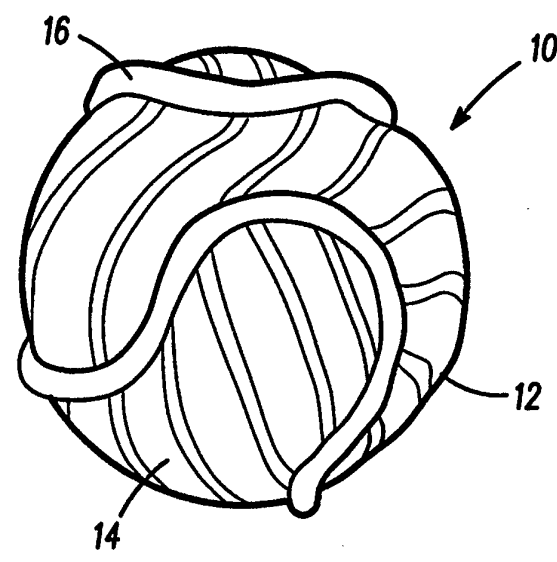




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<p>(21) International Application Number: PCT/US95/01166 (22) International Filing Date: 7 February 1995 (07.02.95) (30) Priority Data: 08/193,482 7 February 1994 (07.02.94) US (71)(72) Applicant and Inventor: KORTZ, Jeanie, L. [US/US]; 7213 South Niagara Circle, Englewood, CO 80012 (US). (74) Agents: DEKRUIF, Rodney, D. et al.; Reinhart, Boerner, Van Deuren, Norris & Rieselbach, S.C., 1000 North Water Street, P.O. Box 92900, Milwaukee, WI 53202-0900 (US).</p>		<p>(81) Designated States: AU, CA, KR, MX, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i></p>
<p>(54) Title: TACTILE-RESPONSIVE TOY ARTICLES</p>		
<p>(57) Abstract</p>		
<p>This invention is an article to be used as a toy or in conjunction with a game and the like, comprising a particulate filler material and a fabric cover portion (12) containing the filler, the cover including means to interact with the filler upon repetitious contact thereto to cause at least partially restrained movement of the filler within the cover.</p>		

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TACTILE-RESPONSIVE TOY ARTICLES

This invention is related generally to toys and games and, more particularly, to stuffed toy articles, of the type including a particulate material contained within a soft flexible cover, arranged and configured to provide a predetermined shape.

Conventional stuffed toys have maintained popularity over the years, despite the recent and increasing influx of electronic and/or computer technology into the toy industry. Stuffed animals, dolls, inanimate figures, bags and the like continue to provide children enjoyment and mental stimulation through the exercise of their creative abilities. To a lesser extent, stuffed toy articles also capture the imagination of adults. With an eye toward profits and marketability, toy designers strive to develop such toys which appeal to both adults and children.

Regardless of the intended market or toy user, stuffed animals, dolls, and figures share several common structural elements. Typically, the toy is constructed with a solid particulate filler material contained within a soft-textured fabric covering. The filler and covering are arranged and configured to meet certain physical and use characteristics. Generally, the position of the particulate material within the cloth provides shaping and weighted support, without compromising liability and the desired soft feel.

The prior art articles include a variety of basic filler/cover combinations by way of meeting the concerns described above. Most articles require additional construction components which add to the design complexity and/or increase the cost of manufacture. United States Patent No. 3,977,121 describes a doll-type toy constructed so as to include several separate compartments, one vertically disposed above another, within the torso portion of the doll figure. The particulate filler material, beans or plastic beads, in one such compartment are prevented from movement into another, thereby maintaining the shape and contour of the doll torso, while providing stability and support for the doll when positioned up-right. The compartments are constructed either with the cover portion, itself, or by providing separate interior compartments within the cover.

