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(19) **United States**(12) **Patent Application Publication****Potak et al.**(10) **Pub. No.: US 2006/0217247 A1**(43) **Pub. Date: Sep. 28, 2006**(54) **ELASTIC EXERCISE APPARATUS****Publication Classification**(76) Inventors: **Sandor Potak**, Aschaffenburg (DE);
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NEW YORK, NY 100368403(57) **ABSTRACT**(21) Appl. No.: **10/514,176**(22) PCT Filed: **May 9, 2003**(86) PCT No.: **PCT/DE03/01492**(30) **Foreign Application Priority Data**May 10, 2002 (DE)..... 102 21 070.5
Jan. 21, 2003 (DE)..... 203 00 971.1

The invention relates to an elastic exercise apparatus, wherein at least one elastic element is fixed or can be fixed between two handles. It is essential that clamp holding devices (3, 10, 40, 50) be used as handles, in which the at least one elastic element (2, 48) can be clamped and fixed or be fixed at a given length. Said clamp holding devices should preferably have loop, ring or bow-shaped holding elements (6, 7, 56). This makes it possible for a person working out to optimally use particularly stretch bands (2) with an even tension in a cramp-free manner and in the required length.

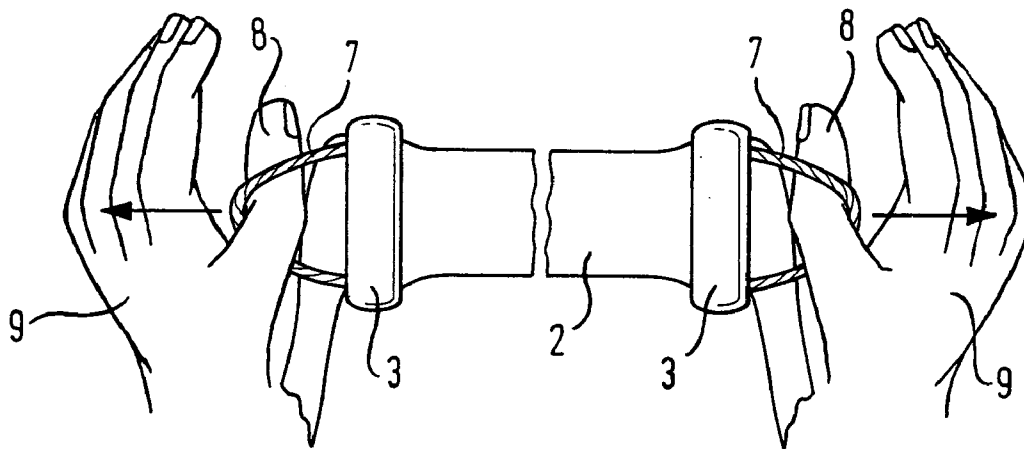


Fig. 1

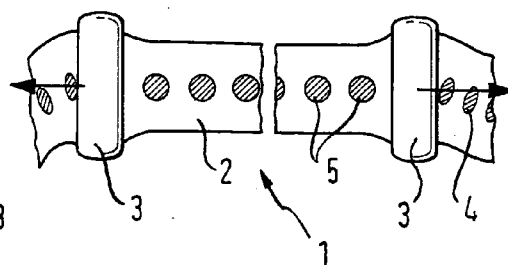


Fig. 2

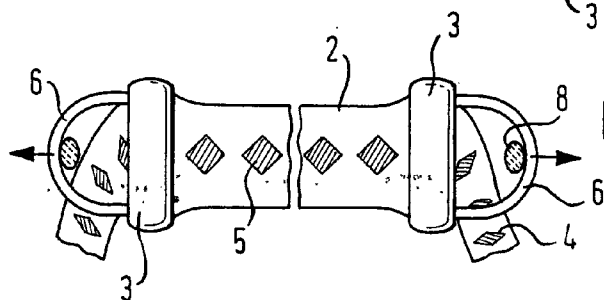


Fig. 3

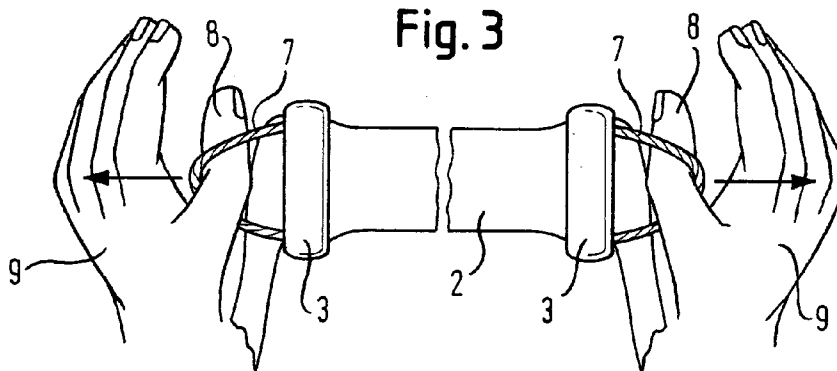


Fig. 4

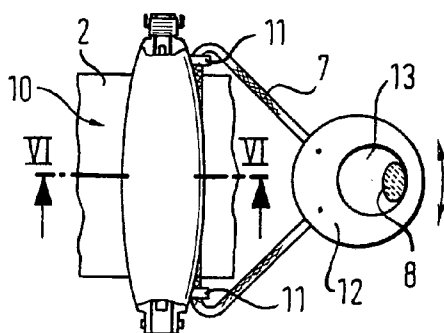


Fig. 5

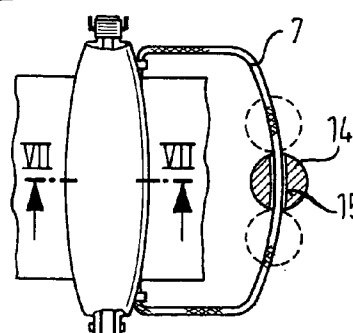


Fig. 6

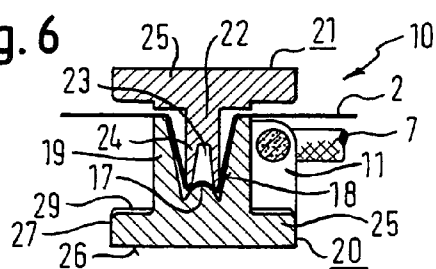


Fig. 7

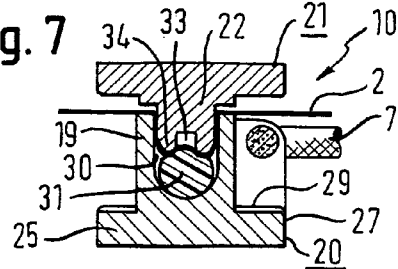


Fig. 8

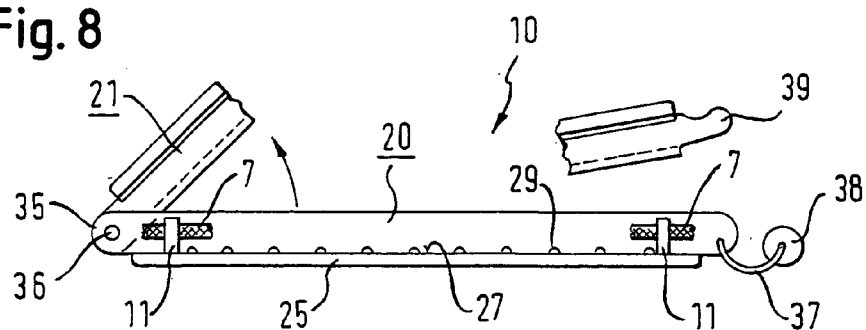


Fig. 9

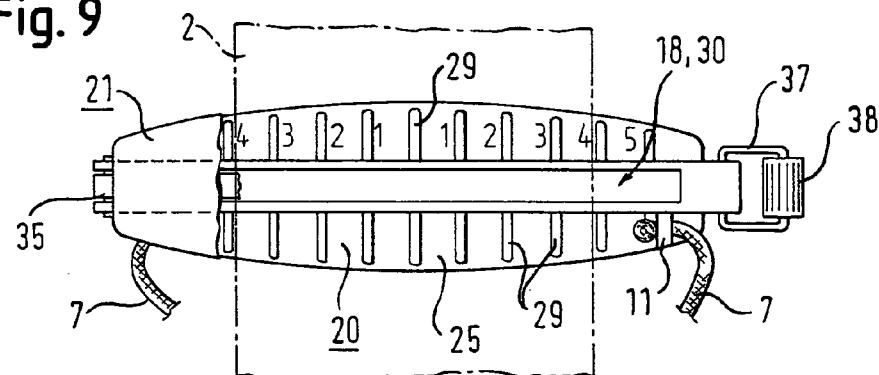


Fig. 10

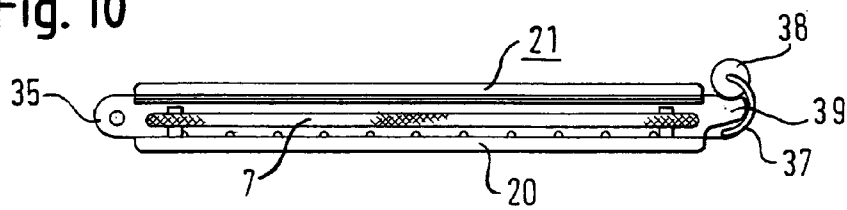


Fig. 11

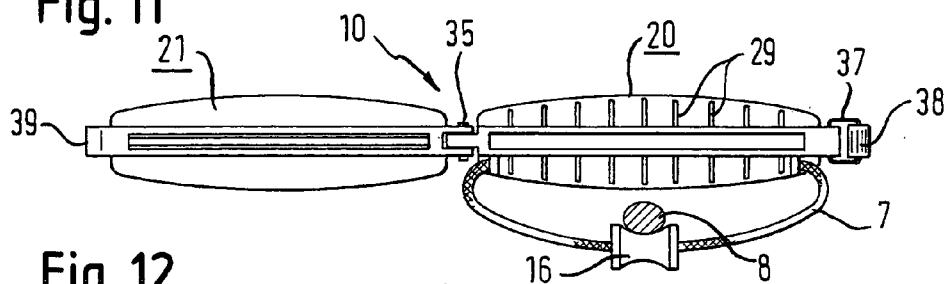


Fig. 12

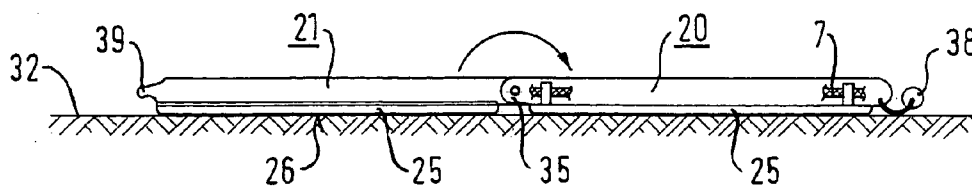


Fig. 13

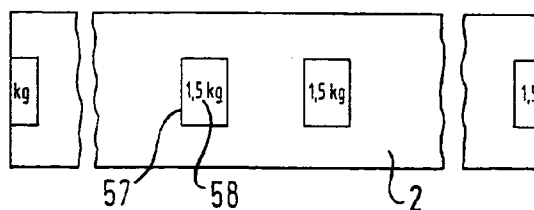


Fig. 14

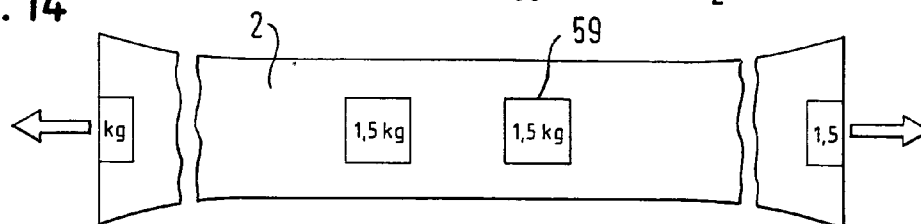


Fig. 15

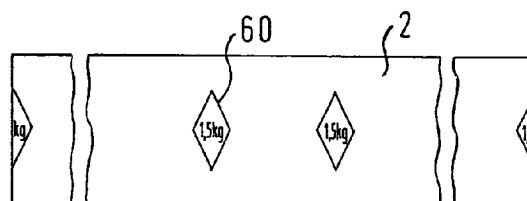


Fig. 16

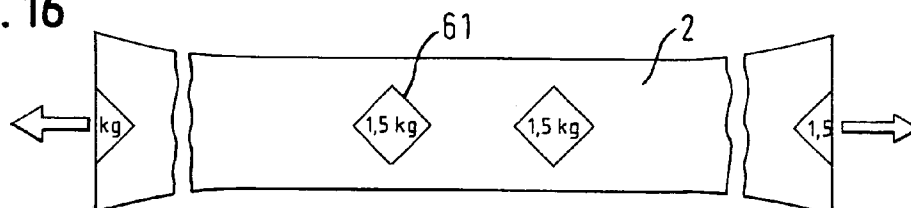


Fig. 17

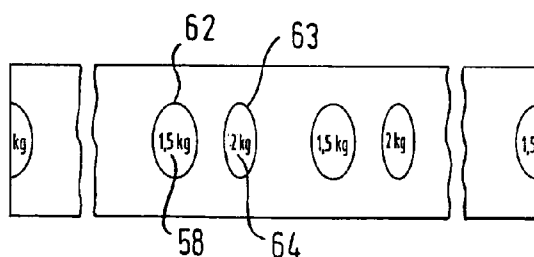


Fig. 18

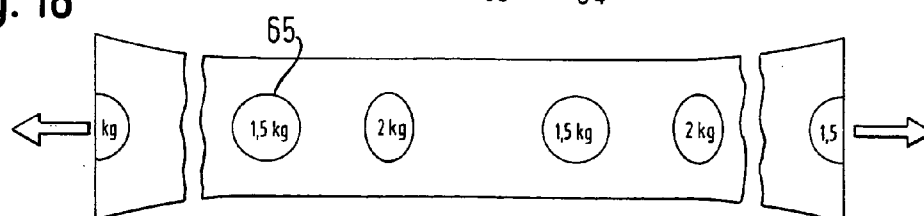


Fig. 19

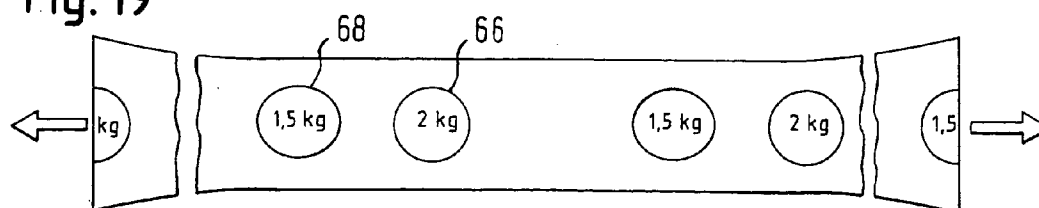


Fig. 20

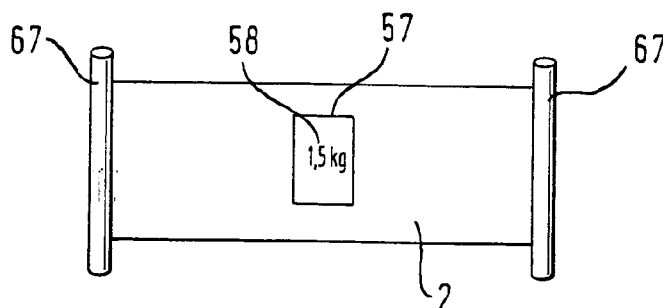


Fig. 21

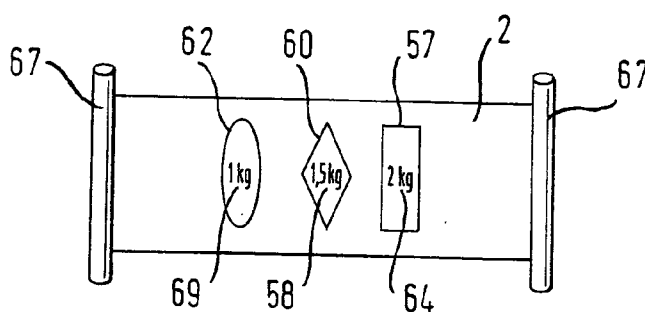


Fig. 22

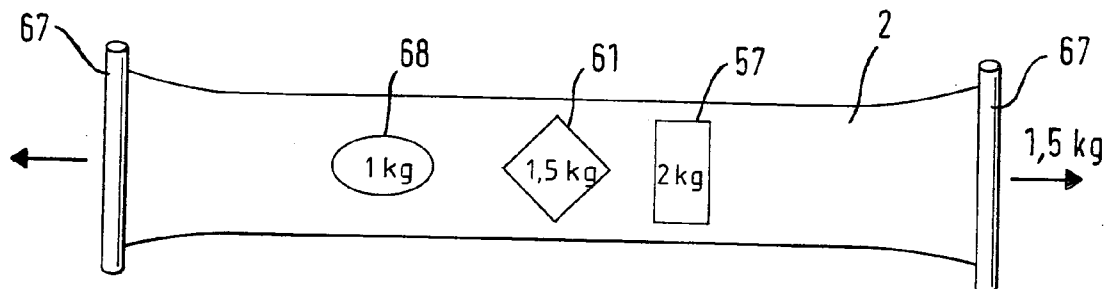
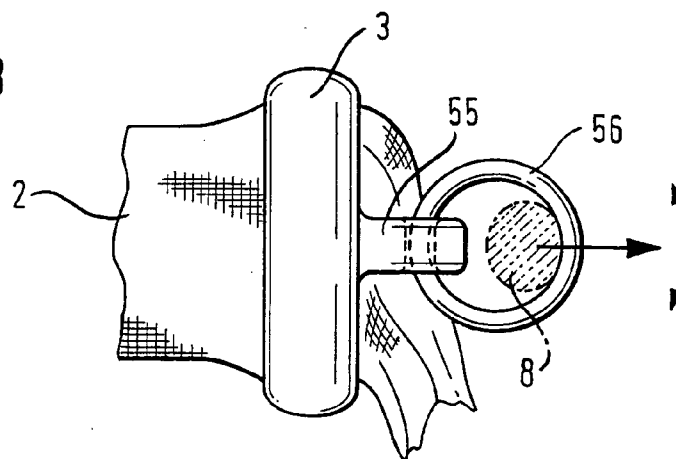


Fig. 23



ELASTIC EXERCISE APPARATUS

[0001] The invention relates to an elastic exercise apparatus according to the preamble of Claim 1, as used particularly for sports or sports medicine purposes.

[0002] Fixing rubber cords between two fixed handgrips of an exercise apparatus (extensor) and pulling axially on the cords via the handles when exercising is known. By attaching an appropriate number of cords to the inner sides of the handles it is certainly possible to change the pulling force but not the length of the cords and hence of the whole exercise apparatus. This would be necessary, however, depending on the exercise or person exercising.

[0003] Elastic exercise apparatuses are known from U.S. Pat. No. 1,729,399 and US 2002/0052270 A1, in each of which an elastic element may be fixed between two handles. Respective conical clamping openings are provided in the handles, through which the elastic element is passed and fixedly clamped, some releasable again only with difficulty, via a wedge in conjunction with a wedge-shaped thickening of the band ends or via a ball. Secure, rapidly releasable clamping/fixing of the handles on an elastic exercise band having a uniform band thickness is not possible.

