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(54) **EXERCISE DEVICE**

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(57) **ABSTRACT**

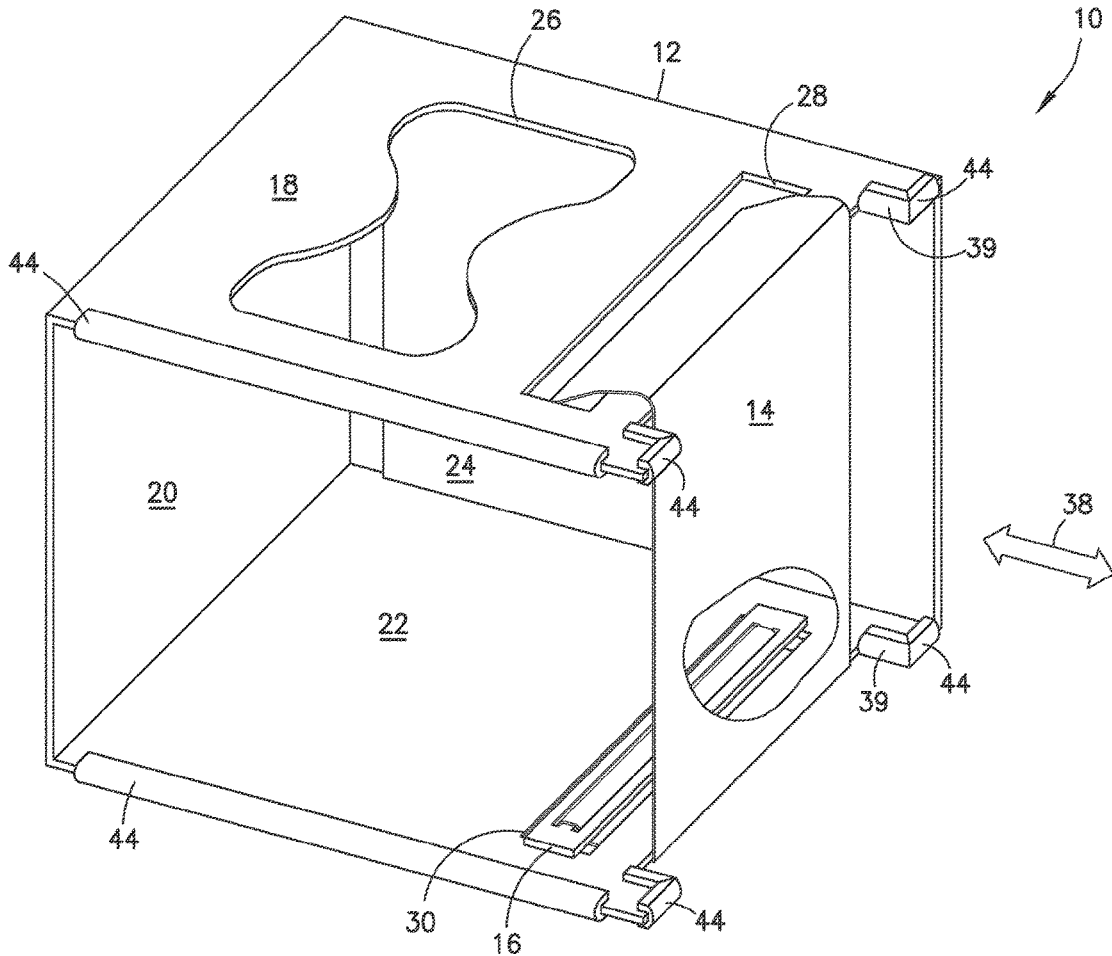
An exercise device for allowing a user to exercise the muscles of an ankle. The device includes a resilient member, such as an elastic band held in a housing. The housing includes three sides with the resilient member suspended between two of the sides in a cutout. The resilient member is suspended over the other side of the housing, which allows the user to place one foot on a side of the housing and thereby secure the device in place while placing the other foot, the one to be exercised, in contact with the resilient member. The other foot may be exercised by pushing it against the resilient member in a desired direction. The first foot is placed to prevent movement of the housing in the direction of the exercise.