Multiple filler compartments within a doll configuration are also described in United States Patent No. 4,884,991. A filler material of readily-flowable spherical particulates fills out the fabric covering. Over-stuffing compromises the desired soft-feel. To prevent evacuation and

unimpeded movement of the filler from one end of the compartment to another and subsequent sagging of the doll during use, the voids are filled with a less-flowable fibrous material which is compressed by the flow/movement of the particulates against it.

United States Patent Application No. 3,748,779 describes a stuffed animal article constructed from a flexible fabric forming a cavity within which a non-toxic cereal grain is employed as a filler. The grain size and configuration are compatible with the chosen fabric so as to not restrain, impede, or affect movement of the grain with respect to the fabric. Millet seed is a preferred filler because of its relatively small size and generally spherical configuration, features which combine to permit the seed to compact within the covering, thereby minimizing interstices and providing a relatively dense feel.

United States Patent No. 4,952,190 describes deformable toys which employ a flexible bladder and a moldable filling medium therein. The bladder is constructed from a variety of latex-forming materials, such as synthetic rubber or plastic, the thickness of which varies according to the ultimate use of the toy. The filling medium is a cohesive mixture of microspheres and a liquid chemically inert to both the spheres and the bladder. Liquid choices include water, mineral oils, glycols, etc., while the microspheres may be produced from a variety of materials, such as synthetic plastics, glass, etc. The filler is thus separated from a fabric covering through use of the latex bladder.

Stuffed animals are also described in United States Patent No. 4,000,968, and include separate filler compartments within the feet portions to add weight to the legs, lower the center of gravity, and permit the animal to stand erect. Other portions of the animal are filled with less denser material, such as fibrous pillow stuffing. The compartments are preferably formed from a polymeric film, which separate the dense filler particles from and minimize interaction with both the less dense material and the outer fabric covering.

Stuffed toy articles of the prior art not only share many of the same structural elements, but also the same shortcomings. Complex structural designs and configurations are required to restrict movement of the filler material within the toy covering or to achieve a desired structural or texture effect. There is a need for an improved soft, pliable, stuffed toy article

which provides shape and density independent of compartment barriers, non-flowable filler materials, and related limitations.

Objects of the Invention

It is an object of the invention to overcome the problems and shortcomings of the prior art.

It is also an object of the invention to provide toy and game articles which include various physical and structural properties derived through the choice of component materials.

Another object of the invention is to provide a filler material which interacts with other components thereof to provide various physical and structural properties.

Another object of the invention is to provide a filler material which when combined and used with other components of the invention provides functional and physical characteristics different from those available through an alternate use of the filler material.

Another object of the invention is to provide a cover member which interacts with other components of the invention to provide various desired physical and structural properties.

Another object of the invention is to provide a cover member which when combined and used with other components of the invention provides functional and physical characteristics different from those available through an alternate use of the cover member.

Another object of the invention is to provide a stuffed toy or game component which includes a particulate filler and fabric cover combination which engage and interact with one another upon use to modify the function and physical properties of each and the performance or operation of the toy or game component.

These and other important objects will be apparent from the descriptions and figures of the invention which follow.

Summary of the Invention

This invention overcomes certain well-known problems and deficiencies, including those outlined above. One aspect of this invention is a novel combination of cover and filler material, the function of each modified by the presence of the other to provide new and unexpected performance characteristics. In part, the invention includes a tactile-responsive toy article including: (1) a polymeric particulate filler,

and (2) a fabric cover portion which contains and interacts with the filler upon repetitious contact between the filler and the fabric, such that the filler is at least partially restrained by the cover. In preferred embodiments, the filler is selected from the group consisting of polyethylene, polypropylene and polyethylene terephthalate beads, and the cover portion comprises a woven, stretchable textile. In highly preferred embodiments, the woven textile is a blend of elastomeric fibers selected from the group consisting of spandex and nylon. The blend is about 10-90 weight % spandex and about 90-10 weight % nylon. The electrostatic interaction is developed upon manipulation of the woven textile and the filler. Preferably, the cover portion is substantially spherical. However, the filler partially fills the cover portion, such that it is manually movable within the cover to form a plurality of shapes.

