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Claims

1. A jump rope, particularly made of steel, with handles attached to the ends, characterized in that inside each handle (14), a pin (28) is provided, which protrudes out from the handle and is connected to the respective end of the jump rope cord (12) in articulating fashion.
2. The jump rope according to claim 1, characterized in that the pin (28) is embodied as a shaft that is supported in the handle (14) in rotary fashion.
3. The jump rope according to claim 1 or 2, characterized in that the handle (14) has a blind hole-like recess (16) into which a bearing sleeve (18) is inserted, which serves to hold bearings (24, 26) that support the shaft (28).
4. The jump rope according to one of claims 1 to 3, characterized in that slide bearings, roller bearings, or ball bearings are provided as the bearings (24, 26) and the outer and inner shells of the bearings (24, 26) are kept apart by means of a first spacer sleeve (32) and an additional spacer sleeve (36).

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Coulter Ventures, Exhibit-1006, page 3

5. The jump rope according to one of the preceding claims, characterized in that the inner bearing (26) rests with its outer shell against a second spacer sleeve (30), which is optionally removable from the bearing sleeve (18), while the outer bearing (24) is held against the first spacer sleeve (32) by a snap ring (34).
6. The jump rope according to one of the preceding claims, characterized in that the second spacer sleeve (30) is composed of at least two partial sleeves.
7. The jump rope according to one of the preceding claims, characterized in that the inner end of the shaft (28) is embodied with an expanded width.
8. The jump rope according to claim 1, characterized in that the pin (28) is positioned in stationary fashion inside the handle (14).
9. The jump rope according to one of the preceding claims, characterized in that an articulation part (44), which has a first arm (40) and a second arm (40 or 42, 72) that is connected to the first in an articulating or cardan-like fashion, is fastened with its first arm (40) to the outward-protruding end of the pin (28) and the second arm (42, 72) of the articulation part can be fastened to the end of the jump rope cord (12).

10. The jump rope according to one of the preceding claims, characterized in that the first arm (40) fastened to the pin (28) is embodied as a sleeve and is slid over the shaft (28).
11. The jump rope according to one of the preceding claims, characterized in that the inner bearing shell of the outer bearing (24) is secured between the edge of the first arm (40) and the additional spacer sleeve (36).
12. The jump rope according to one of the preceding claims, characterized in that the first arm (40) is secured to the pin (28) in a form-fitting fashion, e.g. by means of a cotter pin (50), rivet, or the like, optionally in a detachable way.
13. The jump rope according to one of the preceding claims, characterized in that the first arm (40) is fastened to the pin (28) in a non-detachable way.
14. The jump rope according to one of the preceding claims, characterized in that the first arm (40) is embodied as an angle piece whose legs preferably enclose an angle of 90° with each other.

15. The jump rope according to one of the preceding claims, characterized in that the second arm (42, 72) has a longitudinal bore (60) that is provided with an expansion (62) that faces radially outward; the end of the jump rope cord (12) is slid through this longitudinal bore (16) [*sic* (60)] and through the expansion (32) [*sic* (62)]; and the second arm (42, 72) is provided with a recess (64) and in this recess, a groove (66) is provided, into which the end of the jump rope cord, which has been bent back after being slid through in the direction of the middle of the cord, is inserted and in which the end of the jump rope cord (12) is fastened by means of adhesive tape.
  
16. The jump rope according to one of the preceding claims, characterized in that in the region of the expansion (62), a thickened region (78) is provided around which the end of the jump rope cord (12) is laid.
  
17. The jump rope according to one of the preceding claims, characterized in that the end of the second arm (42, 72) oriented toward the middle of the jump rope cord (12) is conically embodied.
  
18. The jump rope according to one of the preceding claims, characterized in that the end of the longitudinal bore (60) oriented toward the middle of the jump rope cord (12) widens out in a funnel shape.

19. The jump rope according to one of the preceding claims, characterized in that on the side of the recess opposite from the groove, the second arm (42, 72) has a flattened region (80).
20. The jump rope according to one of the preceding claims, characterized in that on its side oriented away from the jump rope cord (12), the handle (14) has an opening into which a balancing weight (84) can be inserted.
21. The jump rope according to one of the preceding claims, characterized in that the handle (14) is composed of two parts, which can be connected to each other by means of at least one screw.
22. The jump rope according to one of the preceding claims, characterized in that one part of the two-part handle (14) is embodied as a bearing sleeve, the other part is slid over the bearing sleeve, and the two parts are detachably connected to each other.
23. The jump rope according to one of the preceding claims, characterized in that in the region adjacent to the middle of the cord, the opening for accommodating the pin has an inward-protruding projection (125) that serves as a holder for the pin (28) and for the bearing (24) that supports the pin.

24. The jump rope according to one of the preceding claims, characterized in that as a bearing sleeve for accommodating the bearings (24, 26), a split sleeve (126) is provided, which has inward-protruding projections (127, 128) on at least one end, which serve to hold the bearings (24, 26) and the spacer sleeves in order to keep the two bearings spaced apart.
25. The jump rope according to one of the preceding claims, characterized in that the bearing sleeve is composed of one piece and is open toward one side (Fig. 16).
26. The jump rope according to one of the preceding claims, characterized in that the handle is composed of two parts (136) that are embodied as symmetrical to its longitudinal axis and are connected to each other by means of at least two screws.
27. The jump rope according to one of the preceding claims, characterized in that the handle is split transversely to its longitudinal axis; at the parting line, a step (134) with a thread extends parallel to the longitudinal axis; and the two parts are connected with at least one screw extending transversely to the parting line (133).
28. The jump rope according to one of the preceding claims, characterized in that the handle part (132) adjacent to the middle of the cord serves to form the flange (125).



