of spherical weights, comprising: an upright frame; an inclined trough on said frame; a circular member supported upon said frame for rotation by said weights about a horizontal axis disposed directly below the low end of said trough, said member having a pair of diametrically disposed receptacles on the periphery thereof for receiving weights from said trough; an elevator and means supporting same upon said frame near one axial side of said member for vertical reciprocation; means responsive to a partial rotation of said member for raising said elevator from a low position to a high position, adjacent to the high end of said trough, and releasing same, a said weight being received by said elevator in its low position from one said receptacle and being discharged by said elevator in its high position into said trough; means on said trough actuated by said member for releasing a weight into each receptacle as it passes said low end of said trough, the other receptacle discharging its weight near the bottom of its rotational path; and a weight guide extending from the one receptacle to said low position of said elevator, said weight guide having one part mounted upon said aixal side of said wheel and another part mounted upon said frame adjacent to said axial side.

References Cited in the file of this patent

UNITED STATES PATENTS

1,260,664	Gregory	Mar. 26, 1918
1,261,691	Bunkley	Apr. 2, 1918
1,631,016	Craven	May 31, 1927