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(54) Title: BALL WITH TACTILE LAYER AND METHOD OF MANUFACTURE

(57) Abstract: An object with a tactile outer layer includes, for example, a ball having an outer surface and a series of protrusions or spikes on the outer surface. The protrusion each appear as a tear-dropped shape mass that includes a base having a relatively flat bottom adhered to the outer surface of the ball and a narrow tip and/or curved tail extending away from the outer surface. Manufacturing can be performed by mounting the object and utilizing injection arms that deposit elastomer globules on the object. The globules are deposited by pressure through a reservoir in the injection arm and the injection arms are then withdrawn to produce the tail shape.

FIG. 1
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TITLE OF INVENTION
Ball with Tactile Layer and Method of Manufacture

TECHNICAL FIELD
The technology relates to balls and other objects having an uneven surface or uneven outer layer, more particularly, balls having a non-smooth, tactile surface.

BACKGROUND
Ball games are a popular form of play. Most conventional balls follow specific and standardized guidelines with traditional designs. The present invention proposes a novel design of a ball and other objects with a tactile layer or irregular outer surface to enhance the pleasure of using, playing or displaying the object.

SUMMARY OF INVENTION
In one general aspect, an object with a tactile layer, or tactile outer layer, may be an inflatable ball having an outer surface and a series of protrusions or spike-shaped deposits on the outer surface. Embodiments may include one or more of the following features. For example, the series of protrusions may include a tear-dropped shape mass or globule that includes a base having a relatively flat bottom adhered to the outer surface of the ball and a narrow tip extending away from the outer surface. The narrow tip may be straight relative to a central axis of the ball or it may have a curve such that it appears more as a tail-like shape.

The base of each tear-dropped shaped mass may be in contact with the base of each adjacent tear-dropped shaped mass or globule to completely cover the outer surface. This can provide additional structural integrity where the base is bonded to the base of each surrounding globule. Alternatively, the base of each tear-dropped shaped mass may be a discrete distance from the base of each adjacent tear-dropped shaped mass thereby exposing portions of the outer surface of the ball. In another embodiment, the elastomer globules are adhered to each other without the need to be adhered to an underlying surface.

Each tear-dropped shaped mass deposited on the outer surface may be a polymer with elastic properties (elastomer), such as, for example, rubber, silicon rubber, polyisoprene or...
polybutadiene, polyisobutylene, etc. The ball may be made from thermoplastic polyurethane, thermoplastic rubber or polyvinyl chloride or other suitable materials.

The series of protrusions may appear as a layer of spikes or furry globules covering the outer surface. The spikes may have different colors configured as a pattern or design.

The ball may be inflatable and can have a fill valve. As another feature, there may be an illumination device inside the inflatable ball. The ball may also be composed of a solid core, or an open or closed cell foam core. The inflatable ball may be spherical, a spheroid or any other suitable shape, such as, for example, an American style football.

In another general aspect, the ball with tactile outer layer may include a first layer that includes a hollow sphere having a smooth outer surface and a second layer of more than one globule deposited or dropped onto the outer surface of the sphere. Each globule may appear as a tear-drop shaped mass having a relatively flat base and a narrow tip, the base of each tear-drop shaped mass adheres to the smooth outer surface with the narrow tip extending away from the outer surface.

Embodiments may include one or more of the above or following features. For example, the second layer may be a continuous layer completely covering the first layer thereby adding additional structural integrity. There may also be a lighting device inside the first layer.

In still another embodiment, a spiked globe may be used in a decorative lamp, that includes a translucent or transparent sphere having a relatively smooth outer surface and more than one tear-drop shaped spike attached to the outer surface, each spike having a relatively flat base and a narrow tip extending away from the outer surface, an illumination device or light source inside the sphere and an electrical lighting circuit having a power source and a switch, the lighting circuit being electrically connected to the light source to turn it on and off.

Embodiments may include one or more of the above or following features. For example, a base can be attached to the sphere. In addition, the lighting circuit may be enclosed within the base.

In another general aspect, a method of manufacturing an object having a tactile outer layer or irregular outer surface layer, includes mounting the object in a mounting device and applying elastomer globules to a surface of the object, wherein the globule includes round drops attached to the surface of the object.
Embodiments may include one or more of the above or following features. For example, applying the elastomer globules further may include applying more than one series of the elastomer globules on the surface of the object. A first series of the elastomer globules may be simultaneously applied, the object may then be rotated and then a second and following series of elastomer globules is applied after reach rotation. When the object is circular or spherical, the simultaneous application may be applied in a circle, such as a great circle, or in an arc around the surface of the object.

