More particularly, there is herein described a sports shoe capable of kicking a ball such as a football boot.
SPORTS SHOE

Field of the Invention

The present invention relates to a sports shoe. More particularly, the present invention relates to a sports shoe capable of kicking a ball such as a football boot.

Background to the Invention

In sports where a user contacts a ball using their feet, sport shoes have been designed to facilitate control of the ball. In sports like football, football boots are intended to assist the user with close control of the ball, for example when dribbling; kicking the ball, for example when the user wants to take a shot at a target; and passing the ball. However, prior to executing one of these disciplines, the user has to be able to control the incoming ball. A footballer’s "first touch" is often the deciding factor as to whether or not the dribble, kick or pass which follows is executed as the user would have liked.

Many football boots on the market are designed to assist in the kicking discipline, allowing the user to hit more spectacular shots on goal for example. However, the design of these boots can hinder the all important first touch and can make the control of the incoming ball more difficult, particularly in adverse weather conditions such as rain or a waterlogged pitch.

Summary of the Invention

A sports shoe for sports in which a ball is controlled with the feet, the sports shoe comprising:

- a sole;
- a shoe upper, the upper being attached to the sole and having an external surface; and
- a ball contact surface defining a plurality of deformable protrusions,
wherein at least one of the protrusions is adapted to deform upon impact with a ball and adhere to the ball.

In a particular embodiment all of the protrusions may be adapted to deform upon impact with a ball and adhere to the ball.

In an embodiment of the present invention, the deformation of the protrusions absorb some of the energy of an incoming ball and the adherence to the ball further facilitates the user's ability to control the ball and execute a subsequent action such as shooting, passing or dribbling.

In one embodiment, a region of pressure less than atmospheric may be formed between at least one deformable protrusion and the ball upon impact. A region of pressure less than atmospheric may create a suction between the ball contact surface and the ball.

Each deformable protrusion may define an impact portion positioned to make contact with an incoming ball.

In one embodiment the/each impact portion is a concave surface. A concave surface may facilitate creation of a suction between the protrusion and the ball upon impact.

The/each impact portion may be a suction cup. Upon impact with a ball, the cup deforms and the air may be squeezed out from within the cup. As the deformable cup tries to return to its original shape an area of pressure less than atmospheric, or possibly even a vacuum, is formed between the cup and the ball, and the higher external atmospheric pressure causes a suction to be created between the cup and the ball.

In an alternative embodiment impact between at least one deformable protrusion and the ball creates a concave surface. The creation of the concave surface facilitates creation of a suction between the protrusion and the ball upon impact.

In one embodiment, the deformable protrusions are of variable sizes.

Where the deformable protrusions include suction cups, the suction cups may be of variable sizes. Deformable protrusions or suction cups of different sizes will give different performance.

The deformable protrusions may be distributed in a regular pattern over the shoe upper.
The deformable protrusions may be distributed irregularly over the shoe upper.

In an embodiment, the shoe upper comprises a top section, first and section side sections and a heel section.

The deformable protrusions may be located on one or more of the top, first or second side or heel sections.

In one embodiment the sports shoe upper defines the ball contact surface.
In an alternative embodiment the ball contact surface is attached to the shoe upper.

The ball contact surface may be adhered to the shoe upper.
The deformable protrusions may define an internal void.
The internal void may be sealed.
The internal void may comprise a gel or liquid.
The internal void may comprise a gas at pressure less than atmospheric.
In one embodiment, on impact with a deformable protrusion, air may be expelled from the internal void.
In this embodiment the internal void may be vented.

The deformable protrusions may be formed from any suitable material. Alternatively, the deformable protrusions may comprise an elastic material. An elastic material ensures that once the ball is released from contact with the deformable protrusions, each protrusion returns to its original shape. The ball contact surface may be made of an elastomeric material.

At least some of the deformable protrusions may define a region of harder material than the rest of the deformable protrusion. A harder material can assist in transferring energy applied by the user to the internal surface of the boot to the ball.

The harder region may be defined by a deformable protrusion impact portion.