[0004] For flat, elastic exercise bands, which are increasingly used for training or exercising purposes, it is not usual to use handles between which the bands of e.g. less than 0.15 mm thickness and up to over 200 mm width could be fixed. If such a band is gripped by a person exercising in order to perform an extension at chest height, for example, the person exercising then has to dig his nails right into the band material so as not to slide off when expanding the band. Moreover, it is well nigh impossible to expand the band without using hands without distorting it so that a pattern present on the surface of the band (see DE 200 13 074 U1 or EP 1 175 922 A2) changes under expansion uniformly over the whole width of the band and may be observed visually in a fully focused manner.

[0005] Thus, the Physioband produced by Tilia GmbH, 87484 Nesselwang is known, from whose exercise poster it is discernable that holding the band tightly in a flat/open, distortion-free position is not easily possible. The person exercising is therefore focused more on clinging onto the band than on the exercise performed therewith. It may also be inferred from this exercise brochure or exercise poster that the loose Physioband can be held together to form an endless loop via a clip which is similarly enclosed in the packaging, to enable corresponding arm or leg exercises, for example, to be performed in the attached state of the band which is clipped together in the shape of a loop.

[0006] Clips of this type, used for holding exercise bands together in the shape of a loop, are already known in various forms, but they are invariably used for closing bags, pouches, sacks etc., as described, for example, in U.S. Pat. No. 2,818,871, U.S. Pat. No. 3,571,861, DE 25 47 875 A1, U.S. Pat. No. 4,296,529, U.S. Pat. No. 4,523,353, U.S. Pat. No. 5,379,489, EP 0 156 779 B1 and WO 93/16930 A1. Single-part closure devices such as clasps or clips for bags or flexible tubes are thus known, consisting of two arms joined by a film hinge¹, which have interlocking clamping profiles on the surfaces facing one another in the closed state and which may be locked in the closed state via a catch device on the free arm ends. In the opened state the arms are

at an angle of max. 90° to one another. The end of the bag to be closed or the two ends of an exercise band to be joined are laid transversely one on top of another on one, usually the lower, arm, whereupon the second, usually upper, arm is swung onto the lower arm and pressed so that their interlocking longitudinal profiles firmly clamp the bag material or band material lying therebetween. The clip is held together in the closed state by way of a catch device on the arm ends. This clip is thus used merely for closing or coupling, but not as a handle via which a pull is exerted.

¹ The preposition 'zwischen'[between] appears in this clause with no noun following it. The translator has assumed its inclusion is a misprint.

[0007] Also, a closing clip for the insulation bag of an underwater camera is known from U.S. Pat. No. 3,036,506, comprising a channel-shaped lower arm and a flat bar-shaped upper arm, the arms being flexibly joined via an axial pin passing transversely through the two interlocking parts. Via an eyelet pivotally fixed on the opposite end of the lower arm, the upper arm, and hence also the bag, is held securely in the closed clamping state via a notch provided on the said upper arm. Using these clips as handles is not known.

[0008] It is therefore the object of the invention to indicate an elastic exercise apparatus, which allows safe, comfortable, versatile and focused handling and exercising.

[0009] This object is achieved by means of an elastic exercise apparatus comprising the features of Claim 1. Advantageous developments of the invention are characterised in the dependent claims.

[0010] The elastic exercise apparatus accordingly has as handles two clip-handles in each case which are constructed in the manner of known bag-closing clips, in which at least one elastic exercise band is fixed so as to be clamped fixedly or releasably at a predetermined length. In addition, in the expanding direction of the exercise band at least one geometric shape is provided on the band which, when expanded with a predetermined force, forms or results in a different predetermined geometric shape. Thus, two clip-handles are fixed at the required spacing of e.g. 40 cm length apart over an exercise band, for example, (or a rubber cable or rubber tube), perpendicularly, i.e. transversely to the longitudinal or pulling direction of the band. The person exercising may thus grip the band at the two clip-handles and safely perform the relevant expansion exercises. Pulling on these clips is effected in such a way that they are moved apart parallel, as a result of which the band part clamped between them is expanded uniformly in length and the geometric shapes located thereon are not distorted and are always easily visible during exercising.

[0011] It is advantageous if a gripping or holding element directed in the pulling direction of the band is provided on each of the clip-handles. Two handles are then fixed to a band so that the respective holding elements are directed outwards, thereby making it easier to grip and particularly to hold the band under tension.

[0012] A rigid bow, a flexible strap or loop such as cable or cord, a central T-shaped handle or ring or similar may be provided according to the invention as the holding element. What is important—and only possible according to the invention—is that when the band is expanded and particularly when it is held expanded by way of the holding elements on the handles, the band remains visible, undis-

torted in its entire width, during exercises at chest height, so that the expansion changes of a geometric pattern located according to DE 200 13 074 U1 on the band surface are possible by the person exercising.

[0013] If, for example, a cable-type holding element is provided which is fixed in an advantageous manner via respective eyelets on the two ends of one handle side, the person exercising may then put the thumb of one hand into the holding loop formed in each case and at chest height with the arms almost extended force the handles apart, causing the band located between them to be accordingly expanded. By gripping and pulling the band apart solely via the thumbs inserted therein, the said band being held slip-free in its full width, free balancing-out of the band and holder takes place around the two points of rotation of the thumbs. As a result, an extension may be performed in which a largely distortion-free, i.e. vector-free, longitudinal expansion of the band may be achieved. This effect is of course also achieved when holding rings are used.

[0014] According to the invention, a ball or a tube made of rigid or flexible material such as wood or plastics material may be fitted slidably via its central bore on the holding loop—but also on a rigid holding bow. If the handle is now gripped via the ball or the tube and extended, distortion-free balancing-out of the handles may similarly then take place.

[0015] A thumb grip ring may also be incorporated centrally on the cable or on the cord of the holding loop, which may similarly be made from wood or plastics material, for example. Because the thumb grip rings are substantially thicker than the cable or the cord and have a firm, rounded gripping inner surface, the balancing-out by the thumb via the ring may take place more easily and more comfortably than via the thumb placed directly in the cable loop. It is easily discernable that, with a relatively thin construction of the loop cable, relatively uncomfortable compressing and cutting-in occurs under loading on the thumb, which is not the case with relatively thick thumb rings, the thickness of which may correspond to the height of the closed clamping holder.

[0016] According to the invention, ellipses, rectangles or diamonds, for example, are provided as geometric shapes on the exercise band, which, when expanded with a force of e.g. 1.5 kg or 2 kg, form or result in circles or squares. A corresponding expansion force indication such as 1.5 kg or 2 kg may be applied in or next to at least one of the geometric shapes, and such that, when forming a circle from an ellipse, for example, under expansion, the corresponding indication of e.g. 1.5 kg is readable very easily.

