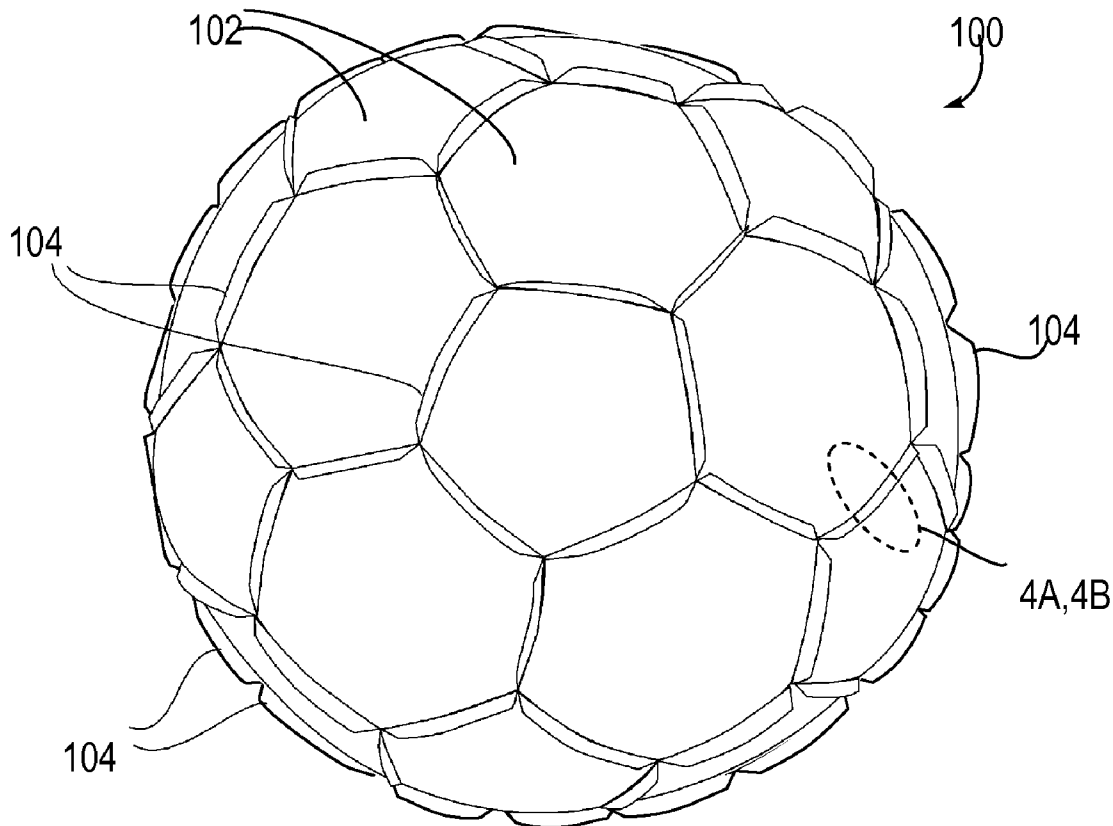




US 20110152018A1

(19) **United States**(12) **Patent Application Publication**
WALLING et al.(10) **Pub. No.: US 2011/0152018 A1**(43) **Pub. Date: Jun. 23, 2011**(54) **ROUND BALL, SUCH AS A SOCCER BALL,
HAVING A PATTERN OF FINS TO RESIST
ROLLING**(52) **U.S. Cl. 473/614**(76) Inventors: **VICTOR CHARLES WALLING,**
SAN JOSE, CA (US); **STEPHEN
PYE,** SAN JOSE, CA (US)(21) Appl. No.: **12/849,196**(22) Filed: **Oct. 29, 2010****Related U.S. Application Data**(60) Provisional application No. 61/238,803, filed on Sep.
1, 2009.**Publication Classification**(51) **Int. Cl.**
A63B 43/00 (2006.01)(57) **ABSTRACT**

A ball with high aerodynamic drag and with the ability to rapidly come to a stop when rolling on a flat or a slight inclined surface is disclosed herein. The ball has an arrangement of fins sewn, glued or molded to its surface. These fins may be of various heights from 2.0 mm to 20.0 mm depending on the degree of the effects sought. The lattice of fins must be such that to continue to roll the ball must roll over a fin. The fundamental tradeoff in this invention is between the degree of normal behavior of the ball when struck or when bouncing and the reduced duration of flight and reduced distance to stop rolling. The preferred embodiment has fins sewn into the seams of an otherwise conventionally constructed sewn soccer ball. The effect gained is a ball that behaves like a normal soccer ball in most ways but flies a shorter distance and stops rolling more quickly.



