

(19)



(11)

EP 4 825 457 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.10.2026 Bulletin 2026/43

(51) International Patent Classification (IPC):
A63B 59/48 ^(2015.01)

(21) Application number: **25170460.7**

(52) Cooperative Patent Classification (CPC):
A63B 59/48; A63B 60/50; A63B 2102/08;
A63B 2209/00; A63B 2209/02; A63B 2225/01

(22) Date of filing: **14.04.2025**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA
Designated Validation States:
GE KH LA MA MD TN

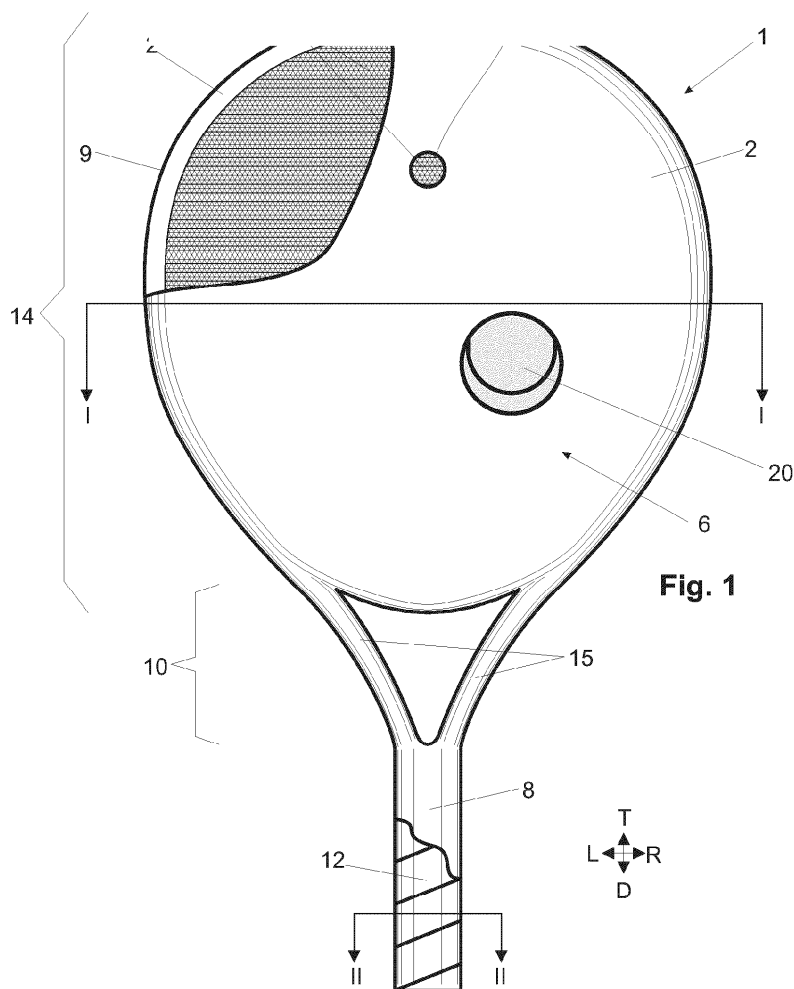
(71) Applicant: **Skip s.r.l.s.**
50123 Firenze (IT)

(72) Inventors:
• **Marino, Fabiana**
Firenze (IT)
• **Baracco, Stefano**
50123 Firenze (FI) (IT)

(54) **PADDLE RACKET**

(57) Paddle racket (1) comprising two striking surfaces (2) and an inner core (3) arranged between the two striking surfaces (2); wherein at least one striking

surface (2) comprises a window (4); and wherein the inner core (3) is visible through and extends through said window (4).

**Fig. 1****EP 4 825 457 A1**

Description

TECHNICAL FIELD

[0001] The present invention relates to the field of rackets for ball sports. In particular, the present invention relates to the field of rackets without strings. Even more particularly, the present invention relates to the field of paddle or padel rackets.

