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Description

FIELD OF INVENTION

[0001] This invention relates to sports, and more particularly to a sporting article, a handle or a sporting article, an over grip, and to associated methods.

BACKGROUND OF INVENTION

[0002] A tennis racquet usually comprises a frame consisting of a racquet handle and a racquet head. On the racquet head, strings are woven thus producing the racquet face of the racquet which is used to hit a tennis ball. At a bottom of the racquet handle there is at least one additional layer of thin, flexible, natural or synthetic material applied so that a tennis player can comfortably and securely hold onto the racquet when playing tennis. This outermost layer of material applied to the handle end of the tennis racquet is generally affixed permanently to the tennis racquet handle and commonly referred to as the "grip" of the racquet, and further referred to in this specification as an over grip to distinguish from the manner in which a racquet is held (see below).

[0003] In tennis circles, however, the term "grip" also refers to the manner in which a tennis player holds his racquet when he executes any particular tennis shot. When tennis is played, many different tennis strokes are used. These different strokes include the serve, the forehand and backhand ground strokes, the forehand and backhand volley, and the overhead. Each of these strokes, in turn, can be played with different grips. The grip used determines the angle of the racquet face and, therefore, how the strings of the racquet face contact the ball on any given tennis stroke. This angle of the racquet face at contact therefore results in tennis balls flying towards the opponents in one of three ways:

1. flat: no spin if the swinging motion at contact corresponds to the angle at which the racquet face is held;
2. with topspin: forward rotation if the swinging motion at contact is from low to high in relation to the angle of the racquet face; and
3. with slice: backward rotation if the swinging motion at contact is from high to low in relation to the angle of the racquet face.

[0004] In modern day tennis, the serve is played at professional level with "slice", "topspin" or "flat". Due to the fact that three different serves have to be mastered, the question that needs to be answered is what grip positioning results in the most successful service motion?

[0005] Furthermore, today it is generally accepted that the combination of power and control are the two key factors that lead to great ground strokes. Power is attained through forward propulsion. Control, in contrast, is obtained through upward propulsion. The question that

has to be answered is what grip positioning on forehand and backhand ground strokes, regardless of at which height they are played, results in the ultimate combination of forwards and upwards propulsion?

[0006] Similarly, two key factors have to be adhered to so as to play successful volleys. First, the racquet face has to be open on contact to ensure that the tennis ball flies over the net. Secondly, the motion at contact must be from high to low to ensure that the ball does not land beyond the baseline. Again, the question which has to be answered is what grip positioning leads to the ultimate high to low motion with an open racquet face when playing low or high volleys?

[0007] Up to the present, therefore, no uniformity in the grip used when playing the variety of strokes in tennis exists. A forehand can be played with one of five different grip alternatives. For each of the other strokes used in the game of tennis there are also numerous grips to choose from.

[0008] An analysis of the grips and strokes of top tennis players indicates conformity between the grip positioning and a particular shot. The Inventor speculates that the perfect grip for each individual stroke was found to be as follows:

Serve: the Continental Grip

Forehand: the Semi-Western Grip

One-Handed Backhand: the Western Grip

Two-Handed Backhand: Left Hand - the Semi-western forehand grip, Right Hand - the Continental Grip or the Western Backhand Grip (for a Right Handed Player)

Slice Forehand: Continental Grip

Slice Backhand: Continental Grip

Forehand Volley: Continental Grip

Overhead: Continental Grip

[0009] Upon close scrutiny, it becomes clear that to be able to play tennis at the highest level, only three grips need to be learnt. These grips are the continental grip, the semi-western forehand grip and the western backhand grip.

[0010] The continental grip is used for:

the serve, the forehand volley, the backhand volley, the slice forehand, the slice backhand, the overhead and possibly the right hand of the two handed backhand.

[0011] The semi-western forehand grip is used for:

the forehand as well as the left hand of the two handed backhand (for a Right Handed Player).

[0012] The Western Backhand Grip is used for:

the one handed backhand and possibly the right hand of the two handed backhand.

[0013] It is interesting to note that the semi-western forehand grip is the same grip as the western backhand grip. It would therefore be possible to play the forehand and backhand with the same grip. Both strokes are then played with the same side of the racquet face. Similarly, the forehand volley and backhand volley are both played with the same grip. This middle grip as it is also known allows a player to execute the volleys on both sides. With the opposite but otherwise identical forearm movement on the preparation for the volley (supination on forehand volley and pronation on backhand volley), the racquet is open on contact ensuring that the ball flies over the net when playing a volley. The motions with the racquets when playing ground strokes and volleys on both sides are thus executed at best when they are mirror images of one another. This breakthrough in the technique could change the game of tennis. More and more professional players are today playing ground strokes and volleys with these grips. However, for beginners to learn to take these grips exactly and for intermediate players to change these grips accurately when playing the different strokes e.g. in rallies is not easy. It would be desirable to facilitate the learning of these exact grip positions for beginners as well as to facilitate accurate grip changes of intermediate players when they play the different strokes, e.g. in rallies.

[0014] Furthermore, many hobby tennis players may find that the above-described "ideal" grip positions used by top-ten players do not suit their playing styles, or may limit their repertoire of tennis strokes. Some players, for example, prefer playing their strokes with more conservative grip positions, other players prefer playing their strokes with more extreme grip positions, and a third group of players find that they need to use more than one grip position for a particular or for more than one particular tennis stroke. Also for these players that use other grips than the aforementioned "ideal" grip positions when playing their strokes it would be helpful if the taking of their appropriate grips could be facilitated.

[0015] There is clearly a need to develop and provide not only one handle for a sporting article like a tennis racquet which facilitates taking the "ideal" grip positions, but also a need to develop and provide different handles for a sporting article like a tennis racquet, each of these handles facilitating specific, preferred grip positions suiting various playing styles.

[0016] Document US 7,284,300 B1 discloses a grip for a handle for example for tools. For each hand essentially one predetermined grip possibility is provided into which each hand is guided, variations being provided for the placement of the thumb and possibly for the forefinger. The handle, for defining the grip position, comprises a plurality of protrusions and recesses.

[0017] From US 2,031,161 a handle for a sport club like a baseball bat is known which has rotationally symmetric rings which help to keep a firm grip on the sporting article.

[0018] It is therefore an object of the present invention

to provide a handle for a sporting article like a tennis racquet which facilitates the taking of two or more predetermined grips on the handle.

5 SUMMARY OF INVENTION

[0019] According to the invention, a handle portion as defined in claim 1 is provided. The dependent claims define further embodiments.

10 **[0020]** According to the invention, there is provided a handle portion for a sporting article, the handle portion defining one or more circumferentially extending indentation rings which are indentation rings, which are depressions in the handle portion and which are configured to guide and locate at least one hand of a user in at least two different predetermined grips, wherein the at least two different predetermined grips define different angles of a face of the sporting article, wherein the one or more indentation rings are sinusoidal, undulating or wave-shaped indentations extending circumferentially fully around the handle portion, wherein the handle portion has an octagonal cross-section.

15 **[0021]** For ease of explanation, the invention is further defined with reference to tennis racquets and to tennis players. It is to be appreciated, however, that the invention extends to other sporting articles including squash racquets, badminton racquets, cricket bats, hockey clubs, golf clubs, baseball bats, as well as any other sporting articles with a handle and possible over grip. Accordingly, any references to tennis racquets and related tennis articles should, where appropriate, be construed to include all sporting articles to which the invention may relate.

20 **[0022]** The racquet handle may include an under grip and the indentations may thus be formed integrally with the under grip. For example, the indentation(s) may be moulded or engraved into the under grip. The under grip may be of natural and/or synthetic material.

25 **[0023]** Instead, the indentation(s) may be defined by an intermediate layer applied around the under grip, the layer and under grip together forming the racquet handle. The intermediate layer may be of a moulded material which may be natural and/or synthetic. The intermediate layer may be moulded by heating and hardened by cooling. The intermediate layer may be resilient, shock absorbent and vibration absorbent. For example, the intermediate layer may be thermokork. Instead, the under grip may be of a material which is mouldable at room temperature and which is settable by applying electromagnetic radiation (e.g. light in the blue spectrum)

30 **[0024]** The under grip, and intermediate layer if present, may be covered by a conventional over grip.

35 **[0025]** According to another aspect of the invention, there is provided an over grip which is configured to be wound around or otherwise applied to a racquet handle of a tennis racquet, the over grip defining one or more indentations which extend circumferentially around the racquet handle when the over grip is applied to the rac-

quet handle and which are configured to accommodate and locate at least one hand of a tennis player in at least two selectable pre-defined grips.

[0026] The over grip may be an elongate, strip-like member configured for winding spirally around the racquet handle. The over grip may be of a resilient or cushioned material. The over grip may be packaged and sold individually for application to a conventional tennis racquet handle.

[0027] In case of more than one indentation, the indentations (whether defined by the over grip, the intermediate layer, and/or the under grip) may be in the form of a plurality of sinusoidal or undulating endless indentations extending circumferentially around the racquet handle. Each indentation may include one or more, e.g. two peaks and one or more, e.g. two valleys. The indentations may be proximate each other and may abut each other. In one embodiment, the peaks of one indentation abut the valleys of a superjacent indentation. Similarly, the valleys of one indentation may abut the peaks of a sub-jacent indentation.

[0028] The indentation(s) may be symmetrical about a plane so that the tennis racquet can be used by both left-handed and right-handed players.

[0029] In case of more than one indentation, the indentations may be clustered into two groups, a lower group towards a lower or free end of the racquet handle and an upper group towards the upper or fixed end of the racquet handle. Each group may comprise e.g. up to three indentations for a total of e.g. up to six indentations. The bottom group may be for locating a dominant hand of a tennis player (i.e. a right-hand of a right-handed tennis player), while the top group may be for locating the non-dominant hand when using a two-handed grip. One or more indentations of a particular group e.g. all indentations, may have a larger amplitude than other indentations of the same group or another group. For example, an upper indentation of a particular group may have a larger amplitude than middle and lower indentations of the same group which may have an equal amplitude.

[0030] However, if desired, the indentations (if there are more than one) may be clustered into only a single group arranged towards a lower end of the racquet handle for one-handed grips only.

[0031] A one-handed shot typically uses only the dominant hand while a two-handed shot typically uses both hands. A thumb, index finger and/or middle finger may be located by a group of indentations thereby to position the hand in one of the grips.

[0032] The indentations (or a particular group of indentations) in a particular embodiment may be configured to locate the or each hand in at least three different grips. The three grips may be the semi-western forehand grip, the continental grip, and the western back-hand grip. The configuration of the indentations may allow for easy and/or guided transition between the respective grips. However, other numbers of grips, for example two different grips, and/or other types of grips are equally possible.

[0033] In an embodiment, also referred to as first embodiment hereinafter, the handle may be a racquet grip that comprises indentations formed by molded undulating and/or sinusoidal rings. Each indentation ring in this embodiment has two peaks and two valleys. In such an embodiment, the indentation rings may span the circumference of the racquet grip and may be clustered into two groups, a lower group towards a lower or free end of the handle and an upper group towards an upper or fixed end of the handle, fixed end referring to the handle end proximate the remaining sporting article like a tennis racquet. Each indentation group comprises for example three indentation rings. This embodiment may therefore have a total of six indentation rings. The bottom group of indentation rings may be configured for locating a dominant hand of a tennis player (i.e. the right hand of a right-handed tennis player) while the top group of indentation rings may be configured for locating a non-dominant hand when using for example a two-handed backhand grip. The upper indentation ring of a particular group may have a larger amplitude than the middle and lower indentation rings of the same group. The middle and lower indentation rings may have an equal amplitude.

[0034] In this embodiment, the indentation rings or a particular group of indentation rings may be configured to locate the or each hand in at least three different grips as already mentioned above. The three grips may be the semi-western forehand grip, the continental grip and the western backhand grip.

[0035] The handle has an octagonal cross-section with eight bevels corresponding to eight faces of the handle, as for example common for tennis racquet handles. The two biggest bevels of the handle may be opposite each other, parallel for example with the face of a tennis racquet. Two somewhat smaller bevels may also be opposite each other and parallel with the edge of the face of such a racquet or, in other words, perpendicular to the two biggest bevels. The four smallest bevels which may be equal in size separate each of the aforementioned four bevels.

[0036] In the first embodiment described above, the two peaks of the upper and lower sinusoidal indentation rings for the bottom hand or for both hands may be parallel with the edge of the face of the handle, for example tennis racquet handle. The two valleys of these sinusoidal indentation rings may be parallel with the face of the racquet grip. In contrast the two peaks of the middle sinusoidal indentation rings for the bottom hand or both hands may be parallel with the face of the sporting article, for example the racquet. The two valleys of the middle sinusoidal indentation rings for the bottom hand or for both hands may be parallel with the edge of the face of the sporting article, for example the racquet. The peaks and valleys of all sinusoidal indentation rings may proximate or abut their adjacent sinusoidal indentation rings.

[0037] In this embodiment the lower two adjacent indentation rings of each group of indentations may proximate at the height of the face of the handle and abut at

the height of the edge of the face of the sporting article associated therewith, for example the edge of the racquet face. The top and middle sinusoidal indentation rings of each group of indentations may abut at the height of the face of the handle and proximate at the height of the edge of the face of the sporting article, for example the racquet. The configuration of the indentation rings in such an embodiment allow for easy and/or guided transition between the respective grips. However, the above-described embodiment is just one example.

[0038] In another embodiment, also referred to as second embodiment hereinafter, also one or two groups of indentation rings may be provided, for example molded on a racquet grip, similar to the above-described embodiment. However the proximity, amplitude and width of these indentation rings may differ from the indentation rings of the above-described embodiment. For example, the proximity of a lowest indentation ring may be higher compared to the above-described embodiment, and each of the six indentation rings for both hands may have a higher amplitude when compared with the rings of the above-described embodiments. The indentation rings for both hands may be constructed with a greater and equal width in this embodiment. Such a change in proximity, width and amplitude may allow both hands to slip into more different grip positions. For example, in such an embodiment the bottom hand may slip into the western grip, the semi-western grip, the continental grip, the eastern back-hand grip and the western back-hand grip. The top hand may slip into the western forehand grip, the semi-western forehand grip, and the continental grip. Also in this case, the indentations may allow for easy and/or guided transition between the respective grips. For example, such an embodiment may be used as tennis racquet handles for players who use up to three different forehand grips, and/or up to three single-handed back-hand grips, and/or up to four different two-handed back-hand grips. Such an embodiment may also suit players who always use more conservative grips, or always use more extreme grips, or use conservative grip positions for certain strokes and extreme grips for other strokes.

[0039] In still another embodiment, also referred to as third embodiment, the indentations are provided as undulating and sinusoidal indentation rings that may be clustered into two groups on the handle. The sinusoidal indentation rings in this embodiment may be configured to locate a hand like the bottom hand or both hands in a plurality of, for example three, main grip positions and a plurality of, for example two, secondary grip positions. Such an embodiment may for example comprise four indentation rings spanning the circumference of the handle, two for the bottom hand and two for the top hand. In case of a tennis racquet, the grip as explained above has an octagonal cross sectional shape with eight bevels. In such an embodiment, for example the top sinusoidal indentation rings in the bottom group or both groups of indentations may have peaks on the four larger bevels. The valleys of the top sinusoidal indentation rings corre-

spondingly are situated on the four smallest bevels. The bottom sinusoidal indentation rings in contrast may for example have two peaks and two valleys. The valleys may be situated on the two largest bevels, and the peaks may be situated on the two next smaller bevels. The peaks and valleys of the two sinusoidal indentation rings in each group of indentations may furthermore be proximate to each other or abut one another. The indentation rings may proximate at the height of the two largest bevels in both groups of indentation rings. In such an embodiment the main grip positions that the hand(s) may slip into are the eastern forehand grip, the continental grip and the eastern single-handed back-hand grip. Two secondary grip positions are the western forehand grip and the western single-handed back-hand grip. Also this configuration may allow for easy and/or guided transition between the respective grips.

[0040] In still another embodiment, also referred to as fourth embodiment, the sinusoidal indentation rings may also be clustered into two groups on the racquet grip, one group for the bottom hand and optionally a second group for the (non-dominant) top hand. In this embodiment the indentation rings may be configured to locate the bottom hand or both hands only in three different grip positions. Such an embodiment may have four undulating sinusoidal indentation rings for the bottom hand, and when constructed for both hands eight sinusoidal indentation rings. Each of the sinusoidal indentation rings in this embodiment may span the circumference of the handle and may have only one peak and one valley. The peaks of all indentation rings in this embodiment may be situated on the smallest bevels, for the bottom hand or for both hands. The valleys of all indentation rings may be situated on the exact opposite bevels to the peaks. The indentation rings in this embodiment may proximate or abut one another. The indentation rings may proximate one another in this embodiment on the two biggest bevels and abut one another in the next smaller two bevels. In this embodiment, four protrusions thus created on the biggest bevels for one hand or both hands play a role for allowing the hand(s) to slip into the appropriate grips. In this embodiment, the grip positions that the bottom hand or both hands may slip into are the western forehand grip, the continental grip as well as the eastern back-hand grip. Such a grip may for example suit players who play one-handed or players who play single-handed forehands and double-handed back-hands.

[0041] In still another embodiment, also referred to as fifth embodiment, two groups of indentation rings may be provided around the circumference of a handle like a racquet handle. The lower group of indentation rings in this embodiment is molded near the free end of the handle. The upper group of indentation rings is molded near the upper, i.e. fixed end, of the handle. The bottom hand may slip into certain grips in the lower group for example to play tennis strokes. The top hand may slip into certain grips in the upper group, for example to also play tennis strokes. This embodiment is an embodiment for both

hands consisting of different combinations of the above-described embodiments. For example, this handle may be racquet grip with indentation rings as described for the second embodiment for the bottom hand and indentation rings as described for the third embodiment above molded on the same racquet grip for the top hand. With such a combination of indentation rings new grip positions may be found. With such an embodiment, all playing styles can be achieved.

[0042] The continental grip or alternatively the semi-western grip of the indentations are provided, e.g. molded, accordingly, e.g. 180 degrees further on the handle, may be used by squash and badminton players when playing or squash badminton strokes. The double handed tennis grip may be used by cricket players and baseball players when playing all cricket and baseball strokes. A western one-handed backhand grip for the top hand may be used by hockey players when playing hockey. A semi-western grip for a bottom hand near a striking end of a hockey clap may be used by hockey players when stopping a ball or dribbling with the ball.

[0043] The racquet handle and/or outer grip may define indentations only and not ridges or protrusions.

[0044] The outer grip (whether it defines the indentations or not) may be colour-coded. More specifically, the outer grip may have a different colour indicating the location of each of the indentations. Alternatively, certain areas on the outer grip may be colour-coded indicating the exact desired positioning of the thumb and/or the index finger and/or the middle finger, or parts thereof. The colour codes may also be provided on the under-grip. Here for example certain parts or areas of each indentation ring on the under-grip may be colour-coded indicating the desired exact positioning of the thumb and/or index finger and/or middle finger(s) or parts thereof (or also other fingers). In such an embodiment, the colour codes may for example be visible through small holes like the conventional perspiration holes on the outer grip thus allowing the different grip positions to be easily found.

[0045] The size and dimension of the indentations may be varied for tennis players of different stature e.g. for adults and for children.

[0046] Some sporting articles may include only one group of indentations. Thus, in the case of squash and badminton racquets and hockey clubs, there may be a single group of indentations for accommodating only the dominant hand. Conversely, in the case of golf clubs, cricket bats and baseball bats, there may be either one or two groups of indentations.

[0047] The invention extends to a sporting article having such a handle or outer grip. The sporting article (e.g. tennis racquet) and/or the outer grip may be packaged together with instructions for use. The instructions may be embodied by a video, for example stored on a DVD. Instead, or in addition, the instructions may be written, for example embodied by a pamphlet or instruction manual.

[0048] The invention therefore extends to a sporting

article kit including a sporting article as above defined and instructions as above defined.

[0049] The invention extends to a method of holding a sporting article, the method including locating the fingers or hand of a user on the sporting article by means of a series of circumferentially extending indentations. The indentations may be as above defined.

[0050] The invention extends to a method of manufacturing a sporting article, the method including forming indentations as defined above in at least a portion of the handle.

[0051] It is to be emphasized that the use of the designations "first embodiment", "second embodiment", etc. merely serves for easy reference and is not to be construed as indicating that no other embodiments exist. Moreover, as explained above for each of the first to fifth embodiment described above, a plurality of variations and optional features exist.

[0052] The application of the invention is not limited to tennis racquets but can be applicable to a wide range of sporting articles, such as racquets, bats, clubs, and the like.

BRIEF DESCRIPTION OF DRAWINGS

[0053] The invention will now be further described, by way of example, with reference to the accompanying diagrammatic drawings.