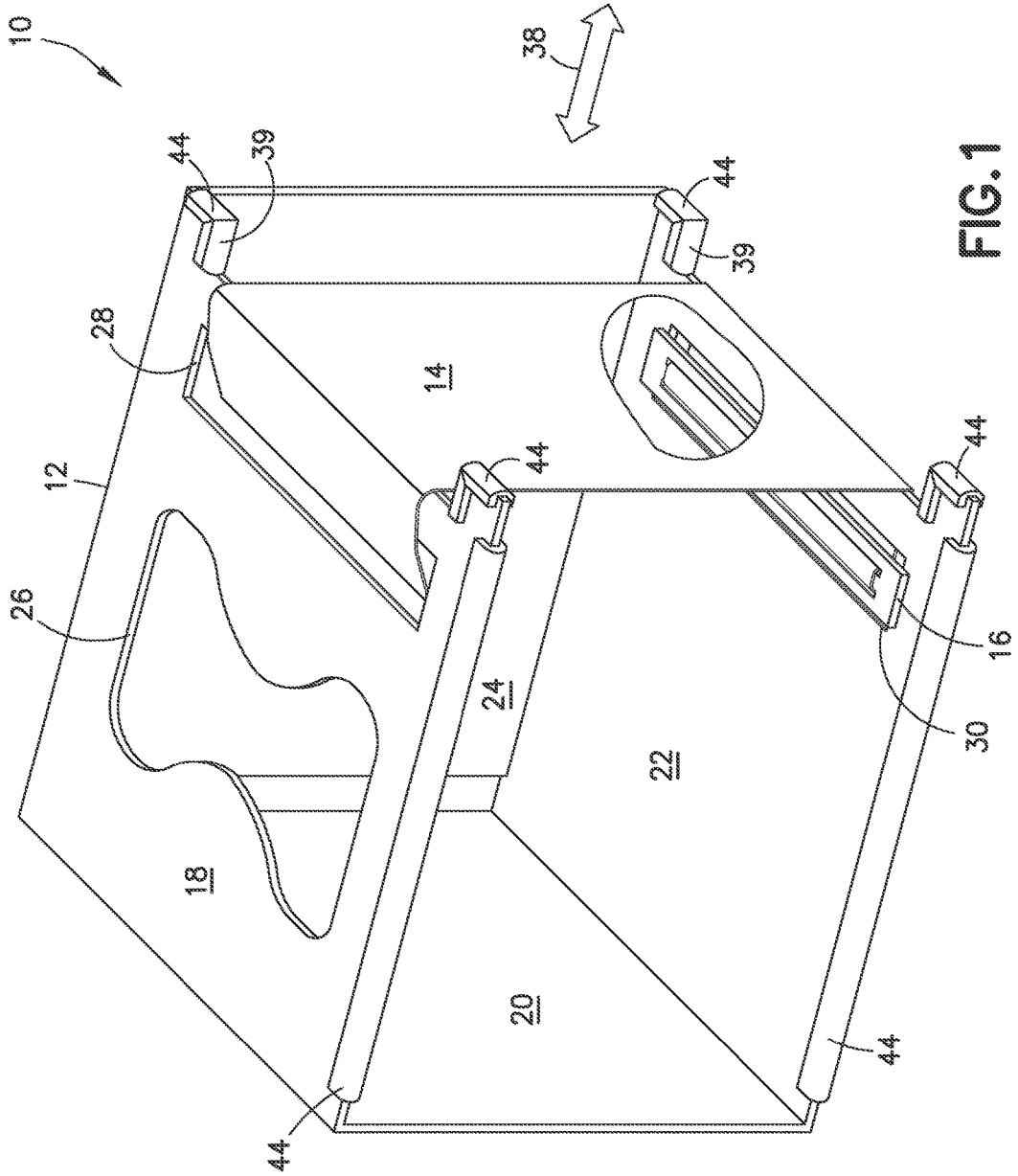
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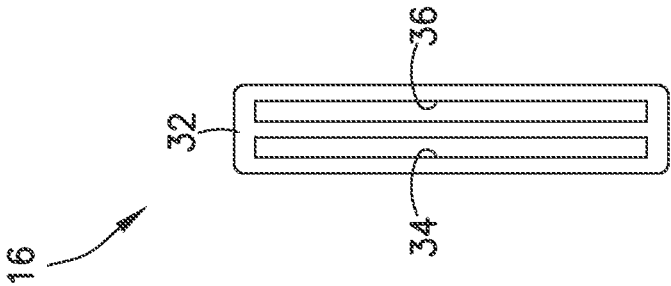


