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(54) **SPORTING ARTICLE WITH ADJUSTABLE WEIGHT CONFIGURATION**

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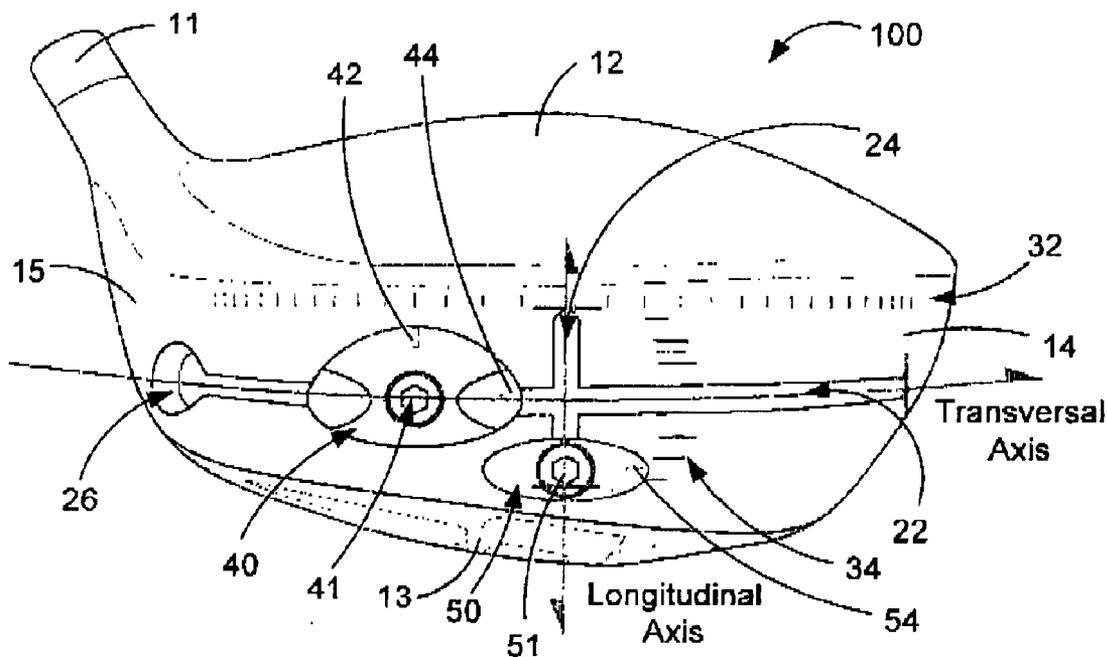
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(57) **ABSTRACT**

A sporting article having moveable weight members of various weight values that may be positioned along a guide in various configurations, for example, transversally, longitudinally and/or diagonally, at various positions and angles on the sporting article so that the user may properly adjust the weight distribution of the sporting article to perform a desired shot or improve maneuverability.

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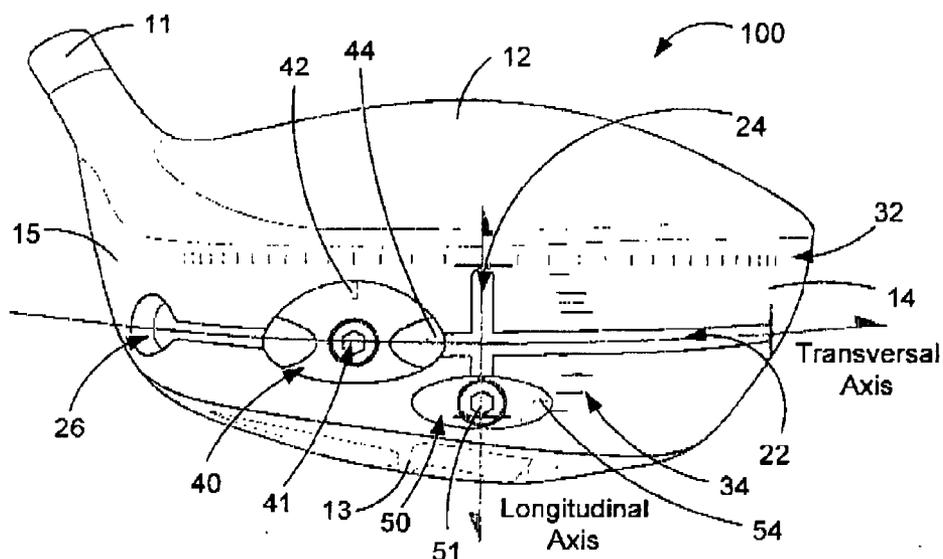


