April 19, 1966 R. BOGGILD ETAL 3,246,893

RESILIENT GYMNASTIC POLE DEVICE

Filed Jan. 14, 1963 3 Sheets-Sheet 1

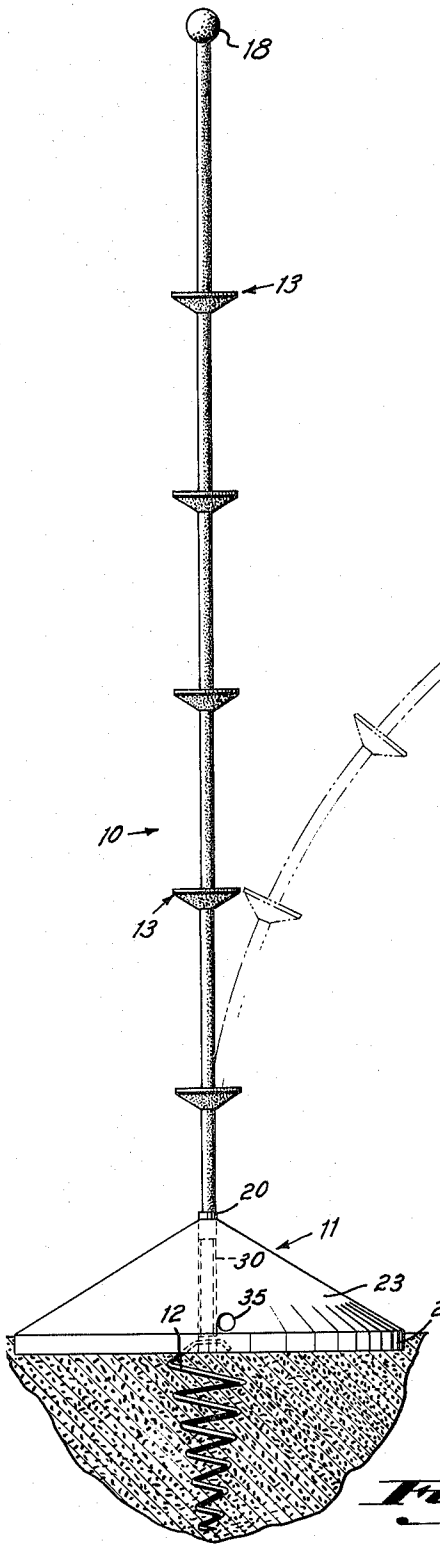

Fig. 1

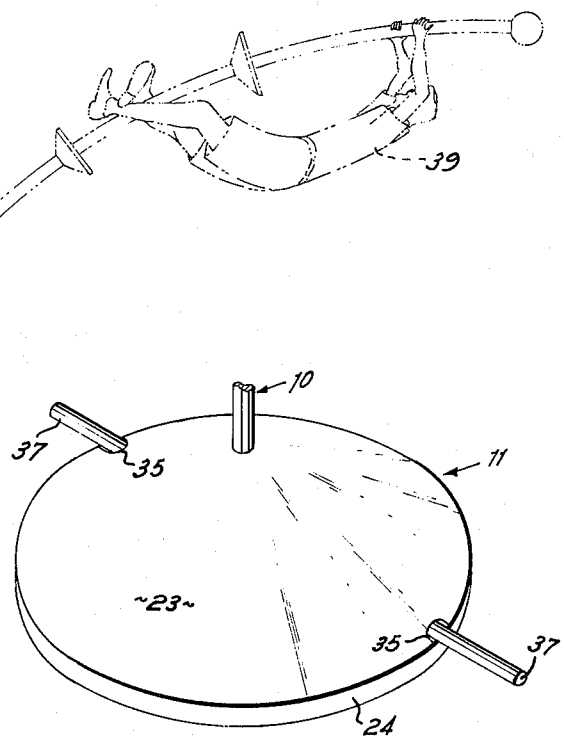

Fig. 5

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RESILIENT GYMNASTIC POLE DEVICE

