Nov. 19, 1968 E. P. DELK, JR 3,411,775

POWER ACTUATED JUMP ROPE

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Fig. 1

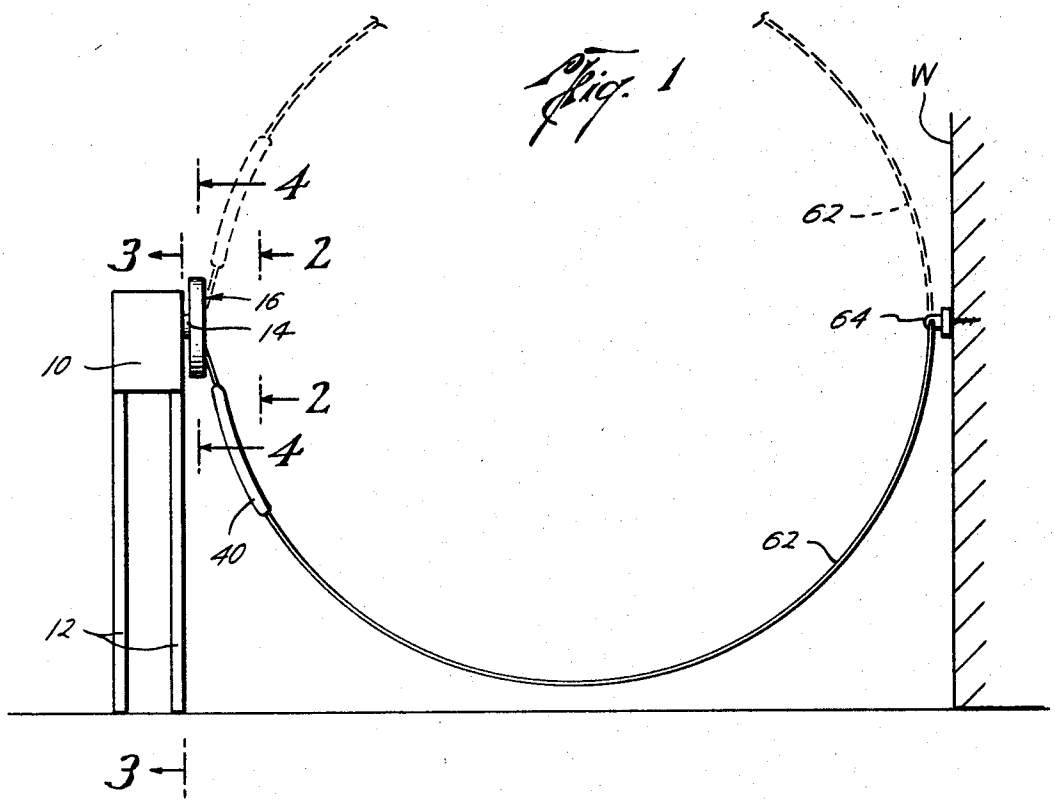


Fig. 3

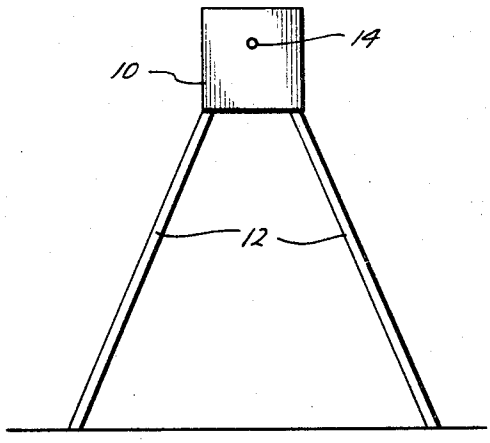
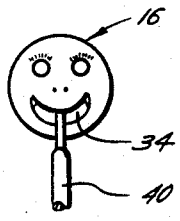