Figure 1

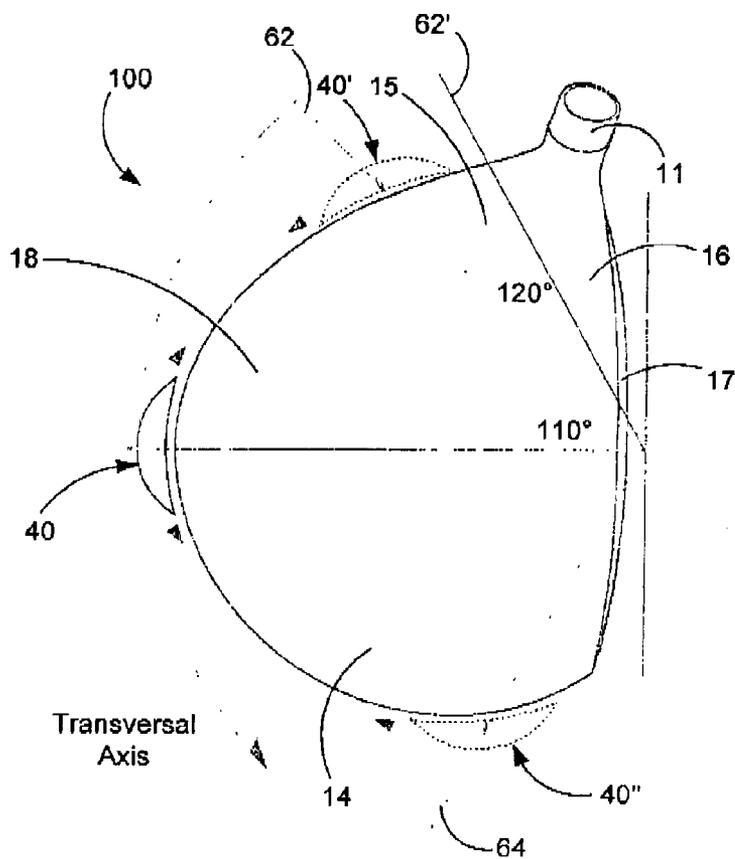


Figure 2

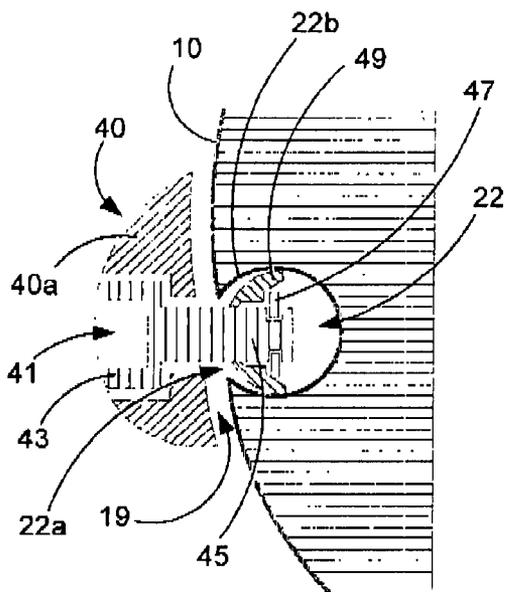


Figure 3A

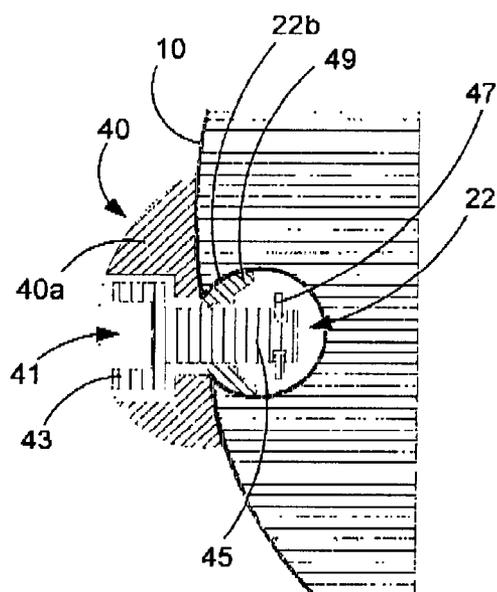


Figure 3B

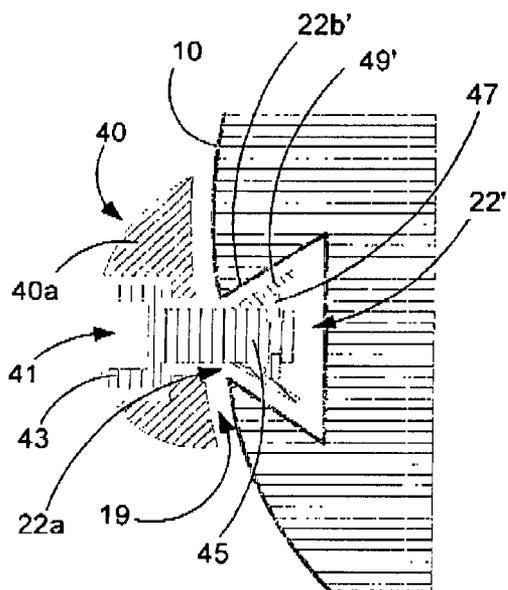


Figure 4A