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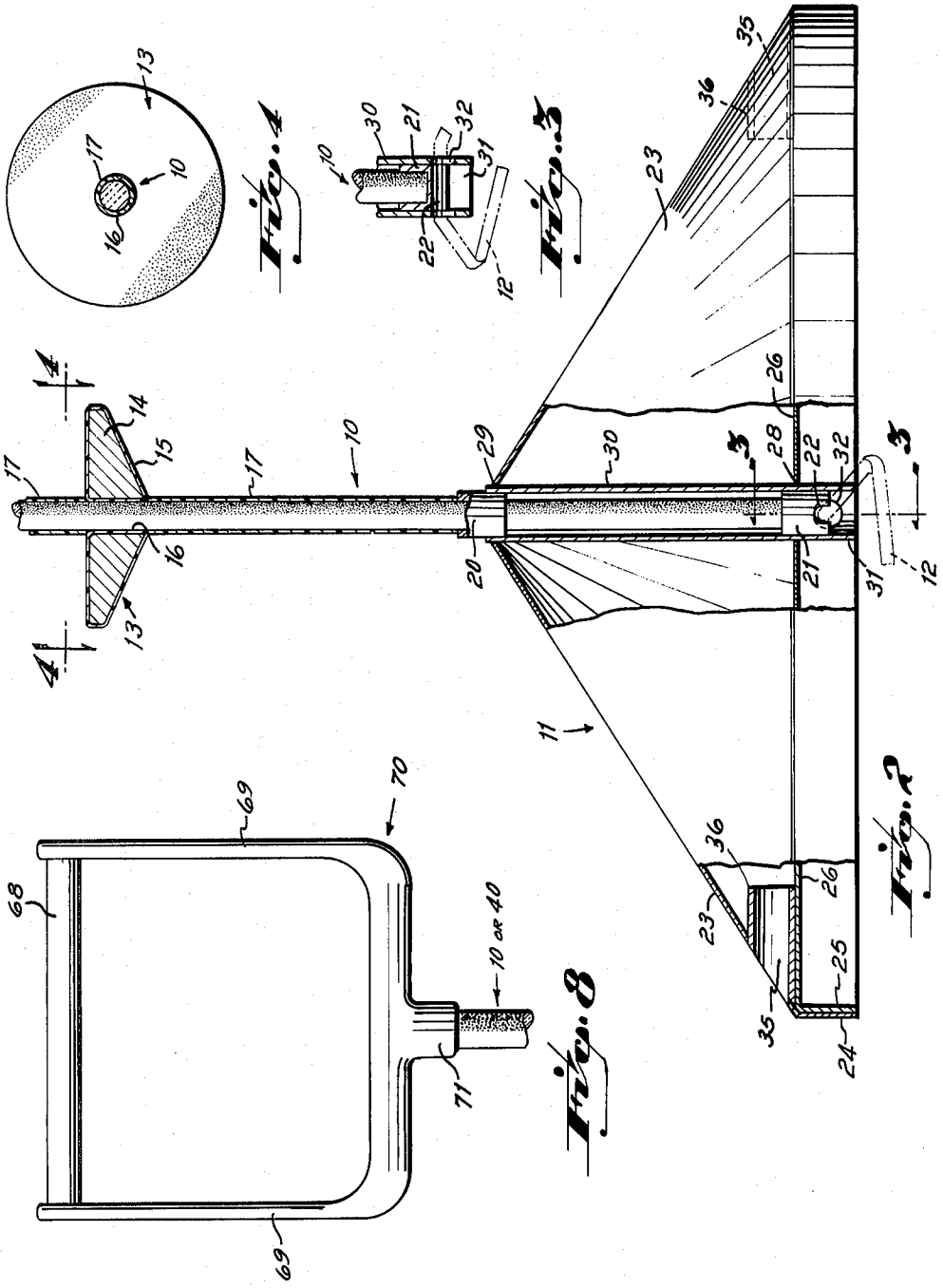

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RESILIENT GYMNASTIC POLE DEVICE

