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(71) Applicant and

(72) Inventor (for all designated States except US): **LANE, Joseph, P.** [US/US]; 6 Goldfinch Court, Amherst, NY 14228 (US).

(74) Agents: **RICHARDS, Rowland** et al.; Phillips Lytle LLP, Intellectual Property Group, 3400 HSBC Center, Buffalo, NY 14203 (US).

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(57) Abstract: A helical band (15) comprising a first rail (16a) having a central longitudinal axis, a second rail (16b) having a central longitudinal axis, multiple rungs (17) extending between the first rail and the second rail and oriented generally transverse to the respective central longitudinal axes of the first and second rails, the central longitudinal axis of the first rail, the central longitudinal axis of the second rail, and the rungs configured and arranged in spacial relationship to each other such that the first rail and the second rail generally form a twisted circular double helix (fig. 1), and an ornamental element (18) supported by at least one of the rungs.



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DOUBLE HELIX BAND WITH ATTACHABLE ORNAMENTAL ELEMENTS

Technical Field

[0001] The present invention relates generally to the field of jewelry and, more particularly, to a band having a circular double helix configuration and adapted to be personalized by the user.

Background Art

[0002] Bracelets are known in the prior art. For example, U.S. Patent No. 4,760,715 discloses a resilient wrist bracelet designed to carry hanging objects. U.S. Patent No. 7,007,507 discloses a bracelet which includes a keeper used to prevent the bunching of bobbles, bangles and beads which are strung on the bracelet. The beads are decorative and come in a variety of colors and shapes. U.S. Patent No. 5,074,127 discloses a highly flexible jewelry band material comprising a plurality of interlocked helical members with articulated surfaces. U.S. Patent No. 5,452,572 discloses a rope chain made from hollow rectangular links having a trapezoidal cross-section. The links may be intertwined to form the appearance of a double helix. However, none of the discovered prior art provides the advantages of the present invention.

Disclosure of the Invention

[0003] With parenthetical reference to the corresponding parts, portions or surfaces of the disclosed embodiment, merely for purposes of illustration and not by way of limitation, the present invention broadly provides a helical band (15) comprising a first rail (16a) having a central longitudinal axis, a second rail (16b) having a central longitudinal axis, multiple rungs (17) extending between the first rail and the second rail and oriented generally transverse to the respective central longitudinal axes of the first and second rails, the central longitudinal axis of the first rail, the central longitudinal axis of the second rail, and the rungs configured and arranged in spacial relationship to each other such that the first rail and the second rail generally form a twisted circular double helix (fig. 1), and an ornamental element (18) supported by at least one of the rungs.

[0004] The first rail and the second rail may each have a first end (21a, 21b) and a second end (22a, 22b) and the respective first and second ends of the first and second rails may be detachably coupled together or may be fused together.

[0005] The ornamental element may comprise a first part (20a) and a second part (20b) adapted and configured to couple together around the rung. The rung may have an outer diameter (23), the ornamental element may comprise a through opening (25) having a diameter (24), and the diameter of the through opening may be greater than the diameter of the rung. The ornamental element may comprise an opening (25), the rung may extend through the opening in the ornamental element, and the ornamental element may further comprise an outer surface (19) and an ornamental decal (26) adhesively bonded to the outer surface. The first part (20a) of the ornamental element may comprise an outer surface (19a) and an inner surface (28a) having a channel (29a), a post (30a) and a hole (31a), the second part (20b) may comprise an outer surface (19b) and an inner surface (28b) having a channel (29b) and an hole (31b), the channels of the respective first and second parts configured and arranged to encircle the rung when aligned, and the posts and the holes configured and arranged to couple the first part and the second part together around the rung.

[0006] The band may comprise multiple different ornamental elements (18a-18d) supported by the rungs. The ornamental element may be a molded form or may comprise a visual image (26).

[0007] The first rail, the second rail and the rungs may comprise a thermoplastic elastomer material. The rails may be formed of a first material and the rungs may be formed of a second material that is different from the first material, and the first material may be more flexible than the second material. The flexibility of the rungs may also be reduced by the attachment of the ornamental element.

[0008] An object of the invention is to provide a bracelet that may be personalized by the user.

[0009] Another object of the invention is to provide a bracelet in the form of a circular double helix.

