Dec. 29, 1970 Y. W. EAST 3,550,312

AMUSEMENT AND EXERCISE APPARATUS

Filed Feb. 26, 1969

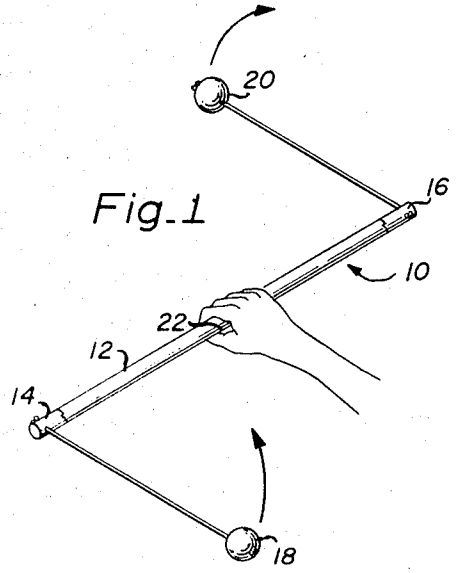


Fig_1

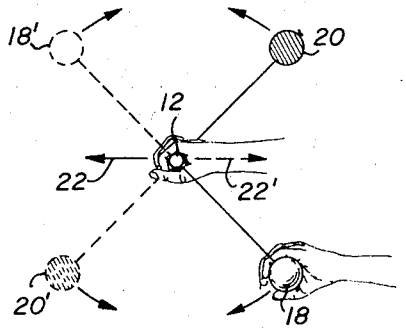


Fig_2

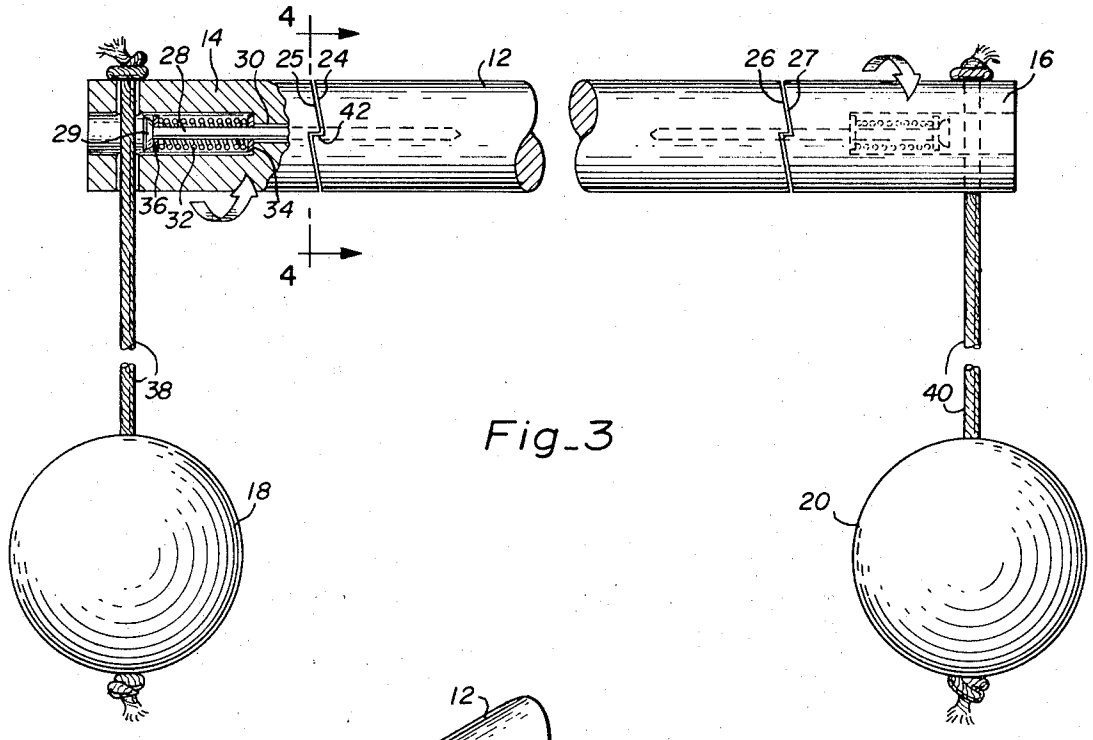


Fig_3

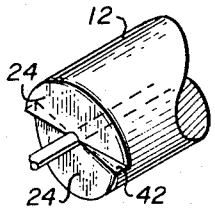


Fig_4

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AMUSEMENT AND EXERCISE APPARATUS

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ABSTRACT OF THE DISCLOSURE

An amusement and exercise apparatus comprised of an elongated handle member having secured at either end thereof rotative assemblies adapted to rotate about the longitudinal axis of the handle member in opposite directions in response to manipulative movement of the handle portion. The rotative assemblies are respectively constrained from rotation in one direction by ratchet-like means which also produce an audible sound when the device is in operation.