29. The jump rope according to one of the preceding claims, characterized in that the second arm (104) is composed of a holding part (106), which can be connected to the first arm (40, 100) in articulating fashion at one end, and a sleeve part (107), which is affixed to the holding part and serves to accommodate the jump rope and hold it in a frictionally engaging way.
30. The jump rope according to one of the preceding claims, characterized in that the sleeve part (107) is embodied as oval; the longer axis corresponds to twice the cord diameter and the short axis corresponds to a single cord diameter so that the sleeve part accommodates the bent cord end.
31. The jump rope according to one of the preceding claims, characterized in that after the cord end has been inserted, the sleeve part (107) is crimped in the direction of the short axis, thus forming a figure eight.
32. The jump rope according to one of the preceding claims, characterized in that the sleeve part (107) has a spacer element (109) that serves as a stop for the jump rope cord.

33. The jump rope according to one of the preceding claims, characterized in that the second arm is embodied in the form of a flat steel element with at least one bore through which the cord end is slid and, after being folded back parallel to the flat steel, is fastened to the flat steel element by means of a sleeve or an adhesive film.
  
34. The jump rope according to one of the preceding claims, characterized in that approximately in its middle, the flat steel element has an offset that corresponds to the thickness of the cord; in the region of the offset and next to the offset, a respective bore is provided, through which the jump rope is slid and after being folded back in the direction of the middle of the cord, is fastened by means of a sleeve or an adhesive film.

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Jump Rope

The invention relates to a jump rope, particularly made of steel, with handles attached to the ends.

Jump roping has turned out to be useful as a practical addition to training in many types of sports such as boxing, rowing, and the like. In this connection, jump ropes that are sometimes made of hemp or a similar material are used, which taper from the middle toward the ends. In order to improve the fastening of the jump rope, knots are provided at the ends.

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Jump ropes of this kind have the disadvantage that they cannot be whipped quickly and are unwieldy.

There are also jump ropes that are made of rubber or leather. These have a diameter of 4 to 8 mm. If they are made of leather, then in addition to a high air resistance, they also have a relatively low weight so that certain exercises such as double and triple turns of the cord with only one jump are relatively difficult or even impossible. If the cord is made of rubber, then the weight is somewhat higher; but rubber bounces when it hits the ground, which likewise leads to disadvantages.

Jump ropes made of the above-mentioned materials can also be provided with handles at their ends. In this case, careful attention must be paid to how the jump rope cord is attached to the handle.

A jump rope has been disclosed (German patent application 2 328 316) in which the cord is made of a hemp-like material, which is provided with a knot at its ends. The handle is composed of two half-shell-like handle parts, which are kept spaced apart by means of springs.

At the end of each of the two handles oriented toward the middle of the cord, there is a curved section that is embodied as ring-like in the middle. The knot then engages between the curved

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sections and is secured there.

Another solution for fastening the cord to a handle is described in German patent application 238 214. In this case, the jump rope cord is fastened in a clamping bushing, which is screwed onto a threaded section that protrudes outward from the handle as an extension thereof.

In both of these embodiments, there is the problem that the mechanical stress on the cord is quite high at the fastening point such that, practically speaking, a kink point is produced there. At these points, there is a risk of the cord breaking easily.

A jump rope has also been disclosed (German patent application 240 228) in which the handles are stirrup-shaped. This jump rope can be used not only as a jump rope, but also as a kind of chest expander.

Furthermore, a fastening of a handle to a jump rope has been disclosed (German patent application 911 713) in which the cord ends are fastened to the handles by means of clamped connections. The clamping points are situated partially inside the handle and partially outside the handle.

In all of these jump ropes, there is the problem first of all that there is a relatively high amount of friction between the handle and cord, which results in the fact that fast and

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extremely fast jumping and cord-turning movements cannot be executed. Furthermore, there is the risk of the cord itself bending and easily breaking right at the points where the cord comes out of the handle.

Whereas in the known jump ropes, usually hemp is used as the cord material - in which case the material is relatively light-weight and easily flexible, a feature that turns out not to be particularly desirable in practice -, with jump rope cords made of steel, this is nevertheless distinctly more problematic. Specifically, jump ropes of this kind are relatively rigid right at the transition points from the handle to the cord so that at extremely fast cord-turning speeds, powerful twisting forces are exerted on the wrists.

The object of the invention is to create a jump rope of the type mentioned at the beginning in which the connection between the handle [sic] can move easily and in which extremely powerful forces are not transmitted to the wrists.

This object is attained according to the invention in that inside each handle, a pin is provided, which protrudes out from the handle and is connected to the respective end of the jump rope cord in articulating fashion.

A first preferred embodiment can be comprised of the fact that the pin is embodied as a shaft that is supported in the handle in rotary fashion.

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The provision of the shaft that is supported in rotary fashion results in the fact that the friction, which is present between the handle and the cord in the known jump ropes and which requires a high exertion of force in order to overcome it, is avoided. Through the articulating attachment of the cord ends to these pins, the twisting forces that are exerted by the cord on the wrist via the handle are reduced significantly so that on the whole, with the same expenditure of force, a more advantageous effect for circuit training and jumping strength training is achieved. With jump rope cords made of steel, which are relatively heavy, but smaller in diameter and as a result, only have a low air resistance, it is then possible to achieve not only two, but - depending on the training - also three turns in one jump.

Ball bearings can be provided as the bearings; it is also possible to use plastic slide bearings. But ball bearings are preferable since they eliminate the relatively high initial friction resistance that is present in slide bearings.

