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# (54) HARNESS FOR LIGHTED SPORT ARTICLE

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#### ABSTRACT (57)

A harness (10) for illuminating an article is provided. The harness (10) includes elongate members (12) of elastic material that can be releasably secured to an exterior surface of the article. The elongate members (12) include light stick securing portions (19) to releasably secure a light stick such as a chemi-luminescent light stick (20).









FIG. 3







FIG. 6











FIG. 10



FIG. 11



# HARNESS FOR LIGHTED SPORT ARTICLE

# FIELD OF THE INVENTION

**[0001]** The present invention relates to a lighted sport article. More specifically, the present invention relates to a harness for securably maintaining a light to a sports article, for example, a recreational ball.

#### BACKGROUND OF RELATED TECHNOLOGY

**[0002]** Sport articles, such as balls, rackets and the like, have been illuminated for recreational play during dark hours of the evening or nighttime. Illuminated sports articles, however, are often specifically designed and manufactured to provide such lighted articles. For example, U.S. Pat. No. 5,186,458 describes a ball made of translucent material having a light source positioned within the ball. When the light source is activated, the ball is illuminated via its translucent material of construction. The ball, however, is made of two releasable halves which connect to activate the light source and to form the playing shape of the ball.

**[0003]** Other designs have included a light source within a ball without having to assemble or disassemble the ball itself. For example, U.S. Pat. No. 4,479,649 describes an inflatable play ball having a preformed interior passage for receiving a light source, such as a light stick. The ball, however, must be deflated for placing the light source therein and must be subsequently inflated to hold the light source within the ball during use of the ball. Alternatively, to inflating and deflating a ball, U.S. Pat. No. 4,002,893 describes the press-fitting of a light source within a hollow passageway of the ball. Moreover, U.S. Pat. Nos. 4,776,587 and 5,066,012 describe a ball having a hollow passageway for holding a light source. The passageway for the ball is covered by a cap or collar after the light source is placed with the passageway.

**[0004]** These illuminated sports balls, however, require specially designed articles or hollow passageways with such articles for holding their light source. Such designs complicate the design and increase the cost for manufacturing an illuminated sports ball.

[0005] To avoid making hollow passageways within sports articles, exterior portions of sports articles have been altered to provide securement light sources. Grooves on exterior surfaces of sports balls and croquet mallets have been described respectively in U.S. Pat. Nos. 5,683,316 and 5,370,390. Clips for holding lights have been molded to exterior surfaces of toys, for example a flying saucer toy in U.S. Pat. No. 4,086,723. Moreover, lights have been screwed onto sports articles, for example roller skates in U.S. Pat. No. 5,855,382. All of these techniques, however, require modification of a sports article's surface or a surface adapted for securely receiving screws or the like for holding a light source.

**[0006]** To avoid specially designed sports articles, a harness for holding a light stick around a sports ball has been described in U.S. Pat. No. 4,979,751. The harness, however, requires hollow tubular members for holding light sticks. Such hollow tubular members make the harness bulky and also limit the type and size of light stick useful to one that can be releasably secured within the hollow tubular members.

**[0007]** Thus, there is a need in the art for a device for illuminating a sports article without the disadvantages of the prior art. More particularly, there is a need for a device for illuminating a sports article that does not require modification of the sports article itself and one that is not bulky.

#### SUMMARY OF THE INVENTION

**[0008]** The present invention is a harness for releasably securing a light source around a play toy or sport article. The harness includes elastically resilient material. The harness is capable of being securely fitted over an exterior surface of an article by stretching the harness and slipping onto the article.

**[0009]** The harness of the present invention includes elastic elongate members. These members are generally flat planar strips and have at least one hole through the wall of the member. Portions of the member proximal to the hole are configured to frictionally engage a light stick and secure the light stick to the harness. The harness is capable of snugly fitting over an article. Portions of the light stick are thereby engaged between the interior of the harness and the exterior of the surface to securely hold the light stick in place during use of the article. Upon activation of the light sticks, the article becomes illuminated.