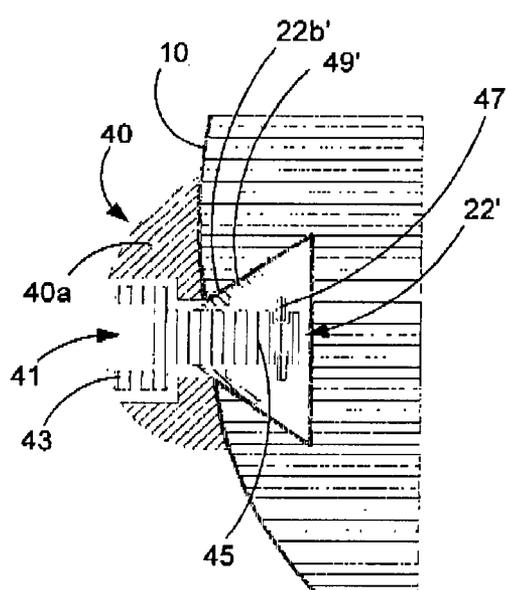


Figure 4B

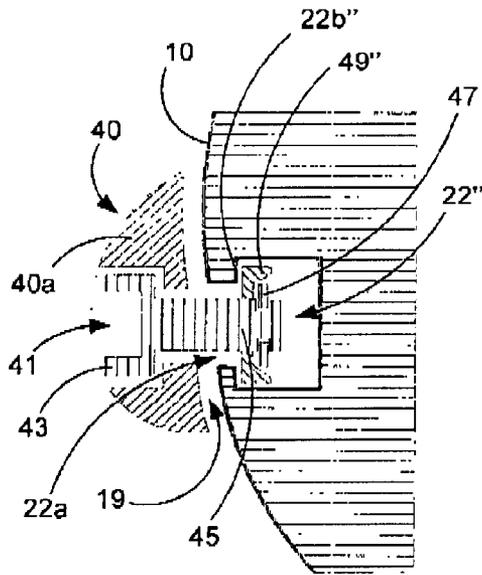


Figure 5A

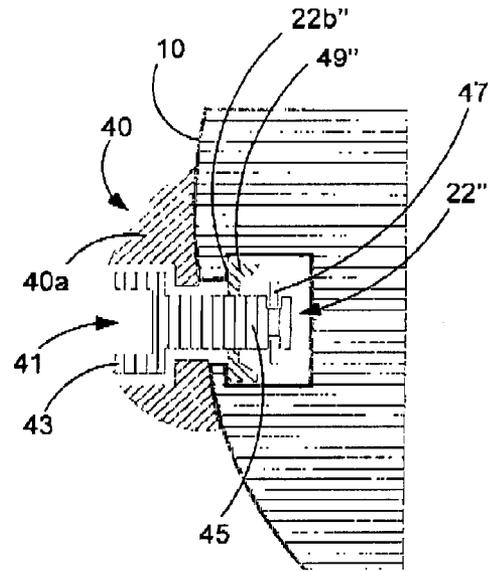


Figure 5B

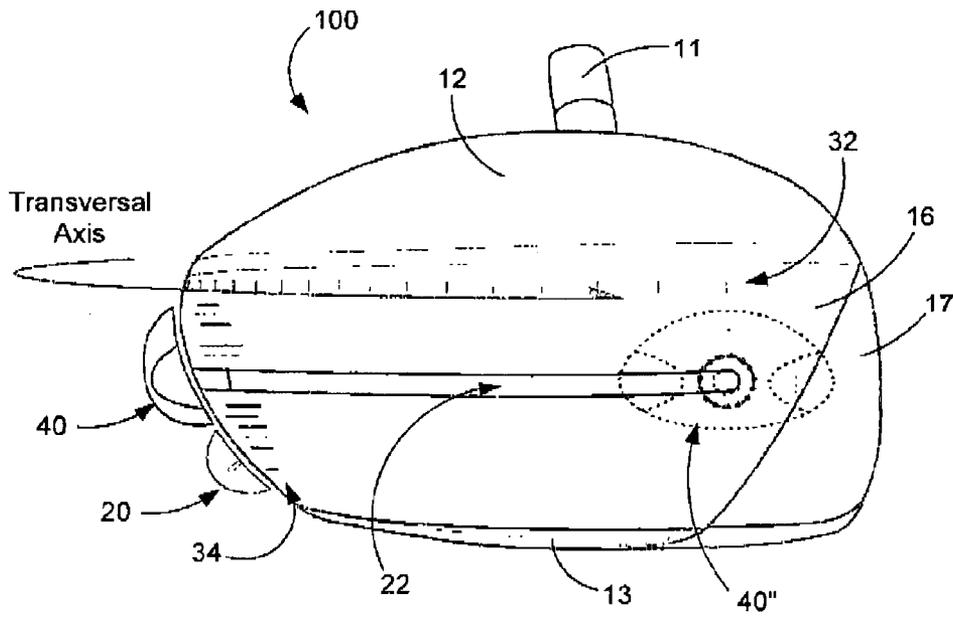


Figure 6

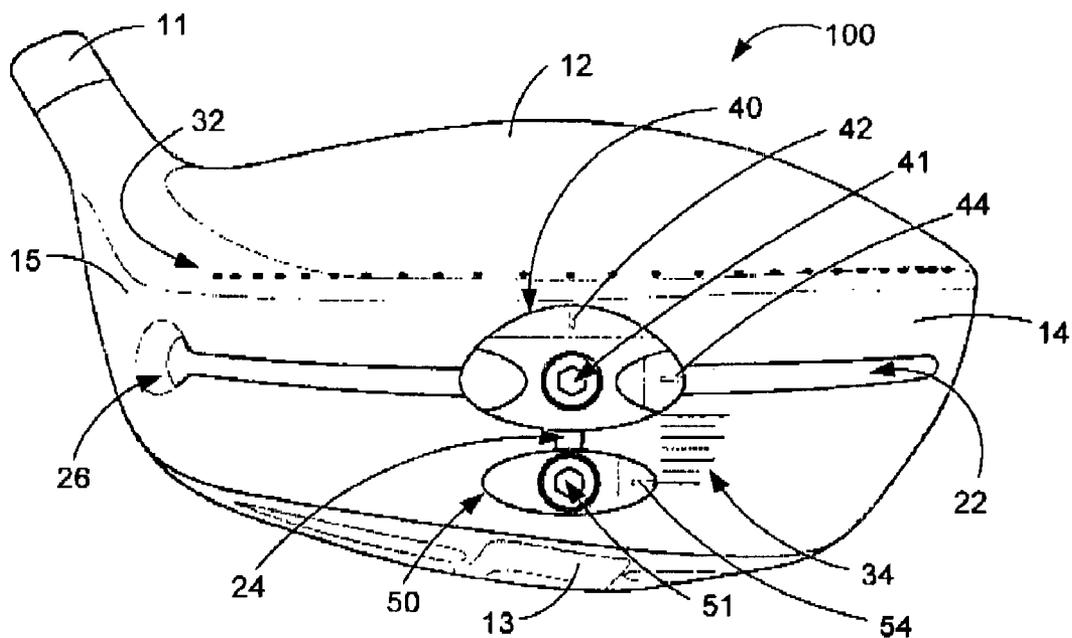