The bearings are kept spaced apart by means of spacer sleeves; inside the handle, a spacer sleeve is provided, which is optionally removable so that it is thus possible to slide the pin farther into the inside of the handle. In this case, it is possible for this spacer sleeve to be composed of a plurality of

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partial sleeves so that the pin can be inserted a greater or lesser distance.

A second embodiment of the invention can be comprised of the fact that the pin is positioned in stationary fashion inside the handle.

On the outward-protruding pin, an articulation part is mounted, which advantageously consists of two arms; the first arm is connected to the pin and the second arm is fastened to the end of the jump rope cord. In this case, the end of the cord is simply slid into the longitudinal bore and slid back out again via the expansion, then bent back and inserted into the groove and finally, an adhesive tape is wound around the second arm with the bent jump rope cord. It is thus possible to achieve a quick attachment of the jump rope cord to the second arm. It has turned out that exerting a relatively powerful, intense load on the second arm constitutes a hazard to the bridge piece that remains between the groove and the inner wall of the longitudinal bore and under some circumstances, it can tear out.

To address this issue, in the region of the expansion, a thickened region is provided, which provides a sufficient hold. The thickened region also results in the fact that the groove can be milled relatively deeply without having to take into account disadvantageous tolerances.

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**In addition to adjusting the shaft - or more precisely, changing its position -, it is also possible to fasten a** balancing weight on the side of the handle opposite from the middle of the cord. As a result, the tilting moment and bending moment acting on the wrist are further reduced.

Other embodiments and advantageous improvements of the invention, particularly of the handle and articulation part, can be inferred from the rest of the dependent claims.

In other words, the present invention has achieved a jump rope in which the particular embodiment enables a simple assembly with very few tools and a very low degree of assembly effort. It has turned out that the handle can be taken apart and assembled using only side-cut nippers, an Allen wrench, and round nose pliers. The particular positioning of pins, in particular rotatable pins, in the handle achieves an optimal operability by simple means; it is even possible to achieve an optimal performance output in high-performance training.

Several exemplary embodiments of the invention should be explained in greater detail and described based on the drawings.

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In the drawings:

- Fig. 1 shows a jump rope cord that is fastened to a handle,
- Fig. 2 shows a cross-section through the handle according to Fig. 1,
- Fig. 3 shows a view of the articulation part according to Fig. 1, in a disassembled view,
- Figs. 4 - 7 show different views of another embodiment of the part to which the jump rope cord is directly fastened,
- Figs. 8 - 12 show different/other embodiments of the second arm to which the jump rope cord is directly fastened,
- Figs. 13 - 15 show sectional views of three different embodiments of a handle according to the invention, and
- Fig. 16 shows another modification of a bearing sleeve.

A jump rope cord 12 made of steel is fastened to a handle 14 in an articulating fashion. In this case, the different positions that the jump rope cord 12 can assume relative to the handle 14 and vice versa are represented by the dashed lines in positions I and II. The angle at which the handle can be pivoted relative to the cord 12 can be 90°, more, or less - the latter, provided that

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the cord 12 is prevented from striking the handle 14 during use.

A more precise depiction of the handle with the cord is shown in Fig. 2. It shows a cross-sectional view of the handle 14.

According to Fig. 2, the handle 14 has a through opening, which is labeled in its entirety with the reference numeral 16. In the section adjacent to the cord, the opening is labeled with the reference numeral 161; it transitions into the section 162, which has a smaller cross-section than section 161 and then widens out again into a section 163 that in the present example has the same diameter as section 161.

Section 161, which extends beyond the middle of the whole handle, serves to accommodate a bearing sleeve 18, which, on the inside, rests against the shoulder 20 at which the section 161 transitions into the section 162. The bearing sleeve is secured by means of a snap ring 22 so that it cannot fall out. The bearing sleeve itself supports the outer shells of two ball bearings 24 and 26. The inner shells of the ball bearings 24 and 26 enclose a shaft or pin 28 whose function will be explained further below. A first spacer sleeve 32 keeps the two ball bearings 24 and 26 spaced apart from each other and the second spacer sleeve 30 keeps the two ball bearings and the shaft spaced apart from the shoulder 20. To prevent the ball bearings 24, 26 and spacer sleeves 30, 32 from falling out, a snap ring 34 is

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provided, which is threaded into a groove on the inner surface of the bearing sleeve 18. The spacer sleeve 30 can be removed so that the ball bearings 24 and 26 and the shaft can be inserted farther into the handle. Then the second spacer sleeve 30 only has to be placed between the snap ring 34 and the outer shell of the bearing 24. It is naturally also possible to eliminate the bearing sleeve 18 and to support the outer shells of the bearings directly on the handle (see Fig. 15).

**In addition to the** spacer sleeve 32, whose outer diameter corresponds to the inner diameter of the bearing sleeve, an additional spacer sleeve 36 is provided which spaces apart the inner shells of the two ball bearings 24 and 26. The inner diameter of the spacer sleeve 36 corresponds to the outer diameter of the shaft 28 so that it is thus possible to also prevent a deflection of a shaft, which may possibly be of a weaker design for weight reasons.

The inner end of the shaft has a widened section 38, which serves to secure the shaft inside the handle. The shaft is prevented from being able to slide inward by the first arm 40 of an articulation part, which is composed of the first arm 40 and a second arm 42 and is labeled in its entirety with the reference numeral 44. The first arm 40 in this case has an inner bore 46

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whose inner diameter corresponds to the outer diameter of the shaft 28. In the assembled state, the outward-protruding end of the shaft is slid into the inner bore 46 and connected to it by means of a cotter pin 50. It is naturally also possible to use a steel wire spring that can be removed without tools. The first arm 40 is connected to the second arm 42 by means of an articulation pin 48. In this case, the first arm is embodied as fork-like at its end oriented toward the articulation; both of the forks are labeled with the reference numeral 52. The second arm is flattened at its end oriented toward the articulation, specifically such that the section that is labeled with the reference numeral 54 can engage between the two forks 52. Then the articulation pin 48 is slid through mutually aligned openings - 56 in the fork region and 58 in the flattened section - so that the two arms are connected to each other in articulating fashion. The articulation pin 48 can be secured in the openings through suitable measures such as caulking.

