This invention relates generally to toys or amusement devices which require the skill of an operator thereof for maintaining the ball in continuous motion over alternating guideways or tracks, and more particularly relates to improvements in such toys which render the same more interesting and challenging in operation to the greater enjoyment, accomplishment and delight of an operator thereof.

Although numerous devices of the general type under consideration have heretofore been provided, the same have never achieved any widespread popularity and use. Invariably, the prior ball-rolling toys comprised a pair of parallel rails or the like which afforded two trackways, i.e., one on the top and one on the bottom of said rails. In these trackways were interconnected by enlarged openings sufficient to permit the passage of the ball therethrough at or near the opposite ends thereof. Associated with the enlarged openings were direction reversing means of one type or another. In the operation of such prior toys, the operator thereof would roll the ball down one of the trackways until it reached one of the enlarged openings. When the ball fell through the particular opening, the direction reversing means would reverse the direction of travel of the ball. With a properly timed rotation of the toy through an arc of 180°, the operator could then roll the ball again in the opposite direction on the second track. The described operation could be repeated time and again without permitting the ball to fall off of the trackways.

The user of one of the described prior toys soon discovered that its operation could be quickly mastered so that the ball could be kept in continuous motion for virtually unlimited periods of time without requiring the exercise of any great physical dexterity or skill. As a result, he soon lost interest in the toy and discarded the same. The ease of mastery of the toy resulted, of course, from the fact that there were only two tracks and only a single repeated rotational manipulation of 180° was required to roll the ball alternately on said tracks. It may thus be safely assumed that the lack of success of the prior toys was caused by the described failure of the device to challenge the user's skills and thereby sufficiently hold his interest or justify a feeling of accomplishment.

It is, therefore, an important object of this invention to provide a ball-rolling toy of the character described which overcomes all of the aforementioned disadvantages of the prior similar toys.

Another object of the invention is to afford a ball-rolling toy of the character described which employs four guideways instead of the customary two trackways heretofore employed. In this regard, the invention comprises a novel member having four contiguous and interconnected guideways and no spaced rails or the like of the type heretofore employed.

A further object is to provide a ball-rolling toy of the character described whose operation requires a series of different manipulations instead of the single 180° rotational manipulation heretofore required.

Yet a further object is to provide a ball-rolling toy of the character described which requires no openings or holes through which the ball must pass in going from one guideway to another. The entire toy thus may be more sturdily and integrally fabricated without necessitating the use of excessively dimensioned components or materials of unusual strength.

Still a further object is to afford a ball-rolling toy of the character described which may be inexpensively fabricated and yet affords great enjoyment and amusement to the user thereof.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

FIG. 1 is a side elevational view of a ball-rolling toy embodying the principles of the invention and showing a ball operationally positioned thereon;

FIG. 2 is a top plan view showing the ball in the same position;

FIG. 3 is an enlarged sectional view taken on the plane of line 3—3 in FIG. 1 and viewed in the direction indicated;

FIG. 4 is a similar view taken on the plane of line 4—4 in FIG. 1 and viewed in the direction indicated; and

FIG. 5 is a similar view with the ball removed taken on the plane of line 5—5 in FIG. 1 and viewed in the direction indicated.

Referring now to FIGS. 1, 2 and 2 of the drawings, the reference character 10 indicates generally a ball-rolling toy embodying the principles of the invention. The toy 10 comprises an elongated member 12 having an outer end member 14 and a similar inner end member 16. Attached to the inner end member 16 is a handle 17 of any suitable shape for manipulating the toy in a manner which will be subsequently described.

As indicated in FIGS. 4, 5 and 6, the member 12 is substantially cruciform in cross section and thus has four arms or fins 18, 20, 22 and 24. The fins 18, 20, 22 and 24 are symmetrically arranged and adjacent pairs thereof are connected by the uniformly arcuate surfaces indicated to thereby afford four elongated troughs or guideways 26, 28, 30 and 32. It is important to note, however, that the four fins do not extend over the full length of the member 12. It will thus be noted that the opposed fins 18 and 22 terminate in arcuate rabor edges 34 and 36 spaced inwardly from the inner end member 16. Similarly, the opposed fins 20 and 24 terminate in arcuate rabor edges 38 and 40 spaced inwardly from the outer end member 14. There are thus provided adjacent the end members 14 and 16 substantially flat segments 42 and 44 respectively.

Turning again to the outer end member 14, it will be
seen that the same comprises an arcuate inner wall 46 which terminates in a pair of railings such as 48 and 50, said inner wall and railings being in a plane substantially perpendicular to the segment 42. Similarly, the inner end member 16 comprises an arcuate inner wall 52 terminating in a pair of railings such as 54 and 56 said inner wall and railings likewise being in a plane substantially perpendicular to the segment 44. It may thus be appreciated that as a ball such as 58 is rolled along any of the four guideways, the direction of motion of the ball is caused to be reversed by the pertinent railings and arcuate inner wall as the ball approaches either end of said guideway. It will be further appreciated that each of the guideways 26, 28, 30 and 32 has a direction reversing railing and arcuate inner wall at both ends thereof, but that the segments 42 and 44 which interconnect adjacent guideways lie in planes perpendicular to each other.