[0017] It is advantageous if an oblique rhombus pattern, a rectangle pattern or an ellipse pattern is provided on the exercise band, consisting respectively of at least one rhombus, rectangle or ellipse directed along its short axis in the expansion direction, which are deformed in a predetermined expansion situation into, respectively, an oblique square, standard square or circle. Just one geometric shape may be arranged centrally on the band in each case or two or more identical shapes may be applied symmetrically to the centre of the band or evenly spaced from one another along the whole band.

[0018] It may also be particularly advantageous, however, to provide at least two identical geometric shapes having

different dimensions adjacent to one another, to which different force indications are assigned and which, when the particular corresponding expansion force has been reached, form the predetermined different geometric shape, thus, for example, become a circle from an ellipse. In this case a pair of shapes, for example, e.g. two ellipses of different sizes, may be provided in the centre of the band or several pairs of shapes may be provided or arranged next to one another symmetrically to the centre or in even spacing of the pairs of shapes relative to one another over the whole length of the band.

[0019] Obviously, however, more than two shapes having different dimensions and thus different loadings assigned to them may also be provided next to one another, with corresponding force indications, such as four ellipses of different widths or different widths and heights, designed for and marked with 0.5 kg, 1 kg, 1.5 kg and 2 kg or even a fifth ellipse marked with 2.5 kg. The exercise apparatus may thus be used by people of different strength for different exercises, e.g. for exercises while holding a specific force constant or exercises which continually change between different expansion loadings, i.e. intermittent exercises.

[0020] In a particularly advantageous manner, the clamping clips used as clip-handles may have clip arms, on the inner side of which there are clamping profiles similar to those in the known bag clips. Unlike those, however, they are no longer connected via a film hinge, which does not allow the two arms to fold out and remain lying open in a 180° supporting position, but in most cases holds the two arms in an angle of less than 90°, thereby obstructing the view into the clamping surfaces and thus hindering optimum placement therein of the band. Connecting the two independent clamping arms via a hinge with bearing eyelets and bearing pin enables the two holder arms to rest on a support flat and without tilting in the fully opened, i.e. folded out state. The exercise band may thereafter be placed more easily and more accurately on the one arm at right angles to the longitudinal extent of the arms. The second arm is then folded over the lower arm, which remains lying at rest with the band lying thereon, and is firmly pressed onto the latter, so that the fastening at the ends of the arms, preferably a pivoting bow, locks.

[0021] It is advantageous if a spherical abutment is provided on the bottom of the clamping groove of the lower arm, on which, in the closed state of the clamping arms, the at least one bar of the upper arm rests with the band lying therebetween. Moreover, there are then two upper clamping bars present which are spaced apart from one another such that they partially engage around the spherical abutment, causing the band clamped therebetween additionally to undergo a deflection. The band is thereby not only deflected in a V shape but in a W shape, as a result of which more secure clamping takes place and thus higher pulling forces are exerted via the handles on the band without the band slipping out of the clamping holders of the handles.

[0022] The spherical abutment may in this case be a soft-elastic cord which is fixed in the bottom of the groove by adhesive bonding, for example, wherein the bars may then be made shorter and non-resilient. As a result of the soft-elastic abutment, optimum non-slip clamping is achieved without the risk existing of damaging the band by squashing it.

[0023] Secure clamping is also obtained if the abutment is a semicircular, rigid elevation on the groove bottom, while the two clamping bars are of a slightly longer, resilient design, so that they are spread apart slightly as they press down on the abutment and thus cannot squash the band lying therebetween.

[0024] Furthermore, it is advantageous if the two arms of the clip handle have supporting bases which are relatively wide in relation to the height and length thereof, which bases are e.g. 1.5 to 5 times wider than the active inner side of the arms. A particularly wide supporting surface of the arms is thereby obtained, which then rest without tilting in the open, folded out state, e.g. on the table or floor, so that the band may be placed, appropriately aligned, at rest thereon. Even when the upper arm is pivoted and folded onto the lower arm and pressed closed, there is no danger of the holder tilting, which could cause the band to slip out of its aligned position. In addition, this supporting base may also have a curved design and be wider in the middle than at the ends. An attractive shape, with good ease of handling, is thereby achieved at the same time.

[0025] It is particularly advantageous as well if, on the inner side of the margin of the base of the lower arm on which the band is placed for clamping firmly, several markings such as grooves, lines, knobs or beads are provided transversely to the longitudinal extent thereof, in equal spacing relative to the centre. This is possible in a simple manner, as the supporting bases project, reaching relatively far out laterally in relation to the central shaped strips, so that substantially a T-shape of the arm is obtained. There is thus a relatively wide base margin available on either side, enabling the markings to be applied on the inner sides so as to be easily visible. The band may thus be inserted and firmly clamped in the gripping clip exactly perpendicularly and in a central orientation at the same time.

[0026] The invention is described in more detail below with the aid of several embodiments with reference to the drawing, in which

[0027] FIG. 1 shows a plan view of an elastic exercise apparatus with two clamping handles;

[0028] FIG. 2 shows a plan view as in FIG. 1, with clamping handles with rigid bow-type holding elements;

[0029] FIG. 3 shows a plan view as in FIG. 1 and 2 with handles with holding loops;

[0030] FIG. 4 shows a plan view of a clip-handle in construction, with holding loop and thumb grip ring;

[0031] FIG. 5 shows a plan view of a clip-handle from FIG. 4, with holding loop and gripping ball;

[0032] FIG. 6 shows a section VI-VI from FIG. 4 through a clip-handle with a rigid abutment and resilient bars;

[0033] FIG. 7 shows a section VII-VII through a clip-handle with resilient abutment cord and rigid bars;

[0034] FIG. 8 shows a side view of the clip-handle according to FIG. 4 to 7, in partially opened state;

[0035] FIG. 9 shows a plan view of the clip-handle holder according to FIG. 8, illustrating the lower arm with placement markings;

[0036] FIG. 10 shows a side view as in FIG. 8, in the closed state;

[0037] FIG. 11 shows a plan view of a clip-handle in the fully opened state;

[0038] FIG. 12 shows a side view of the clip-handle in the state of FIG. 11;

[0039] FIG. 13 shows a plan view of an exercise band with a longitudinally central row of rectangles with loading indications of 1.5 kg, in the unexpanded state;

[0040] FIG. 14 shows a plan view of the band according to FIG. 13, in the state expanded with an expansion force of 1.5 kg;

