US 20160184679A1

(19) **United States**

(12) **Patent Application Publication**

Bramhall et al.

(10) **Pub. No.: US 2016/0184679 A1**

(43) **Pub. Date: Jun. 30, 2016**

(54) **NECK COVER FOR A SPORTS PADDLE AND METHOD OF MANUFACTURE**

(71) Applicant: **Aztek Racquet Sports LLC**, San Diego, CA (US)

(72) Inventors: **Everett Bramhall**, Concord, MA (US); **Adrian Sawyer**, San Diego, CA (US); **Dorina Molnar**, Boxborough, MA (US)

(73) Assignee: **Aztek Racquet Sports LLC**

(21) Appl. No.: **14/694,888**

(22) Filed: **Apr. 23, 2015**

Related U.S. Application Data

(63) Continuation of application No. 14/692,471, filed on Apr. 21, 2015.

(60) Provisional application No. 62/098,169, filed on Dec. 30, 2014.

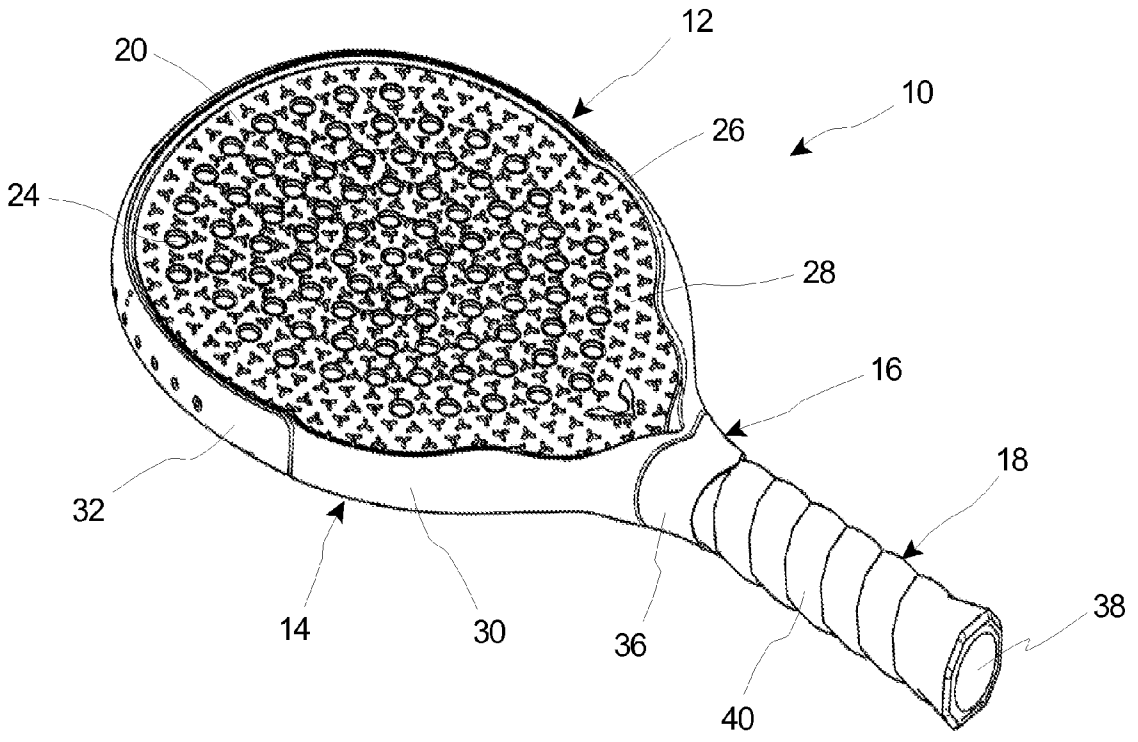
Publication Classification

(51) **Int. Cl.**
A63B 59/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A63B 59/0025*** (2013.01); ***A63B 59/0029*** (2013.01)

(57) **ABSTRACT**

A sports paddle for use in striking an object during play comprises a head, a handle, a neck and a neck cover. The head is configured to contact the object during play. The handle is coupled to the head. The neck that extends substantially between the head and the handle. Additionally, the neck cover is selectively positionable substantially about the neck to provide a smooth transition between the head and the handle. The neck cover includes an engineered surface formed from at least one of rubber, polymer, foam, composites and plastic. Additionally, the neck cover can include an ergonomically formed outer surface that can be selectively gripped by the hand of the user. For example, the outer surface can be shaped to fit into a crease between a palm and forefingers of the hand of the user.