BACKGROUND OF THE INVENTION

The present invention relates generally to toy and exercise apparatus and, more particularly, to a novel operative device which may be used by children and adults alike as an exercise medium or as a game which tests manual dexterity and coordination.

Many toys and exercising devices have been provided in the prior art wherein the object is to cause one or more balls or eccentric projections to spin around a shaft or handle member. Examples of these types of device are disclosed in the Batchelder U.S. Pat. No. 139,533, the Rogers U.S. Pat. No. 2,414,063 and the Rolin U.S. Pat. No. 2,956,369. The Batchelder and Rolin devices are quite similar to that of the present invention in that the intended object of the device is to cause a pair of ball-on-string or eccentrically mounted members to rotate in opposite directions in response to manipulation of a supporting rod or shaft. Although these devices have been found both amusing and beneficial from an exercising standpoint, there are certain improvements thereto to which the present invention is directed in order that the usefulness and amusing capabilities can be increased.

OBJECTS OF THE PRESENT INVENTION

It is therefore a principal object of the present invention to provide an improved amusement and exercise device wherein the rotative elements are constrained to rotate independently in opposite directions.

Another object of the present invention is to provide a simplified mechanical amusement device including a handle portion with rotative elements disposed at either end thereof which is constrained to respectively rotate in only one direction.

Still another object of the present invention is to provide a rotative amusement device requiring manual dexterity and coordination and including noise maker means at either end thereof for providing a rhythmatic beat responsive to the rotative frequency at which the rotative elements are turning.

SUMMARY OF THE PRESENT INVENTION

The present invention is comprised of an elongated handle member having secured at either end thereof, rotative assemblies adapted to rotate about the longitudinal axis of the handle member in opposite directions in response to manipulative movement of the handle portion. The rotative assemblies are respectively restrained from rotation in one direction by ratchet-like means which also produce an audible sound when the device is in operation.

In the drawing:

FIG. 1 is a perspective view of the device illustrating the manner in which it is used.

FIG. 2 is an end view of the device illustrating the operation thereof.

FIG. 3 is a partially broken elevation illustrating the mechanical components of the device.

FIG. 4 is a cross perspective taken along the lines 4—4 of FIG. 3.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to FIG. 1 of the drawing, there is shown an amusement and exercising device in accordance with the present invention illustrating the manner in which the device is held by the user. The device **10** generally includes an elongated handle portion **12** and a pair of rotatable end portions **14** and **16** adapted to rotate about the longitudinal axis of the handle portion **12**. Attached to the end portions **14** and **16** are cord and ball assemblies **18** and **20** which are constrained to rotate in different directions about the axis of the handle **12** by means to be explained in detail below.

When one grasps a device such as the present invention in the manner illustrated in FIG. 1 of the drawing, and attempts to rotate both end assemblies, the initial tendency is to "wobble" the wrist to cause the ends **14** and **16** to describe generally conical surfaces of rotation about the midpoint **22** of the handle **12**. However, to do so causes the balls **18** and **20** to rotate in the same direction rather than in opposite directions. Thus, the manner in which the desired opposing rotations are obtained is not immediately apparent and it takes a substantial degree of coordination to obtain the desired bi-directional operation.

In FIG. 2, the manner in which the desired opposing rotational movements are obtained is illustrated. For example, the handle **12** might be held in the right hand and the ball **18** held in the left hand. The handle **12** is then caused to reciprocate in a horizontal plane until the ball **20** begins to rotate in the counter-clockwise direction as illustrated. It will be readily apparent to those of skill in the art that with the ball in the position illustrated, a movement of the handle **12** in the direction indicated by the arrow **22** will cause the ball **21** to be accelerated to rotate to the position **20'**.

Likewise, when the ball **20** has been displaced around the handle **12** to the position **20'**, abrupt movement in the direction illustrated by the arrow **22'** will cause the ball in the position **20'** to continue to rotate back to the initial position **20**. Once a frequency of displacement of the handle **12** has been achieved which is capable of causing the desired rotation of the ball **20**, the ball **18**, held in the left hand as illustrated, is then given a slight impetus with the left hand in the clockwise direction as the rod **12** is continuously reciprocated.