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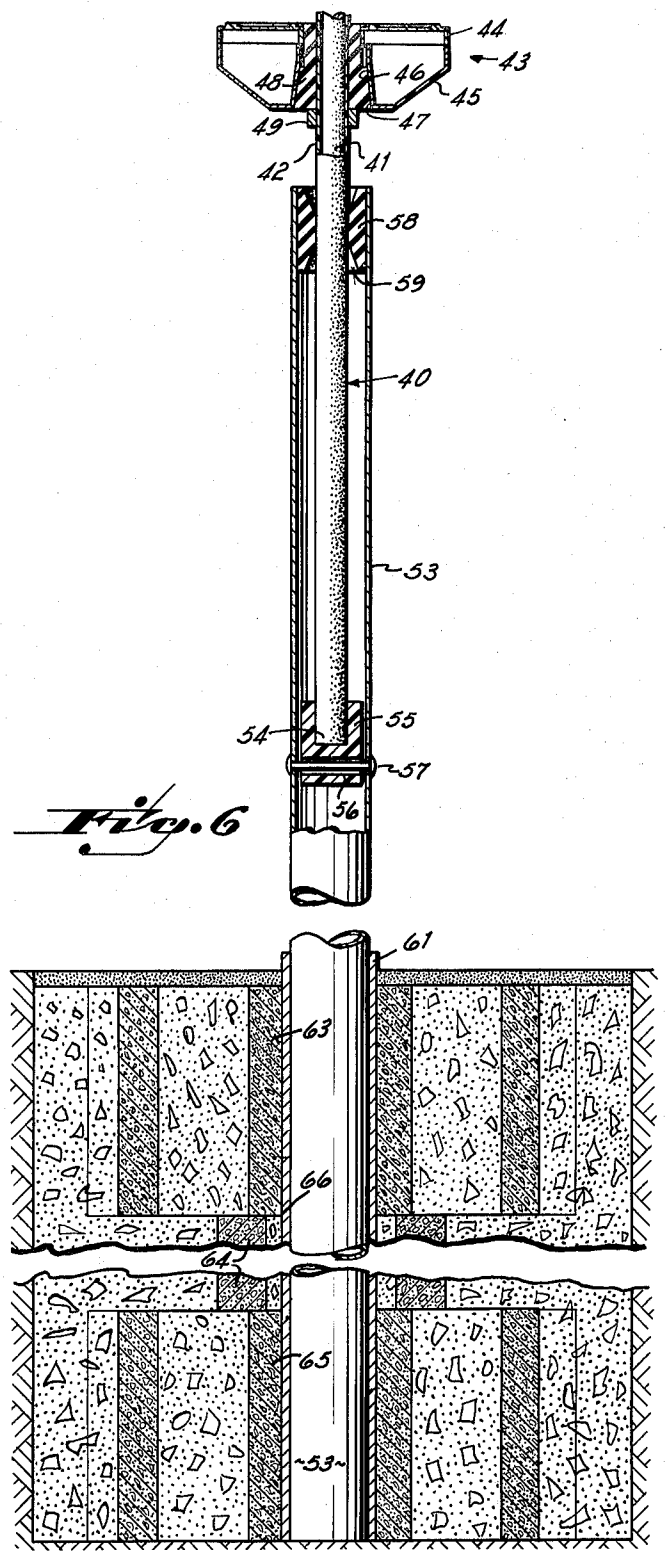