**[0010]** In one aspect of the present invention, a harness for attachment of lights to an article is provided. The harness includes, but is not limited to, at least two elongate members having opposed interior and exterior surfaces defining a wall therebetween and opposed ends. Each of these members has a hole through the wall. The hole is of a size to securably hold a light source. Desirably, one of the surfaces is a substantially planar surface. The harness may further include a first elongate connecting member securably attached to one end of each of the elongate members, and a second elongate connecting member securably attached to the other end of each of the elongate members. Desirably, the elongate members and the connecting members have elasticity to releasably secure the harness over an external surface of the article.

**[0011]** The harness of the present invention may have a plurality of holes in the elongate members for securably holding a light, source. Desirably, the elongate members of the present invention have at least four holes for securably holding the light source.

**[0012]** The harness of the present invention may further include a pocket for securably holding the light source. A portion of the pocket is connected to the interior surface of at least one of the elongate members.

**[0013]** Moreover, the harness of the present invention may include elongate members that have an elastic portion. The elastic portion or, alternatively, the elastic members themselves may be made from elastic material selected from the group consisting of natural rubbers, synthetic rubbers, elastic plastics or elastic textiles. The use of elastic materials facilitates the securement of the harness over the article and further facilitates the securement of the light source to the elongate members.

**[0014]** The harness of the present invention may further include a light source capable of releasable securement to the harness by frictional engagement with portion of the elongate members proximal to the holes. Desirably, the light

source is a chemi-luminesent light stick, but other light sources may suitably be used. For example, an electroluminescent, battery-operated light stick or an incandescent, battery-operated light stick is useful with the practice of the present invention. The harness of the present invention may further include a battery securing portion.

**[0015]** Articles that may be illuminated with the harness of the present invention include, but are not limited to, a play toy or a sport article, such as a ball.

[0016] In another aspect of the present invention, an illuminated play toy is provided. The play toy has an exterior surface for securement of the inventive harness thereto. An elastic harness for covering a portion of the exterior surface of the play toy and for releasably attaching the harness to the play toy is also provided. The elastic harness includes, but is not limited to, (1) at least two elongate members having opposed interior and exterior surfaces defining a wall therebetween and opposed ends, each of the members having a hole through the wall, the hole being of a size to securably hold a light source, wherein one of the surfaces is a substantially planar surface; (2) a first elongate connecting member securably attached to one end of each of the elongate members; (3) a second elongate connecting member securably attached to the other end of each of the elongate members; and (4) a light stick securably attached to portions of the elongate members proximal to the holes. The play toy may be, but is not limited to, a sport article or a ball. The present invention is not limited to any particular type of light stick, and a chemi-luminescent light stick, an electroluminescent light stick or an incandescent light stick may suitably be used.

[0017] In yet another aspect of the present invention, a method for illuminating a play toy is provided. The method includes, but is not limited to, the steps of (1) forming an elastically deformable harness having resilient elongate members; (2) providing a plurality holes through the elongate members of the harness; (3) providing light stick for securement to the harness; (4) weaving the light stick through the holes to secure the light stick to the harness; and (5) placing the harness over an exterior surface of the play toy to releasably secure the harness to the play toy.

**[0018]** In yet another aspect of the present invention, a harness for illuminating an article includes, but is not limited to, elastic, light-emitting elongate members securably attached to one and the other to form a harness, wherein the harness is releasably slidable over the article. The elastic, light emitting members may further include light sources interconnected to elastic harness portions. Moreover, the elastic, light-emitting members desirably include elastic, light sources. The elastic, light-emitting members desirably include elastic, light sources. The elastic, light-emitting members may also include replaceable light sources, which may be refillable with light emitting devices or chemicals.

#### BRIEF DESCRIPTION OF THE FIGURES

[0019] FIG. 1 is a top view of the harness of the present invention.

[0020] FIG. 2 is a side view of the harness of FIG. 1.

[0021] FIG. 3 is a perspective view of the harness of FIG. 1.

[0022] FIG. 4 is a perspective view of a portion of the harness of FIG. 1.

**[0023]** FIG. 5 is an illustration of a light stick secured to a portion of the harness of the present invention.

**[0024] FIG. 6** is an illustration of a portion of the harness having a pocket for further securing a light stick.

**[0025]** FIG. 7 is an illustration of another aspect of the present invention showing a harness with an incandescent light source.