STATE OF THE ART

[0002] Padel rackets are known in the state of the art. These are composed of a continuous shell made of composite material, generally comprising glass or carbon fibre, inside which, in the area where the ball impacts the racket, there is a cushion made of an expanded polymeric material. The racket also comprises a handle integral with the shell in a continuous manner. The production process of the paddle racket involves placing a layer of composite material comprising glass or carbon fibre on the internal surface of the two halves of a mould, together with a polymeric foam disc surrounded by an inflatable air chamber. Once the mould is closed, the air chamber is inflated to maintain the centre of the disc and to compress, from the inside, the layer of composite material against the mould. The mould is then overheated for a curing or polymerisation phase of the materials. The racket including the handle is then extracted from the mould for the final finishing and painting. Finally, the racket is drilled with several through holes that run through the racket from side to side and lie in the ball impact zone.

[0003] The holes that run through the racket should serve to make the racket more aerodynamic during the game and therefore offer less resistance to the air. In reality, the holes in current paddle rackets offer practically no advantage in terms of friction with the air.

[0004] Furthermore, the holes made in traditional paddle rackets pass through both the striking surfaces and the polymer foam disc. In traditional rackets, the striking surfaces are made by overlapping glass and/or carbon fiber fabrics together with thermosetting resins. Only after the surface is formed, the through holes are performed. Therefore, the holes cut the fibers of the composite material, thus constituting points of fragility of the material from which cracks often propagate that compromise the functionality of the paddle racket. The holes are therefore an element of fragility of the racket that is absolutely not counterbalanced by the weak aerodynamic advantage generated by the through holes of the racket.

[0005] The solution in document DE202024100253U1 has already reached this conclusion. In this solution, however, the hole in the striking surface is not used to make the material inside the racket visible and inspectable, but rather it passes through the racket from one side to the other as in

traditional rackets. In one embodiment, document DE202024100253U1 describes the possibility that the striking surface has a recess so as to form a blind hole. This solution does not describe or suggest the possibility of drilling the striking surface but not the material inside the racket. Indeed, this document describes a version in which both the inner material and the striking surfaces are holed with a through hole or a version in which the striking surface does not have through holes.

[0006] None of the known solutions allows the material inside the rigid shell to be visible and inspectable by touch.

SUMMARY

[0007] These and other drawbacks of the state of the art are now solved by a paddle racket comprising two striking surfaces and an inner core arranged between the two striking surfaces, wherein at least one striking surface comprises a window; and wherein the inner core is visible through and extends through said window. Since the inner core passes through the window in the striking surface, it is possible to inspect the inner core from the outside without any effort and from any angle the racket is observed. Furthermore, the inner core contributes structurally to compensate for the discontinuity of material that is created in the striking surface due to the window. Finally, the possibility of clearly seeing the inner core increases the appeal of the racket itself.

[0008] This striking surface can be closed in a continuous manner except for the window, which represents the only opening of the striking surface. In this way the striking surface is particularly resistant and less prone to cracks or fractures.

[0009] In particular, the window passes through the striking surface from its outer face to its inner face. The window is therefore a through hole that perforated the striking surface along its thickness. The risk of initiating cracks or fractures in the striking surface is reduced.

[0010] Advantageously, the inner core can be in contact with the inner faces of said striking surfaces. In this way, if the inner core is elastic, in case of compression of the racket, in the sense of its thickness, the inner core exerts an elastic rebounding force on the striking surface. The properties of the inner core in terms of stiffness and elasticity are transferred even better to the striking surface when this is attached to the inner core. When the striking surfaces are attached to the inner core, a relative slippage of these elements is prevented in case of bending or twisting of the racket with respect to the handle and the elastic response of the racket is improved.

[0011] In particular, the inner core can include a layer of foam. When the inner core is made of foam, the elastic properties of the foam are transferred to the striking surface and therefore to the racket. An inner foam core is light, elastic, economical and dampens

the vibrations generated by the ball when it hits the striking surfaces.

[0012] The inner core and window can be shaped so that a user can easily touch the inner core with a finger through the window from the outside of the racket. The ability to touch the inner core allows for inspection of the quality of the inner core. For example, polymer foams are known to be very sensitive to humidity and temperature. Therefore, the ability to observe and touch whether the inner core material is always uniform and compact or whether, on the contrary, it begins to deteriorate, allows the player to understand when it is time to change the racket. Furthermore, the ability to physically touch the inner core represents an attractive element for the potential buyer of the racket. The ability to touch the stiffness or elasticity of the inner core is not possible in the known rackets. In known rackets, the only way to understand how elastic or rigid the inner core is, it is to compress the racket with your hands, squeezing it along its thickness, but this indication is not representative of the real rigidity/elasticity of the inner core, as it is affected by the rigidity/elasticity of the striking surfaces and the rest of the shell.