Fig. 6

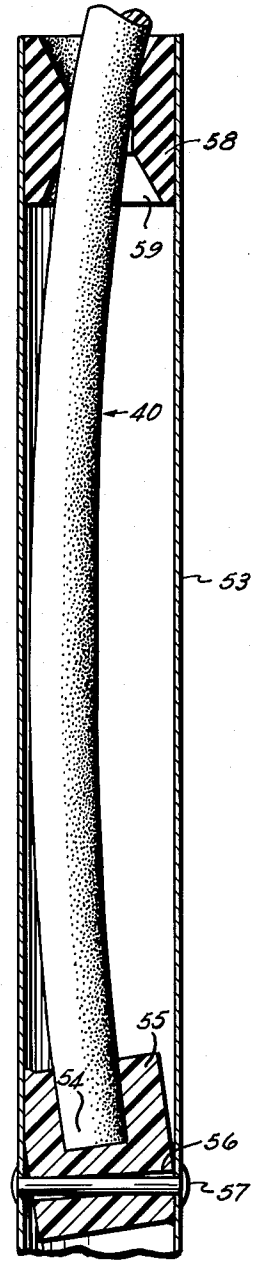

Fig. 7

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RESILIENT GYMNASTIC POLE DEVICE

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10 Claims. (Cl. 272—61)

This invention relates to a gymnastic device and is particularly directed to a device on which energetic children, and even adults, can find an unusual and entertaining form of exercise.

The invention relates to a resilient device which, in a sense, has that characteritsic of a trampoline, which many people find to be so enjoyable, namely the characteristic of receiving and storing energy imparted to it by a person and immediately returning that energy to the body of the person to move him about. More specifically, the invention comprises a resilient pole, firmly anchored at its base, upon which a child can climb. The weight of the child, together with the energy which he imparts to the pole as he swings on it, will cause the pole to oscillate or gyrate carrying the child with it. The variety of movements is infinite, the variation being attained in part simply by the distance which the child climbs up on the pole and, still further, by the degree and direction of force which the child applies to the pole. For example, a child can cling to the top of the pole and, perhaps with friends pushing, can swing in a plane in which the pole touches the ground at one side and swings through its uppermost position to a position in which it touches the ground on the diametrically opposite side of the pole. As another example, a child can grasp the end of the pole with his hands and bound in circles around the pole.

In the prior art, there are rigid poles or other devices which a person can climb, the devices being mounted on varying types of bases and being adapted to move about when the persons impart a force to them. Relatively complex types of bases have been designed to provide support for such rigid poles, each base permitting or imparting some type of movement of its pole. In addition to the cost of manufacturing such complex structures, the prior devices lacked an ingredient to which may be attributed a large part of the enjoyment to be derived from the present invention, namely the whipping action of a resilient pole. It is the very fact of the simplicity of the present invention which gives it this universal type action and distinguishes it from the cumbersome, limited devices of the prior art. In short, the present invention provided greater enjoyment at less cost than prior structures.

It has been an objective of the invention to provide, as an amusement and exercising device, a pole anchored in the ground at its lower end and having a substantial length projecting above the ground, the pole being formed of longitudinally extending glass fibers bonded by a suitable resin. We have found the resin bonded fiber glass to be an ideal substance for this purpose for several reasons. It has sufficient resilience and flexibility to be bent through an angle of greater than ninety degrees without destroying its physical characteristics. Because of its low specific gravity, as compared to steel for example, it has a high damping characteristic so that, when bent to the ground and released, it will swing past its normal vertical position through an angle of only about thirty degrees and thus will not injure a child through a whiplash.

It has been another objective of the invention to provide a base by which the fiber glass rod is anchored in the ground. The base is designed to permit the bending of the rod through an angle of ninety degrees or more without creating a localized stress concentration as would tend to cause the pole to break.

It has been another objective of the invention to provide as a gymnastic device a fiber glass pole having a plastic sleeve wrapped about its entire length. The plastic sleeve prevents such scratching or scuffing of the fiber glass pole during use as might tend to weaken it., it provides a good hand grip, and it prevents glass fibers from injuring the people playing on the pole.

It has been still another objective of the invention to provide steps and means for mounting them on the pole without having to penetrate the fiber glass material, thereby avoiding the creation of a weak area which might be subject to failure.

It has been still another objective of the invention to provide means for anchoring the base on the earth. In this respect, we provide two embodiments, one of them being a removable anchor which will permit the pole to be moved from place to place, and the second being an inexpensive but permanent mount for the pole.

