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(54) **RACKET FRAME**

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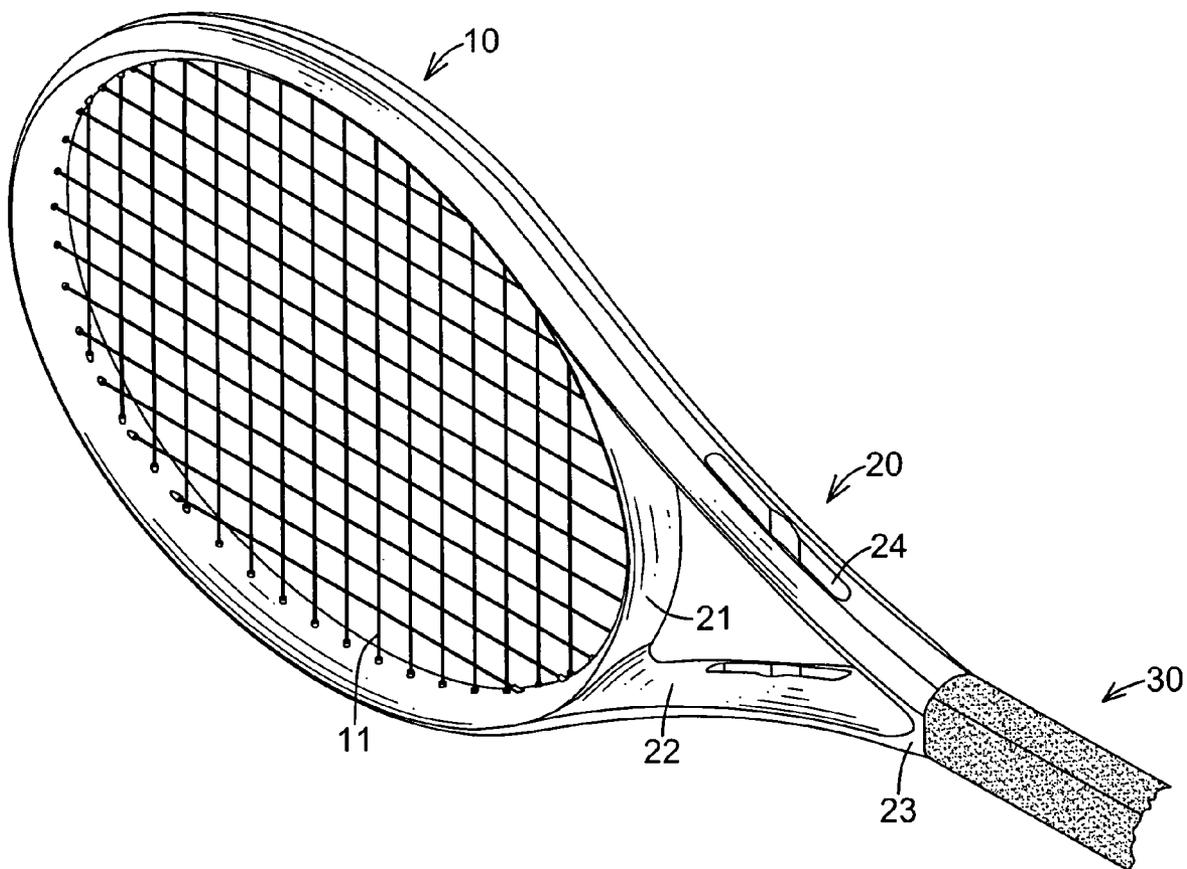
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(57) **ABSTRACT**

A racket frame has a head hoop, a connecting segment, at least two through holes and a handle. The head hoop has a bottom end and a string. The connecting segment is connected with the bottom end of the head hoop and has a yoke, two shafts and a throat. The yoke is formed on the bottom end of the head hoop. The shafts are respectively mounted with the yoke and each shaft has an upper end, a lower end and two sidewalls. The throat is connected to the lower ends of the shafts. The at least two through holes are formed respectively and symmetrically through the sidewalls of the head hoop or the sidewalls of the shaft between the upper end and the lower end. The handle is connected with the connecting segment and has a proximal end.



