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(54) **RACKET FOR PADEL TENNIS**

(57) The invention relates to a racket for padel tennis comprising: a blade, which comprises: a core body; and a holder for rimming at least a part of the core body, wherein: the blade has a first blade side having a first composition and a second blade side having a second composition; and the first composition of the first blade side is different to the second composition of the second blade side.

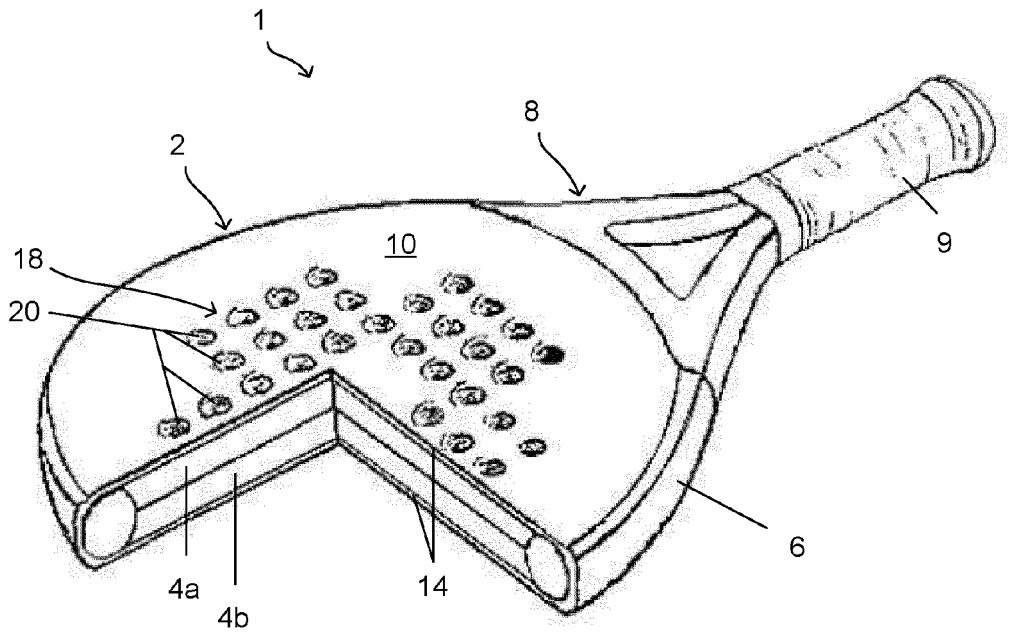

Fig. 1

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Description

[0001] The present disclosure relates to a racket for padel tennis, a kit of parts for forming a racket for padel tennis, use of a holder and a core body for forming a racket for padel tennis and a method of manufacturing a racket for padel tennis.

[0002] Padel or padel tennis is a racket sport typically played in doubles on an enclosed court slightly smaller than a doubles tennis court. Although padel shares the same scoring system as tennis, the rules, strokes, and technique are different. The balls used are similar but with less pressure. The main differences are that the court has walls and the balls can be played off them in a similar way as in the game of squash and that solid, stringless rackets or bats are used.

[0003] Padel rackets are made of a composite material without strings. While the racket may appear similar to the one used in platform or table tennis it has its own, different specifications. In particular, the blade is perforated.

[0004] There are significant differences between rackets for padel tennis depending on the shape of their blades. While rackets having a blade with a round shape are usually beginner friendly and more forgiving due to a relatively large sweet spot, rackets having a blade with a tear drop shape or a diamond shape are for intermediate and advanced players and have more performance but require more precise handling.

[0005] Another major factor defining the racket properties is the core materials used. The core material of the blade of the racket is usually composed of EVA (Ethylene Vinyl Acetate) rubber or PET (Polyethylene) foam. Each material may be provided in different densities. However, PET foam generally provides a soft touch or feel with minimum vibrations along with a lot of ball bounce but is less durable than EVA rubber. EVA rubber is a soft, flexible yet durable plastic. Soft EVA rubber provides comfort and control while medium and hard EVA rubber provides a firm feel alongside more power but with less comfort and control. There exist also so-called hybrid rackets with a soft but resistant rubber, which is made up of a foam core with outer edges of EVA rubber. Its main feature is that it increases the stability of the racket and at the same time reduces vibrations. However, this compound was predominantly substituted by EVA soft rubber.

[0006] Also, the laminate covering the core material and at least parts of the racket frame has an important impact on the racket properties. The laminate generally comprises fibers or a web of fibers, which is cured with resin, such as epoxy. Fiberglass is often used for beginner models as it is cheap and provides a comfortable feel. Fiberglass rackets are more flexible, elastic and give off more but are less resistant and heavier than other materials, such as carbon fiber or graphene. Carbon fiber is comprised by most rackets due to its advantages over fiberglass in terms of durability, strength, weight and tolerance to high temperatures. Manufacturers offer different types of carbon fiber, which may be divided into subdivisions such as 3K, 6K, 9K, 12K and 18K. For example, a 3K carbon fiber racket comprises 3.000 carbon fiber strands and is the most common type as it provides a lightweight, easy to use racket offering good control. In contrast, for example, a 18K racket offers less control but increased power. Some padel rackets are made of 90% carbon and 10% fiberglass. Graphene has recently been included in the manufacture of high-end padel rackets. It is the strongest material that exists for use in padel rackets and benefits the performance of a padel racket quite as it is a very resistant material, but also flexible and elastic.

[0007] The core material is held and radially surrounded by a frame of the racket, more precisely by a holder as part of the racket. While the holder defines the shape of the blade, the material comprised by the holder or frame also influences the properties of the racket. For example, the holder may comprise and/or predominantly consist of fiberglass. Fiberglass frames are often used in beginner-level padel rackets because they are comparatively cheap and soft but heavy. A very popular material is carbon fiber, which results in a good balance between hardness, lightness, and resistance.

[0008] Another exemplary material is graphene, which is recognized for its incredible strength, offering a solid, durable and light frame while providing a softer and more comfortable touch for improved control. Kevlar frames is sometimes used for high-professional padel rackets as it is very expensive.

[0009] A further difference between padel rackets is the ball contact surface for hitting the ball, i.e., the outermost surface of the blade with which the ball comes in contact with during controlled shots. The ball contact surface may be sleek or comprise a structure or texture, such as dimples and/or knobs, and/or is roughened, like sandpaper, for applying more spin to the ball and/or improving control.

[0010] Generally, padel rackets have a symmetrical form, wherein both ball sides of the blade, i.e., forehand and backhand sides, have identical compositions and/or properties. This limits the versatility of padel rackets, since for different playing conditions and/or playing levels different padel rackets have to be used.

[0011] In view of the above, it is an object of the present invention to provide a versatile padel racket for padel tennis offering different properties for use in different situations.

[0012] These objects are solved by the solutions defined by the independent claims. Additional embodiments are defined by the dependent claims.

Summary of the Invention

[0013] The claimed invention is defined by the subject-matters of the independent claims. Additional embodiments are defined by the dependent claims.

[0014] One aspect of the present invention relates to

a racket for padel tennis comprising: a blade, which comprises: a core body; and a holder for rimming at least a part of the core body, wherein: the blade has a first blade side having a first composition and a second blade side having a second composition; and the first composition of the first blade side is different to the second composition of the second blade side.

[0015] A racket according to the invention is advantageous because it allows different sides of the racket to be used for different playing styles or different type of shots. For example, the backhand side is often used in defense situations to return a relatively fast ball and out of corners or when standing close to the net. In contrast, the forehand side is generally used for attack situations such as serves and smashes. A racket having blade sides which have a different composition and/or different characteristics allows use of the appropriate side of the blade best for each shot.

[0016] The racket and/or racquet and/or bat preferably comprises a substantially flat blade part for playing the ball. The blade may be between approximately 25 mm to approximately 40 mm thick and may have a width and length of between approximately 20 cm to approximately 30 cm.

[0017] The blade includes at least a core body and a holder. The holder substantially surrounds and/or rims and/or frames at least a part of the core body.

[0018] The core body may comprise or consist of EVA rubber and/or PET foam, or other materials commonly used in rackets for padel tennis. The core body preferably comprises a flat shape with a substantially round or tear-shaped or diamond-shaped outline.

[0019] The first blade side may constitute or comprise one of the forehand side or the backhand side of the blade and comprises a first section and/or a first part of the core body. The second blade side may respectively constitute or comprise the other side of the blade and comprise a second section and/or a second part the core body on the opposite side of the blade.

[0020] The sections of the core body of the first blade side and of the second blade side do not need to be physically and/or visually separated. For example, the first blade side and the second blade side may be formed and/or defined by an imaginary plane dividing the blade, in particular the core body, of the racket, wherein the imaginary plane is oriented substantially parallel to a ball contact surface of the blade and/or of the racket. Thus, the first blade side and the second blade side may respectively comprise directly neighboring sections of the same, e.g., uniform, core body. Alternatively, the first blade side and the second blade side may respectively comprise separate and/or distinguishable parts of the core body, which are positioned in contact with another or with a distance to one another and, together, form the core body.

[0021] The first blade side and the second blade side comprise differing compositions, wherein composition may be one or more of a physical structure and/or physical property and/or configuration and/or constitution. The composition particularly influences the ball rebound characteristic and/or playing characteristic and/or feel of the racket, in particular of the blade.

[0022] In particular, the first blade side may have a different composition than the second blade side, wherein the different compositions for example result in a different ball rebound characteristic and/or playing characteristic and/or structural and/or visual and/or measurable difference.

[0023] As an illustrative example, the first blade side may be stiffer than the second blade side. As another illustrative example, the first blade side may be more compressible than the second blade side.

[0024] According to an example, the core body may comprise a first core body element and a second core body element, wherein the first blade side comprises the first core body element and the second blade side comprises the second core body element and, wherein, preferably, the second core body element is different to the first core body element.

[0025] A racket having a blade with a core body having different material on opposing sides is advantageous because the manufacturing of a racket according to the invention is substantially similar to common rackets but the number of possible varieties and impact of different materials to the characteristics of the racket is comparably large.

[0026] The first core body element and the second core body element may be formed and/or produced integrally, e.g., by foaming the respective materials subsequently but in a single mold and/or simultaneously. Alternatively, the first core body element and the second core body element may be formed and/or produced separately and assembled and/or joined and/or coupled to one another, e.g., by an adhesive bond and/or a bonding layer. The first core body element and the second core body element may be arranged in contact to one another or may be separated by one or more layers and/or one or more additional core body elements.

[0027] For example, the blade may comprise a first blade side having a first core body element comprising or consisting of soft EVA rubber and a second blade side having a second core body element comprising or consisting of hard EVA rubber. A racket with a respective different composition of the first blade side and of the second blade side would have a different playing characteristic for each respective blade side. A respective racket may for example provide a first blade side offering improved control and a second blade side for powerful attack shots.

[0028] The core body and/or a first core body element and/or a second core body element may comprise or consist of EVA rubber or PET foam or another material commonly used for rackets for padel tennis. The materials may have different densities, e.g., super soft, soft, medium, or hard. The materials may have different damping and/or ball rebound properties and/or durability. This

way, the different sides of the racket may be optimized for particular playing situations and/or shots, e.g., one side for defensive shots and the other side for offensive shots. For example, the first core body element may comprise or substantially consist of a first material having a first density and the second core body element may comprise or substantially consist of a second material having a second density, wherein the second density is greater or less than the first density.

[0029] In addition or as an alternative, a first core body element may have a first thickness and a second core body element may have a thickness greater or less than the first thickness. For example, the first core body element may have a thickness of approximately 2 cm and the second core body element may have a thickness of approximately 1,5 cm.

