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POWER OPERATED JUMPING DEVICE

Filed Nov. 18, 1959

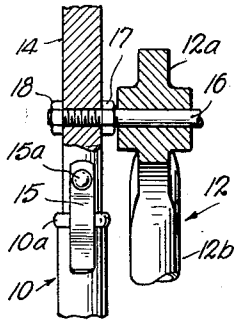


Fig. 4.

Fig. 1.

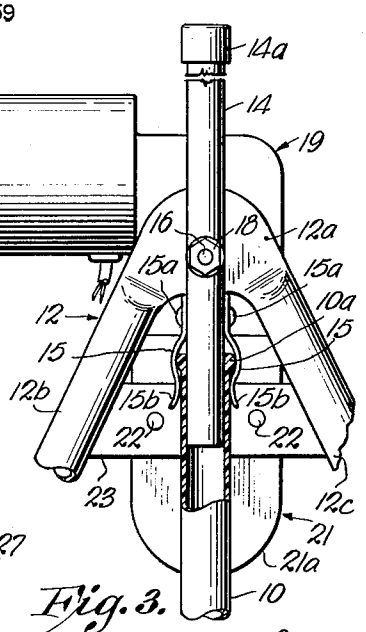


Fig. 3.

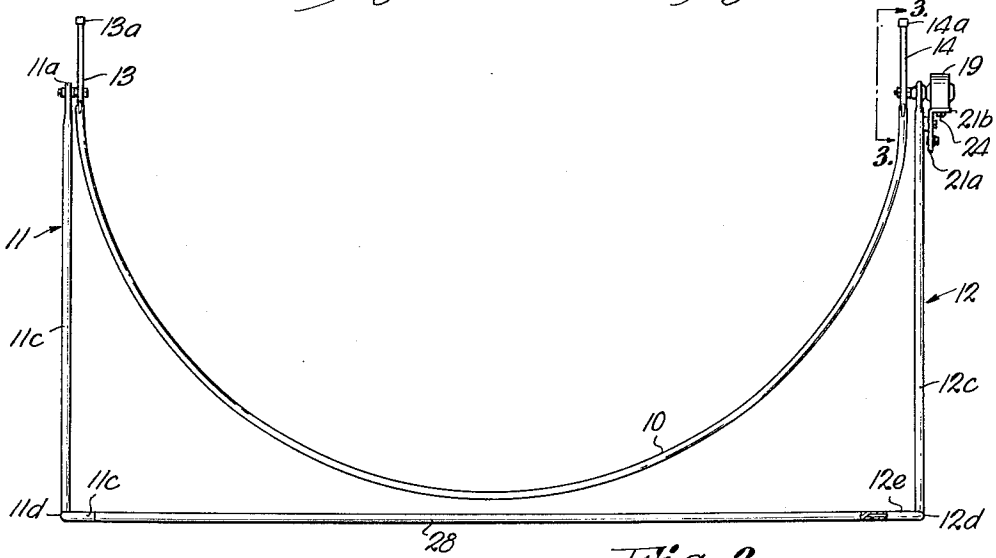


Fig. 2.

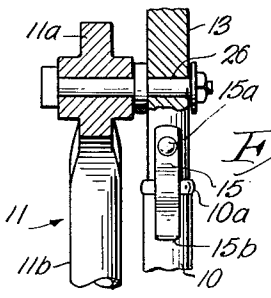


Fig. 5.

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POWER OPERATED JUMPING DEVICE

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This invention relates generally to recreational and exercising devices and refers more particularly to an apparatus by which individuals are enabled to engage in the pastime known as in-place rope jumping without the necessity of other persons being present to manipulate or swing the rope.

One of the principal objects of the invention is to provide apparatus having a power driven jumping member resembling the arched rope used in the past, yet which is extremely safe to use and can be manufactured at low cost. Among the many features of my invention contributing to its safety, particularly when used by children, is the provision of a semi-rigid non-metallic jumping member which is capable of disengagement from the drive means should a jump be missed and the member come into forceful contact with the jumper. Another safety feature of great importance is the provision of a framework for the moving parts and drive means which leaves the jumping area itself free of any obstructions or parts which might otherwise present dangerous obstacles causing tripping or probability of injury should the child fall thereon.