[0010] These and other objects and advantages will become apparent from the foregoing and ongoing written specification, the drawings and the appended claims.

Brief Description of the Drawings

[0011] Fig. 1 is a perspective view of the preferred embodiment of the bracelet.

[0012] Fig. 2 is a cut and untwisted view of the bracelet shown in Fig. 1.

[0013] Fig. 3 is a side view of the bracelet shown in Fig. 2.

[0014] Fig. 4 is partially exploded view of the bracelet shown in Fig. 3.

[0015] Fig. 5 is a partial horizontal cross-sectional view of the ornamental element shown in Fig. 4, taken generally on line 5-5 of Fig. 4.

[0016] Fig. 6 is a partial horizontal cross-sectional view of the ornamental element shown in Fig. 3, taken generally on line 6-6 of Fig. 3.

Description of the Preferred Embodiments

[0017] At the outset, it should be clearly understood that like reference numerals are intended to identify the same structural elements, portions or surfaces consistently throughout the several drawing figures, as such elements, portions or surfaces may be further described or explained by the entire written specification, of which this detailed description is an integral part. Unless otherwise indicated, the drawings are intended to be read (*e.g.*, cross-hatching, arrangement of parts, proportion, degree, etc.) together with the specification, and are to be considered a portion of the entire written description of this invention. As used in the following description, the terms "horizontal", "vertical", "left", "right", "up" and "down", as well as adjectival and adverbial derivatives thereof (*e.g.*, "horizontally", "rightwardly", "upwardly", etc.), simply refer to the orientation of the illustrated structure as the particular drawing figure faces the reader. Similarly, the terms "inwardly" and "outwardly" generally refer to the orientation of a surface relative to its axis of elongation, or axis of rotation, as appropriate.

[0018] Referring now to the drawings, and more particularly to Fig. 1 thereof, this invention provides a helical band, of which the presently preferred embodiment is generally indicated at 15. Bracelet 15 is shown as broadly including two helically twisted rails 16a and 16b, multiple rungs 17 extending transversely between rails 16a and 16b, and buttons 18 supported by rungs 17. Rails 16a and 16b and rungs 17 are configured and arranged in spatial relationship to each other such that rails 16a and 16b generally form a twisted circular double helix, as shown in Fig. 1.

[0019] In the preferred embodiment, rails 16a and 16b are formed of a thermoplastic elastomer (TPE) material that is flexible such that it can be twisted into the circular double helix configuration shown in Fig. 1. As shown in Fig. 2, rails 16a and 16b are generally elongated cylindrical members orientated about a central longitudinal axis. The respective ends 21 and 22 of rails 16 are twisted into a double helix and connected to form a generally circular configuration that is slid over the hand and onto the wrist of the wearer.

[0020] While in the first embodiment ends 21 and 22 of rails 16a and 16b are fused together to form a single unitary twisted circular double helix, it is contemplated that ends 21

and 22 may be detachably coupled together in a circular double helix. In this second embodiment, each of ends 21 and 22 can be disengaged by the wearer and the bracelet unwound to the form shown in Fig. 2. This configuration may make it easier for the user to place the band around their wrist and may also make it easier for the user to apply buttons 18 in a personalized manner on rungs 17. Thus, in the first embodiment, rails 16 and rungs 17 are preformed and the bracelet is one single unitary circular unit that can slide over the hand and onto the wrist of the wearer. In the second embodiment, rails 16 are cut to a specified length with rungs 17 extending between them. Rails 16 are then twisted into a circular double helix shape by the user and ends 21 and 22 of respective rails 16 are joined together by insertion of a flange into the hollow rail ends 21 or by clamping an external clasp between rail ends 21 and 22 to connect them. In both of these embodiments, buttons 18 are adapted to be snapped onto rungs 17 by the user.

[0021] In an alternative embodiment, the bracelet may be worn without twisting rails 16 into a helix. In this non-twisted embodiment, rails 16 are maintained as parallel and are connected at each of their own ends to form a non-twisted circular band around the user's wrist, with buttons 18 affixed to rungs 17, as shown in Fig. 2.