Not only can the movable anchor be easily installed, but also it can be easily removed so that it can be shifted from place to place to avoid the development of ugly, bare spots and mud holes from too much activity in one spot, or so that it can be moved from one home to another. Further, in the case of either the permanent or movable anchor, the pole itself can be temporarily removed merely by lifting it out of its anchor.

It has been still another objective of the invention to provide a pole of the type described having a trapeze bar mounted at the top, thereby further increasing the number of varied activities which can be achieved on the pole.

These and other objectives of the invention will become more readily apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a side elevational view of the invention,

FIG. 2 is a side elevational view, partly in section, showing the construction of the movable base,

FIG. 3 is a cross sectional view along lines 3—3 of FIG. 2,

FIG. 4 is a cross sectional view along lines 4—4 of FIG. 2,

FIG. 5 is a fragmentary perspective view illustrating a preferred embodiment of the base of the device and the manner in which the base is secured to the ground,

FIG. 6 is a cross sectional view, partly in elevation of an alternative form of the pole mounted in a permanent base,

FIG. 7 is a fragmentary cross sectional view illustrating the operation of the lower end of the pole during flexure, and

FIG. 8 is a side elevational view of a trapeze bar which can be mounted at the top of the pole.

In the form of the invention illustrated in FIG. 1, a pole **10** is mounted in a base or anchor **11**, the base being anchored to the ground by an auger **12** in a manner to be described below. The pole **10** is a rod formed of longitudinally extending glass fibers bonded by a suitable resin, and may be manufactured by any of several known techniques. A series of steps **13** are spaced along the pole about eighteen inches apart so that they can be easily climbed by a small child.

As shown in FIG. 2, the steps are made of a foam or balsa core **14** which is formed to the proper shape and which is thereafter covered by a fiber glass cloth and resin shell **15**.

Each step is circular in plan view, as shown in FIG. 4, and has a central hole **16** of approximately the same diameter as the fiber glass pole. The steps are supported on the pole in part by spaced, resilient sleeves **17** which are shrunk onto the pole and in part by a suitable resin adhesive between the pole and the cylindrical wall which forms the hole **16** in each step. A knob **18** is fixed to the top of the pole to prevent injury and to provide a grip for a child to keep himself on the pole.

The lower end of the pole is removably inserted in the base **11** and engages the base at two spaced apart areas to form a simple beam support for the pole. Thr first support area is provided by a steel radial bearing ring **20** fixed at the lower end portion of the pole a small distance, as for example, eighteen inches from the end of the pole. A thrust bearing cup **21** is secured to the extreme end of the pole. The cup has a slot **22** which engages the upper end of the auger **12** and thereby fixes the vertical penetration of the lower end of the pole into the base **11**.

The base comprises a frusto-conical member **23** having a depending cylindrical flange at its lower edge. The flange **24** is welded to a flange **25** formed integrally with a circular plate **26**. The plate **26** has a central hole **28** which is coaxial with a central hole **29** in the upper end of the frusto-conical member **23**. A socket tube **30** is disposed in the frusto-conical member **23** and has its upper end welded to the upper end of frusto-conical member **23** at hole **29** and its lower end welded to the center of plate **26** at the location of hole **28**. The socket tube **30** has a lower end portion **31** projecting below the circular plate **26**. Two aligned transverse holes **32** are formed in the lower end portion **31** of the socket tube to receive the upper end of the auger **12**.

The frusto-conical member **23** has a pair of aligned holes **35—35** having a common axis which is slightly offset from the center of the frusto-conical member **23**. Pipe inserts **36** are welded to the member **23** and to the base plate **26**. The thus aligned pipe inserts **36** are adapted to receive a rod **37** which passes through the pipes and alongside the tube socket **29** as illustrated in FIG. 5. The rod **37** provides the leverage required to screw the anchor auger **12** into the ground.