Another important object of the invention is to provide an apparatus of the character described which is so constructed as to result in a balanced load on the drive means. The rotation of the jumping member is extremely smooth in operation, thus achieving satisfactory results with little wear and tear on the drive means.

Still another object of the invention is to provide an apparatus of the character described which is easily assembled and disassembled, which is sturdy in its assembled condition, and which occupies a minimum of space when disassembled, thus rendering it easily shipped or stored when not in use.

Other and further objects of the invention together with the features of novelty appurtenant thereto will appear in the course of the following description.

In the accompanying drawings in which like reference numerals indicate like parts in the various views:

FIG. 1 is an end elevation of an apparatus embodying my invention, taken from that end on which the motor is carried, parts being broken away for purposes of illustration;

FIG. 2 is a side elevation of the apparatus;

FIG. 3 is an enlarged fragmentary view taken generally along the line 3—3 of FIG. 2 in the direction of the arrows, parts again being broken away for purposes of illustration;

FIG. 4 is an enlarged fragmentary view of the power shaft and arm showing the manner of journaling the power shaft in the standard and the connection between the arm and jumping member, parts shown in section for purposes of illustration;

FIG. 5 is a view similar to FIG. 4 showing the manner of supporting the non-powered arm and the connection of the jumping member therewith.

Referring to the drawing, reference numeral **10** indicates an arch-like jumping member which is suspended in a shape resembling a catenary between two vertical standards **11** and **12**. The jumping member **10** is so designed as to pass at its central portion relatively close to the ground at the low point in its travel. The jumping member is constructed of a light weight, stiff, but resilient material such as polyethylene or the like and is preferably tubular in construction.

As is best shown in FIGS. 3, 4, and 5, the end portions

of the jumping member **10** are sleeved over the end portions of a pair of arms **13** and **14** which are supported respectively by the standards **11** and **12**. The outside diameter of the portions of the arms within the jumping member are such that the fit will be relatively loose. As shown, the ends of the jumping member are slightly beaded as at **10***a*. Cooperating with the beads are spring clamps **15** which are secured at one end to the arm as by rivets **15***a* and extend down over and are contoured to grip the bead at the other. The lower ends of the spring clamps **15** are bent slightly outward as at **15***b* to permit easy insertion of the tubing and bead thereunder.

The arms **13** and **14** are supported for rotation about a common axis extending transversely across the standard.

The arm **14** is connected with a rotary drive shaft **16** which is journaled for rotation in the flattened upper end **12***a* of the standard **12**, apertured bosses being secured to opposite sides of the portion **12***a* to provide a relatively long bearing surface. The arm is apertured to receive the threaded end of the drive shaft and is tightened thereto and against a spacer nut **17** by an end nut **18**. As will be evident, the nut **18** can be tightened to any degree desired, thus providing a friction clutch between the shaft and the arm.

The outside end of the drive shaft **16** leads from a speed reducer and right angle transmission unit **19** which is connected with an electric motor **20**. Preferably the transmission unit **19** is of the worm and pinion type, the worm being on the motor shaft and the pinion on the drive shaft **16**. These parts are, however, commercially available and the details play no part in my invention so will not be further described.

The power unit (motor and transmission) is supported by a generally L-shaped bracket **21** which has a vertical leg **21***a* bolted as at **22** to a gusset **23** extending between the legs of the standard. The horizontal leg **21***b* provides the base for the power unit, the latter being bolted thereto as by bolts **24**. The motor control switch **25** is preferably supported on the vertical leg **21***a*. This may either be an off-on switch or a rheostat.

Arm **13**, on the opposite standard, is free-swinging, being coupled with a shaft **26** journaled in a suitable aperture in the upper portion **11***a* of the standard **11**.