Instead of the cotter pin 50, other solutions are also conceivable; for example, the first arm can be screw-mounted; in this case, it is necessary to provide a means that prevents an unscrewing from occurring since an exact rotation direction cannot be determined at the outset.

The second arm 42 has a longitudinal bore 60, which continues outward in the form of an expansion 62 in the region adjacent to

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the articulation pin. The second arm also has a recess 64 and, on the side on which the expansion is situated, has a groove 66, which extends across the entire recess. For assembly, the end of the jump rope cord 12 is slid into the longitudinal bore 60 from the outside until the end comes out of the expansion 62. Then the end of the cord is bent and inserted into the groove 66 and wrapped with PVC adhesive tape 68.

The free end is conically embodied; this end is labeled with the reference numeral 70.

Figs. 4 to 8 show another embodiment of the second arm. It is labeled in its entirety with the reference numeral 72.

The remaining parts and sections are provided with the same reference numerals as before. The particular embodiment of the expansion part, or more precisely the expansion 62, differs from the second arm 42. If the groove 66 is milled into it, all that remains of the second arm 42 is a bridge piece 74, whose end oriented toward the articulation pin 48 is the same exact width or thickness as the end oriented toward the middle of the cord. Certain problems therefore arise at the bending point of the cord (labeled with the reference numeral 76); in practical use, it has turned out that this is the most likely place for a cord break to

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occur. For this reason, at the transition point from the longitudinal bore to the expansion 62 in the second arm according to Figs. 4 through 7, a thickened region 78 is left, which permits a more favorable bending, i.e. a bending with a larger radius. Furthermore, the thickened region prevents the bridge piece 74 - which is indeed relatively thin - from shearing off or tearing through. As a further simplification, it is also achieved that it is easily possible to mill the groove 66 practically all the way through so that there is no longer a bridge piece.

The transmission of force from the cord to the second arm then takes place exclusively via the thickened region 78, which when appropriately dimensioned, practically cannot be torn. In any case, the thickened region 78 avoids having an arm manufactured with too thin a bridge piece 74, which - as mentioned above - can easily tear out during hard training use.

As is clear from Fig. 8 [*sic* Fig. 7], in the region of the recess on the side opposite from the groove 66, the second arm has a flattened region 80, which prevents the adhesive tape from protruding beyond the outer contour of the second arm. In addition, this can permit a better grasp on the jump rope since a spring sleeve can be used whose outer contour of the second arm

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in the vicinity of the flattened region is adapted so that an incorrect rotation cannot occur. Such a spring sleeve, on the side that rests against the flattened region on the second arm, has a slit that provides flexibility and permits the cord to be inserted. After the insertion, the sleeve is rotated into its correct position.

As is depicted with dashed lines in Figs. 5 through 7, the longitudinal bore 60 of the second arm 72 has an expansion 82 in the form of a truncated cone, which serves to prevent breakage of the cord at the transition point between the arm and cord.

The handle according to Fig. 2, on the side oriented away from the middle of the cord, has the section 163, which is provided with an internal thread 164 extending from the outside into its inner region.

Into this internal thread, a counterweight 84 can be screwed, which, like the adjustability of the shaft with the shifting of the articulation point S, thus enables a more advantageous maneuvering of the cord by means of the handle.

As is clear from Figs. 1 and 2, the handle 14 has a ball-shaped region 141 and a relatively thin section 142, which transitions into a widened region 143 whose shape is adapted to the shape of

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the thumb. The end of the handle oriented toward the middle of the cord is provided with a truncated cone 144; the generatrixes assume an angle of 90° relative to each other. This truncated cone 144 is selected to be long enough that when the shaft is inserted into the handle in the way shown in Fig. 2, the generatrixes are positioned exactly even with the recess 64. This preserves the adhesive tape or adhesive film 68 and also prevents wear on the handle.

The handle 14 can be made of plastic, for example in the form of an injection molded part or a compression molded part; it is also possible to produce the handle out of two parts; for this purpose, a screw connection is provided in the region of the section 162 (see Figs. 13 - 15). Naturally, a handle made of wood is also conceivable.

Instead of plastic, metal can also be used for the handle; aluminum is a suitable option as a metal. The material of which the articulation part 44 and the shaft consist is preferably steel. Aluminum and similar materials have too low a strength. The balancing weight or counterweight 84 can also be made of steel; it is also possible to manufacture it out of lead and to

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cover it with a plastic film.

Instead of a single spacer sleeve 30, it is also possible to provide two or more of them; this has the advantage of being able to achieve a gradual sliding of the shaft relative to the handle. This allows the proportions to be infinitely adjusted to individual athletes. Likewise, the attachment of the counterweight or additional weight compensates for the loading torque on the handle (tilting action) that is produced at higher revolving or turning speeds.

Figs. 8 through 12 depict a plurality of embodiments of the articulation part. In Figs. 8 and 9, the first arm, labeled with the reference numeral 100, is embodied as angled; the two legs 101 and 102 enclose an angle of 90° with each other. The leg 101 has a blind hole 103 for accommodating the pin 28 or shaft while on the other leg 102 of the second arm, labeled here with the reference numeral 104, is connected to the first arm via an articulation 105. The special advantage of the angled first arm 100 is essentially that it improves the maneuverability of the jump rope.