In the operation of the embodiment of FIGS. 1–5, the anchor is quite simply secured to the ground first by passing the upper end of the auger **12** through the hole **32** provided in the tube socket **30**. Then the rod **37** is passed through the pipe sections **36** to provide the leverage for turning the auger **12** into the ground. Once the auger has started to screw its way into the ground, turning by means of the rod **37** can be done until the base ring **25** has cut its way through the turf to bring the base plate **26** flush with the ground. Thus installed, the auger prevents the base from lifting up from the ground, and the base plate **26** provides stability against tilting.

The pole is thereafter positioned in the tube socket **30** with the cup **21** having its slot **22** in engagement with the upper end of auger **12**. Thus, the pole is prevented from rotating as well as prevented from burying itself into the ground. When the bearing cup **21** is in proper position, the bearing sleeve **20** is in engagement with the upper end of the socket **30** so as to prevent any wear on the pole during its normal use. The pole can be taken down at any time merely by lifting it out of the socket.

Children can play on the pole in the manner illustrated in FIG. 1. The steps, which are disc-like and resilient to prevent injury, may be climbed to bring a child, indicated at **39** in broken lines, at any desired position along the height of the pole. By shifting his position and his weight, the child can perform many gyratory and swinging movements on the pole. The manner in which the pole is mounted at its base and its physical characteristics arising from the use of resin bonded glass fibers provides an exciting ride during which the free end of the pole can be bent to the ground without fracturing the pole. These features will be discussed in greater detail below in connection with the embodiment illustrated in FIGS. 6 and 7.

In the form of the invention illustrated in FIGS. 6 and 7, the principle of the invention is the same as that illustrated in FIGS. 1–5. The pole, indicated at **40**, comprises a rod **41** which is sheathed in a vinyl plastic sleeve **42**. The rod **41** is constituted by longitudinally extending fiber glass fibers bonded by a suitable resin as described in connection with the previous embodiment. The sleeve is shrunk on the rod by forcing air into it to expand it and sliding it onto the rod while it is in its expanded condition and spaced from the rod by the layer of air. When the air pressure is relieved, the sleeve whose inside diameter is substantially less than the outside diameter of the rod fits tightly onto the surface of the rod. The sleeve **42** provides a good hand gripping surface which protects the hands against injury from loose glass fibers. Additionally, the sleeve prevents the nicking or scuffing of the surface of rod **41** which might form the beginning of a point of failure of the rod after constant usage.

Steps **43** are fixed to the rod and have generally the same appearance as those described in the previous embodiment. However, the steps are formed and mounted on the rod in a different manner. Each step is circular and is formed of an upper half **44** and a lower half **45**. The two halves are shaped as cups having radial ribs and are vacuum formed or injection molded from a high strength thermo-plastic such as acrylonitrile-butadiene, styrene or vinyl-polymer or co-polymer. The halves are formed as shown and are glued together as an integral unit. The unit has a central hole **46**, the lower portion **47** of which is downwardly and outwardly flaring to form a frusto-conical surface. The hole **46** is substantially larger than the outside diameter of the pole and is mounted on a rubber stopper **48**. The rubber stopper **48** is fixed in position by a ring **49** which is adhesively secured to the pole with a suitable resin. The only bonding of the step to the pole occurs at the ring **49** which is of minimum thickness. The bonding over the minimum thickness reduces the possibility of breaking the bond through the elongation and contraction of the pole surfaces during the constant flexure which the pole undergoes when it is put in use. In addition to the ring **49**, the securing of the step to the pole is effected in part by the cooperating tapered surfaces of the step and the rubber stopper. It can be observed from FIG. 6 that as weight is applied to the step, the tapered surface **47**, in moving downwardly with respect to the stopper, tends to squeeze the stopper radially inwardly to force it tightly to the pole surface.

The lower end of the pole **40** is mounted in a tube **53**. The extreme end of the pole indicated at **54** is fixed in a cup **55** of suitable plastic material, the cup having a transverse bore **56** through which a rivet **57** passes to fix the cup loosely in the tube. The upper end of the tube has a rubber bushing **58** fixed to it, the bushing having an hourglass shaped bore **59** which snugly receives the pole.