In still another general aspect, a method of manufacturing an object having a tactile outer layer includes mounting the object in a mounting device, positioning a series of applicators proximate to a surface of the object, ejecting elastomer globules from the applicators onto the surface of the object, withdrawing the applicators from the surface to produce a tail-like shape at an end of the elastomer globule furthest from the surface of the object, rotating the object in the mounting device, and repeating the ejection of the elastomer globules until the surface of the object is covered with the elastomer globules. Embodiments may include one or more of the above or following features.

In yet another general aspect, a system to manufacture objects having a tactile surface include a mounting device to receive an object and more than one injection arm in an arc surrounding the object. Each injection arm moves from a proximate position nearest the object and a distal position farthest from the object, and each injection arm deposits an elastomer globule on the object in the proximate position and then moves toward the distal position to produce a tail-like shape at an end of the elastomer globule farthest from the object. This can provide a soft, "furry" appearance to the object.

Embodiments may include one or more of the above or following features. For example, the injection arm may have a reservoir that contains elastomer, a nozzle at an end of the injection arm, and a pressure system that pushes the elastomer globule out of the nozzle and onto the object.

As another feature, the mounting device includes a rotation assembly to rotate the object on a central axis. It may also have a rotation motor to rotate the rotation assembly or a rotation knob to manually turn the rotation assembly.

In another general aspect, a system to manufacture an object with a tactile layer includes an injection mold that receives a plasticized material and more than one injection surrounding the
injection mold. Each injection arm moves from a proximate position nearest the injection mold and a distal position farthest from the injection mold and each injection arm deposits the elastomer globule on the plasticized material in the proximate position and then moves toward the distal position to produce a tail-like shape from the elastomer globule at a position farthest from the plasticized material. Embodiments may include one or more of the above features.

BRIEF DESCRIPTION OF THE DRAWINGS

The following drawings show some of the exemplary embodiments of the present invention:

Fig. 1 shows a ball with tactile outer layer according to the present invention;
Fig. 2 shows a cross-section perspective view of the ball in Fig. 1;
Fig. 3 shows layers of the ball of Fig. 1;
Fig. 4 shows a portion of a cross-section of the ball in Fig. 1;
Fig. 5 shows a second embodiment of the ball with tactile outer layer according to the present invention;
Fig. 6 shows a third embodiment of the ball with tactile outer layer according to the present invention;
Fig. 7 shows a cross-sectional view of a fourth embodiment of a spiked globe used as a lamp;
Fig. 8 shows a lighting circuit for the lamp shown in Fig. 7;
Fig. 9 illustrates a multi ball production rig to produce objects with tactile outer layers;
Fig. 10 illustrates a cross sectional view of injection arms and mounting device to produce an object with a tactile outer layer;
Fig. 11 illustrates a partial view of injection arms to produce an object with a tactile outer layer;
Fig. 12 illustrates another partial view of injection arms to produce an object with a tactile outer layer; and
Fig. 13 shows another embodiment of an object with a tactile outer layer and a foam core.

DETAILED DESCRIPTION

Referring to Figs. 1-2, a ball with tactile outer layer, referred to as a spiked ball 100, includes a series of spikes 102 covering an inner pressurized ball 104. As used herein, the term
tactile outer layer refers more generally to a non-smooth or irregular surface that can provide a unique sense of feel when touched. Hundreds of spikes 102 made of silicon rubber or other elastomers are positioned on the inner ball 104 which is made of plastic or other rubber hybrids, such as, for example, thermoplastic polyurethane, thermoplastic rubber or polyvinyl chloride or other suitable materials. The result is a play ball 100 that does not have a heavy, dangerous hard core and creates a ball 100 that can be used in unique ways that no other ball can do.

The spikes 102 can be made of a soft elastomer such with a high degree of elasticity. This elasticity of the protruding spikes 102 gives the ball 100 a unique tactile feel and provides a surface for gripping that is different than any other ball. The protruding spikes 102 cause the ball 100 to contact or "grab" the ground to create a unique bounce. The spikes 102 may be straight or curved relative to a central axis of the ball 100.

The inner pressurized ball 104 can be made of any inflatable ball structure but typically would not be a balloon or other material that could puncture easily. The inner ball 104 should maintain its own integral structure and pressure to be a product that maintains durability and long life. However, in other embodiments the spikes 102 are a complete layer that provides additional structural integrity, and in some embodiments, without the need for an inner ball.