FIG. 2

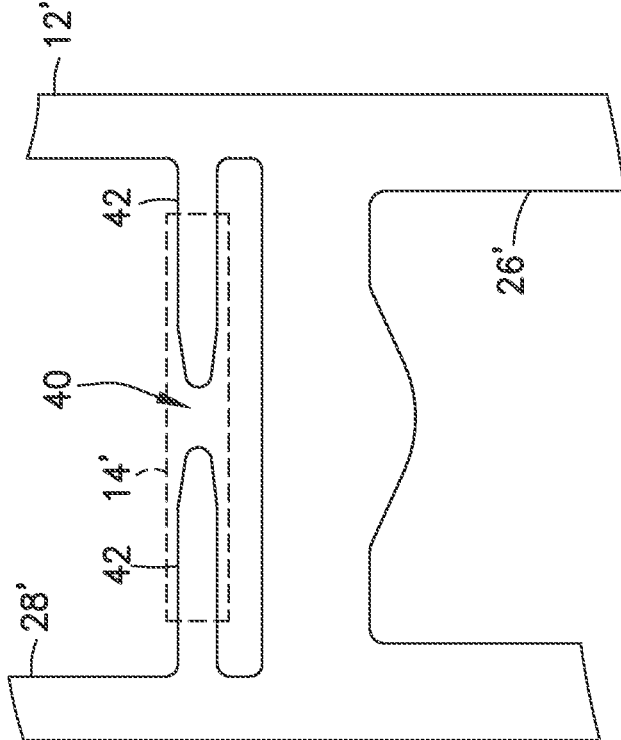


FIG. 3

EXERCISE DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The invention is directed to an exercise device and, more particularly, to an exercise device useful for strengthening ankle muscles.

[0003] 2. Description of the Related Art

[0004] Many exercise devices are known for strengthening various muscles and/or muscle groups. Not many, however, are targeted towards one of the weakest muscle groups: the ankle. The ankle supports an individual's entire body weight, and may be subjected to injury from twists, sudden turns while running or other physical insult, and yet it can be difficult to exercise the muscles in the group either for prevention of injuries or to rehabilitate the muscles after an injury.

[0005] The best technology currently available for strengthening the ankle consists of a long elastic band. In use, a user places one foot in the end of the band, and holds the opposite end. To work the ankle muscles in a downward direction, the user grabs the end of the band opposite to where the foot is, and points the foot downward, tensioning the band further. This is fairly straightforward. However, to work the muscles in any other direction requires twisting oneself to position the foot which is being worked in such a position that the foot may pull the band in a direction which is against the tension of the band.

[0006] This system requires the user to twist about while trying to maintain tension of the elastic band in a direction which will provide resistance against the desired movement. This system also requires the user to find a solid immovable object around which the band may be wrapped in order to provide tension so that the ankle may be exercised by pulling upwards, i.e., the tension must be exerted in a direction which is directly away from the user. This requires some amount of room to allow the user to sit or lie on the floor to provide the requisite directional tension of the band, and so is not very convenient for the user, who may be, for example, a student in a dorm room, or otherwise have access to a small space in which to exercise, such as an apartment.

[0007] There is therefore a need in the art to provide an exercise device for exercising the ankle which is both compact and inexpensive, while providing the user with the opportunity to exercise the ankle in several directions of movement without complicated contortions or setup.

SUMMARY OF THE INVENTION

[0008] It is an object of the invention to provide an improved exercise device for allowing the exercise of a user's ankle, in a convenient and economical fashion.

[0009] It is a further object of the invention to provide an exercise device which allows for the exercise of a user's ankle in four directions of movement: up, down, inward and outward, without the need for finding an anchor, recruiting a partner or twisting the body to provide appropriate directional tension.

[0010] In accordance with these, and other, objects of the invention, there is provided an improved exercise device for working muscles in an ankle of a user, the device comprising: a resilient member; a housing for retaining the resilient

member; and a first support for securing the housing against movement if pressure is applied against the resilient member in a first direction.

[0011] In a preferred embodiment of the invention, the housing includes a cutout portion for securing the resilient member in place, and the resilient member includes a clip which engages the cutout portion and may adjust the tension of the resilient member to a desired level.