[0041] FIG. 15 shows a plan view of an exercise band with a longitudinally central row of diamonds with loading indications of 1.5 kg, in the unexpanded state;

[0042] FIG. 16 shows a plan view of the band according to FIG. 15, in the state expanded with an expansion force of 1.5 kg;

[0043] FIG. 17 shows a plan view of an exercise band with a longitudinally central row of pairs of ellipses, with ellipses of different sizes and loading indications of 1.5 kg and 2 kg assigned thereto, in the unexpanded state;

[0044] FIG. 18 shows a plan view of the band according to FIG. 17, in the state expanded with an expansion force of 1.5 kg;

[0045] FIG. 19 shows a plan view of the band according to FIG. 17, in the state expanded with an expansion force of 2 kg;

[0046] FIG. 20 shows a plan view of an exercise band with a central rectangle with loading indication of 1.5 kg and handles fixedly attached to the band ends, in the unexpanded state;

[0047] FIG. 21 shows a plan view of the band similar to that according to FIG. 20, with an ellipse, a central diamond and a rectangle and the expansion force indications of 1 kg, 1.5 kg and 2 kg, in the unexpanded state, and

[0048] FIG. 22 shows a plan view of the band according to FIG. 21, in the state expanded with an expansion force of 1.5 kg;

[0049] FIG. 23 shows a plan view of a holder with central eyelet and thumb grip ring.

[0050] Represented in FIG. 1 is an elastic exercise apparatus 1 which consists of an exercise band 2, known per se, to which two clamp-handles 3 are attached at the optimum distance apart for the exercise concerned. It is discernable that this is an exercise band on the surface of which at least one row of a geometric pattern is applied. It may also be seen that the non-tensioned band motif 4 is here an ellipse, which under a predetermined pulling force is expanded into a circle as the tensioned band motif 5. The person exercising may now evenly expand the exercise band 2 clamped between the clamp-handles 3 in the course of extension exercises and follow the expansion process visually and mentally until the provided motif change occurs. This indicates that the pulling force or tension under which the band is to be held constant during the exercise is reached. This occurs without cramped, direct digging in of the hands into the band, as a result of

which no distortions in the band and premature fatigue phenomena in the hands can occur.

[0051] FIG. 2 shows a similar exercise apparatus to FIG. 1, only here the exercise band 2 has diamonds as geometric motif 4 in the non-tensioned state of the band, which become squares as motifs 5 in the correspondingly tensioned state. Moreover, on each of the clamp-handles 3 is provided a holding element 6 which is, as is evident here, a rigid bow which is attached to one longitudinal side of the handles. The person exercising is now able to grip the handles in a simple manner by the bows with his whole hand and thereby pull on the two handles and hence on the band. The person exercising may, however, also very effectively put just the thumb 8 of each hand therein, as may be seen in more detail from FIG. 3. The thumb thereby acts as axis of rotation, via which free balancing-out takes place during the exercise, so that the two clamp-handles always automatically align themselves parallel to one another under even pulling of the band 2 which is clamped in place in a slip-free manner.

[0052] It may be seen from FIG. 3 that the handles 3, between which the band 2 is clamped, bear flexible holding loops 7 as holding elements, into which the thumbs 8 of the hands 9 of the person exercising are placed. It is discernable how self-balancing, correct aligning of the exercise apparatus takes place as a result of being suspended between the thumbs and thus allows even, distortion-free expansion of the band.

[0053] In FIG. 4 to 12, the clamp-handle is represented in its particular form as a clip-handle 10, in which the band 2 is securely clamped between two mutually pivotable clamping arms, as is described in more detail later on.

[0054] Thus FIG. 4 shows how a holding loop 7 is fixed to the clip-handle 10 by way of eyelets 11 fitted at the longitudinal ends. The cable, rope or cord from which the holding loop 7 is formed is here passed through the two eyelets 11 and ends in a thumb grip ring 12 in which the loop ends are securely fixed. The person exercising now places his thumb 8 in the eccentric opening 13 of the grip ring. It is discernable how balancing-out of the handles takes place, wherein displacement of the loop cord in the eyelets may additionally also take place, to align the ring 12 symmetrically in relation to the handle and hence to the band.

[0055] FIG. 5 shows the same view and the same form of construction as in FIG. 4, only here a gripping ball 14 is provided as the gripping element on the holding loop, represented non-tensioned, the said ball being threaded via its central bore 15 on the loop cord 7. The person exercising does not now grip the holding loop 7 directly but via the gripping ball 14. The axial sliding of the ball on the cord similarly enables free balancing-out of the exercise apparatus to take place. Obviously several gripping balls of identical or differing diameter may be threaded on the holding loop instead of one gripping ball, or a gripping reel 16, as represented in FIG. 11, may be used.

[0056] It is discernable from FIG. 6, which shows a cross-section through a clip-handle 10 in the closed state of tension, that the handle consists of a lower arm 20 and an upper arm 21, which interlock by means of their correspondingly designed inner profiles and thereby secure the band 2 laid between them to effect clamping. A V-shaped groove 18 is in this case provided in the shaped strip 19 of the lower

arm 20 longitudinally centrally thereof, on the groove bottom of which is moulded a spherical abutment 17. The upper arm 21 has on its shaped strip 22 two resilient bars 24, separated via a central groove 23. It is discernable that in the tensioned/closed state of the clip-handle 10 the bars 24 stand on the spherical abutment 17 such that they are pressed slightly apart and thus resiliently abut its periphery, sliding laterally, without fitting thereon so as to exert pressure perpendicularly or radially. As a result the band 2 laid therebetween is not squeezed as in gripping jaws, but is merely held securely between the bars and the abutment, pressed resiliently against them. Secure, slip-free holding of the band over its whole length is ensured by means of the five deflection points in the band's path. This secure holding may also occur with bands of differing thickness, as the resilient bars just spread apart slightly more or less as required. Furthermore, it is discernable how the eyelets 11 are provided on the shaped strip 19 of the lower arm 20, in which connection it should be noted that the eyelet is raised to the upper margin of the shaped strip 19 far enough to enable the holding loop to be fixed to the eyelet as close as possible to the band 2. Finally, marking beads 29 are provided on the inner base margin, as may be seen more closely from FIG. 8 to 11.