Figure 7

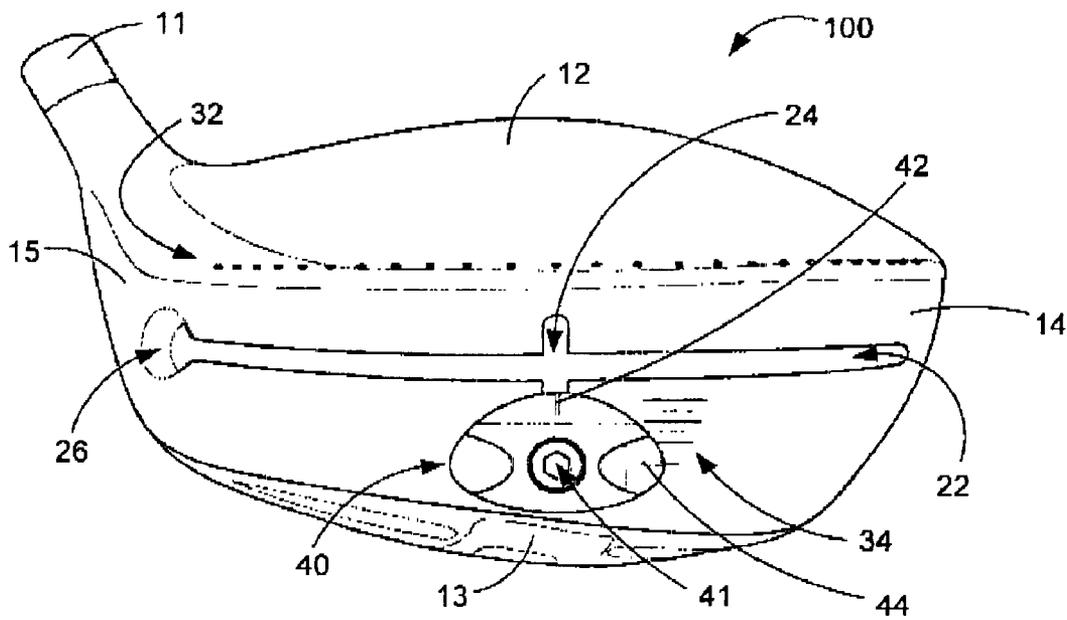


Figure 8

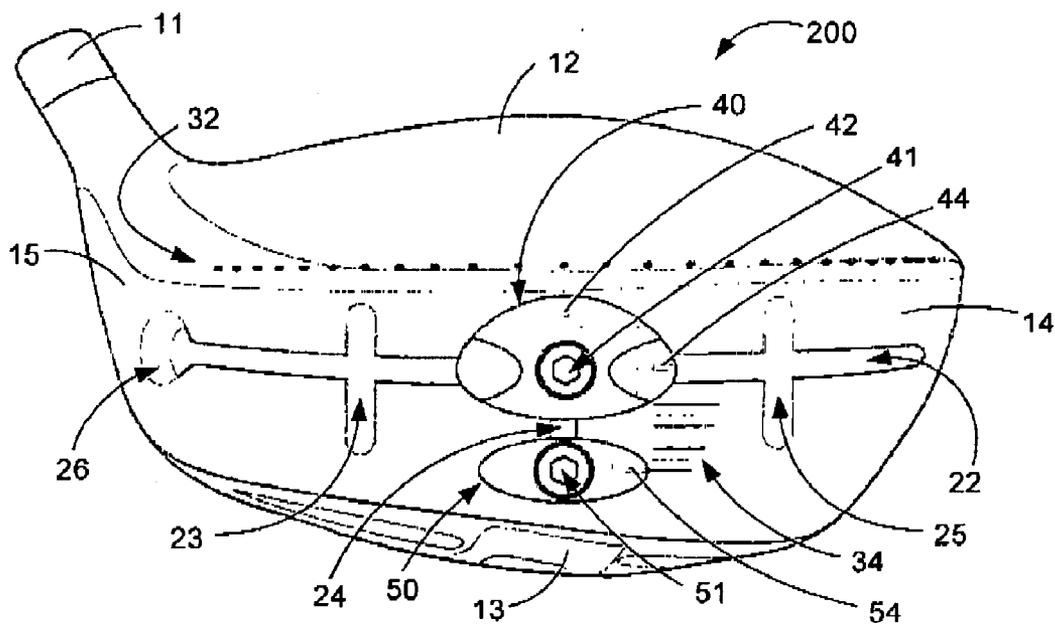


Figure 9

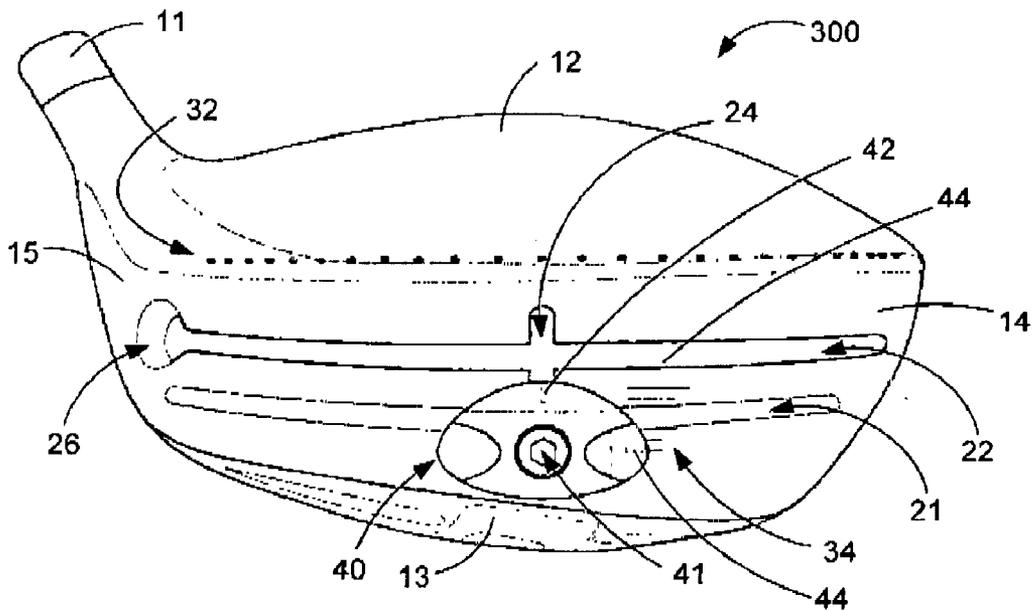


Figure 10

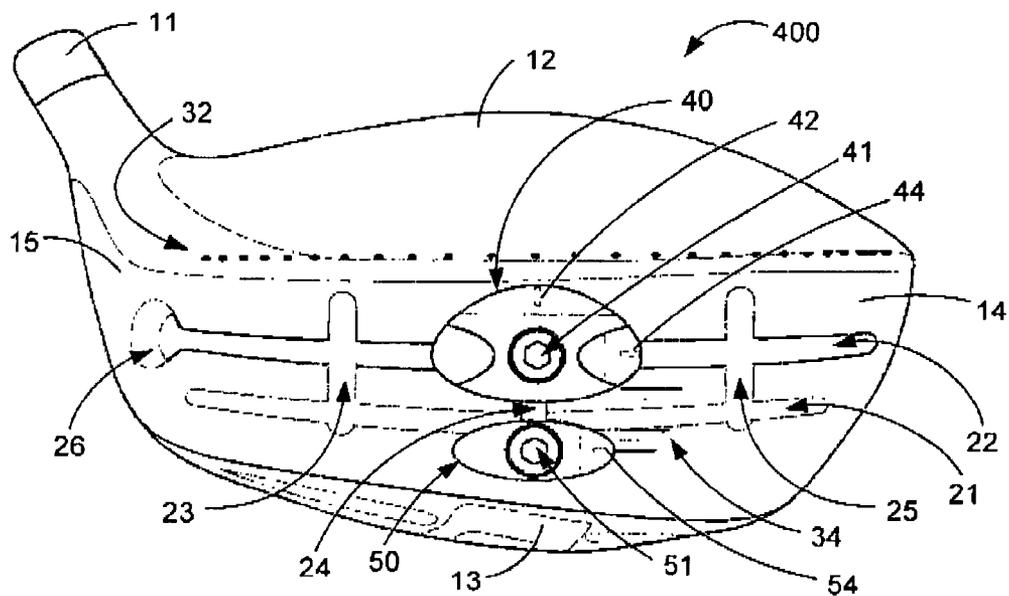


Figure 11