[0013] Preferably, the inner core can be air permeable. When the inner core is air permeable, air passes through the window and permeates into the inner core, until it exits from the corresponding window on the opposite striking surface.

[0014] Alternatively, the inner core can be airtight. When the core is airtight, no air passes through the window and the racket is effectively free of through holes along the thickness of the racket.

[0015] In particular, the inner core can be much thicker than each striking surface. Preferably, the inner core can be at least twenty times thicker than each striking surface. Such a thick inner core is the prerogative of paddle rackets. No other type of racket has such a thick inner core. For example, pickleball rackets have non-elastic (rigid) inner cores and have a thickness that is approximately ten times the thickness of the striking surfaces. A soft inner core is not necessary in pickleball rackets, as the ball is extremely soft and a racket with a soft inner core would not provide sufficient thrust to the ball. Conversely, a rigid and too thick inner core would make the racket too heavy and non-compliant.

[0016] The racket may comprise a handle rigidly connected to the striking surfaces. The striking surfaces are directly and monolithically connected to the handle. Each striking surface may be rigidly connected to a half-handle. This solid connection between the striking surfaces and the handle makes the racket elastic to bending when the ball hits a striking surface.

[0017] In particular, the striking surfaces can be connected to each other by a sidewall which, in turn, is also connected to the handle. The striking surfaces and the sidewall form the head portion of the racket. When these elements are connected to each other, the head portion assumes a desired torsional and flexural rigidity

with respect to the handle.

[0018] The striking surfaces and the sidewall can be connected to the handle by a connecting portion that joins these elements of the racket together in a stable manner.

[0019] Preferably, the striking surfaces and the sidewall form a head portion of the racket that has a rounded shape and does not have any sharp edges. The head portion's silhouette is therefore tapered and allows for better airflow over the outer surface of the racket, improving its aerodynamics. In addition, a rounded head portion is more pleasing to the eye and less dangerous during play. Any sharp edges could be dangerous in the event of a collision with another player.

[0020] In particular, the striking surfaces, the handle, the sidewall and the connecting portion are part of a shell. This shell can be a single piece, in order to improve the torsional and flexural resistance of the racket, or it can be divided into two half-shells, to make the racket production easier and cheaper. In this last case, the two half-shells can be joined together directly or through a coupling element that further facilitates their union.

[0021] These and other advantages will be explained in more detail in the description below of an example of implementation given for indicative and non-limiting purposes with reference to the attached drawings.

DESCRIPTION OF DRAWINGS

[0022] In the drawings:

Fig. 1 shows a front view of a paddle racket partially sectioned to allow its interior to be seen in accordance with the present invention;

Fig. 2 shows a sectional view, along section plane I-I, of the racket in Fig. 1;

Fig. 3 shows a sectional view, along the section plane II-II, of the racket in Fig. 1.

DETAILED DESCRIPTION

[0023] The following description of one or more embodiments of the invention refers to the attached drawings. The same numerical references in the drawings identify equal or similar elements. The object of the invention is defined by the attached claims. The technical details, structures or characteristics of the solutions described below can be combined with each other in any manner.

[0024] In Fig. 1 a paddle or padel racket is shown with the numerical reference 1. In the following the term "paddle racket" or "padel racket" is abbreviated for simplicity with the term "racket".

[0025] In the figures the axes are shown to indicate the top-down (T-D), right-left (R-L) and front-back (F-B) directions.

[0026] The racket 1 illustrated in the various figures and described here is configured and shaped for the game of paddle, or padel. The game is a ball sport derived from tennis. It is played in pairs on a rectangular court enclosed by walls on four sides. The game is played with a racket with which a ball is exchanged that is the same as a tennis ball, but with less internal pressure, which allows for greater control of the shots and rebounds on the walls.

[0027] The racket 1 comprises an external shell 6 which can be monolithic or composed of several elements joined together.

[0028] The shell 6 can be made of a composite material, for example containing carbon or glass, or of plastic material, or of wood.

[0029] The shell 6 includes the striking surfaces 2.