The second arm 104 according to Figs. 8 through 10 essentially consists of two parts, a holding part 106 that is provided with the articulation pin 105 and a sleeve part 107 that is

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fastened to the former, e.g. welded to it. The sleeve part is shown in greater detail in Fig. 10; it has an oblong hole-like cross-section whose long axis corresponds to twice the cord diameter and whose short axis corresponds to a single cord diameter. The cross-sectional form can also be oval; it is naturally also possible to provide a recess in the middle region so that in cross-section, the sleeve part approximates the form of a figure eight. The cord 12 is inserted in the direction F into the sleeve part 107 until the end of the cord 12 protrudes a certain distance beyond the end of the sleeve part 107 adjacent to the articulation 105. Then the end of the cord is bent and inserted into the remaining free cross-section. It is then possible to crimp the sleeve part 107 to fasten the cord. Furthermore, an additional spacer 109 can be provided in the sleeve part and can serve as a stop for the end of the cord 12. In the region 110, the sleeve part 107 and the spacer 109 are beveled, which contributes to the esthetic appearance. The spacer 109, which is embodied as a round piece, is soldered in place; this is not required, however, since the sleeve part 107 is itself crimped. The sleeve part is formed - starting from a steel pipe - by pressing it to size in an oval shape and after the insertion and installation of the cord, compressing it in the middle in the direction of the short axis so that the figure eight is formed and it is no longer possible for the cord to slip

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out. The attachment of the support part 104 to the sleeve part 107 and vice versa takes place by means of soldering or welding at the location 111.

Instead of embodying the second arm so that it is composed of the holding part 104 and a sleeve part 107, the second arm - as shown in Fig. 11 and also in Fig. 12 - can be embodied in a much simpler way. To this end, a flat steel element 112 is provided, which has an offset approximately in the vicinity of its middle, i.e. in the region 113; in the offset itself, a bore 114 is provided and on the side of the offset oriented away from the middle of the cord, another bore 115 is provided. The thickness of the offset corresponds approximately to the thickness of the jump rope cord. For assembly, the cord is then slid through the bore 114, then through the bore 115; after this, the cord is bent back in the direction of the middle of the cord and by means of the sleeve 116, is affixed to the flat steel element 112, with the sleeve being slid on in the direction of the arrow G and crimped in place.

A particularly simple embodiment of the attachment of the second arm can be seen in Fig. 12; in this figure, the second arm 117 consists of only a flat steel element that has been provided with a bore 118 for accommodating the articulation 105 and another bore 119 for accommodating the cord. For the assembly, the cord 12 is slid through the bore 119 and then bent back in the direction of the middle of the cord. The flat steel element and the cord 12 are attached by means of the sleeve 116 according to

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Fig. 11; the final attachment is produced by means of adhesive tape 120. In Figs. 8 through 10, an especially formed holding part is provided as the holding part 104; it is naturally also possible to simply use a flat steel element and to fasten the sleeve part 107 to it. In this case, the long axis of the oval sleeve part 107 should be oriented perpendicular to the flat steel surface or parallel to it. The two alternatives are approximately equivalent.

Figs. 13 to 15 depict another embodiment of the handle. In Fig. 13, the handle is embodied in the same way as the one in Fig. 2, at least with regard to the outer contour. Accordingly, the handle itself is composed of a total of two parts, a first part 121 and a second part 122 that can be screwed into the first part. To this end, the first part 121 has an opening 123 that is provided with thread into which the second part 122, which is equipped with a neck 124 provided with thread, can be screwed. In this connection, it should be noted that at the end of the handle oriented toward the cord end, an inwardly protruding, lip-like flange 125 is provided, which serves to accommodate a two-part sleeve 126, which corresponds to the bearing sleeve 18 in Fig. 2. In this case, the sleeve 126 likewise has an inward-pointing lip-shaped flange 127, which is used to achieve a better hold of the bearings 24 and 26. At the end of the sleeve 126 opposite from

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the inward-pointing projection 127, a projection 128 is likewise provided, which is used for securing the pin 28 in the same way as the projection 127; in the example according to Fig. 3, the second spacer sleeve 30 is secured between the bearing 26 and the projection 128.

The annular flange 125 is clearly recognizable in Fig. 14. For added security, an additional O ring is provided therein, in the region 129 in the midsection of the handle.

Instead of a sleeve according to Fig. 13, which is labeled therein with the reference numeral 126, it is also possible to provide a sleeve according to Fig. 16; this sleeve does not have any projection 127; the flange 125 serves as a retainer for the shaft and bearing 24.

Fig. 15 then shows a handle whose region lying above the line X-X is divided axially and whose region lying below the line X-X is divided radially in the form of two shell halves. The region shown at the top now has a first handle part 131 and a second handle part 132 that are divided in the axial direction according to the parting line 133, in the region of the end oriented toward the middle of the cord. In the region of the step 134 extending parallel to the longitudinal axis of the handle - line X-X - this parting line 133 has a thread with which the two parts 131 and 132 can be screwed together.

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A screw - which is labeled with the reference numeral 135 here and extends at an angle, in this case 45°, and passes through the parting line - is provided for safety. This screw is embodied as an Allen screw. Advantageously, two or three screws 135 can be provided distributed over the circumference.

The grip part 136 shown below the line X-X is embodied in the form of a half shell and is fastened to a second handle part to be imaged above the line X-X by means of screws 137 and 138.

Fig. 1 shows that in order to improve the position of the center of gravity of the handle, an additional weight 34 [sic 84] can be inserted. In Fig. 15, this additional weight for the handle is screwed in above the line X-X and for the region below the line X-X, it is merely inserted; the weight has a thickened region 841 that is used for holding it and preventing it from falling out.