[0054] In the drawings:

Figure 1 shows a front (or rear) elevational view of a tennis racquet including a handle in accordance with an embodiment of the invention;

Figure 2 shows a side elevational view of the tennis racquet of Figure 1;

Figure 3 shows a front (or rear) elevational view of the racquet handle of Figure 1;

Figure 4 shows a side elevational view of the racquet handle of Figure 1;

Figures 5a - 5c show elevational views of the racquet handle of Figure 1 being grasped by a semi-western forehand grip;

Figures 6a - 6c show elevational views of the racquet handle of Figure 1 being grasped by a continental grip;

Figures 7a - 7c show elevational views of the racquet handle of Figure 1 being grasped by a one-handed western backhand grip;

Figures 8a - 8c show elevational views of the racquet handle of Figure 1 being grasped by a non-dominant or an upper hand using a semi-western forehand grip, used in a first version and a second version of a double-handed backhand grip;

Figures 9a - 9c show elevational views of the racquet handle of Figure 1 being grasped by the first version of a double-handed backhand grip, with the dominant or lower hand using the continental grip of Figures 7a - 7c and the non-dominant or upper hand

using the semi-western forehand grip of Figures 9a - 9c;

Figures 10a - 10c show elevational views of the racquet handle of Figure 1 being grasped by the second version of a double-handed backhand grip, with the dominant or lower hand using the one-handed western grip of Figures 8a - 8c and the non-dominant or upper hand using a semi-western forehand grip of Figures 9a - 9c;

Figure 11a shows a rear elevational view of a cricket bat including a handle in accordance with the invention;

Figure 11b shows an elevational view of the cricket bat of Figure 11a being grasped in a double-handed backhand grip;

Figure 12a shows a front (or rear) elevational view of a squash racquet in accordance with the invention; Figure 12b shows an elevational view of the squash racquet of Figure 12a being grasped in a continental grip;

Figure 13 shows a front (or rear) elevational view of a tennis racquet including a handle in accordance with a further embodiment of the invention;

Figure 14 shows a side elevational view of the tennis racquet of Figure 13;

Figure 15 shows a front (or rear) elevational view of the racquet handle of Figure 13;

Figure 16 shows a side elevational view of the racquet handle of Figure 13;

Figure 17 shows a front (or rear) elevational view of a tennis racquet including a handle in accordance with another embodiment of the invention;

Figure 18 shows a side elevational view of the tennis racquet of Figure 17;

Figure 19 shows a front (or rear) elevational view of the racquet handle of Figure 17;

Figure 20 shows a side elevational view of the racquet handle of Figure 17;

Figure 21 shows a front (or rear) elevational view of a tennis racquet including a handle in accordance with an embodiment of the invention;

Figure 22 shows a side elevational view of the tennis racquet of Figure 21;

Figure 23 shows a front (or rear) elevational view of the racquet handle of Figure 21;

Figure 24 shows a side elevational view of the racquet handle of Figure 21;

Figure 25 shows a front (or rear) elevational view of a tennis racquet including a handle in accordance with a further embodiment of the invention;

Figure 26 shows a side elevational view of the tennis racquet of Figure 25;

Figure 27 shows a front (or rear) elevational view of the racquet handle of Figure 25;

Figure 28 shows a side elevational view of the racquet handle of Figure 25;

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0055] Referring first to Figures 1 to 4, reference numeral 10 generally indicates a sporting article, in the form of a tennis racquet, in accordance with the invention. The tennis racquet 10 includes a racquet head 12 and a racquet handle 14. The racquet handle 14 defines a series of circumferentially extending indentations 16 (which can be seen more clearly in Figures 3 and 4), which may define a series of peaks and valleys and are also referred to as indentation rings in the context of this application, which are configured, i.e. arranged, shaped and dimensioned, to accommodate and locate at least one hand of a tennis player in at least two different grips (in this example, three one-handed grips and two double-handed grips).

[0056] More particularly, the indentations 16 are clustered into two groups 16.1, 16.2. The top group 16.1 comprises three individual indentations which abut each other, as does the bottom group 16.2. The bottom group 16.2 is configured to locate the fingers of a dominant or lower hand (i.e. a right-hand for a right-handed tennis player) which will always be present during a shot. On the other hand, the top group 16.1 is configured to locate a non-dominant or upper hand, which will typically only be used for playing two handed shots.

[0057] The indentations 16 are undulating or sinusoidal and each comprise two peaks and two valleys. The peaks or valleys of each indentation 16 abut against the valleys or peaks of an adjacent indentation 16. More specifically, the peaks of one indentation 16 abut against the valleys of a superjacent indentation 16, while the valleys of one indentation abut against the peaks of a subjacent indentation 16.

[0058] Although not illustrated in the black and white Figures, the indentations 16 in the respective groups 16.1, 16.2 are colour-coded. For instance, the upper indentation 16 in each group 16.1, 16.2 may be green, while the middle indentation may be black and the lower indentation may be orange. It should be noted that the upper indentation 16 has a thicker width than each of the middle and lower indentation 16, which have an equal width.

[0059] Figures 1 to 4 illustrate an under grip of the tennis racquet 10, which may in use receive an over grip, if desired. In such case, it may be the over grip which is colour-coded. The over grip may be generally flat but sufficiently thin to follow the contours and indentations of the under grip. It should be noted that the under grip does not include any ridges or protrusions, thus facilitating smooth and obstruction free transitions from one grip to another.

[0060] Figures 5a - 5c respectively show side, front and other side elevational views of the handle 14 being grasped in a semi-western forehand grip. The thumb is located in the middle indentation 16 of the lower group 16.2 on one of the sides of the handle 14, with the index

finger being located in the upper indentation 16 of the lower group 16.2 on the other side of the handle 14. The middle finger is located in the bottom indentation 16 and extends between the two sides, e.g. along the front or back, closing the grip.

[0061] Figures 6a - 6c respectively show side, front and other side elevational views of the handle 14 being grasped in a continental grip. The thumb is located in the middle indentation 16 of the lower group 16.2, extending between the sides, i.e. along the front or the back of the handle 14. The index finger is located in the top indentation 16 opposite the thumb, i.e. extending along the back or the front of the handle 14. The middle finger is located in the bottom indentation 16, extending between the two sides, along the front or the back, closing the grip.

[0062] Figures 7a - 7c respectively show side, front and other side elevational views of the handle 14 being grasped in a one-handed western backhand grip. In this grip, the thumb is located in the middle indentation on one of the sides of the lower group 16.2 while the index finger is located in the top indentation 16 on the front or the back. The middle finger is located in the bottom indentation 16 and closes the grip on both sides.

[0063] Figures 8a - 8c respectively show side, front and other side elevational views of the handle 14 being grasped by a non-dominant or upper hand using a semi-western forehand grip, used in a first version and a second version of a double-handed backhand grip.

[0064] The thumb is located in the middle indentation 16 of the top group 16.1 on the top or bottom of the handle 14. The index finger is located in the top indentation 16 opposite the thumb on either the bottom or the top of the handle 14, while the middle finger extends along a side of the bottom indentation 16 between the thumb and index finger, closing the grip.

[0065] Figures 9a - 9c respectively show side, front and other side elevational views of the handle 14 being grasped by both hands in a first version of a double-handed backhand grip. In this first version, the dominant hand slides into the continental grip (as shown in Figures 6a - 6c), while the non-dominant hand uses the semi-western forehand grip of Figures 8a - 8c.

[0066] Similarly, Figures 10a - 10c show side, front and other side elevational views of the handle 14 being grasped by both hands in a second version of a double-handed backhand grip. In the second version, in contrast with the first version above, the dominant hand slides into the (one-handed) western backhand grip (as shown in Figures 7a - 7c).

[0067] In use, the indentations 16 serve to guide and locate the fingers of the player in one of the three grips (for the dominant hand). Further, the indentations 16 allow smooth and guided transition from one grip to another. For instance, if the hand is turned or displaced circumferentially by 90° relative to the racquet handle 14 from the semi-western forehand grip (Figures 5a - 5c), the indentations guide or at least assist the fingers to position themselves in the continental grip (Figures 6a -

6c). This may be useful, on the one hand, for training tennis players to become familiar with the different grips and, on the other hand, for actual use during tennis matches to help form grips properly and transition from one grip to another.

[0068] With a racquet handle 14 as described above, grip variations as used by top players like e.g. Gustavo Kuerten, Ivan Ljubicic, Tommy Robredo, Philipp Kohlschreiber, Raphael Nadal, Carlos Moya, David Nalbandian, Nikolay Davidenko or Fernando Verdasco may be easily used by a hobby player.

[0069] Such a tennis racquet 10 in accordance with the invention could be sold together with instructions for its use (in the form of an instructional pamphlet and/or a DVD) in the form of a tennis training or tennis playing kit.

[0070] Referring now to Figures 11, the indentations 16 may similarly be applied to a sporting article in the form of a cricket bat 100 having a blade 102 and a handle 14 in accordance with the invention. As illustrated in Figure 11b, the cricket bat 100 may be grasped in a double-handed backhand grip.

[0071] Referring now to Figures 12, the indentations 16 may equally be applied to a sporting article in the form of a squash racquet 200 having a racquet head 202 and a handle 14 in accordance with the invention. Figure 12b illustrates that the squash racquet 200 may be grasped using a continental grip.

[0072] An advantage of the invention as exemplified is that in at least one embodiment the forming of the indentations in accordance with the invention can easily be done by moulding the under grip or an intermediate layer of the handle. Additionally, existing tennis racquets can be retrofitted with an outer grip in accordance with the invention so that a player need not sacrifice his/her favourite racquet in order to reap the benefits provided by the indentations 16.

[0073] Also, the indentations 16 in the embodiment shown are symmetrical and therefore will work equally well for left-handed and right-handed tennis players. The indentations 16 provide for both one-handed and double-handed grips.

[0074] The racquet grip 14 does not define any ridges or protrusions which could interfere with the transition between grips.

[0075] With the grips for which the indentations 16 provide, it is possible to play at least the majority and probably all useful tennis shots.

[0076] The tennis racquet 10, or at least the racquet handle 14, may be provided in different sizes for different players simply by scaling the size of the indentations 16 accordingly. If desired, respective indentations may be colour-coded for easy identification.

[0077] The handle 14 as described above with respect to the figures, in particular the tennis racquet handle described with reference to Figs. 1-10, is merely one example for implementing the present invention, and a plurality of variations are possible, some of which will be described below.

[0078] For example, in a further embodiment of a racket 20 with a racket handle 24 and a racket head 22 shown in Figs. 13-16, one or two groups 26.1, 26.2 of circumferentially extending indentations 26, also referred to as indentation rings, may be provided similar to indentations 16 of the embodiment of Figs. 1-10. However, the proximity, amplitude and width of the indentations 26 may differ from the indentations 16 discussed with respect to Figs. 1-10. For example, in a particular embodiment, the proximity (i.e. distance between indentation rings), amplitude and width of the indentation rings 26 may differ from the ones discussed with reference to Figs. 1-10. For example, the proximity of the lowest indentation ring 26 in a particular embodiment may be higher when compared with the lowest indentation ring 16 of the embodiment of Figs. 1-10. Furthermore, each of the six indentation rings 26 for both hands may have a higher amplitude and may be constructed with a greater but equal width in the embodiment of Figs. 13-16. This change in proximity, width and amplitude of all the indentation rings allows both hands to slip into more grip variations. In particular, in such an embodiment the hands may slip into any one of eight grip positions such that several different forehand and back-hand grips may be used. The forehand grips that the bottom hand may slip into in such an embodiment are the western forehand grip and the semi-western forehand grip. The back-hand grips that the bottom hand may slip into in such an embodiment are the eastern back-hand grip and the single-handed western grip. Such widened bottom indentation rings 26 also simplify the locating of the continental grip for the bottom hand. The top hand may use also the widened indentation rings 26 allowing the (dominant) top hand to slip into the western forehand grip, the semi-western forehand grip or the continental grip. This racket handle suits players who use up to three forehand grips and/or three single-handed back-hand grips and/or up to four double-handed back-hand grips. Such an embodiment may provide all the grip variations used by players like Andy Murray, Juan Martin del Potro, Novac Djokovic, Nikolay Davidenko or Vernando Verdasco, facilitating it for hobby players to use these grips.

[0079] By combining the possibilities given above for the top hand and the bottom hand, the following ten different grip positions may be used in the embodiment of Figs. 13-16:

Bottom Hand:

- Western forehand grip
- Semi-western forehand grip
- Continental grip
- Eastern single-handed back-hand grip
- Western single-handed back-hand grip

Both Hands:

- A two-handed back-hand: bottom hand conti-

nental grip, top hand semi-western forehand grip

- A two-handed back-hand: bottom hand continental grip, top hand continental grip
- A two-handed back-hand: bottom hand eastern back-hand grip, top hand semi-western forehand grip
- A two-handed back-hand: bottom hand eastern back-hand grip, top hand western forehand grip
- A two-handed back-hand: bottom hand western back-hand grip, top hand semi-western forehand grip

[0080] Also in this embodiment, the outer grip, whether the indentations are defined on the outer grip, in the under grip or therebetween, may be colour-coded in order to facilitate locating the grips. More specifically, similar to the embodiment shown in the figures the outer grip may have different colour codes indicating the location of each of the circumferentially extending indentation rings molded on the racket grip. Alternatively certain areas on each of the indentation rings may be colour-coded. When for example the middle knuckle of the index finger is placed in one of the indentation rings on a specific bevel, i.e. face of the handle, which is colour-coded, on the handle, and the area of the thumb between the two thumb knuckles is placed in another indentation ring on a corresponding colour, a specific grip position may be found. Similarly, all the other grip positions for the top and bottom hands that this racket grip allows or may be found using colour codes. As in this embodiment a large variety of grip possibilities may be found, some grip positions may for example be found when the knuckle of index finger is placed on a specific bevel with a specific colour code and the area between the two thumb knuckles in contrast based on another bevel with a different or even the same colour code.

[0081] In yet a further embodiment shown in Figs. 17-20, a handle 34, for example for a tennis racket 30 having a head 32, may have altogether four circumferentially extending indentations 36, two (36.1) for the top hand and two (36.2) for the bottom hand. In other words, while in Figs. 1-10 three indentation rings 16 are provided for each of the top hand and the bottom hand, in this further embodiment only two indentation rings 36 are provided for each hand, or in still other words, each group 36.1, 36.2 only comprises two indentation rings. The indentation rings 36 for both hands may be undulating or sinusoidal and each comprise peaks and valleys.

[0082] To explain the positioning of indentation peaks and valleys in this embodiment of Figs. 17-20, it should be noted that a tennis handle usually has an octagonal cross section with eight bevels, corresponding to eight faces of the handle. In common tennis racket handles,

the eight bevels comprise usually two largest bevels that are equal in size, two next smaller bevels which are also equal in size and finally four even smaller bevels again equal in size.

[0083] In the currently discussed embodiment, a top sinusoidal indentation of each of the two groups of indentations 36.1, 36.2 ("top" referring to the indentation closer to the fixed end of the handle) each has four peaks and four valleys. The peaks are provided on the four larger bevels, and the valleys on the four smaller bevels. The bottom sinusoidal indentation of each of the two groups of indentations 36.1, 36.2 in the currently discussed embodiment only has two peaks and two valleys. The peaks are provided on the two next smaller bevels and the valleys on the two largest bevels. The two indentation rings 36 of each group of indentations may be proximate one another, i.e. come close to one another, or may abut one another. The indentations 36 in each group 36.1, 36.2 in a particular implementation abut twice, namely at the height of the two next smaller bevels.

[0084] The indentations 36 of this embodiment allow the hand to slip into five main grip positions (both for left- and right-handed persons), three main grip positions for the bottom hand and two main grip positions for the top hand. Furthermore, this handle 34 allows for two additional secondary grip positions for the bottom hand. The three main grip positions that can be perceived exactly by the bottom hand include the following: eastern forehand grip, continental grip and eastern single-handed back-hand grip. These grips are for example used by Roger Federer when he plays the various tennis strokes. Additionally, the hand can slip into the full western forehand grip or the full western single-handed back-hand grip. Furthermore, this racquet handle 34 also offers a two-handed back-hand player the possibility to perceive exactly either the continental grip or the eastern forehand grip with his top hand. In combinations, up to eight grip positions can be found on this handle. These eight grip positions the hands can easily slip into guided by the indentations 36 are:

- the eastern forehand grip
- the western forehand grip
- the continental grip
- the single-handed eastern back-hand grip
- the single-handed western back-hand grip
- a two-handed back-hand: bottom hand continental grip, top hand eastern forehand grip
- a two handed back-hand: bottom hand continental grip, top hand continental grip
- a two handed back-hand: bottom hand eastern back-hand grip, top hand eastern forehand grip.

[0085] Also in this embodiment, colour codes may be used to facilitate finding each of the above-listed eight possible grip positions. For example, again the area between the two thumb knuckles and the middle knuckle of the index finger may be used to indicate the various

grips. To achieve this, certain areas of each indentation ring may be colour-coded. When the middle knuckle of the index finger is placed in an indentation of a specific bevel which is colour-coded and the area between the two thumb knuckles in another indentation with corresponding colours, one of the grip positions may be found depending on the colour. The main grip positions for both hands that may be found on this handle in this manner may be the eastern forehand grip, the continental grip, and the single-handed eastern back-hand grip for the bottom hand and the continental grip and the eastern forehand grip for the top hand. The secondary grip positions that can be found in a similar way, i.e. using colour coding, are the western forehand grip and the extreme western single-handed back-hand grip for the bottom hand, although in other embodiments colour coding for the secondary grip positions may be omitted.

[0086] In a still further embodiment shown in Figs. 21-24, a handle 44, for example of a tennis racquet 40 having a head 42, comprises a plurality of, preferably up to eight, wave-shaped indentation rings 46, each of said indentation rings 46 having one peak and one valley, which are provided, for example molded across the circumference of the handle, for example molded across the circumference of the under grip. The positions of the peaks and valleys will again be described making reference to the bevels of a tennis racquet handle having an octagonal cross section.

[0087] In the currently discussed embodiment, the peaks of each of the wave-shaped indentation rings 46, for example four indentation rings 46 for the top hand, i.e. of a first group 46.1, and four for a bottom hand, i.e. for a second group 46.2, are provided on the four smallest bevels. Each valley of the eight wave-shaped indentations 46 are provided on the exact opposite smallest bevel with respect to the bevel where the peak is provided. Each of the indentation rings 46 may abut or proximate the adjacent indentation ring(s) 46. The indentation rings 46 in the currently discussed embodiment proximate one another, i.e. come close to each other, on the two biggest bevels. In this manner four protrusions remain on each of the biggest bevels, two for the bottom hand and two for the top hand. The two protrusions for the bottom hand assist finding the continental grip, the western forehand grip and the eastern back-hand grip. The two remaining protrusions for the top hand facilitate finding various double-handed grips.

[0088] The indentations 46 of the currently discussed embodiments allow the hands to easily slide into five grip positions. The hands may slip into three grip positions for the bottom hand and two grip positions for the top hand. In particular, the bottom hand may easily slide into the western forehand grip, the continental grip and the eastern single-handed back-hand grip, while the top hand may easily slide into the western grip and the continental grip. For example, Tommy Haas uses the western forehand grip, the continental grip and the eastern single-handed back-hand grip for all of his shots. Other

players like Andy Murray, Novak Djokovic and Andy Roddick use the western forehand grip, the continental grip and a double-handed back-hand grip where the top hand is either in the continental grip or the western forehand grip and the bottom hand is either in the continental grip or the eastern back-hand grip. Therefore, the grip variations used by these players may be easily taken with the currently discussed embodiment.

[0089] Therefore, with the currently discussed embodiment of Figs. 21-24 up to six different grip positions may be easily found:

- the western forehand grip
- the continental grip
- the eastern single-handed back-hand grip
- a two-handed back-hand: bottom hand continental grip, top hand continental grip
- a two-handed back-hand: bottom hand continental grip, top hand western forehand grip
- two-handed back-hand: bottom hand eastern back-hand, top hand western forehand grip.

[0090] Also in this embodiment, a colour coding may be provided to facilitate finding the different grips. In this embodiment, for example the middle knuckle of the index finger of both hands may be used or facilitate finding the six grip positions. When the middle index finger knuckle of the bottom hand is placed in an indentation ring on one of the four smallest bevels which are colour-coded, one of the four grip positions for the bottom hand is shown. When the middle index finger knuckle of the bottom hand is placed in an indentation ring on exact the opposite bevel which is colour-coded with the same colour the same grip position for the bottom hand is found. In a similar manner when the middle index finger knuckle of the bottom hand is placed in an indentation ring on one of the two remaining smallest bevels which are also colour-coded a second grip position for the bottom hand is found. When the middle index finger knuckle of the bottom hand is placed in an indentation ring on the exact opposite bevel to the previously mentioned one which is colour-coded with the same colour the same grip is found. The western forehand grip and the eastern back-hand grip are in fact the same grip. Therefore, both strokes may be played without changing the grip if the balls are played on either side of the body with the same side of the racquet face or the grip may be changed in different sides of the racquet face. Therefore, in such an embodiment, the colour coding for a forehand grip and a single-handed back-hand grip are the same for the bottom hand.