[0012] Other objects and features of the present invention will become apparent from the following detailed description of the presently preferred embodiments, considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims. It should be further understood that the drawings are not necessarily drawn to scale and that, unless otherwise indicated, they are merely intended to conceptually illustrate the structures and procedures described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] In the drawings:

[0014] FIG. 1 shows a perspective view of an exercise device in accordance with the invention;

[0015] FIG. 2 shows a plan view of a clip used with the device of FIG. 1; and

[0016] FIG. 3 shows a detail of one side of an alternative configuration of the housing of FIG. 1.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

[0017] FIG. 1 shows an inventive exercise device 10. Device 10 includes a housing 12, a resilient member 14 and at least one clip 16. In the embodiment of FIG. 1, two clips 16 are used, but only one is visible.

[0018] In its simplest form, housing 12 includes first, second and third sides 18, 20 and 22, respectively, although it may also include an optional fourth side 24 for additional strength and stability. Sides 18, 20, 22 and 24 are generally positioned like four sides of an open box and so are generally perpendicular to the side(s) to which each is adjacent and first side 18 is generally parallel to third side 22 which is opposed thereto. Optional fourth side 24 need not extend completely to second side 20 to provide the additional support for sides 18 and 22.

[0019] Sides 18, 20, 22 and 24 may be solid, or may include openings 26 in one or more sides to reduce material costs. The embodiment of FIG. 1 shows just one opening 26, but the number, placement and configuration of any opening (s) 26 are matters of design choice. Opening(s) 26 may also serve as handle(s) to allow for ease of transport of exercise device 10. Housing 12 is preferably made of metal, such as, preferably, anodized aluminum.

[0020] Housing 12 further includes first and second slots, or cutouts, 28, 30 on opposed sides thereof. Here, first cutout 28 is in first side 18 and second cutout 30 is in third side 22. Second cutout 30 is mostly obscured in FIG. 1 by the presence of clip 16. In one preferred embodiment, housing 12 is sized sufficiently large to permit a user to place both feet side-by-side within it on any side to perform the exercises described below.

[0021] Resilient member 14 is preferably made of an elastic material to provide resistance and tension against which the user may exercise the ankle. In the preferred embodiment, resilient member 14 is a Theraband® brand of resistance band sold by The Hygenic Corporation of Akron, Ohio. These resistance bands are available in either flat or looped form, and in differing levels of resistance. The user of inventive exercise device 10 may choose the level of resistance suitable for his or her needs, and may choose to use different levels of resistance at different times as a matter of choice.

[0022] In use, resilient member 14 is looped through openings 28 and 30, and secured in place by clips 16. Clips 16 are made of any suitable material, such as a plastic, preferably an acrylic, and are formed as conventional double-loop adjustable buckles, such as are used in connection with straps to adjust the length of the strap. A detail of a preferred embodiment of clip 16 is shown in FIG. 2. As shown, clip 16 includes a generally flat body 32 having two slits 34 and 36 through which resilient member 14 (not shown in FIG. 2) may be looped and adjusted for the desired length, and therefore resistance. In a preferred embodiment, resilient member 14 is adhered in place on clips 16, with, for example, glue. Once resilient member 14 is secured to clips 16, one clip 16 may be inserted through an opening 28 or 30, with its thinnest portion entering the opening 28 or 30, and then rotated by 90° so that a portion of clip 16 which is larger than the relevant opening 28 or 30 faces that opening 28 or 30 so that clip 16 will not slide therethrough, thereby securing resilient member 14 in place. The same procedure is followed on the opposite side.

[0023] In some embodiments, if a closed loop is used, the user may not need a clip at the closed end, but may simply position some sort of bar or rod, even a pencil or pen, having sufficient length and rigidity to extend past the sides of cutout 28 to hold resilient member 14 in place. This is especially helpful if the user loses one clip 16. If the user uses a closed loop of a size which is suitable for extending precisely across housing 12, then two such rods or bars may be used, and clips 16 may be dispensed with entirely.