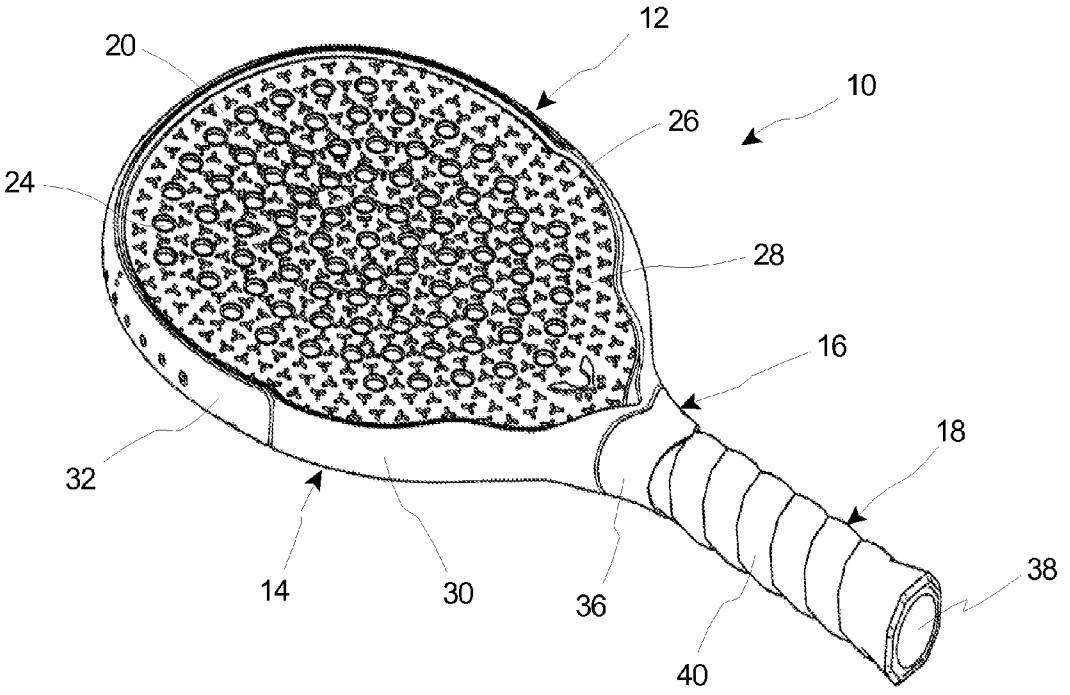


Fig. 1A

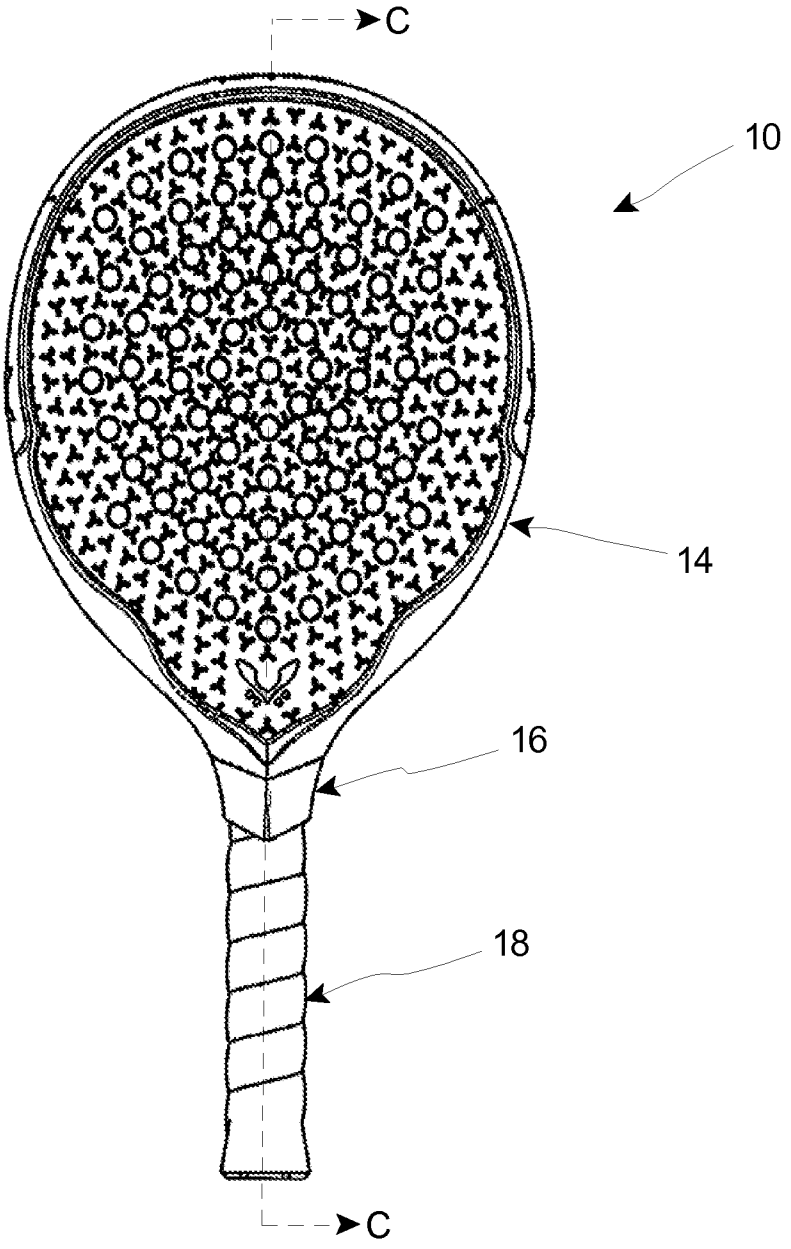


Fig. 1B

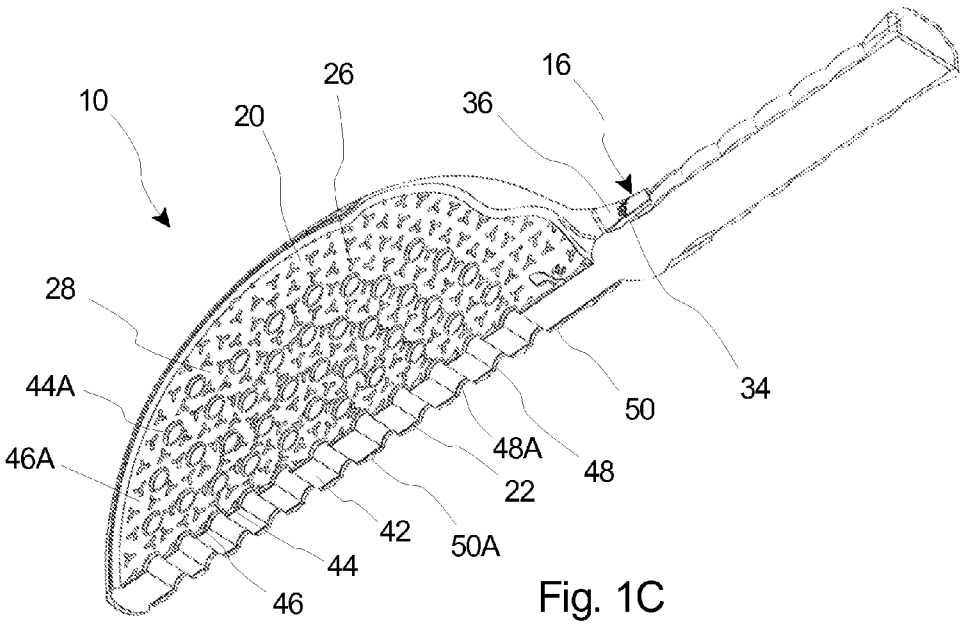

10
20
26
16
36
28
44A
46A
48A
48
50
34
22
42
50A
44
46

Fig. 1C

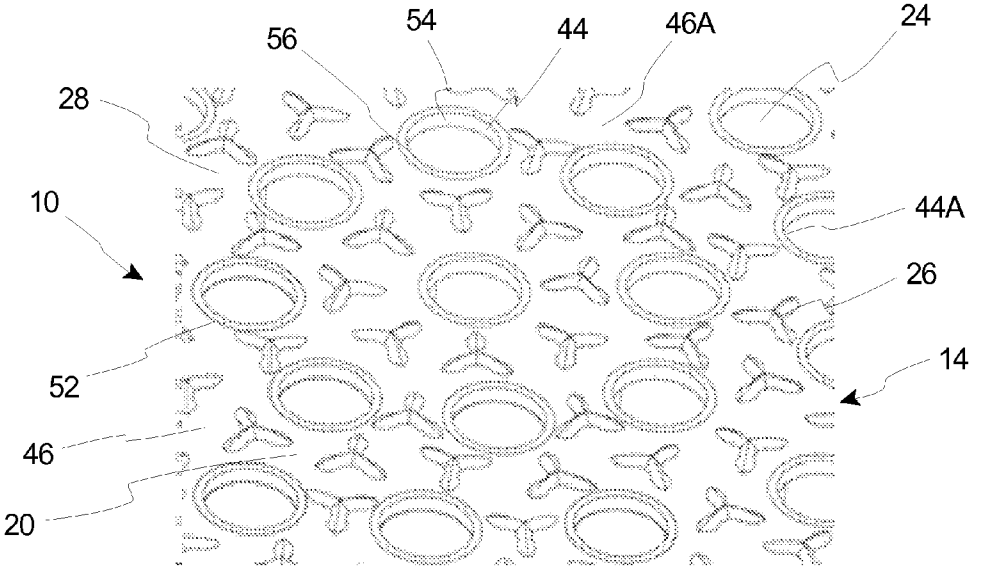

56
54
44
46A
24
28
10
44A
26
52
14
46
20

Fig. 1D

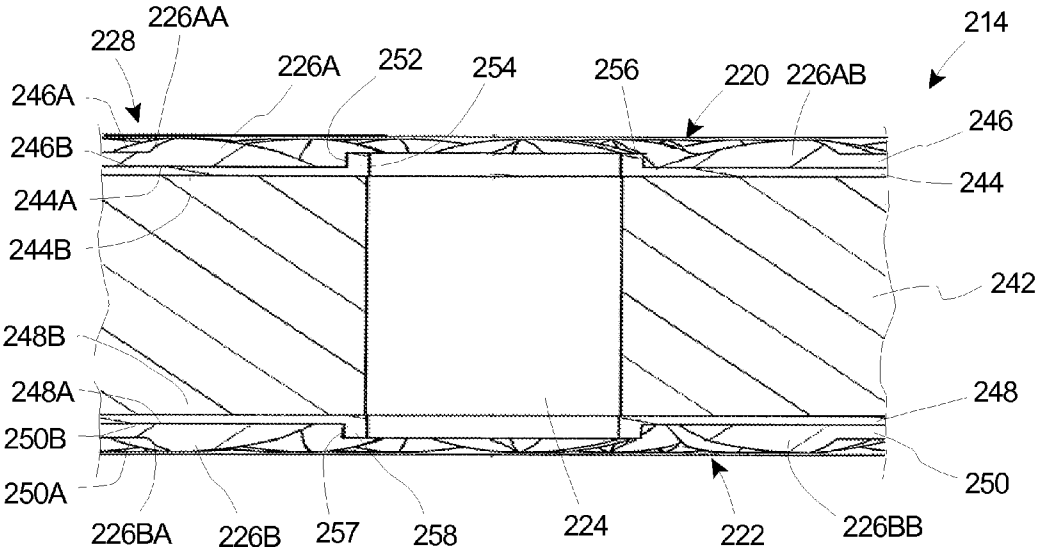

226AA
228
214
226A
252
254
256
220
226AB
246A
246
246B
244
244A
244B
242
248B
248A
248
250B
250
250A
226BA
226B
257
258
224
222
226BB