Naturally, it is possible to embody the handle in any of a variety of ways. It is thus conceivable to embody the handle out of two straight sleeve halves; to connect the two sleeve halves, a securing sleeve must be provided, which is to be slid over the handle and which can engaged with the two sleeve halves in detent fashion or be screwed to them. There are also numerous other possible modifications and changes; the outer contour and outer

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embodiment of the handle itself are not absolutely critical in this regard.

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2 6 4 1 3 8 3

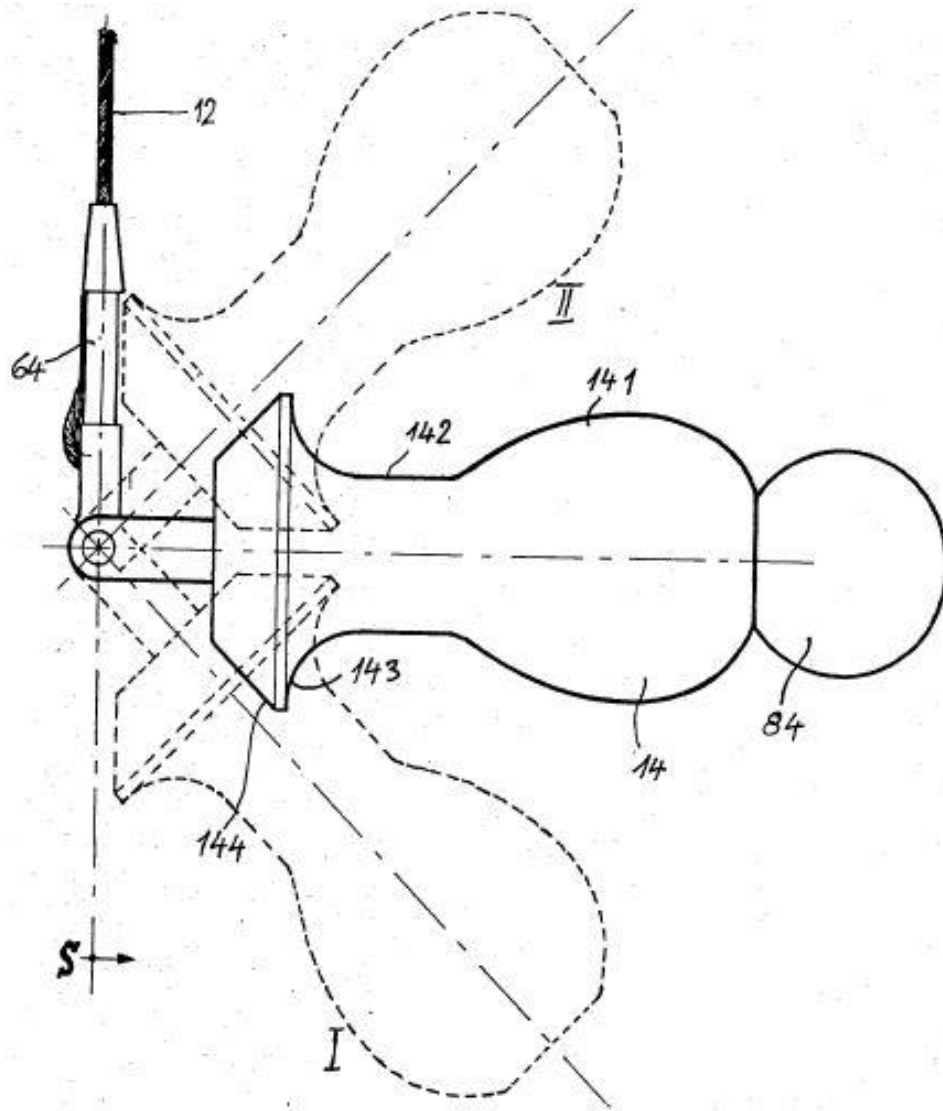
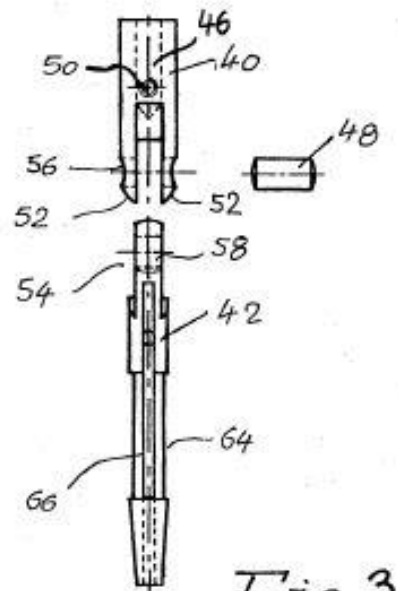
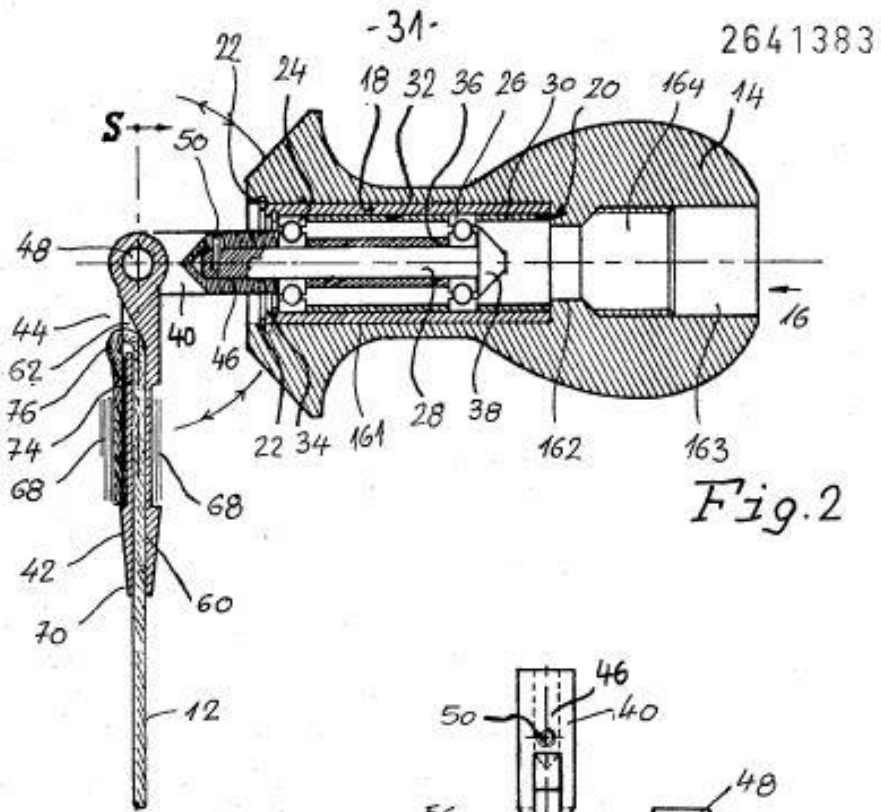