[0030] Optionally, in order to compensate for an uneven weight distribution of the blade and/or to obtain a balanced weight distribution of the blade, a compensation layer and/or compensation body may be provided, in particular positioned between the first core body element and the second core body element. Advantageously, the compensation layer and/or body may have a thickness approximately equivalent to the thickness difference between the first core body element and the second core body element and/or a weight approximately equivalent to the weight difference between the first core body element and the second body element.

[0031] Alternatively or in addition, the core body or a core body element may have different zones with different properties and/or comprising different materials. The different zones may be arranged on one blade side so that a ball interacts with different zones depending on the point of impact of the racket. For example, a core body element may comprise a softer and/or less dense material in a zone at the center of the blade for obtaining a powerful sweet spot and a harder and/or more dense material in a zone around and/or surrounding the center for a more forgiving touch when hitting the ball outside the sweet spot.

[0032] The blade may comprise at least one laminate structure wrapped at least partially, preferably entirely, around the core body and the holder. Advantageously, the laminate structure is substantially uniformly wrapping the core body and the holder so as to obtain a substantially integrally laminated blade.

[0033] Optionally, the first blade side may comprise a first laminate structure covering at least a part of the core body; and the second blade side may comprise a second laminate structure covering at least a part of the core body; wherein the first laminate structure and the second laminate structure are provided on opposite sides of the blade and/or on opposing sides of the core body and the first laminate structure is different to the second laminate structure. This way, even with a uniform core body, the opposing blade sides comprise different compositions and/or properties due to the differing laminate structures.

[0034] The laminate structure may constitute one factor resulting in different constitutions of the first blade side and the second blade side. In other words, the constitution of the first blade side and/or the constitution of the second blade side may include and/or be composed of and/or be defined by the respective laminate structure.

[0035] A laminate structure may be a composite material. The laminate structure may comprise at least one laminate material such as carbon fiber, fiberglass or graphene. A laminate structure may comprise a combination of laminate materials, e.g., approximately 90% carbon fiber and approximately 10% fiberglass. A laminate structure may comprise one or more layers of laminate material. A laminate structure may comprise same or different layers. A layer of laminate material may be characterized by properties such as laminate material and/or webbing and/or weaving and/or height and/or grammage. The laminate structure may comprise one or more of the foregoing characteristics.

[0036] The laminate structure may have different zones with different properties and/or comprising different materials on one blade side. For example, the laminate structure may comprise fiberglass in a first zone at the center of the blade for obtaining a softer sweet spot and carbon fiber in a second zone around and/or surrounding the center for increased durability.

[0037] Application of a laminate structure may include the following steps: One or more laminate layers are coated with a resin, such as epoxy, when positioned in a mold part. The core body and the holder are placed into the mold on top of the fibers. Subsequently, a second mold part with one or more of resin coated laminate layers is placed onto the core body and the holder from the other side. The assembly is cured, optionally by applying pressure and/or heat to the assembly. The cured blade or racket is further processed, which may include sanding and painting.

[0038] The holder may be premanufactured or may be formed together with the application of the laminate structure of the blade, e.g., by a coated tubular web of fibers positioned around the core body in the mold, wherein the tubular web may be inflated and cured within the mold together with the laminate structure. The holder may comprise materials commonly used in rackets for padel tennis such as fiberglass and/or graphene and/or carbon fiber and/or Kevlar.

[0039] Advantageously, the first blade side comprises a first laminate structure, wherein the first laminate structure covers at least a part of the first core body element; and the second blade side comprises a second laminate structure, wherein the second laminate structure covers at least a part of the second core body; at least a part of the first laminate structure and at least a part of the second laminate structure are on opposite sides of the blade and, preferably, the second laminate structure is different to the first laminate structure. This way, the blade sides may have different compositions and/or properties due to the different laminate structures covering respective core body elements.

[0040] The laminate structure of the racket has a substantial impact on the playing characteristics and/or properties of a racket. Thus, providing a different laminate structure on opposing sides of the blade is an effective way for obtaining a racket having sides with different playing characteristics and/or properties, in particular if a uniform core body is provided.

[0041] For example, the first blade side may comprise a first laminate structure comprising carbon fiber for obtaining a powerful characteristic for attack shots and the second blade side may comprise a second laminate structure comprising fiberglass for obtaining a more balanced characteristic for defensive shots offering improved control.

[0042] The different laminate structures may be provided in combination with different core body elements or with a uniform core body.

[0043] An exemplary racket for padel tennis may include the first blade side, the first blade side comprising a first section of the uniform core body and a first laminate structure, wherein the first laminate structure covers at least a part of the first section of the core body; and the racket may further include the second blade side comprising a second section of the core body and a second laminate structure, wherein the second laminate structure covers at least a part of the second section of the core body; wherein: the second laminate structure is different to the first laminate structure. Particularly, the first laminate structure and the second laminate structure are provided on opposite sides of the blade, i.e., the first laminate structure is provided on one blade side and the second laminate structure is provided on the other blade side. The core body may be physically divided into the first section and the second section or may be uniform so that the core body is virtually divided into the first section and the second section. The core body may comprise further sections or further parts.

[0044] Preferably, the first blade side comprises a first ball contact surface and the second blade side comprises a second ball contact surface; wherein the first ball contact surface and the second ball contact surface respectively form the outermost surface on opposite sides of the blade. The first ball contact surface and the second ball contact surface may form the outermost surfaces of the blade on opposing sides. The ball contact surfaces may be considered as corresponding to the surfaces of the blade intended for hitting the ball and/or which comes in direct contact with the ball when playing the ball and/or from which the ball bounces off during a controlled shot. The ball contact surface may extend at least over an area corresponding to the outline of the core body or the core body element and, optionally, may further extend over at least a part of the adjacent part of the holder. Preferably, the ball contact surface is substantially flat and/or levelled.

[0045] The ball contact surface may constitute one factor resulting In different constitutions of the first blade side and the second blade side. In other words, the constitution of the first blade side and/or the constitution of the second blade side may include and/or be composed of and/or be defined by the respective ball contact surface.

[0046] With different ball contact surfaces on opposing sides of the blade, the player can advantageously choose the side of the blade to play a ball depending on the degree of spin that shall be applied to the ball. For example, it is advantageous to serve a ball either relatively fast or with a large amount of spin. If one side of the blade has a blade contact surface allowing for applying an increased amount of spin, said blade side is best used for a slower serve but with more spin.

[0047] The first ball contact surface may be constituted by the outer surface of the first laminate structure or by an additional top layer positioned as outermost layer on one side of the blade. The second ball contact surface may be constituted by the outer surface of the second laminate structure or by an additional top layer positioned as outermost layer on the other side of the blade.

[0048] The first ball contact surface and/or the second ball contact surface may be evenly or unevenly formed and/or may be structured and/or textured and/or may comprise protuberances such as dimples and/or knobs in a regular or unregular pattern and/or of uniform or differing shape. The ball contact surface may be rough, e.g., like sandpaper. Parameters such as distance, number, diameter, height, form and/or material of protuberances may be selected in order to obtain a desired structure of the ball contact surfaces and respective ball playing characteristics of the racket.

[0049] One or more protuberances may be arranged in a pattern, for example along a line or in a circle or half circle. Protuberances may differ in softness/hardness and/or distance to one another. Protuberances may have a different shape and/or a different height/thickness. The pattern may be grid-like or round/arched and/or concentrical.

[0050] For example, protuberances may have a substantially round shape with a diameter of between approximately 1 mm and 5 mm. As another example, protuberances may have a substantially rectangular and/or square shape with a length and/or width of between approximately 1 mm and 10 mm. As a further example, protuberances may have a straight or arched/wavelike shape. A height of a protuberance may be between approximately 0.1 mm and 3 mm.

[0051] An exemplary ball contact surface may comprise a plurality of substantially square protuberances with approximately 4 mm length/width and approximately 3 mm height provided in a grid-like pattern, wherein the protuberances are relatively hard and/or comprise carbon fiber and/or hard rubber. A respective or similar ball contact surface may provide the advantage of reversing the spin of a ball so that a ball having a spin in one direction before impact has a spin in the opposite direction after rebound from the ball contact surface.

[0052] Another exemplary ball contact surface may

comprise a plurality of substantially rectangular shaped protuberances with a length of more than 5 mm and a width of approximately 2 mm and approximately 2 mm height provided in a linear and/or parallel pattern, wherein the protuberances are relatively soft and/or comprise soft rubber. A respective or similar ball contact surface may provide the advantage of generating an unpredictable spin to the ball due to a deformation of the protuberances occurring during impact of the ball and a resulting long contact time between the protuberances and the ball.

[0053] In order to obtain differing compositions of the first blade side and the second blade side, the first ball contact surface may be different to the second ball contact surface.

[0054] For example, the first ball contact surface may be structured and/or comprise a plurality of protuberances, wherein the second ball contact surface may be sleek. In this case, more slice may be applied to a ball by the first blade side than by the second blade side.

[0055] The first blade side may comprise a first intermediate layer between the core body and the first ball contact surface. Alternatively or in addition, the second blade side may comprise a second intermediate layer between the core body and the second ball contact surface.

[0056] An intermediate layer may constitute one factor resulting in different constitutions of the first blade side and the second blade side. In other words, the constitution of the first blade side and/or the constitution of the second blade side may include and/or be composed of and/or be defined by the respective intermediate layer(s).

[0057] An intermediate layer may comprise rubber and/or foam and/or cork material for damping and/or absorbing part of the impact force of a ball when hitting. One or more intermediate layers may be positioned between the core body or a core body element of the core body and a laminate structure and/or between a laminate structure and a top layer, which forms the ball contact surface. The second intermediate layer of the second blade side may be different to the first intermediate layer of the first blade side, thereby obtaining different compositions of opposing sides of the blade. The number and/or type and/or thickness and/or structure and/or position of one or more intermediate layers may differ between the first blade side and the second blade side. Furthermore, only one of the blade sides may comprise an intermediate layer, preferably the blade side intended for backhand and/or defensive shots so as to provide a softer and more forgiving feel. Intermediate layers may comprise a different height and/or thickness.

[0058] Thus, in particular for the backhand side of the racket, one or more intermediate layers are advantageous because they provide increased damping and/or impact absorption compared to no intermediate layer for better defending relatively fast attacking shots from the opponent.

[0059] The racket may comprise a plurality of holes and/or openings, in particular in at least a part of the blade.

[0060] Holes and/or openings may constitute one factor resulting in different constitutions of the first blade side and the second blade side. In other words, the constitution of the first blade side and/or the constitution of the second blade side may include or may be composed of and/or be defined by the respective holes and/or openings.

[0061] Holes and/or openings may extend entirely through the blade, thereby reducing air resistance during hitting movement. In general, holes and/or openings in the blade influence characteristics of the blade due to removal of material. In particular, holes may extend at least partly through the core body and/or through the laminate structure and/or through an intermediate layer and/or through a top layer.

[0062] The holes and/or openings form a hole pattern. The hole pattern may be defined by shape and/or depth and/or diameter and/or positions of the holes. The first blade side may comprise a first hole pattern; and the second blade side may comprise a second hole pattern, wherein the second hole pattern is different to the first hole pattern. Thus, the compositions of the first blade side and the second blade side may be different due to differing hole patterns. For example, the number of holes and/or openings in the first blade side, e.g., the first section of the core body and the first laminate structure, may be larger than the number of holes and/or openings in the first blade side, e.g., the second section of the core body and the second laminate structure. By this, even if the core body is uniform and/or is composed of a single material, the first blade side comprises a different composition and/or ball rebound properties and/or characteristics than the second blade side.

[0063] Holes and/or openings may have different diameters, depths, arrangements and/or forms. Preferably, at least a number of holes and/or openings extend through the entire padel from the one ball contact surface to the other ball contact surface, thereby advantageously allowing air flow and reduced air resistance during swinging of the racket. Exemplary holes and/or openings are shown in the figures and are further described below. According to FIP regulations, holes in the central area of the blades may be cylindrical and having a diameter between 9 and 13 mm.