[0091] The above-mentioned embodiments are merely examples, and in particular various features described above may be combined with each other. For example, indentation rings for the top hand may be taken from one of the embodiments, while indentation rings for the bottom hand are taken from another one of the embodiment. For example, a racquet handle 50 having a head 52 and a handle 54 as shown in Figs. 25-28 may have the in-

dentations 56.2 for the bottom hand of embodiment of Figs. 13-16, i.e. corresponding to indentations 26.2, and for the top hand the indentation rings 56.1 correspond to indentation rings 36.1 of the embodiment of Figs. 17-20.

5 This combination for example allows the bottom hand to easily slip into the semi-western forehand grip, a western forehand grip, a continental grip, an eastern back-hand grip or a western back-hand grip. The top hand can easily slip into a western forehand grip, an eastern forehand grip or a continental grip. In such an embodiment, the hands can slip into more different double-handed back-hand grip variations than before. In other embodiments, for example the bottom hand indentations 36.1 of the embodiment of Figs. 17-20 which are less complex may be combined with the top hand indentations 46.1 of the embodiment of Figs. 21-24 providing for less complex grips.

10 **[0092]** Correspondingly, for colour coding also the above-described embodiments can be combined with each other.

15 **[0093]** All of the above-described embodiments may be implemented as fixed handles, for example by providing molded indentations in an under grip which is then covered by the over grip or by providing indentations even on the over grip, or as a removable training grip which is designed to removably cover a handle of a sporting article, for example by being pullable over the handle of the sporting article. The molded material can be a natural or synthetic material, which preferably is resilient, shock-absorbent and vibration-absorbent. The molding may be performed by heating the moldable material, or by molding it at room temperature for example by applying light in a suitable spectral range.

25 **[0094]** The indentations described above may be all arranged in a symmetrical manner such that both right-handed and left-handed people can use the same handle, for example the same tennis racquet. Furthermore, such symmetrical indentations allow for grip changes in both directions. In embodiments, no ridges exist on the handle, only the depressions, which ensures a secure grip positioning but nevertheless comfortable grip changes.

30 **[0095]** While in the embodiments described above the indentations form indentation rings extending completely around the handle, in other implementations the indentations may extend only partially around the handle.

35 **[0096]** The handles described above may be manufactured in different sizes to accommodate different hand sizes. Instructions for use, for example on a DVD or in a booklet or pamphlet, may be provided accompanying the handle or sporting article.

40 **[0097]** As can be seen, a plurality of variations and modifications is possible, and consequently the above-described embodiments are not to be construed as limiting the scope of the present application as defined by the appended claims.

Claims

1. A handle portion (14; 24; 34; 44; 54) for a sporting article, the handle portion (14; 24; 34; 44; 54) defining one or more circumferentially extending indentation rings (16; 26; 36; 46; 56), which are depressions in the handle portion and which are configured to guide and locate at least one hand of a user in at least two different predetermined grips, wherein the one or more indentation rings (16; 26; 36; 46; 56) are sinusoidal, undulating or wave-shaped indentations extending circumferentially fully around the handle portion, **characterised in that** the handle portion (14; 24; 34; 44; 54) has an octagonal cross-section, and **in that** the at least two different predetermined grips define different angles of a face of the sporting article. 5
2. The handle portion (14; 24; 34; 44; 54) of claim 1, wherein said one or more circumferentially extending indentation rings (16; 26; 36; 46; 56) comprise a first group (16.1; 26.1; 36.1; 46.1; 56.1) of indentation rings arranged adjacent to a free end of the handle portion to accommodate and locate a first hand of a user and a second group (16.2; 26.2; 36.2; 46.2; 56.2) of circumferentially extending indentation rings arranged adjacent to an end of the handle portion destined to be located adjacent to a remaining portion of the sporting article and configured to accommodate and locate a second hand of the user when using a two-handed grip. 10 20 25 30
3. The handle portion (14; 24; 34; 44; 54) of any one of claims 1 or 2, wherein the sinusoidal shape, undulating shape or wave-shape of each indentation ring (16; 26; 36; 46; 56) comprises one or more peaks and one or more valleys. 35
4. The handle portion (14; 24; 34; 44; 54) of any one of claims 1-3, wherein at least two adjacent indentation rings of the one or more indentation rings (16; 26; 36; 46; 56) proximate and/or abut each other. 40
5. The handle portion (14; 24; 34; 44; 54) of any one of claims 1-4, wherein the indentation rings (16; 26; 36; 46; 56) are colour-coded indicating the exact desired positioning of a thumb, an index finger, a middle finger or parts thereof. 45
6. The handle portion (14; 24; 34; 44; 54) of any one of claims 1-5, wherein different ones of the one or more indentation rings (16; 26; 36; 46; 56) have different amplitudes. 50
7. The handle portion (14; 24) of any one of claims 1-6, wherein the indentation rings are grouped into a first group (16.1; 26.1) adjacent to an end of the handle portion destined to be located adjacent to a remaining portion of the sporting article, and a second group (16.2; 26.2) towards a free end of the handle portion, each group comprising three of said one or more indentation rings (16; 26), wherein an indentation ring (16; 26) of each group closer to the first end has a larger amplitude than the other indentations rings. 5
8. The handle portion (14) of claim 7, wherein the indentation rings (16) are configured to locate each hand in the semi-western forehand grip, a continental grip or a western back-hand grip. 10
9. The handle portion (24) of claim 7, wherein the indentation rings (26) are configured to locate a hand of a user in the western grip, the semi-western grip, the continental grip, the eastern back-hand grip or the western back-hand grip. 15
10. The handle portion (34) of any one of claims 1-6, wherein the one or more indentation rings (36) are grouped into two groups (36.1, 36.2), wherein each group comprises two indentation rings (36), the sinusoidal shape, undulating shape or wave-shape of the indentation rings (36) of each group closer to a first end of the handle portion (34) destined to be adjacent a remainder of the sporting article having four peaks and four valleys and the sinusoidal shape, undulating shape or wave-shape of the indentation rings closer to a second free end of the handle portion (34) having two peaks and two valleys. 20 25 30
11. The handle portion (44) of any of claims 1-6, wherein the handle portion (44) has an octagonal cross section with two largest bevels opposite each other, two middle bevels opposite each other and smaller than the largest bevels, and four smallest bevels smaller than the middle bevels and separating the largest bevels and the middle bevels, wherein the indentation rings (46) are grouped into a first group (46.1) adjacent to a free end of the handle portion configured to accommodate and locate a first hand of a user and a second group (46.2) arranged adjacent to an end of the handle portion destined to be located adjacent to a remaining portion of the sporting article and configured to accommodate and locate a second hand of the user when using a two-handed grip, wherein each of the first and second groups (46.1, 46.2) has four indentation rings, the sinusoidal shape, undulating shape or wave-shape of each of the indentation rings having one peak situated on one of the smallest bevels and one valley situated on a bevel opposite to the peak. 35 40 45 50
12. The handle portion of any one of claims 1-11, wherein said one or more indentation rings comprise more than one indentation ring (16; 26; 36; 46; 56) clustered into two groups, a lower group towards a free end of the handle portion (14; 24; 34; 44; 54) 55

and an upper group towards an upper end of the handle portion (14; 24; 34; 44; 54), the lower group for locating a fist hand in at least two different predetermined grips and the upper group for locating a second hand in at least two different predetermined grips.

13. The handle portion (14; 24; 34; 44; 54) of any one of claims 1-11, wherein said handle portion (14; 24; 34; 44; 54) is configured to be removably slippable over a handle of a sporting article (10; 20; 30; 40; 50; 100; 200).
14. A sporting article (10; 20; 30; 40; 50; 100; 200) comprising a handle, said handle comprising a handle portion (14; 24; 34; 44; 54) according to any one of claims 1-13.
15. The sporting article (10; 20; 30; 40; 50; 100; 200) of claim 14, wherein said sporting article is a tennis racquet, a squash racquet, a cricket bat or a hockey stick.

Patentansprüche

1. Griffabschnitt (14; 24; 34; 44; 54) für einen Sportartikel, wobei der Griffabschnitt (14; 24; 34; 44; 54) einen oder mehrere sich in Umfangsrichtung erstreckende Vertiefungsringe (16; 26; 36; 46; 56) definiert, welche Vertiefungen in dem Griffabschnitt sind und welche eingerichtet sind, mindestens eine Hand eines Benutzers in mindestens zwei verschiedene vorgegebene Griffe zu führen und in diesen zu lokalisieren, wobei die ein oder mehreren Vertiefungsringe (16; 26; 36; 46; 56) sinusförmige, wellige oder wellenförmige Vertiefungen sind, welche sich in Umfangsrichtung vollständig um den Griffabschnitt erstrecken,
dadurch gekennzeichnet, dass der Griffabschnitt (14; 24; 34; 44; 54) einen achteckigen Querschnitt hat, und dass die mindestens zwei verschiedenen vorgegebenen Griffe verschiedene Winkel einer Fläche des Sportartikels definieren.
2. Griffabschnitt (14; 24; 34; 44; 54) nach Anspruch 1, wobei die ein oder mehreren sich in Umfangsrichtung erstreckenden Vertiefungsringe (16; 26; 36; 46; 56) eine erste Gruppe (16.1; 26.1; 36.1; 46.1; 56.1) von Vertiefungsringen, welche benachbart zu einem freien Ende des Griffabschnitts angeordnet sind, um eine erste Hand eines Benutzers aufzunehmen und zu lokalisieren, und eine zweite Gruppe (16.2; 26.2; 36.2; 46.2; 56.2) sich in Umfangsrichtung erstreckender Vertiefungsringe, welche benachbart zu einem Ende des Griffabschnitts angeordnet sind, welcher dazu bestimmt ist, benachbart zu einem verbleibenden Abschnitt des Sportartikels angeordnet

zu sein und welche eingerichtet sind, eine zweite Hand des Benutzers aufzunehmen und zu lokalisieren, wenn ein zweihändiger Griff benutzt wird, umfassen.

3. Griffabschnitt (14; 24; 34; 44; 54) nach einem der Ansprüche 1 oder 2, wobei die Sinusform, wellige Form oder Wellenform jedes Vertiefungsrings (16; 26; 36; 46; 56) einen oder mehrere Höhepunkte und ein oder mehrere Täler umfasst.
4. Griffabschnitt (14; 24; 34; 44; 54) nach einem der Ansprüche 1-3, wobei zumindest zwei benachbarte Vertiefungsringe der ein oder mehreren Vertiefungsringe (16; 26; 36; 46; 56) sich einander annähern und/oder aneinander stoßen.
5. Griffabschnitt (14; 24; 34; 44; 54) nach einem der Ansprüche 1-4, wobei die Vertiefungsringe (16; 26; 36; 46; 56) farbkodiert sind, was die exakte gewünschte Positionierung eines Daumens, eines Zeigefingers, eines Mittelfingers oder Teilen hiervon anzeigt.
6. Griffabschnitt (14; 24; 34; 44; 54) nach einem der Ansprüche 1-5, wobei unterschiedliche der ein oder mehreren Vertiefungsringe (16; 26; 36; 46; 56) verschiedene Amplituden aufweisen.
7. Griffabschnitt (14; 24; 34; 44; 54) nach einem der Ansprüche 1-6, wobei die Vertiefungsringe in eine erste Gruppe (16.1; 26.1) benachbart zu einem Ende des Griffabschnitts, welcher dazu bestimmt ist, benachbart zu einem verbleibenden Abschnitt des Sportartikels angeordnet zu sein, und eine zweite Gruppe (16.2; 26.2) zu einem freien Ende des Griffabschnitts hin gruppiert sind, wobei jede Gruppe drei der ein oder mehreren Vertiefungsringe (16; 26) umfasst, wobei ein Vertiefungsring (16; 26) jeder Gruppe, welche näher an dem ersten Ende ist, eine größere Amplitude aufweist, als die anderen Vertiefungsringe.
8. Griffabschnitt (14) nach Anspruch 7, wobei die Vertiefungsringe (16) eingerichtet sind, jede Hand im Semi-Western-Vorhandgriff, einem Kontinentalgriff oder einem Western-Rückhandgriff zu lokalisieren.
9. Griffabschnitt (24) nach Anspruch 7, wobei die Vertiefungsringe (26) eingerichtet sind, eine Hand eines Benutzers im Westerngriff, im Semi-Westerngriff, im Kontinentalgriff, im Eastern-Rückhandgriff oder im Western-Rückhandgriff zu lokalisieren.
10. Griffabschnitt (34) nach einem der Ansprüche 1-6, wobei die ein oder mehreren Vertiefungsringe (36) in zwei Gruppen (36.1, 36.2) gruppiert sind, wobei jede Gruppe zwei Vertiefungsringe (36) umfasst, wo-

bei die sinusförmige Form, wellige Form oder Wellenform der Vertiefungsringe (36) jeder Gruppe näher an dem ersten Ende des Griffabschnitts (34), welcher dazu bestimmt ist, benachbart zu einem übrigen Teil des Sportartikels zu sein, vier Höhepunkte und vier Täler aufweist, und die sinusförmige Form, wellige Form oder Wellenform der Vertiefungsringe näher an einem zweiten freien Ende des Griffabschnitts (34) zwei Gipfel und zwei Täler umfasst.

11. Griffabschnitt (44) nach einem der Ansprüche 1-6, wobei der Griffabschnitt (44) einen achteckigen Querschnitt mit zwei einander gegenüberliegenden größten Abflachungen, zwei einander gegenüberliegende mittlere Abflachungen, welche kleiner als die größten Abflachungen sind, und vier kleinste Abflachungen, welche kleiner als die mittleren Abflachungen sind und die größten Abflachungen und die mittleren Abflachungen voneinander trennen, wobei die Vertiefungsringe (46) in eine erste Gruppe (46.1) benachbart zu einem freien Ende des Griffabschnitts, welcher eingerichtet ist, eine erste Hand eines Benutzers aufzunehmen und zu lokalisieren, und eine zweite Gruppe (46.2), welche benachbart zu einem Ende des Griffabschnitts angeordnet ist, welche dazu bestimmt ist, benachbart zu einem verbleibenden Abschnitt des Sportartikels angeordnet zu sein und welche eingerichtet ist, eine zweite Hand des Benutzers aufzunehmen und zu lokalisieren, wenn ein zweihändiger Griff benutzt wird, gruppiert sind, wobei jede der ersten und zweiten Gruppen (46.1, 46.2) vier Vertiefungsringe aufweist, wobei die sinusförmige Form, wellige Form oder Wellenform jedes der Vertiefungsringe einen auf einer der kleinsten Abflachungen angeordneten Höhepunkt und einen auf einer Abflachung gegenüberliegend dem Höhepunkt angeordnetes Tal aufweist.
12. Griffabschnitt nach einem der Ansprüche 1-11, wobei die ein oder mehreren Vertiefungsringe mehr als einen Vertiefungsring (16; 26; 36; 46; 56) angeordnet in zwei Gruppen, eine untere Gruppe zu einem freien Ende des Griffabschnitts (14; 24; 34; 44; 54) hin und eine obere Gruppe zu einem oberen Ende des Griffabschnitts (14; 24; 34; 44; 54) hin umfassen, wobei die untere Gruppe zum Lokalisieren einer ersten Hand in zumindest zwei unterschiedlichen vorgegebenen Griffen und die obere Gruppe zum Lokalisieren einer zweiten Hand in mindestens zwei unterschiedlichen vorgegebenen Gruppen eingerichtet ist.
13. Griffabschnitt (14; 24; 34; 44; 54) nach einem der Ansprüche 1-11, wobei der Griffabschnitt (14; 24; 34; 44; 54) eingerichtet ist, entfernbar über einen Griff eines Sportartikels (10; 20; 30; 40; 50; 100; 200) überziehbar zu sein.

14. Sportartikel (10; 20; 30; 40; 50; 100; 200) umfassend einen Griff, wobei der Griff einen Griffabschnitt (14; 24; 34; 44; 54) gemäß einem der Ansprüche 1-13 umfasst.

15. Sportartikel (10; 20; 30; 40; 50; 100; 200) nach Anspruch 14, wobei der Sportartikel ein Tennisschläger, ein Squashschläger, ein Cricketschläger oder ein Hockeyschläger ist.

Revendications

1. Partie de manche (14; 24; 34; 44; 54) pour un article de sport, la partie de manche (14; 24; 34; 44; 54) définissant un ou plusieurs anneaux échancrés s'étendant circonférentiellement (16; 26; 36; 46; 56), qui sont des enfoncements dans la partie de manche et qui sont configurés pour guider et localiser au moins une main d'un utilisateur dans au moins deux prises différentes prédéterminées, les un ou plusieurs anneaux échancrés (16; 26; 36; 46; 56) étant des échancrures sinusoïdales, ondulées ou en forme d'onde s'étendant circonférentiellement tout autour de la partie de manche, **caractérisée en ce que** la partie de manche (14; 24; 34; 44; 54) a une section transversale octogonale, et **en ce que** les au moins deux prises différentes prédéterminées définissent des angles différents d'une face de l'article de sport.
2. Partie de manche (14; 24; 34; 44; 54) selon la revendication 1, lesdits un ou plusieurs anneaux échancrés s'étendant circonférentiellement (16; 26; 36; 46; 56) comprenant un premier groupe (16.1; 26.1; 36.1; 46.1; 56.1) d'anneaux échancrés disposés adjacents à une extrémité libre de la partie de manche pour loger et localiser une première main d'un utilisateur, et un deuxième groupe (16.2; 26.2; 36.2; 46.2; 56.2) d'anneaux échancrés s'étendant circonférentiellement disposés adjacents à une extrémité de la partie de manche destinée à être localisée adjacente à une partie restante de l'article de sport et configurés pour loger et localiser une deuxième main de l'utilisateur lorsqu'il utilise une prise à deux mains.
3. Partie de manche (14; 24; 34; 44; 54) selon l'une des revendications 1 ou 2, la forme sinusoïdale, la forme ondulée ou la forme d'onde de chaque anneau échancré (16; 26; 36; 46; 56) comprenant un ou plusieurs sommets et une ou plusieurs vallées.
4. Partie de manche (14; 24; 34; 44; 54) selon l'une des revendications 1-3, au moins deux anneaux échancrés adjacents des un ou plusieurs anneaux échancrés (16; 26; 36; 46; 56) étant voisins et/ou étant en butée les uns contre les autres.