Fig. 2

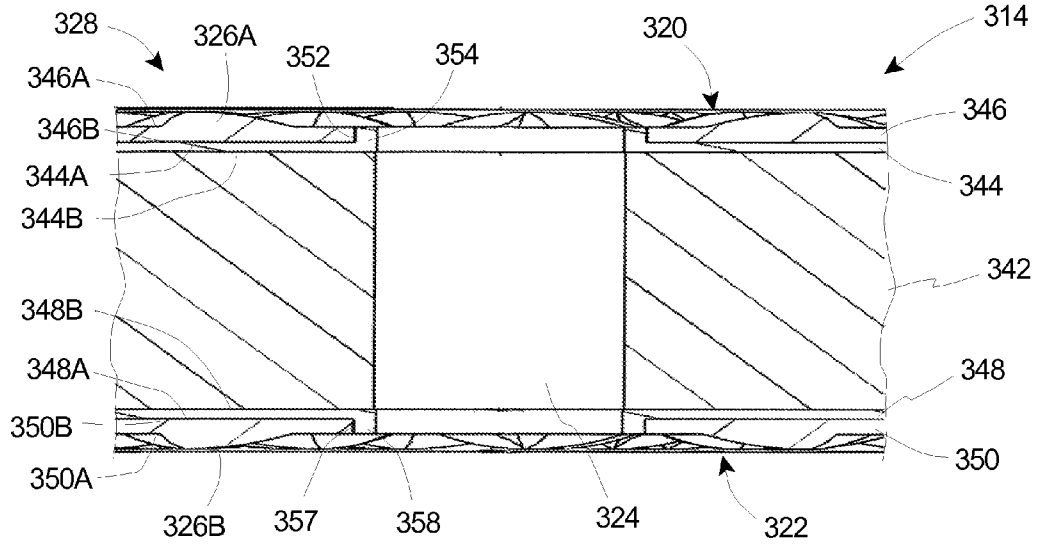

328
326A
352
354
320
314
346A
346
346B
344A
344
344B
342
348B
348A
348
350B
350
350A
326B
357
358
324
322

Fig. 3

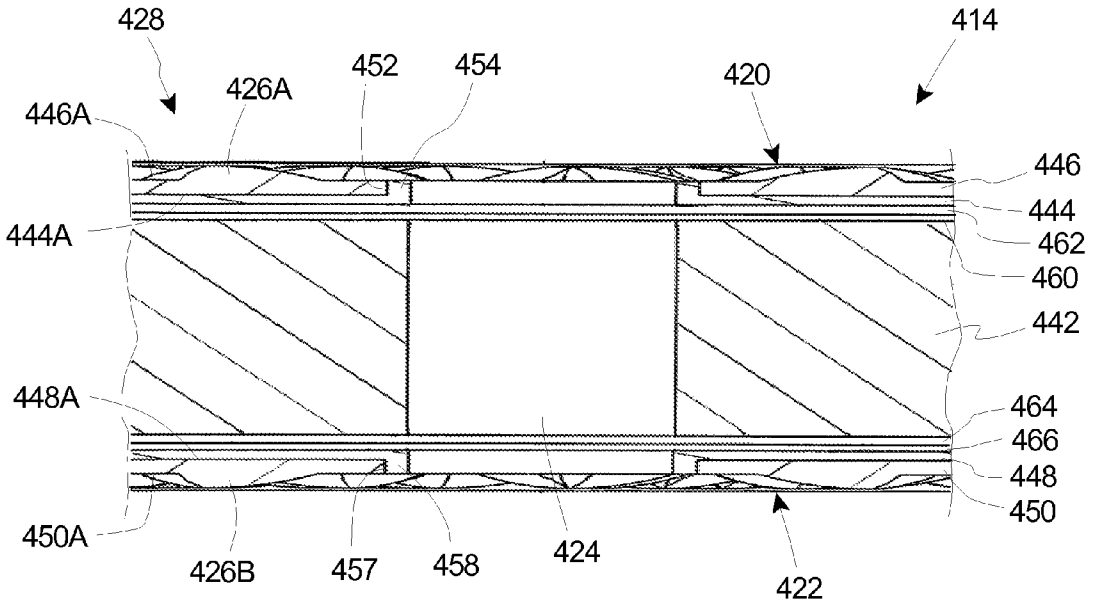


Fig. 4

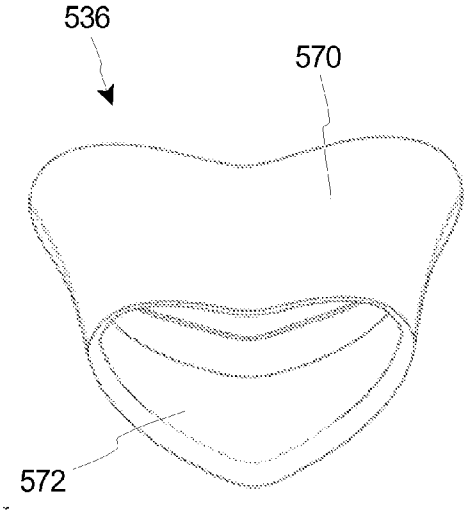


Fig. 5A

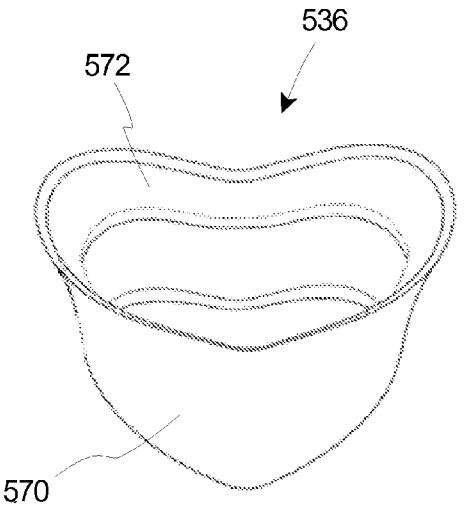


Fig. 5B

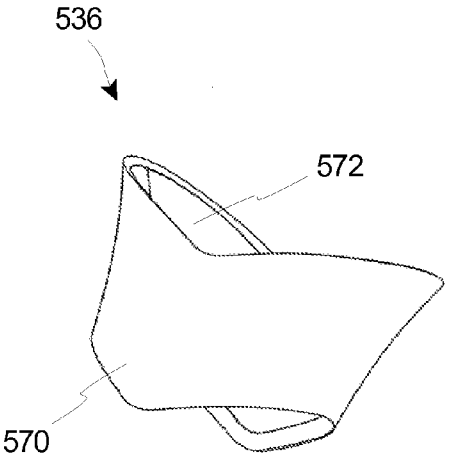


Fig. 5C

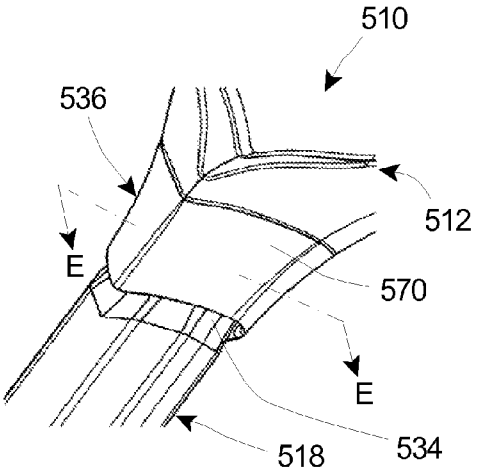


Fig. 5D

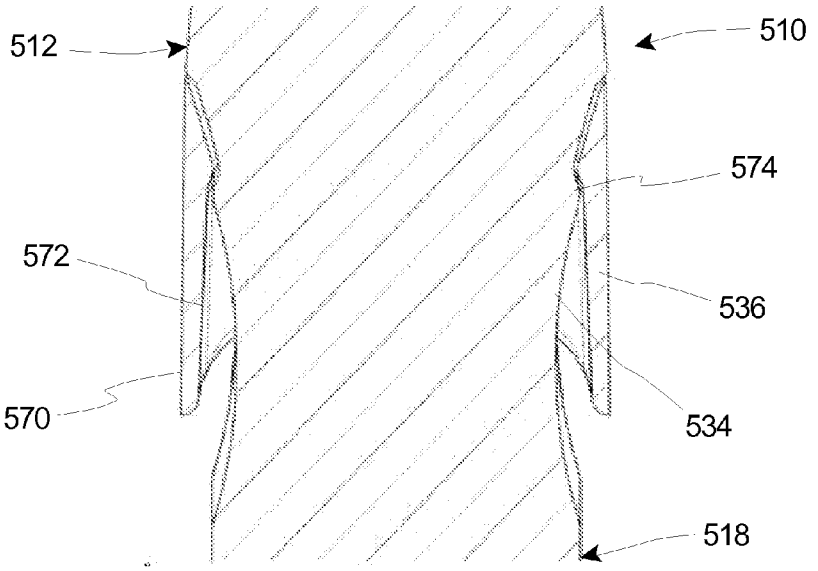


Fig. 5E

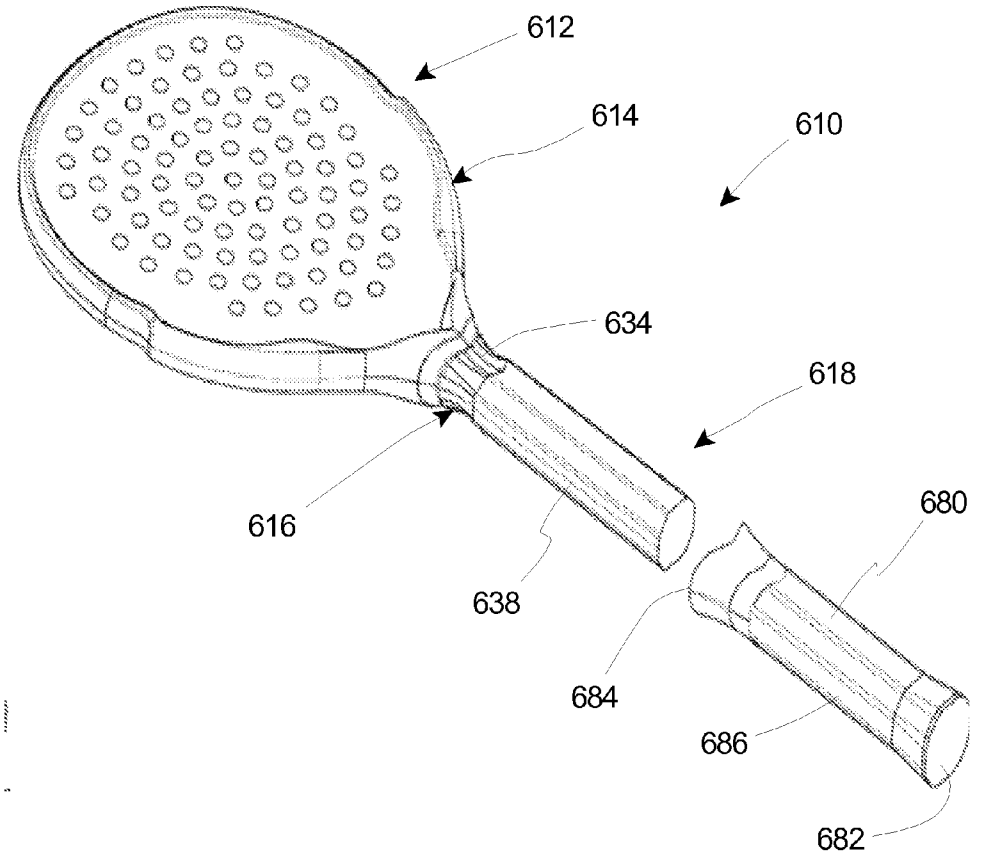


Fig. 6

NECK COVER FOR A SPORTS PADDLE AND METHOD OF MANUFACTURE

RELATED APPLICATION

[0001] The present application is a continuation application and claims the benefit under 35 U.S.C. 120 on co-pending U.S. patent application Ser. No. 14/692,471, filed on Apr. 21, 2015, which claims the benefit of U.S. Provisional Patent Application Ser. No. 62/098,169. The contents of U.S. patent application Ser. No. 14/692,471 and U.S. Provisional Patent Application Ser. No. 62/098,169 are incorporated herein by reference.

BACKGROUND

[0002] Sports paddles and racquets (hereinafter sometimes referred to as "sports paddles" or simply "paddles") are designed for use in various different sports, such as paddles specifically designed for paddle tennis, platform tennis, table tennis, paddleball, pickleball and beach tennis, and racquets specifically designed for tennis, badminton, squash and racquetball. Sports paddles typically include a body assembly and a handle assembly that is connected to and/or extends from the body assembly. The body assembly normally includes a head assembly and a neck, with the neck extending between and connecting the head assembly and the handle assembly.

[0003] In designing these sports paddles, it is desired to provide certain features and aspects that promote an improved feel, power, and control (velocity, direction, spin) for the user, while often minimizing the overall weight so that the sports paddle or racquet is easier for the user to swing. Additionally, it is desired to provide a sports paddle or racquet with improved collision efficiency and durability. Further, it is also desired to provide a sports paddle or racquet that inhibits potential injury to the user.

SUMMARY

[0004] The present invention is directed toward a sports paddle for use in striking an object, e.g., a ball specifically designed for use in any number of paddle or racquet sports, a shuttlecock, etc., during play. In various embodiments, the sports paddle comprises a head including a first base layer and a first support layer. The first base layer has an exposed, first base surface that is configured to contact the object during play, and a first opposed base surface. Additionally, the first base layer is formed from a first material. The first support layer has a first support surface that substantially faces the first opposed base surface, the first support surface being only partially exposed. Additionally, the first support layer is formed from a second material that is different than the first material.

[0005] In some embodiments, less than approximately twenty percent of the first support surface is exposed.

[0006] Additionally, in certain embodiments, the head further includes (i) a second base layer having an exposed, second base surface that is configured to alternatively contact the object during play, and a second opposed base surface, the second base layer being formed from the first material; and (ii) a second support layer having a second support surface that substantially faces the second opposed base surface, the second support surface being only partially exposed, the second support layer being formed from the second material.