[0024] In use, the user selects the desired level of tension to be afforded by resilient member 14, by first selecting the desired level of resistance afforded by resilient member 14 and then adjusting the level of tension afforded thereby by adjusting the effective length of resilient member 14 within housing 12 with the proper placement of clip(s) 16 to make the length of resilient member 14 which lies between clips 16 shorter, increasing the resistance, or longer, decreasing the resistance. Clips 16 may be attached before resilient member 14 is positioned for use. To accommodate this procedure, clip 16 should be sized so that it may slip through cutout 28 when clip 16 is flat, and yet be large enough to extend past the widest extent of cutout 28 when placed flush with the side of housing 12, thereby securing resilient member 14 in place.

[0025] As an alternative preferred embodiment, where resilient member 14 is adhered to clips 16, multiple resilient members 14, each having a different strength, may be provided, thereby allowing the user to vary the tension by using one of a plurality of resilient members 14, each having a different level of tension.

[0026] Once device 10 is thus assembled, the user selects the desired direction of exercise by placing housing 12 on a secure, stable support, such as the floor, with resilient

member 14 placed in the desired direction of exercise. FIG. 1 illustrates a positioning of housing 12 which allows for exercise in the left/right directions shown by double-headed arrow 38. To so exercise in the inward (i.e., left) direction, the user places the foot which is not being exercised to the left of second side 20, to support housing 12 and secure housing 12 against movement during use. The foot which is to be exercised is then placed on the outside of resilient member 14 so that it may be moved inwardly against resilient member 14, i.e., in the direction to the left in FIG. 1 as shown by double-headed arrow 38.

[0027] The placement of the non-exercising foot on the outside of second side 20 stabilizes housing 12 against movement during use.

[0028] If the foot to be exercised is placed inside housing 12 beside the non-exercising foot the ankle may be flexed outwardly, i.e., in the direction to the right of FIG. 1.

[0029] By rotating housing 12 90° so that second side 20 is at the bottom, the ankle to be exercised may be flexed downwardly, with the opposing foot positioned on second side 20 holding housing 12 securely in place against movement (using the ground to support housing 12), thereby supporting housing 12 during the exercise.

[0030] Alternatively, depending upon the nature of the surface upon which housing 12 rests, it may not be necessary to use the opposing foot to hold housing 12 in place.

[0031] Finally, if housing 12 is rotated so that resilient member 14 is at the bottom, the user may place the foot to be exercised underneath resilient member 14 and the stabilizing foot on the top of housing 12 on the outside of second surface 20, thereby preventing housing 12 from moving during use. For this purpose, it may be preferred, although not required, to provide a notch 39 in first and third sides 18, 20 (FIG. 1), to provide some clearance when the user places the foot to be exercised underneath resilient member 14 as described.

[0032] As will be appreciated by one of ordinary skill in the art, housing 12 may be rotated so that resilient member 14 is on the left (as seen in FIG. 1), thereby allowing for exercise of the other foot.

[0033] In this fashion, the user may exercise the muscles in either ankle in any desired direction, and against any desired level of resistance to achieve desired goals of strengthening, rehabilitation or conditioning.

[0034] In an alternative embodiment of the invention shown in FIG. 3, a housing 12' includes a cutout 28' which is angled inwardly from top to bottom terminating in an opening 40 having one or more hooks 42 around which a looped end of a resilient member 14' (shown in dashed line in FIG. 3) may be looped. With this configuration, only one clip 16 is required, on the side opposed to the illustrated side. It is also possible to use similar openings and hooks on opposed sides of housing 12', but that requires dimensioning resilient member 14 so that it is a continuous loop and has a length which spans the distance between the two sides of housing 12' without being too long to lose the desired resistive tension. However, in this embodiment, no clips 16 would be required.

[0035] As a further alternative, one or more protective strips 44 may be used (FIG. 1). Strips 44 may be made of a cushioning or protective material, such as hard rubber, to protect the user, or the surfaces against which device 10 may be used, against scratching.

[0036] In the preceding Detailed Description, reference was made to the accompanying drawings, which form a part of this disclosure, and in which are shown illustrative specific embodiments of the invention. In this regard, directional terminology, such as “top”, “bottom”, “left”, “right”, “front”, “back”, etc., is used with reference to the orientation of the Figure(s) with which such terms are used. Because components of embodiments can be positioned in a number of different orientations, the directional terminology is used for purposes of ease of understanding and illustration only and is not to be considered limiting.