If such reciprocal movement of the handle **12** is continued with the proper frequency of repetition, both of the balls **18** and **20** will be caused to rotate in opposite directions as shown. When so rotating, the device will, for reasons to be explained below, produce a rhythmic sound at a frequency determined by the frequency of revolution of the balls **18** and **20**.

Referring now to FIG. 3 of the drawing, the particular features of the present invention will be disclosed in detail. In a preferred embodiment, the handle **12** is a cylindrical rod of wood, plastic, aluminum, or other suitable material and includes a pair of helical camming surfaces **24** on one end, and a pair of similar camming surfaces **26** on the other end. The camming surfaces **24**, for example, are perhaps better illustrated in FIG. 4 of the drawing. Rotatably affixed to one end of the handle **12** is the rotatable end portion **14** having a similarly cammed end surface **25** which mates with the end surface **24**.

Rotatably mounted to the other end of the handle **12** is another end portion **16**, also having a cammed end surface **27** for meshing with the end face **26** of the handle **12**. The ends **14** and **16** are free to revolve in one direction about the axle pin **28** which pass through apertures **30** in the cammed ends thereof but are obviously constrained against rotation in the other direction. Recessed within the ends **14** and **16** and concentric with the pins **28** are spring means **32** which bear against the head **29** of the pin **28** and the pin shoulders **34** to bias the ends **14** and **16** toward the ends of the handle **12**.

The spring means **32** are shown as a helical spring having a pair of end bearings or washers **36** and the pin **28** is illustrated as being simply a headed nail which is frictionally secured in the ends of the handle **12**. However, it will be readily apparent to those of skill in the art that the pin **28** could just as well be threaded into the handle **12** or be otherwise attached in any suitable manner. Likewise, the spring means **32** could be any other resilient mechanism which would allow the ends **14** and **16** to be axially displaced a predetermined distance from the end of the handle **12** sufficient to allow the cam surface **25** to cam completely over the surfaces **24**, for example. The balls **18** and **20** are attached to the ends **14** and **16** respectively, by suitable cord means **38** and **40** which pass through suitable apertures and are knotted or otherwise secured to the rotatable ends of the device.

The noise maker feature of the device is actually incidental to the ratchet-type structure which permits opposite unidirectional rotation of the ends **14** and **16**. The audible sounds are produced as the surfaces **25** re-engage the surfaces **24** after having been cammed off of the edges **42** during rotation. The staccato beat produced when the device is in operation is conductive to the continued rhythmic operation of the device since it is indicative of the speed of rotation. Thus, once a rotational speed sufficient to maintain the contrarotation is attained, this rotation can be perpetuated by audibly monitoring the sounds produced by the device.

The device is preferably brightly colored and the exterior surface can take a suitable decorative configuration. The balls, or spheres, **18** and **20** are preferably of a soft material to prevent injury to children using the device. However, the bodies **18** and **20** are not limited to spherical bodies, but could be of any suitable configuration and may even themselves contain noise makers or illuminating apparatus to enhance the effect produced by operation of the device.

A suitable overall length of a device has been found to be approximately 20" or so, with 12" cords and 2" diameter spheres. These dimensions are, of course, only exemplary and the device can be of any suitable proportion.

Furthermore, the bearing parts, ratchet parts, etc. are not limited to the very basic mechanisms disclosed but can likewise be modified to suit the particular application.

After having read the above disclosure, many alterations and modifications of the invention will be apparent to those of skill in the art. It is therefore to be understood that this discription of a preferred embodiment is for purposes of illustration only and is in no manner intended to be limiting in any way. Accordingly, I intend that the appended claims be interpreted as covering all modifications which fall within the true spirit and scope of my invention.

What is claimed is:

1. An amusement and exercise apparatus comprised of:

an elongated handle portion having rotative end portions coupled to either end thereof which are rotatable about a common axis;

ratchet-like camming means coupling said end portions to said handle portion, said camming means limiting rotation of said end portions to opposite directions; and

pendulous means attached to each end portion whereby reciprocal motion of said handle portion in a single plane will cause said end portions and the respective pendulous means affixed thereto to rotate in opposite directions about said handle portion.

2. An amusement and exercise apparatus as recited in claim **1** wherein said camming means include the mating end surfaces of said end portions and said handle portion, and resilient biasing means for biasing said end portions into engagement with said handle portion.

3. An amusement and exercise apparatus as recited in claim **2** wherein said pendulous means comprise weighted spheres attached to said end portions by connecting means.

4. An amusement and exercise apparatus as recited in claim **3** which further includes means for producing an audible sound which is related to the angular velocity of said rotating pendulous means about said handle portion.

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U.S. Cl. X.R.

272—67