[0064] Larger diameters offer a reduced air resistance and a greater impact on the core body and the laminate structure compared to smaller diameters.

[0065] In summary, the different compositions and, as a consequence, the different properties and/or characteristics of the first blade side and the second blade side of a blade of a racket, may be obtained by one or more of the following features:

- different material and/or material property of a first core body and of a second core body and/or different respective thicknesses;
- different materials and/or thicknesses and/or gram-

mages and/or webbings of a first laminate structure of the first blade side and of a second laminate structure of the second blade side;
- different number and/or thickness and/or material and/or position of one or more intermediate layers;
- different structure of ball contact surfaces, optionally comprising a structured surface and/or protuberances, e.g., formed by a top layer;
- different number and/or pattern and/or diameter and/or form of holes.

[0066] A further aspect of the present invention relates to a kit of parts for forming at least a part of a racket for padel tennis. In particular, the kit of parts may be delivered to a customer and/or player and assembled by the customer and/or player. Thus, the customer and/or player may assemble a padel racket having customized properties. Also, the customer and/or player may replace and/or change parts of the racket in order to repair or tune the racket. Thus, if playing characteristics of a racket shall be changed or a part of the racket is defect, only one or more specific parts of the racket may be replaced, which reduces costs and increases sustainability.

[0067] Players may have different playing styles, wherein some have a more aggressive, offensive playing style while some have a more defensive playing style. The chosen playing style may also be affected by the level of the opponent and the course of the game. Moreover, the playing style may change when the playing level advances so that a player might desire different racket properties as during beginning of playing padel tennis. However, buying new rackets regularly is expensive and requires an increased amount of resources. A racket comprising exchangeable elements so that the player is able to easily alter the characteristics or properties of the racket may reduce costs and provides more sustainable rackets.

[0068] The kit of parts may comprise: a core body; and a holder for rimming at least a part of the core body; wherein at least a part of the core body and the holder are configured to be connected to one another to form at least a part of a blade of the racket; wherein, the blade has a first blade side having a first composition and a second blade side having a second composition.

[0069] The holder and the core body may respectively be shaped so as to be mated and/or connected with one another and/or coupled to one another so as to form at least a part of a blade of a racket for padel tennis. Specifically, the holder and the core body may form or comprise a connecting structure allowing connecting and/or mating and/or coupling. In particular, connecting the core body with the holder may be achieved by form closure and/or form fit and/or form lock and/or by adhesive bond. The connecting and/or mating and/or coupling may be substantially reversible or substantially irreversible. Reversible means that the core body and the holder may be separated substantially without destruction of the core body and the holder.

[0070] Preferably, the second composition of the second blade side is different to the first composition of the first blade side so that the racket has different characteristics on opposite sides of the blade.

[0071] The disclosure referring to a racket for padel tennis according to an aspect of the present invention also applies to the kit of parts, which may comprise the same or corresponding components and/or elements and/or parts of a racket.

[0072] In particular, the first blade side may comprise a first section of the core body and a first laminate structure, wherein the first laminate structure covers at least a part of the first section of the core body; and the second blade side may comprise a second section of the core body and a second laminate structure, wherein the second laminate structure covers at least a part of the second section of the core body, and the first laminate structure is different to the second laminate structure. As described above with respect to a racket, a laminate structure may comprise at least one laminate material such as carbon fiber, fiberglass or graphene and one or more layers of laminate material.

[0073] In the kit of parts, the core body may be separate and/or individual of the holder before connecting with the holder. The core body may be laminated, i.e., wrapped and/or covered by at least one laminate structure. The core body may be covered on one side by a first laminate structure and on an opposite side by a second laminate structure.

[0074] The first blade side of the formed and/or assembled racket for padel tennis may comprise a first ball contact surface; and the second blade side of the formed and/or assembled racket may comprise a second ball contact surface; wherein the first ball contact surface and the second ball contact surface respectively form the outermost surface on opposite sides of the blade.

[0075] In particular, the first ball contact surface may be constituted and/or formed by the outer surface of one side of the laminated core body and/or of the first laminate structure and/or by an additional top layer positioned as outermost layer on one side of the blade and/or of the laminated core body. The second ball contact surface may be constituted and/or formed by the outer surface of an opposing side of the laminated core body and/or of the second laminate structure and/or by a top layer positioned as outermost layer on the other side of the blade and/or of the laminated core body.

[0076] Optionally, the first ball contact surface is different to the second ball contact surface so that the composition of the first blade side and the second blade side differs in at least the respective ball contact surfaces.

[0077] The first blade side may comprise a first intermediate layer between the core body and the first ball contact surface. Alternatively, or in addition, the second blade side may comprise a second intermediate layer between the core body and the second ball contact surface. The second intermediate layer may be different to the first intermediate layer.

[0078] One or more intermediate layers may be provided between the core body and a laminate structure. Alternatively or in addition, one or more intermediate layers may be provided on an outward facing side of the laminate structure. In this case, the one or more intermediate layers may be in the kit of parts separate to the laminated core body or already attached to the laminated core body.

[0079] The kit of parts may comprise a core body, wherein the core body comprises: a first core body element; and a second core body element, wherein the second core body element is different to the first core body element; wherein the first blade side comprises the first core body element and the second blade side comprises the second core body element. In this example, at least two individual core body elements separate from each other may be comprised by the kit of parts, wherein both core body elements and the holder may be connected and/or mated and/or coupled to one another as to form at least a part of a blade of a racket. Specifically, the first core body element may be configured to be connected to the second core body element and/or to the holder. Alternatively or in addition, the second core body element may be configured to be connected to the first core body element and/or to the holder.

[0080] As another example, one of the first core body element and the second core body element may be integrally formed with the holder and/or integrally bonded to the holder. In other words, only one of the first core body element and the second core body element may be provided individually and/or separately in the kit of parts to be handled by the customer or player. The other one of the core body elements is configured to be connected and/or coupled to the holder and/or the other one of the core body elements by the customer or player. This is particularly advantageous as increased stability is obtained by integrally laminating the holder with one of the core body elements. On the other hand, only one of the core body elements may be changed and/or customized.

[0081] In any case, the first core body element and the second core body element may comprise and/or consist of the same or different materials such as EVA rubber or PET foam. Alternatively, or in addition, the first core body element and the second core body element may be covered with the same or a different laminate structure. Thus, the first blade side and the second blade side may comprise the same or a different composition.

[0082] A core body element may comprise different core body element sides having different compositions. Thus, depending on the orientation of the core body element in the holder, different playing characteristics may be obtained. This is particularly advantageous in case the other core body element is integrally formed with the holder because this way, the characteristics of the racket may be changed without replacing a part, i.e., merely by rotating the connectable core body element.

[0083] Another aspect relates to a kit of parts for forming at least a part of a racket for padel tennis, the kit comprising: a first core body element and a first holder element, wherein the first holder element rims at least a part of the first core body element and is integrally formed with the first core body element; and a second core body element and a second holder element, wherein the second holder element rims at least a part of the second core body element and is integrally formed with the second core body element.

[0084] Thus, the kit of parts essentially comprises separate blade segments that may be coupled together, preferably with respective coupling surfaces substantially parallel to one another and to a ball contact surface, to form at least a part of a blade wherein: the first core body element and the first holder are configured to be connected to the second core body element and the second holder element to form at least a part of a blade of the racket; the first blade side comprises the first core body element and the first holder element and the second blade side comprises the second core body element and the second holder element.

[0085] In other words, the blade comprises the first core body element and the first holder element positioned on top of the second core body element and the second holder element. Due to the respective integral configuration, the link between the first core body element and the first holder element is superior. The same applies for the link between the second core body element and the second holder element. Thus, forces may be transferred more effectively between said parts comparted to reversibly or irreversibly couplable core body elements and holders/holder elements assembled by a customer or player.

[0086] Preferably, the blade comprises a first blade side having a first composition and a second blade side having a second composition different to the first composition of the first blade side. The different composition and, as a consequence, a different property and/or characteristic of the blade sides, may be obtained by one or more of the optional features as laid out in the following.

[0087] For example, the first blade side may comprise a first laminate structure, the first laminate structure covers at least a part of the first core body element; and the second blade side may comprise a second laminate structure, the second laminate structure covers at least a part of the second core body element; and the first laminate structure is different to the second laminate structure. Examples and possible properties of a laminate structure is described above with respect to a racket according to the invention.

[0088] The first blade side may comprise a first ball contact surface; the second blade side may comprise a second ball contact surface; wherein the first ball contact surface and the second ball contact surface form the outermost surface of the blade, i.e., of the first blade side and the second blade side.

[0089] Optionally, the first ball contact surface is different to the second ball contact surface, thereby obtaining a different composition of the first blade side and the sec-

ond blade side. Examples and properties of a ball contact surface is described above with respect to a racket according to the invention.

[0090] The first blade side may comprise a first intermediate layer, the first intermediate layer may be positioned between the first core body element and the first ball contact surface, e.g., between the first core body element and a first laminate structure or between the first laminate structure and a top layer constituting the first ball contact surface, the second blade side comprises a second intermediate layer, the second intermediate layer is positioned between the second core body element and the second ball contact surface of the second blade side, e.g., between the second core body element and a second laminate structure or between the first laminate structure and a top layer constituting the second ball contact surface.

[0091] Optionally, the second intermediate layer is different to the first intermediate layer. Alternatively or in addition, the first blade side may comprise a different number of intermediate layers than the second blade side or the position of one or more intermediate layers may be different.

[0092] The first blade side may comprise a first hole pattern; and the second blade side may comprise a second hole pattern. Optionally, the second hole pattern of the second blade side may be different to the first hole pattern of the first blade side. Holes and/or openings in the core body or the core body element may alter the characteristic of the blade as described above with respect to a racket according to the invention.

[0093] The kit of parts may further comprise a handle. The handle may be integrally formed with the holder, respectively with a first holder element and/or a second holder element. Alternatively, the handle may be configured to be connected to the holder, respectively, to the first holder element and/or the second holder element.

[0094] The holder and the handle may form at least a part of a frame of the racket.

[0095] Another aspect of the invention relates to use of a holder for forming at least a part of a racket for padel tennis by receiving at least a part of a core body, wherein the holder and the core body form at least a part of a blade of the racket; and wherein the holder is configured to rim at least a part of the core body; and wherein the core body is at least partially covered and/or wrapped by at least one substantially cured laminate structure prior to being received by the holder.

[0096] The holder is preferably configured to receive and rim and/or surround a core body in order to form at least a part of a blade of a racket. In particular, the holder is advantageously configured to receive and/or be coupled with a plurality of core bodies, wherein the core bodies have a different composition. This way, the holder may be used for forming different rackets having different playing characteristics and/or properties.

[0097] Another aspect of the invention relates to use of a core body for forming at least a part of a racket for padel tennis by connecting with a holder, wherein the core body and the holder form at least a part of a blade of the padel racket; and wherein the holder is configured to rim at least a part of the core body; and wherein the core body is at least partially covered and/or wrapped by at least one substantially cured laminate structure prior to being received by the holder.

[0098] The core body is preferably configured to be coupled with a plurality of holders, wherein the holders have different compositions. This way, the core body may be used for forming different rackets having different playing characteristics and/or properties.

[0099] The core body may comprise a first core body element and a second core body element; wherein the first core body element is at least partially covered by a first laminate structure and the second core body element is at least partially covered by a second laminate structure. The core body may comprise or be composed of a first and a second core body element, each covered by a laminate structure. The laminate structure may be identical or different. The first core body element may be identical or different to the second core body element. One or both of the core body elements may be replaced in order to alter the composition of the blade and/or of the racket so as to obtain a versatile and easily customizable racket.