5. Partie de manche (14; 24; 34; 44; 54) selon l'une des revendications 1-4, les anneaux échancrés (16; 26; 36; 46; 56) étant codés en couleur indiquant le positionnement exact désiré d'un pouce, d'un index, d'un médus ou de parties de ceux-ci. 5
6. Partie de manche (14; 24; 34; 44; 54) selon l'une des revendications 1-5, des anneaux différents des un ou plusieurs anneaux échancrés (16; 26; 36; 46; 56) ayant des amplitudes différentes. 10
7. Partie de manche (14; 24) selon l'une des revendications 1-6, les anneaux échancrés étant assemblés dans un premier groupe (16.1; 26.1) adjacent à une extrémité de la partie de manche destinée à être localisée adjacente à une portion restante de l'article de sport, et dans un deuxième groupe (16.2; 26.2) vers une extrémité libre de la partie de manche, chaque groupe comprenant trois desdits un ou plusieurs anneaux échancrés (16; 26), un anneau échancré (16; 26) de chaque groupe plus près de la première extrémité ayant une amplitude plus grande que les autres anneaux échancrés. 15
8. Partie de manche (14) selon la revendication 7, les anneaux échancrés (16) étant configurés pour localiser chaque main dans la prise coup droit semi-western, une prise continentale ou une prise revers western. 20
9. Partie de manche (24) selon la revendication 7, les anneaux échancrés (26) étant configurés pour localiser une main d'un utilisateur dans la prise western, la prise semi-western, la prise continentale, la prise revers eastern ou la prise revers western. 25
10. Partie de manche (34) selon l'une des revendications 1-6, les un ou plusieurs anneaux échancrés (36) étant assemblés en deux groupes (36.1, 36.2), chaque groupe comprenant deux anneaux échancrés (36), la forme sinusoïdale, la forme ondulée ou la forme d'onde des anneaux échancrés (36) de chaque groupe plus près d'une première extrémité de la partie de manche (34) destinée à être adjacente à un reste de l'article de sport présentant quatre sommets et quatre vallées, et la forme sinusoïdale, la forme ondulée ou la forme d'onde des anneaux échancrés plus près d'une deuxième extrémité libre de la partie de manche (34) présentant deux sommets et deux vallées. 30
11. Partie de manche (44) selon l'une des revendications 1-6, la partie de manche (44) ayant une section transversale octogonale avec deux chanfreins les plus grands opposés l'un à l'autre, deux chanfreins moyens opposés l'un à l'autre et plus petits que les chanfreins les plus grands, et quatre chanfreins les plus petits plus petits que les chanfreins moyens et 35
12. Partie de manche selon l'une des revendications 1-11, ledit ou un plusieurs anneaux échancrés comprenant plus d'un anneau échancré (16; 26; 36; 46; 56) agglomérés dans deux groupes, un groupe inférieur en direction d'une extrémité libre de la partie de manche (14; 24; 34; 44; 54), et un groupe supérieur en direction d'une extrémité supérieure de la partie de manche (14; 24; 34; 44; 54), le groupe inférieur pour localiser une première main dans au moins deux prises prédéterminées différentes, et le groupe supérieur pour localiser une deuxième main dans au moins deux prises prédéterminées différentes. 40
13. Partie de manche (14; 24; 34; 44; 54) selon l'une des revendications 1-11, ladite partie de manche (14; 24; 34; 44; 54) étant configurée pour pouvoir être glissée de manière démontable sur une manche d'un article de sport (10; 20; 30; 40; 50; 100; 200). 45
14. Article de sport (10; 20; 30; 40; 50; 100; 200) comprenant une manche, ladite manche comprenant une partie de manche (14; 24; 34; 44; 54) selon l'une des revendications 1-13. 50
15. Article de sport (10; 20; 30; 40; 50; 100; 200) selon la revendication 14, ledit article de sport étant une raquette de tennis, une raquette de squash, un battoir ou une crosse. 55