[0030] In particular, the racket 1 comprises two striking surfaces 2 that are parallel to each other and spaced apart from each other. The striking surfaces 2 are flat surfaces.

[0031] An inner core 3 is arranged between the two striking surfaces 2.

[0032] The shell 6, and in particular its striking surfaces 2, are rigid, while the inner core 3 is softer and more elastic.

[0033] The racket 1 also includes a handle 8 that can be held by a player during play.

[0034] Preferably the handle 8 is part of the shell 6. The handle 8 is preferably monolithically connected to the striking surfaces 2 either directly or via a connecting portion 10, that is also part of the shell 6, as illustrated in Fig. 1.

[0035] The shell 6 also comprises a sidewall 9 which keeps the striking surfaces 2 spaced apart and parallel to each other, as illustrated in Fig. 2.

[0036] The sidewall 9 is connected to the handle 8 via the connecting portion 10.

[0037] The connecting portion 10 is preferably hollow in the center so as to form two connections 15 that connect the sidewall 9 and the striking surfaces 2 to the handle 8. As illustrated in Fig. 1, these elements of the connecting portion 10 diverge from the handle 8 towards the outside, connecting in a substantially tangential manner to the sidewall 9.

[0038] The central cavity of the connecting portion 10 shown in Fig. 1 has a substantially triangular shape, but can assume any other shape or be absent.

[0039] The shell 6 therefore comprises a head portion 14 which includes the striking surfaces 2 and the sidewall 9, a connecting portion 10 and a handle 8. These portions of the racket 1 are preferably connected monolithically to each other to form a single piece.

[0040] In an embodiment not illustrated, the shell 6 is made of multiple pieces. In this case, the striking surfaces 2 may be independent elements that are connected to a sidewall 9 that is monolithically connected to the handle 8 via a connecting portion 10 (embodiment not illustrated). Alternatively, the shell 6 may com-

prise two half-shells connected to each other (embodiment not illustrated). These half-shells may be divided along a vertical plane parallel or orthogonal to the striking surfaces 2. Each half-shell may comprise at least in part a striking surface 2, a part of a connecting portion 10, a part of a sidewall 9 and a part of a handle 8. These half-shells (not illustrated) are joined together directly or via a coupling element (not illustrated) that serves to keep the two half-shells joined together. Each coupling element connects/joins both half-shells, preventing them from separating.

[0041] The head portion 14 is preferably rounded and has no sharp corners or edges, as illustrated in Fig. 1 and 2. The shape of the racket 1 is tapered and the striking surfaces 2 do not include raised edges as occurs in pickleball rackets.

[0042] As illustrated in Fig. 3, the handle 8 has a polygonal profile, preferably the handle section 11 has the shape of an irregular octagon, as is known to be used in traditional paddle rackets. The handle 8 may be covered by a grip 12, as illustrated in Fig. 1.

[0043] The outer surface of the racket 1 is smooth and continuous. The striking surfaces 2 may have a pronounced surface roughness on their outer face 2' to increase the grip with the ball 20.

[0044] Inside the head portion 14, between the striking surfaces 2 and the sidewall 9, the inner core 3 is arranged.

[0045] The inner core 3 is preferably arranged in direct contact with the striking surfaces 2, as illustrated in Fig. 2. In particular, the inner face 2" of each striking surface 2 is in direct contact with opposite faces of the inner core 3.

[0046] The inner core 3 is preferably glued to the inner faces 2" of the striking surfaces 2. Other joining systems can be envisaged, for example thermosetting resins.

[0047] The inner core 3 may be in contact with the sidewall 9 only in part, as illustrated in Fig. 3. In other embodiments the inner core 3 is in contact only with the striking surfaces 2, and in a further embodiment, the inner core 3 is in contact with the entire internal face of the sidewall 9.

[0048] Preferably, the inner core 3 is composed of a foam layer 5, as schematically illustrated in Fig. 1 and 2. The foam layer 3 can be a polymer foam layer, preferably EVA (ethylene vinyl acetate) foam, polyethylene foam or TPE-E (thermoplastic polyester elastomer) foam. In particular, these foams can be nitrogen-filled.

[0049] The foam layer 5 is preferably obtained by cutting a panel of expanded polymer material into the desired shape. In this way, the density is uniform at all points of the foam layer 5.

[0050] Alternatively, the inner core 3 can be made of any other material.