[0022] As shown in Fig. 2, rungs 17 are spaced evenly around bracelet 15. Rails 16a and 16b provide the spiral curve to bracelet 15 and rungs 17 maintain the distance between rails 16a and 16b. In the preferred embodiment, rungs 17 are formed of a material that is less flexible than the material used to form rails 16a and 16b. This difference in elasticity provides the flexibility and support for forming and maintaining the twisted circular double helix shown in Fig. 1. Rails 16a and 16b are more elastic and therefore easily twisted into the circular double helix shown in Fig. 1. Rungs 17 are stiffer and provide transverse support and hold rails 16a and 16b apart in the circular double helix configuration shown in Fig. 1.

[0023] In the first embodiment, rails 16 are formed of a conventional TPE material having a first degree of stiffness, and the rungs 17 are formed of a conventional TPE material having a second level of stiffness greater than the first level of stiffness of rails 16. In this embodiment, bracelet 15 is molded in a two-shot molding processing, wherein the first shot pours the stiffer TPE material into the rung portion of the mold and the second shot pours the less stiff TPE material to form rails 16. Alternatively, rungs 17 and rails 16 may be molded with a uniform material having uniform properties using a single pour and rungs 17 stiffened by the attachment of buttons 18 to rungs 17.

[0024] Buttons 18 are specially formed polypropylene ornamental elements configured to snap around rungs 17. Each of buttons 18 are adapted to be personalized and to attach to

rungs 17 of bracelet 15. Fig. 4-6 show how button 18 snaps onto rung 17. As shown, buttons 18 are comprised of two opposed parts 20a and 20b. Parts 20a and 20b are generally circular members having an outer surface 19a and an inner surface 28a. A male post or stem having a bulbous tip projects from inner surface 28a of part 20a. Both a cylindrical channel 29a and a hole 31a are cut into surface 28a. Channel 29a is a semi-circular shaped groove when seen in elevation. Part 20b corresponds to part 20a and also has an outer annular surface 19b and an inner annular surface 28b. Surface 28b also includes a semi-cylindrical channel 29b, a cylindrical post 30b, and a cylindrical hole 31b.

[0025] Post 30a of part 20a is sized and arranged to be received in hole 31b of part 20b and, conversely, post 30b is sized and arranged to be received in hole 31a of part 20a. Thus, the geometries of the inside surfaces of 28a and 28b are generally complementary such that when part 28a properly engages part 28b, channels 29a and 29b align to form through opening 25, post 30b detachably snaps into hole 31a, and post 30a detachably snaps into hole 31b, thereby forming a single annular ornamental element adapted to be supported by rung 17. Parts 20a and 20b are connected so that rung 17 is engaged by channels 29a and 29b of parts 20a and 20b. Channels 29a and 29b are sized such that, when parts 20a and 20b are connected, through diameter 24 of through opening 25 is slightly larger than the diameter 23 of cylindrical rung 17. With this tolerance between through opening 25 and rung 17, when snapped together and fastened around rung 17, button 18 may rotate freely around the central axis of rung 17. However, it is contemplated that the tolerance may be modified so that buttons 18 are not free to rotate or that a locking mechanism may be used to keep buttons 18 from rotating around rung 17.

[0026] As shown in Fig. 6, outer surfaces 19a and 19b of button 18 are generally flat planar circular surfaces to which a decal, sticker or other ornamental feature 26 may be applied. In the preferred embodiment, buttons 18 are adapted to allow for a user to choose and adhesively apply a different decal or visual image to each side 19a and 19b of each button 18 on each rung 17 of bracelet 15. In the preferred embodiment, a wide range of different decals or stickers are provided for the user to select from, with each decal or sticker 26 configured to be applied to outside surfaces 19 of buttons 18. Thus, the user may selectively assemble bracelet 15 with buttons 18 and decals 26 to form a personalized jewelry item. In addition, parts 20a and 20b of buttons 18 may also be unsnapped by the user and replaced with buttons having alternate ornamentation. This way, the buttons may be interchanged as desired by the user.

[0027] Bracelet 15 is configured to allow a user to select from a wide range of decals or stickers 26 to thereby assemble a bracelet that is unique or reflects a desired message, trait or other characteristics. Thus, decal stickers 26 placed by the user on the outside surfaces 19a and 19b of buttons 18 provide a highly individualized reflection of the user. Bracelet 15 permits both sides of the bracelet and both sides of buttons 18 to be visible in three dimensional space around the wearer's wrist. Further, bracelet 15 occupies a three dimensional space on the wrist, which permits buttons 18 to rotate around rungs 17 to make both sides visible.