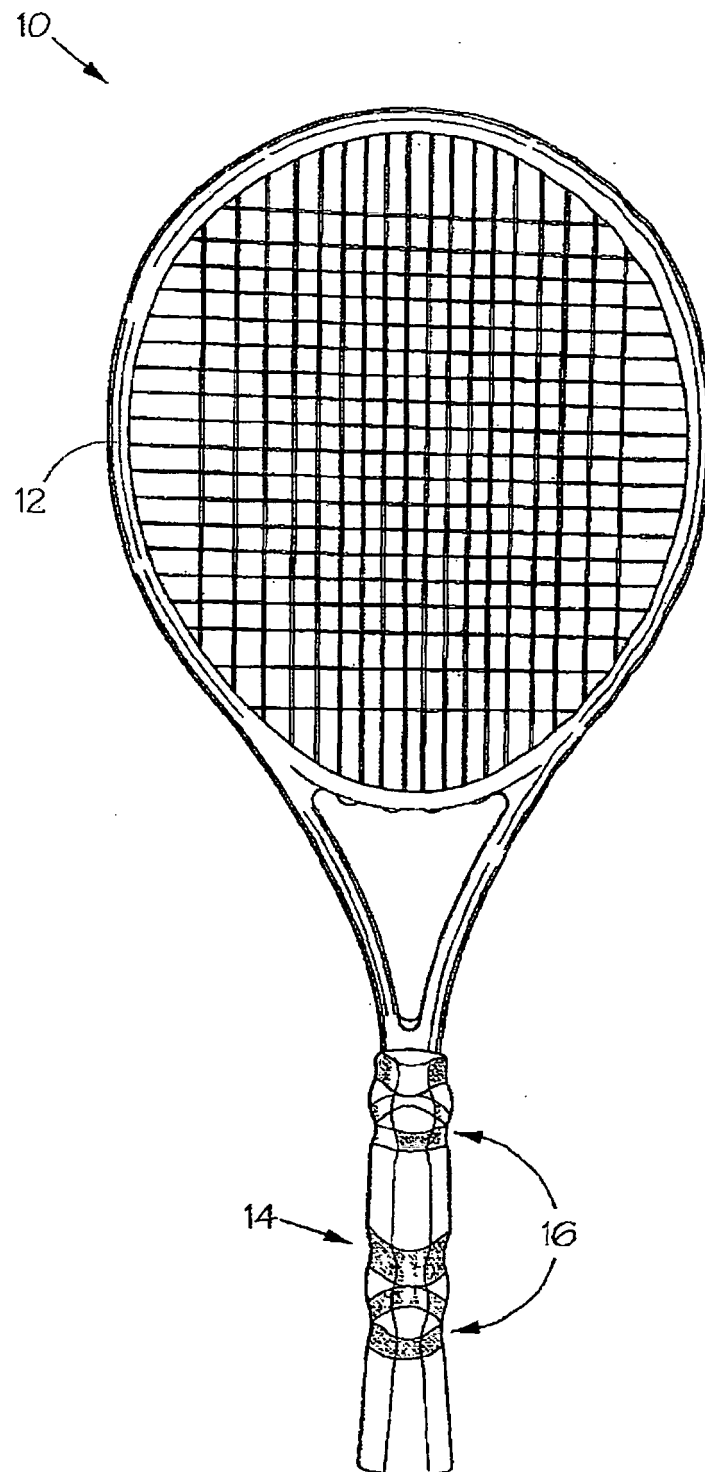


FIG 1

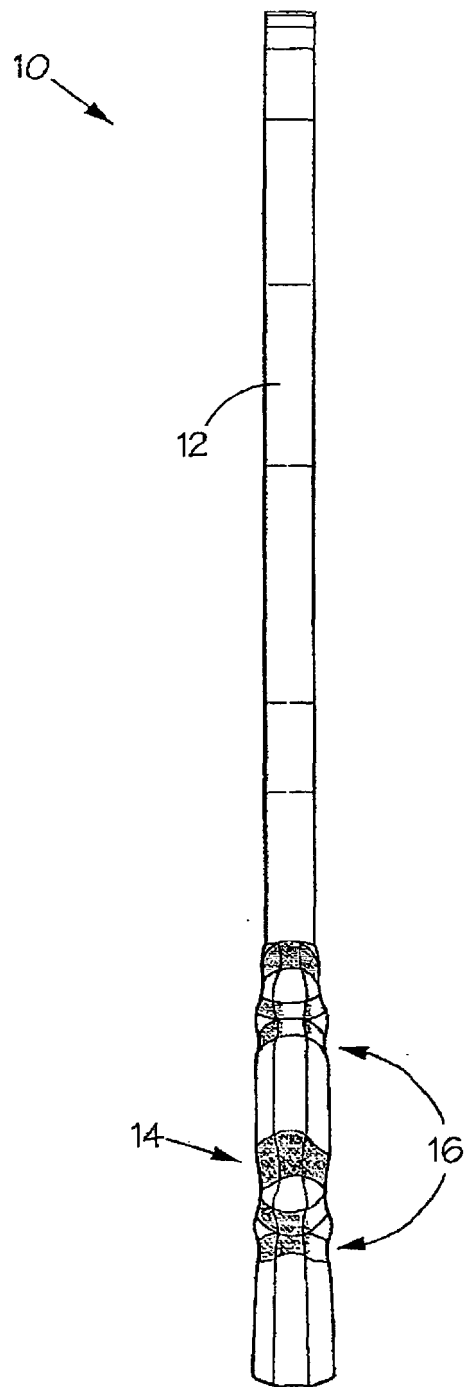


FIG 2

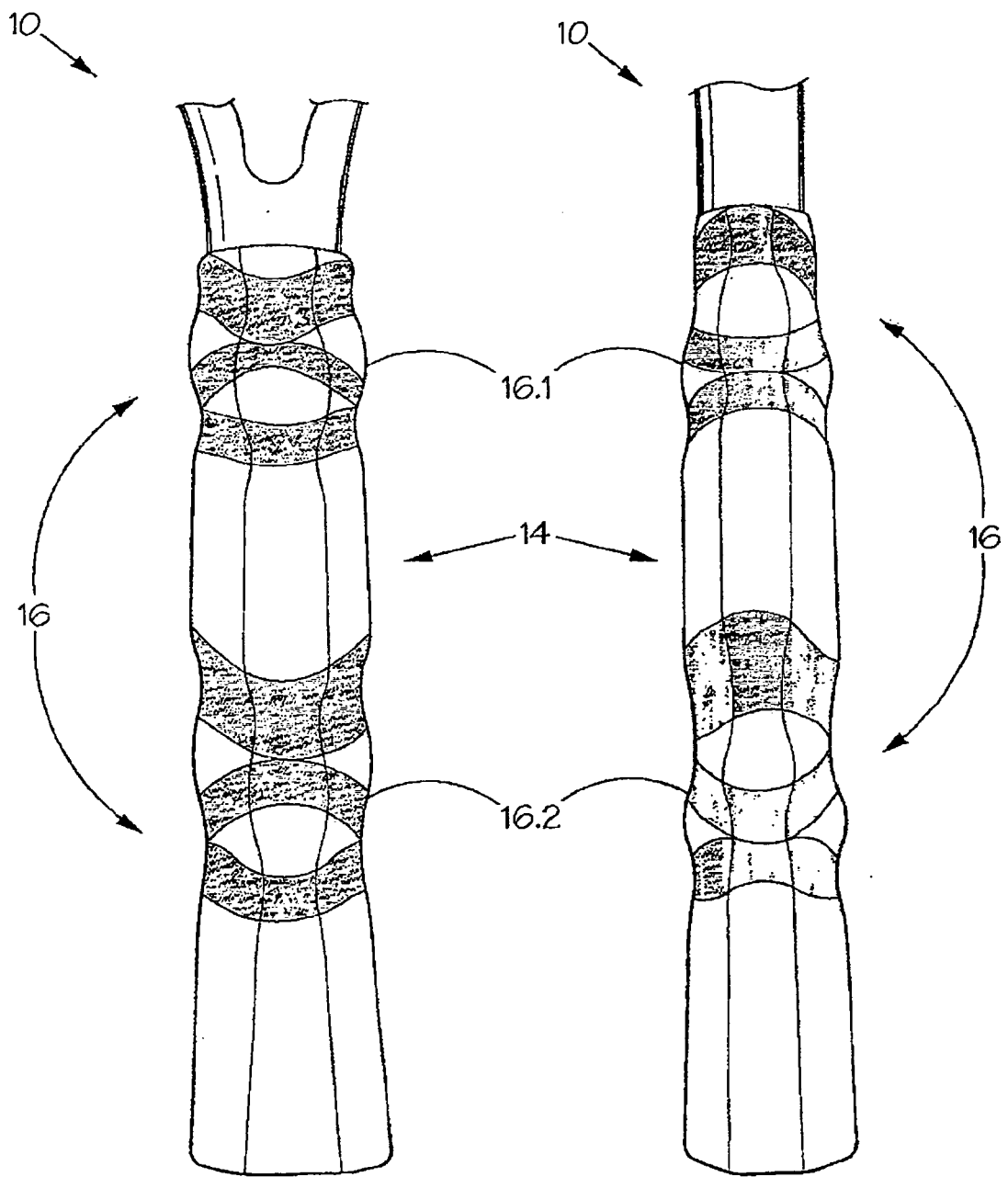


FIG 3

FIG 4

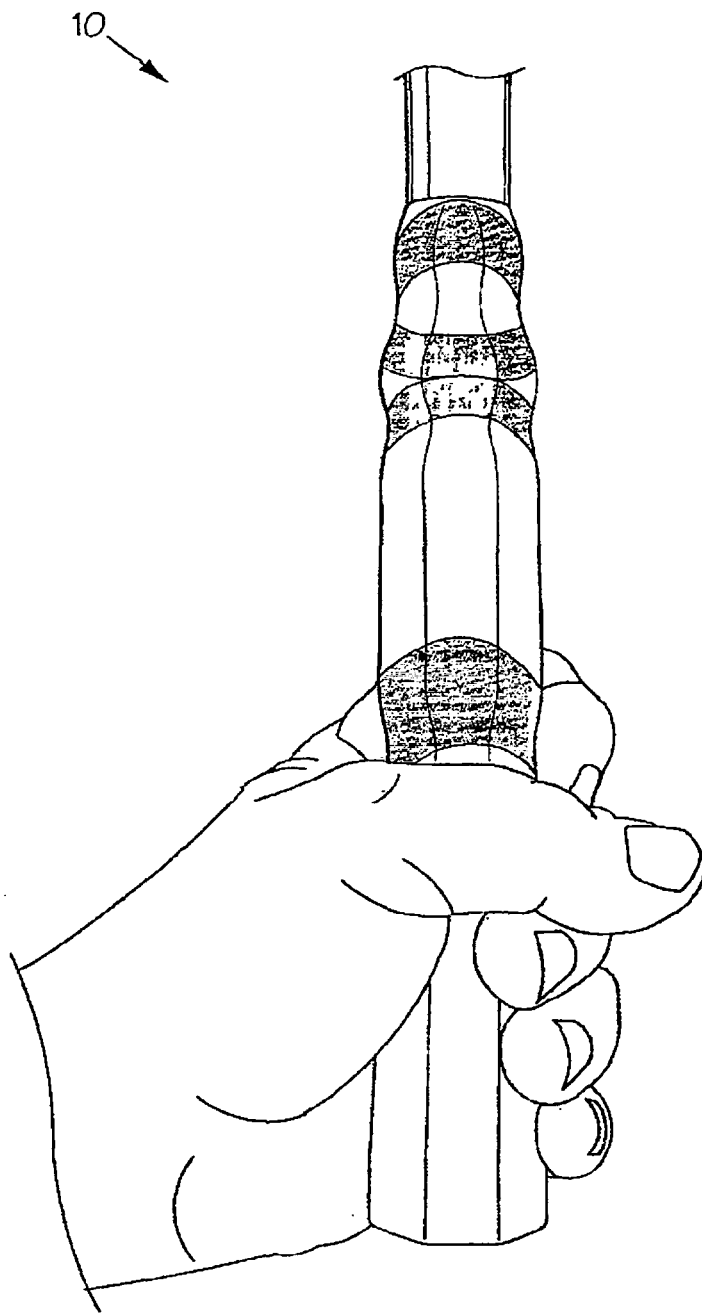


FIG 5a

10 →

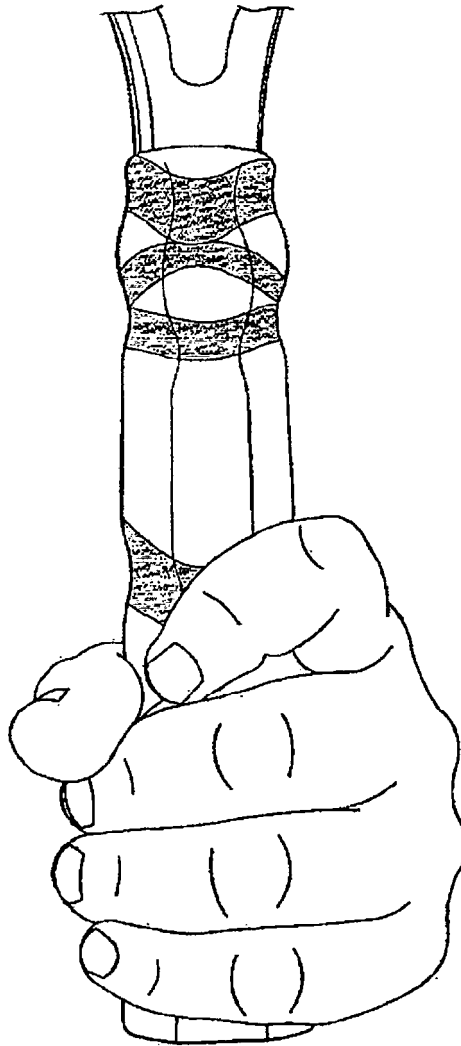


FIG 5b

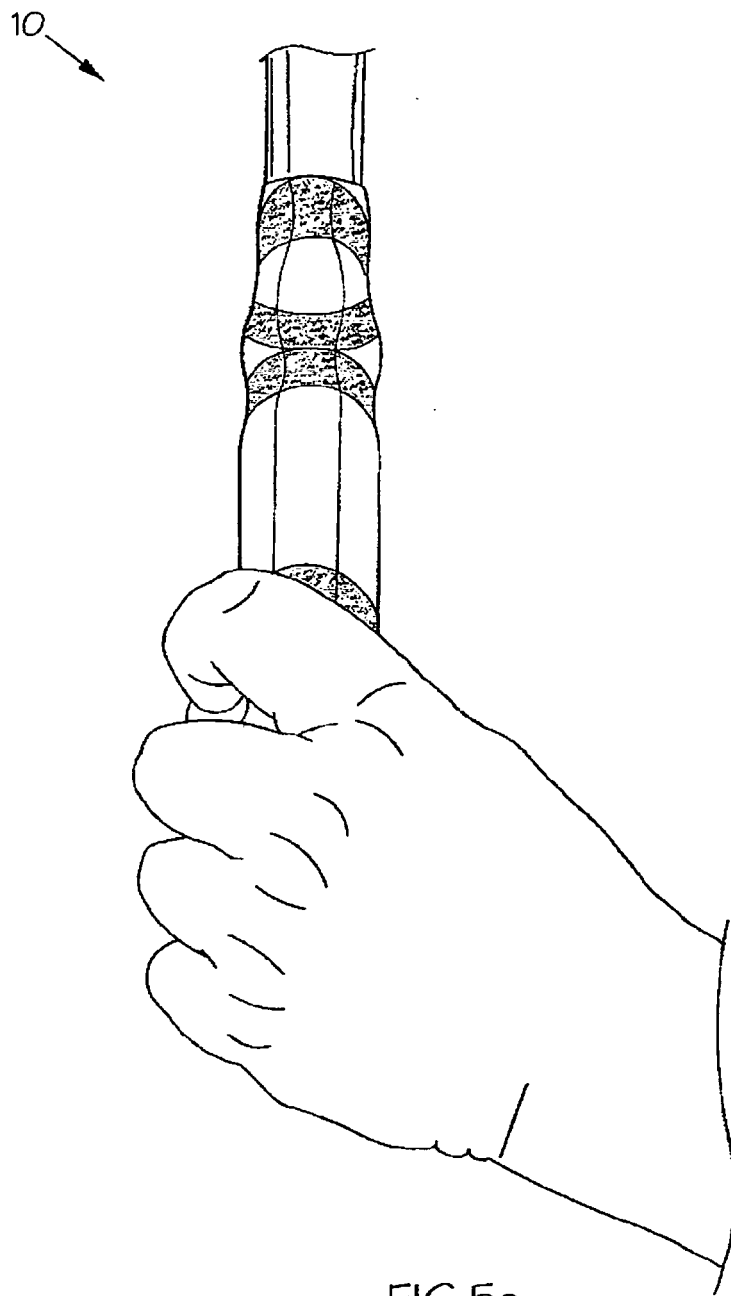


FIG 5c

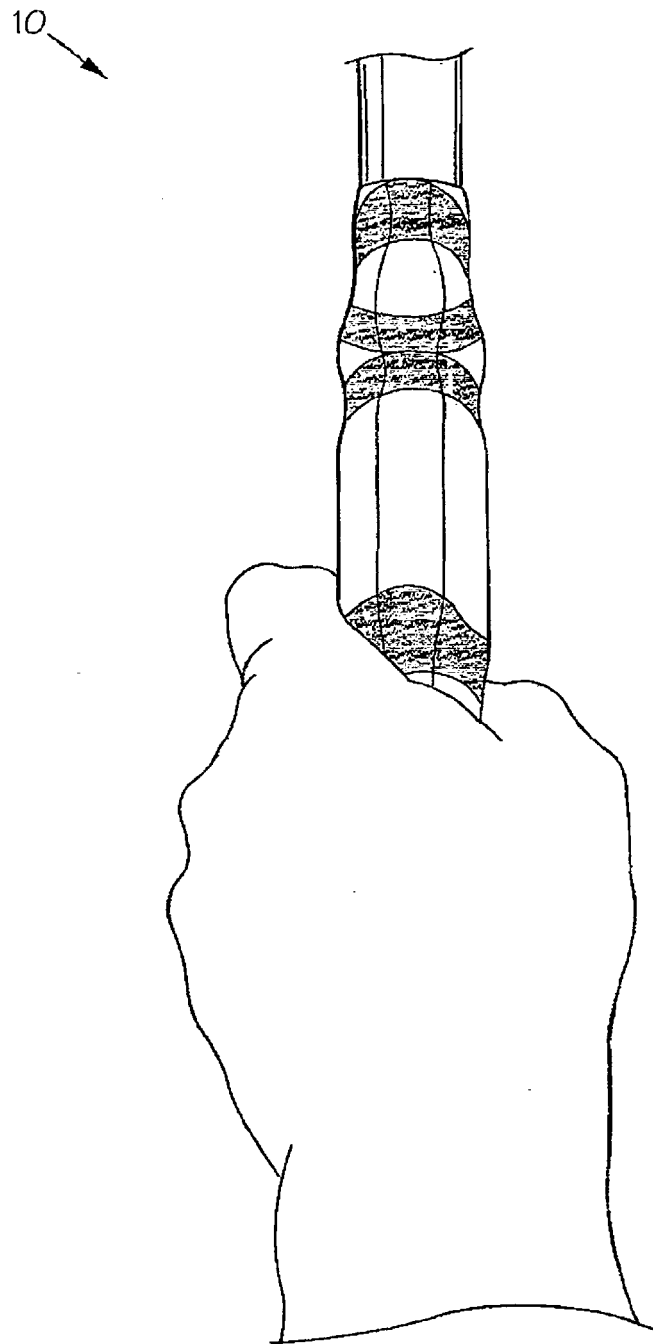


FIG 6a

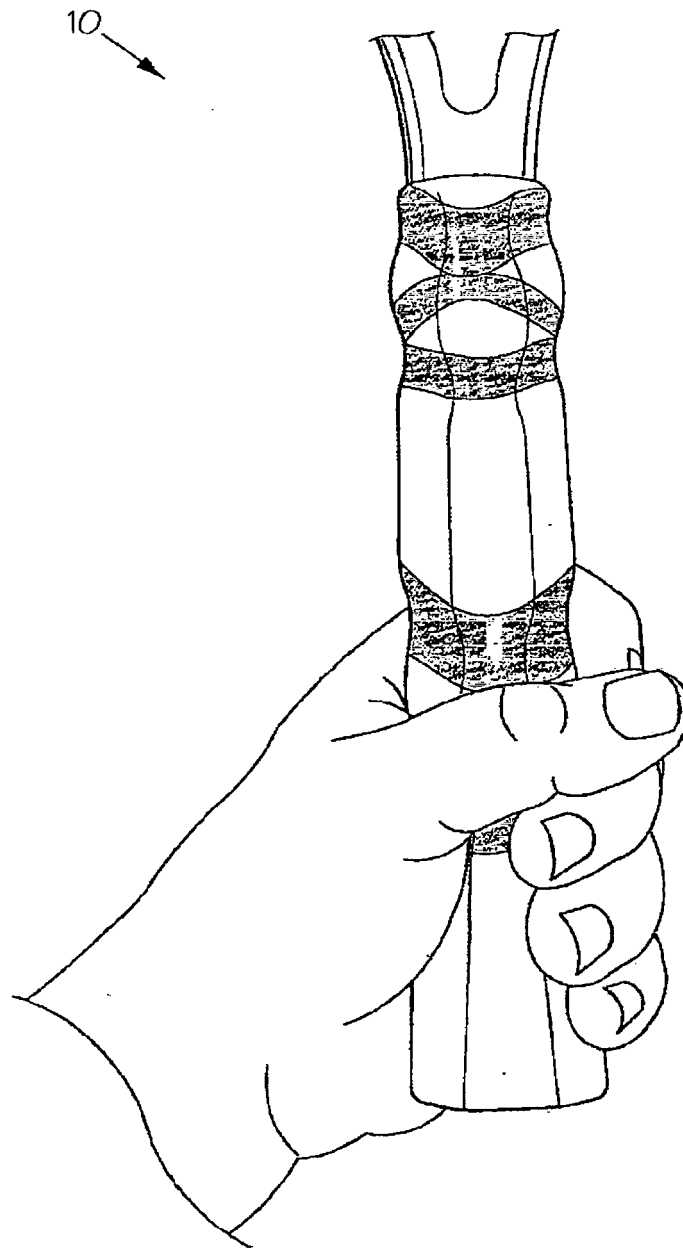


FIG 6b

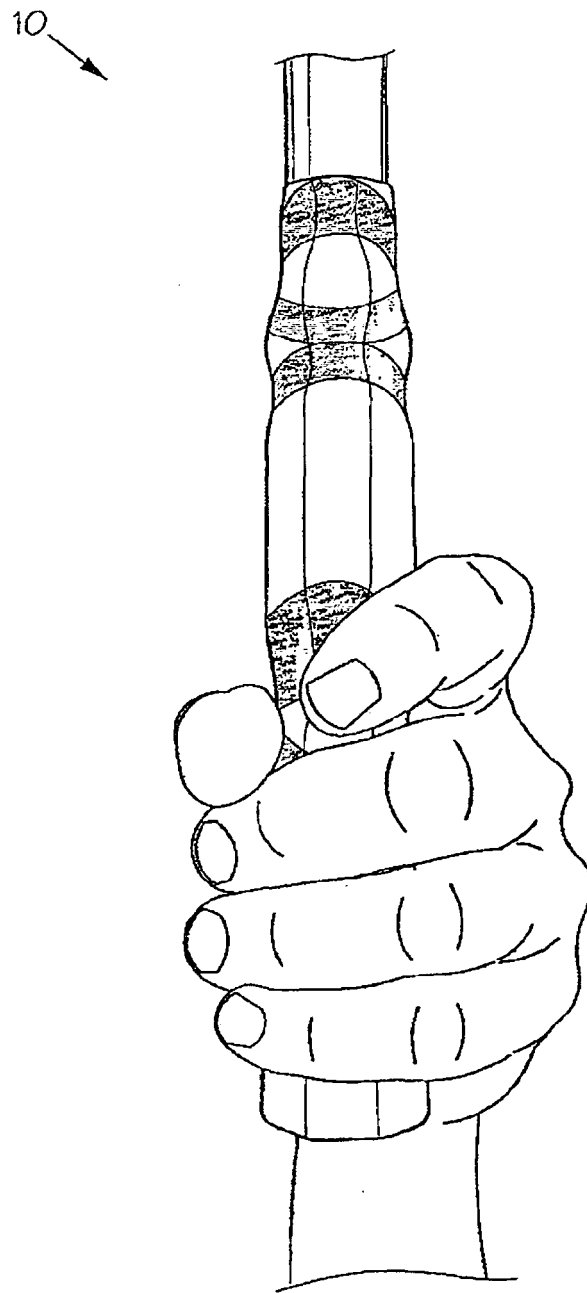


FIG 6c

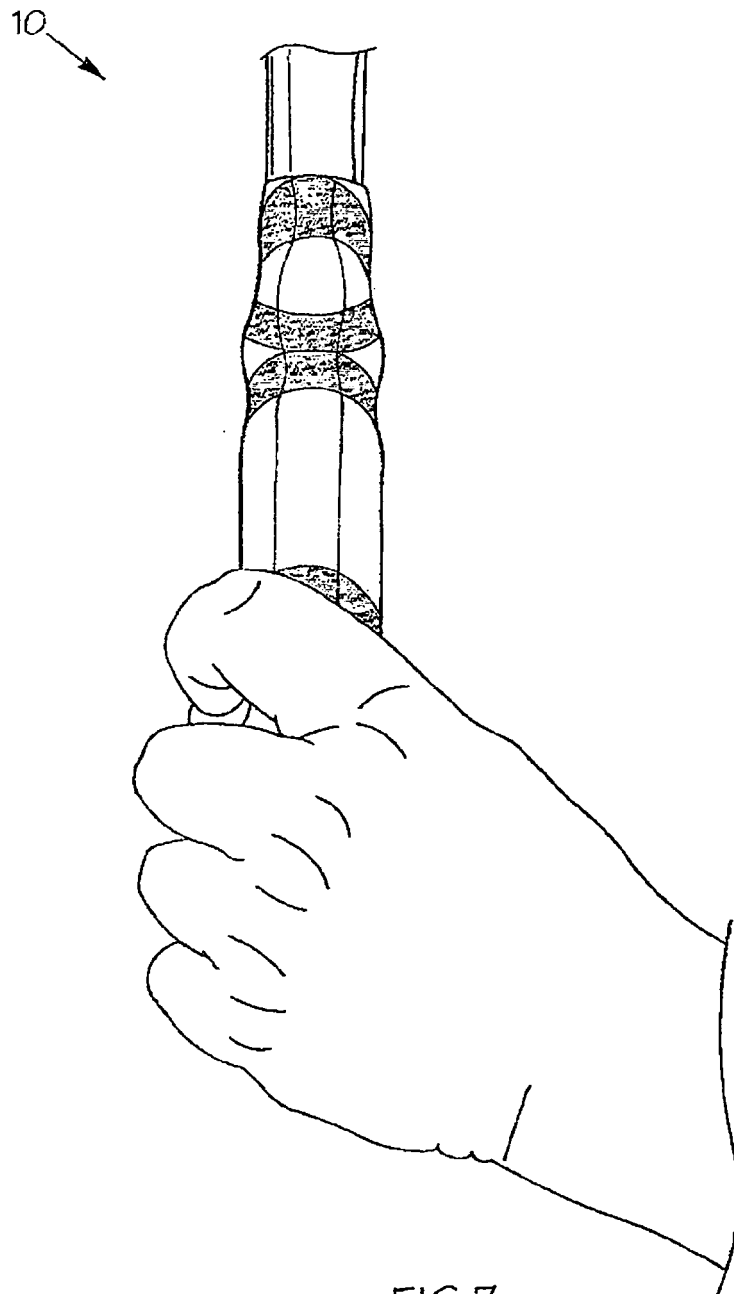


FIG 7a