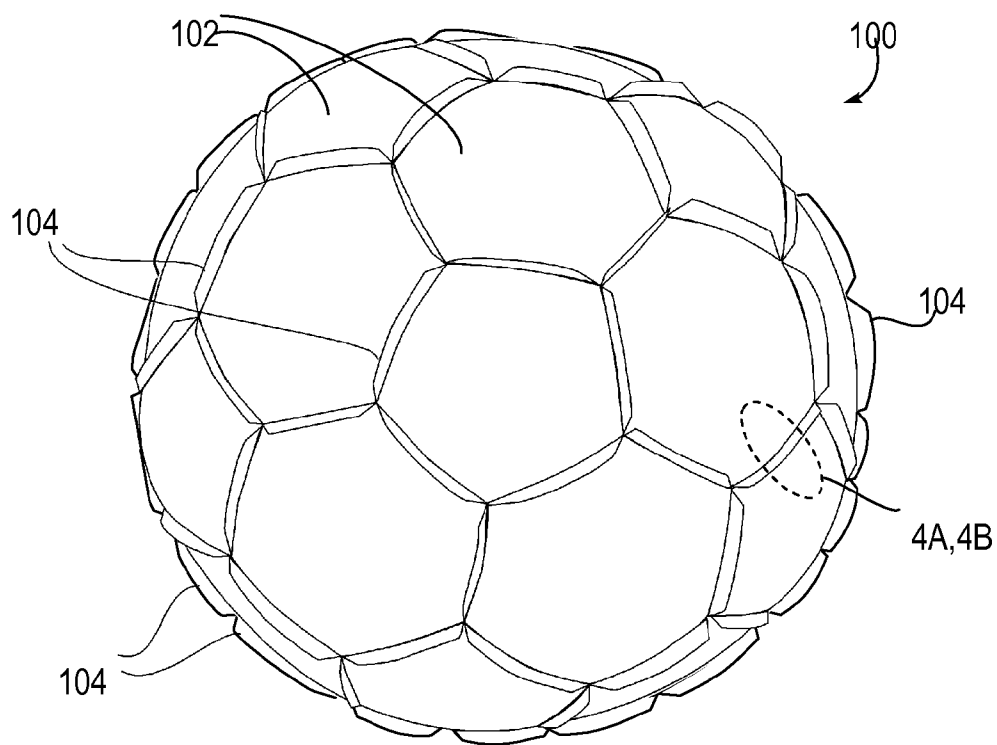


FIG. 1



FIG. 2A



FIG. 2B



FIG. 2C



FIG. 2D

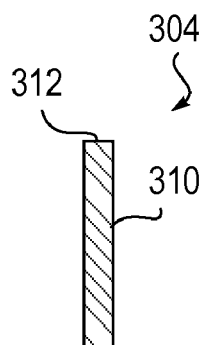


FIG. 3A

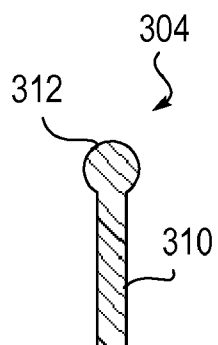


FIG. 3B

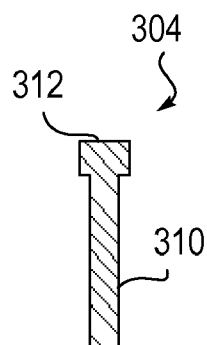


FIG. 3C

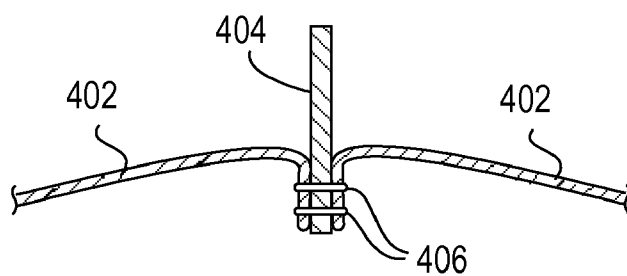


FIG. 4A

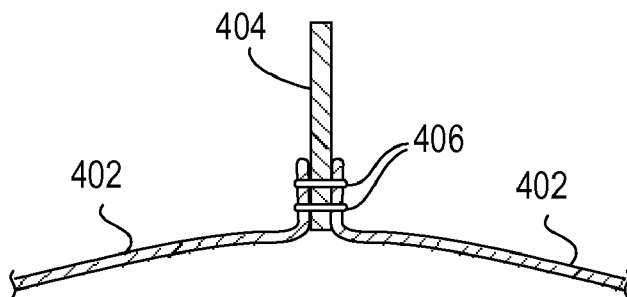


FIG. 4B

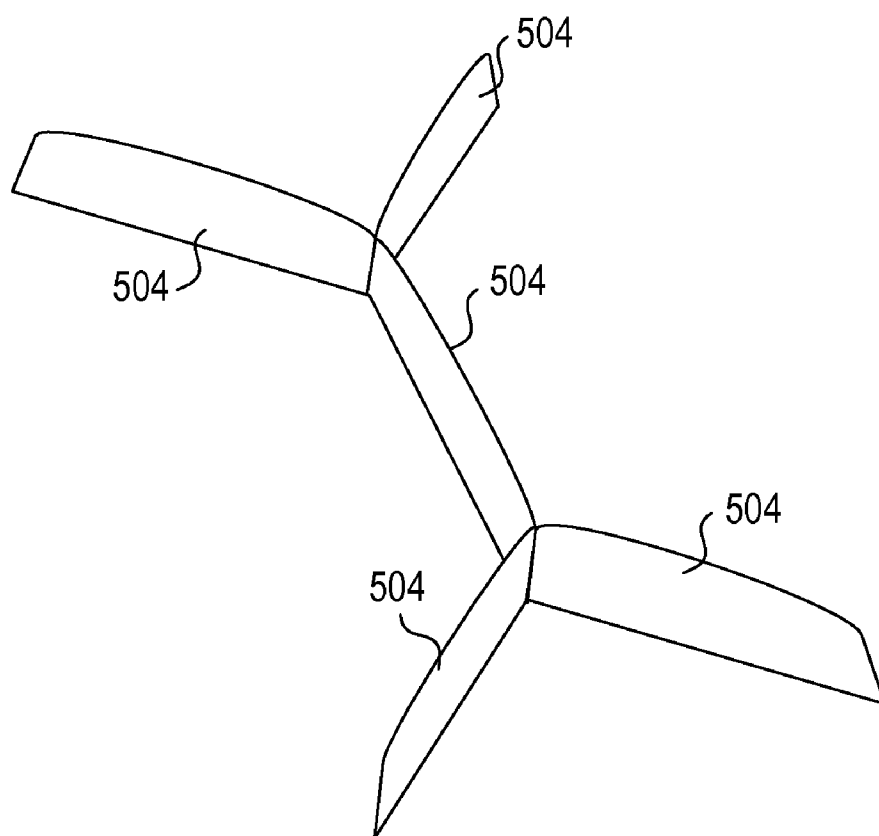


FIG. 5

ROUND BALL, SUCH AS A SOCCER BALL, HAVING A PATTERN OF FINS TO RESIST ROLLING

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] Provisional application 61238803, filed Sep. 1, 2009; and Design Pat. application 29/364,674, filed Jun. 23, 2010.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

BACKGROUND OF THE INVENTION

[0003] 1. Field of the Invention

[0004] The present invention relates to the performance of round balls directly touched by players on a field of play such as basketballs, baseballs and in particular to the performance of soccer balls. More specifically, the present invention relates to a ball, such as a soccer ball, having a lattice pattern protruding from the surface in a predetermined pattern. Soccer balls have been produced since the mid 1800's. Prior to this invention, balls in general and soccer balls in particular that are intended for the field of play have been made as smooth and round as possible to minimize aerodynamic drag. The result is that existing balls travel very fast through the air and roll easily on the slightest incline.

[0005] This invention addresses the need for a ball that feels and generally behaves like traditional balls on the field of play but when struck with maximum force travel much less distance and which resist rolling especially on hard, flat or slightly inclined surfaces.