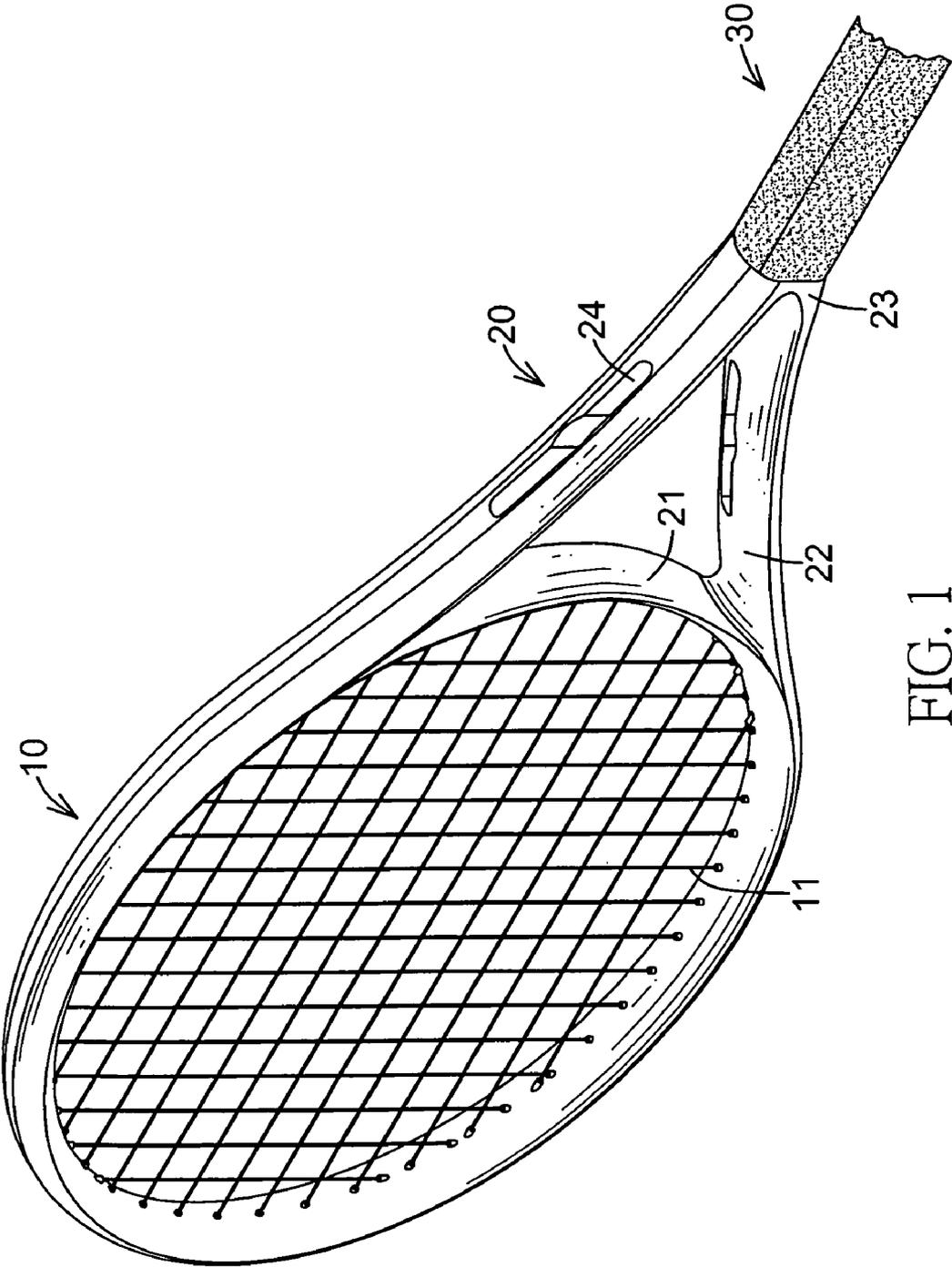


FIG. 1

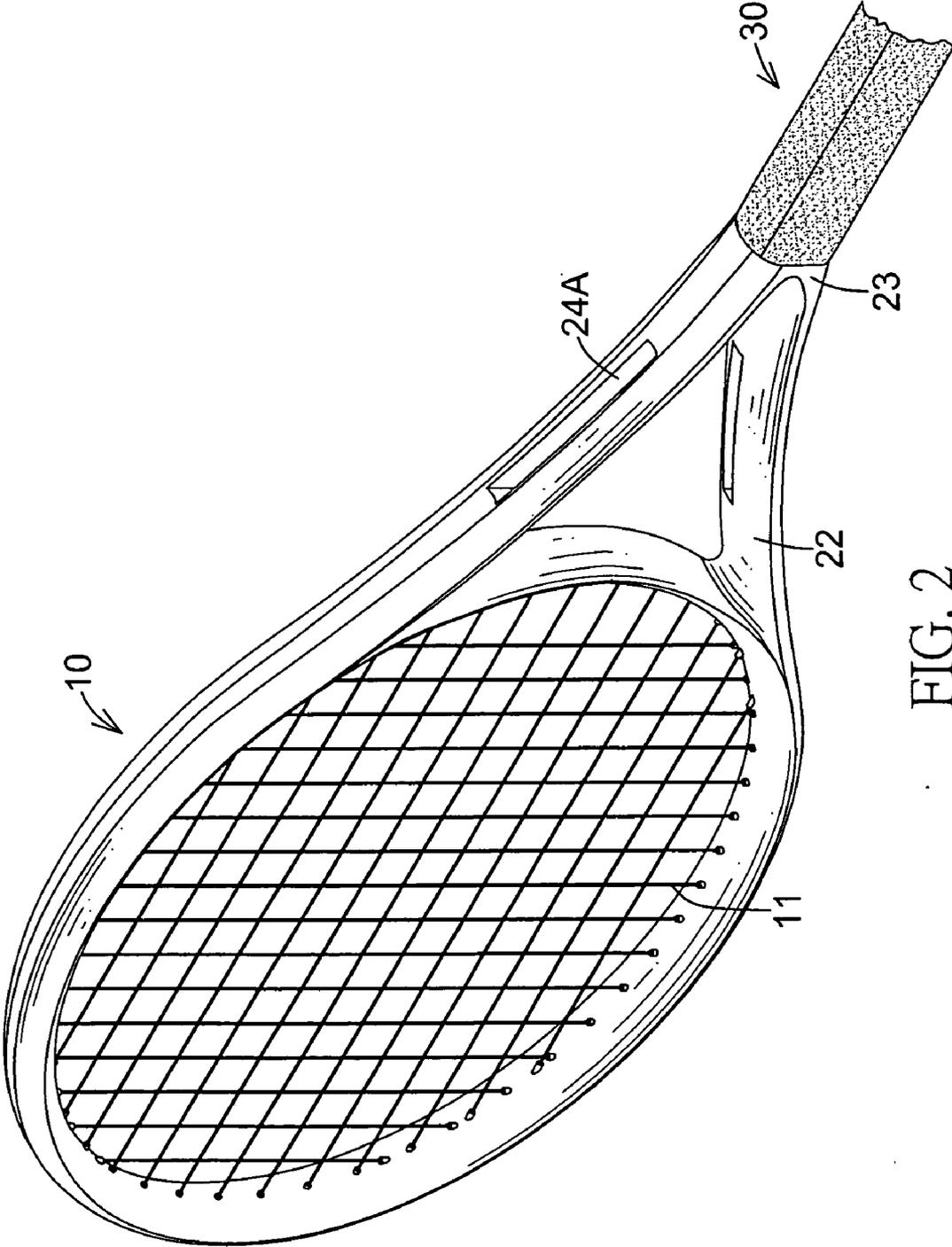


FIG. 2

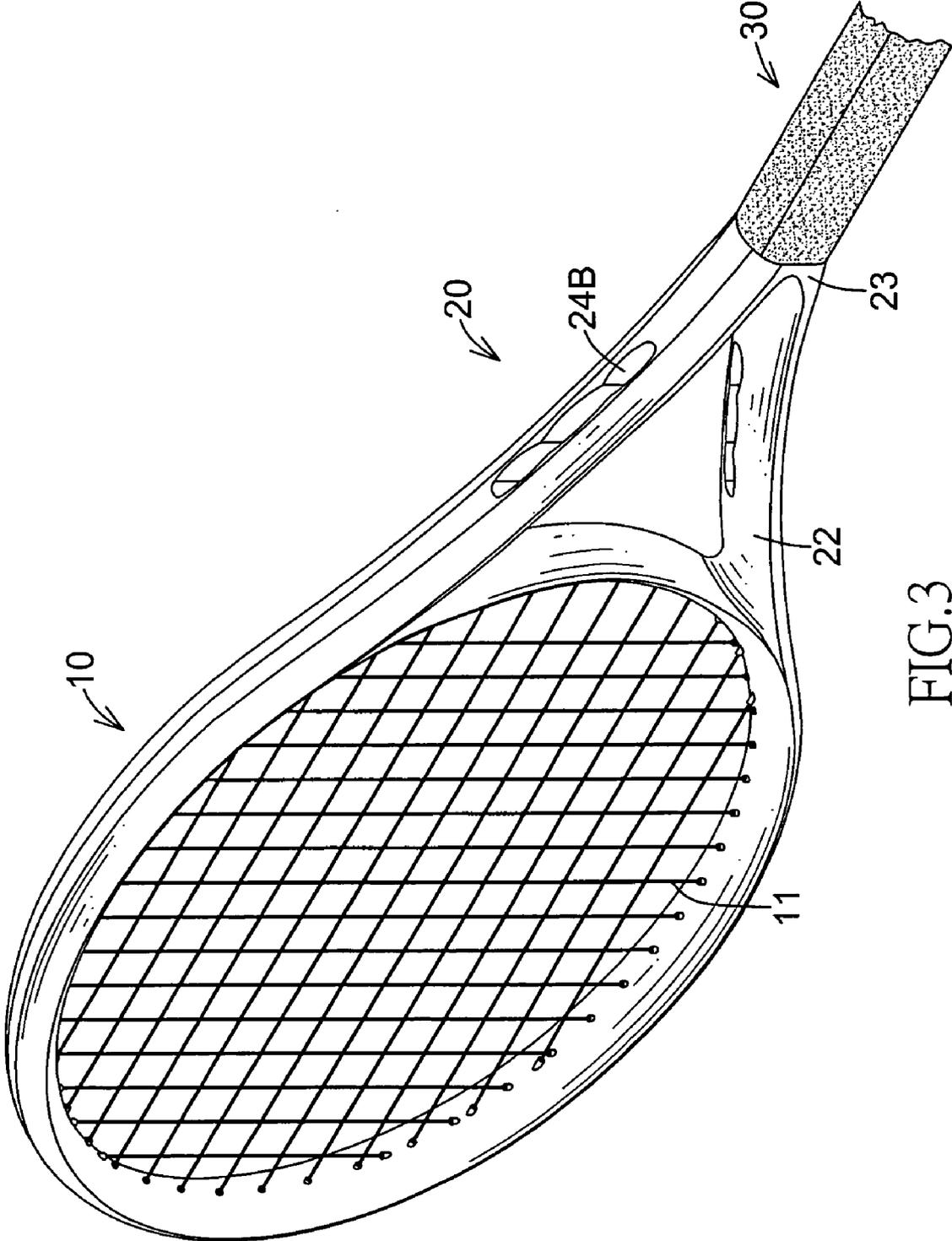


FIG.3

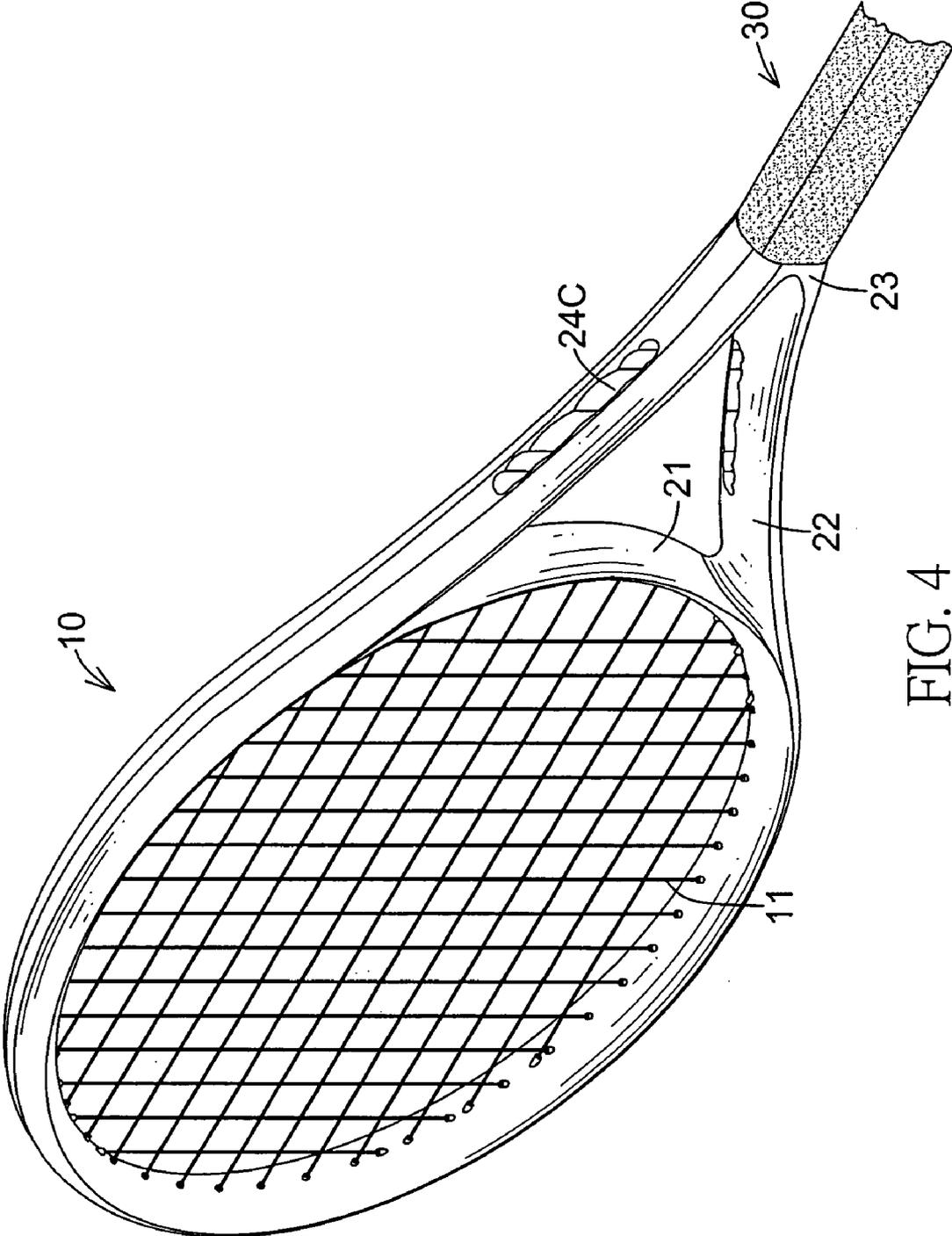


FIG. 4

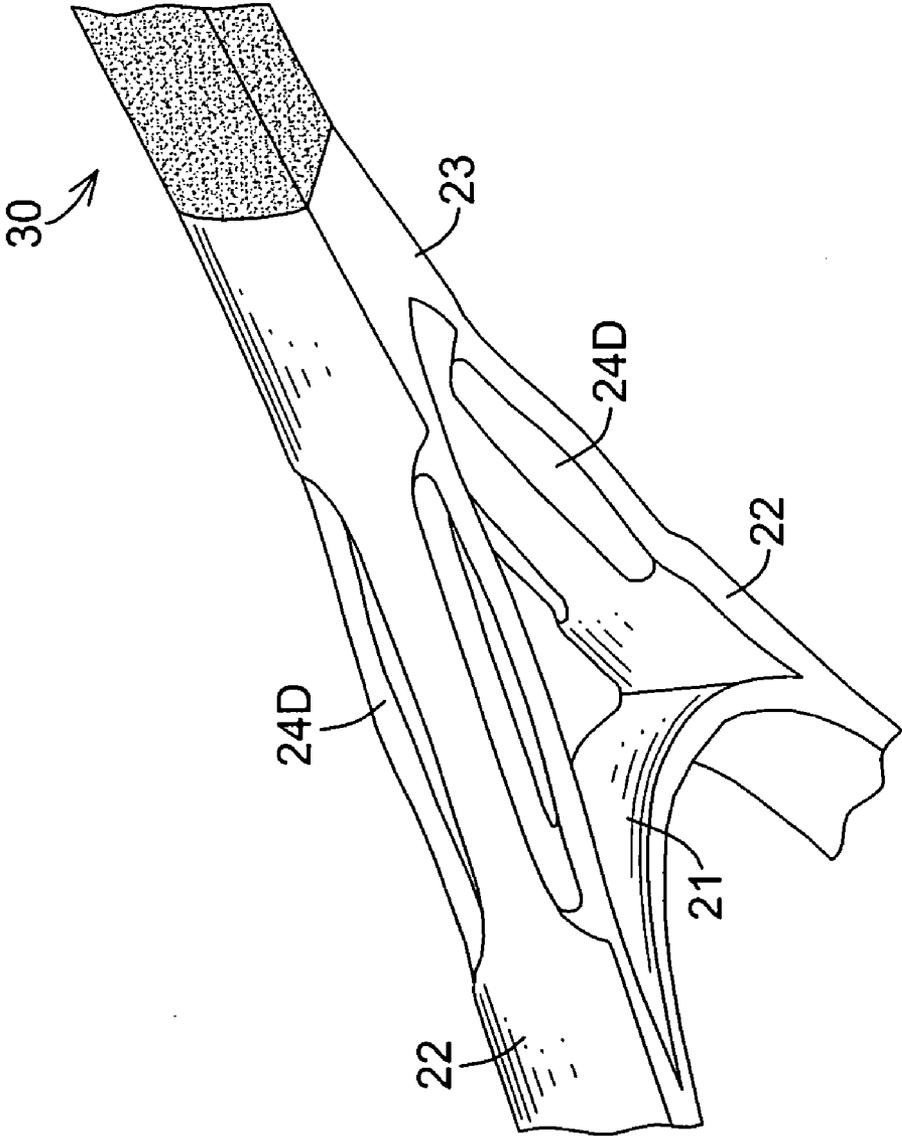


FIG. 5

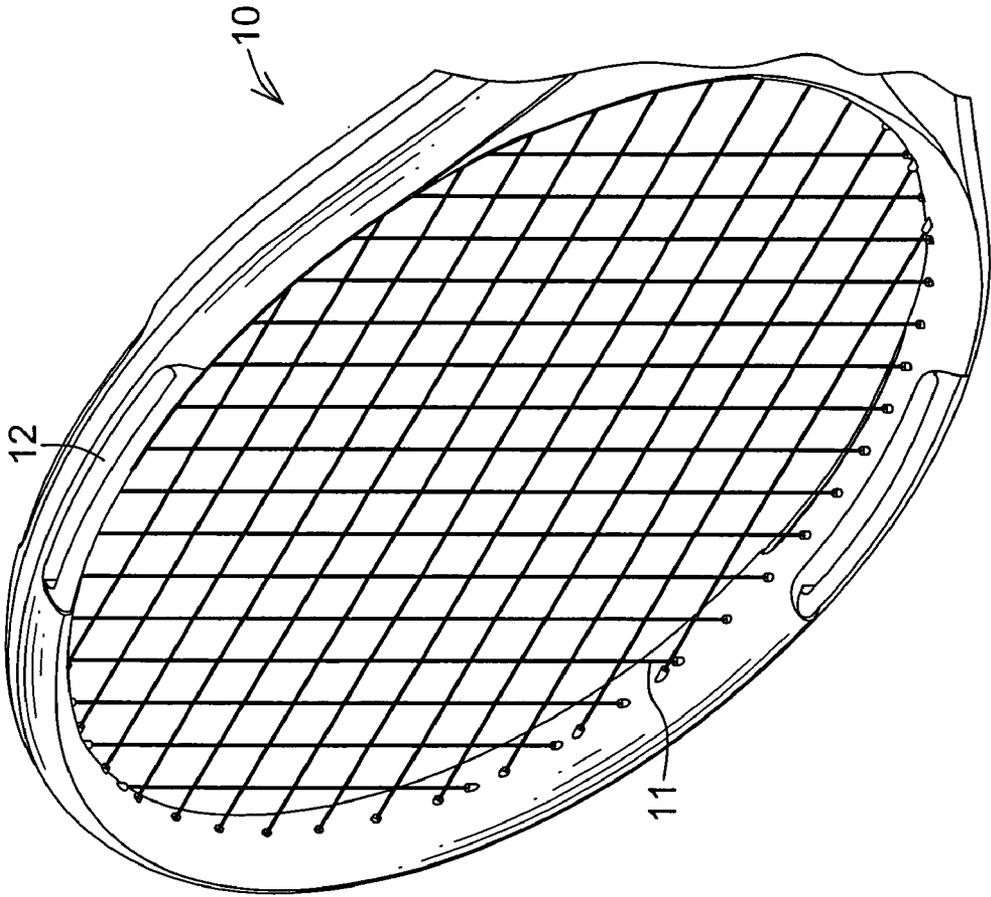


FIG. 6

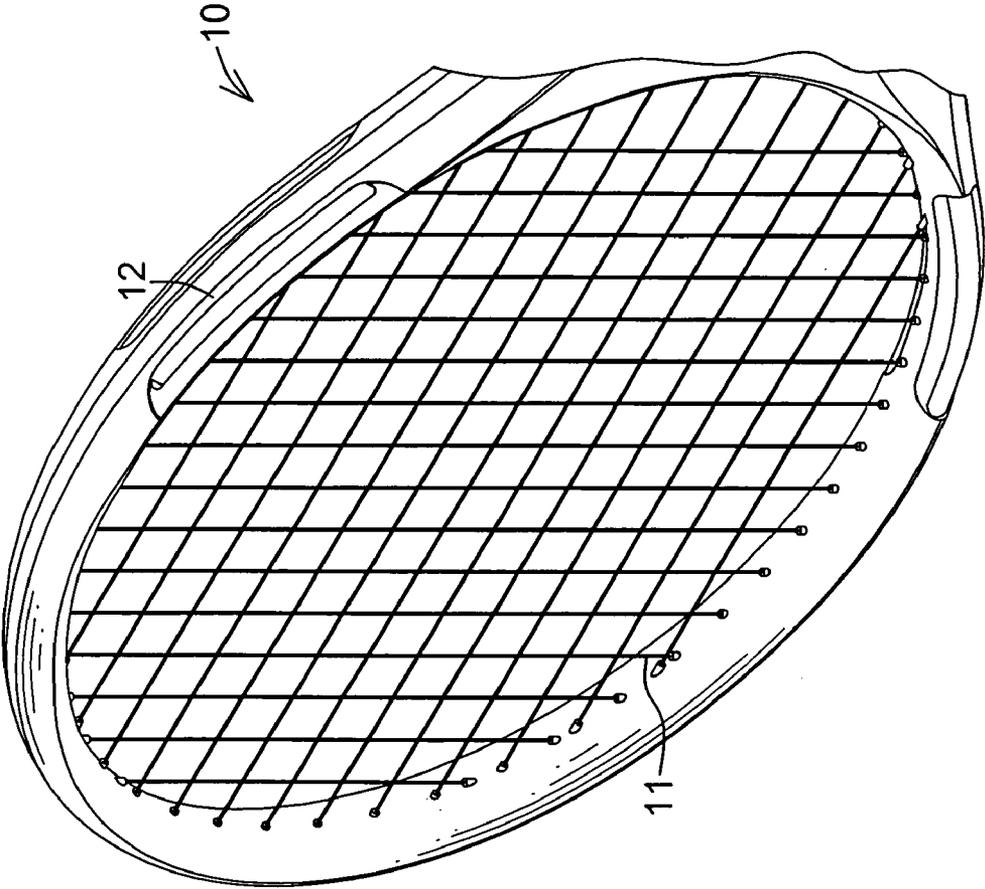


FIG. 7

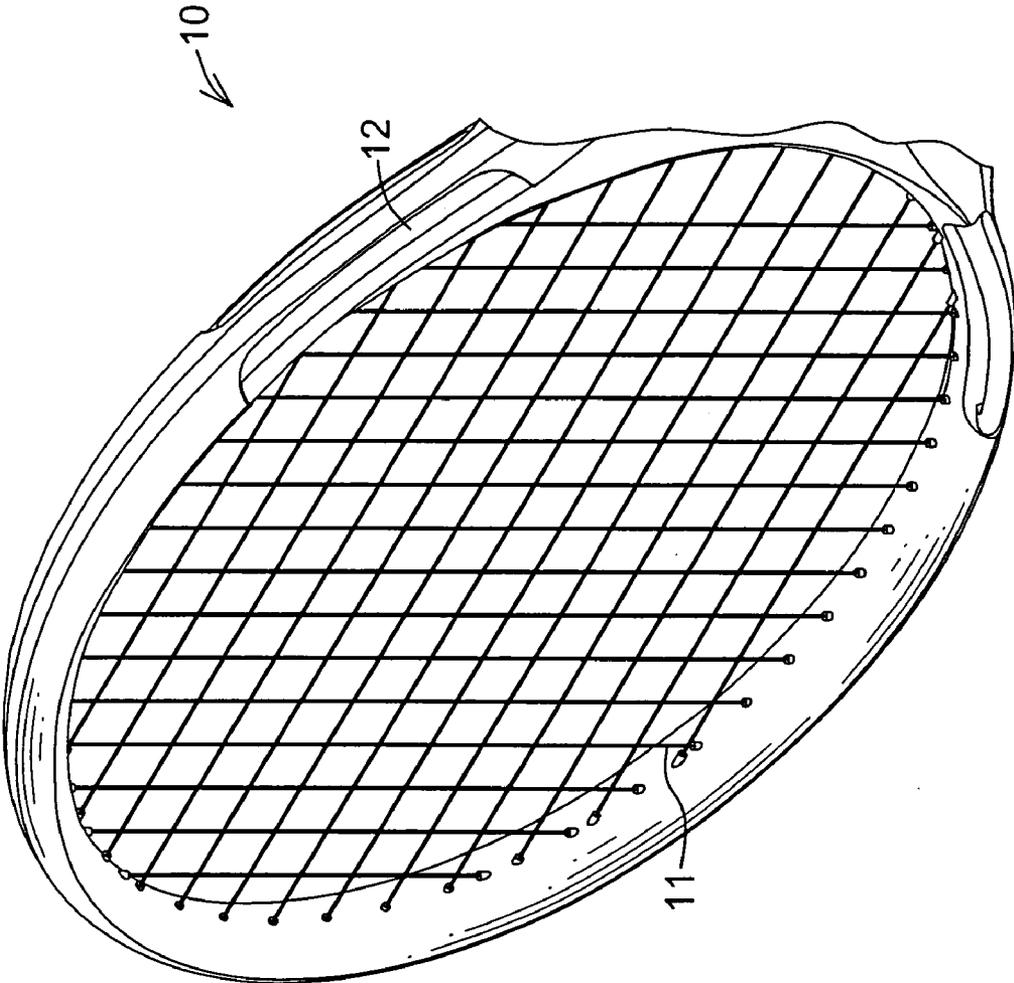


FIG. 8

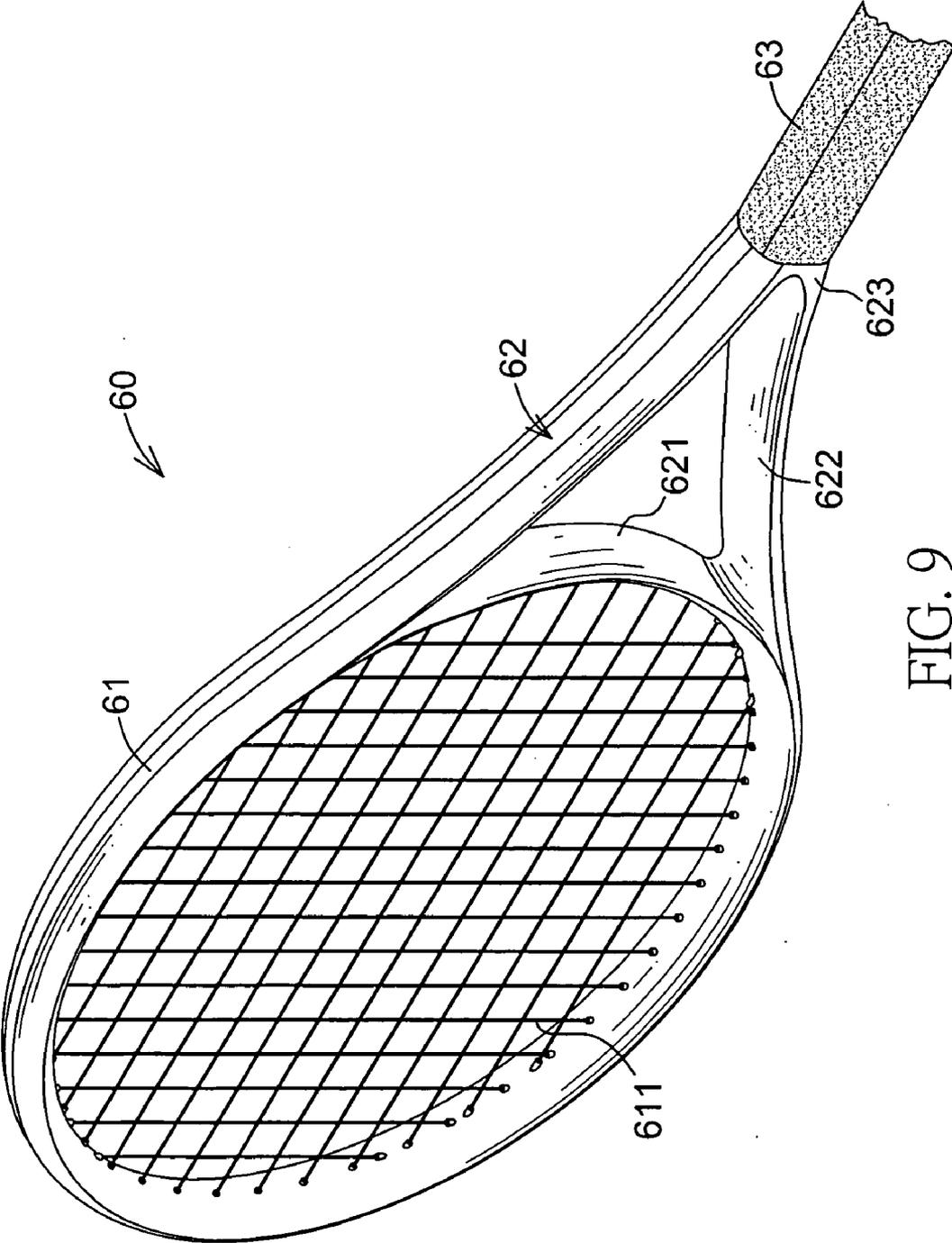


FIG. 9  
PRIOR ART

**RACKET FRAME**

[0001] The present invention is a continuation-in-part of application Ser. No. 11/786,502 filed on Apr. 12, 2007.

**BACKGROUND OF THE INVENTION**

[0002] 1. Field of the Invention

[0003] The present invention relates to a racket frame, and more particularly to a racket frame that can provide an enhanced structure.

[0004] 2. Description of Related Art

[0005] With reference to FIG. 9, a conventional racket frame (60) is made of carbon fiber composite and used for playing with a tennis ball or a paddleball and has a head hoop (61), a connecting segment (62) and a handle (63).