Fig. 1

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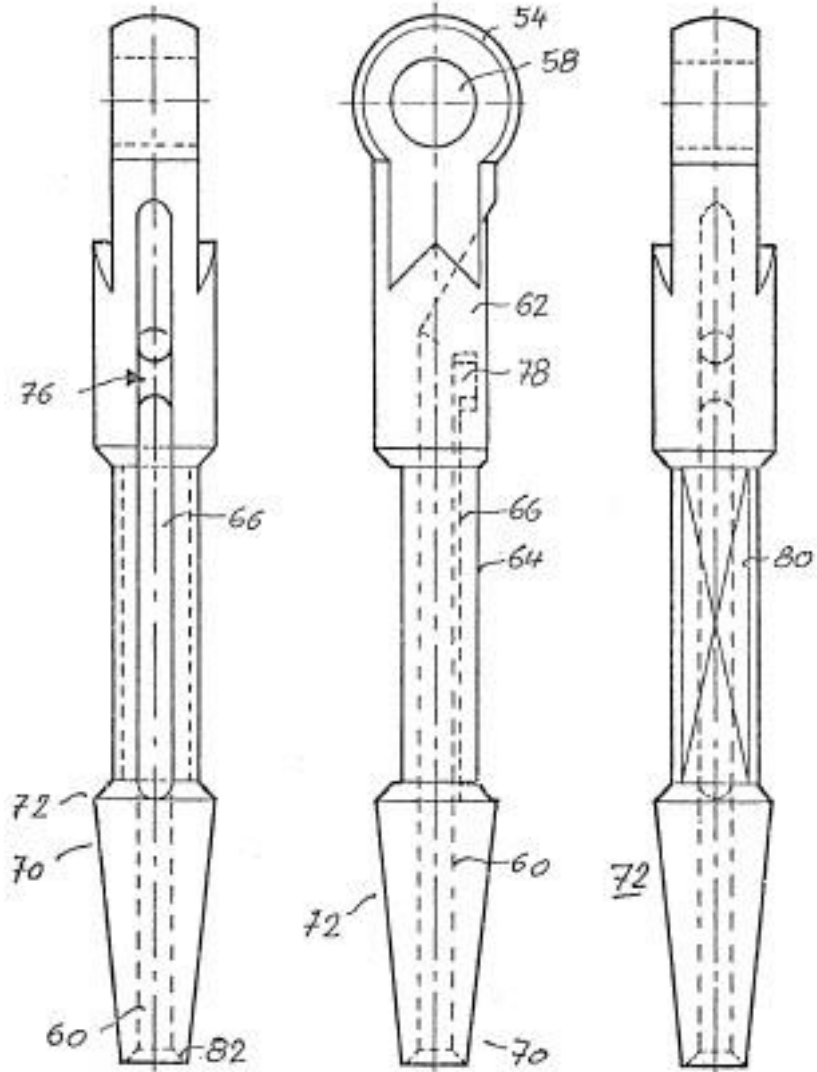
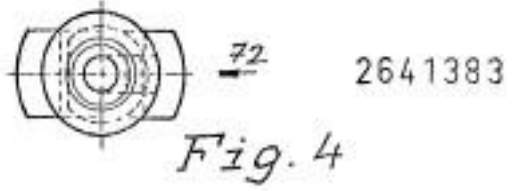


Fig. 5

Fig. 6

Fig. 7

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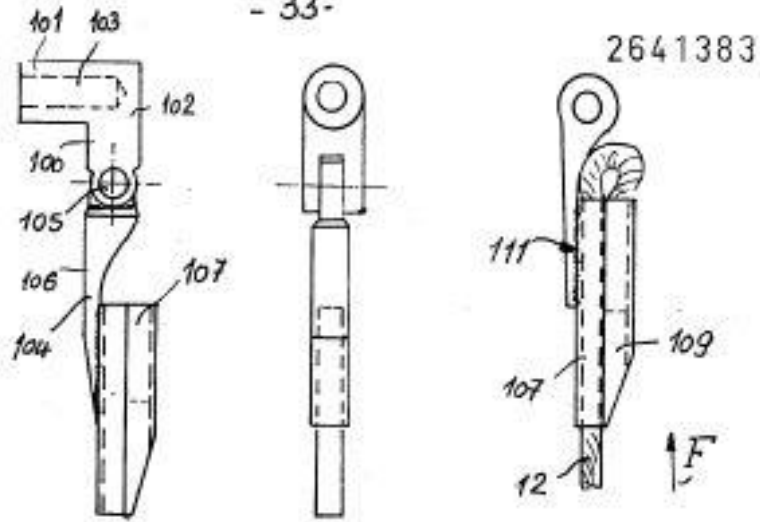