[0006] 2. Description of the Related Art

[0007] Ball players have long recognized that the more smooth the surface of a ball, the better its aerodynamics for swerving. Concerning soccer balls in particular, in the 20th century with the rise of indoor soccer and street soccer, some effort has been spent to develop a ball that wears better on hard surfaces such as streets, that has a deadened bounce and is difficult to loft.

[0008] No prior innovation has attached an additional element deliberately intended to protrude from the surface of a ball in order to change the behavior of the ball in the manner here in described. No invention has deliberately intended to increase aerodynamic drag and slow the way a field ball rolls without significantly altering the rolling direction and without substantially altering the other performance features of the ball such as its ability to bounce.

[0009] The soccer ball is the preferred embodiment of this invention. The most commonly recognized soccer ball, as readily accepted by the consuming public, is spherical and made with a polygon pattern consisting of 20 hexagons and 12 pentagons. Many soccer balls now break this tradition, however none of these have added elements that stick out from the ball. Indeed most of these new balls seek to be even smoother and more round than traditional balls.

[0010] Although the prior art has set forth variations for materials used to make and shape the surface of a soccer ball, there remains a need for a soccer ball having a surface that maximizes aerodynamic drag and minimizes the extent that

the ball will continue to roll once it stops bouncing, yet leave the ball's other performance including its bounce largely intact.

[0011] Patents with spherical balls with patterns on the surface include: USD095034, USD395690, USD405486, USD478367, USD501520, USD563495, USD585644, USD595367, USD599966, and USD609290.

BRIEF SUMMARY OF THE INVENTION

[0012] The present invention is able to provide a soccer ball that meets FIFA (Fédération Internationale de Football Association (International Federation of Association Football)), specification for size and weight and at the same time reduces the distance the ball can be kicked compared to a normal soccer ball struck with the same force. The present invention reduces the amount that the ball will roll whether on flat and somewhat inclined surfaces. The present invention is able to accomplish this by providing the ball with a lattice pattern of fins protruding from the surface of an otherwise normal ball sphere.

[0013] One aspect of the present invention is a soccer ball with an inner sphere having a surface and a plurality of fin-like projections disposed on the sphere surface. The plurality of fin-like projections is interconnected to form a predetermined pattern on the surface. Each of the projections extends a similar amount from the surface that ranges from 2 mm to 30 mm outward from the inner sphere surface depending on the size of the soccer ball (official FIFA number sizes for soccer balls range from 3 to 5.) or the degree of effects sought. These fins may be attached in any of variety of ways including sewing or gluing. They may also be molded onto the surface of the ball.

[0014] Another aspect of the present invention is a soccer ball having a lattice of fin-like elements with a coefficient of friction that is deliberately much higher than the coefficient of friction for the surface material of most balls. This higher coefficient of friction provides increased friction (or "grip") between the ball and other surfaces including the player.

[0015] Yet another aspect of the present invention is a ball with fin-like lattice elements having flexibility. These elements collapse under pressure thereby absorbing energy.

[0016] Having briefly described the present invention, the above and further objects, features and advantages thereof will be recognized by those skilled in the art from the following detailed description of the invention when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0017] FIG. 1 view of the ball showing the sphere, the distinct smooth areas and a pattern of fins separating the smooth areas in a traditional 32 panel soccer ball pattern.

[0018] FIGS. 2A, 2B, 2C, and 2D are views of alternative fin profiles suitable to cause a ball made according to the invention to have the desired performance.

[0019] FIGS. 3A, 3B, and 3C are views of alternative cross-sectional shapes of the fin protrusions that are suitable to cause a ball made according to the invention to have the desired performance.

[0020] FIGS. 4A and 4B are views of sewn seam cross-sections showing two alternative patterns for sewing the fins into the ball. FIG. 4A shows the seam turned to the center of the ball in the traditional way a soccer ball is sewn. FIG. 4B

shows the seam sewn to the outside of the ball. Either pattern can be used to achieve the desired performance.

[0021] FIG. 5 is an enlarged view of a set of the fins of FIG. 1 showing the connection of one fin to four other fins, two at each end.

DETAILED DESCRIPTION OF THE INVENTION

[0022] As shown in FIG. 1, a soccer ball (100) is generally designated as the preferred embodiment.

[0023] The soccer ball may be a traditional 32 piece sewn ball, or any of the newer pieced or laminated balls. The core and cover of the soccer ball may be any suitable material. Typically butyl bladders and vinyl-coated fabric are used for many soccer balls today. Rubber bladders are common in lower quality balls. Wound bladders are often used in higher quality balls. However, those skilled in the art will recognize that other core and cover materials may be utilized without departing from the scope and spirit of the present invention.