In another embodiment, the invention is a stuffed toy including: (1) a filler material, and (2) a fabric cover containing the filler material, the cover including means to establish an electrostatic interaction between the cover and the filler material. In preferred embodiments, the filler material is a mass of polymeric particulates. In highly preferred embodiments, the filler material is selected from the group consisting of polyethylene, polypropylene and polyethylene terephthalate beads.

In preferred embodiments, the means to establish electrostatic interaction is the presence of elastomeric fibers woven within the fabric cover. In highly preferred embodiments, the elastomeric fiber is selected from the group consisting of spandex and nylon, such that the fabric cover includes a blend of about 10-90 weight % spandex and about 90-10 weight % nylon. The electrostatic interaction is established by manipulation of the filler material within the cover.

In part, the invention is game which includes a substantially disk-shaped woven elastomeric textile cover, consisting essentially of spandex and nylon and holding therein a particulate polymeric filler material selected from the group consisting of polyethylene, polypropylene and polyethylene terephthalate beads. The filler material is manipulated within the textile cover to induce an electrostatic attraction there between, such that the filler material has a fluid-like movement within the cover. The cover is about 10-90 weight % spandex and about 90-10 weight % nylon. The game includes tossing the filler-filled cover with a side-armed wrist

motion. The article assumes a disk-like configuration as it spins through the air, but is deformable upon contact such that it can be caught easily by hand.

As discussed above, the toy and game articles of this invention employ a unique cover and filler combination which impart to the articles physical characteristics not otherwise observed. The combination performs together with a different function, not available through use of one without the other, in a manner wholly unanticipated and unexpected. From one embodiment of the invention to another, the filler material attains a fluidity of movement within the cover portion upon tactile stimulation. Continued manipulation of the article engenders a responsive playful quality found appealing by both children and adults, alike. With respect to adult users and depending upon the particular embodiment employed, articles of this invention can impart a certain sensuousness. Other embodiments, upon repetitious contact and manipulation can provide a calming, soothing effect, ideal for the release of stress, tension, or anxiety.

The function and results demonstrated through use of the fabric and filler combinations described herein were quite unexpected. Without restriction to any one theory or mode of operation, it is believed that the interaction of the fabric cover portions of the invention with the filler materials used in conjunction therewith create something of an electrostatic attraction between the two components. The attractive force so generated restrains movement of the filler material with respect to the fabric portion as the material is manipulated. In a counteracting fashion, the stretchability of the fabric portion, depending upon the density of the filler mass, also impedes or restrains movement of the filler. The composite result produced is a fluid-like movement of the filler material within the fabric cover, giving the articles a certain and novel playfulness.

As further provided in the figures and descriptions described below, embodiments of this invention include a multitude of shapes and sizes, and include a variety of filler material densities, the specific combination of which is dependent upon particular physical and use characteristics desired. As a general proposition, the articles of the invention include a filler material density sufficient to provide the fluid-like movement described above and provide the desired tactile responsiveness. Greater densities restrict the interaction between the cover portion and the filler material,

prohibit movement of the filler within the cover, and compromise the soft feel quality. Lesser densities do not ensure the requisite degree of contact between the filler material and the cover portion, such that neither the cover/filler interaction or the cover stretchability are invoked.

Brief Description of the Drawings

FIGURE 1 illustrates a preferred embodiment of a toy article of the invention, schematically illustrating a preferred cover/filler configuration;

FIGURE 2 is a perspective view of an alternate embodiment of the invention;

FIGURE 3 is a perspective view of another alternate embodiment of the invention; and

FIGURE 4 is a perspective view of another alternate embodiment of the invention, illustrating schematically a design and configuration suitable for use in the release of tension and stress.