[0100] Another aspect of the invention relates to a method of manufacturing a racket for padel tennis according to a customer's specification, the method comprising the steps of: selecting, by a customer, composition properties of the racket, the composition properties including at least a holder and a core body; and producing, by a producer, a racket for padel tennis, the racket having a blade, the blade comprising the holder and the core body selected by the customer. This way, a customer may specify one or more properties and/or specifications of the customized racket.

[0101] In particular for advanced players, an off-the-shelf racket might not have the desired properties for the particular playing style. Therefore, a racket with properties selected by the customer may further improve the player's level.

[0102] Preferably, the customer may select the composition properties of the racket through a user interface, e.g., on a website or in a smartphone application. Upon completion of the selected racket properties, the producer may manufacture a customized racket according to the selected racket properties.

[0103] The method may further comprise the step of: selecting, by the customer, further composition properties of the racket including a laminate structure. In particular, the customer may select the laminate material, e.g., fiberglass, carbon fiber or Kevlar, and/or mix of laminate materials.

[0104] Accordingly, the producing by the producer may comprise: arranging, by the producer, the holder and the core body element so that the holder rims at least a part of the core body; and covering at least a part of the holder

and the core body with the laminate structure selected by the customer.

[0105] The core body may comprise or consist of a first core body element and a second core body element, which the customer may select as part of the composition properties. Accordingly, the method for producing the racket may further comprise the steps of: arranging the holder, the first core body element, the second core body element so that the holder rims at least a part of the first core body element and the second core body element, wherein the first core body element and the second core body element are positioned in a stacked manner; covering at least a part of the holder and the first core body element and the second core body element with at least one laminate structure.

[0106] The customer my select a ball contact surface as part of the composition properties.

[0107] Preferably, the customer may select a first ball contact surface of a first blade side and a second ball contact surface of a second blade side. Accordingly, the method for producing the racket may further comprise step of: placing a top layer on the outer surface of the laminate structure, wherein the top layer corresponds to the selected ball contact surface.

[0108] The customer my select a hole pattern as part of the composition properties. Preferably, the customer may select a first hole pattern of a first blade side and a second hole pattern of a second blade side. Accordingly, the method for producing the racket may further comprise step of: forming the hole pattern(s) into the blade, wherein the hole pattern(s) correspond(s) to the selected hole pattern(s).

[0109] The present invention is further explained in detail by the following detailed description and the appended drawings, in which particular embodiments are illustrated by way of example, wherein the present invention is in no way limited by these particular embodiments.

Brief description of the drawings

[0110]

Fig. 1 shows an exemplary racket for padel tennis, which blade has a core body comprising a first core body element and a second core body element;

Fig. 2 shows exemplary ball contact surfaces of a racket for padel tennis;

Fig. 3 shows cross-sections of different blades of exemplary rackets for padel tennis, wherein the blades have a first blade side and a second blade side with different compositions;

Fig. 4 shows exemplary holes in a blade of a racket;

Fig. 5 shows an exemplary kit of parts for forming a racket for padel tennis;

Fig. 6 shows cross-sections of different blades of rackets for padel tennis formed by exemplary kits of parts.

Description of exemplary embodiments

[0111] Fig. 1 shows an exemplary racket 1 for padel tennis, which blade 2 has a core body 4 comprising a first core body element 4a and a second core body element 4b. A respective racket 1 corresponds to an exemplary solution according to the present invention, namely a racket 1 for padel tennis which has a first blade side 2a having a different composition than a second blade side 2b.

[0112] The shown racket 1 comprises a frame 8, which comprises a handle 9 and a holder 6. The holder 6 is configured to rim and/or surround the core body 4, more specifically, at least a part of the first core body element 4a and a part of the second core body element 4b in this example.

[0113] The blade 2 of the shown racket 1 has a substantially round outline. However, blades 2 of other exemplary rackets 1 may have a tear-shaped or diamond-shaped outline. The shape of the blade 2 may substantially be defined by the shape of the holder 6.

[0114] The blade may be between approximately 25 mm to approximately 40 mm thick and may have a width and length of between approximately 20 cm to approximately 30 cm.

[0115] The core body 4 comprising the first core body element 4a and the second core body element 4b are provided in the space within the holder 6.

[0116] The first core body element 4a and the second core body element 4b preferably comprise or consist of different materials. For example, the first core body element 4a may comprise or consist of soft EVA rubber and the second core body element 4b may comprise or consist of hard EVA rubber. By this, a first blade side 2a comprising the first core body element 4a comprises a different composition and, thus, different characteristics and/or properties, than a second blade side 2b comprising the second core body element 4b. More specifically, in this particular example, the first blade side 2a with or out of soft EVA rubber provides comfort and control while the second blade side 2b with or out of hard EVA rubber provides a firm feel alongside increased power.

[0117] Consequently, the exemplary racket 1 provides two different blade sides 2a, 2b having different compositions and, thus, playing characteristics the player may choose from during a match by a corresponding handling of the racket 1.

[0118] The core body 4 respectively the first core body element 4a and the core body element 4b of exemplary rackets may comprise or consist of EVA (Ethylene Vinyl Acetate) rubber or PET (Polyethylene) foam. Said materials may have in different densities, which influence the

feel and/or touch of a racket 1. In particular, different materials provide different characteristics and/or properties of the racket 1, e.g., ball bounce, shot power and damping.

[0119] Different combinations of materials of the first core body element 4a and the second core body element 4b may be used for obtaining different specific racket characteristics and/or properties.

[0120] The first core body element 4a and the second core body element 4b may be produced separately and joined subsequently, e.g., produced prior and joined during manufacturing of the racket 1. As an alternative, the first core body element 4a and the second core body element 4b may be produced substantially simultaneously and/or in subsequent productions steps and/or in a single mold. The core body elements 4a, 4b may be joined and/or coupled to one another directly or with one or more coupling layers and/or coupling bodies therebetween.

[0121] Preferably, a laminate structure 14 is provided, which covers and/or wraps at least a part of the core body 4 and, advantageously, a least a part of the holder 6. The laminate structure 14 may be a composite material comprising one or more layers of carbon fiber, fiberglass or Kevlar and a resin, e.g., epoxy. Exemplary materials and layer configurations are described above.

[0122] The blade 2 of the racket 1 comprises a ball contact surface 10 on either side of the blade 2. The ball contact surfaces 10a on the first blade side 2a may be different to the ball contact surface 10b on the second blade side 2b. The ball contact surface 10 may be formed at least partially by the outer surface of the laminate structure 14 and/or by a top layer 12 as outermost layer of the blade 2.

[0123] The ball contact surface 10 defines the part of the blade with which a ball is hit and/or played during a controlled shot. The ball contact surface 10 may be larger in diameter than the core body 14. Thus, the ball contact surface 10 may extend over a part of the holder 6, which is described in more detail with respect to figure 3.

[0124] The ball contact surface 10 may comprise a texture and/or protuberances and/or may have a roughness over at least a part of its area. Alternatively, or in addition, the ball contact surface 10 may be sleek, at least in parts of its area.

[0125] Fig. 2 shows exemplary ball contact surfaces 10 of a racket 1 for padel tennis, wherein the ball contact surfaces 10 comprise different protuberances 11. The shown protuberances 11 include a star-shaped protuberance 11, protuberances 11 in a honeycomb shape and forming a net, linear protuberances 11 positioned with a distance to one another, wherein three protuberances 11 form a triangle, and linear protuberances aligned substantially parallel to one another with a slightly curved section.

[0126] A ball contact surface 10 of a blade 2 may comprise identical, similar or different protuberances 11 as shown in Fig. 2 and described above. Protuberances 11 generally allow more spin to be transferred to the ball. The same applies for a ball contact surface 10, which is rough, e.g., like sandpaper, or which comprises roughened areas.

[0127] Alternatively, or in addition, a ball contact surface 10 may be sleek or comprise sleek areas.

[0128] Another exemplary ball contact surface 10 may comprise a plurality of rectangular or lengthy protuberances 11 aligned along a plurality of substantially parallel lines at least in a central area of the racket 1. Advantageously, the lines may be spaced apart from each other by approximately 1 mm to 5 mm and oriented diagonally, e.g., in an angle of between 10° to 50° with respect to a line rectangular to the orientation of the handle 9 of the racket 1. This way, the player may apply a great amount of spin to the ball. A respective or similar ball contact surface 10 is particularly advantageous for the forehand side of the racket 1.

[0129] Depending on the preferred smash style of a player, the angle of the lines may vary so that the protuberances 11 and/or lines are preferably oriented substantially orthogonal to the swinging plane of the racket 1 when hitting a ball during a smash. For example, a smaller angle may be advantageous for increased slice or side spin, in particular when hitting the ball more to the side of the body, whereas a larger angle may be advantageous for increased top spin, in particular when hitting the ball more above the body.

[0130] Fig. 2 further shows holes 20 in the blade 2, which extend through the ball contact surface 10, through the laminate structure 14 and through at least a part of the core body 4. Different parameters of holes 20 is described with respect to Fig. 4.

[0131] Fig. 3 shows cross-sections of different blades 2 of exemplary rackets 1 for padel tennis, wherein the blades 2 have a first blade side 2a and a second blade 2b side with different compositions.

[0132] In Fig. 3 a), the blade 2 comprises a core body 4, wherein the core body 4 comprises a first core body element 4a and a second core body element 4b. Preferably, the core body elements 4a and 4b each comprise or consist of different materials so that the characteristics of the first blade side 2a comprising the first core body element 4a is different to the characteristics of the second blade side 2b comprising the second core body element 4b.

[0133] In the blade 2 of Fig. 3 a), a laminate structure 14 is, preferably substantially uniformly and/or evenly, covering the holder 6 and the core body elements 4a and 4b in order to provide an integral blade having advantageous uniformity and robustness. The laminate structure 14 may comprise for example carbon fiber. Preferably, the first core body element 4a, the second core body element 4b and the holder 6 are coupled to one another by an adhesive bond in order to obtain a more resilient and robust blade 2.

[0134] The first blade side 2a and the se"ond ’lade side 2b of the exemplary blade 2 each comprise a top layer

12, which are provided on the respective outfacing sides of the laminate structure 14. The outer surface of the top layer 12 of the first blade side 2a forms the ball contact surface 10a of the first blade side 2a. The outer surface of the top layer 12 of the second blade side 2b forms the ball contact surface 10b of the second blade side 2b. In this particular example, the top layers 12 of the first blade side 2a and of the second blade side 2b are identical.

[0135] Thus, the different compositions of the first blade side 2a and the second blade side 2b of this exemplary blade 2 result only through different materials of the first core body element 4a and the second core body element 4b.

[0136] The blade 2 of Fig. 3 b) comprises a first core body element 4a and a second core body element 4b, which may comprise or consist of different materials. The first core body element 4a and the second core body element 4b may have substantially the same thickness or may have a different thickness.

[0137] In contrast to the blade 2 of Fig. 3 a), there is a first laminate structure 14a covering the first core body element 4a and a second laminate structure 14b covering the second core body element 4b, wherein the first laminate structure 14a is different to the second laminate structure 14b. Thus, the different composition, and therefore, different characteristics and/or properties, of the first blade side 2a and the second blade side 2b at least partly arises from the laminate structure 14 of the blade 2.

[0138] For example, the first laminate structure 14a comprises a percentage of above 80% carbon fiber, wherein the second laminate structure 14b comprises no or a percentage of below 20% carbon fiber. Thus, the second blade side 2b may provide a softer and more balanced feel than the first blade side 2a, irrespective of the materials of the first core body element 4a and the second core body element 4b.

[0139] As can be seen in Fig. 3 b), the first laminate structure 14a and the second laminate structure 14b extend over a part of the holder 6. Preferably, the first laminate structure 14a and the second laminate structure 14b form a joint, wherein the laminate structures 14a, 14b may overlap and/or contact each other or are placed edge to edge. This way, an improved rigidity and force transfer to the holder 6 and, further to the frame 8, can be achieved.