[0024] Extending outward from the surface (FIG. 1) are a plurality of fin like projections (FIG. 1, 104). In a preferred embodiment, these projections (104) may have any of many top profiles with a base shaped to suit the attachment strategy. In the case of sewing in the projections a square straight line base is appropriate (FIG. 2A.) However, those skilled in the art will recognize that the projections may have other similar shapes (FIGS. 2B, 2C, 2D). The projections (104) are connected to each other to form a lattice structure on the surface of the sphere. See FIGS. 1 and 5. The interconnected projections form a plurality of enclosed areas encompassing discrete areas (102) of the surface of the sphere. When the invention is embodied in a traditional sewn soccer ball, there are 20 hexagonal areas and 12 pentagonal bounded areas

[0025] (FIG. 1, 102). In the preferred embodiment, each of the plurality of projections (102) is connected to at least four other projections (FIG. 5), two at each end. In the preferred embodiment, each of the projections (FIG. 1, 104) meets two other projections at a vertex meeting point of a combination of polygons.

[0026] FIGS. 3A, 3B, and 3C are views of alternative fin cross sections (310) of the fin protrusions (304) that are suitable to cause a ball made according to the invention to have the desired performance. The outer edges (312) of fin protrusions (304) are shown to have different shapes. Each of the plurality of fin protrusions has thickness between 0.2 mm and 4.0 mm and is flexible.

[0027] FIGS. 4A and 4B are views of sewn seam cross-sections (406) showing two alternative patterns for sewing the fins (404) into the ball between discrete areas (402). FIG. 4A shows the seam turned to the center of the ball in the traditional way a soccer ball is sewn. FIG. 4B shows the seam sewn to the outside of the ball. Either pattern can be used to achieve the desired performance.

[0028] Unlike traditional soccer balls that attempt to make the surface as smooth as possible, the preferred embodiment of the present invention employs the fin-like protrusions

(FIG. 1, 104) such that whichever direction the ball rolls, it must roll over one of these fin-like protrusions to keep on rolling. Moreover the height of the protrusions in the preferred embodiment is such that any line drawn to connect any two points on the outside edge of the fin-like protrusions surrounding any one of the enclosed areas will lie above the surface of the sphere or be tangent to the sphere. The height of the protrusions ranges between 2.0 mm and 20.0 mm depending on the degree of effect sought and the size of the underlying ball.

[0029] Traditional soccer balls are designed to maximize the roundness and smoothness of the surface to maximize aerodynamic performance. The ball of the present invention has a flexible high friction lattice structure to (1) reduce tendency to continue to roll (2) change the aerodynamics so the ball will be dead in the air, that is, will not fly as far or as fast as a normal soccer ball struck with the same force and (3) provide better grip between the player and the ball.

[0030] From the foregoing it is believed that those skilled in the art will recognize the meritorious advancement of this invention and will readily understand that while the present invention has been described in association with a preferred embodiment thereof, and other embodiments illustrated in the accompanying drawings, still other numerous changes, modifications and substitutions of equivalents may be made therein without departing from the spirit and scope of this invention which is intended to be unlimited by the foregoing.

1. A ball comprising:

a sphere having a surface;

a plurality of smooth portions on the surface of the sphere; and

a plurality of flexible fin-like projections protruding from the surface.

2. The ball according to claim 1 wherein the material used to plurality of fin-like projections has a coefficient of friction higher than that of the smooth portions of the surface of the sphere.

3. The ball according to claim 1 wherein each of the plurality of flexible fin-like projections has thickness between 0.2 mm and 4.0 mm.

4. The ball according to claim 1 wherein the fin-like projections separate the smooth portions from one another.

5. The ball according to claim 1 wherein the fin-like projections have outer edges such that a straight line drawn between the outer edges of any two fin-like projections that surround a smooth portion on the surface of the sphere will not touch the smooth surface except when that line is tangent to the smooth surface.

6. The ball according to claim 1 wherein a fin-like projection is connected to at least four other fin-like projections to form a pattern of shapes about the surface of the sphere.

7. The ball according to claim 1 wherein the fin-like projections have heights that range from 2.0 mm to 20.0 mm.

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