[0057] In the form of construction of the clip-handle 10 represented in FIG. 7, a U-shaped groove 30 is provided on the shaped strip 19 of the lower arm 20, in the bottom of which is placed an elastic cord 31 having a circular cross-section and is fixed therein by means of adhesive bonding, for example. In addition, the shaped strip 22 of the upper arm 21 has two rigid bars 34 which are separated from one another by means of a groove 33. The rounded front ends of the bars 34 stand on the soft-elastic cord 31 with perpendicular pressure, depressing it slightly. It is obvious that the band 2 laid therebetween, which here undergoes five deflections in the shape of a W, is held resiliently clamped extremely securely but at the same time without being damaged. The profiles and the elastic cord are adapted to one another dimensionally so that even the thinnest band is held securely by slight depressing of the elastic cord. But even the thickest band to which the strongest pulling forces are applied as are required is similarly held secure against slipping or sliding by the correspondingly stronger depressing of the elastic cord, determined by the thickness of the band.

[0058] As is discernable from FIG. 8, the lower arm 20 may be connected to the upper arm 21 via a hinge 35 with an axis 36 so as to be pivotable or foldable open and closed over min. 180°. Provided at the other end of the lower arm 20 is a pivoting bow 37 made preferably from sprung steel wire, on which in turn a guide roller 38 or guide ball is placed so as to rotate. In addition, the outer end of the upper arm 21 has a projection 39, over which, in the closed state of the clip-handle, i.e. in the pressed down state of the upper arm on the lower arm, the guide roller 38 rolls into place as the pivoting bow 37 pivots upwards, and secures the two arms. Finally, it is discernable how the marking beads 29 are arranged on the inner side of the base margin 27 evenly spaced relative to one another and to the centre of the arm at the same time and how also the two eyelets 11 are provided, into which the cord of the holding loop 7 is placed.

[0059] FIG. 9, which permits a clear view onto the upper side of the lower arm 20 through the broken-away upper arm

21, illustrates particularly the width relationship according to the invention between the shaped strip 19 with the V-shaped or U-shaped groove 18 or 30 and the base 25. It is discernable that in its central, greatest width, the base 25 is here more than three times the width of the shaped strip 19. As a result, there is optimum resistance to tilting of the lower arm and also of the whole handle, in the position resting on a level support, as is the case, for example, when placing the exercise band therein. In addition, the marking beads 28² provided on the inner base margin are provided on both sides of the shaped strip 19, extending in the transverse direction of the clip, i.e. in the insertion direction of the band, aligned with one another on both sides. As a result they permit easy and accurate placement of the band and “guide” the human eye. Numerals or letters may additionally be assigned to the marking beads 28 and these may be arranged e.g. in mirror image relationship, each going outwards from the centre. Thus, when placing, there is no need to start an elaborate count, but simply to note on the left and right that the same letters or numbers or other symbols of the same type are visible at each of the margins of the band. The band may thus be positioned or aligned quickly and accurately both centrally and perpendicularly on the lower arm and thus relative to the whole clip.

² The marking beads are referenced 28 in this paragraph and also in the list of reference numerals, but elsewhere in the description and in the Figures they are referenced 29.

[0060] FIG. 10 shows the clip-handle in the closed or, via the hinge 35, in the folded-together state of the arms 20 and 21 and with the bow 37 swung upwards, the guide roller 38 thereof engaging over the projection 39 and thus holding the two arm ends fixedly together.

[0061] FIGS. 11 and 12 show the clip-handle 10 in the fully folded-out state via the hinge 35 and with the pivoting bow 37 folded out outwardly. It is discernable that the arms 20 and 21, via their wide bases 25, and also the pivoting bow 37 rest on a level support 32. In this tilt-proof state of the clip-handle, folded out free of tension, the exercise band may simply be laid on the lower arm in the appropriate orientation, particularly as it may also be discerned quickly and reliably by means of the transverse marking beads 29, which are only provided on the lower arm, where and how the band should be laid in the correct orientation, i.e. on the lower arm 20. Once the band is duly laid on the said lower arm, the upper arm 21 may then be lifted from the support 32 via its outer end with the projection 39 without any risk of tilting and pivoted around 180° or folded over the lower arm. Thereafter, close to the outer end of the upper arm, [the said upper arm]³ is pressed in the direction of the lower arm and the guide roller 38 of the pivoting bow 37 is clipped over the projection 39 of the upper arm. It is additionally discernable from FIG. 11 how a holding reel 16 is provided on the holding loop 7, which reel is provided centrally with a deep annular groove into which the thumb 8 may be placed.

³ Suggested by the translator, as the verb has no subject in the source text.

[0062] Finally, it should further be noted that while the handles according to the invention are designed particularly for holding exercise bands and rubber cords, they may, however, also be successfully used to make the bands and cords endless, if required. Thus, it is possible in relevant exercises also to pull directly on the handle, which couples the two ends of an exercise band, for example, while the band loop is located attached therein.

[0063] A flat exercise band 2 is represented in the non-loaded state in FIG. 13, on which is applied a longitudinally central row of rectangles 57, evenly spaced apart. The expansion force indication 58 is inscribed inside each rectangle 2[sic, recte 57] as 1.5 kg, under the effect of which the rectangles 57 are expanded into the squares 59 apparent in FIG. 14. The corresponding indication of 1.5 kg also becomes readable very easily in this case.

[0064] FIG. 15 similarly shows a flat exercise band 2 in the non-loaded state, on which is applied a longitudinally central row of diamonds 60, evenly spaced apart. The expansion force 58 is inscribed inside each diamond 60 similarly as 1.5 kg, under the effect of which the diamonds 60 are expanded into the oblique squares 61 apparent in FIG. 16. Here too the corresponding indication of 1.5 kg becomes readable very easily.

[0065] A flat exercise band 2 in the non-loaded state is discernable from FIG. 17, on which band is arranged a longitudinally central row of pairs of ellipses, evenly spaced apart, each pair composed of a wider ellipse 62 and a narrower ellipse 63. The expansion force indication 58 is inscribed inside each wider ellipse 62 as 1.5 kg, under the effect of which these wider ellipses 62 are expanded into the circles 65 apparent from FIG. 18, while the expansion force indication 64 is inscribed inside each narrower ellipse 63 as 2 kg, under the effect of which these narrower ellipses 63 are expanded into the circles 66 apparent from FIG. 19.

[0066] FIG. 20 shows a short elastic exercise band 2, on which just one rectangle 57 with the expansion force indication 58 is applied centrally, while respective handles 67 are fixedly attached at both ends of the band.

[0067] The unexpanded band 2 represented in FIG. 21 similarly has two fixed handles 67 at its ends, only here three different geometric shapes, each with different expansion force indications, are applied in the centre of the band. Thus there is a wider ellipse 68 with the indication 69 of 1 kg, a diamond 60 with the indication 58 of 1.5 kg and a narrow rectangle 57 with the indication 64 of 2 kg.