The operation of the toy 10 may now be described with particular reference being had to FIGS. 1 and 2 of the drawings. The ball 58 is placed on any one of the guideways such as 52 and the operator causes the same to roll in either direction such as rearwardly (to the left, as indicated by the arrows in the drawings). The rearward rolling motion of the ball 58, of course, is initiated by merely tilting the outer end of the member 12 upwardly to slant the guideway in the proper direction. When the ball 58 reaches the railing 56 and inner wall 52, it is caused to roll therewith along it rolls onto the adjacent guideway 26 (along the curved path indicated by the arrows in FIG. 2 of the drawings). At this instant, the operator must quickly tilt the outer end of the member 12 downwardly in order to keep the ball 58 in constant motion by causing the same to roll forwardly. When the ball 58 reaches the railing 48 and inner wall 46, it is caused to roll therewith along the next adjacent guideway 28. At this instant, the operator must once again tilt the outer end of the member 12 upwardly in order to cause the ball to roll rearwardly once more.

It is important to note, however, that simultaneously with the last described tilting motion, the operator must likewise rotate the member 12 in a clockwise direction through an arc of approximately 90°. This rotation is necessary in order to bring the guideway 28 into a substantially horizontal position so that the ball may be retained thereon. The described manipulations may now be repeated, it being necessary to rotate said member through an arc of approximately 90° each time the ball passes from one guideway to the next adjacent one.

The toy 10 may likewise be operated so that the described rotational motion is counter-clockwise instead of clockwise. Thus, for example, if the ball 58 is first positioned on the guideway 26 and put in motion in the opposite direction of the arrows in FIG. 2, a counter-clockwise rotational motion is required to retain the ball on the member 12.

To a certain extent, the degree of skill required to operate the toy may be varied by changing the specific contour of the four guideways. Thus, for example, the outer edges of the fins 18, 20, 22 and 24 have been illustrated as being slightly wider than the adjacent guideway surfaces. The narrowing or complete removal of the said outer edges, of course, will result in guideways which have less retaining influence on the ball 58.

From the foregoing description and drawings, it should be apparent without further description that I have provided a novel ball-rolling toy whose successful operation requires a considerable degree of skill and physical and mental coordination so that the continued interest and enjoyment of a user thereof is assured. The toy affords four guideways instead of the customary two trackways, and during the operation thereof, the guideway adjacent to the one supporting the ball lies in a plane normal thereto so that a deft rotational movement is required to prevent the rolling ball from falling off. The toy has no separated rails, holes or openings, and is thus extremely sturdy in structure. In addition, the toy may be inexpensively and even integrally fabricated from ordinary materials of manufacture such as woods, plastics, or lightweight metals.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. A skill and amusement device comprising an elongated member having at least three longitudinally extending radial fins substantially equal in length to the elongated member, said fins defining at least three longitudinally extending conterminous guideways, each of said guideways being interconnected at each of the ends thereof to another of said guideways, and a ball, said ball adapted to be rolled from one of said guideways to another.

2. A skill and amusement device comprising an elongated member of generally cruciform cross section and having four longitudinally extending radial fins affording four longitudinal conterminous guideways over which a ball can roll, said guideways being interconnected adjacent the opposite ends of said member, and direction reversing means at said opposite ends whereby the ball may be rolled in continuous motion from one of said guideways onto the next.

3. The skill and amusement device of claim 2 in which said direction reversing means comprises a pair of U-shaped end members, each of said end members affording a pair of side railings connected by an arcuate end wall.

4. The skill and amusement device of claim 3 in which a handle is connected to one of said end members for manipulating said device.

5. A skill and amusement device comprising an elongated member having four symmetrically arranged longitudinal fins, adjacent pairs of said fins being connected by arcuate surfaces to afford four trough-like elongated guideways over which a ball can roll, inner and outer U-shaped end members at opposite ends of said elongated member, each of said end members affording a pair of side railings and an arcuate end wall, one opposed pair of said fins terminating in razor edges spaced inwardly from said outer end member to afford a substantially flat end segment interconnecting said guideways at the outer ends thereof, the other opposed pair of said fins terminating in razor edges spaced inwardly from said inner end member to afford a substantially flat end segment interconnecting said guideways at the inner ends thereof, and a handle connected to said inner end member, said end members adapted to reverse the direction of motion of a ball rolling on said guideways at either end thereof whereby the ball may be rolled in continuous motion from one of said guideways onto the next.

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