[0007] The head can further include a core layer that is coupled to and is positioned substantially between the first support layer and the second support layer. Further, the head can also include a first intermediate layer that is positioned substantially between the core layer and the first support layer, and a second intermediate layer that is positioned substantially between the core layer and the second support layer. In some such embodiments, each of the first intermediate layer and the second intermediate layer are formed from a carbon fiber material.

[0008] In certain embodiments, the first base surface and the first support surface cooperate to form a first hitting surface that is configured to contact the object during play. Additionally, in some such embodiments, the first hitting surface further includes a plurality of first surface features. The plurality of first surface features can include a plurality of first raised surface features that project outwardly away from the first base layer. In such embodiments, the plurality of first raised surface features may also be referred to as "embossed features". Additionally and/or alternatively, the plurality of first surface features can include a plurality of first recessed surface features that are formed inwardly into the first base layer. In such embodiments, the first recessed surface features may also be referred to as "debossed features".

[0009] It should be appreciated that the embossed and/or debossed features may be formed in any of various three-dimensional patterns. Additionally, as provided herein, the embossed and/or debossed features may be utilized in place of, and/or in conjunction with, texturing of grit along the first base layer, as well as the first base apertures (which can form part of through holes through the entirety of the head of the sports paddle).

[0010] Additionally, the first surface features can be formed from the first material.

[0011] In certain embodiments, the first material includes thermoplastic urethane and the second material includes one or more of a plastic and a viscoelastic material.

[0012] Additionally, in some embodiments, the first base layer includes a plurality of first base apertures that extend through the first base layer, and the first support layer includes a plurality of first support projections that extend at least partially into the first base apertures.

[0013] The present invention is also directed toward a sports paddle for use in striking an object during play, the sports paddle comprising a head including (i) a first base layer that is configured to contact the object during play, the first base layer including a plurality of first base apertures that extend through the first base layer, the first base layer being formed from a first material; and (ii) a first support layer that is coupled to the first base layer, the first support layer including a plurality of first support projections that extend at least partially into the first base apertures, the first support projections being formed from a second material that is different than the first material.

[0014] Additionally, in another representative application, the present invention is further directed toward a sports paddle for use in striking an object during play, the sports paddle comprising a head including a first hitting surface that is configured to contact the object during play, and a plurality of spaced apart through holes that extend through the first hitting surface, the first hitting surface including a first base layer and a plurality of spaced apart first raised surface features that project outwardly away from the first base layer;

and wherein the first base layer and the first raised surface features are formed from the same material.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The novel features of this invention, as well as the invention itself, both as to its structure and its operation, will be best understood from the accompanying drawings, taken in conjunction with the accompanying description, in which similar reference characters refer to similar parts, and in which:

[0016] FIG. **1**A is a perspective view of an embodiment of a sports paddle having features of the present invention, the sports paddle including a head assembly and a handle;

[0017] FIG. **1**B is a front view of the sports paddle illustrated in FIG. **1**A;

[0018] FIG. **1**C is a perspective, cross-sectional view of the sports paddle taken on line C-C in FIG. **1**B;

[0019] FIG. **1**D is a simplified top perspective view of a portion of the head assembly illustrated in FIG. **1**A;

[0020] FIG. **2** is a cross-sectional view of a portion of one embodiment of the head assembly of the sports paddle;

[0021] FIG. **3** is a cross-sectional view of a portion of another embodiment of the head assembly of the sports paddle;

[0022] FIG. **4** is a cross-sectional view of a portion of still another embodiment of the head assembly of the sports paddle;

[0023] FIG. **5**A is a bottom perspective view of an embodiment of a neck cover that is usable as part of the sports paddle;

[0024] FIG. **5**B is a top perspective view of the neck cover illustrated in FIG. **5**A;

[0025] FIG. **5**C is a front perspective view of the neck cover illustrated in FIG. **5**A;

[0026] FIG. **5**D is a front perspective view of a portion of an embodiment of the sports paddle, including the neck cover illustrated in FIG. **5**A;

[0027] FIG. **5**E is a cross-sectional view of a portion of the sports paddle, including the neck cover, taken on line E-E in FIG. **5**D; and

[0028] FIG. **6** is a partially exploded, simplified view of another embodiment of the sports paddle.

DESCRIPTION

[0029] Reference will now be made in detail to embodiments which are illustrated in the accompanying drawings. In the following detailed descriptions, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However it will be apparent to one of ordinary skill in the art that the invention may be practiced without these specific details. In other instances, use of well-known methods, procedures, components, circuits, and networks will not be described in detail in order to not obscure aspects of the embodiments.

[0030] FIG. **1**A is a perspective view of an embodiment of a sports paddle **10** having features of the present invention. The design of the sports paddle **10** can be varied to suit the specific requirements of the user of the sports paddle **10** and/or the specific sport in which the sports paddle **10** is being used. As illustrated in FIG. **1**A, the sports paddle **10** includes a body assembly **12** and a handle assembly **18** that is coupled to the body assembly **12**. The body assembly **12** includes a head assembly **14** and a neck assembly **16**.

[0031] As illustrated and described herein, the present invention is directed toward various embodiments of a sports paddle **10**, and methods for manufacturing the sports paddle **10**. The sports paddle **10** is usable for such sports as paddle tennis, platform tennis, table tennis, paddleball, pickleball and beach paddle tennis. However, various aspects of the present invention, as disclosed herein, are equally applicable for embodiments of a sports racquet that can be used for such sports as tennis, badminton, squash and racquetball. Thus, it is recognized that although the term "sports paddle" is used throughout this disclosure and/or in the claims, the term "sports racquet" could equally be used interchangeably therewith. Stated another way, as used herein, the term "sports paddle" is intended to encompass both sports paddles and sports racquets unless stated otherwise. Those of ordinary skill in the art will recognize that the following detailed description of the present invention is illustrative only and is not intended to be in any way limiting. Other embodiments of the present invention will readily suggest themselves to such skilled persons having the benefit of this disclosure.

[0032] Further, in the interest of clarity, not all of the routine features of the implementations described herein are shown and described. It will, of course, be appreciated that in the development of any such actual implementation, numerous implementation-specific decisions must be made in order to achieve the developer's specific goals, such as compliance with application- and business-related constraints, and that these specific goals will vary from one implementation to another and from one developer to another. Moreover, it will be appreciated that such a development effort might be complex and time-consuming, but would nevertheless be a routine undertaking of engineering for those of ordinary skill in the art having the benefit of this disclosure.

[0033] As an overview, as described in greater detail herein below, the various embodiments of the sports paddle **10** disclosed herein offer a significant improvement over the dynamic response characteristics of current sports paddles and racquets. Additionally, the sports paddle **10** including features of the present invention is configured to provide improved performance and feel for the user of the sports paddle **10**. For example, in various embodiments, the head assembly **14** of the the sports paddle **10** is configured to have a first hitting surface **20** and/or a second hitting surface **22** (illustrated in FIG. **1**C) that alternately contact an object, e.g., a ball suitable for the specific sport being played, during play. The sports paddle **10** can increase power, control and/or feel through the use of customizable engineered surface textures. Further, the sports paddle **10** as disclosed herein can also provide vibration dampening and can reduce the risk of skin abrasions to the user(s).

[0034] The various embodiments of the sports paddle **10** can improve the performance and/or user experience because of the engineered hitting surfaces **20**, **22**, in shape and/or material construction. More particularly, in certain embodiments, the hitting surfaces **20**, **22** can be formed to include a plurality of spaced apart holes **24**, also referred to herein as "through holes", which can extend fully through the head assembly **14**. The hitting surfaces **20**, **22** can also include a plurality of spaced apart surface features **26** that either project away from or are formed into the hitting surfaces **20**, **22**. These textured hitting surfaces **20**, **22** can function to enhance control, friction and/or spin qualities.

[0035] As provided herein, in certain embodiments, one or both of the hitting surfaces **20**, **22** can include first surface

features **26** that project away from the hitting surface(s) **20**, **22** (also referred to herein as "raised surface features" or "embossed features"), and second surface features **26** that are formed or sunken into the hitting surface(s) **20**, **22** (also referred to herein as "recessed surface features" or "debossed features"). It should be appreciated that the use of the terms "first surface features" and "second surface features" is merely for convenience, and any surface features **26** can be referred to as "first surface features" and/or "second surface features" without departing from the spirit and intent of the present invention.

[0036] When an object such as a paddle ball contacts one of the hitting surfaces **20**, **22** of the sports paddle **10**, the ball can compress into one or more of the through holes **24** (and thus can contact the corresponding "sharp edges" of the holes **24**), with such compression allowing the user to impart the desired spin on the ball. The advantage of the textured, engineered hitting surfaces **20**, **22** disclosed herein, i.e. with the plurality of surface features **26**, is that the total linear length or surface area of the "sharp edges" is increased, such that the user has an improved ability to impart the desired spin on the ball.

[0037] Additionally, as provided herein, one or both of the hitting surfaces **20**, **22** can be formed from more than one material, e.g., utilizing different materials having different hardnesses, which can further enhance the ability to control the ball. For example, the different materials can also increase the number and/or length of "sharp edges" that can be utilized to impart desired spin on the ball.

[0038] The design of the head assembly **14** can be varied to suit the specific requirements of the sports paddle **10**. More specifically, the design of the head assembly **14** can be varied based on the particular sport for which the sports paddle **10** is being made, some of which provide specific standards with which the equipment needs to comply. For example, for paddle tennis, the Official APTA Rules and Regulations Book (Eighteenth Edition, June 2011) includes various requirements for the sports paddle such as: the total length of the sports paddle should not exceed eighteen inches; the number of through holes should not exceed eighty-seven; the diameter of each through hole should not exceed three-eighths of an inch; the edge or rim of the sports paddle may be flush or wrap-around, with a maximum depth into the paddle face of one-half inch and a maximum height above the hitting surface of one-eighth of an inch; and the hitting surface of the sports paddle should be flat, not curved. Such Rules and Regulations also allow for the surface finish of the sports paddle to be textured, but they do not limit the number and/or amount of texturing that is permissible, so long as the hitting surface of the sports paddle is still seen as flat rather than curved. Thus, the number of surface features **26** provided on the hitting surfaces **20**, **22** can be any desired number. Moreover, the surface features **26** can be positioned so as to cover substantially the entire hitting surface **20**, **22**, and/or the surface features **26** can be positioned to cover only a portion of the hitting surface **20**, **22**, e.g., just a center portion of the hitting surface **20**, **22**, or some other portion.