Fig. 2



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Fig. 4

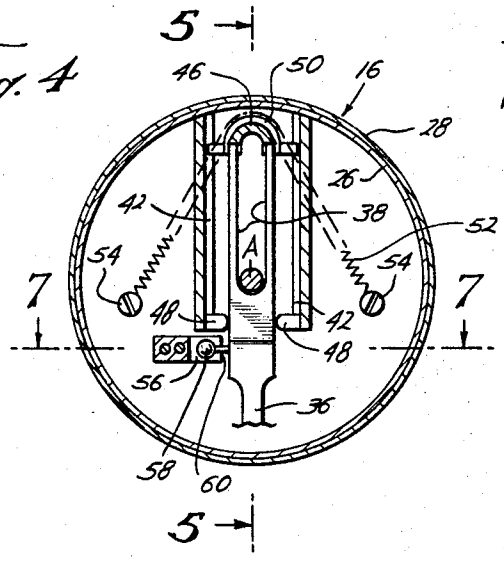


Fig. 5

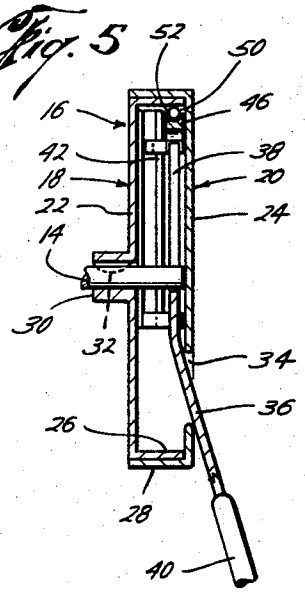


Fig. 6

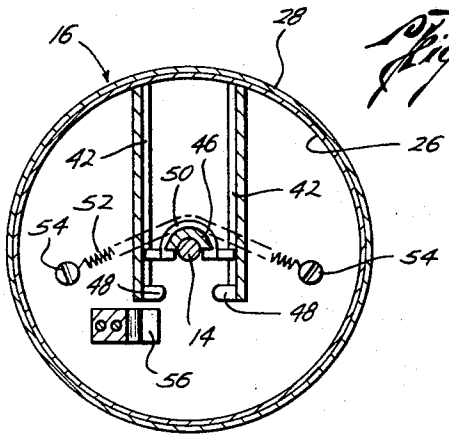
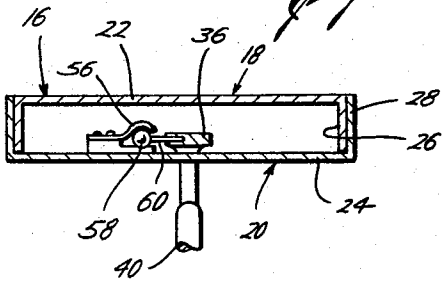
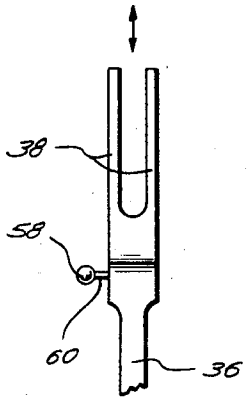


Fig. 7





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United States Patent Office 3,411,775 Patented Nov. 19, 1968

3,411,775

POWER ACTUATED JUMP ROPE

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Filed Oct. 20, 1965, Ser. No. 498,739
3 Claims. (Cl. 272—75)

ABSTRACT OF THE DISCLOSURE

Mechanism for operating a jump rope for use as play or exercise equipment. An electric motor is used to drive a circular plate to which one end of a jump rope is releasably attached. Also attached to the plate by resilient biasing springs is a counterweight. When the end of the rope is attached to the plate the counterweight is offset from the center of rotation of the plate to counterbalance the weight of the rope, when the rope is disengaged from the plate, the counterweight returns to the center of rotation of the plate so that the device is always balanced.

This invention relates to play and exercise apparatus and more particularly to jump rope mechanism by which a jump rope is operated without the necessity of manipulation or swinging of the rope by the person using the same.

The invention has for an important object the provision of power mechanism for operating a jump rope whereby the rope is made to rotate in the usual manner without manual effort on the part of the user.