[0037] Additionally, while there have been shown and described and pointed out fundamental novel features of the invention as applied to a preferred embodiment thereof, it will be understood that various omissions and substitutions and changes in the form and details of the devices illustrated, and in their operation, may be made by those skilled in the art without departing from the spirit of the invention. For example, it is expressly intended that all combinations of those elements and/or method steps which perform substantially the same function in substantially the same way to achieve the same results are within the scope of the invention. Moreover, it should be recognized that structures and/or elements and/or method steps shown and/or described in connection with any disclosed form or embodiment of the invention may be incorporated in any other disclosed or described or suggested form or embodiment as a general matter of design choice. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.

What is claimed is:

1. An exercise device for exercising muscles in an ankle of a user, the device comprising:
 - a resilient member;
 - a housing for retaining said resilient member; and
 - a first support for securing said housing against movement if pressure is applied against said resilient member in a first direction.
2. The exercise device of claim 1, wherein said resilient member comprises an elastic material.
3. The exercise device of claim 2, wherein said elastic material is an elastic band.
4. The exercise device of claim 1, further comprising a second support for securing said housing against movement if pressure is applied against said resilient member in a second direction, different from said first direction.
5. The exercise device of claim 4, wherein said second direction is substantially perpendicular to said first direction.
6. The exercise device of claim 4, wherein said second direction is substantially opposite to said first direction.
7. The exercise device of claim 6, wherein said first support and said second support are a single support, which secures said housing against movement in both of said first and second directions.
8. The exercise device of claim 4, further comprising a third support for securing said housing against movement if pressure is applied against said resilient member in a third direction, different from both said first direction and said second direction.
9. The exercise device of claim 8, wherein one of said first, second and third directions is substantially perpendicular to the other two of said first, second and third directions, and said other two of said first, second and third directions are generally opposite to one another.

10. The exercise device of claim 1, wherein said housing includes a cutout portion for receiving said resilient member and securing said resilient member in said housing.

11. The exercise device of claim 10, further comprising at least one clip for holding said resilient member in said cutout portion.

12. The exercise device of claim 10, wherein said cutout portion is disposed so that said resilient member is secured in a position which is opposite to a first side of said housing at a distance sufficient to permit the user to place at least one of the user's feet at least partially within said housing and exercise the ankle.

13. An exercise device for exercising muscles in an ankle of a first foot of a user, the device comprising:

a resilient member;

a housing having at least first, second and third sides, said first and third sides being substantially perpendicular to said second side and substantially parallel to one another at opposed locations on said second side, at least one of said first and third sides including a cutout portion for receiving said resilient member; and

at least one clip configured to receive said resilient member and to engage said cutout portion for securing said resilient member in a position generally opposed to said second side of said housing;

whereby the user may position the second of the user's two feet adjacent to at least one of said first, second and third sides of said housing to secure said housing against movement if the user moves the user's first foot against the resilient member to thereby exercise the user's ankle muscles of the first foot.

14. The exercise device of claim 13, wherein said housing further has a fourth side substantially perpendicular to said first and third sides of said housing to support said first and third sides of said housing against movement towards one another.

15. The exercise device of claim 13, wherein each of said first and third sides of said housing includes a respective first and second cutout portion, and said at least one clip being a first clip which engages said first cutout portion, and the device further comprises a second clip for engaging said second cutout portion, and thereby retain said resilient member in a desired location within said housing.

16. The exercise device of claim 13, further comprising a hook disposed on one of said first and third sides of said housing, and said other of said first and third sides of said housing includes said cutout portion, whereby said resilient member may be hooked over said hook at an end of said resilient member, and said clip may be attached to a portion of said resilient member distant from said end of said resilient member, said portion of said resilient member at which said clip is positioned being at a distance from said end of said resilient member at which said clip may be positioned in said cutout portion while tensioning said resilient member at a desired tension to provide a desired level of resistance for the desired exercise to be performed.

17. The exercise device of claim 16, wherein the position of said clip on said resilient member may be adjusted to provide different levels of tension and thereby allow the user to exercise the muscles of the ankle being exercised at different degrees of resistance.

18. The exercise device of claim **13**, further comprising an opening in at least one of said first, second and third sides, said opening having a size sufficient to accommodate a user's hand.

19. The exercise device of claim **13**, wherein at least one of said first and third sides includes a notch which receives said resilient member.

20. The exercise device of claim **13**, wherein said cutout portion includes a hook for securing an end of said resilient member therein.

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