[0039] In various embodiments, as shown in FIG. **1**A, the head assembly **14** includes a head **28**, a frame **30** that substantially encircles a perimeter of the head **28**, and an edge protector **32** that can be positioned substantially adjacent to a portion of the frame **30**. Alternatively, the head assembly **14** can be designed to include more components or fewer components than those specifically illustrated in FIG. **1**A. For example, in certain non-exclusive alternative embodiments, the head assembly **14** can be designed without the edge protector **32**.

[0040] The head **28** provides the hitting surfaces **20**, **22**, which are utilized by the user to contact the object during play. Additionally, as noted above, in various embodiments, the head **28** includes the plurality of spaced apart through holes **24**, and the plurality of spaced apart surface features **26**, i.e. first surface features **26** and/or second surface features **26**. Moreover, as illustrated, the surface features **26** can also be spaced apart from the through holes **24**.

[0041] The design of the head **28** can be varied to suit the specific requirements of the sports paddle **10** and/or the particular sport being played. As provided in detail herein below, in various embodiments, the head **28** can be formed from a plurality of layers of material that are coupled and/or secured together, e.g., with adhesive layers and/or adhesive material. Additionally, the head **28** can be formed from a plurality of different materials so as to better realize the intended benefits of the sports paddle **10** as described herein. Various embodiments of the head **28** and the materials that may be utilized in forming the head **28** are described in greater detail herein below.

[0042] The number and size of the through holes **24** can be varied. For example, in compliance with the Rules and Regulations cited to above, in certain embodiments, the sports paddle **10**, i.e. the head **28**, can be designed to include eighty-seven through holes **24** that are each approximately three-eighths of an inch in diameter. Alternatively, the head **28** can include fewer than eighty-seven through holes **24** and/or the through holes **24** can be less than three-eighths of an inch in diameter. It should be appreciated that in embodiments not specifically designed to be in compliance with stated Rules and Regulations, the head **28** can include greater than eighty-seven through holes **24** and/or the through holes **24** can be greater than approximately three-eighths of an inch in diameter.

[0043] Additionally, the number, size, shape, positioning and orientation of the surface features **26** may be varied as desired. Stated in another manner, the surface features **26**, i.e. raised/embossed surface features **26** and/or recessed/debossed surface features **26**, may exhibit any suitable shape, size, height or depth and may be located on the head **28** of the sports paddle **10** in any suitable number, location, orientation and spacing. Additionally, the surface features **26** can be positioned in a specific pattern, and/or they can be positioned in a random or semi-random configuration. In certain embodiments, as provided herein, the surface features **26** can include any suitable design or pattern. For example, in certain embodiments, the surface features **26** can include three-dimensional patterns having any desired shape, including but not limited to circles (e.g., a semi-spherical projection and/or an indentation), stars, triangles, pyramids, seeds, squares, rings, hexagons, other polygons, or any other desired shape.

[0044] Further, in some embodiments, the height and/or depth of the surface features **26**, i.e. depending on whether the surface features **26** project away from the remainder of the hitting surface **20**, **22** or are formed into the hitting surface **20**, **22**, can be between approximately one-sixteenth of an inch and one-quarter inch. For example, in one specific embodiment, the height and/or depth of the surface features **26** can be approximately one-eighth of an inch. Alternatively, the height and/or depth of the surface features **26** can be greater than or less than the values specifically disclosed above.

[0045] As provided herein, the combination of the holes **24** and the surface features **26** provide an improved ability for the user to swing the sports paddle **10** (i.e. with lower resistance), while also providing an improved ability to impart the desired spin on the ball. Additionally, in certain embodiments, the hitting surface(s) **20**, **22** can be formed from multiple different materials. Further, as provided herein, the hitting surfaces **20**, **22** can improve performance, reduce vibration from impact, increase collision efficiency for more power, and/or increase control while increasing spin for improved feel.

[0046] The frame **30** can be further configured to provide additional structural integrity to the head assembly **14**. In alternative embodiments, the frame **30** can be formed separately and then adhered to the head **28** and/or the frame **30** can be integrally formed with the head **28**, i.e. with one or more layers of the head **28**. The frame **30** can be formed from any suitable material. For example, in certain non-exclusive alternative embodiments, the frame **30** can be formed from one or more of carbon fiber, carbon nanotube materials, extruded aluminum, graphite, wood, ethylene vinyl acetate foam ("EVA"), glass, aramid, olefin, or other suitable materials. For example, in one non-exclusive alternative embodiment, the frame **30** is formed of a composite of carbon fiber with an EVA foam core.

[0047] Additionally, the edge protector **32** can be positioned substantially adjacent to a portion of the frame **30**, and can be configured to provide further protection for the rest of the head assembly **14**. For example, in certain embodiments, the edge protector **32** can be made of a relatively rigid plastic material that can effectively absorb impact stresses if and when the head assembly **14** makes contact with a surface such as the ground. Moreover, the edge protector **32** can also protect the frame **30** from being scratched and marred from any incidental scraping of such surfaces. Alternatively, the edge protector **32** can be made from any other suitable material(s).

[0048] As provided herein, in certain embodiments, the neck assembly **16** and/or the handle assembly **18** can include an improved ergonomic design that can improve and/or extend the grip of the sports paddle **10** and/or can increase control of the sports paddle **10** during use.

[0049] The neck assembly **16** provides the transition between the head assembly **14** and the handle assembly **18**. The design of the neck assembly **16** can be varied. In certain embodiments, the neck assembly **16** includes a neck **34** (illustrated, for example, in FIG. **1**C) and a neck cover **36** that is positioned substantially around the neck **34**. As described in greater detail herein below, the neck cover **36** can be ergonomically designed to provide a smoother, more comfortable holding area for the user during execution of certain shots, e.g., when the user is using two hands, such as in a two-handed backhand shot. Additionally, the neck cover **36** can provide an ergonomically formed surface that fits more comfortably into a gripped hand, thereby improving control and decreasing risk of joint and tendon injury.

[0050] The handle assembly **18** is configured for providing a comfortable grip for the user during the playing of a paddle or racquet sport. The design of the handle assembly **18** can be varied to suit the requirements of the sports paddle **10** and/or the user of the sports paddle **10**. As illustrated, the handle assembly **18** can include a handle shaft **38** (also sometimes referred to herein simply as a "handle") and grip tape **40** that is adapted to be selectively wrapped around the handle **38**. The grip tape **40** can be adhesive-backed to be effectively secured to the handle **38** and can be terminated toward the body assembly **12** by a wrap of tape (not shown). Alternatively, the handle assembly **18** can have a different design. For example, the handle assembly **18** can be designed such that the handle **38** is used without grip tape **40** being wrapped around the handle **38**.

[0051] Still alternatively, as described in detail below, in certain embodiments, the handle assembly **18** can include a replaceable, handle sleeve **680** (illustrated in FIG. **6**) that can be slid onto and fit around the handle shaft **38**. The use of a handle sleeve **680** enables more variability for the user in choosing a handle size and shape that is more precisely tailored to their needs, without the need for obtaining an entirely new sports paddle **10** or racquet.

[0052] FIG. **1**B is a front view of the sports paddle **10** illustrated in FIG. **1**A. More specifically, FIG. **1**B more clearly illustrates certain additional features and aspects of the sports paddle **10**, such as the relative size and shape of each of the head assembly **14**, the neck assembly **16** and the handle assembly **18** of the sports paddle **10**.

[0053] FIG. **1**C is a perspective, cross-sectional view of the sports paddle **10** taken on line C-C in FIG. **1**B. Although it is more clearly illustrated in the discussion of various embodiments herein below, FIG. **1**C illustrates that the head **28** can include a core layer **42**, a first support layer **44** that is coupled to and/or positioned substantially adjacent to the core layer **42**, a first base layer **46** that is coupled to and/or positioned substantially adjacent to the first support layer **44**, a second support layer **48** that is coupled to and/or positioned substantially adjacent to the core layer **42**, i.e. an opposite side of the core layer **42**, and a second base layer **50** that is coupled to and/or positioned substantially adjacent to the second support layer **48**. Stated in another manner, in such embodiments, (i) the first support layer **44** is positioned substantially between the first base layer **46** and the core layer **42**; (ii) the second support layer **48** is positioned substantially between the second base layer **50** and the core layer **42**; and (iii) the core layer **42** is positioned substantially between the first support layer **44** and the second support layer **48**.

[0054] As provided herein, in various embodiments, the first base layer **46** and the first support layer **44** can cooperate to form at least a portion of the first hitting surface **20** that is configured to contact the object, e.g., the ball, during play. Further, as described in greater detail herein below, the first base layer **46** can include an exposed first base surface **46**A that is configured to contact the object during play; and the first support layer **44** can include a partially exposed first support surface **44**A that can also contact the object during play. Additionally and/or alternatively, one or more of the plurality of surface features **26** can also form a portion of the first hitting surface **20** that is configured to contact the object during play. As such, during any given shot, when the user is striking the object with the first hitting surface **20**, a portion of the first base layer **46**, a portion of the first support layer **44**, and/or one or more surface features **26** can each contact the object.

[0055] Similarly, the second base layer **50** and the second support layer **48** can cooperate to form at least a portion of the second hitting surface **22** that is configured to alternatively contact the object during play. Further, as described in greater detail herein below, the second base layer **50** can include an exposed second base surface **50**A that is configured to alternatively contact the object during play; and the second support layer **48** can include a partially exposed second support

surface **48**A that can also contact the object during play. Additionally and/or alternatively, one or more of the plurality of surface features **26** can also form a portion of the second hitting surface **22** that is configured to contact the object during play. As such, during any given shot, when the user is striking the object with the second hitting surface **22**, a portion of the second base layer **50**, a portion of the second support layer **48**, and/or one or more of the surface features **26** can each contact the object.