10 →

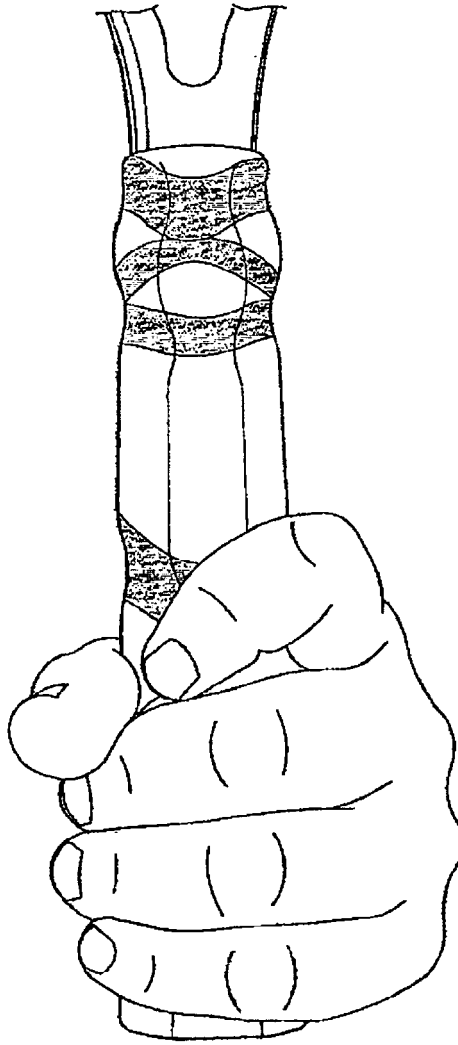


FIG 7b

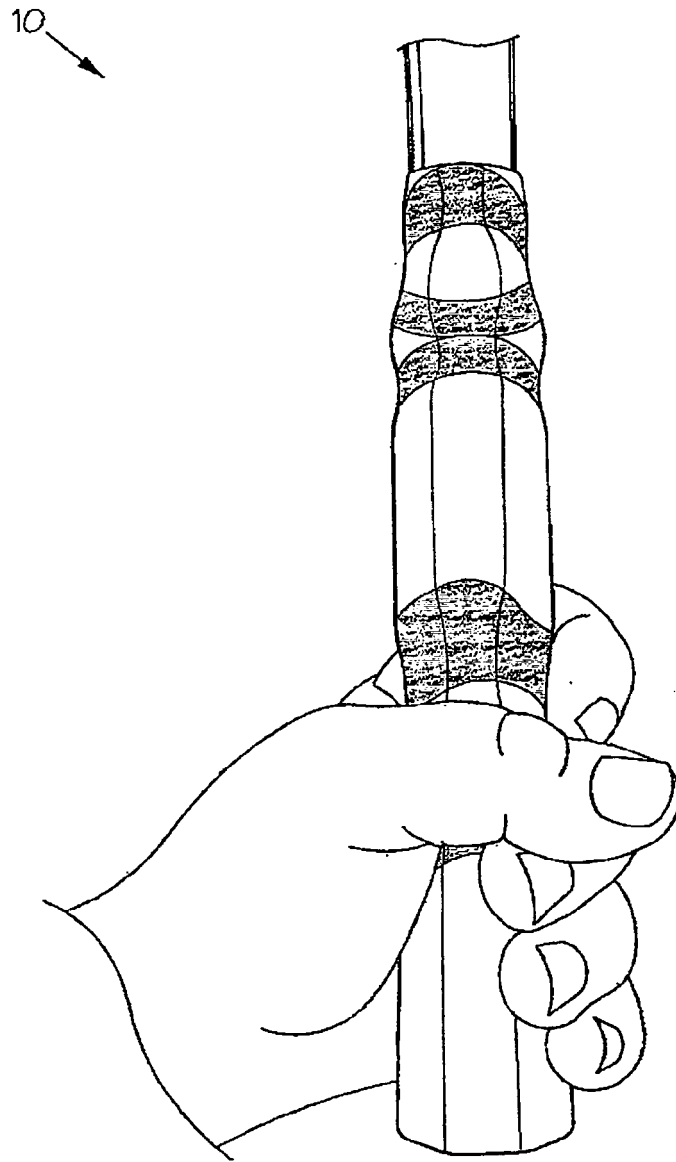


FIG 7c

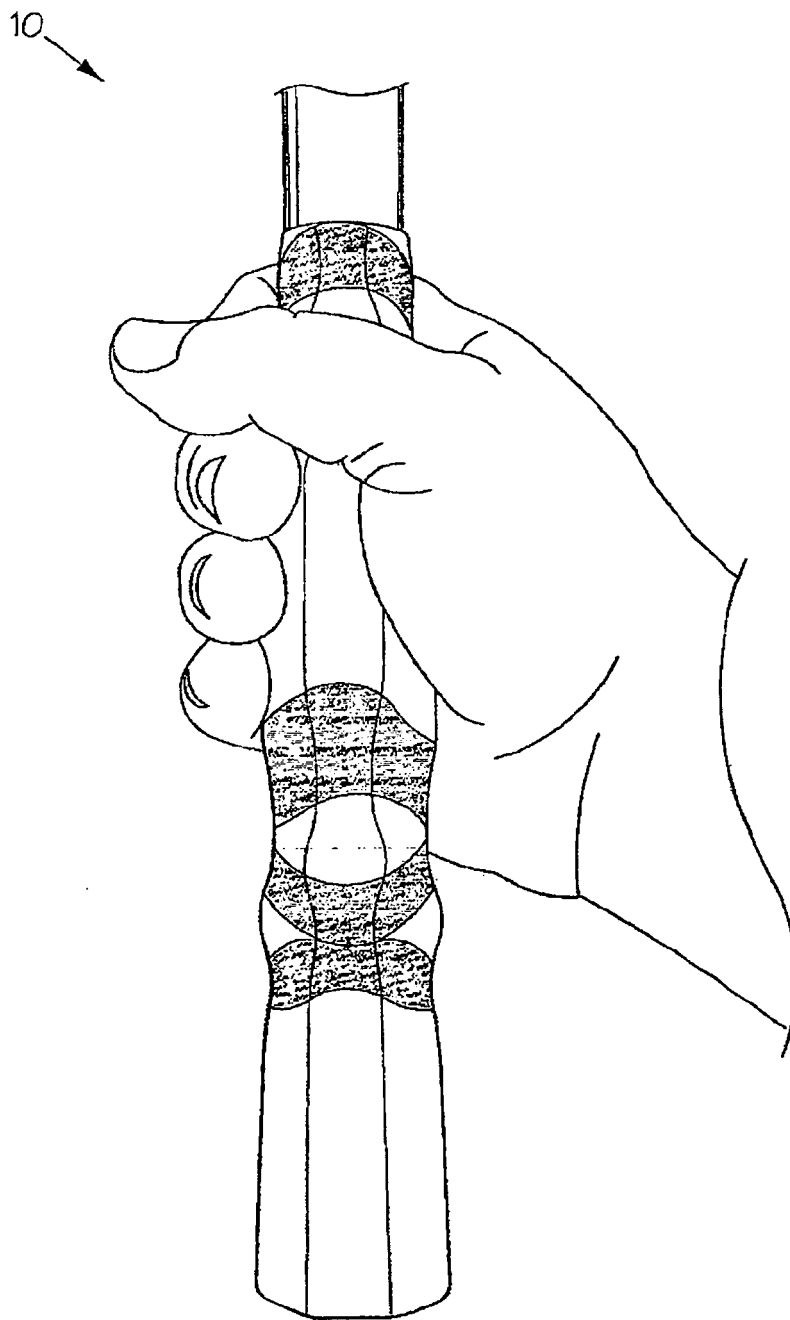


FIG 8a

10 →

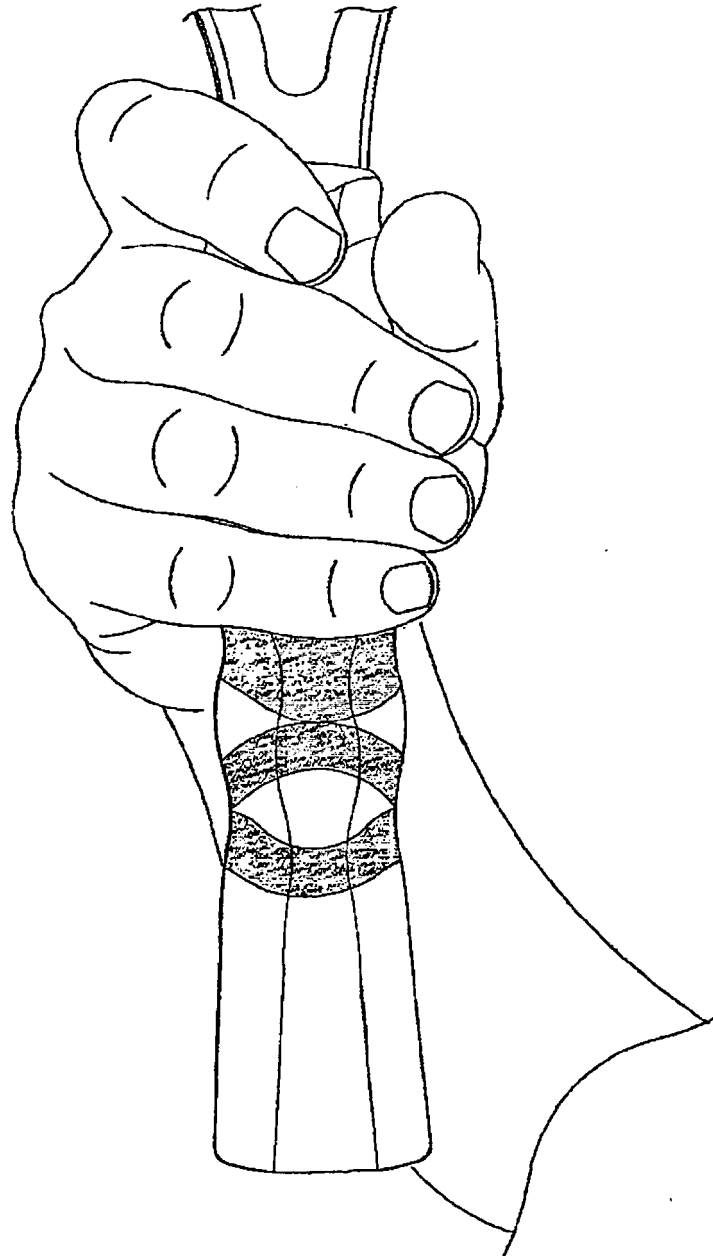


FIG 8b

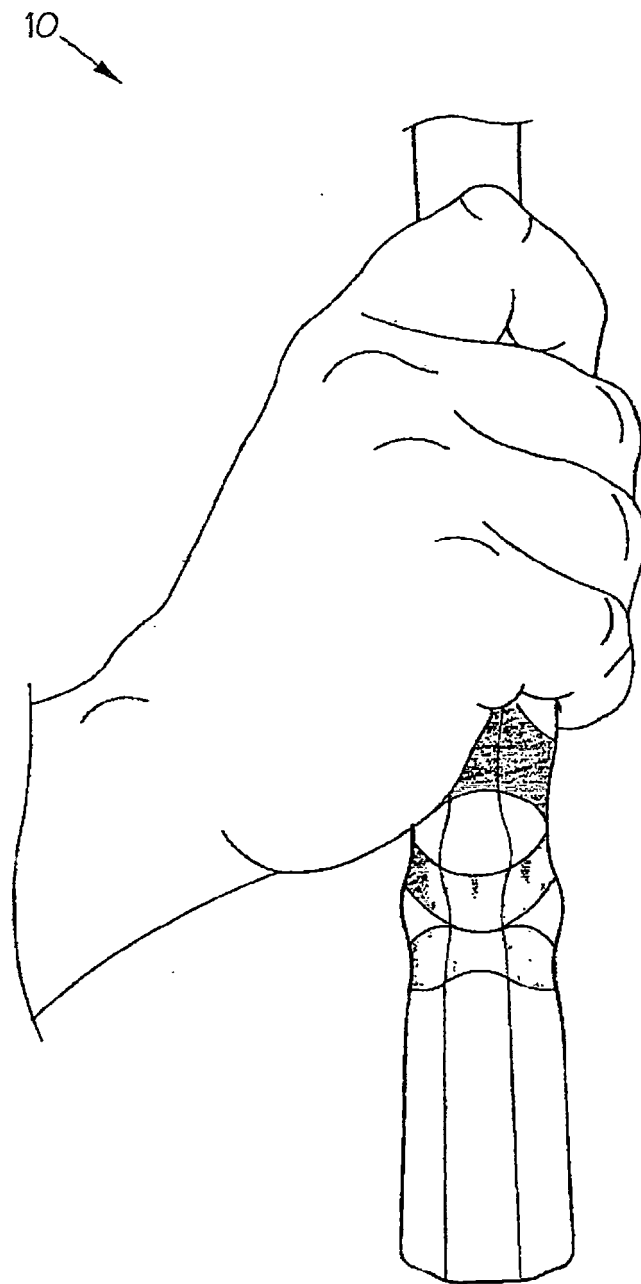


FIG 8c

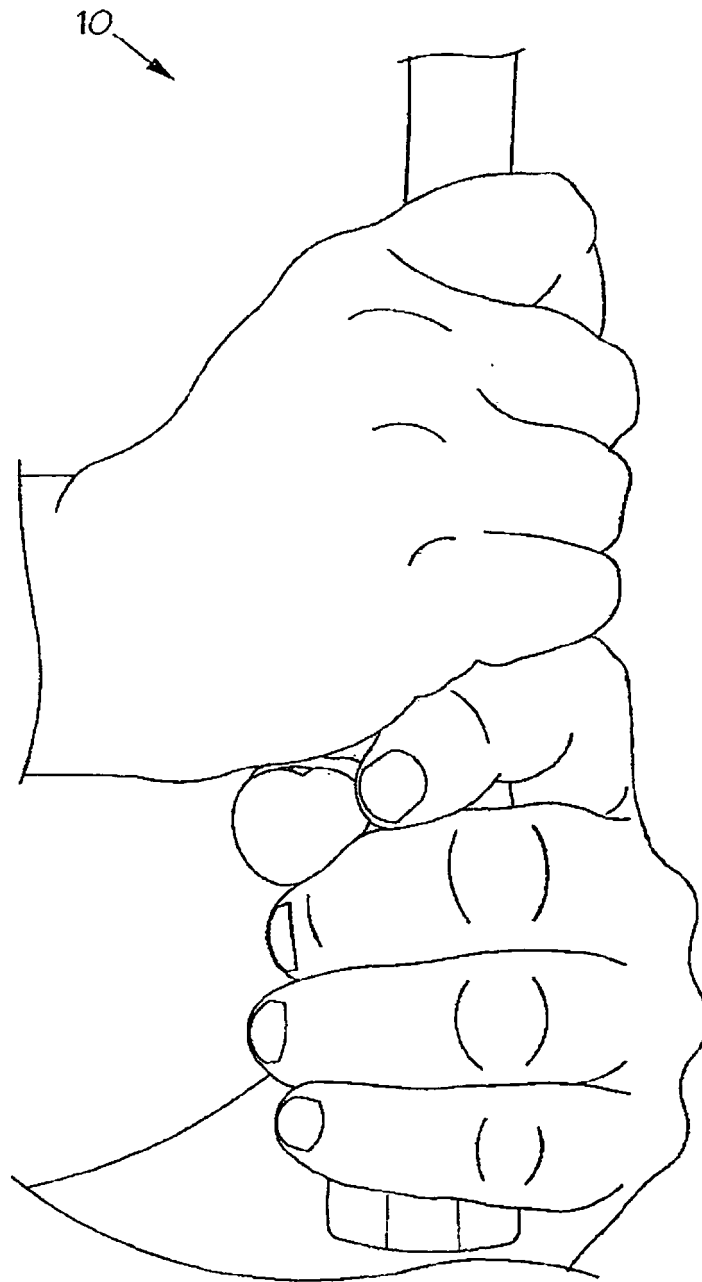


FIG 9a

10 →



FIG 9b

10 →

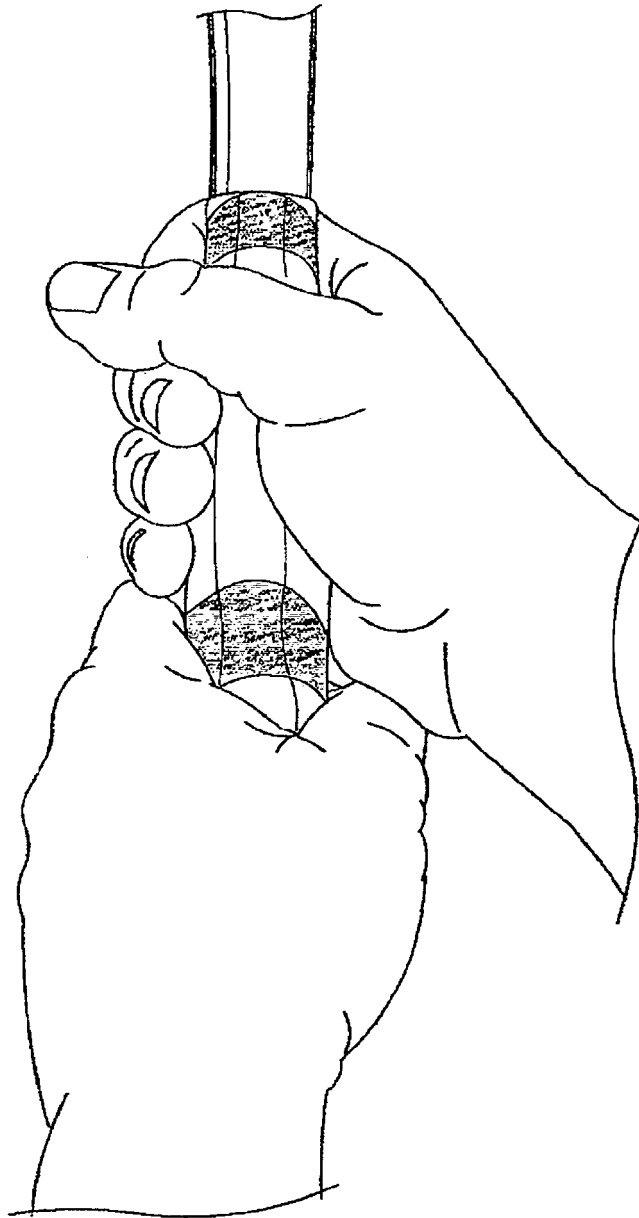


FIG 9c

10 →

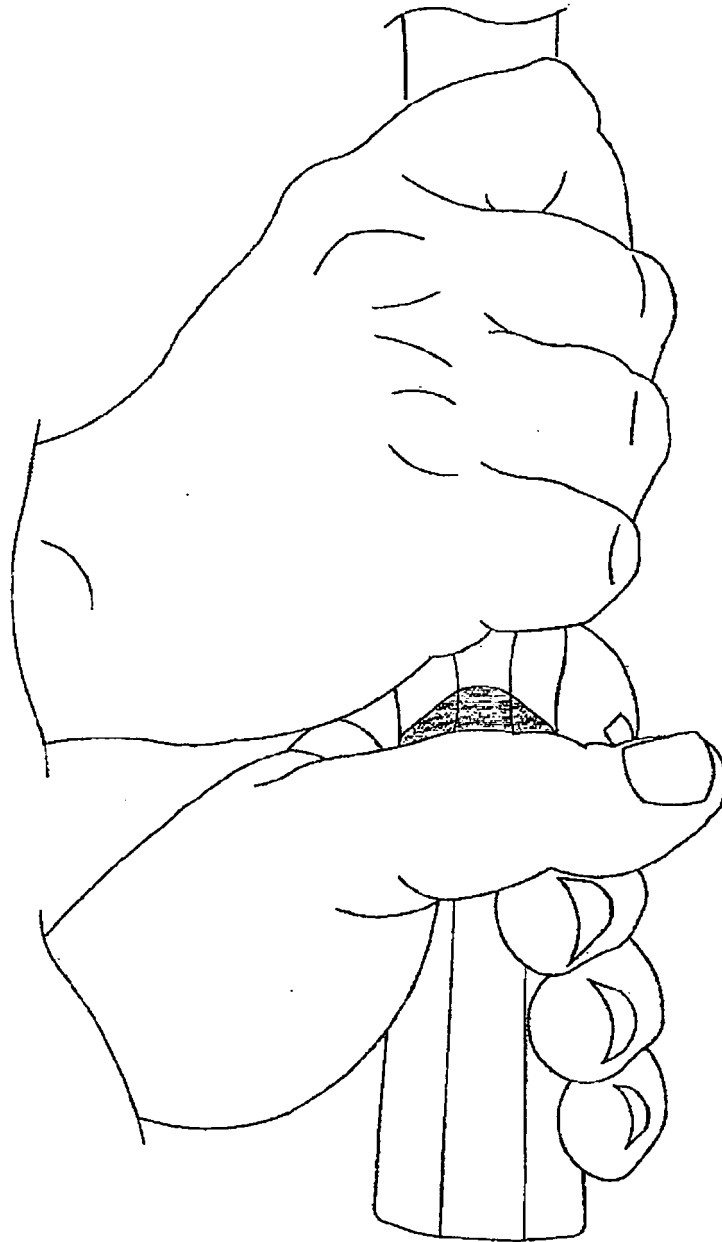


FIG 10a

10 →



FIG 10b

10 →

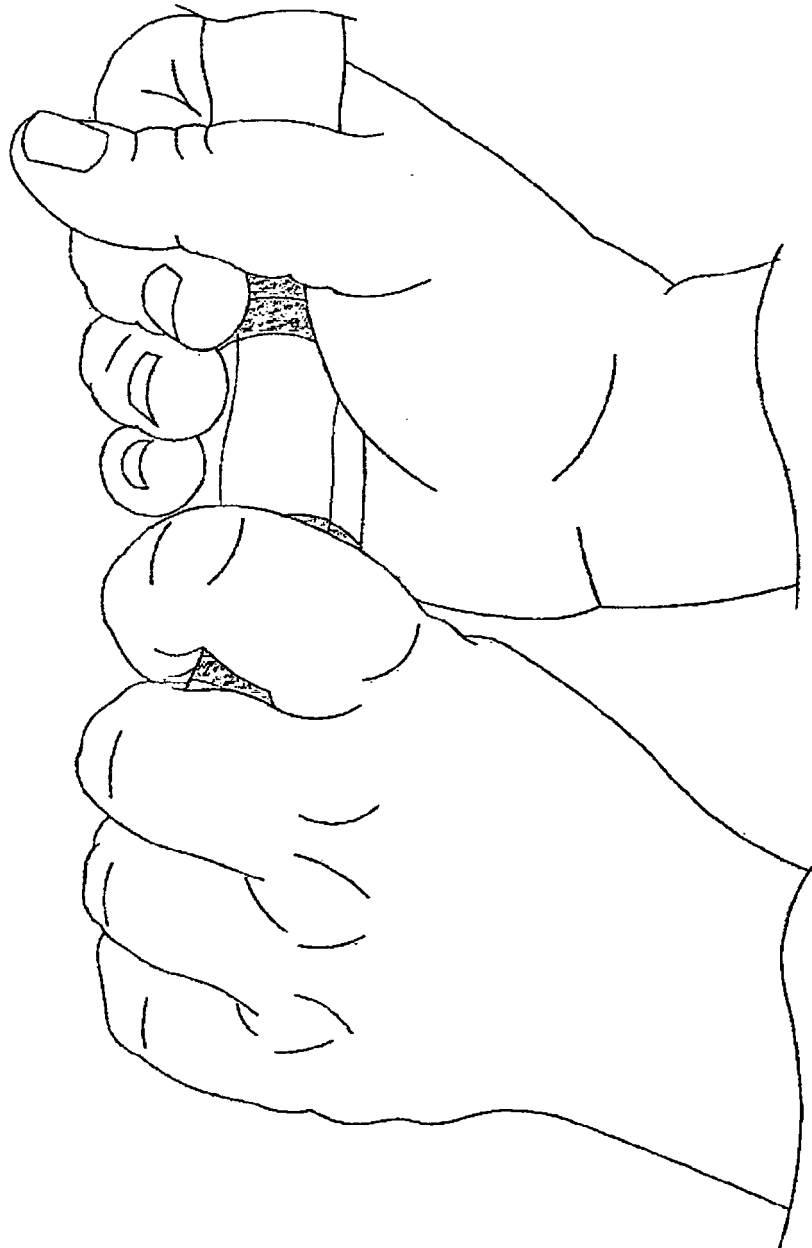