Another object of the invention is to provide power mechanism for operating a jump rope embodying means for releasing the rope from the driving means in the event that the user should fail to clear the rope in jumping.

A further object of the invention is the provision of power operated jump rope mechanism having means for balancing the load on the mechanism during the rotation of the rope whereby the mechanism operates smoothly without substantial variation in timing.

Another object of the invention is to provide power actuated jump rope mechanism which is of simple design and rugged construction and which may be easily set up and taken down.

The above and other obvious advantages of the invention will be apparent from the following detailed description of the preferred embodiment of the same shown in the accompanying drawings, wherein:

FIGURE 1 is a front elevational view of the jump rope operating mechanism of the invention showing the same in operations;

FIGURE 2 is a fragmentary side elevational view showing the rope operating mechanism as viewed from the line 2—2 of FIGURE 1, looking in the direction indicated by the arrows;

FIGURE 3 is a cross-sectional view, taken along the line 3—3 of FIGURE 1, looking in the direction indicated by the arrows;

FIGURE 4 is a cross-sectional view, on an enlarged scale, taken along the line 4—4 of FIGURE 1, looking in the direction indicated by the arrows, showing details of construction of the releasable connecting means and counterbalancing means for the rope and showing the same with the connecting means in connected condition;

FIGURE 5 is a cross-sectional view, taken along the line 5—5 of FIGURE 4, looking in the direction of the arrows;

FIGURE 6 is a view similar to that of FIGURE 4, showing the releasable connecting means in released condition; and

FIGURE 7 is a cross-sectional view, taken along the line 7—7 of FIGURE 4, looking in the direction indicated by the arrows.

Referring now to the drawings in greater detail the power actuated jump rope mechanism of the invention includes motor means, such as an electric motor, of a usual type, disposed in a suitable casing **10**, supported on legs, such as those shown at **12**, by which the casing may be positioned at a desired distance from some suitable supported structure, such as a wall W, post, or the like, and at a suitable elevation above the ground.

The motor may be connected in driving relation to suitable speed reducing mechanism, also contained in the casing **10**, and having an output shaft **14**, which extends horizontally from the casing.

Mounted on the ouput shaft **14**, for rotation therewith, externally of the casing **14**, is a hollow, generally cylindrical housing, generally designated **16**, which is preferably made up in two parts, **18** and **20**, having the disc-like bottom walls **22** and **24**, respectively, the part **18** having a peripheral flange **26**, which fits within a peripheral flange **28** formed on the part **20** when the parts are assembled. The part **18** is also provided with an external, central, tubular neck **30** through which the outer end portion of the shaft **14** is extended, and in which suitable means, such as a key **32** is carried, extending into a key-way in the shaft to connect the housing to the shaft for rotation therewith.

The bottom wall **24** of the part **20** has an opening **34** therein, through which a releasable connecting member **36** extends into the housing, which connecting member takes the form of a flat strip formed at its upper end with spaced apart arms **38**, and connected at its lower end to a connector element **40**, which may take the form of a slightly curved tube, formed of plastic or the like, suitably attached at one end to the connector member.

Within the housing **16**, spaced apart, vertically disposed trackways **42** are provided, one on each side of the output shaft **14**, between which trackways a counterweighting element **46** is vertically movable along the trackways. At their lower ends the trackways are provided with inwardly extending lugs **48**, between which the connector member **36** may be extended upwardly, to engage the upper ends of the arms **38** with the counterweight element **46** and the shaft **14** extending between the arms, as best seen in FIGURE 4.

The counterweighting element **46** may be formed with an upwardly opening arcuate groove **50** through which a coiled spring **52** is extended, which spring is attached at its upper ends to the housing, as by means of screws **54**, at a location to apply a downward force to the counterweight element when the counterweight element is in its upper position on the trackways **42**.

Detent mechanism is provided for releasably holding the connector member **36** in its inserted position, as shown in FIGURES 4 and 5, which detent mechanism takes the form of a spring clip **56**, attached to the bottom wall **24** of the housing member **20** inside of the housing, and beneath which a ball **58** is insertable, which ball is carried on a laterally extended arm **60** attached to the connector member **36**.