[0051] The inner core 3 can be composed of various layers stacked and joined together to combine the properties of different materials/elements.

[0052] The inner core 3 may be partially hollow inside or have pneumatic properties.

[0053] The inner core 3 may be permeable to air, thus allowing air to pass through it. In this case, the window 4 is present in both striking surfaces 2 and the windows 4 are coaxial with each other. However, it is not excluded that the window 4 is present only on one striking surface 2.

[0054] The permeable inner core 3 may be an open-cell foam. Alternatively, the inner core 3 may comprise a honeycomb layer. Alternatively, the inner core 3 may comprise through holes of a smaller size than that of the window 4, for example a concentric hole of half the diameter.

[0055] Alternatively, the inner core 3 can be non-permeable to air. In this case, the inner core 3 blocks/occludes the window 4 and does not allow any air to pass through it. For example, when the inner core 3 is a polymer foam layer 5, this is a closed-cell foam, and the foam 5 is easily inspectable and touchable through the window 4.

[0056] The inner core 3 has a thickness S' which is considerably greater than the thickness S'' of the striking surfaces 2. Preferably, the thickness S' of the inner core 3 is at least twenty times greater than the thickness S'' of the inner core 3. Even more preferably, the ratio between the thickness S' of the inner core 3 and the thickness S'' of the striking surface 2 is between 20 and 40. The sum of the thicknesses S'' of the striking surfaces 2 and the thickness S' of the inner core 3 represents the thickness of the racket 1, net of small thicknesses due to the gluing/adhesion layers of the inner core 3 to the striking surfaces 2. The thickness of the racket 1 is preferably less than 38 mm and more than 20 mm.

[0057] As illustrated in Fig. 1, the inner core 3 substantially overlaps the entire striking surface 2 when the racket is observed from the front.

[0058] As illustrated in Fig. 1 and 2, at least one of the two striking surfaces 2 has a window 4 that allows to see what is present inside the racket 1.

[0059] Unlike traditional paddle rackets, which have through holes that pass through both the striking surfaces and the inner core, the present racket 1 has an inner core 3 that extends through the window 4, therefore it spans across the window 4 from one side to the other. In this way, the inner core 3 is visible through the window 4 from practically any angle, and in particular if the racket 1 is observed from the front, thus along a direction perpendicular to the outer face 2' of the striking surface 2. In a traditional paddle racket, when observing a racket from the front, it is not possible to see the inner core because it is holed.

[0060] As illustrated in Fig. 1 and 2, the striking surface 2 is closed and has no holes, except for the window 4.

[0061] This window 4 allows inspection of the inner core 3. Through window 4 it is also possible to touch

the inner core 3 with a finger 30. In this way, in addition to having a tactile sensation of the material the inner core 3 is made of, it is possible to understand if its material is degrading. This can happen for example with polymer foams, which are very sensitive to high temperatures and humidity.

[0062] Since the inner core 3 is attached directly to the inner face 2'' of the striking surface 2, as illustrated in Fig. 2, it is particularly easy, even by touching the striking surface 2 with the hand, to touch the inner core 3 through the window 4, because the striking surface 2 is very thin.

[0063] The window 4 is one for striking surface 2 and, as already mentioned, can be present only in one of the two striking surfaces 2.

[0064] The window 4 is sized so that it is possible to easily touch the inner core 3 with a finger 30 through the window 4, but it cannot be too wide, otherwise the window would affect the bounce of the ball 20 on the racket 1.

[0065] Easily touching the inner core 3 with a finger 30 through the window 4 means that the finger 30 does not have to be that of a child and does not have to be inserted into a hole in the inner core to be touched. Ease of contact means that, without any difficulty, by placing a finger 30 of the hand, for example the index finger of an adult player, on the window 4, the tip of the finger 30 touches the inner core 3.

[0066] Window 4 is preferably a hole of circular cross-section. In particular, the hole may have a diameter greater than or equal to 9 mm and preferably less than or equal to 13 mm.

[0067] The hole in window 4 passes through the thickness of striking surface 2, as illustrated in Fig. 2. Window 4 extends from the outer face 2' to the inner face 2'' of striking surface 2, but not through the inner core 3.

[0068] In accordance with the present invention, the window 4 is a single one for each striking surface 2.