[0006] The head hoop (61) is connected with a string (611) and has an inner surface, a bottom end and a cross-section. The string (611) is wound on the inner surface of the head hoop (61) in a crisscross manner. The cross-section of the head hoop (61) has an area, a width and a height.

[0007] The connecting segment (62) is connected with the head hoop (61) and has a yoke (621), two shafts (622) and a throat (623). The yoke (621) is formed on the bottom end of the head hoop (61). The shafts (622) are arc shaped, are respectively mounted with the yoke (621) and each shaft (622) has an upper end, a lower end, a front side and a rear side. The upper ends of the shafts (622) are respectively connected to the yoke (621). The throat (623) is connected to the lower ends of the shafts (622).

[0008] The head hoop (61) and the connecting segment (62) of the conventional racket frame (60) are respectively made of a hollow tube

[0009] The handle (63) is connected with the connecting segment (62) and has a proximal end. The proximal end of the handle (63) is connected with the throat (623).

[0010] When using, tennis players hold the handle (63) and swing the racket frame (60) to hit balls. The players may feel vibrations transmitted from the head hoop (61) caused by impacts with balls and may feel uncomfortable when the vibrations are manifest. Theoretically speaking, a high frequency vibration with higher transmission speed may be generated by the impacted head hoop (61) when the area of the cross-section is increased. Hence, racket frame (60) designers may reduce the area of the cross-section to make the head hoop (61) became "softer" to overcome the vibration problem and to increase comfortability to use. However, the head hoop (61) becomes fragile since strength of the racket frame (60) will also be