FIG 10c

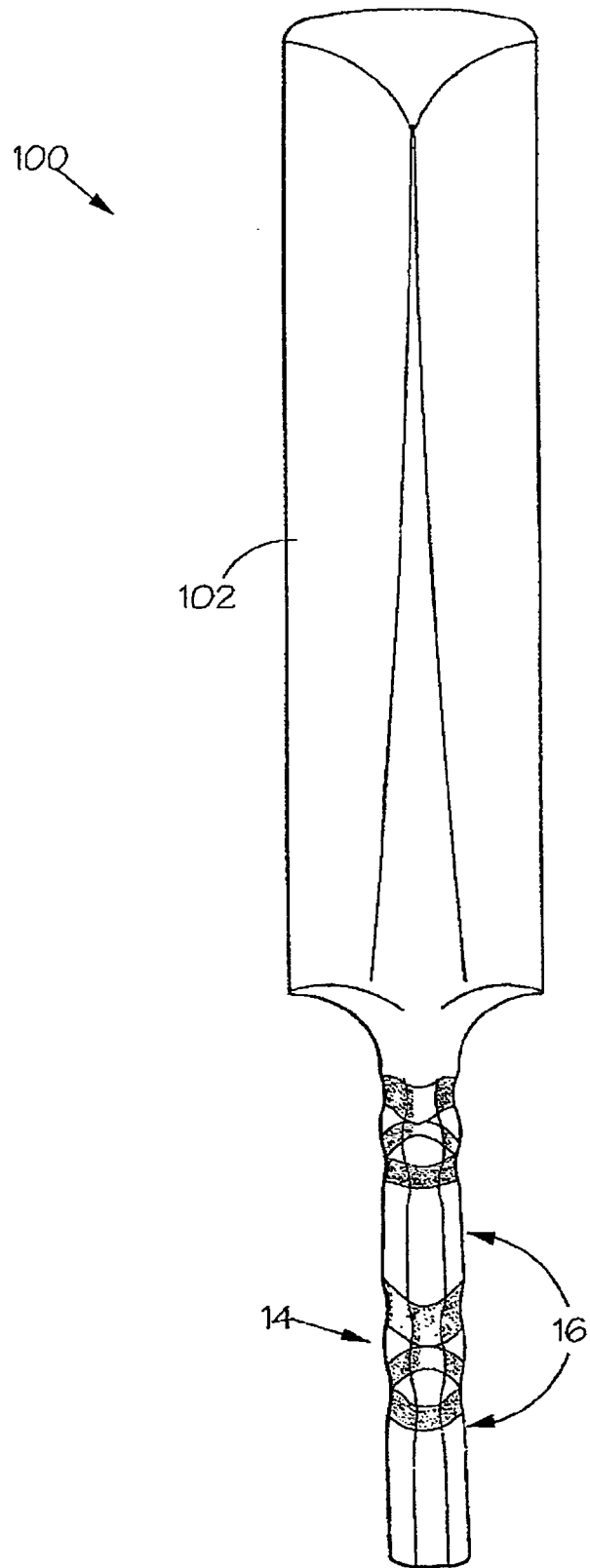


FIG 11a

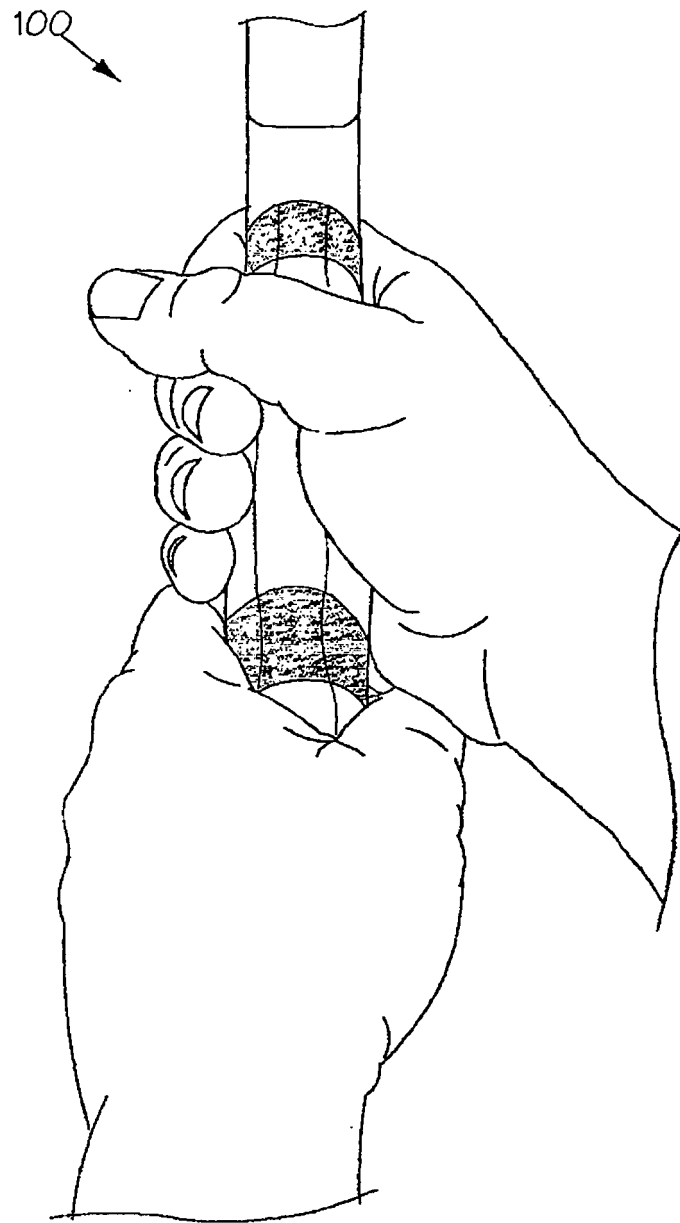


FIG 11b

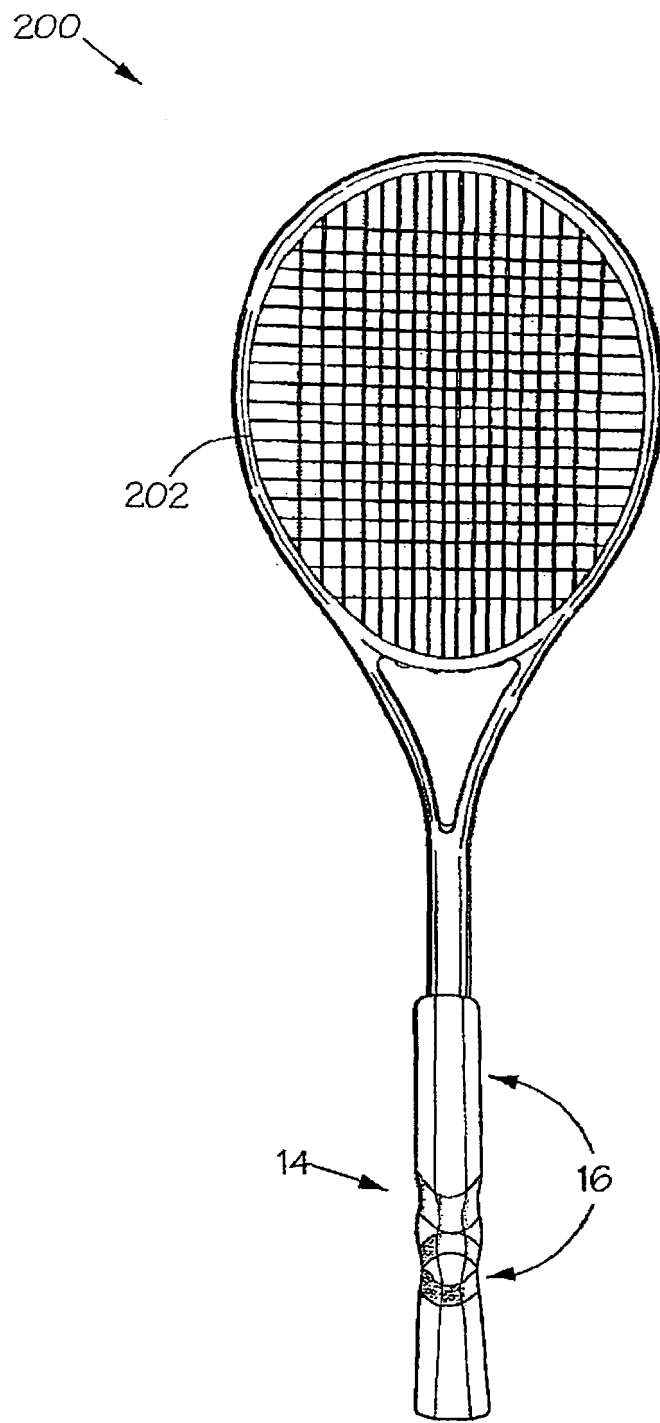


FIG 12a

200

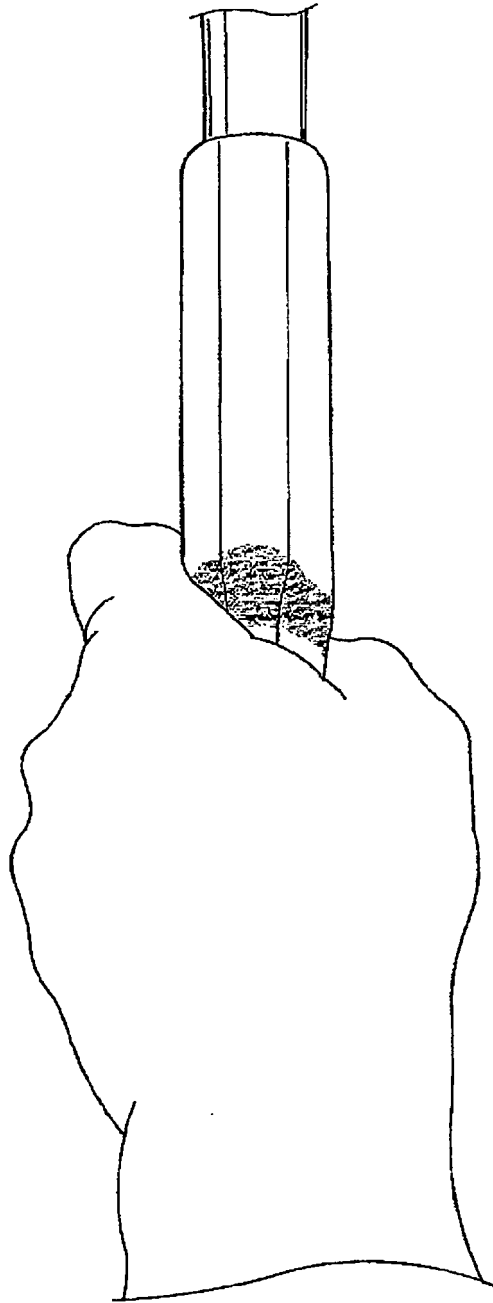


FIG 12b

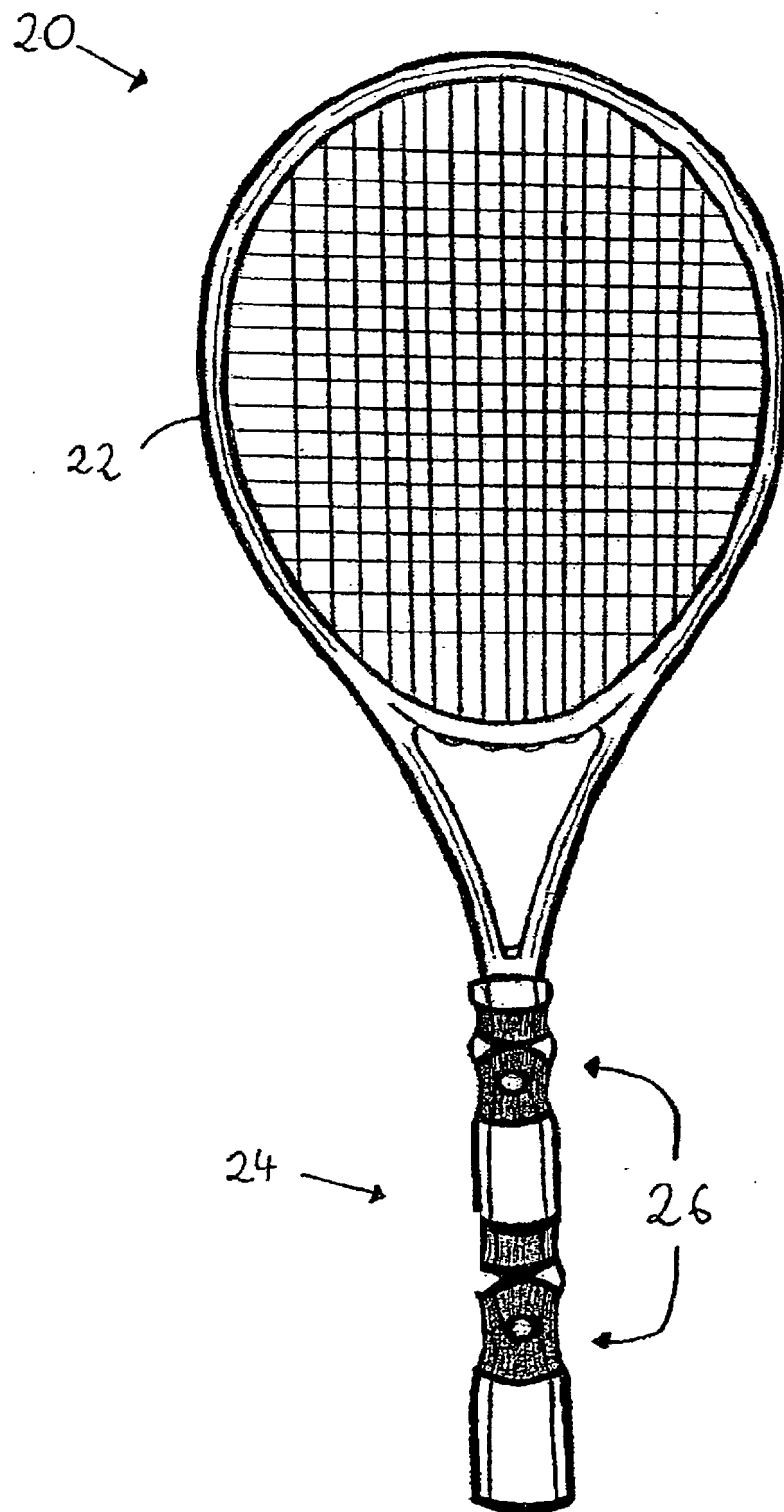


FIG 13

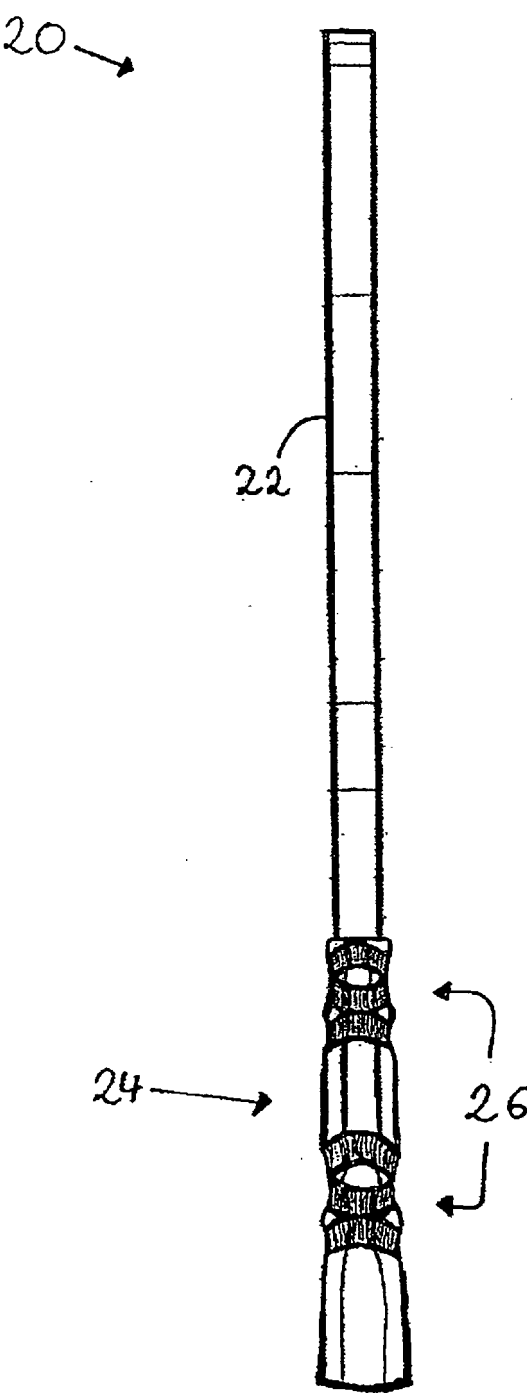


FIG 14

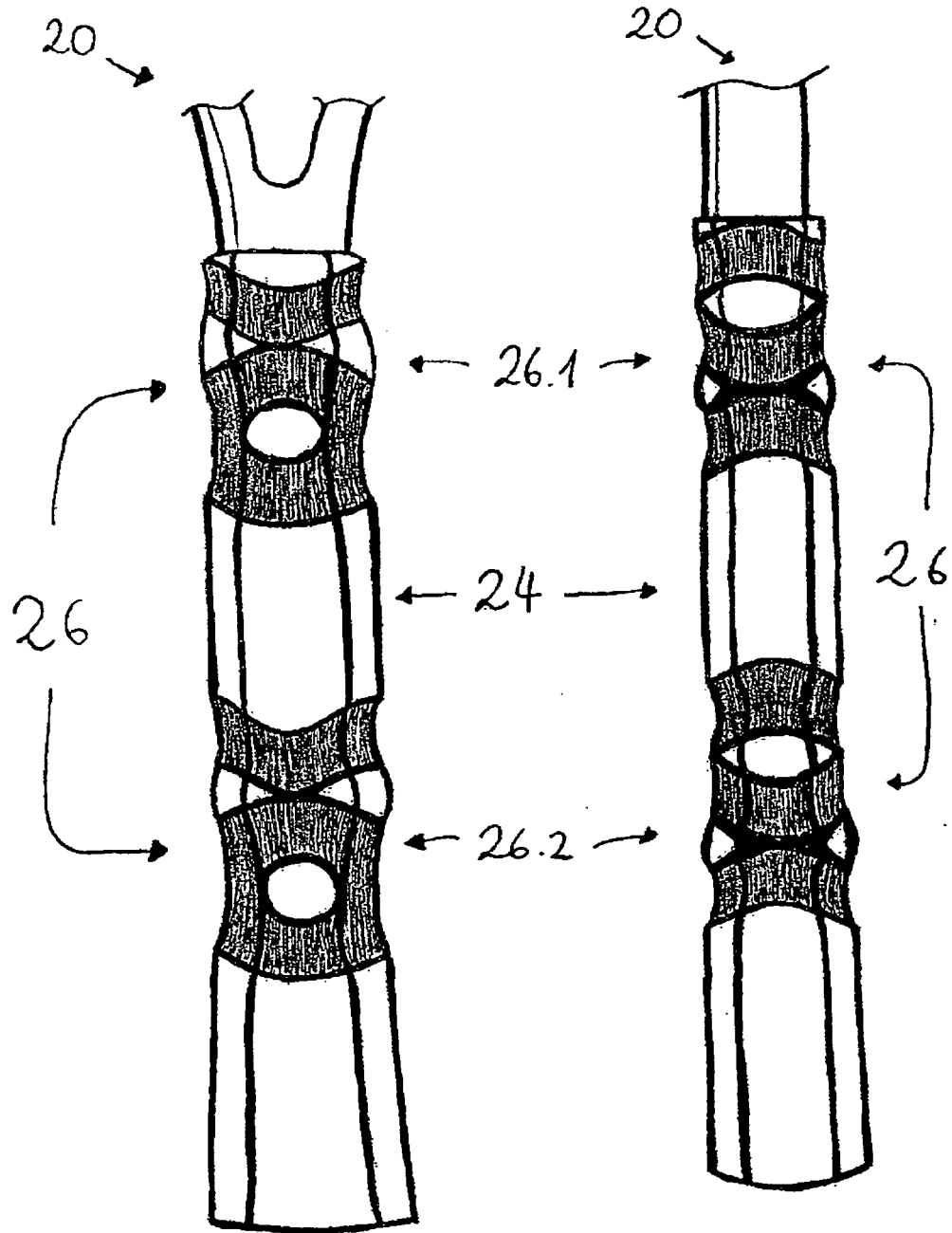


FIG 15

FIG 16

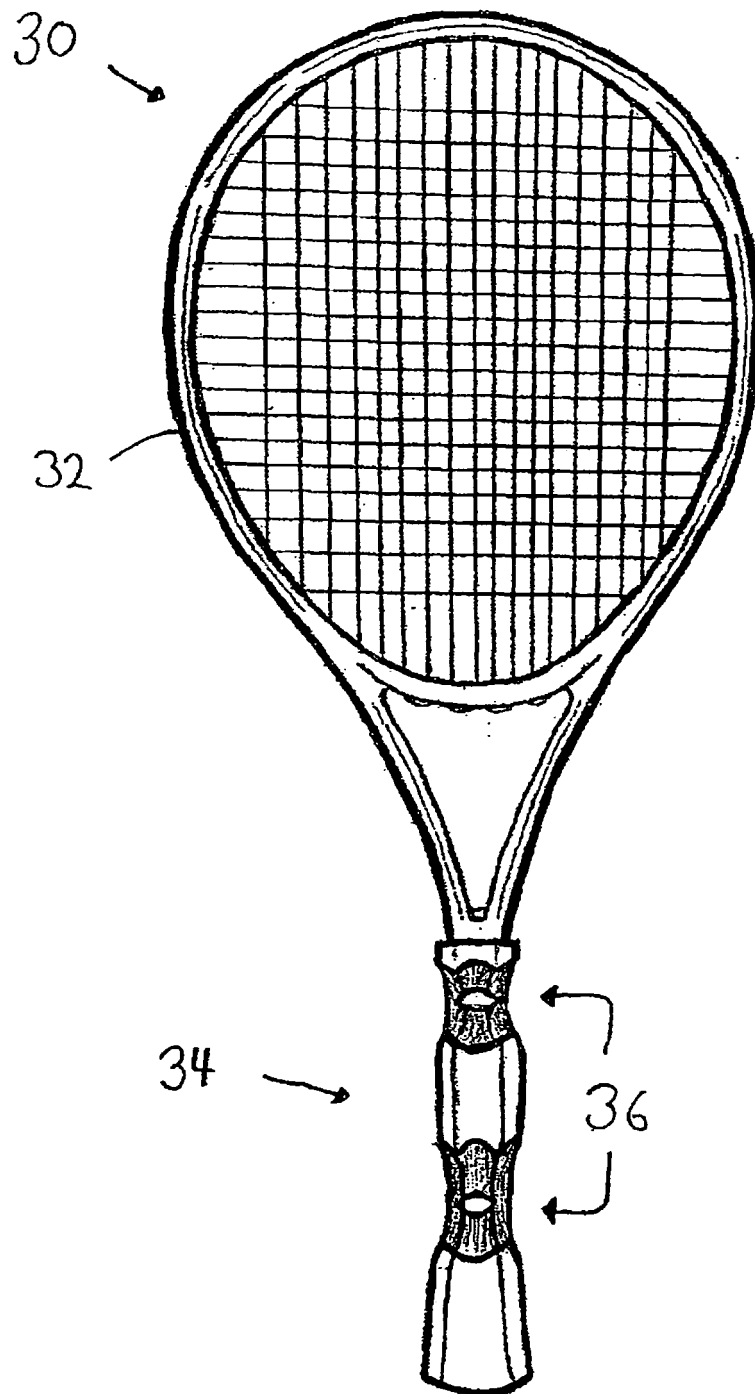


FIG 17

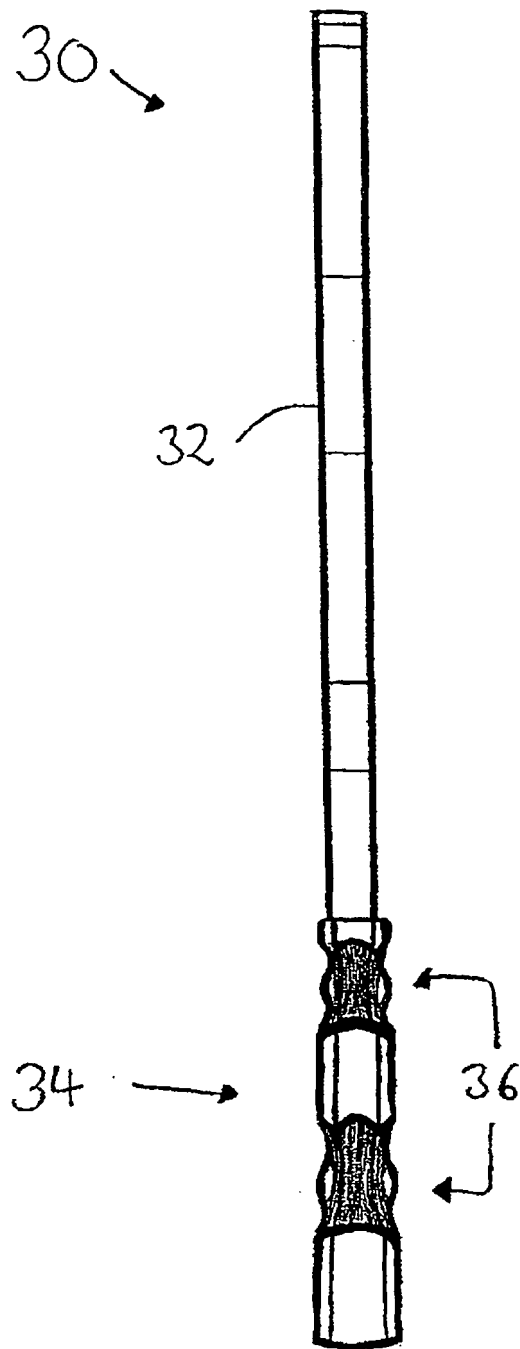
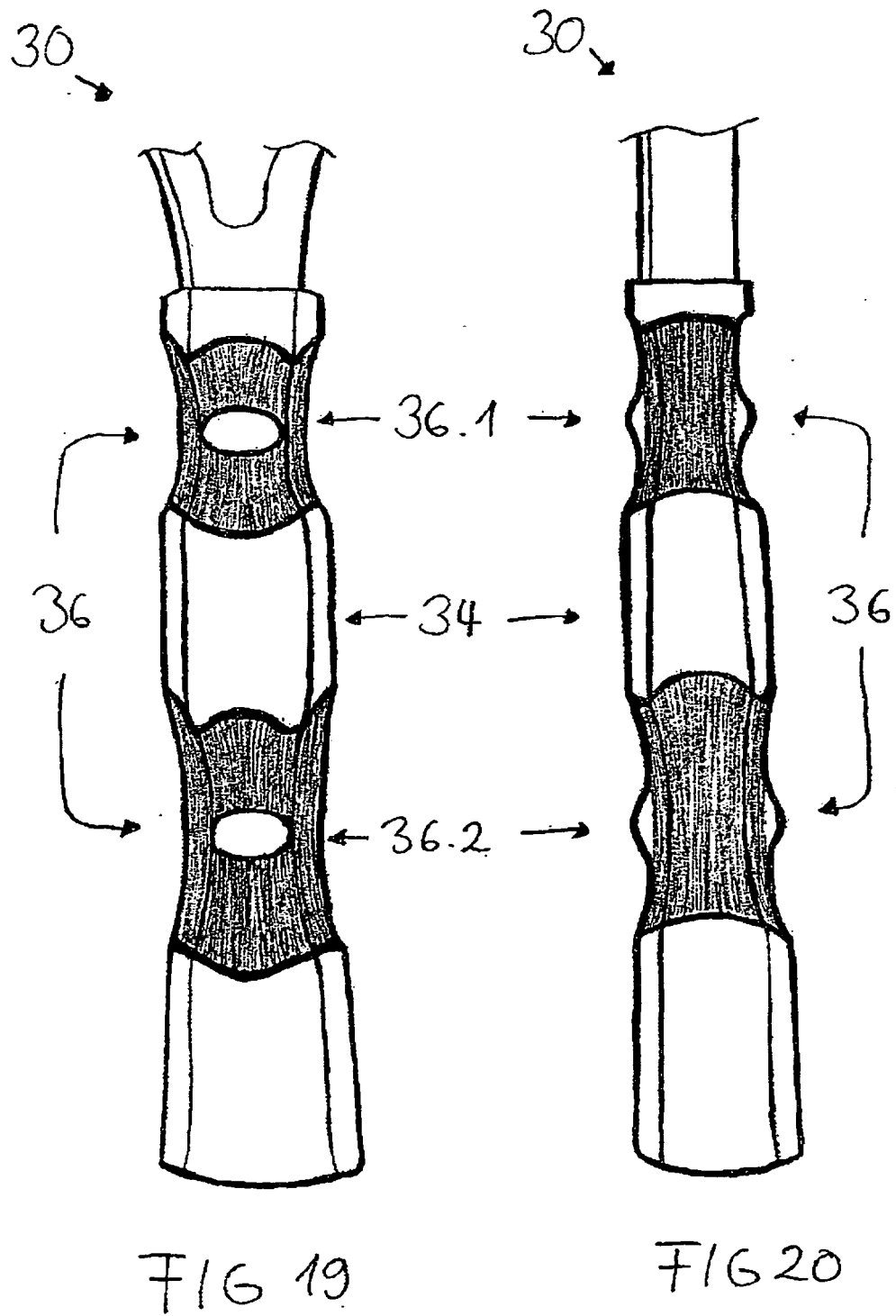