**[0026] FIG. 8** is an illustration of yet another aspect of the present invention showing a harness with an electro-luminescent light source.

**[0027] FIG. 9** depicts an alternate means for securing a light stick to the harness of the present invention.

**[0028] FIG. 10** depicts another means for securing a light stick to the harness of the present invention.

**[0029] FIG. 11** depicts yet another means for securing a light stick to the harness of the present invention.

**[0030] FIG. 12** depicts a light source interconnected to portions of the harness of the present invention.

**[0031] FIG. 13A** depicts a portion of an elastic transparent or translucent portion of the harness of the present invention in a quiescent state.

[0032] FIG. 13B depicts the portion of FIG. 13A in a stretched or elongated position.

**[0033] FIG. 14** is a cross-sectional view of the portion of **FIG. 13A** showing a hollow cavity.

### DETAILED DESCRIPTION

**[0034]** The present invention is a harness for releasably securing illuminating sources to an article, such as a play toy or a sport article. The harness has elongate members for securing the illuminating sources. The elongate members also have elasticity to allow the members or portions of the members to be stretched and securely fitted over the article.

[0035] Articles that can be illuminated with the harness of the present invention, include, but are not limited to, sport articles, such as a basketball, football, volley ball, soft ball, soccer ball, wiffle ball, golf ball, tennis ball and the like, and play toys, such as a basketball rim, a tennis racket, a baseball bat, a wiffle ball bat and the like. The illuminating harness may also be used as a safety device, such as providing illumination to joggers, bicycles, sports shoes, helmets and the like. The harness is useful with any article where illumination for safety, play or appearance is desired.

[0036] FIG. 1 depicts a top view of a harness 10 of the present invention. Harness 10 includes a plurality of elongate members 12. Ends 13 of the elongate members 12 are connected to connecting members 14.

[0037] FIG. 2 is a side view of the harness 10 of FIG. 1. Harness 10 is depicted as a generally circular harness. Elongate members 12 have a plurality of holes 16. As depicted in FIG. 4, the elongate member 12 has a wall portion 19, defined between an exterior surface 24 and an opposed interior surface 22, which is depicted in FIG. 5. The elongate members 12 have a hole 16 through the wall portion 19. Portion 18 of the elongate member 12 is interior portion of the wall portion 19 defining the hole 16 and is configured to frictionally engage an illumining source. [0038] FIG. 5 depicts a light stick 20 releasably secured to the elongate member 12. Light stick 20 is slipped or weaved or otherwise placed through holes 16 of elongate members 12. Portions 18 of the elongate members 12 frictionally engage portions of the light stick 20 to releasably secure the light stick 20 to the elongate members 12. Furthermore, when the harness 10 is placed over an article, such as a ball (not shown), the light stick 20 is further secured between an exterior surface of the article and the interior surface 22 of the elongate member 12. Moreover, as depicted in FIG. 6, light stick 20 may terminate within pocket 23. Pocket 23 is useful for securably holding the light stick 20 therein. Pocket 23 is depicted as being proximal to the interior surface 22, but pocket 23 may suitably located at other locations of the harness 10, such as, but not limited to the exterior surface 24.

[0039] The present invention is not limited to any specific type of light stick. For example, in one aspect of the present invention the light stick 20 may be a chemi-luminescent light stick. Chemi-luminescent light sticks typically contain liquid chemical separated by a frangible divider. A typical chemi-luminescent light stick holds a hydrogen peroxide solution in one section and a phenyl oxalate ester solution and a fluorescent dye in another section. When the chemicals co-mingle upon breaking of the divider, a chemical reaction between the chemicals produce light. Examples of such light sticks are disclosed in U.S. Pat. Nos. 3,597,362 and 3,539, 794, whose contents are incorporated herein by reference. These light sticks may be activated by bending, snapping or shaking the light stick as disclosed in U.S. Pat. No. 4,979, 751, whose contents are incorporated herein by reference. Chemiluminescent light sticks are also commercially available from, for example, from Omniglow Corporation, W. Springfield, Mass.