[0028] Rather than having a flat surface to which individualized stickers may be adhesively applied, it is contemplated that buttons 18 may be molded elements of different shapes and sizes and/or may be provided with a wide range of different visual images, coloring or other aesthetic or decorative effects.

[0029] While the presently preferred form of the band has been shown and described, and several embodiments discussed, persons skilled in this art will readily appreciate that various additional changes and modifications may be made without departing from the spirit of the invention, as defined and differentiated by the following claims.

Claims

What is claimed is:

1. A helical band comprising:
 - a first rail having a central longitudinal axis;
 - a second rail having a central longitudinal axis;
 - multiple rungs extending between said first rail and said second rail and oriented generally transverse to said respective central longitudinal axes of said first and second rails;
 - said central longitudinal axis of said first rail, said central longitudinal axis of said second rail and said rungs configured and arranged in spatial relationship to each other such that said first rail and said second rail generally form a twisted circular double helix; and
 - at least one ornamental element supported by at least one of said rungs.
2. The band set forth in claim 1, wherein said first rail, said second rail and said rungs comprise a thermoplastic elastomer material.
3. The band set forth in claim 1, wherein said first rail and said second rail each have a first end and a second end and said respective first and second ends of said first and second rails are detachably coupled together.
4. The band set forth in claim 1, wherein said first rail and said second rail each have a first end and a second end and said respective first and second ends of said first and second rails are fused together.
5. The band set forth in claim 1, wherein said ornamental element comprises a first part and a second part adapted and configured to couple together around said rung.
6. The band set forth in claim 1, wherein:
 - said rung has an outer diameter;
 - said ornamental element comprises a through opening having an outer diameter; and
 - said diameter of said through opening is greater than said diameter of said rung.

7. The band set forth in claim 1, wherein:
 - said ornamental element comprises an opening;
 - said rung extends through said opening in said ornamental element; and
 - said ornamental element further comprises an outer surface and an ornamental decal adhesively bonded to said outer surface.
8. The band set forth in claim 5, wherein:
 - said first part of said ornamental element comprises an outer surface and an inner surface having a channel and a post;
 - said second part of said ornamental element comprises an outer surface and an inner surface having a channel and an orifice;
 - said channels of said respective first and second parts are configured and arranged to encircle said rung when aligned; and
 - said post and said orifice are configured and arranged to couple said first part and said second part together around said rung.
9. The band set forth in claim 1, and comprising multiple different ornamental elements supported by said rungs.
10. The band set forth in claim 1, wherein said ornamental element is a molded form.
11. The band set forth in claim 1, wherein said ornamental element comprises a visual image.
12. The band set forth in claim 1, wherein said rails are formed of a first material and said rung is formed of a second material different from said first material.
13. The band set forth in claim 12, wherein said first material is more flexible than said second material.
14. An ornamental band comprising:
 - a first rail having a central longitudinal axis;
 - a second rail having a central longitudinal axis;

multiple rungs extending between said first rail and said second rail and oriented generally transverse to said respective central longitudinal axes of said first and second rails;
at least one ornamental element supported by at least one of said rungs; and
said ornamental element comprising a first part and a second part adapted and configured to couple together around said rung.

15. The band set forth in claim 14, wherein:

said rung has an outer diameter;

said ornamental element comprises a through opening having an outer diameter; and

said diameter of said through opening is greater than said diameter of said rung.

16. The band set forth in claim 14, wherein:

said ornamental element comprises an opening;

said rung extends through said opening in said ornamental element; and

said ornamental element further comprises an outer surface and an ornamental decal adhesively bonded to said outer surface.

17. The band set forth in claim 14, wherein:

said first part of said ornamental element comprises an outer surface and an inner surface having a channel and a post;

said second part of said ornamental element comprises an outer surface and an inner surface having a channel and an orifice;

said channels of said respective first and second parts are configured and arranged to encircle said rung when aligned; and

said post and said orifice are configured and arranged to couple said first part and said second part together around said rung.