Detailed Descriptions of the Drawings

As shown in FIGURE 1, a preferred embodiment of an article of the invention is spherical toy article 10, which comprises outer cover 12 containing therein (not shown in FIGURE 1) a filler material of the invention. As best shown in FIGURE 1, cover 12 can comprise a plurality of cover portions 14, the number of which, in part, are determined by the particular structural requirements and related manufacturing concerns. Cover portions 14 are joined and secured one to another by means connecting the portions. Cover portions 14 of article 10 include two substantially figure-eight-shaped sections, which when made from preferred woven fabrics are cut with the grain line and joined in a complimentary manner to optimize stretchability in all directions. As shown in FIGURE 1, cover 12 can include reinforced stitching, as portrayed by seam 16 along cover 12 and joining portions 14. While cover 12 of article 10 is configured and designed to provide an initial spherical shape, the density of the filler material therein allows for manipulation and spherical deformation in a manner consistent with the interaction between cover 12 and the filler material, as described above.

As shown in FIGURE 2, the invention can take the shape and design exhibited by article 18. Likewise, as with article 10, cover 20 contains an inventive filler material (not shown) and is arranged in such a way as to provide a peripheral portion 22 defining a central opening 24. As shown in

FIGURE 2, article 18 is configured to lend itself to a variety of games and activities, not only those previously available, but also those which can utilize the novel interaction between cover 20 and the filler material contained therein.

Article 26, as shown in FIGURE 3, schematically illustrates another embodiment of the invention. Cover 28 is arranged and configured to provide substantially circular, tubular portion 30 circumscribing connective portion 32. Without limiting the scope of the invention, toy article 26 can be utilized by way of a game which includes the spinning, saucer-like movement of article 26 from one participant to another. The deformable nature of article 26, as enhanced by connective portion 32, increases the catchability. As described in connection with articles 10 and 18, article 26 also incorporates the cover/filler interaction described above and the cover stretchability to afford use and physical characteristics which increase the usefulness of the invention.

FIGURE 4 shows knotted article 34 constructed consistent with the invention and for the purpose of release of stress and tension through manipulation of cover 36 and interaction with an appropriate filler material (not shown) in central containment area 38. The stretchability of cover 36, the density of filler therein, and the interaction between the filler and cover provide a useful stress-release mechanism. As with article 10, article 34 is reinforced where structurally required.

As described herein, the playful qualities of the articles of the invention and the fluid-like movement of the filler materials therein are, in part, a function of the filler density. A greater density provides for a higher degree of particulate/cover interaction and, as contemplated herein, a higher degree of electrostatic attraction between the filler and cover of the article. A greater density also invokes the stretchability or elasticity of a cover fabric, which acts in conjunction with the filler/cover interaction to provide a certain degree of moldability and shapability to the article.

In preferred embodiments, covers used in conjunction with the invention comprise a stretchable woven fabric. In highly preferred embodiments, the fabric is a blend of elastomeric spandex and nylon fibers. Without limiting the scope of the invention, a variety of blends are commercially available for use with the invention, ranging from 10-90 weight percent spandex and about 90-10 weight percent nylon. Textile

blends found especially useful are those in which the spandex component is about 10-15 weight percent of the fabric. A cover having a spandex component greater than 90 weight percent is stretchable, but tends to provide less than the degree of support necessary for the filler material contained therein. A spandex component less than about 10% by weight does not provide the requisite degree of resiliency and stretchability and, likewise, does not interact sufficiently with the filler to provide the desired playfulness and fluidity of movement. While the articles are described above in connection with a preferred spandex/nylon fabric cover, the invention contemplates use of other fabrics which when used in combination with the inventive filler materials also provide the use and physical characteristics described herein. Accordingly, another fabric useful for an article cover comprises about 75 weight percent of a polyester and about 25 weight percent spandex. Nylon is a generic name for a variety of chemically and structurally-related polyamides available from a number of commercial sources, including E.I. du Pont de Nemours & Company, the exact chemical make up of which determines, in part, the observed elasticity. Spandex is a generic name for one of a variety of polyurethane-type materials, typically prepared from diisocyanates and polyols or the functional equivalents, and is, commonly available under the Lycra tradename from du Pont and under the Glospan and Cleerspan tradenames from Globe Manufacturing Company. Again, the specific chemical composition of a specific spandex material determines, in part, its elasticity and related physical characteristics.