Fig. 2 is a cut-away or cross section of the ball 100. A fill valve 106 is used to pressurize the ball 100. The ball 104 is made of a transparent material. Thus, the bottom or base 110 of the spikes 102 are visible from the inside of the ball 104. The spikes may be viscous, fluid-like globules when deposited on the ball. Thus, depending on the proximity and pattern of application of the spikes on the ball, the bottom of the spikes can take on random non-circular shapes as the globules settle onto the surface of the ball 104.

Figs. 3 and 4 show an embodiment where the spikes are applied in a continuous layer to essentially cover the surface of the inner ball 104. As shown in the more detailed view of Fig. 4, the spikes 102 may have a tear-dropped shape with a flat bottom or base 110 adhered to the inner ball 104 and a tail or tip 108 extending away from the center of the spiked ball 100. The base 110 of each tear-dropped mass or spike 102 is in contact with and essentially bonded to the base 110 of each adjacent spike. Thus, the inner ball 104 may not be visible and the continuous bonding of adjacent spikes may add some additional structural integrity.

Fig. 5 shows a second embodiment of the ball 200 where a discrete distance is maintained between each spike 202 on an inner pressurized ball 204. Thus, the surface of the ball 204 is
visible between the spikes. As shown, the tail of each spike 202 may be curved relative to a central axis of the ball 204. This second embodiment provides a different appearance, feel and bounce profile.

Fig. 6 shows a third embodiment of the spiked ball 300 with a shape like an American football. The base of each spike overlaps with every other, however, once again, the spikes may be a discrete distance from each other on the pressurized ball 304. The third embodiment is just another example of potential outer shapes which are essentially unlimited.

The manufacturing technique to make the spiked ball can incorporate an automatic or semi-automatic process that applies silicon spikes to the round ball. A "drop" process may be used to produce the spiked ball. In the drop process, a highly viscous elastomer globule is deposited onto the outer surface. The high viscosity globule creates the tail-shaped appearance as it leaves a dispensing device and is deposited onto the ball. The ball is then continuously rotated to deposit each of the spikes in continuous rows or layers as desired.

In addition to a unique tactile surface the spikes allow for a unique visual appearance. Unique patterns can be created using a pixel approach to design. For example, the ball can have stripes, X patterns or triangles. With computer assistance, the spikes may appear as faces, words or other designs may be created.

The ball can be of any size based on the size of the inner ball. Smaller balls may have a solid inner core, but hollow cores are preferred with balls greater than 2 inches in diameter. Otherwise, the additional weight could cause a potentially dangerous impact with a person or could cause damage to another object.

Fig. 7, the spiked design can be used for a lamp 700, such as, for example, a night light. The lamp 700 includes a base 712, a globe 704 covered with spikes 702, and a light source 714 inside the globe. The light source may be incandescent, LED or other types of illumination. For a night light application, typically the light source 714 would be low wattage.

Fig. 8 shows an illumination or electrical lighting circuit 800 for the lamp 700. The circuit 800 includes a battery 816 connected to the light source 814 by a switch. The circuit 800 uses a battery 816, however, other sources of power may be used such as a plug into 112 volt alternating current house power with a voltage reduction transformer and a rectifier circuit.

The electrical (illumination) circuit may be in the base 712 of the lamp. In another embodiment, an electrical power circuit is enclosed within an inflated ball with a tactile outer
layer. The power circuit can have a motion sensor such that the light source is only illuminated when the ball receives an impact or is otherwise moved or in motion. The ball may also have a solar photovoltaic cell and battery so that it can be illuminated without external charge. In these embodiments, the circuitry can be made extremely durable so that the ball can be bounced or thrown without damage.

Fig. 9 illustrates a multi ball production rig 910 to produce balls with tactile outer layers. The production rig 910 includes a set 920 of armature injection arms 930 that are mounted in an arc around a mounting device 940. The object, such as, for example, a ball made from, for example, a foam or solid core or an inflatable ball are mounted in the mounting device 941.

Each of the injection arms 930 has an applicator tip that deposits elastomer globules onto the ball. The ball can then be rotated to deposit additional globules until the surface of the ball is covered.

Fig. 10 is a cross-sectional view of the mounting device 940 and applicator tips of the set of injection arms 930. The mounting device 940 includes a bracket with first and second adjustment arms 1020, 1030. The adjustment arms 1020, 1030 are positioned to hold an object between them. The adjustment arms 1020, 1030 can be rotated around a central axis. When the object is a ball, the adjustment arms are positioned so that the ball can be rotated on the central axis. The rotation can be achieved manually with an adjustment device 1040 that can be a knob to rotate manually or a gear to rotate the ball with a motor.

The applicator tips deposit elastomer globules onto the object positioned between the adjustment arms. The applicator tips move closer to the ball (proximate position) to deposit the globules. The applicator tips then withdraw (distal position) which creates a tail-like shape at the end of the globule farther from the surface of the ball.