[0069] Window 4 is preferably located in a central area of the striking surface 2, when viewed from the front. This central area is located at a distance of 4 cm measured from the edge of the racket.

[0070] The striking surface 2 is perforated for less than 1% of its area.

[0071] Alternatively, there may be more than one window 4. In this case, the inner core 3 is visible through the windows 4 and the inner core 3 extends through the windows 4.

[0072] In conclusion, the invention thus conceived is susceptible to numerous modifications and variations all falling within the scope of the inventive concept, furthermore all the characteristics are replaceable with technically equivalent characteristics. In practice the quantities can be varied according to the specific technical needs. Finally, all the characteristics of the previously described embodiments can be combined in any way, so as to obtain other embodiments that are

not described here for reasons of practicality and clarity.

Legend of reference signs:

[0073]

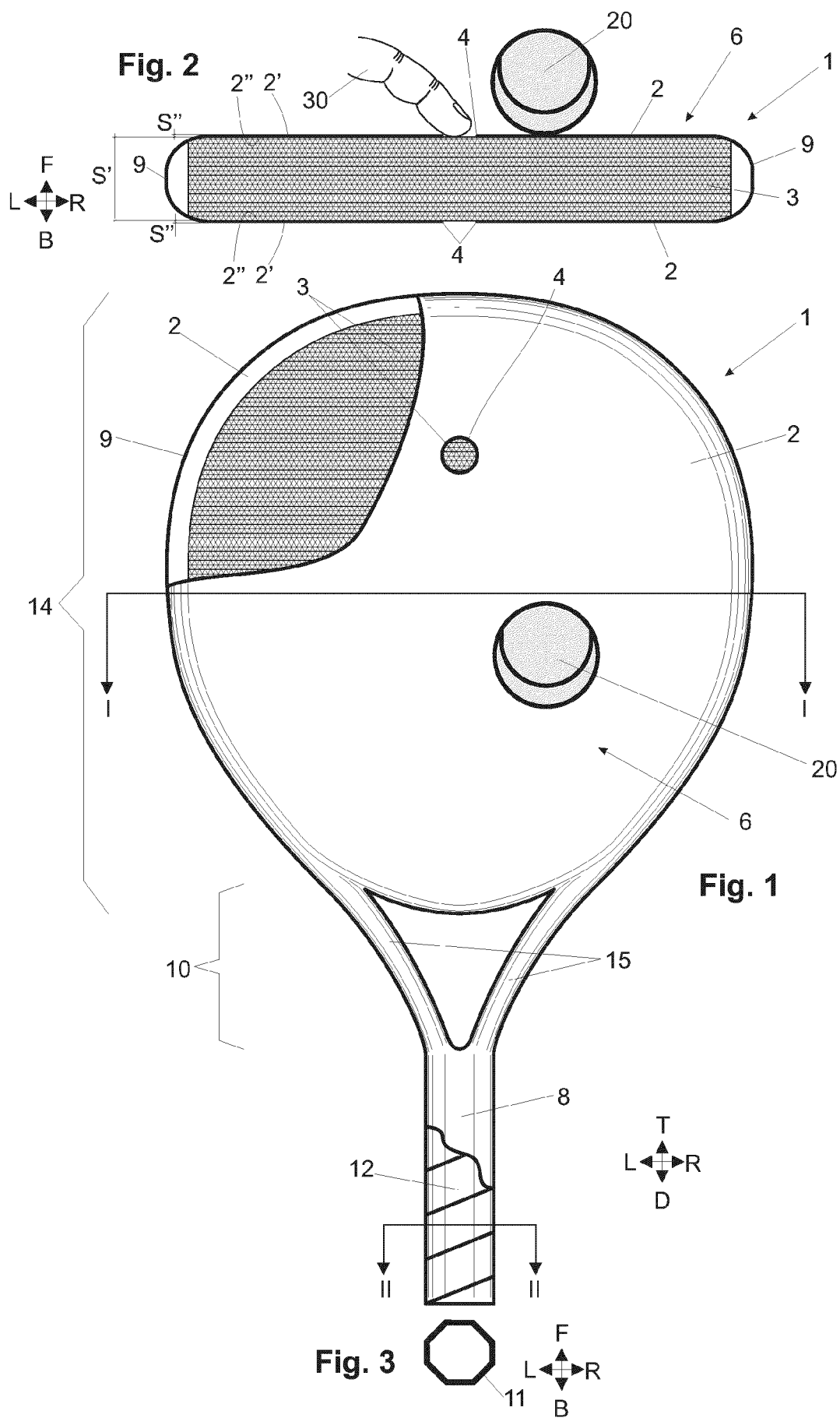
1	paddle racket	
2	striking surface	
2'	outer face	
2"	inner face	10
3	inner core	
4	window	
5	foam layer	
6	shell	15
8	handle	
9	sidewall	
10	connecting portion	
11	handle section	
12	grip	20
14	head portion	
15	connection (of the connecting portion)	
20	ball	
30	finger	
S'	inner core thickness	25
S"	thickness of the striking surface	