[0056] FIG. **1**D is a simplified perspective view of a portion of the head assembly **14**, i.e. a portion of the head **28**, illustrated in FIG. **1**A. More particularly, FIG. **1**D illustrates some of the plurality of through holes **24** and some of the plurality of surface features **26** that can be formed in and/or along the first hitting surface **20**.

[0057] As shown in FIG. **1**D, the first base layer **46** includes the first base surface **46**A, and a plurality of spaced apart first base apertures **52** that extend through the first base layer **46**. Each of the first base apertures **52** forms a portion of one of the through holes **24** that extend fully though the head **28** of the sports paddle **10**. Additionally, the first support layer **44** includes the first support surface **44**A having a plurality of first support projections **54**, wherein each of the first support projections extends at least partially into one of the first base apertures **52**. In some embodiments, the first support projections **54** can extend substantially fully into and through the first base apertures **52**, such that a top edge **56** of the first support projections **54** is approximately flush with the rest of the first hitting surface **20** formed from the first base layer **46**. With such design, as noted above, the first base layer **46** and the first support layer **44**, i.e. the first support projections **54**, can cooperate to form at least a portion of the first hitting surface **20** that is configured to contact the object, e.g., the ball, during play.

[0058] FIG. **2** is a cross-sectional view of a portion of an embodiment of the head assembly **214** of the sports paddle **10** illustrated in FIG. **1**A. More particularly, FIG. **2** illustrates a portion of an embodiment of the head **228** of the sports paddle **10** illustrated in FIG. **1**A.

[0059] The design of the head **228**, i.e. the design and materials incorporated into each of the layers of the head **228**, can be varied to suit the requirements of the sports paddle **10**. In certain embodiments, as shown in FIG. **2**, the head **228** can include a core layer **242**, a first support layer **244**, a first base layer **246**, a second support layer **248** and a second base layer **250**. Further, in some such embodiments, (i) the first support layer **244** is positioned substantially between the first base layer **246** and the core layer **242**; (ii) the second support layer **248** is positioned substantially between the second base layer **250** and the core layer **242**; and (iii) the core layer **242** is positioned substantially between the first support layer **244** and the second support layer **248**.

[0060] Additionally, as illustrated, the head **228** can also include a plurality of spaced apart through holes **224** that extend fully through the head **228**, a plurality of first surface features **226**A that project away from (raised surface features) and/or are formed into (recessed surface features) the first base layer **246**, and a plurality of second surface features **226**B that project away from (raised surface features) and/or are formed into (recessed surface features) the second base layer **250**. More particularly, as illustrated in FIG. **2**, the head **228** can include (i) the plurality of through holes **224**; (ii) a plurality of first raised (embossed) surface features **226**AA; (iii) a plurality of first recessed (debossed) surface features **226**AB; (iv) a plurality of second raised (embossed) surface features **226**BA; and (v) a plurality of second recessed (debossed) surface features **226**BB, which are all spaced apart from one another.

[0061] As shown, in various embodiments, the core layer **242** is the thickest layer of the head **228**, and, thus, plays the biggest factor in the overall weight of the sports paddle **10**. Thus, if it is desired to have a relatively lightweight sports paddle **10**, it is desired to form the core layer **242** from a relatively lightweight material. Additionally, it is also known that the core layer **242** has a large effect on control and vibration dampening, i.e. feel. In general, a softer core layer **242** will enable both more control and improved vibration dampening, but will also have an adverse impact on collision efficiency and power. However, an engineered surface such as taught in the present disclosure can be provided with a soft core layer **242** to enable both improved collision efficiency and enhanced feel.

[0062] Based on the desired characteristics of the sports paddle **10** for the user, the material utilized for the core layer **242** can be varied. In some embodiments, the core layer **242** can be formed from a foam material or another suitable soft, relatively lightweight material. Alternatively, in other embodiments, the core layer **242** can be formed from a carbon fiber or other more rigid material. Still alternatively, the core layer **242** can be formed from still other suitable materials. [Is this an accurate description of the potential materials and/or do we have any other specific examples that should be included?]

[0063] The first support layer **244** is coupled to and/or positioned substantially adjacent to the core layer **242**. More specifically, in certain embodiments, the first support layer **244** is disposed on a substantially planar face of the core layer **242**. In some such embodiments, an adhesive layer or adhesive materials can be utilized for securing the first support layer **244** to the core layer **242**. Alternatively, the first support layer **244** can be secured to the core layer **242** by chemical bond, trapped geometry, friction, or another suitable method.

[0064] In various embodiments, the first support layer **244** includes a first support surface **244**A that substantially faces the first base layer **246**, and a first opposed support surface **244**B that substantially faces the core layer **242**. Additionally, in some such embodiments, the first support surface **244**A is only partially exposed, i.e. only a portion of the first support surface **244**A is visible to a person looking at the sports paddle **10**. It should be appreciated that the amount of the first support surface **244**A that is exposed can be varied as desired. For example, in one non-exclusive embodiment, less than approximately 75% of the first support surface **244**A is exposed. In non-exclusive, alternative embodiments, less than approximately 50%, 30%, 20%, 10% or 5% of the first support surface **244**A is exposed.

[0065] The materials utilized for the first support layer **244** can be varied. For example, in certain embodiments, the first support layer **244** is formed from one or more rigid materials such as acrylonitrile butadiene styrene (ABS) plastic, viscoelastic material, and/or a combination of plastic and viscoelastic material. Alternatively, in other embodiments, the first support layer **244** can be formed from an expanded foam material, e.g., ethylene acetate foam ("EVA"), or another suitable material.

[0066] The first base layer **246** is similarly coupled to, positioned substantially adjacent to and/or disposed on a surface, e.g., on the first support surface **244**A, of the first support

layer **244**. In some embodiments, an adhesive layer or adhesive materials can be utilized for securing the first base layer **246** to the first support layer **244**. Alternatively, the first base layer **246** can be secured to the first support layer **244** by chemical bond, trapped geometry, friction, or another suitable method.

[0067] In some embodiments, the first base layer **246** includes a first base surface **246**A, and a first opposed base surface **246**B. In some such embodiments, the first base surface **246**A is exposed, i.e. the first base surface **246**A is visible to a person looking at the sports paddle **10**. Additionally, the first opposed base surface **246**B substantially faces the first support surface **244**A, and/or the first support surface **244**A substantially faces the first opposed base surface **246**B.

[0068] As illustrated in FIG. **2** and as noted herein above, the first base layer **246** can form a majority of the first hitting surface **220** that is configured to contact the object, e.g., the ball, during play. In various embodiments, the first base layer **246** can be formed from an engineered material that specifically alters the impact dynamics of the sports paddle **10**, creating a distinct difference in performance and/or control characteristics. The stiffness, durometer, and/or tack of the engineered surface can be modified to control such characteristics. In performance, a defining mode of energy transfer in the elastic collision between ball and paddle surface is strain energy. One mode of energy loss within the system is deformation of the ball and/or paddle core materials. This engineered surface increases the returnable energy storage of the collision, thereby increasing the amount of energy returned to the ball upon release.

[0069] The first base layer **246** can be formed from any suitable materials. For example, in various embodiments, the first base layer **246** is formed from an engineered elastomer material. Additionally and/or alternatively, in certain embodiments, the first base layer **246** can be formed from one or more materials including but not limited to, thermoplastic urethane ("TPU"), natural or synthetic rubber (hard rubber and/or soft rubber), natural or synthetic resins, foam, plastics, or any combinations or composites thereof, any of which may be utilized to alter the physical modes that create spin, performance and control. The first base layer **246** and/or the first hitting surface **220** can deform and/or grip the ball during impact, and release the ball cleanly upon return, which can provide greater spin control. Moreover, the first base layer **246** can provide shock absorption characteristics for the user. Still alternatively, the first base layer **246** can be formed from other suitable materials.

[0070] Additionally, as noted above, the head **228**, e.g., the first hitting surface **220**, can include the plurality of first surface features **226**A that project away from and/or are formed into the first base layer **246**. The materials used to form the first surface features **226**A may vary, thus allowing for adjustments in the hardness of each first surface feature **226**A to create different effects and different feel for the user. It should be appreciated that the hardness of each first surface feature **226**A may also vary within the pattern along the first base layer **246** and/or it can be adjusted within a line of sports paddles **10**.

[0071] Any of the first surface features **226**A may be manufactured from materials including, but not limited to, thermoplastic urethane, natural or synthetic rubber (hard rubber and/or soft rubber), natural or synthetic resins, foam, plastics, or any combinations or composites thereof, using known techniques for creating a surface having embossed and/or debossed features. Such techniques may include, but are not limited to, thermal forming using one or more extruding rollers in conjunction with one or more embossing rollers in addition to laser or die cutting apparatus.

[0072] Additionally, in some embodiments, the first surface features **226**A are formed from the same material as is used in the formation of the first base layer **246**. Further, in some such embodiments, the first surface features **226**A can be integrally formed with the first base layer **246**, such that the first base layer **246** and the first surface features **226**A are formed in a single manufacturing process. Alternatively, the first surface features **226**A can be formed from a material different than that used for the remainder of the first base layer **246**, and/or the first surface features **226**A may be formed separately from the first base layer **246** and subsequently be coupled to the first base layer **246**.

[0073] As shown in FIG. **2**, and as noted above, the head **228** includes the plurality of through holes **224** that extend fully through the head **228**. Additionally, the first base layer **246** includes a plurality of first base apertures **252** that extend through the first base layer **246**. In one embodiment, the first base apertures **252** can each form a portion of a corresponding through hole **224**.