decreased by decreased area of the cross-section. Dilemma situation as described above may be overcome by replacing a suitable material with suitable rigidity and strength to form the head hoop (61), but looking for another suitable material is not easy because the carbon fiber composite is generally recognized most suitable material nowadays. Therefore, it is valuable to study on forming the cross-section of the head hoop (61) with optimized shape to have a better strength and a better softness of the racket frame.

[0011] The invention provides a racket frame that can mitigate or obviate the aforementioned problems.

**SUMMARY OF THE INVENTION**

[0012] The main objective of the present invention is to provide a racket frame that can provide an advanced tensile force to the corresponding shafts.

[0013] The racket frame in accordance with the present invention has a head hoop, a connecting segment, at least two through holes and a handle. The head hoop has a bottom end and a string. The connecting segment is connected with the bottom end of the head hoop and has a yoke, two shafts and a throat. The yoke is formed on the bottom end of the head hoop. The shafts are respectively mounted with the yoke and each shaft has an upper end, a lower end and two sidewalls. The throat is connected to the lower ends of the shafts. The at least two through holes are formed respectively and symmetrically through the sidewalls of the head hoop or the sidewalls of the shaft between the upper end and the lower end. The handle is connected with the connecting segment and has a proximal end.

[0014] Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0015] FIG. 1 is a perspective view of a first embodiment of a racket frame in accordance with the present invention;

[0016] FIG. 2 is a perspective view of a second embodiment of a racket frame in accordance with the present invention;

[0017] FIG. 3 is a perspective view of a third embodiment of a racket frame in accordance with the present invention;

[0018] FIG. 4 is a perspective view of a fourth embodiment of a racket frame in accordance with the present invention;

[0019] FIG. 5 is a perspective view of a fifth embodiment of a racket frame in accordance with the present invention;

[0020] FIG. 6 is a perspective view of a sixth embodiment of a racket frame in accordance with the present invention;

[0021] FIG. 7 is a perspective view of a seventh embodiment of a racket frame in accordance with the present invention;

[0022] FIG. 8 is a perspective view of an eighth embodiment of a racket frame in accordance with the present invention; and

[0023] FIG. 9 is a perspective view of a conventional racket frame in accordance with the prior art.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

[0024] With reference to FIGS. 1 to 8, a racket frame in accordance with the present invention comprises a body and a handle (30).