18. The band set forth in claim 14, and comprising multiple different ornamental elements supported by said rungs.

19. The band set forth in claim 14, wherein said ornamental element is a molded form.

20. The band set forth in claim 14, wherein said ornamental element comprises a visual image.

21. The band set forth in claim 14, wherein said rails are formed of a first material and said rung is formed of a second material different from said first material.
22. The band set forth in claim 21, wherein said first material is more flexible than said second material.
23. The band set forth in claim 14, wherein said ornamental element rotates about said rung.

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15

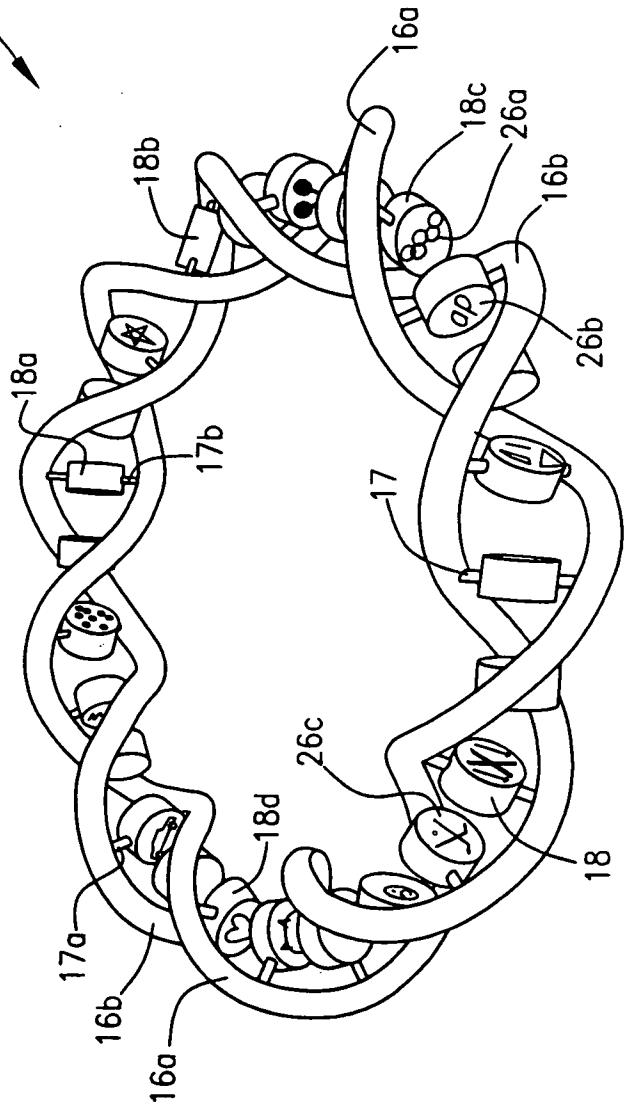


FIG. 1

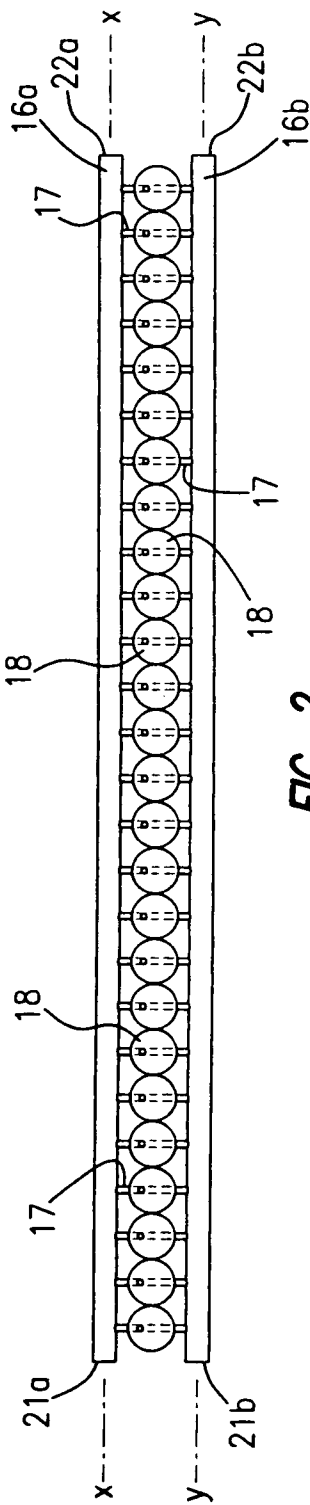


FIG. 2

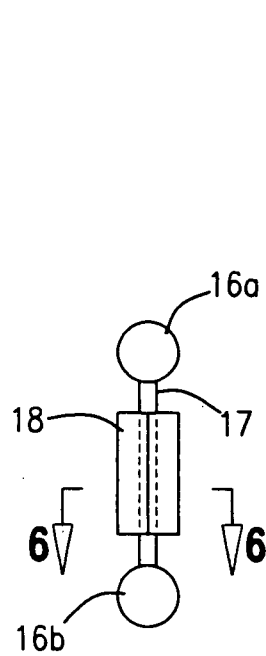


FIG. 3

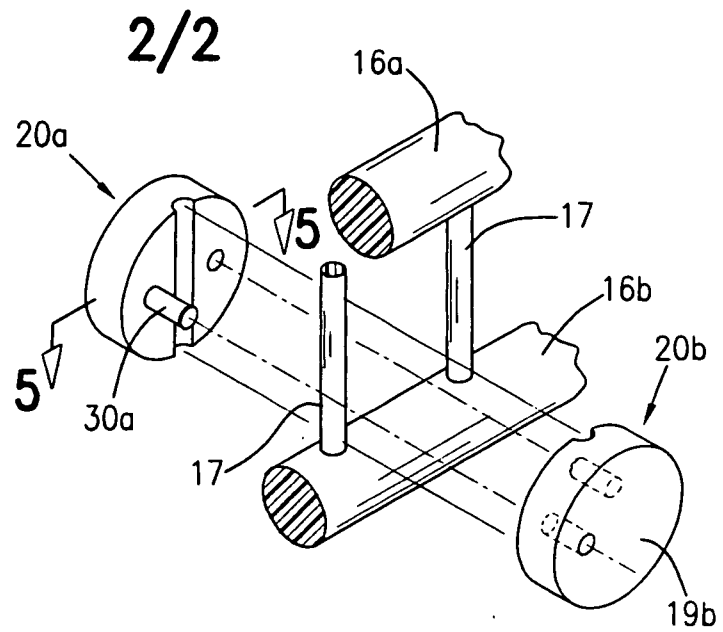


FIG. 4

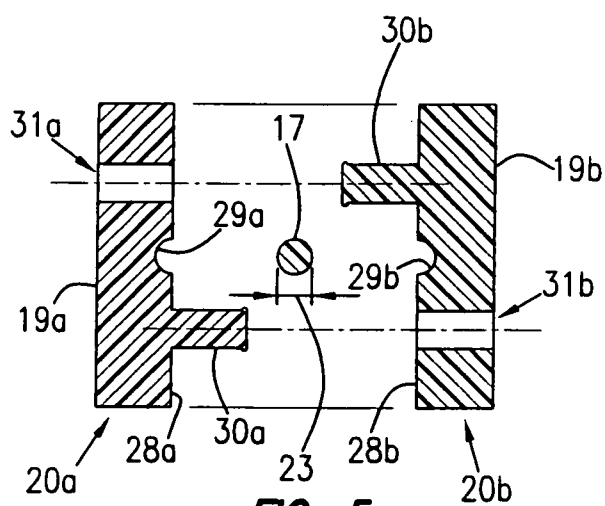


FIG. 5

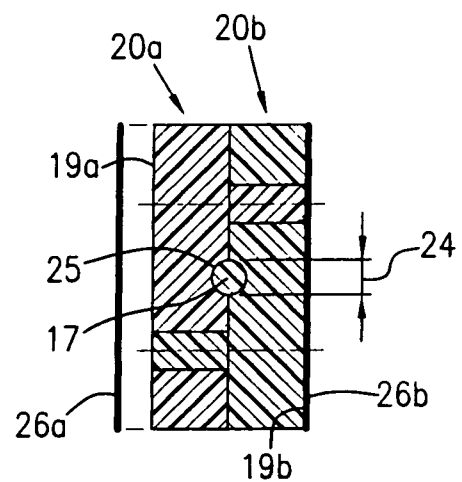


FIG. 6