The lower end of the tube **53** with its attached pole **40** is slidably and removably disposed in an anchor tube **61** permanently fixed in the ground. It should be understood that the tube **53** could also be inserted into the tube **30** of the removable anchor illustrated in FIGS. 1–5. The relationship of the tubes **53** and **61** is such that the lower end of pole **40** is elevated well above ground level. In this manner an increase in the over-all height of the device is obtained through the use of tubing **53** which is less expensive per unit of length than is the rod **40**.

The tube **61** can be permanently fixed in the ground simply by digging a hole for it and surrounding it with ready-mixed concrete. Preferably, it should not be mounted in loose earth because the loose earth cannot be compacted sufficiently tightly around the pole to give it the required vertical support. An alternative method of mounting which is considerably less expensive than the use of ready-mixed concrete is that illustrated in FIG. 6. In FIG. 6 are three 8 x 8 x 16 three-hole concrete blocks **63**, **64** and **65**. The upper and lower blocks **63** and **65** are parallel to each other and the central block **64** is at right angles to the other two blocks, the center holes of all three blocks being alinged as at **66**. The tube **61** is placed in the center hole **66** and is secured by filling the space around it with a small amount of

ready-mixed concrete or alternatively with well-packed bank run gravel. The remainder of the hole may also be filled with bank run gravel or combinations of bank run gravel, ready-mixed concrete and earth as desired.

An addition can be made to the upper end of either the pole **10** or the pole **40** to increase the number and variety of activities which can be performed on the pole. Such an addition is illustrated in FIG. 8 and comprises a trapeze bar **68** supported in arms **69** of a U-shaped support **70**. The support **70** has a socket **71** which can be slipped over the upper end of the pole **40** and permanently fixed there.

In the mounting of the pole at its base in either the first embodiment or the second embodiment, it is important that the mounting be such as to provide a simple beam support for the pole as contrasted to a cantilever support. The principle of the mounting is illustrated in FIG. 7. There, the lower end of the pole is mounted in the cup **55** which has a loose fitting relationship to the tube **53** in order to permit the cup to move angularly with respect to the tube. Similarly, at the upper end of the tube **40**, the mounting is such as to permit that portion of the pole **40** engaged by the bushing **58** to move angularly with respect to the bushing **58**. As a consequence of the mounting, when a force is applied to the upwardly projecting end of the pole so as to bend it all the way to the ground, the rod at its base has a gradual curvature imparted to it, the curvature being permitted by the two-position mounting and the spacing of the tube **53** from the rod **40**. This mounting eliminates the localizing of stress at the juncture between the base and the upwardly projecting portion of the pole which would cause the pole to fracture.

The mounting permits the use of a sufficiently thin pole of resin bonded glass fibers to have the needed flexibility, as well as resiliency, but without being subject to fracture.

A variety of sizes of pole diameters and lengths may be chosen. For example, a combination which provides highly satisfactory results includes the use of a pole of one and one-eighth inch diameter and ten feet in overall length. The cup **55** and bushing **58** which support the pole are eighteen inches apart. The rod **41** is approximately sixty-five percent glass fibers which are resin bonded. On this pole, children ranging from fifty to ninety pounds will be pleased with the ride on the pole in which the factors are so combined. In fact, a further benefit of a pole of this size has been noted in that it is self-governing as to the size of the children who can play on it. The older children will not keep the younger children away from the pole for long because a child over one hundred pounds will find the thinner pole insufficiently strong to give him an exciting ride.

The larger children and adults can be accommodated by increasing the diameter and the length of the pole to correspond to their weight ranges and heights.

What is claimed is:

1. An amusement device comprising,
a tube,
a resilient flexible pole vertically mounted in said tube,
a bearing ring spaced from the bottom of said tube and engaging the surface of said pole, and
a thrust bearing cup loosely mounted in the bottom of said tube and receiving the lowermost end of said pole, said ring and cup spacing the surface of said pole a substantial distance from the inner surface of said tube.