[0068] FIG. 22, finally, shows how the band of FIG. 21 is expanded under the expansion force effect of 1.5 kg such that the oblique ellipse 68 with the indication 1 kg is over-expanded into a longitudinal ellipse, the diamond 60 becomes an oblique square 61, and the narrow rectangle 57 is expanded into a slightly wider rectangle. It is discernable that under expansion with 1.5 kg, the shape of an oblique square 61 corresponding to this expansion force with a corresponding expansion force indication is clearly visible, while the two other shapes are not pulled into a clear expansion shape (circle or square).

[0069] FIG. 23 shows another handle 3 which may be designed basically as a clip-handle and which has a central eyelet 55 as holding element, to which a grip ring 56 is attached so as to be pivotable and displaceable. This grip ring 56 may be a standard ring or an eccentric ring like the grip ring 12 of FIG. 4.

LIST OF REFERENCE NUMERALS

- [0070] 1. elastic exercise apparatus
- [0071] 2. elastic exercise band
- [0072] 3. clamp-handles

[0073] 4. motifs, non-tensioned
 [0074] 5. motifs, tensioned
 [0075] 6. holding bow
 [0076] 7. holding loop
 [0077] 8. thumb
 [0078] 9. hand
 [0079] 10. clip-handles
 [0080] 11. eyelet
 [0081] 12. thumb grip ring
 [0082] 13. opening
 [0083] 14. gripping ball
 [0084] 15. bore
 [0085] 16. gripping reel
 [0086] 17. abutment
 [0087] 18. V-shaped groove
 [0088] 19. shaped strip
 [0089] 20. lower arm
 [0090] 21. upper arm
 [0091] 22. shaped strip
 [0092] 23. groove
 [0093] 24. bars, resilient
 [0094] 25. base
 [0095] 26. supporting surface
 [0096] 27. base margin
 [0097] 28. markings (beads)
 [0098] 29. - - -
 [0099] 30. U-shaped groove
 [0100] 31. elastic cord
 [0101] 32. support
 [0102] 33. groove
 [0103] 34. bars, rigid
 [0104] 35. hinge
 [0105] 36. axis
 [0106] 37. pivoting bow
 [0107] 38. guide roller
 [0108] 39. projection
 [0109] 40. - - -
 [0110] 41. - - -
 [0111] 42. - - -
 [0112] 43. - - -
 [0113] 44. - - -
 [0114] 45. - - -
 [0115] 46. - - -

[0116] 47. - - -
 [0117] 48. - - -
 [0118] 49. - - -
 [0119] 50. - - -
 [0120] 51. - - -
 [0121] 52. - - -
 [0122] 53. - - -
 [0123] 54. - - -
 [0124] 55. eyelet, central
 [0125] 56. grip ring
 [0126] 57. rectangle
 [0127] 58. expansion force indication of 1.5 kg
 [0128] 59. square
 [0129] 60. diamond
 [0130] 61. oblique square
 [0131] 62. wide ellipse
 [0132] 63. narrow ellipse
 [0133] 64. expansion force indication of 2 kg
 [0134] 65. circle 1.5 kg
 [0135] 66. circle 2 kg
 [0136] 67. fixed ellipse
 [0137] 68. wide ellipse
 [0138] 69. expansion force indication of 1 kg

1-11. (canceled)

12. An elastic exercise apparatus, comprising:

an elastic exercise band having at least a first geometric shape defined thereon, wherein when the exercise band is expanded by application of a predetermined force the at least first geometric shape is deformed into a different geometric shape; and

two clamping handles, wherein the exercise band is releasably clamped between each of the clamping handles, wherein each clamping handle includes a first and second arm pivotally connected to each other, wherein the first arm of each respective clamping handle includes a bar and the second arm of each respective clamping handle includes a corresponding groove for engaging the bar such that the exercise band is secured between the bar and the groove, further wherein each clamping handle includes a respective fastener for securing the first arm to the corresponding second arm in a closed position.

13. The exercise apparatus according to claim 12, further comprising a holding element attached on each of the clamping handles, wherein the holding element is directed in a pulling direction of the exercise band, wherein the holding element is one of a rigid bow and a flexible loop constructed of one of a cable and a cord.

14. The exercise apparatus according to claim 13, further comprising one of:

at least one of a ball, a tube, and a gripping reel constructed of one of rigid and flexible material slidably fitted via a central bore thereof onto the loop; and

a thumb grip ring secured to the loop in a substantially centrally and parallel planar relation with respect to the exercise band.

15. The exercise apparatus according to claim 12, wherein the at least first geometric shape is one of an ellipse, a rectangle, and a diamond, wherein a corresponding amount of predetermined force is visually associated with the at least first geometric shape, wherein application of the corresponding amount of predetermined force on the exercise band causes the at least first geometric shape to be deformed into one of a circle, a standard square, and an oblique square, respectively.

16. The exercise apparatus according to claim 15, further comprising a second geometric shape defined on the exercise band and having a corresponding amount of predetermined force associated therewith, wherein the second geometric shape is one of:

substantially the same shape as the first geometric shape; and

substantially a different shape than the first geometric shape, wherein the second geometric shape is positioned in one of:

a substantially spaced relation to the first geometric shape; and

a substantially paired relation with the first geometric shape.

17. The exercise apparatus according to claim 12, wherein the bar of the first arm of each clamping handle further

defines a first bar and a second bar, wherein the exercise apparatus further comprises an elastic substantially spherical abutment situated within and substantially along the length of the groove, wherein the abutment is adhesively secured to a bottom portion of the groove, wherein the first bar and second bar are adapted to resiliently bend apart and rest upon the abutment when the first and corresponding second arms are in the closed position

18. The exercise apparatus according to claim 17, wherein the first and second arms include respective supporting bases, wherein the width of the bases is about 1.5 to 5 times the width of one of the bar and groove of the respective first and second arms.

19. The exercise apparatus according to claim 17, further comprising at least one eyelet defined substantially centrally on one of the first and second arms, wherein the eyelet is sized to receive one of the gripping reel and the thumb grip ring.

20. The exercise apparatus according to claim 17, wherein the first and second arms are separate pieces and are pivotally connected to each other by a hinge comprised of a pivot bearing providing at least a 180° angle with respect to the first and second arms in an open position.

21. The exercise apparatus according to claim 18, wherein at least one of the supporting bases includes one of a groove, a line, a knob, and a bead defined therein in a transverse evenly spaced relation to the length thereof.

22. The exercise apparatus according to claim 17, wherein the fastener is a pivoting bow positioned on the second arm, wherein the pivoting bow is adapted to resiliently snap over a projection defined on the first arm.

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