In preferred embodiments, the filler material is a particulate which interacts with the article cover in a manner as described above. Without limiting the scope of the invention, particulates found especially useful are polyethylene, polypropylene and polyethylene terephthalate beads. The dimensions of the beads can vary, consistent with the invention, but it has been observed that beads having relatively small dimensions are better suited in establishing the unique cover/filler material interaction. Smaller dimensions promote a greater degree of surface contact with a preferred fabric cover to facilitate the contemplated interaction. Lighter particle weights associated with smaller dimensions enhance such interaction, in that the particle weight does not overcome the attraction developed in response to manipulation or tactile stimulation. Furthermore, smaller

particulate dimensions provide a greater packing density which, in turn, tends to promote a greater degree of filler fluidity within the cover. Polyethylene and polyethylene terephthalate beads, of various dimensions, are available through a number of commercial sources well known to those skilled in the art. An especially useful and suitably-dimensioned polypropylene is available through the Amoco Chemical Company under the "7234" numerical designation.

By way of demonstrating an aspect of the unique cover/filler interaction available through use of the invention, a fabric of about 85 weight percent nylon and about 15 weight percent spandex was spread and positioned on a level support surface. Amoco polypropylene 7234 beads were placed on an approximately one-half portion of the fabric surface area. The remaining half-portion was folded over the polypropylene beads to form a fabric-bead-fabric layered effect. The upper fabric portion and beads thereunder were repetitiously manipulated by hand over the lower fabric portion for less than thirty seconds, to simulate the cover/filler interaction described above. The upper fabric portion was then lifted and with it a majority of the polypropylene beads thereunder, most of which adhered to the fabric for a time greater than one minute. The procedure was repeated as above, except that the beads initially placed on the fabric half-portion were treated with a commercially-available aerosol spray formulated to eliminate electrostatic attraction. The treated beads did not adhere to the fabric under the simulated cover/filler interaction conditions, described above.

While the principles of this invention have been described in connection with specific embodiments, it should be understood clearly that these descriptions are made only by way of example and are not intended to limit the scope of the invention. For instance, the articles and games of the invention include a wide variety of shapes, dimensions and configuration determined, in part, by the combination filler material density and cover configuration. Other advantages and features of the invention will be become apparent from the claims hereinafter, with the scope of the claims determined by the reasonable equivalents as understood by those skilled in the art.

What is claimed is:

1. A toy article, comprising:
a polymeric particulate filler; and
a fabric cover portion containing and interacting with said filler upon
repetitious contact therewith, such that the movement of said filler within
said cover is at least partially restrained by said cover.

2. The article as defined in Claim 1 wherein said filler is selected
from the group consisting of polyethylene, polypropylene, and polyethylene
terephthalate beads.

3. The article as defined in Claim 1 wherein said cover portion
comprises a woven stretchable textile.

4. The article as defined in Claim 3 wherein said woven textile is
a blend of elastomeric fibers selected from the group consisting of spandex
and nylon.

5. The article as defined in Claim 4 wherein said woven textile
comprises about 10-90 weight % spandex and about 90-10 weight % nylon.

6. The article as defined in Claim 5 wherein an electrostatic
interaction is developed upon manipulation of said woven textile and said
filler.

7. The article as defined in Claim 6 wherein said filler is selected
from the group consisting of polyethylene, polypropylene, and polyethylene
terephthalate beads.