[0140] In addition, the first blade side 2a comprises a top layer 12 constituting a substantially sleek ball contact surface 10a of the first blade 2a. In contrast, the second blade side 2b comprises a top layer 12 comprising a plurality of protuberances 11 so that more spin can be transferred to the ball by its ball contact surface 10b. Thus, the different composition, and therefore, different characteristics and/or properties, of the first blade side 2a and the second blade side 2b at least partially arises from the ball contact surfaces 10a and 10b of the blade 2.

[0141] As can be seen in Figs. 3 a) and b), the top layer 12 is preferably provided over the entire core body 4 and extending over the outline of the core body 4 further over an adjacent part of the holder 6, in particular over the part of the holder 6, which is substantially flat. This way, the characteristic caused by the top layer 12 also influences the ball when hit in the area of the holder 6.

[0142] The exemplary blade 2 of Fig. 3 c) comprises a uniform core body 4. The core body 4 and the holder 6 are wrapped by a substantially uniform laminate structure 14.

[0143] However, the first blade side 2a comprises an intermediate layer 16, e.g., comprising or consisting of a rubber sheet, on an outer side of the laminate structure 14, wherein the second blade side 2b comprises no intermediate layer 16. Thus, the first blade side 2a comprises greater damping and/or absorption than the second blade side 2b without an intermediate layer 16.

[0144] In addition, the first blade side 2a comprises a top layer 12 forming a rough ball contact surface 10a. In contrast, the second blade side 2b comprises a top layer 12 with protuberances 11, e.g., having a hexagonal shape and forming a net as shown in Fig. 2. Thus, in particular the characteristics of the first blade side 2a and the second blade side 2b with respect to applying ball spin is different.

[0145] Fig. 3 d) shows a blade 2 comprising a core body 4 with a first core body element 4a and a second core body element 4b, which may comprise or consist of different materials. The core body element 4a, 4b and the holder 6 are covered and/or enwrapped by a laminate structure 14. However, an intermediate layer 14 is provided at the first blade side 2a between the first core body element 4a and the laminate structure 14.

[0146] In addition, the second blade side 2b comprises a top layer 12 forming the ball contact surface 10b, whereas at the first blade side 2a, the ball contact surface 10a is formed by the outer surface of the laminate structure 14. The ball contact surface 10a may be structured or sleek depending on the corresponding surface of the mold used for manufacturing of the blade 2.

[0147] It is emphasized that the blades 2 shown in Figs. 3 a) to d) are merely examples illustrating possible variations with respect to the core body 4, the laminate structure 14, the ball contact surface 10, a top layer 12 and an intermediate layer 16. It is particularly pointed out that rackets 1 according to the invention may comprise any combination of said variations. For example, a racket 1 according to the invention may comprise the core body 4 of Fig. 3 c), the laminate structure 14 of Fig. 3 b), the intermediate layer 16 of Fig. 3 d) and the top layers 12 of Fig. 3 a).

[0148] The shown and described variations particularly describe possible composition properties selectable by a customer for a customized racket. More specifically, the composition properties selectable by a customer may include one or more of the following:

- material of the core body 4 or material of a first core body 4a and material of a second core body 4b and respective thicknesses;

- material(s) and/or thickness and/or grammage and/or webbing of the laminate structure 14 or of the first laminate structure 14a and the second laminate structure 14b;
- number and/or thickness and/or material and/or position of intermediate layers;
- structure of ball contact surfaces 10 and/or provision of a top layer 12;
- number and/or pattern and/or diameter and/or form of holes 20.

[0149] Fig. 4 shows exemplary holes 20 in a blade 2 of a racket 1. The exemplary racket 1 may have a blade 2 with a substantially uniform core body 4 or a core body 4 comprising a first core body element 4a and a second core body element 4b as illustrated.

[0150] The exemplary holes 20a to 20f differ in particular with respect to their depth, diameter and/or shape. Holes 20 being different have varying impact on the characteristics and/or properties of the blade 2.

[0151] The exemplary hole 20a has a cylinder form and extends through the entire blade 2, i.e., from the first ball contact surface 10a of the first blade side 2a to the second ball contact surface 10b of the second blade side 10b. This kind of hole is regularly used in rackets for padel tennis. The holes may have a diameter between approximately 2 mm and 15 mm, preferably between 9 mm and 13 mm.

[0152] Their main purpose of through holes as the hole 20a is to reduce air resistance of the racket 1 during swinging because air can flow through the hole 20a. However, they also have an impact on the characteristics of the padel because they remove material, in particular from the laminate structure 14 and of the core body 4. Thus, the blade 2 has a different behavior upon impact of a ball compared to when no or less holes 20 or holes 20 with a different diameter are provided.

[0153] However, the exemplary hole 20a does not cause a different composition of the first blade side 2a compared to the second blade side 2b.

[0154] In contrast, hole 20b is only provided on the first blade side 2a. Thus, even if the core body elements 4a and 4b would be identical, the first blade side 2a would have a different composition to the second blade side 2b due to hole 20b and, therefore, different characteristics and/or properties.

[0155] A hole 20c may extend through only a part of the core body 4 or a part of a core body element 4a/4b.

[0156] Compared to hole 20a, holes 20b and 20c do not reduce air resistance of the racket 1. Thus, such holes 20b, 20c may advantageously be provided only in certain areas of the blade 2, for example in a central area, and/or in combination with through holes such as hole 20a.

[0157] Hole 20d is a through hole but with same shape but different diameters in the first core body element 2a and the second core body element 2b. This hole 20d is particularly advantageous if the blade 2 comprises a uniform core body 4 and different compositions of the first blade side 2a and the second blade side 2b shall be obtained by forming of holes 20.

[0158] Hole 20e is also a through hole but with a not uniform diameter. In this example, hole 20e has a cone shape and/or tapering diameter. Cone shaped holes such as hole 20e may be particularly formed only using one drilling bit or drilling working step, compared to hole 20d, which might require two separate drilling or forming steps.

[0159] Similarly, hole 20f has a cone shape on one blade side 2b and a cylindrical shape on the other blade side 2a.

[0160] Apart from the shape and/or form of holes 20, the pattern 18 in which holes 20 are provided also influences the characteristics of the blade 2. For example, a great number of holes 20 influences the blade 2 to a greater extend than a lesser number. The same applies with respect to distances between the holes 20 and their respective diameter. Also, the positions of holes 20 over the area of the blade 2 has an impact on its properties. For example, holes 20 at the center of the blade 2 may have a greater influence than holes 20 closer to the holder 6.

[0161] Fig. 5 shows an exemplary kit of parts for forming a racket 1 for padel tennis. The kit of parts can comprise different parts of a racket 1. For example, the kit of parts comprises a holder 6, which may be part of a frame 8, and a core body 4. In the shown example, the kit of parts comprises a first core body element 4a and a second core body element 4b.

[0162] The core body elements 4a, 4b are configured to be mated with and/or coupled to the holder 6, thereby forming at least a part of a blade 2 of the racket 1. This way, a customer may assemble a racket 1 by joining and/or coupling the core body elements 4a, 4b with the holder 6. Also, if substantially reversibly coupled, parts of the racket 1 may be exchanged due to a defect or if desired preferences of racket characteristics change. This way, not the entire racket 1 has to be replaced, thereby improving sustainability and versatility.

[0163] Preferably, the core body elements 4a, 4b respectively are covered by at least one laminate structure 14, at least on the side facing outwards. This way, the core body elements 4a, 4b are "ready to use" and do not have to be finished, e.g., laminated, by the customer.

[0164] The core body elements 4a, 4b are preferably configured to be substantially rigidly and/or firmly attached and/or coupled to one another and/or to the holder 6. An adhesive bond and/or form closure and/or form fit and/or form lock is advantageous for attaching the respective parts.

[0165] Alternatively or in addition, a bracket 22 and/or connection element may be provided for coupling the core body elements 4a, 4b and the holder 6. The bracket 22 may be comprised by the kit of parts. The bracket 22 may comprise an elongated sheet of metal. The bracket 22 may be configured and/or shaped so as to surround and/or cuff at least a part of blade 2, in particular the

holder 6. The bracket 22 may have a shape corresponding to the holder 6 and covering an outer face of the holder 6. The holder 6 may comprise a recess and/or pocket for receiving the bracket 22.

[0166] The bracket 22 may comprise coupling means 24 for coupling and/or attaching the bracket 22 to the holder 6 and/or to the core body 4. A coupling means 24 may be for example a screw or a rivet or a hook. Preferably, at least two coupling means 24 are provided on opposing end parts of the bracket 22 with which the bracket 22 is coupled with the holder 6 and/or which may extend through openings in the holder 6. The bracket 22 may be directly coupled to the core body element(s) 4, 4a, 4b or through one or more coupling means 24. The core body element 4, 4a, 4b may comprise corresponding counterparts 26, such as e.g., threads or reinforced anchor parts, with which coupling means 24 may engage. Preferably, the coupling is nondestructively detachable so that it allows replacement of parts of the racket 1.

[0167] The kit of parts may further comprise a top layer 12 for one or both blade sides 2a and 2b for application onto the first core body element 4a and the second core body element 4b respectively, for forming the ball contact surfaces 10 of the blade 2. The top layer 12 may provide a structured or sleek ball contact surface 10. The top layer 12 may be preferably attached via adhesive bond by the customer. Alternatively, the top layer 12 may be attached to the respective core body element 4a, 4b before being provided to the customer.

[0168] Optionally, the top layer 12 may have a graphic or design feature for customizing the look of the racket.

[0169] The kit of parts may further comprise a handle 9. The handle 9 may be integrally formed with the holder 6 or may be configured to be connected to the holder 6. The holder 6 and the handle 9 may form the frame 8 of the racket 1.

[0170] The components of kits of parts according to one aspect of the invention may be identical to the corresponding components and/or elements of rackets according to another aspect of the invention.

[0171] Fig. 6 shows cross-sections of different blades 2 of rackets 1 for padel tennis formed by exemplary kits of parts.

[0172] Fig. 6 a) shows a blade 2 assembled from a kit of parts, which comprises a first core body element 4a and a second core body element 4b as well as a holder 6. The material and/or thickness of the core body elements 4a, 4b may be different or identical.

[0173] The first core body element 4a is at least partially covered by a first laminate structure 14a and the second core body element 4b is at east partially covered by a second laminate structure 14b.

[0174] The customer may assemble the blade 2 of the racket by substantially irreversibly coupling the core body elements 4a, 4b with the holder 6, e.g., by an adhesive bond. Alternatively, the coupling may be substantially reversible without destruction of the respective parts. This is particularly advantageous so that parts of the assembled racket 1 may easily be replaced.

[0175] Optionally, the first blade side 2a, which comprises a part of the holder 6 and the first core body element 4a covered by the first laminate structure 14a, may further comprise a top layer 12. The top layer 12 may constitute and/or form the first ball contact surface 10a of the first blade side 2a. The top layer 12 may be provided separately to the customer or may be attached on top of the first laminate structure 14a before provided to the customer. Accordingly, the second blade side 2b, which comprises another part of the holder 6 and the second core body element 4b covered by the second laminate structure 14b, may further comprise another top layer 12, which may be attached by the customer or may be pre-attached.

[0176] As shown in Fig. 6 a), the holder 6 may be covered by a laminate material for increased stability and/or enhanced optical appearance.

[0177] The blade 2 shown in Fig. 6 b) is formed by a kit of parts comprising a holder 6, a first core body element 4a and a second core body element 4b. In this example, the second core body 4b is bonded and/or substantially irreversibly coupled to the holder 6 and/or provided as a single, integral part to the customer. The customer may couple any first core body element 4a to the holder 6 and/or to the second core body element 4b, either substantially reversible or substantially irreversible.