[0074] Further, as illustrated in FIG. **2**, the first support layer **244** can include a plurality of first support projections **254** that extend at least partially into the first base apertures **252**. In some embodiments, the first support projections **254** can extend substantially fully into and through the first base apertures **252** such that a top edge **256** of the first support projections **254** is substantially flush with the first base layer **246**. In such embodiments, the first base layer **252** and the first support projections **254** can cooperate to form the first hitting surface **220**, such that each of the first base layer **246** and one or more of the first support projections **254** contact the object during play. Alternatively, the first support projections **254** can extend less than fully into and through the first base apertures **252** (e.g., approximately halfway through, three-fourths through, or another portion through) or the first support projections **254** can extend slightly beyond the first base layer **246**. It should be appreciated that even in such alternative embodiments, depending upon the specific materials utilized to form the first support layer **244** and the first base layer **246**, an object can still be contacted by both the base layer **246** and one or more of the first support projections **254**. Additionally, it should also be appreciated that the first support projections **254** form at least a portion of the first support surface **244**A that is exposed, i.e. is visible to a person looking at the sports paddle **10**, and/or is capable of contacting an object such as a ball.

[0075] Moreover, in certain embodiments, the first surface layer **244**, and thus the first support projections **254**, can be formed from a different material than the material that is used to form the first base layer **246**. With this design, when the first hitting surface **220** contacts the object, different materials can contact the object, thereby further enhancing performance, feel and/or spin effects. More particularly, with multiple materials being utilized in forming of the hitting surface **220**, the engineered surface deforms to allow both the outer diameter of the through holes **224** (formed from the first base layer material) and the inner diameter of the through holes **224** (formed from the first support projection material) to come in contact with the object, effectively doubling the surface area

that contacts the object. Alternatively, the first support projections **254** and the first base layer **246** can be formed from the same material.

[0076] The second support layer **248** and the second base layer **250** can be substantially similar in design to the first support layer **244** and the first base layer **246**. For example, the first support layer **248** can include a partially exposed, second support surface **248**A and a second opposed support surface **248**B; and the second base layer **250** can include an exposed, second base surface **250**A and a second opposed base surface **250**B.

[0077] Further, the second hitting surface **222** can include the plurality of second surface features **226**B that project away from (the second raised surface features **226**BA) and/or are formed into (the second recessed surface features **226**BB) the second base layer **250** that are substantially similar in design, positioning and material as the first surface features **226**A.

[0078] Additionally, the second base layer **250** can include second base apertures **257** and the second support layer **248** can include second support projections **258** that are substantially similar in design and function to the first base apertures **252** and the first support projections **254**, respectively, as described above. Alternatively, the second support layer **248** and/or the second base layer **250** can have a different design than the first support layer **244** and the first base layer **246**, respectively, such that the first hitting surface **220** and the second hitting surface **222** have different performance characteristics.

[0079] FIG. **3** is a cross-sectional view of a portion of another embodiment of the head assembly **314** of the sports paddle **10** illustrated in FIG. **1**A. More particularly, FIG. **3** illustrates a portion of another embodiment of the head **328** of the sports paddle **10** illustrated in FIG. **1**A. As shown in FIG. **3**, the head **328** is substantially similar to the head **228** illustrated and described above in relation to FIG. **2**. For example, the head **328** includes a core layer **342**, a first support layer **344**, a first base layer **346**, a second support layer **348** and a second base layer **350** that are substantially similar in design, positioning and function to the core layer **242**, the first support layer **244**, the first base layer **246**, the second support layer **248** and the second base layer **250** illustrated and described above in relation to FIG. **2**. Additionally, in this embodiment, the head **328** again includes a plurality of through holes **324** that extend fully through the head **328**, a plurality of first surface features **326**A, and a plurality of second surface features **326**B. However, in this embodiment, the head **328** only includes first surface features **326**A that project away from the first base layer **346** (i.e. first raised (embossed) surface features), and second surface features **326**B that project away from the second base layer **350** (i.e. second raised (embossed) surface features).

[0080] Further, (i) the first base layer **346** again includes an exposed first base surface **346**A and a first opposed base surface **346**B; (ii) the first support layer **344** again includes an only partially exposed first support surface **344**A that substantially faces the first opposed base surface **346**B, and a first opposed support surface **344**B; (iii) the second base layer **350** again includes an exposed second base surface **350**A and a second opposed base surface **350**B; and (iv) the second support layer **348** again includes an only partially exposed second support surface **348**A that substantially faces the first opposed base surface **350**B, and a second opposed support surface **348**B.

[0081] Still further, as in the previous embodiment, the first base layer **346** includes a plurality of first base apertures **352**, and the second base layer **350** includes a plurality of second base apertures **357**, with each of the first base apertures **352** and the second base apertures **357** forming part of one of the through holes **324**. Still further, the first support layer **344** again includes a plurality of first support projections **354** that extend at least partially into the first base apertures **352**, and the second support layer **348** again includes a plurality of second support projections **358** that extend at least partially into the second base apertures **357**. Moreover, as is the previous embodiments, the first base layer **346** and the first support projections **354** cooperate to form a first hitting surface **320**, and the second base layer **350** and the second support projections **358** cooperate to form a second hitting surface **322**, with the hitting surfaces **320**, **322** being alternatively utilized by the user to contact the object during play.

[0082] FIG. **4** is a cross-sectional view of a portion of still another embodiment of the head assembly **414** of the sports paddle **10** illustrated in FIG. **1**A. More particularly, FIG. **4** illustrates a portion of still another embodiment of the head **428** of the sports paddle **10** illustrated in FIG. **1**A. As shown in FIG. **4**, the head **428** is somewhat similar to the heads **228**, **328** illustrated and described above in relation to FIGS. **2** and **3**, respectively. For example, the head **428** includes a core layer **442**, a first support layer **444**, a first base layer **446**, a second support layer **448** and a second base layer **450** that are somewhat similar in design and function to such components as illustrated and described above in relation to FIG. **2** and FIG. **3**. Additionally, in this embodiment, the head **428** again includes a plurality of through holes **424** that extend fully through the head **428**, a plurality of first surface features **426**A that project away from and/or are formed into the first base layer **446**, and a plurality of second surface features **426**B that project away from and/or are formed into the second base layer **450**. Further, in this embodiment, (i) the first base layer **446** again includes an exposed first base surface **446**A and a plurality of first base apertures **452**, and the first support layer **444** again includes an only partially exposed first support surface **444**A and a plurality of first support projections **454** that extend at least partially into the first base apertures **452**, the first base layer **446** and the first support projections **454** cooperating to form at least a portion of a first hitting surface **420**; and (ii) the second base layer **450** again includes an exposed second base surface **450**A and a plurality of second base apertures **457**, and the second support layer **448** again includes an only partially exposed second support surface **448**A and a plurality of second support projections **458** that extend at least partially into the second base apertures **457**, the second base layer **450** and the second support projections **458** cooperating to form at least a portion of a second hitting surface **422**.

[0083] However, in this embodiment, the head **428** further includes a first intermediate layer **460**, a first adhesive layer **462**, a second intermediate layer **464** and a second adhesive layer **466** that were not included in the previous embodiments.

[0084] As shown in FIG. **4**, the first intermediate layer **460** is disposed on a substantially planar surface of the core layer **442**, i.e. between the core layer **442** and the first support layer **444**. In certain embodiments, the first intermediate layer **460** is formed from a carbon fiber material or another stiff material. With this design, the head **428** can show improved col-

lision efficiency and power. Alternatively, the first intermediate layer **460** can be formed from another suitable material.

[0085] Additionally, as illustrated, the first adhesive layer **462** is positioned substantially directly between the first intermediate layer **460** and the first support layer **444**. The first adhesive layer **462** can be provided to provide the desired bonding between the first intermediate layer **460** and the first support layer **444**. The first adhesive layer **462** can be formed from any suitable adhesive materials.

[0086] Somewhat similarly, the second intermediate layer **464** is disposed on another, i.e. opposed, substantially planar surface of the core layer **442**, i.e. between the core layer **442** and the second support layer **448**. In certain embodiments, the second intermediate layer **464** is formed from a carbon fiber material, carbon nano tube materials, or another relatively stiff material. Alternatively, the second intermediate layer **464** can be formed from another suitable material.

[0087] Additionally, as illustrated, the second adhesive layer **466** is positioned substantially directly between the second intermediate layer **464** and the second support layer **448**. The second adhesive layer **466** can be provided to provide the desired bonding between the second intermediate layer **464** and the second support layer **448**. The second adhesive layer **466** can be formed from any suitable adhesive materials.

[0088] FIG. **5**A is a bottom perspective view of an embodiment of a neck cover **536** that is usable as part of an embodiment of the sports paddle **510** (illustrated in FIG. **5**D). As provided herein, the neck cover **536** can be formed with an engineered surface and an ergonomic design that is sized and shaped to improve and/or extend the effective grip of the sports paddle **510** and/or to increase control of the sports paddle **510** during use. More particularly, the neck cover **536** can be ergonomically designed to provide a smoother, more comfortable holding area for the user during the execution of certain shots, e.g., during two-handed play, such as in a two-handed backhand shot. Additionally, the neck cover **536** can provide an ergonomically formed surface that fits more comfortably into a gripped hand, as opposed to more conventional sports paddles, in which the handle and/or neck can have flat surfaces that do not fit comfortably into a gripped hand. With this design, the user can realize improved control of the sports paddle **510** during the execution of such shots, as well as a decreased risk of joint and tendon injury.

[0089] The design of the neck cover **536** can be varied to suit the specific requirements of the sports paddle **510** and/or the user of the sports paddle **510**. For example, as shown in FIG. **5**A, the neck cover **536** can be a contoured, tube-like component (e.g., somewhat heart-shaped) including an outer surface **570** and an inner surface **572**. The outer surface **570** of the neck cover **536** can be shaped to fit into a crease between palm and forefingers of a cupped or wrapped hand. Additionally, the inner surface **572** can be sized and shaped to fit securely about a portion of the sports paddle **510**. In alternative embodiments, the neck cover **536** can have a different shape than what is illustrated in FIG. **5**A, depending on the desired comfort needs for the user.

[0090] Further, the neck cover **536** can be formed from any suitable materials. For example, in certain non-exclusive alternative embodiments, the neck cover **536** can be formed from one or more of rubber, polymer, foam, composites or plastics. Alternatively, the neck cover **536** can be formed from other suitable materials.