Claims

1. Paddle racket (1) comprising two striking surfaces (2) and an inner core (3) arranged between the two striking surfaces (2);
 wherein at least one striking surface (2) comprises a window (4); and
 wherein the inner core (3) is visible through and extends through said window (4). 30
2. Paddle racket (1) according to claim 1, wherein said striking surface (2) is closed and comprises only said window (4). 40
3. Paddle racket (1) according to claim 1 or 2, wherein said window (4) passes through the striking surface (2) from its outer face (2') to its inner face (2"). 45
4. Paddle racket (1) according to any of the preceding claims, wherein the inner core (3) is in contact with the inner faces (2") of said striking surfaces (2), and is preferably attached to said inner faces (2"). 50
5. Paddle racket (1) according to any of the preceding claims, wherein the inner core (3) comprises a foam layer (5). 55
6. Paddle racket (1) according to any of the preceding claims, wherein the inner core (3) and the window (4) are shaped so that a user can easily touch with

a finger (30) the inner core (3) through the window (4).

7. Paddle racket (1) according to any of the preceding claims, wherein the inner core (3) is permeable to air. 5
8. Paddle racket (1) according to any of claims 1 to 6, wherein the inner core (3) is impermeable to air. 10
9. Paddle racket (1) according to any of the preceding claims, wherein the inner core (3) is largely thicker than each striking surface (2), preferably the inner core (3) is at least twenty times thicker than each striking surface (2). 15
10. Paddle racket (1) according to any of the preceding claims, further comprises a handle (8) rigidly connected to the striking surfaces (2). 20
11. Paddle racket (1) according to claim 10, wherein the striking surfaces (2) are connected to each other via a sidewall (9) which is also connected to the handle (8), preferably the striking surfaces (2) and the sidewall (9) are connected to the handle (8) via a connecting portion (10). 25
12. Padel racket (1) according to claim 10 or 11, wherein the striking surfaces (2) and the sidewall (9) form a head portion (14) of the racket (1) which has a rounded external shape without sharp edges. 30
13. Paddle racket (1) according to claim 11 or 12, wherein the striking surfaces (2), the handle (8), the sidewall (9) and the connecting portion (10) are part of a shell (6). 35
14. Paddle racket (1) according to claim 13, wherein the shell (6) is a single piece. 40
15. Paddle racket (1) according to claim 13, wherein the shell (6) is divided into two half-shells joined together directly or via a coupling element. 45





EUROPEAN SEARCH REPORT

Application Number

EP 25 17 0460

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,D	DE 20 2024 100253 U1 (HEAD TECHNOLOGY GMBH [AT]) 3 April 2024 (2024-04-03)	1-8,10, 12	INV. A63B59/48
A	* paragraph [0018] - paragraph [0019]; figures 1, 4 * * paragraph [0006] * * claims 1, 27-2 * * the whole document *	9,11, 13-15	
A	Drop Shot: "https://www.amazon.de/-/en/DS1800013/dp/B07B4WG5NT", , 3 March 2018 (2018-03-03), XP093178118, Retrieved from the Internet: URL:https://www.amazon.de/-/en/DS1800013/dp/B07B4WG5NT	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			A63B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		27 August 2025	Schindler-Bauer, P
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 25 17 0460

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

27-08-2025

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	DE 202024100253 U1	03-04-2024	DE 202024100253 U1	03-04-2024
15			EP 4588536 A1	23-07-2025

20				
25				
30				
35				
40				
45				
50				
55				

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 202024100253 U1 [0005]