**[0040]** Electro-luminescent light sticks are also useful with the practice of the present invention. Electro-luminescent light sticks or lamps consist of a dielectric layer and a light-emitting phosphor layer sandwiched between two conductive surfaces. An electric field is generated across the phosphor and dielectric layers thereby exciting electrons which emit light as they return to their ground state. Electro-luminescent lights may be powered by direct current through use of an AC-DC converter. Both the converter and the power source can be miniaturized by use, for example, solid state electronics and lithium batteries. Electro-chemical light sticks are commercially available from Kriana Corp., Alpine, Calif.

[0041] As depicted in FIG. 8, the harness 10 of the present invention may include a battery 30, an AC-DC converter 32 and an electro-luminescent light stick 34. Alternatively, in another aspect of the present invention as depicted in FIG. 7, the harness 10 may include a light source 26, an optical connector 28 for transmitting light from the light source 26, and a light transmitting member 36. The member 36 may be translucent plastic tubing or strips, or may be a fiber optic cable for transmitting light from the light source 26. The light source 26 may be a chemi-luminescent, electro-luminescent or an incandescent light source.

**[0042]** The harness **10**, including elongate members **12** and connecting members **14** or portions thereof, may suitably be constructed of elastic materials. Such elastic materials include, but are not limited to, natural rubber and synthetic rubber or plastics, such as polyisoprene polymers,

polybutadiene polymers, copolymers of dienes and hydrocarbons or amorphous (non-crystalline) polyolefins, and copolymers of acrylonitrile and a diene, such as butadiene. These elastic materials may be molded to form portions of the harness 10 of the present invention. Alternatively, portions of the harness 10 may be a textile that is woven, braided or knitted from an elastomeric fiber, such as Spandex<sup>®</sup>.

[0043] The harness 10 of the present invention may be a unitary structure, i.e., a unitary molded structure. Alternatively, the connecting members 14 and the elongate members 12 may be securably attached by other means, such as, but not limited to, adhesively bonded, mechanically bonded, such as riveted and the like, or heat bonded to form the harness 10 of the present invention. Moreover, some or all of the connecting members 14 and the elongate members 12 may be releasably attached to one and the other. For example, members may be mechanically attached in a releasable manner, such as through the use of Velcro securement, snaps, ties and the like. Furthermore, portions of the harness 10, such as portions of the elongate members 12, may also have adhesive, for example, two-sided adhesive tape, to further secure the harness 10 to an exterior surface of an article.

[0044] A perspective view of the harness 10 is depicted in FIG. 4. As depicted in FIG. 4, the harness 10 maybe capable of achieving a generally spherical shape for securement over a ball (not shown). The harness 10 need not be self-supporting, but only needs to be capable of securement over a ball and maintaining a generally spherical shape thereover. If the ball is not spherical, for example a football, the harness 10 need not be capable of achieving a spherical shape, but rather is capable of achieving a shape that generally conforms to the external profile of the ball. The elastic elongate members are generally configured as elongate strips having at least one substantially planar surface. Such elongate members exhibit a low profile such that the harness 10 does not substantially interfere with the intended use of the ball.

[0045] Desirably, the harness 10 is sized to be slightly smaller than the exterior portion of the ball or article over which it is to be placed. For example, the exterior portion of a standard college basketball has a diameter of approximately 9.5 inches. The harness 10 of FIG. 4 may have a spherical diameter of about 8.3 inches, which is about five percent smaller than the diameter of the ball. In such a manner, the harness 10 may be securely placed over the ball by stretching elongate members 12 or connecting members 14 and sliding the harness 10 over the ball. The degree of undersizing the harness for securement over an article object, however, is not limited to such a five percent undersizing. An undersizing of twenty-five percent of less is useful with the practice of the present invention. Desirably, an undersizing from one to twenty percent is useful with the practice of the present invention. Other undersizings, such as 1 to 15%, 1 to 10%, 5 to 10%, 15 to 20% and 1 to 5% may suitably be used. The degree of undersizing depends, in part, on the elastic nature, i.e., stretchability, of the harness and shape of the article over which the harness is to be placed.