[0091] FIG. **5**B is a top perspective view of the neck cover **536** illustrated in FIG. **5**A. In particular, FIG. **5**B again illustrates the contoured, somewhat heart-shaped design of the neck cover **536**, including the outer surface **570** and the inner surface **572**.

[0092] FIG. **5**C is a front perspective view of the neck cover **536** illustrated in FIG. **5**A. FIG. **5**C again illustrates the outer surface **570** and the inner surface **572** of the neck cover **536**, albeit from a slightly different perspective than is shown in FIGS. **5**A and **5**B.

[0093] FIG. **5**D is a front perspective view of a portion of an embodiment of the sports paddle **510**, including the neck cover **536** illustrated in FIG. **5**A. As illustrated, the neck cover **536** can be a contoured, tube-like component that stretches over the handle assembly **518** (a portion of which is shown in FIG. **5**D) such that the neck cover **536** can be positioned substantially about the neck **534** of the sports paddle **510**. In certain applications, the neck cover **536** can be positioned to cover the end of the grip tape **40** (illustrated in FIG. **1**A) and to provide a smooth transition between the body assembly **512** (a portion of which is shown in FIG. **5**D) and the grip tape **40** and/or other portions of the handle assembly **518**. It should be appreciated that the neck cover **536** can also provide the desired smooth transition between the body assembly **512** and the handle assembly **518** even in embodiments where grip tape is not being used. With the design of the neck cover **536** illustrated and described herein, the neck cover **536** can be easy to install, as well as enabling the user to realize various shock absorbing and ergonomic properties.

[0094] As shown, and as noted above, the specific ergonomic design of the neck cover **536** can include the outer surface **570** of the neck cover **536** that is shaped to fit into a crease between palm and forefingers of a cupped or wrapped hand around the handle assembly **518**.

[0095] FIG. **5**E is a cross-sectional view of a portion of the sports paddle **510**, including the neck cover **536**, taken on line E-E in FIG. **5**D. More specifically, FIG. **5**E again illustrates the neck cover **536** being positioned substantially about the neck **534** of the sports paddle **510** so as to provide the smooth transition between the handle assembly **518** and the body assembly **512**.

[0096] Further, as shown, in certain embodiments, a portion of the neck cover **536** can be slightly spaced apart from the neck **534**. This can make the neck cover **536** easier to install about the neck **534**, as the amount of friction between the neck cover **536** and the neck **534** and/or between the neck cover **536** and the handle assembly **518** can be limited. Moreover, with this design, when the user grips the outer surface **570** of the portion of the neck cover **536** that is spaced apart from the neck **534**, the inner surface **572** of the neck cover **536** can then engage the neck **534** in the aforementioned ergonomic manner.

[0097] Additionally, FIG. **5**E further illustrates how the inner surface **572** of the neck cover **536** can be configured to engage with a mechanical locking feature **574** that can be molded into the neck **534** to inhibit independent motion of the neck cover **536** relative to the body assembly **512** and/or the neck **534**.

[0098] Still further, it should be appreciated that the neck cover **536** can then be secured in place about the neck **534** and/or handle assembly **518** in any suitable manner. For example, in certain embodiments, the neck cover **536** can be secured about the neck **534** and/or the handle assembly **518**

through chemical bond, any of a variety of adhesives, friction, trapped geometry or by another suitable method.

[0099] FIG. **6** is a partially exploded, simplified view of another embodiment of the sports paddle **610**. The sports paddle **610** is somewhat similar to the sports paddle **10** illustrated and described above in relation to FIG. **1**A. For example, the sports paddle **610** includes a body assembly **612** including a head assembly **614** and a neck assembly **616** that are somewhat similar to and contain many of the same or similar components as the body assembly **12**, head assembly **14** and neck assembly **16** illustrated and described herein above. Accordingly, the body assembly **612**, the head assembly **614** and the neck assembly **616** will not be described in detail herein.

[0100] However, in this embodiment, the handle assembly **618** is somewhat different than the embodiments illustrated and described above. In particular, as shown in FIG. **6**, the handle assembly **618** includes a handle shaft **638** (also sometimes referred to herein simply as a "handle") and a replaceable and interchangeable handle sleeve **680** that is configured to be selectively positioned and secured about the handle **638**. As noted below, the use of such a handle sleeve **680** enables more variability for the user in choosing a handle size and shape that is more precisely tailored to their needs, without the need for obtaining an entirely new sports paddle **610** or racquet.

[0101] The design of the handle sleeve **680** can be varied. As shown, in certain embodiments, the handle sleeve **680** can include a closed distal end **682** and an open proximal end **684** for installation onto the handle **638**, as illustrated in FIG. **6**. Interior dimensions of the handle sleeve **680** can be sized to create a tight fit over the handle **638**, and an outer surface **686** of the handle sleeve **680** can be shaped to create a smooth transition between the neck **634** and the handle assembly **618** of the sports paddle **610**. Further, the outer surface **686** of the handle sleeve **680** can be sized to best fit the hand of the user. With this design, a plurality of different sized handle sleeves **680** can be used with the same handle **638** to accommodate different users, or different conditions for the same user. The outer surface **686** can also be textured to provide improved grip and ergonomics to the handle assembly **618**. With this design, the sports paddle **610**, including both the body assembly **612** and the handle assembly **618**, can be ready for play without the need for an overwrap of grip tape, though a player can add such overwrap, if desired.

[0102] Additionally, the handle sleeve **680** can be formed from any suitable materials. For example, in certain non-exclusive alternative embodiments, the handle sleeve **680** can be formed from one or more of rubber, polymer, foam, composites or plastics. Alternatively, the handle sleeve **680** can be formed from other suitable materials.

[0103] It is understood that although a number of different embodiments of the sports paddle **10** and methods for manufacture have been illustrated and described herein, one or more features of any one embodiment can be combined with one or more features of one or more of the other embodiment, provided that such combination satisfies the intent of the present invention. Additionally, it will be obvious to those recently skilled in the art that modifications to the sports paddle **10** and methods of manufacture disclosed herein may occur, including substitution of various component values or modes of connection, without departing from the true spirit and scope of the disclosure.

[0104] While a number of exemplary aspects and embodiments of the sports paddle **10** and method for manufacture have been shown and disclosed herein above, those of skill in the art will recognize certain modifications, permutations, additions and sub-combinations thereof. It is therefore intended that the system and method shall be interpreted to include all such modifications, permutations, additions and sub-combinations as are within their true spirit and scope, and no limitations are intended to the details of construction or design herein shown.

What is claimed is:

1. A sports paddle for use in striking an object during play, the sports paddle being configured to be held by a hand of a user during play, the sports paddle comprising:
- a head that is configured to contact the object during play;
- a handle that is coupled to the head;
- a neck that extends substantially between the head and the handle; and
- a neck cover that is selectively positionable substantially about the neck to provide a smooth transition between the head and the handle.

2. The sports paddle of claim **1** wherein the neck cover includes an engineered surface formed from at least one of rubber, polymer, foam, composites and plastic.

3. The sports paddle of claim **1** wherein the neck cover includes an ergonomically formed outer surface that can be selectively gripped by the hand of the user.

4. The sports paddle of claim **3** wherein the outer surface is shaped to fit into a crease between a palm and forefingers of the hand of the user.

5. The sports paddle of claim **1** wherein the neck cover includes an outer surface and an opposed, inner surface, and wherein a portion of the inner surface is spaced apart from the neck when the neck cover is positioned substantially about the neck.

6. The sports paddle of claim **1** wherein the neck cover is secured about the neck utilizing at least one of chemical bond, adhesive, friction and trapped geometry.

7. The sports paddle of claim **1** wherein the neck includes a mechanical locking feature that is molded into the neck, and wherein the neck cover includes an inner surface that selectively engages the mechanical locking feature to inhibit motion of the neck cover relative to the neck.

8. The sports paddle of claim **1** further comprising grip tape that is wrapped around the handle, and wherein the neck cover is positioned to cover at least a portion of the grip tape.

9. A neck cover of a sports paddle, the sports paddle being configured to be held by a hand of a user during play, the sports paddle including a head that is configured for striking an object during play, a handle that is coupled to the head, and a neck that extends substantially between the head and the handle, the neck cover being selectively positionable about the neck, the neck cover comprising:
- an inner surface that selectively engages the neck; and
- an opposed, outer surface that is ergonomically shaped to be selectively gripped by the hand of the user.

10. The neck cover of claim **9** wherein the neck cover includes an engineered surface formed from one or more of rubber, polymer, foam, composites and plastic.

11. The neck cover of claim **9** wherein the outer surface of the neck cover is somewhat heart-shaped.

12. The neck cover of claim **9** wherein the outer surface is shaped to fit into a crease between a palm and forefingers of the hand of the user.

13. The neck cover of claim **9** wherein a portion of the inner surface is spaced apart from the neck when the neck cover is positioned substantially about the neck.

14. The neck cover of claim **9** wherein the neck cover is secured about the neck utilizing one or more of chemical bond, adhesive, friction and trapped geometry.

15. A sports paddle comprising (i) a head that is configured for striking an object during play, (ii) a handle, (iii) a neck that extends between and couples the head and the handle, and (iv) the neck cover of claim **9** that is selectively positioned about the neck.

16. The sports paddle of claim **15** wherein the neck includes a mechanical locking feature that is molded into the neck, and wherein the inner surface of the neck cover selectively engages the mechanical locking feature to inhibit motion of the neck cover relative to the neck.

17. A method for manufacturing a sports paddle for use in striking an object during play, the method comprising:

providing a head that is configured to contact the object during play;

coupling a handle to the head with a neck that extends substantially between the head and the handle; and

selectively positioning a neck cover substantially about the neck to provide a smooth transition between the head and the handle.

18. The method of claim **17** wherein selectively positioning includes the neck cover having an engineered surface formed from one or more of rubber, polymer, foam, composites and plastic.

19. The method of claim **17** further comprising securing the neck cover about the neck utilizing one or more of chemical bond, adhesive, friction and trapped geometry.

20. The method of claim **17** wherein coupling the handle includes molding a mechanical locking feature into the neck, and wherein selectively positioning includes selectively engaging an inner surface of the neck cover with the mechanical locking feature to inhibit motion of the neck cover relative to the neck.

* * * * *