[0178] Preferably, the second laminate structure 14b covers the second core body element 4b and substantially the entire outfacing side of the holder 6.

[0179] The blade 2 shown in Fig. 6 b) provides an increased rigidity compared to the blade 2 shown in Fig. 6 a), while still offering sufficient variations by selection of the second core body element 4b and possible top layers 12.

[0180] In this example, the first blade side 2b comprises a top layer 12 with a structured ball contact surface 10b, wherein the second blade side 2a comprises a top layer 12 having a sleek ball contact surface 10a. Also, the top layer 12 may be attached reversibly to allow changing by the customer in order to alter the characteristics if desired.

[0181] Optionally, the first core body element 4a may have a first side and a second side having different compositions, such as different laminate structures 14. Accordingly, the first core body element 4a may be attached in a first configuration or in a second configuration, wherein the second configuration is obtained by flipping over the first core body element 4a from the first configuration. This offers a further option for assembling the racket 1.

[0182] The blade 2 shown in Fig. 6 c) is assembled by components of a kit of parts comprising a holder 6, wherein the holder comprises a first holder element 6a and a second holder element 6b. The first holder element 6a and the second holder element 6b are configured to be coupled together in order to provide a resilient holder 6 for receiving a core body 4, which is also a component of the kit of parts.

[0183] In the shown example, the core body 4 comprises a first core body 4a and a second core body element 4b, which may be reversibly or irreversibly coupled to each other and/or to the holder 6.

[0184] A holder 6 comprising first holder elements 6a and second holder element 6b offers an even further customization variety. In particular, the first holder element 6a may be provided in correspondence to the height and/or thickness of the first core body element 4a and/or the second holder element 6b may be provided in correspondence to the height and/or thickness of the second core body element 4b.

[0185] The exemplary blade 2 shown in Fig. 6 d) may be assembled from a kit of parts comprising a first blade part, the first blade part comprising a substantially integrally coupled first holder element 6a and a first core body element 4a, and a second blade part, the second blade part comprising a substantially integrally coupled second holder element 6b and a second core body element 4b. This configuration is advantageous due to the relatively large coupling surface between said first part and said second part.

[0186] Also, the coupling between the first holder element 6a and the first core body element 4a is enhanced due to the first laminar structure 14a wrapping the first holder element 6a and the first core body element 6b substantially to the full extent. The same applies for the second holder element 6b and the second core body element 4b wrapped by the second laminate structure 14b.

[0187] Optionally, one or more top layers 12 may be comprised by the kit of parts or may be pre-attached.

[0188] Fig. 6 d) shows an exemplary bracket 22 being connected to the outer side of the holder 6, e.g., as described with respect to Fig. 5. In the particular example of Fig. 6 d), the bracket 22 connects the first holder element 6a and the second holder element 6b. The bracket 22 may comprise a projecting part projecting from the side of the blade 2 to the first blade side 2a and/or the second blade side 2b. The projecting part of the bracket 22 may form a rimming part and/or boarder of the ball contact surface 10. The bracket 22 may couple the first blade side 2a and the second blade side 2b by exerting force on the blade sides 2a, 2b from opposite sides through the projecting part(s) and/or substantially prohibits a relative movement of the blade sides 2a, 2b.

[0189] In a kit of parts and/or a racket 1 assembled from a kit of parts which comprises a holder 6 couplable to a core body element 4 or core body elements 4a, 4b, the bracket 22 may extend on the ball contact surface(s) 10 further toward the center of the blade 2 so that it covers a gap and/or joint between the holder 6 and the core body 4/core bodies 4a, 4b and holds the parts forming the blade 2 substantially rigidly connected by substantially prohibiting relative movement of said parts, in particular of the holder 6 and the core body element(s) 4, 4a, 4b.

[0190] It is emphasized that the kits of parts for assembling the blades 2 shown in Figs. 6 a) to d) are merely examples illustrating possible variations of respective kit of parts. It is particularly pointed out that kits of parts according to the invention may comprise any combination of said variations with respect to the core body 4, the holder, the laminate structure 14 as well as the ball contact surface 10, a top layer 12 and an intermediate layer 16.

[0191] The application may further relate to the following items:

Item 1. Kit of parts for forming of a racket (1) for padel tennis, the kit comprising:

a core body (4); and
a holder (6) for rimming at least a part of the core body (4);
wherein the core body (4) and the holder (6) are configured to be connected to one another to form at least a part of a blade of the racket (1); and
wherein the blade (2) has a first blade side (2a) having a first composition and a second blade side (2b) having a second composition different to the first composition of the first blade side (2a).

Item 2. Kit of parts of item 1, wherein:

the first blade side (2a) comprises a first section of the core body (4) and a first laminate structure (14a), wherein the first laminate structure (14a) covers at least a part of the first section of the core body (4);
the second blade side (2b) comprises a second section of the core body (4) and a second laminate structure (14b), wherein the second laminate structure (14b) covers at least a part of the second section of the core body (4), and
the first laminate structure (14a) is different to the second laminate structure (14b).

Item 3. Kit of parts of item 1 or 2, wherein:

the first blade side (2a) comprises a first ball contact surface (1 0a);
the second blade side (2b) comprises a second ball contact surface (1 0b);
wherein the first ball contact surface (10a) and the second ball contact surface (10b) respectively form the outermost surface on opposite sides of the blade (2).

Item 4. Kit of parts of item 3, wherein the first ball contact surface (1 0a) is different to the second ball contact surface (10b).

Item 5. Kit of parts of item 3 or 4, wherein:

the first blade side (2a) comprises a first intermediate layer (16) between the core body (4)

and the first ball contact surface (10a); and
the second blade side (2b) comprises a second intermediate layer (16) between the core body (4) and the second ball contact surface (10b);
wherein the second intermediate layer (16) is different to the first intermediate layer (16).

Item 6. Kit of parts of item 1, wherein:

the core body (4) comprises:

a first core body element (4a); and
a second core body element (4b), wherein the second core body element (4b) is different to the first core body element (4a);

the first blade side (2a) comprises the first core body element (4a) and the second blade side (2b) comprises the second core body element (4b); and
the first core body element (4a) is configured to be connected to the second core body element (4b) and/or to the holder (6); and/or
the second core body element (4b) is configured to be connected to the first core body element (4a) and/or to the holder (6).

Item 7. Kit of parts for forming of a racket (1) for padel tennis, the kit comprising:

a first core body element (4a) and a first holder element (6a), wherein the first holder element (6a) rims at least a part of the first core body element (4a) and is integrally formed with the first core body element (4a);
a second core body element (4b) and a second holder (6) element, wherein the second holder element (6b) rims at least a part of the second core body element (4b) and is integrally formed with the second core body element (4b);
wherein:

the first core body element (4a) and the first holder element (6a) are configured to be connected to the second core body element (4b) and the second holder element (6b) to form at least a part of a blade of the racket (1);
the blade (2) comprises a first blade side (2a) having a first composition and a second blade side (2b) having a second composition different to the first composition of the first blade side (2a); and
the first blade side (2a) comprises the first core body element (4a) and the first holder element (6a) and the second blade side (2b) comprises the second core body element (4b) and the second holder element (6b).

Item 8. Kit of parts of item 6 or 7, wherein:

the first blade side (2a) comprises a first laminate structure (14a), the first laminate structure (14a) covers at least a part of the first core body element (4a);
the second blade side (2b) comprises a second laminate structure (14b), the second laminate structure (14b) covers at least a part of the second core body element (4b); and
the first laminate structure (14a) is different to the second laminate structure (14b).

Item 9. Kit of parts of any one of items 6 to 8, wherein:

the first blade side (2a) comprises a first ball contact surface (1 0a);
the second blade side (2b) comprises a second ball contact surface (10b);
the first ball contact surface (10a) and the second ball contact surface (10b) respectively form the outermost surface of the first blade side (2a) and the second blade side (2b).

Item 10. Kit of parts of item 9, wherein the first ball contact surface (10a) is different to the second ball contact surface (10b).

Item 11. Kit of parts of item 8 or 9, wherein:

the first blade side (2a) comprises a first intermediate layer (16), the first intermediate layer (16) is positioned between the first core body element (4a) and the first ball contact surface (10a);
the second blade side (2b) comprises a second intermediate layer (16), the second intermediate layer (16) is positioned between the second core body element (4b) and the second ball contact surface (10b) of the second blade side (2b); and
the second intermediate layer (16) is different to the first intermediate layer (16).

Item 12. Kit of parts of any one of items 1 to 11, wherein:

the first blade side (2a) comprises a first hole pattern (18); and
the second blade side (2b) comprises a second hole pattern (18) different to the first hole pattern (18) of the first blade side (2a).

Item 13. Kit of parts of any one of items 1 to 12, further comprising a handle (9).

Item 14. Use of a holder (6) for assembling a racket (1) for padel tennis by receiving at least a part of a core body (4) by the holder (6), wherein the holder

(6) and the core body (4) form at least a part of a blade (2) of the racket (1) for padel tennis; and

wherein the holder (6) is configured to rim at least a part of the core body (4); and

wherein the core body (4) is at least partially covered by at least one laminate structure (14).

Item 15. Use of a core body for assembling a racket (1) for padel tennis by connecting the core body (4) with a holder (6), wherein the core body (4) and the holder (6) form at least a part of a blade (2) of the racket (1) for padel tennis; and

wherein the holder (6) is configured to rim at least a part of the core body (4); and

wherein the core body (4) is at least partially covered by at least one laminate structure (14).

Item 16. Use of item 13 or 14, wherein the core body (4) comprises a first core body element (4a) and a second core body element (4b); and
wherein the first core body element (4a) is at least partially covered by a first laminate structure (14a) and the second core body element (4b) is at least partially covered by a second laminate structure (14b).

List of Reference Numerals

[0192]

1	racket
2	blade
2a	first blade side
2b	second blade side
4	core body
4a	first core body element
4b	second core body element
6	holder
6a	first holder element
6b	second holder element
8	frame
9	handle
10	ball contact surface
10a	first ball contact surface
10b	second ball contact surface
11	protuberance
12	top layer
14	laminate structure
14a	first laminate structure
14b	second laminate structure
16	intermediate layer
18	hole pattern
20	hole
22	bracket
24	coupling means
26	counterpart

Claims

1. Racket (1) for padel tennis comprising:

a blade (2), which comprises:

a core body (4); and
a holder (6) for rimming at least a part of the core body (4),

wherein:

the blade (2) has a first blade side (2a) having a first composition and a second blade side (2b) having a second composition; and
the first composition of the first blade side (2a) is different to the second composition of the second blade side (2b).

2. Racket (1) of claim 1, wherein:

the core body (4) comprises:

a first core body element (4a); and
a second core body element (4b), wherein the second core body element (4b) is different to the first core body element (4a); and

the first blade side (2a) comprises the first core body element (4a) and the second blade side (2b) comprises the second core body element (4b); and, optionally,
wherein the first core body element (4a) has a first thickness and the second core body element (4b) has a second thickness greater or less than the first thickness and/or the first core body element (4a) comprises a first density and the second core body element (4b) comprises a second density greater or less than the first density.

3. Racket (1) of claim 2, wherein:

the first blade side (2a) comprises a first laminate structure (14a), the first laminate structure (14a) covers at least a part of the first core body element (4a);
the second blade side (2b) comprises a second laminate structure (14b), the second laminate structure (14b) covers at least a part of the second core body element (4b);
the second laminate structure (14b) is different to the first laminate structure (14a); and
the first laminate structure (14a) and the second laminate structure (14b) are on opposite sides

of the blade (2).

4. Racket (1) of claim 1, wherein:

the first blade side (2a) comprises a first section of the core body (4) and a first laminate structure (14a), wherein the first laminate structure (14a) covers at least a part of the first section of the core body (4); and
the second blade side (2b) comprises a second section of the core body (4) and a second laminate structure (14b), wherein the second laminate structure (14b) covers at least a part of the second section of the core body (4);
wherein:
the second laminate structure (14b) is different to the first laminate structure (14a).