The protrusions may comprise a polymeric material.
The protrusions may comprise a rubber
Alternatively the protrusions may comprise a polymer such as PVC.
**Brief Description of Drawings**

Embodiments of the present invention will now be described with reference to the accompanying drawings in which:

- Figure 1 is a side view of the sports shoe and according to a first embodiment of the present invention;
- Figure 2 is a section view through the sports shoe of Figure 1;
- Figure 3 is a plan view of the sports shoe of Figure 1;
- Figure 4a is an enlarged side view of one of the deformable protrusions of the shoe of Figure 1;
- Figure 4b is an enlarged side view of the protrusions of Figure 4a shown in contact with a ball;
- Figure 5 is a side view of an alternative deformable protrusion according to a second embodiment of the present invention;
- Figure 6 is a side view of an alternative deformable protrusion according to a third embodiment of the present invention;
- Figure 7 is a side view of an alternative deformable protrusion according to a fourth embodiment of the present invention;
- Figure 8 is a side view of the protrusion of Figure 7 shown in contact with a ball;
- Figure 9 is a side view of an alternative deformable protrusion according to a fifth embodiment of the present invention; and
- Figure 10 is a section view of an alternative deformable protrusion according to a sixth embodiment of the present invention.

**Detailed Description of the Drawings**

Referring firstly to Figure 1-3, these figures show the side, section and plan views respectively of a sports shoe, generally indicated by reference number 10, according to a first embodiment of the present invention. The sports shoe 10 is a football boot and comprises a sole 12 having studs 14 and a shoe upper 16, the shoe upper 16 being attached to the sole 12 and having an external surface 18. The external surface 18 includes a ball contact surface 20. The ball surface
20 defines plurality of deformable protrusions 22, each protrusion 22 adapted to deform upon the impact with a ball and adhere to the ball.

Referring to Figure 4a the deformable protrusion 22 includes an impact portion 24 in the form of a suction cup.

As can be seen from Figure 4b, when the ball 26 impacts on the deformable protrusion 22, the suction cup 24 deforms. This deformation will absorb some of the energy of the incoming ball 26. As the deformable protrusion 22 comprises an elastic material, the suction cup 24 tries to return to its undeformed state. During this recovery process, the pressure within the cup 24 will be lower than the atmospheric pressure outside the cup 24 and a suction will be created between the cup 24 and the ball 26, momentarily adhering the ball 26 to the shoe 10, assisting the user in bringing the ball 26 under control. As the user applies energy to the ball 26, the ball 26 will be released from the ball control surface 20 and the user will have the ball 26 under control.

As can be seen most clearly from figures 1 and 3, the deformable protrusions 22 are all of a similar size and distributed in a largely regular pattern over the side 28 and top 30 of the shoe upper 16. It will be understood that the deformable protrusions 22 can be of varying sizes and arranged in irregular patterns if desired.

Referring to Figure 5, there is shown a deformable protrusion 122 according to a second embodiment of the present invention. The deformable protrusion 122 includes a region of material 130 which is harder than the rest of the deformable protrusion 132. This region of harder material 130 assists in the transfer of energy from the user to the ball 26 making the ball 26 travel further and faster.

Figure 6 shows an alternative embodiment of the deformable protrusion 222 having a concave impact portion 224. The protrusion 222 works in a similar way to the protrusion of Figure 4a.

Figure 7 shows a still further alternative embodiment of the protrusion 322 in this case the protrusion 322 is domed. As can be seen from Figure 8, upon impact with a ball 26, the deformable protrusion 322 deforms to create a concave surface which will form a suction between the protrusion 322 and the ball 26 similar to that created by the suction cup 24 or Figure 4a.
A further alternative embodiment is shown in Figure 9 which is similar to the domed protrusion 322 of Figure 7. However the protrusion in 422 of Figure 9 includes a region of harder material 430 which acts to transfer energy from the used to a ball 26.

Finally referring to Figure 10 this is a further example of a doomed protrusion 522. To assist in deformation of the protrusion 522, the protrusion 522 defines a void 540 which is vented to atmosphere by a vent 542. Upon impact with a ball 26, air within the void 540 is expelled through the vent 542 allowing the protrusion 522 to deform.