It will be observed that the arms **13** and **14** have portions extending well beyond the axis of rotation in the opposite direction from the jumping member. The length of these portions is made such that their mass and the spacing of their center of gravity from the axis of rotation will counter-balance the jumping member, thus to provide for a balanced load on the motor. This promotes smooth operation and prevents periodic overloading and overheating. Plastic or rubber protective caps **13***a*, **14***a* are employed on the free ends of the arms to reduce likelihood of injury by accidental contact therewith.

Turning now to the construction of the standards **11** and **12**, they are each made up of tubular steel or aluminum bent into a V-shape to provide the legs **11***b*, **11***c* and **12***b*, **12***c*. The ends of the legs **11***b*, **12***b* are capped by plastic or rubber caps **27**. The opposite legs **11***c*, **12***c* have outturned horizontal extensions **11***d*, **12***d*, which terminate in right angle confronting portions **11***e*, **12***e*. The portions **11***e*, **12***e* are joined together by a straight tube section **28** which is firmly connected therewith by any suitable joint such as a friction, telescopic fit which may be supplemented by bolts.

The manner of operation of the invention is believed largely evident from the foregoing description. Upon energizing the motor the drive shaft causes its arm **14** to rotate, carrying with it the jumping member **10**. The jumping member is sufficiently stiff to retain its general shape at the start of rotation and thereafter. The counter-balancing of the jumping member assists in reduc-

ing the strain placed on the motor during the initial period of rotation. The child or other jumper can now use the device for jumping purposes in the known manner.

Should the jumping member catch on a fallen or inattentive user it will immediately come free of one or the other of the arms, or cause the drive shaft **16** to slip relative the arm **14**. Re-engagement of the jumping member with the arms is accomplished with ease by simply slipping them back thereon under the clamps **15**.

The knock-down character of the entire assembly permits quick separation and collection of the components in a fairly compact package which can be stored or shipped with ease.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth together with other advantages which are obvious and which are inherent to the structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, 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:

1. A power operated recreational jumping apparatus comprising a frame including a pair of spaced upright standards, a horizontal drive shaft journaled for rotation at the upper end of one of said standards, electric power means secured to said one standard and drivingly connected with said shaft, an arm secured to and extending transversely from said drive shaft and rotatable therewith, a second shaft journaled in the other of said standards for rotation about an axis common with that of said drive shaft, an arm on said second shaft extending transversely therefrom, a stiff yet resilient arched jumping member extending between said arms and having tubular ends sleeved over the distal ends of said arms, means releasably connecting said ends of said jumping member with the respective arms whereby under normal conditions said jumping member will remain connected with the arms and rotate about said axis under the influence of said power means, but will be disengaged from at least one

arm upon the application of pressure outwardly on the jumping member, and counterweights on the arms constructed to counterbalance the jumping member with respect to the axis of rotation.

2. Apparatus as in claim 1 wherein said last mentioned means includes frictional clamps serving to engage the end portions of the jumping member in a releasable grip.

3. A power operated recreational jumping apparatus comprising a pair of spaced parallel standards of inverted V-shape, each provided with legs diverging from an upper juncture and adapted to rest at their ends on a level surface, a bracing member rigidly joining the end of one of the legs on one standard to the end of the corresponding leg on the other whereby to maintain the standards in fixed spatial relationship, a horizontal drive shaft journaled for rotation at the upper juncture of one of said standards, electric power means secured to said one standard and drivingly connected with said shaft, an arm secured to and extending transversely from said drive shaft and rotatable therewith, a second shaft journaled in the other of said standards for rotation about an axis common with that of said drive shaft, an arm on said second shaft extending transversely therefrom, a stiff yet resilient arched jumping member extending between said arms, means releasably connecting the ends of said jumping member with the respective arms whereby under normal conditions said jumping member will rotate about said axis under the influence of said power means, but will be disengaged from at least one arm upon the application of pressure outwardly on the jumping member, and counter-weights on the arms constructed to counterbalance the jumping member with respect to the axis of rotation.

4. A power operated recreational jumping device as in claim 3, including means associated with said power means operable to vary the speed of rotation of said drive shaft.

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