[0046] In another aspect of the present invention, light stick 20 may be securably attached to the harness 10 without weaving the light stick 20 through the holes 16 of the elongate members 12. As depicted in FIG. 9, the light stick

20 may be securably fitted into the elongate member 12. Alternately, as depicted in FIG. 10, the light stick 20 may be securably attached to the elongate member 12 by connector 35. Connector 35 may be, but is not limited to, a layer of adhesive or a strip of tape having adhesive on its opposed planar surfaces for securably attaching the light stick 20 to the connecting member 12. Moreover, connector 35 may releasably secure the light stick 20 to the elongate member 12. For example, connector 35 may consist of opposed Velcro strips (not shown) capable of releasable engagement where one strip is attached to the light stick 20 and the other strip is attached to the elongate member 12. The strips may suitably be attached by adhesives or other suitable techniques.

[0047] In yet another aspect of the present invention, the harness of the present invention may be capable of securably holding the light stick against the article. As depicted in FIG. 11, the elongate member 12 is elastically deformable to secure light stick 20 to an external 37 of an article 38. In this aspect of the present invention, the elongate member 12 or a portion thereof may be made from a translucent or transparent material which allows light from the light source 20 to be visible.

[0048] Although the present invention has been described with the use of tubular light stick 20, the present invention is not so limited. Other shaped light sources may suitable be used. For example, a generally flat planar lights source would also be useful with the practice of the present invention. Such a flat light source may provide an overall lower profile to the lighted harness of the present invention and may be secured to the harness by any of the above-described techniques. Moreover, the shape of the light source is not limited to an elongate shape, such as a light stick, but could have greater breadth or width than an elongate light stick.

**[0049]** Shapes having greater dimensional breadths or widths include, but are not limited to, shapes such as circles, disks, squares, rectangles, elliptical shape, irregular geometric shapes, and the like. Such wider shapes also have the advantage of illuminating a greater amount of light per unit length as compared to thin elongate shapes. Such shape could also have an adhesive containing side for securement purposes.

[0050] Furthermore, the light sources may also be used, in part, to interconnect portions of the harness of the present invention. For example, as depicted in FIG. 12, a light source 40 may interconnect a portion of one elongate member 12 to a portion of another elongate member 12 via connectors 42. Alternatively, light source 40 may be interconnected to a portion of one connecting member 14 and a portion of another connecting member 14, a portion of one elongate member 12, and the like. The light source 40 may be connected to the harness members by any of the above-described connecting means. Desirably, such light sources are snap-fitted, such as frictional engagements between the harness member and the light source via a connecting member, or press-fitted, such as through the use of Velcro, to the harness members.

**[0051]** Still furthermore, the harness of the present invention or portions of the harness of the present invention may be made from transparent or translucent elastic materials such as clear or partially clear elastic plastics or polymers. Such transparent or translucent elastic materials desirably

contain a light source therein. In this aspect of the present invention, the harness or portions of the harness also act as the illuminating source. Such a harness or portions of the harness may be a single-use light source. Alternatively, multi-use elastic light sources may be suitable be used. In such a case, the light source within the elastic harness or elastic harness portion may be refilled with chemi-luminescent chemicals and fluorescent dyes or refilled with devices containing the same. For example, the chemi-luminescent chemicals and fluorescent dyes may be separately contained in small breakable beads or the like which could be placed within the elastic harness or elastic harness portions.

[0052] Such aspects of the present invention are illustrated in FIGS. 13A through 14. FIG. 13A depicts a transparent or translucent elastic portion 44 in its quiescent or unstretched state. Portion 44 may be elastically stretched or elastically elongated as depicted in FIG. 13B. Elastic portion 44 is a hollow member having a hollow cavity 46, as depicted in FIG. 14, receptive for receiving light emitting devices or chemicals (not shown).

**[0053]** Moreover, the low profile of the present invention may allow a user to better grip an article over which the harness has been placed. For example, the harness of the present invention may allow one to better grip a basketball over which the inventive harness has been placed. In such a case, the harness of the present invention may be one as described in conjunction **FIG. 11**, where the light stick is securably held between the harness and the article. Desirably, such a harness has transparent or translucent portions for emitting light therethrough.