Fig. 8 Fig. 9 Fig. 10

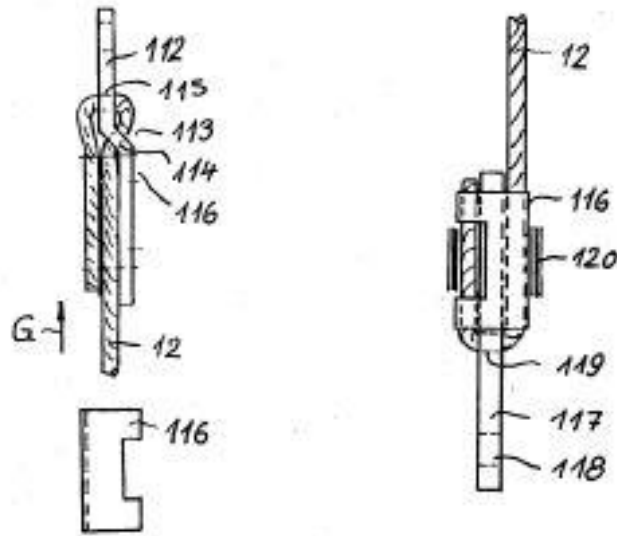
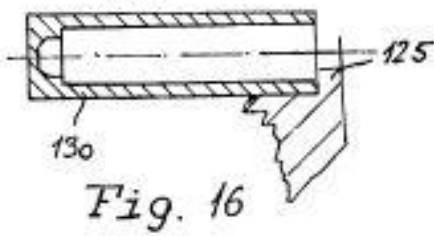
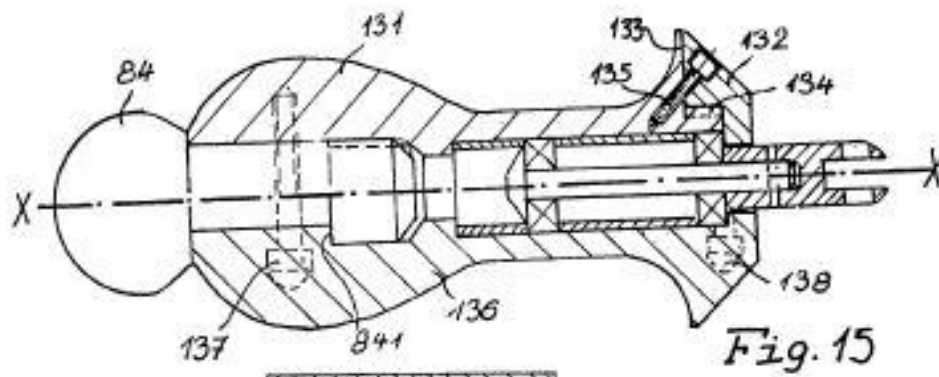
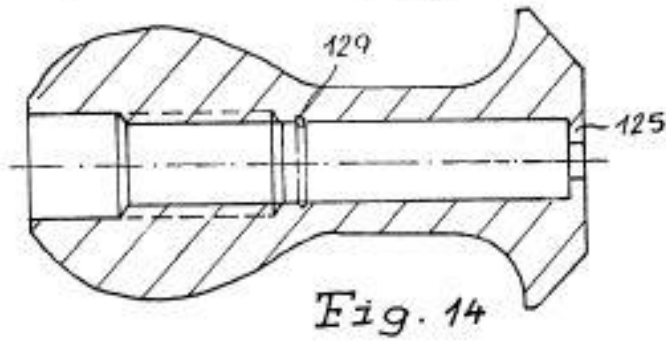
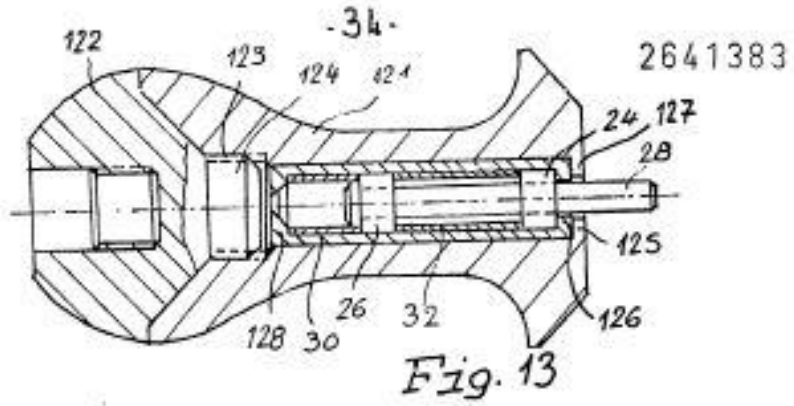


Fig. 11

Fig. 12

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**Certificate of Accuracy**

November 10, 2018

I, David Clayberg, being fluent in both the German and English languages, hereby certify under penalty of perjury under the laws of the United States, and in particular 37 CFR 1.68, that German Patent Application Publication 2,641,383 and the attached English language translation thereof, are accurate to the best of my knowledge and belief, and complete renditions of each other, understanding that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. § 1001). All of the foregoing statements made of my own knowledge are believed to be true and all statements made on information and belief are believed to be true.

I hereby certify under penalty of perjury that the foregoing is true and correct.

Signature of David Clayberg