5. Racket (1) of any one of the preceding claims, wherein:

the first blade side (2a) comprises a first ball contact surface (10a);
the second blade side (2b) comprises a second ball contact surface (10b);
wherein the first ball contact surface (10a) and the second ball contact surface (10b) respectively form the outermost surface on opposite sides of the blade (2).

6. Racket (1) of claim 5, wherein the first ball contact surface (2a) and/or the second ball contact surface (2b) comprises a plurality of protuberances (11) arranged in a pattern, optionally, wherein:

the protuberances (11) have a rectangular or round shape; and/or
the protuberances (11) have a diameter or length and/or width between approximately 1 mm and 10 mm; and/or
the protuberances (11) have a height between approximately 0.1 mm and 3 mm; and/or
the pattern is grid-like or round.

7. Racket (1) of claim 5 or 6, wherein the first ball contact surface (10a) is different to the second ball contact surface (10b).

8. Racket (1) of any one of claims 5 to 7, wherein:

the first blade side (2a) comprises a first intermediate layer (16) between the core body (4) and the first ball contact surface (10a); and
the second blade side (2b) comprises a second intermediate layer (16) between the core body (4) and the second ball contact surface (10b);
wherein the second intermediate layer (16) is different to the first intermediate layer (16).

9. Racket (1) of any one of the preceding claims, wherein:

the first blade side (2a) comprises a first hole pattern (18); and
the second blade side (2b) comprises a second hole pattern (18) different to the first hole pattern (18) of the first blade side (2a).

10. Kit of parts for forming of a racket (1) for padel tennis, the kit comprising:

a core body (4); and
a holder (6) for rimming at least a part of the core body (4);
wherein the core body (4) and the holder (6) are configured to be connected to one another to form at least a part of a blade of the racket (1); and
wherein the blade (2) has a first blade side (2a) having a first composition and a second blade side (2b) having a second composition different to the first composition of the first blade side (2a).

11. Kit of parts of claim 10, wherein:

the first blade side (2a) comprises a first section of the core body (4) and a first laminate structure (14a), wherein the first laminate structure (14a) covers at least a part of the first section of the core body (4);
the second blade side (2b) comprises a second section of the core body (4) and a second laminate structure (14b), wherein the second laminate structure (14b) covers at least a part of the second section of the core body (4), and
the first laminate structure (14a) is different to the second laminate structure (14b).

12. Kit of parts of claim 10 or 11, wherein:

the first blade side (2a) comprises a first ball contact surface (10a);
the second blade side (2b) comprises a second ball contact surface (10b);
wherein the first ball contact surface (10a) and the second ball contact surface (10b) respectively form the outermost surface on opposite sides of the blade (2); and, optionally,
wherein the first ball contact surface (10a) is different to the second ball contact surface (10b).

13. Kit of parts for forming of a racket (1) for padel tennis, the kit comprising:

a first core body element (4a) and a first holder element (6a), wherein the first holder element (6a) rims at least a part of the first core body

element (4a) and is integrally formed with the first core body element (4a);
a second core body element (4b) and a second holder (6) element, wherein the second holder element (6b) rims at least a part of the second core body element (4b) and is integrally formed with the second core body element (4b);
wherein:

the first core body element (4a) and the first holder element (6a) are configured to be connected to the second core body element (4b) and the second holder element (6b) to form at least a part of a blade of the racket (1);
the blade (2) comprises a first blade side (2a) having a first composition and a second blade side (2b) having a second composition different to the first composition of the first blade side (2a); and
the first blade side (2a) comprises the first core body element (4a) and the first holder element (6a) and the second blade side (2b) comprises the second core body element (4b) and the second holder element (6b).

14. Method of manufacturing a racket (1) for padel tennis according to a customer's specification, the method comprising the steps of:

selecting, by a customer, composition properties of the racket (1), the composition properties including a holder (6) and a core body; and
producing, by a producer, a racket (1) for padel tennis, the racket (1) having a blade (2), the blade (2) comprising the holder (6) and the core body selected by the customer.

15. Method of claim 14, wherein the method further comprising the steps of:

selecting, by the customer, a laminate structure (14); and
the producing by the producer comprises:

arranging, by the producer, the holder (6) and the core body (4) so that the holder (6) rims at least a part of the core body (4); and
covering at least a part of the holder (6) and the core body (4) with the laminate structure (14);
or

wherein the core body (4) comprises a first core body element (4a) and a second core body element (4b); and producing the racket (1) for padel tennis comprises the steps of:

arranging the holder (6), the first core body element (4a), the second core body element (4b) so that the holder (6) rims at least a part of the first core body element (4a) and the second core body element (4b), wherein the first core body element (4a) and the second core body element (4b) are positioned in a stacked manner;
covering at least a part of the holder (6) and the first core body element (4a) and the second core body element (4b) with at least one laminate structure (14).

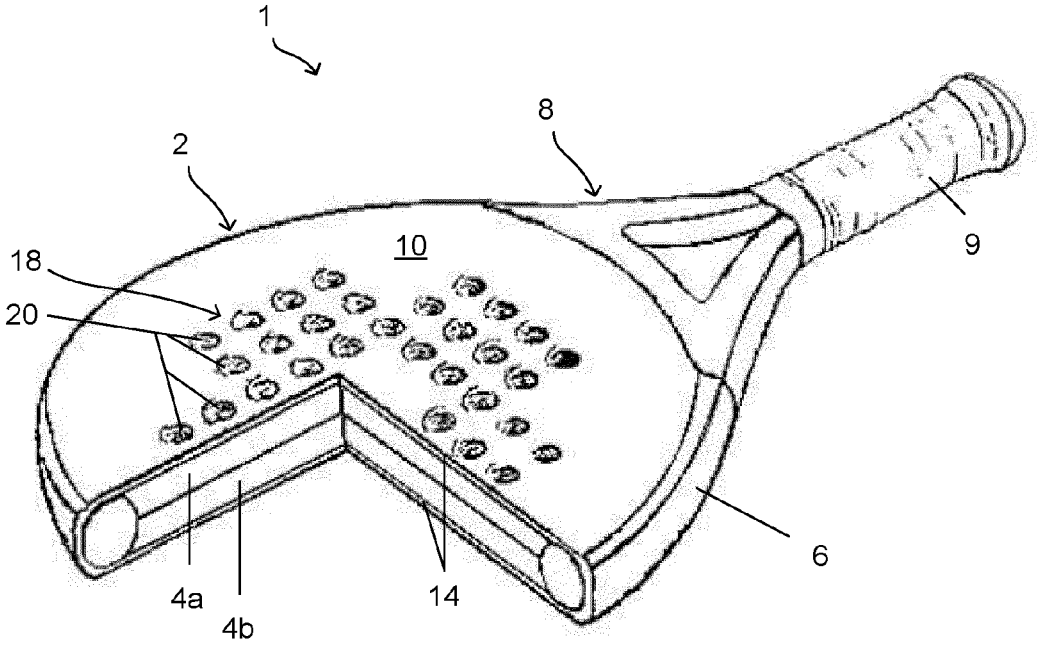


Fig. 1

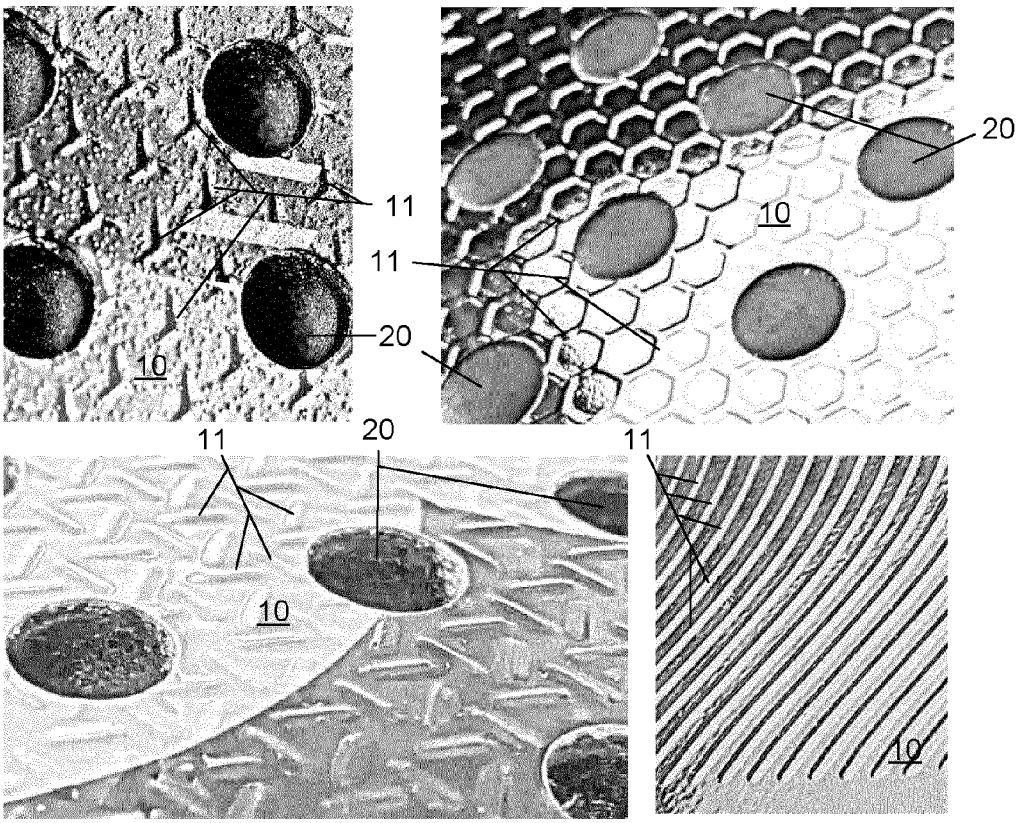
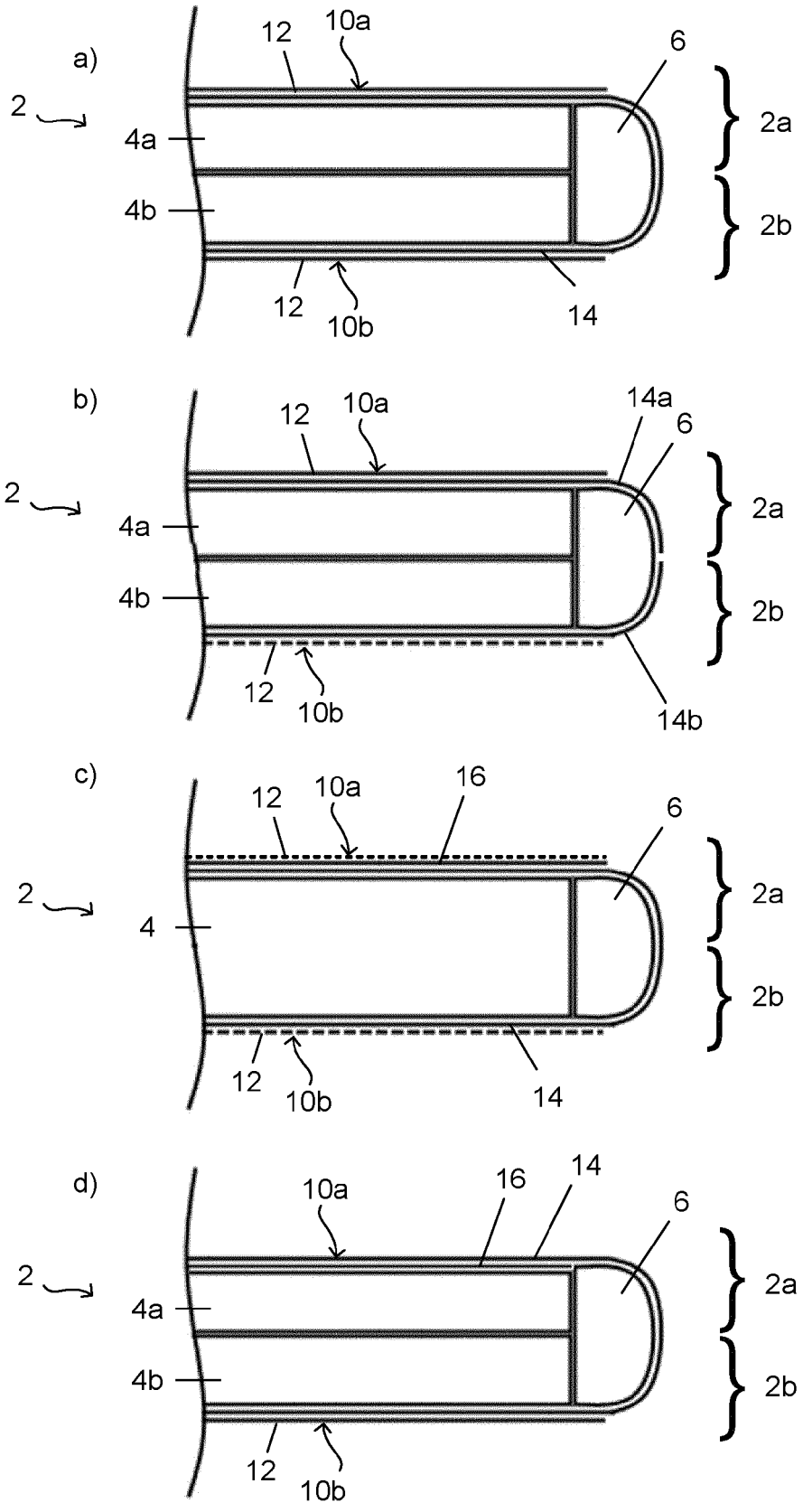