**[0054]** Furthermore, the harness of the present invention may be used to attach or secure other items in addition to the above-described light sources. For example, decorative streamers or sound-emitting whistles could also be suitably attached to the harness.

**[0055]** The invention being thus described, it will be clear to those persons of skill in the art that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention and all such modifications are intended to be included within the scope of the claims.

What is claimed is:

1. A harness for attachment of lights to an article, comprising:

- at least two elongate members having opposed interior and exterior surfaces defining a wall therebetween and opposed ends, each of the members having a hole through the wall, the hole being of a size to securably hold a light source, wherein one of the surfaces is a substantially planar surface;
- a first elongate connecting member securably attached to one end of each of the elongate members; and
- a second elongate connecting member securably attached to the other end of each of the elongate members;
- wherein the elongate members and the connecting members have elasticity to releasably secure the harness over an external surface of the article.

2. The harness of claim 1, wherein the elongate members have a plurality of holes for securably holding a light source.

**3**. The harness of claim 2, wherein the elongate members have at least four holes for securably holding a light source.

4. The harness of claim 1, further including a pocket for securably holding a light source; wherein a portion of the pocket is connected to the interior surface of at least one of the elongate members.

5. The harness of claim 1, wherein the elongate members have an elastic portion.

**6**. The harness of claim 1, wherein the elongate members are elastic members made from elastic material selected from the group consisting of a natural rubber, a synthetic rubber, an elastic plastic or an elastic textile.

7. The harness of claim 1, further including a light source capable of releasable securement to the harness by frictional engagement with portion of the elongate members proximal to the holes.

8. The harness of claim 7, wherein the light source is a chemi-luminesent light stick.

**9**. The harness of claim 7, wherein the light source is an electro-luminescent, battery-operated light stick.

**10**. The harness of claim 7, wherein the light source is an incandescent, battery-operated light stick.

11. The harness of claim 9, wherein the harness further includes a battery securing portion.

**12**. The harness of claim 10, wherein the harness further includes a battery securing portion.

13. The harness of claim 1, wherein the article is a play toy

14. The harness of claim 1, wherein the article is a sport article.

**15**. The harness of claim 13, wherein the sport article is a ball.

16. An illuminated play toy comprising:

- a play toy having an exterior surface;
- an elastic harness covering a portion of the exterior surface of the play toy and releasably attached to the play toy, the elastic harness comprising:
- at least two elongate members having opposed interior and exterior surfaces defining a wall therebetween and opposed ends, each of the members having a hole through the wall, the hole being of a size to securably hold a light source, wherein one of the surfaces is a substantially planar surface;

- a first elongate connecting member securably attached to one end of each of the elongate members;
- a second elongate connecting member securably attached to the other end of each of the elongate members; and
- a light stick securably attached to portions of the elongate members proximal to the holes.

17. The play toy of claim 15, wherein the play toy is a sport article.

**18**. The play toy of claim 15, wherein the sport article is a ball.

**19**. The play toy of claim 13, wherein the light stick is a chemi-luminescent light stick.

**20**. The play toy of claim 13, wherein the light stick is selected from the group consisting of a chemi-luminescent light stick, an electro-luminescent light stick or an incandescent light stick.

21. A method for illuminating a play toy comprising:

- forming an elastically deformable harness having resilient elongate members;
- providing a plurality holes through the elongate members of the harness;

providing light stick for securement to the harness;

- weaving the light stick through the holes to secure the light stick to the harness; and
- placing the harness over an exterior surface of the play toy to releasably secure the harness to the play toy.

22. A harness for illuminating an article comprising:

elastic, light-emitting elongate members securably attached to one and the other to form a harness,

wherein the harness is releasably slidable over the article.

**23**. The harness of claim 22, wherein the elastic, light emitting members comprise light sources interconnected to elastic harness portions.

**24**. The harness of claim 22, wherein the elastic, lightemitting members comprise elastic, light sources.

**25**. The harness of claim 22, wherein the elastic, lightemitting members include replaceable light sources.

**26**. The harness of claim 25, wherein the replaceable light sources are refillable.

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