8. The article as defined in Claim 7 wherein said cover portion is
substantially spherical.

9. The article as defined in Claim 8 wherein said filler partially
fills said cover portion and is manually movable therein to form a plurality
of shapes.

10. A stuffed toy, comprising:
a filler material; and
a fabric cover containing said filler material, said cover including
means to establish an electrostatic interaction between said cover and said
filler material.

11. The stuffed toy as defined in Claim 10 wherein said filler
material is a mass of polymeric particulates.

12. The stuffed toy as defined in Claim 11 wherein said filler material is selected from the group consisting of polyethylene, polypropylene, and polyethylene terephthalate beads.

13. The stuffed toy as defined in Claim 10 wherein said means to establish electrostatic interaction comprises a woven elastomeric fiber.

14. The stuffed toy as defined in Claim 13 wherein said elastomeric fiber is selected from the group consisting of spandex and nylon.

15. The stuffed toy as defined in Claim 14 wherein said fabric cover comprises a blend of about 10-90 weight % spandex and about 90-10 weight % nylon.

16. The stuffed toy as defined in Claim 15 wherein said electrostatic interaction is established by manipulation of said filler material within said cover.

17. The stuffed toy as defined in Claim 16 wherein said filler material is selected from the group consisting of polyethylene, polypropylene, and polyethylene terephthalate beads.

18. A game, comprising:

a particulate polymeric filler material selected from the group consisting of polyethylene, polypropylene and polyethylene terephthalate beads; and

a substantially disk-shaped woven elastomeric textile cover consisting essentially of spandex and nylon holding said filler material therein, said filler material manipulated within said cover to induce the electrostatic attraction therebetween, such that said filler material has fluid-like movement within said cover.

19. The game as defined in Claim 18 wherein said cover is about 10 -90 weight % spandex and about 90-10 weight % nylon.

20. The game as defined in Claim 18 wherein said filler and said cover develop a saucer-shaped configuration when thrown.

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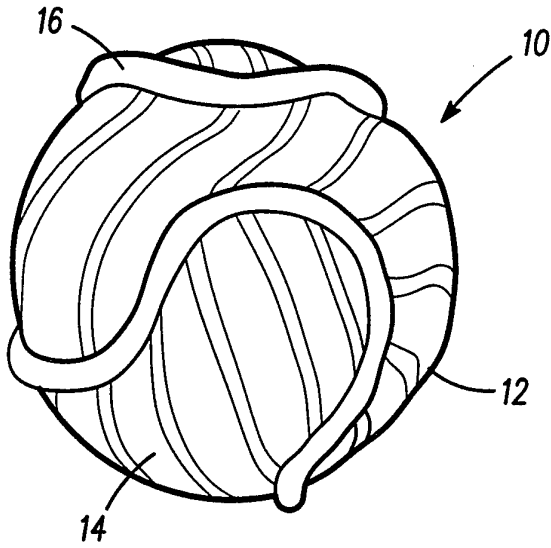