Fig. 2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2
12
10a
6
4a
4b
2a
2b
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10b
14
b)
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4a
4b
2a
2b
12
10b
14b
c)
2
12
10a
16
6
4
2a
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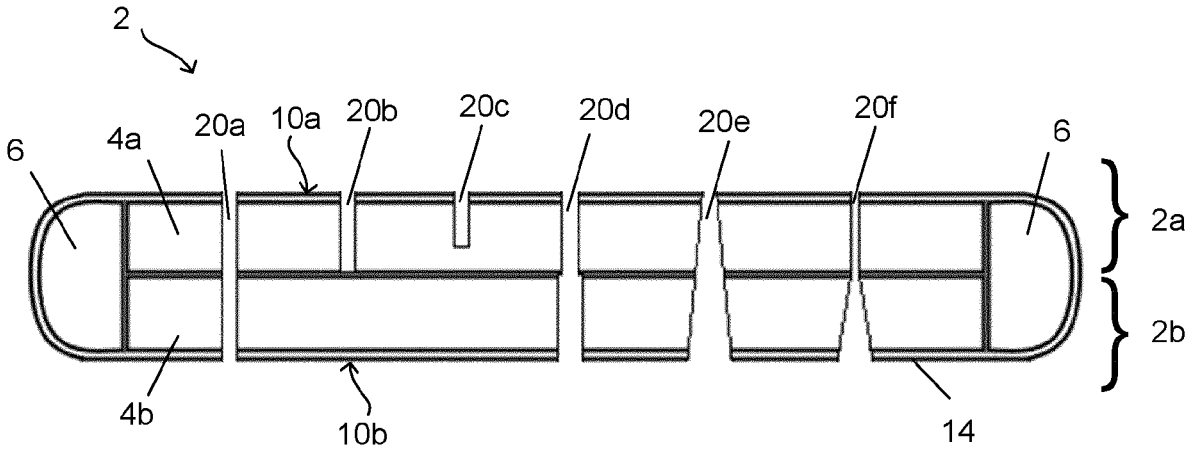
4a
4b
2a
2b
12
10b

Fig. 3


2
6
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20a
10a
20b
20c
20d
20e
20f
6
2a
2b
4b
10b
14

Fig. 4

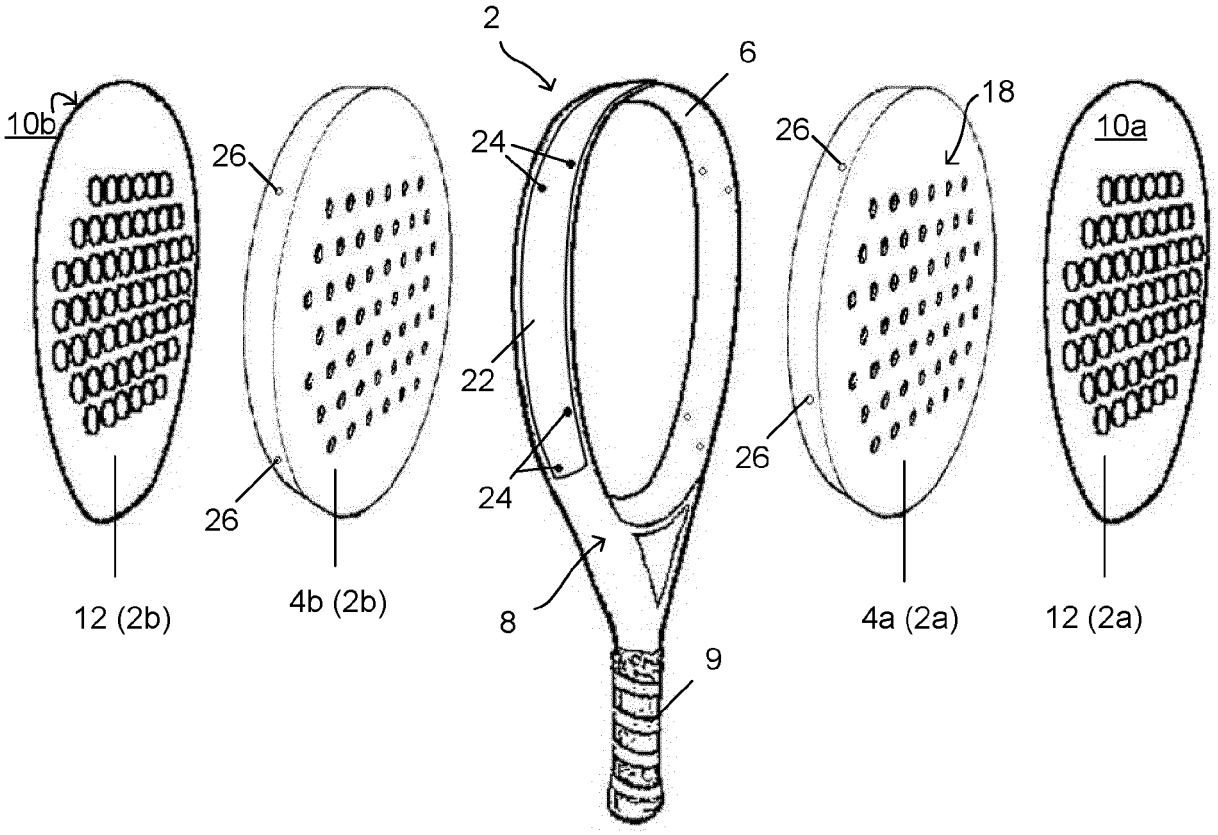
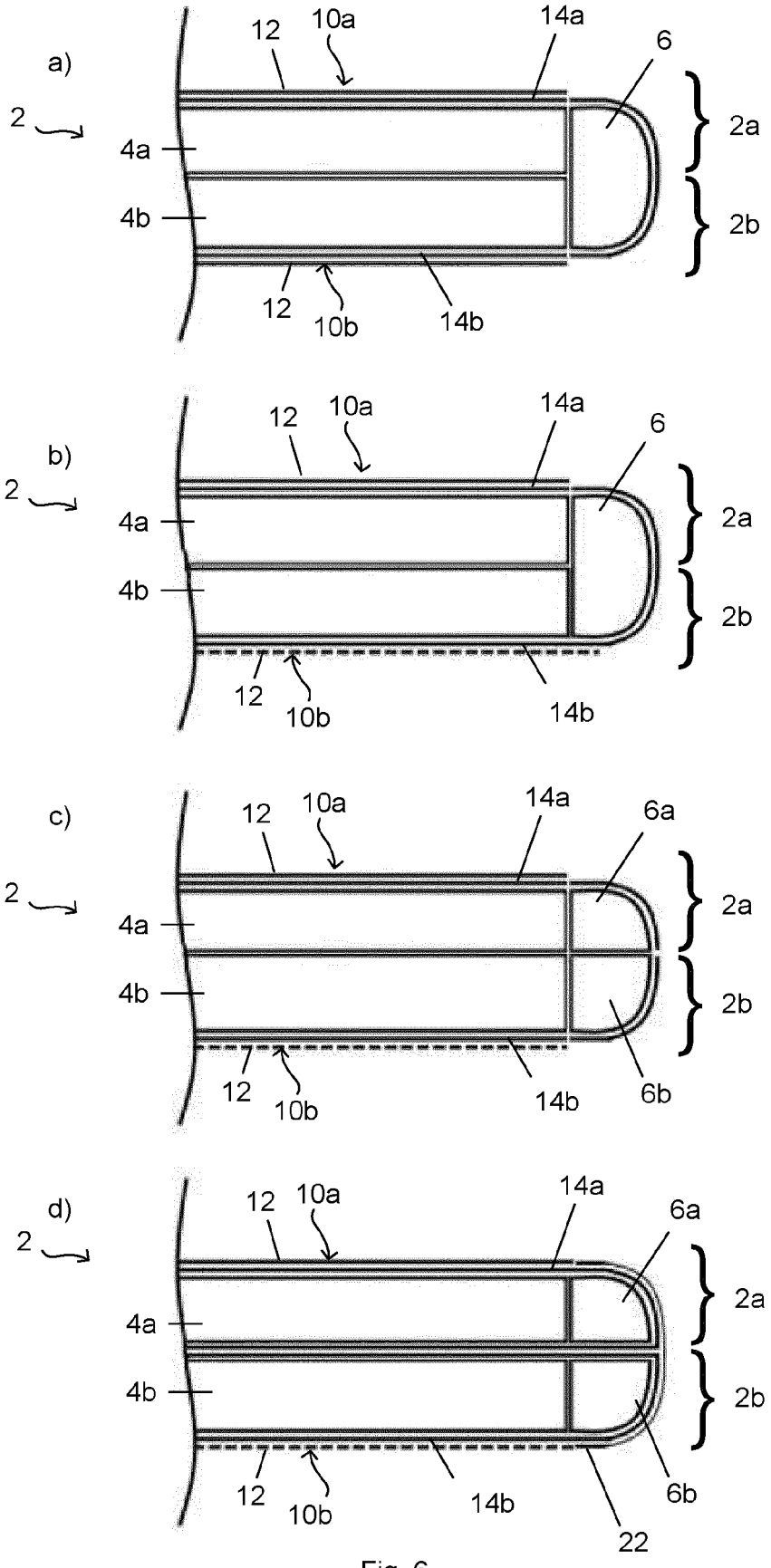

10b
26
26
2
6
24
22
24
8
9
18
26
26
10a
12 (2b)
4b (2b)
4a (2a)
12 (2a)

Fig. 5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14a
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4b
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10b
14b
b)
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6
2a
4a
4b
2b
12
10b
14b
c)
2
12
10a
14a
6a
2a
4a
4b
2b
12
10b
14b
6b
d)
2
12
10a
14a
6a
2a
4a
4b
2b
12
10b
14b
6b
22

Fig. 6