Various modification and improvements may be made to the above described embodiment without departing from the present invention. For example the protrusion voids 540 of the final embodiment may be sealed and contain a low pressure gas or a gel.
Claims

1. A sports shoe for sports in which a ball is controlled with the feet, the sports shoe comprising:
   - a sole;
   - a shoe upper, the upper being attached to the sole and having an external surface; and
   - a ball contact surface defining a plurality of deformable protrusions, wherein at least one of the protrusions is adapted to deform upon impact with a ball and adhere to the ball.

2. A sports shoe according to claim 1, wherein all of the protrusions are adapted to deform upon impact with a ball and adhere to the ball.

3. A sports shoe according to any of claims 1 or 2, wherein the deformation of the protrusions absorb some of the energy of an incoming ball and the adherence to the ball further facilitates the user's ability to control the ball and execute a subsequent action such as shooting, passing or dribbling.

4. A sports shoe according to any preceding claim, wherein a region of pressure less than atmospheric is formed between at least one deformable protrusion and the ball upon impact.

5. A sports shoe according to any preceding claim, wherein at least one or all deformable protrusions are capable of defining an impact portion positioned to make contact with an incoming ball.

6. A sports shoe according to any preceding claim, wherein the/each impact portion which is formed is a concave surface.

7. A sports shoe according to any preceding claim, wherein a concave surface is capable of facilitating creation of a suction between the protrusion and the ball upon impact.
8. A sports shoe according to any preceding claim, wherein at least one or all deformable protrusions are capable of defining an impact portion and the/each impact portion is a suction cup and upon impact with a ball, the cup deforms and the air is capable of being squeezed out from within the cup, and as the deformable cup tries to return to its original shape an area of pressure less than atmospheric, or possibly even a vacuum, is formed between the cup and the ball, and the higher external atmospheric pressure causes a suction to be created between the cup and the ball.

9. A sports shoe according to any preceding claim, wherein impact between at least one deformable protrusion and the ball creates a concave surface. The creation of the concave surface facilitates creation of a suction between the protrusion and the ball upon impact.

10. A sports shoe according to any preceding claim, wherein the deformable protrusions are of variable sizes.

11. A sports shoe according to any preceding claim, wherein the deformable protrusions include suction cups, the suction cups may be of variable sizes and deformable protrusions or suction cups of different sizes will give different performance.

12. A sports shoe according to any preceding claim, wherein the deformable protrusions are distributed in a regular pattern over the shoe upper.

13. A sports shoe according to any preceding claim, wherein the deformable protrusions are distributed irregularly over the shoe upper.

14. A sports shoe according to any preceding claim, wherein the shoe upper comprises a top section, first and section side sections and a heel section.
15. A sports shoe according to any preceding claim, wherein the deformable protrusions are located on one or more of the top, first or second side or heel sections.

16. A sports shoe according to any preceding claim, wherein the sports shoe upper defines the ball contact surface.

17. A sports shoe according to any preceding claim, wherein the ball contact surface is attached to the shoe upper.

18. A sports shoe according to any preceding claim, wherein the ball contact surface is adhered to the shoe upper.

19. A sports shoe according to any preceding claim, wherein the deformable protrusions define an internal void and the internal void is sealed.

20. A sports shoe according to claim 19, wherein the internal void is sealed, comprises a gel or liquid or a gas at pressure less than atmospheric.

21. A sports shoe according to any preceding claim, wherein on impact with a deformable protrusion, air is capable of being expelled from the internal void and the internal void is capable of being vented.

22. A sports shoe according to any preceding claim, wherein the deformable protrusions are formed from any suitable material such as elastic material which ensures that once the ball is released from contact with the deformable protrusions, each protrusion returns to its original shape.

23. A sports shoe according to any preceding claim, wherein the ball contact surface is made of an elastomeric material.

24. A sports shoe according to any preceding claim, wherein at least some of the deformable protrusions define a region of harder material than the rest of the
deformable protrusion wherein the harder material can assist in transferring energy applied by the user to the internal surface of the boot to the ball.

25. A sports shoe according to any preceding claim, wherein the protrusions comprise a polymeric material, rubber or PVC.
A. CLASSIFICATION OF SUBJECT MATTER
INV. A43B5/02
ADD.

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)
A43B

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

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of Box C

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Special categories of cited documents

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Date of the actual completion of the international search
28 May 2010

Date of mailing of the international search report
07/06/2010

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Fax (+31-70) 340-3016

Herry, Manuel

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