2. An amusement device comprising,
a tube,
a resilient flexible pole vertically mounted in said tube,
a bearing ring spaced from the bottom of said tube and engaging the surface of said pole, and
a thrust bearing means mounted in the bottom of said tube and receiving the lowermost end of said pole, said ring and thrust bearing means spacing the surface of said pole a substantial distance from the inner surface of said tube, said thrust bearing means and said spacing allowing said pole to flex between said ring and said thrust bearing means.

3. A gymnastic pole device comprising,
a normally vertical resilient flexible pole,
a support for the lower end of said pole,
thrust bearing means mounted on said support receiving the lower end of said pole, and
bearing means mounted on said support spaced above said thrust bearing means and engaging the surface of said pole,
said bearing means and thrust bearing means maintaining the surface of said pole therebetween free from blocking engagement with any support surface during the flexing action of said pole, said thrust bearing means and said spacing allowing said pole to flex between said bearing means and said thrust bearing means.

4. An amusement device comprising,
a socket,
only a single resilient flexible pole means of sufficient rigidity to support a small child and having one end disposed in said socket, and
bearing means surrounding the end of said pole disposed in said socket and supporting said pole normally in a vertical position,
the resiliency of the pole permitting the pole to bend throughout substantially its entire length through an angle of at least 45° without permanent deformation.

5. An amusement device comprising,
a socket,
means on said socket for anchoring said socket to the ground,
only a single resilient flexible pole means of sufficient rigidity to support a small child and having one end disposed in said socket, and
bearing means surrounding the end of said pole disposed in said socket and supporting said pole normally in a vertical position,
the resiliency of the pole permitting the pole to bend throughout substantially its entire length through an angle of at least 45° without permanent deformation.

6. An amusement device comprising,
a socket,
only a single resilient flexible pole means of sufficient rigidity to support a small child and having one end disposed in said socket,
steps spaced along said pole, and
bearing means surrounding the end of said pole disposed in said socket and supporting said pole normally in a vertical position,
the resiliency of the pole permitting the pole to bend throughout substantially its entire length through an angle of at least 45° without permanent deformation.

7. An amusement device comprising,
a socket,
a wide base fixed to said socket,
an auger secured to said base for anchoring said base on the ground,
only a single resilient flexible pole means of sufficient rigidity to support a small child and having one end disposed in said socket, and
bearing means surrounding the end of said pole disposed in said socket and supporting said pole normally in a vertical position,

the resiliency of the pole permitting the pole to bend throughout substantially its entire length through an angle of at least 45° without permanent deformation.

8. An amusement device comprising,
a socket,
a wide base fixed to said socket,
an auger secured to said base for anchoring said base on the ground,
means on said base for receiving a lever generally perpendicular to said socket for rotating said base to drive said auger into the ground,
only a single resilient flexible pole means of sufficient rigidity to support a small child and having one end disposed in said socket, and
bearing means surrounding the end of said pole disposed in said socket and supporting said pole normally in a vertical position,
the resiliency of the pole permitting the pole to bend throughout substantially its entire length through an angle of at least 45° without permanent deformation.

9. An amusement device comprising,
a socket,
only a single resilient flexible pole means of sufficient rigidity to support a small child and having its lower end disposed in said socket,
bearing means surrounding the end of said pole disposed in said socket and supporting said pole normally in a vertical position,
the resiliency of the pole permitting the pole to bend throughout substantially its entire length through an angle of at least 45° without permanent deformation,
a pair of spaced arms secured to the other end of said pole, and
a trapeze bar secured between said arms.

10. An amusement device comprising,
a socket,
only a single resilient flexible pole means of sufficient rigidity to support a small child and having one end disposed in said socket, and
bearing means surrounding the end of said pole disposed in said socket and supporting said pole normally in a vertical position,
the resiliency of the pole permitting the pole to bend throughout substantially its entire length through an angle of at least 45° without permanent deformation,
said pole being constituted by glass fibers bonded with a resin and a plastic sleeve snugly surrounding the outer surface of said pole.

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RICHARD C. PINKHAM, *Primary Examiner.*