Fig. 11 is a partial view of an injection system 1120 to produce an object with a tactile outer layer. The injection arms 1130 are arranged in a radial array. The injection arms 1130 are mechanically moveable by an injection arm drive system 1140. Each drive system 1140 moves the injection arm on a shaft.

Fig. 12 is a second partial view of the injection system 1120. In Fig. 11, the applicator tips or nozzles 1150 of the injection arms are in a distal position and in Fig. 12 the tips 1150 are in a proximate position, with distal being a position farthest from the object that would be positioned in the center and proximate being a position closest to the object (not shown).
Alternatively, an injection mold that produces the inner ball is positioned centrally relative to the injection arms 1130 and the globules are applied to the molded ball.

When the tips 1150 are in the proximate position, pressure causes elastomer globules to be deposited onto an object (not shown). As the tips 1150 are withdrawn to the distal position, a tail-like shape is created from the elastomer material furthest from the surface of the object.

Fig. 13 illustrates a ball with tactile outer layer form around a foam core. Open cell or closed cell foam may be used. In other embodiments, the solid core is high density material which may be a synthetic rubber, such as, for example, polybutadiene.

Numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention. However, the disclosure is illustrative only, and changes may be made in details, especially in matters of shape, size, and arrangement or addition of materials that are understood to be within the scope of the invention.
CLAIMS

1. A ball with tactile outer layer, comprising:
   a ball having an outer surface; and
   a series of protrusions on the outer surface.

2. The ball with tactile outer layer of claim 1, wherein the series of protrusions comprise a
   tear-dropped shaped mass that includes a base having a relatively flat bottom adhered to the
   outer surface and a narrow tip extending away from the outer surface.

3. The ball with tactile outer layer of claim 2, wherein the base of each tear-dropped shaped
   mass is in contact with the base of each adjacent tear-dropped shaped mass.

4. The ball with tactile outer layer of claim 3, wherein the contact between the base of each
   tear-dropped shaped comprises an outer layer completely covering the outer surface of the ball.

5. The ball with tactile outer layer of claim 2, wherein the base of each tear-dropped shaped mass
   is a discrete distance from the base of each adjacent tear-dropped shaped mass.

6. The ball with tactile outer layer of claim 2, wherein each tear-dropped shaped mass
   comprises an elastomer deposited on the outer surface.

7. The ball with tactile outer layer of claim 6, wherein the elastomer comprises silicon
   rubber.

8. The ball with tactile outer layer of claim 1, wherein the series of protrusions comprises a
   layer of spikes covering the outer surface.

9. The ball with tactile outer layer of claim 1, wherein the ball comprises thermoplastic
   polyurethane, thermoplastic rubber or polyvinyl chloride.
10. The ball with tactile outer layer of claim 1, wherein the protrusions comprise different colors configured as a pattern or design.

11. The ball with tactile outer layer of claim 1, wherein the ball comprises an inflatable ball with a fill valve.

12. The ball with tactile outer layer of claim 1, wherein the ball comprises a spherical ball.

13. The ball with tactile outer layer of claim 1, wherein the ball comprises a spheroid shape.

14. The ball with tactile outer layer of claim 1, wherein the series of protrusions each comprise a tear-dropped shape mass that includes a base having a relatively flat bottom attached to the outer surface and a narrow tail extending away from the outer surface wherein the tail is curved relative to a central axis of the ball.

15. The ball with tactile layer of claim 1, wherein the ball comprises a solid core.

16. The ball with tactile layer of claim 1, wherein the ball comprises a foam core.

17. The ball with tactile layer of claim 1, wherein the ball comprises and illumination circuit.

18. A tactile object, comprising:
   an object having a relatively smooth outer surface; and
   an outer layer of more than one tear-drop shaped mass having a relatively flat base and a narrow tip, the base of each tear-drop shaped mass adhered to the outer surface with the narrow tip extending away from the outer surface.

19. The tactile object of claim 18, wherein the outer layer comprises a continuous layer completely covering the first layer thereby adding additional structural integrity.
20. The tactile object of claim 18, wherein the outer layer comprises a series of elastomer globules dropped onto the outer surface.

21. The tactile object of claim 18, wherein the object comprises an open cell or closed cell foam core.

22. A lamp, comprising:
   a translucent or transparent sphere having a relatively smooth outer surface and more than one tear-drop shaped spike attached to the outer surface, each spike having a relatively flat base and a narrow tip extending away from the outer surface;
   an illumination device inside the sphere; and
   an electrical lighting circuit having a power source and a switch, the lighting circuit being electrically connected to the illumination device to turn the illumination device on and off.