By this arrangement, when the connector member **36** is inserted in the housing through the opening **34** and extended upwardly therein to position the shaft **14** between the arms **38** and to engage the arms and the upper ends with the counterweighting element **46** to lift the counterweighting element to its upper position, as shown in FIGURE 4, against the tension of the spring **52**, the ball **58** will be inserted beneath the clip **56**, so that the ball is clamped in position in the housing to hold the connector member in its connected position.

The connector **40** is connected to one end of a rope

62, or other equivalent flexible member, to whose other end a swivel 64 is attached, by means of which the rope may be attached to the wall W, or other suitable supported structure, at the same elevation above the ground as the shaft 14.

In utilizing the jump rope mechanism constructed as described above, the swivel 64 is attached to the wall W at the same elevation above the ground as the shaft 14, and the motor casing with its supporting legs is moved to a position spaced from the wall so that the rope 62 will be supported for rotation in the usual manner of a jump rope, as shown in FIGURE 1. With the connector member 36 in its connected condition, as shown in FIGURES 4 and 5, the motor may then be operated to rotate the rope while the person using the same jumps to clear the rope each time that the rope swings downwardly in the usual manner in which a jumping rope is manipulated by the user.

By providing an electric motor having suitable characteristics and suitable speed reducing mechanism for use therein the rope may be rotated at a desired speed, such as 100 revolutions per minute, for example, for convenient use by children jumping the rope.

In the event that a user of the jump rope should fail to clear the rope during its operation a downward pull will be exerted on the connector member 36, which releases the detent mechanism in the housing, whereupon the spring 52 will pull the counterweight element 46 downwardly along the trackways, so that the connector element will be disconnected from the housing, thus releasing the jump rope and preventing any possible injury to the user.

It will be apparant during the operation of the mechanism, the counterweight element 46 will be positioned to partially or wholly counter-balance the outward pull exerted by the jump rope, so that the mechanism will be substantially in balance, whereby a smooth and regular operation of the jump rope is obtained. When, however, the jump rope is released from the housing the counterweight element 46 will be pulled down against the shaft 14, as shown in FIGURE 6, so that the mechanism remains in a balanced condition even when the jump rope is disconnected.

It will thus be apparent that the invention provides jump rope operated mechanism which is of sturdy construction and which is easily set up and taken down, and by which a jump rope may be operated without manual manipulation of the rope by the user.

The invention is disclosed herein in connection with a particular embodiment of the same, which it will be understood is by way of example only, it being apparent

that various modifications can be made in the structure and arrangement of the parts, within the spirit of the invention and the scope of the appended claims.

Having thus clearly shown and described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. The combination with a jump rope of means for supporting the rope in an arcuate condition at an elevated location for rotation about a substantially horizontal axis, comprising

(a) means forming a rotatable connection between one end of the rope and a support at an elevation above the ground,

(b) a horizontally disposed, rotatably mounted driving element,

(c) means for supporting the element at the same elevation as, and in horizonally spaced relation to, said rotatable connection,

(d) means for rotating the element,

(e) releasable means forming a connection between the element and the other end of the rope to cause the rope to rotate with the element,

(f) weight means,

(g) means movable supporting the weight means on the element for radial movement toward and away from a position to counterbalance the force exerted by the rope on the element during rotation of the rope, and

(h) means on said releasable means positioned for engagement with said weight means to hold the weight means in said counterbalancing position prior to the releasing of said releasable means.

2. The combination as set forth in claim 1, including yieldable means positioned for coaction with the element and said weight means to yieldingly urge the weight means away from said counterbalancing position.

3. The combination as set forth in claim 1, including means positioned for coaction with said element and said releasable means to yieldingly hold said releasable means against releasing.

References Cited

UNITED STATES PATENTS

3,013,798 12/1961 Willoughby ---------- 272—74

FOREIGN PATENTS

227,726 10/1910 Germany.

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P. E. SHAPIRO, *Assistant Examiner.*