FIG 18



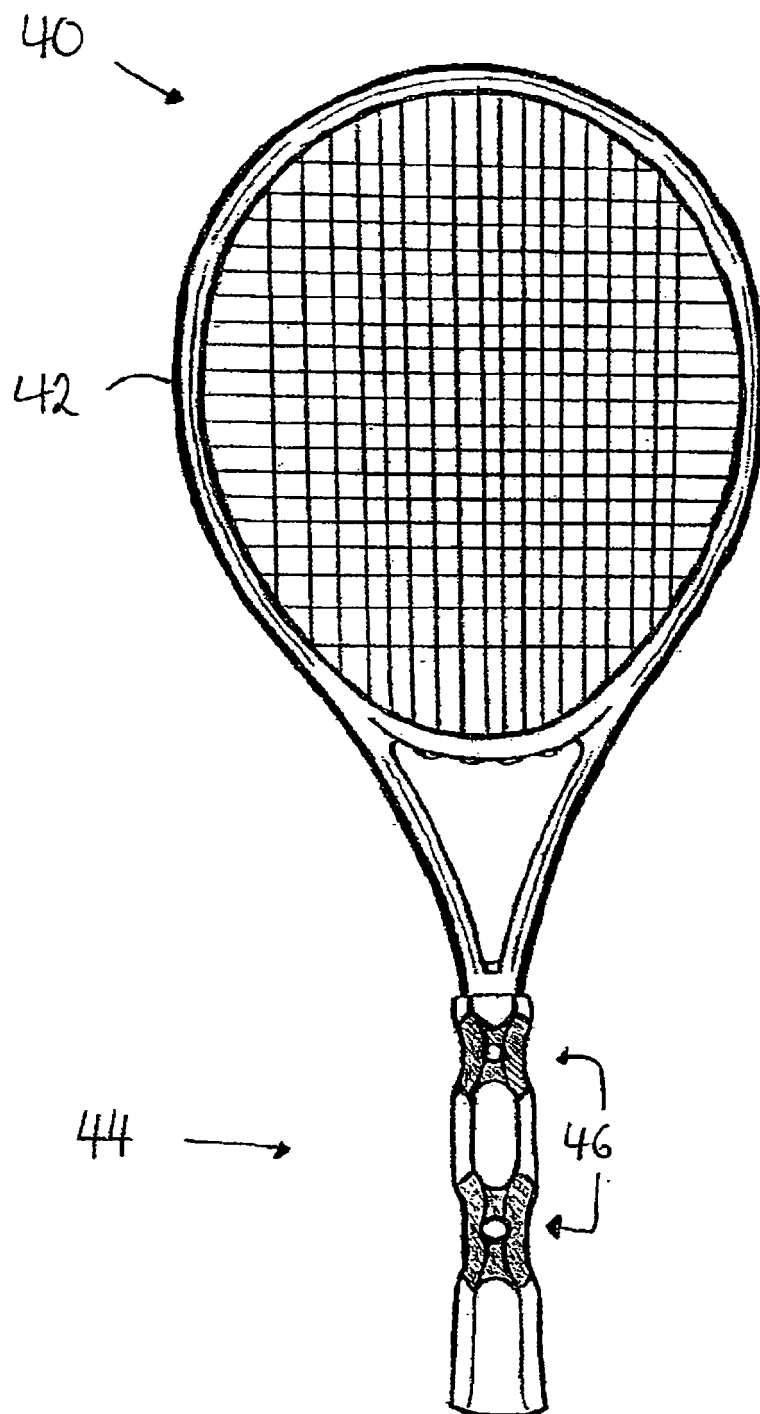


FIG 21

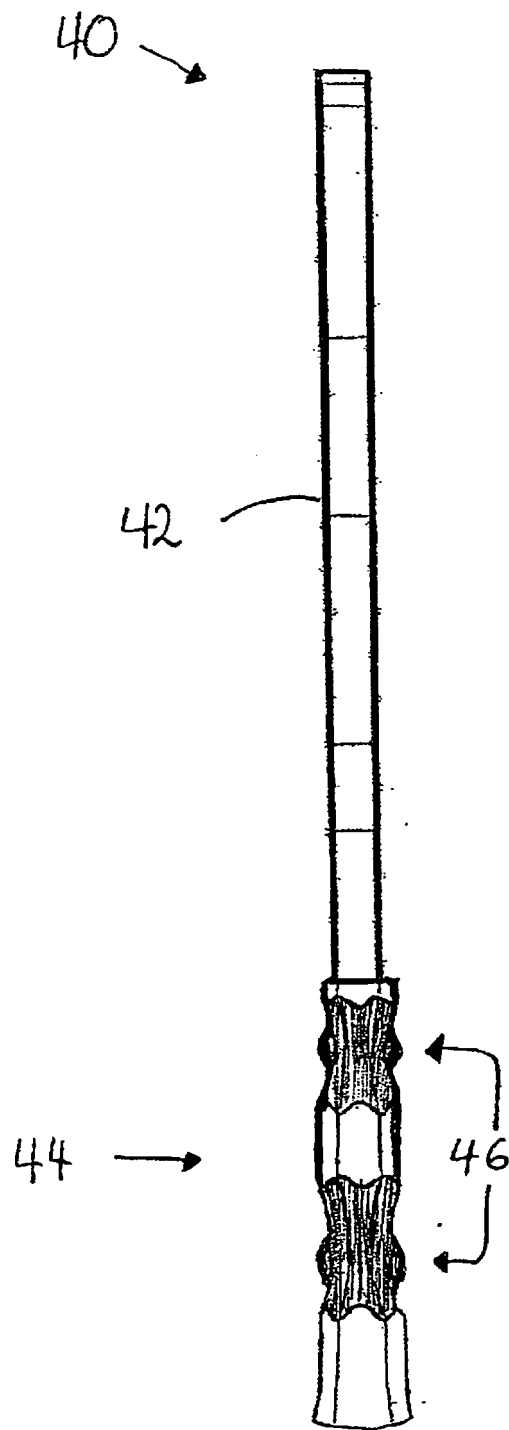


FIG 22

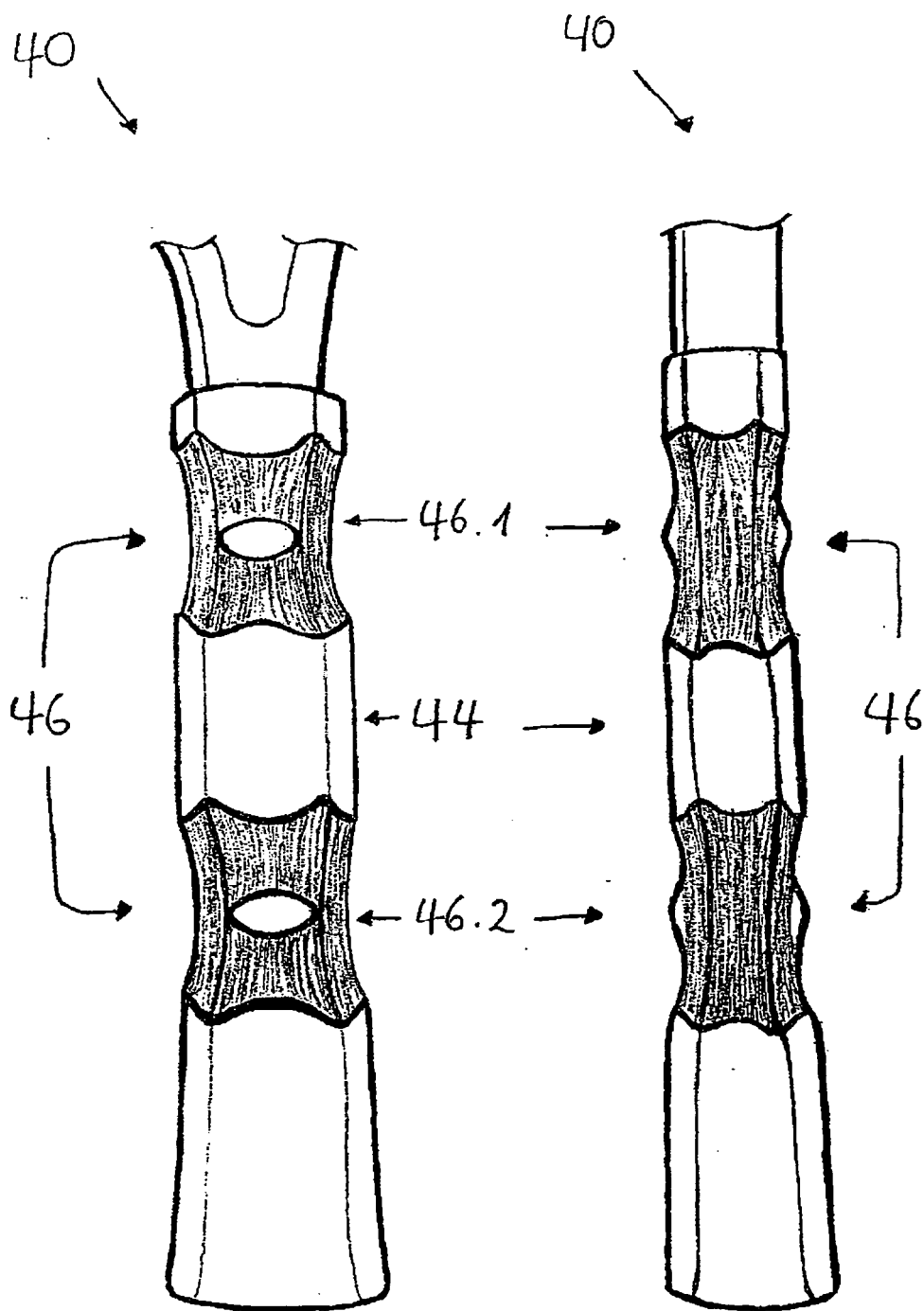


FIG 23

FIG 24

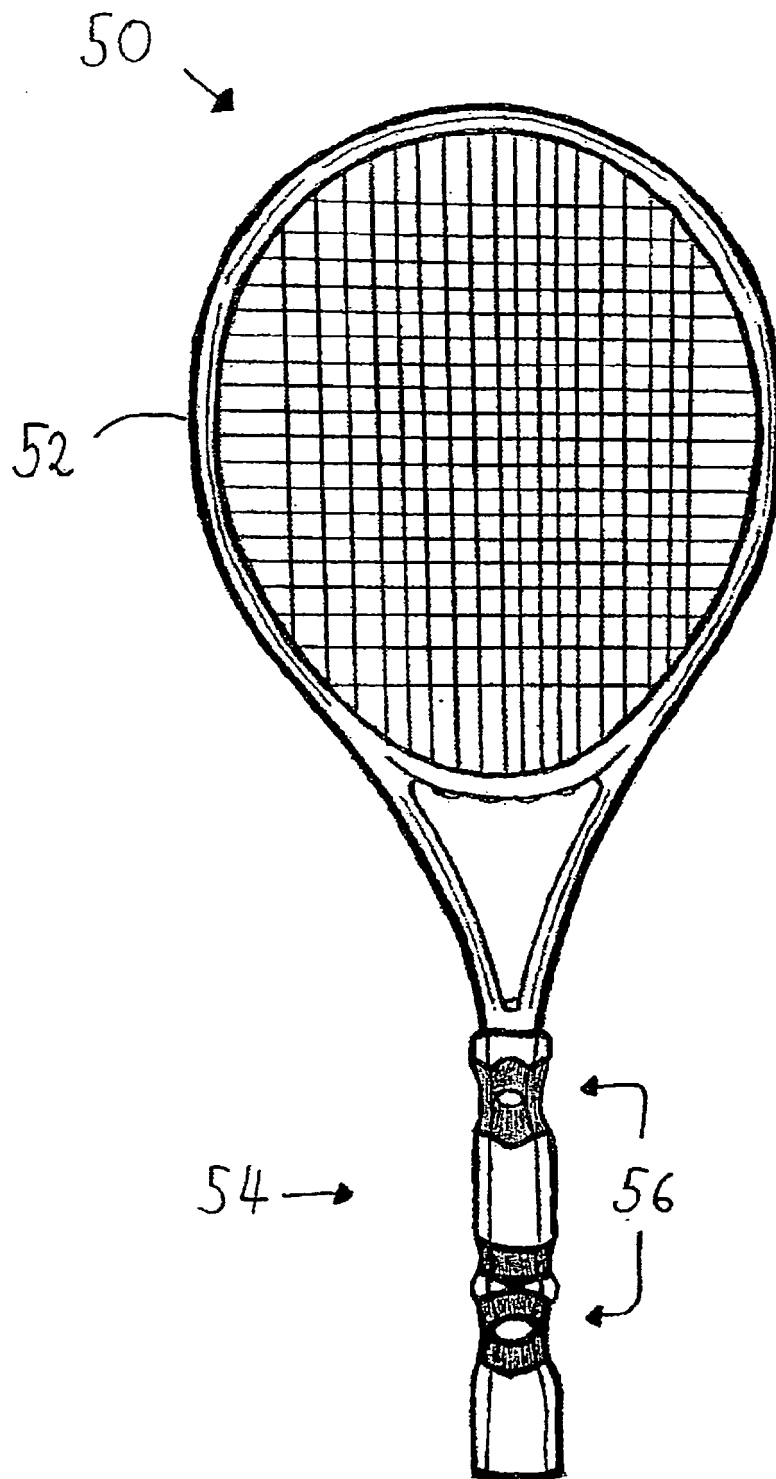


FIG 25

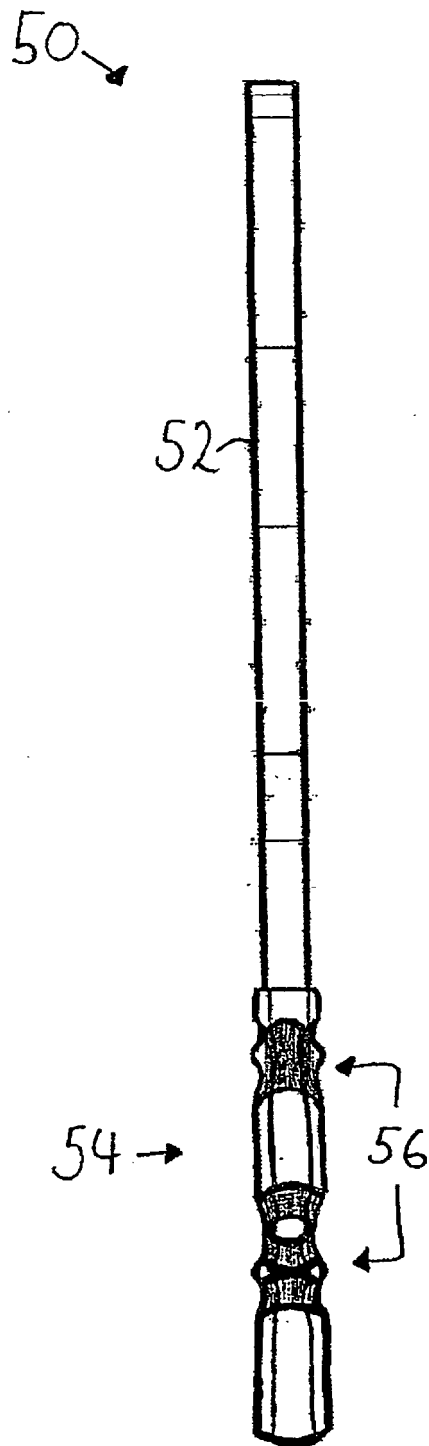


FIG 26

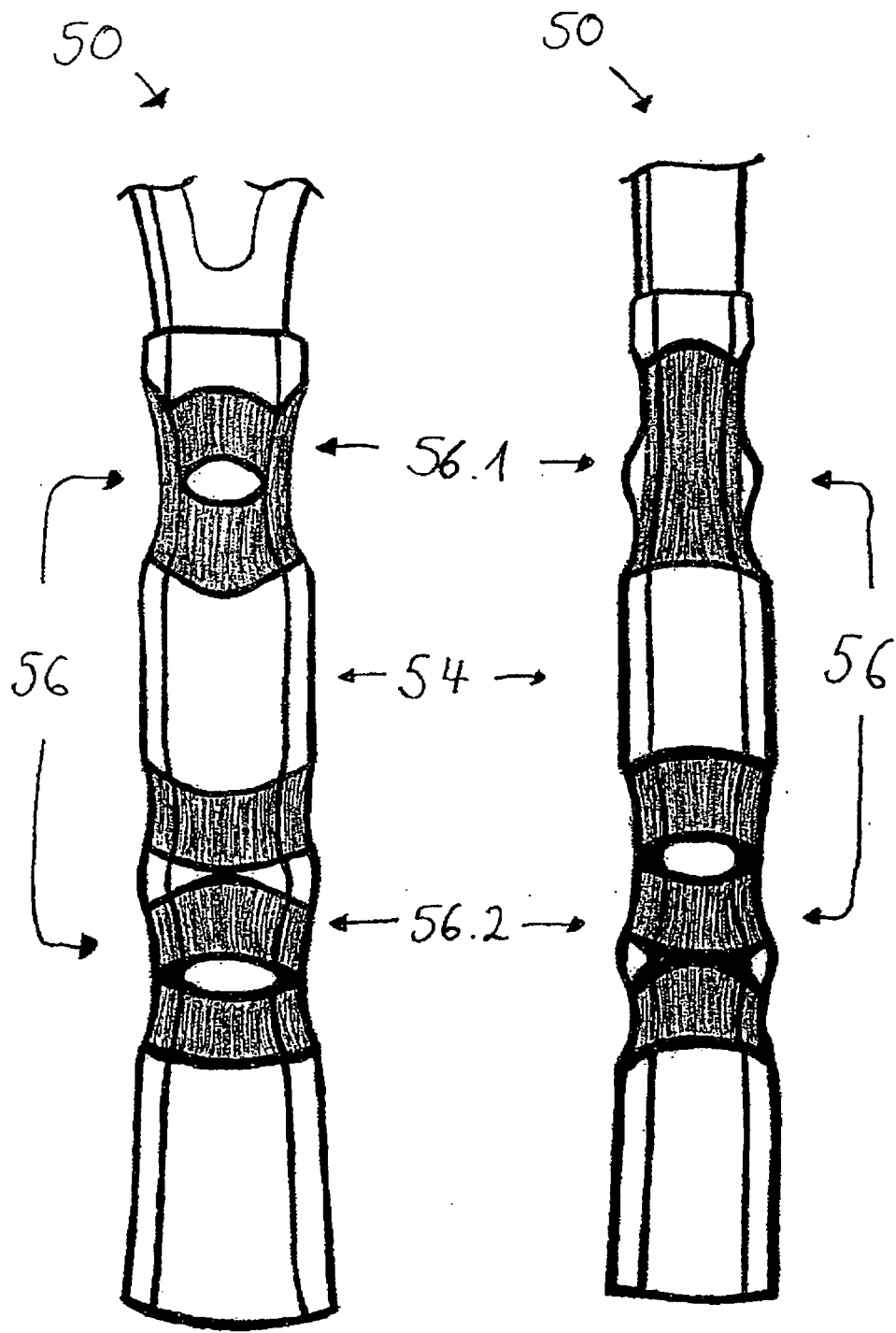


FIG 27

FIG 28

REFERENCES CITED IN THE DESCRIPTION

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- US 2031161 A [0017]