23. The lamp of claim 22, further comprising a base attached to the sphere, wherein the lighting circuit is enclosed within the base.

24. A method of manufacturing an object having a tactile outer layer, the method comprising:
   mounting the object in a mounting device; and
   applying elastomer globules to a surface of the object, wherein the globule includes round drops attached to the surface of the object.

25. The method of claim 25, wherein applying the elastomer globules further comprises applying more than one series of the elastomer globules on the surface of the object.

26. The method of claim 25, wherein
   applying the elastomer globules further comprises simultaneously applying a first series of elastomer globules to the surface of the object; and
   further comprising rotating the object in the mounting device;
   applying a second series of elastomer globules to the surface of the object after rotating the object.
27. The method of claim 25, wherein
the object comprises a sphere; and
applying more than one series of the elastomer globules on the surface of the object comprises applying each of the more than one series on a circle along the surface of the object.

28. The method of claim 22, wherein
the object comprises a sphere; and
applying more than one series of the elastomer globules on the surface of the object comprises applying each of the more than one series on a great circle on the surface of the sphere.

29. A method of manufacturing an object having a tactile outer layer, the method comprising:
mounting the object in a mounting device;
positioning a series of applicators proximate to a surface of the object;
ejecting elastomer globules from the applicators onto the surface of the object;
withdrawing the applicators from the surface to produce a tail-like shape at an end of the elastomer globule furthest from the surface of the object;
rotating the object in the mounting device; and
repeating the ejection of the elastomer globules until the surface of the object is covered with the elastomer globules.

30. A system to manufacture objects having a tactile surface, the system comprising:
a mounting device to receive an object; and
more than one injection arm in an arc surrounding the object;
wherein
each injection arm moves from a proximate position nearest the object and a distal position farthest from the object, and
each injection arm deposits an elastomer globule on the object in the proximate position and then moves toward the distal position to produce a tail-like shape at an end of the elastomer globule farthest from the object.
31. The system of claim 30, wherein the injection arm further comprises:
a reservoir that contains elastomer;
a nozzle at an end of the injection arm; and
a pressure system that pushes the elastomer globule out of the nozzle and onto the object.

32. The system of claim 30, wherein the mounting device comprises a rotation assembly to rotate the object on a central axis.

33. The system of claim 32, wherein the mounting device includes a rotation motor to rotate the rotation assembly.

34. The system of claim 32, wherein the mounting device includes a rotation knob to manually turn the rotation assembly.

35. A system to manufacture an object with a tactile layer, the system comprising:
an injection mold that receives a plasticized material; and
more than one injection arm surrounding the injection mold;
wherein
each injection arm moves from a proximate position nearest the injection mold and a distal position farthest from the injection mold, and
each injection arm deposits the elastomer globule on the plasticized material in the proximate position and then moves toward the distal position to produce a tail-like shape from the elastomer globule at a position farthest from the plasticized material.
### INTERNATIONAL SEARCH REPORT

**International application No.**

PCT/US 2018/033096

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatSearch (RUPTO internal), Esp@cenet, PAJ, USPTO, Information Retrieval System of FIPS

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[X] Further documents are listed in the continuation of Box C. [H] See patent family annex.

* Special categories of cited documents:

- "T" 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
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<td>Y</td>
<td>US 5433438 A (MARTY GLIMAN, INC.) 18.07.1995, col. 4, lines 21-56, fig. 4,</td>
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</tr>
<tr>
<td></td>
<td>abstract</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>US 4368684 A (SOCIETE D'ASSISTANCE TECHNIQUE POUR PRODUITS NESTLE S.A.) 18.01.1983, fig. 2, col. 2, lines 11-61</td>
<td>24-35</td>
</tr>
<tr>
<td>Y</td>
<td>US D626610 S (TOM GRIMM) 02.11.2010, fig. 1</td>
<td>3, 4</td>
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<tr>
<td>Y</td>
<td>US 2009/0209374 A1 (TOPBALL SPORTS INC.) 20.08.2009, abstract, fig. 1, paragraph</td>
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<td></td>
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<tr>
<td>Y</td>
<td>US D551307 S (MARK CHERNICK et al.) 18.09.2007, fig. 1</td>
<td>14</td>
</tr>
<tr>
<td>Y</td>
<td>US 2015/0165277 A1 (NIKE, INC.) 18.06.2015, paragraph [0006], fig. 2-5</td>
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<td>US D667515 S (CONNIE WANG) 18.09.2012, fig. 1</td>
<td>8</td>
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