[0025] The body has a head hoop (10), a connecting segment (20) and at least two through holes (12, 24, 24A, 24B, 24C, 24D).

[0026] The head hoop (10) may be elliptical, is used to connect with a string (11) and has an inner surface, a bottom end and two sidewalls. The string (11) is wound on the inner surface of the head hoop (10) in a crisscross manner.

[0027] The connecting segment (20) may be inverted triangle shaped, is connected with the head hoop (10) and has a yoke (21), two shafts (22) and a throat (23). The yoke (21) is

formed on the bottom end of the head hoop (10). The shafts (22) may be arc shaped and are respectively mounted with the yoke (21), and each shaft (22) has an upper end, a lower end and two sidewalls. The upper ends of the shafts (22) are respectively connected to the yoke (21). The throat (23) is connected to the lower ends of the shafts (22).

[0028] With further reference to FIGS. 1 to 4, the at least two through holes (24, 24A, 24B, 24C, 24D) may be elongated, rectangular or curved, are formed respectively and symmetrically through the sidewalls of the head hoop (10) or the sidewalls of the shaft (22) between the upper end and the lower end. Furthermore, with reference to FIG. 5, there are two through holes (24D) are formed parallelly through the sidewalls of a signal shaft (22).

[0029] With further reference to FIGS. 6 to 8, the at least two through holes (12) may be formed symmetrically through the sidewalls of the head hoop (10) at 3-9 or 4-8 or 5-7 position in a clock system. In addition, the length of each through hole (12, 24, 24A, 24B, 24C, 24D) is 50 to 150 millimeters.

[0030] The handle (30) is connected with the connecting segment (20) of the body and has a proximal end. The proximal end of the handle (30) is connected with the throat (23) of the connecting segment (20).

[0031] The strength of the racket frame is stronger enough to bear the impacts of the balls and the racket frame with the at least two through holes (12, 24, 24A, 24B, 24C, 24D) can make the racket frame going soft to give the players more control, more touch and more feel. This can give a user more power because the ball stay longer time will give the string (1) more time to accelerate the ball, and the ball will receive more momentum from the shot.

[0032] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and features of the invention, the disclosure is illustrative only. Changes may be made in the details, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

- 1. A racket frame having
  - a body having
    - a head hoop having
      - an inner surface;
      - a string being wound on the inner surface of the head hoop in a crisscross manner; and
    - a bottom;
  - a connecting segment being connected with the head hoop and having
    - a yoke being formed on the bottom end of the head hoop;
    - two shafts being respectively mounted with the yoke and each shaft having
      - an upper end being connected to the yoke;
      - a lower end; and
      - two sidewalls;
    - a throat being connected to the lower ends of the shafts; and
- at least two through holes being formed respectively through the sidewalls of the shafts and each through hole having a length between 50 millimeters to 150 millimeters; and

a handle being connected with the connecting segment and having a proximal end connected with the throat of the connecting segment.

2. The racket frame as claimed in claim 1, wherein there are two through holes are formed parallelly through the sidewalls of a signal shaft.

3. The racket frame as claimed in claim 2, wherein each shaft is arc shaped.

4. The racket frame as claimed in claim 3, wherein each through hole is elongated.

5. The racket frame as claimed in claim 3, wherein each through hole is rectangular.

6. The racket frame as claimed in claim 3, wherein each through hole is curved.

7. A racket frame having

- a body having
  - a head hoop having
    - an inner surface;
    - a string being wound on the inner surface of the head hoop in a crisscross manner;
    - a bottom; and
    - two sidewalls;
  - a connecting segment being connected with the head hoop and having
    - a yoke being formed on the bottom end of the head hoop;
    - two shafts being respectively mounted with the yoke and each shaft having
      - an upper end being connected to the yoke; and
      - a lower end; and
    - a throat being connected to the lower ends of the shafts; and
  - at least two through holes being formed respectively and symmetrically through the sidewalls of the head hoop at 3-9 position in a clock system and each through hole having a length between 50 millimeters to 150 millimeters; and

a handle being connected with the connecting segment and having a proximal end connected with the throat of the connecting segment.

8. The racket frame as claimed in claim 7, wherein there are two through holes are formed parallelly through the sidewalls of a signal shaft.

9. The racket frame as claimed in claim 8, wherein each shaft is arc shaped.

10. A racket frame having

- a body having
  - a head hoop having
    - an inner surface;
    - a string being wound on the inner surface of the head hoop in a crisscross manner;
    - a bottom; and
    - two sidewalls;
  - a connecting segment being connected with the head hoop and having
    - a yoke being formed on the bottom end of the head hoop;
    - two shafts being respectively mounted with the yoke and each shaft having
      - an upper end being connected to the yoke; and
      - a lower end; and
    - a throat being connected to the lower ends of the shafts; and

at least two through holes being formed respectively and symmetrically through the sidewalls of the head hoop and each through hole having a length between 50 millimeters to 150 millimeters; and

a handle being connected with the connecting segment and having a proximal end connected with the throat of the connecting segment.

**11.** The racket frame as claimed in claim **10**, wherein there are two through holes are formed parallelly through the sidewalls of a signal shaft.

**12.** The racket frame as claimed in claim **11**, wherein each shaft is arc shaped.

**13.** The racket frame as claimed in claim **12**, wherein the at least two through holes are formed respectively and symmetrically through the sidewalls of the head hoop at 4-8 position in a clock system.

**14.** The racket frame as claimed in claim **12**, wherein the at least two through holes are formed respectively and symmetrically through the sidewalls of the head hoop at 5-7 position in a clock system.

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