Fig. 1

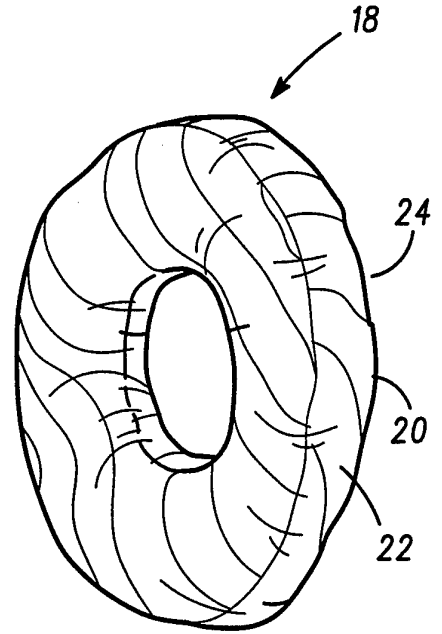


Fig. 2

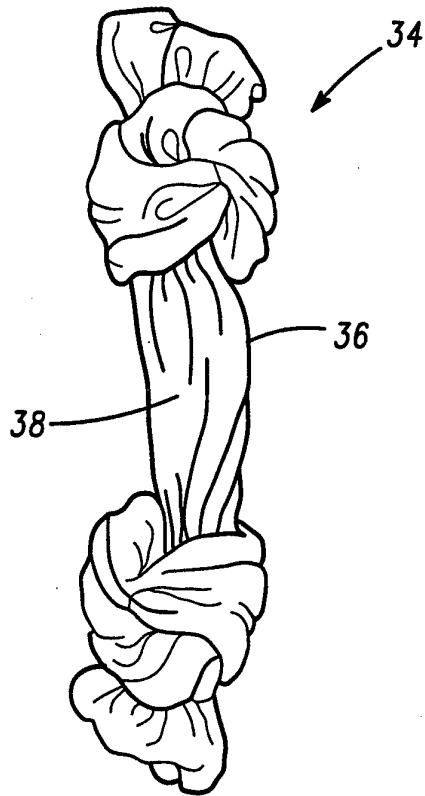


Fig. 4

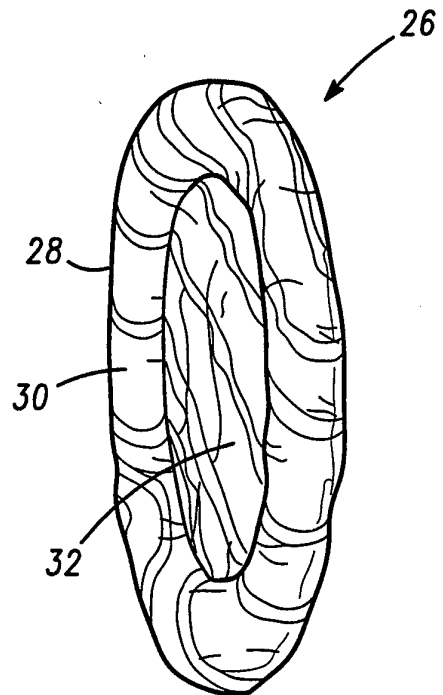


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/01166

A. CLASSIFICATION OF SUBJECT MATTER IPC(6) :A63B 37/00; A63H 33/00 US CL :273/415; 446/46, 140, 491 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 273/415, 424, 428; 446/46, 48, 140, 369, 385, 491; 482/49 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched NONE Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Extra Sheet.		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US, A, 4,055,866, (EVANS), 01 November 1977. See column 4 lines 44 and 45; and column 5 lines 15-22.	1-4, 10-14 ----- 5-9, 15-17
Y	US, A, 4,943,066, (LATHIM ET AL.), 24 July 1990. See the entire document.	18-20
Y	US, A, 5,026,054, (OSHER ET AL.), 25 June 1991. See Fig. 4, and column 3 lines 63-66.	18-20
A	US, A, 3,748,779, (CHERK ET AL.), 31 July 1973.	1-20
A	US, A, 4,884,991, (TERZIAN), 05 December 1989.	1-20
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* "A" "E" "L" "O" "P"	Special categories of cited documents: document defining the general state of the art which is not considered to be part of particular relevance earlier document published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	"T" "X" "Y" "&" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art document member of the same patent family
Date of the actual completion of the international search 07 APRIL 1995	Date of mailing of the international search report 25 APR 1995	
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer <i>Mickey Yu</i> MICKEY YU Telephone No. (703) 308-2672	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US95/01166

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 3,977,121, (GOLDFARB ET AL.), 31 August 1976.	1-20

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US95/01166

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

APS

Search Terms: polystyrene pellet, bag, elastic, cushion, polyethylene pellet, spandex, polyethylene bead, polyethylene terephthalate bead