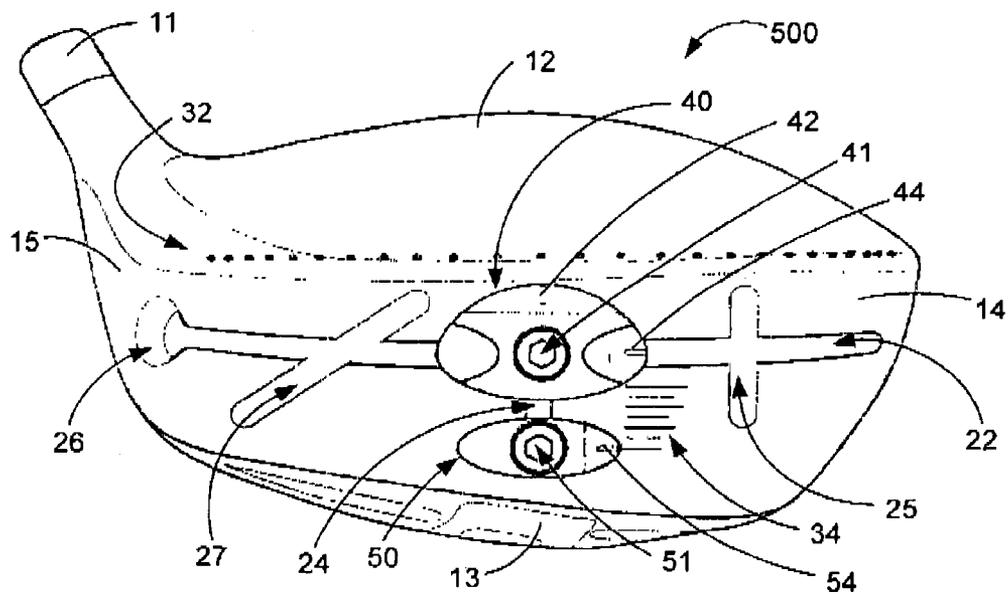


Figure 12

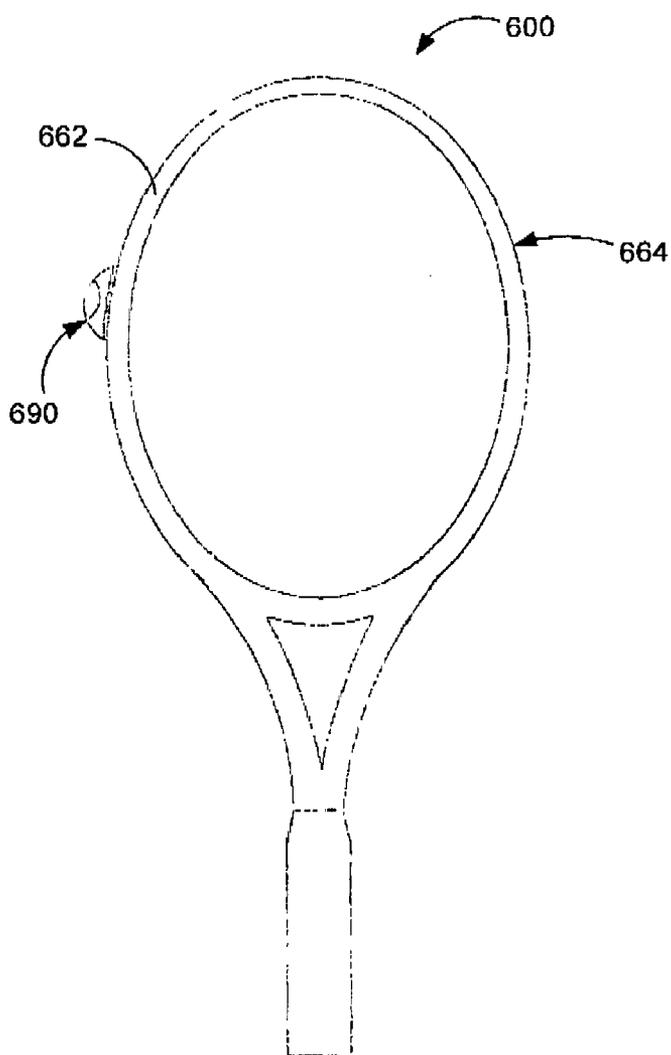


Figure 13

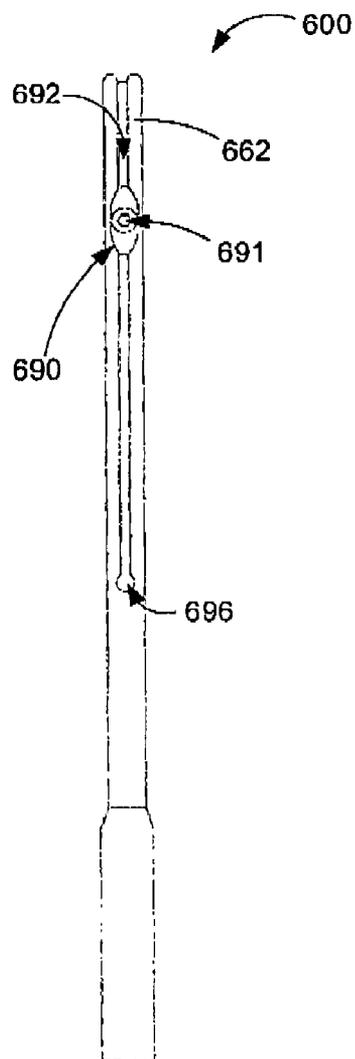


Figure 14

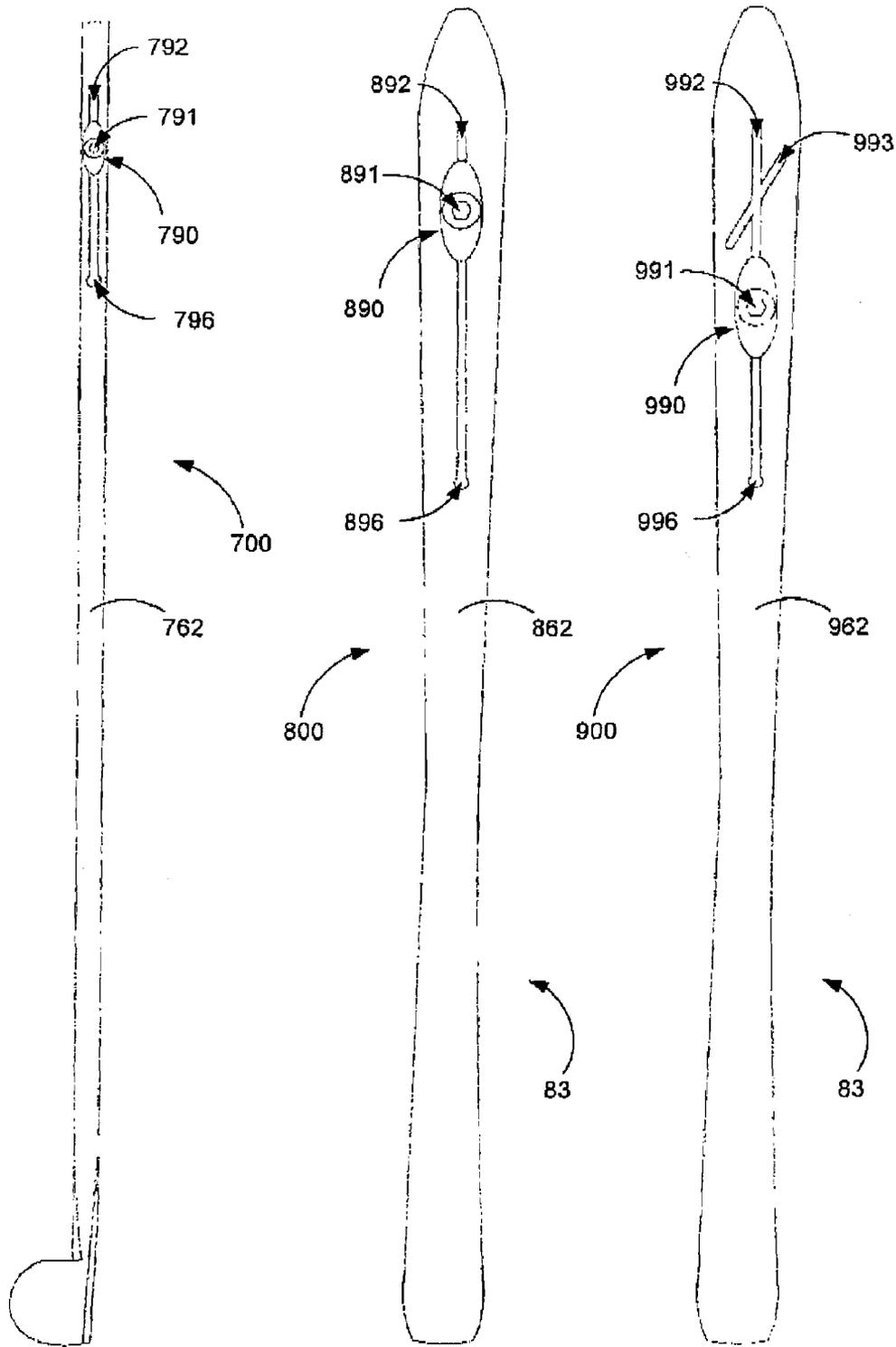


Figure 15

Figure 16

Figure 17

## SPORTING ARTICLE WITH ADJUSTABLE WEIGHT CONFIGURATION

### CROSS-REFERENCE TO RELATED APPLICATION

**[0001]** The present application claims the benefits of U.S. provisional patent application No. 60/780,344 filed Mar. 9, 2006, which is hereby incorporated by reference.

### TECHNICAL FIELD

**[0002]** The present invention relates to a sporting article with an adjustable weight configuration. More specifically, the present invention relates to a golf club head with an adjustable weight configuration.

### BACKGROUND

**[0003]** When practicing sports, the weight balance of a sporting article may have an impact on the performance of the user, be the sporting article be a golf club, racket, a hockey stick, a ski, etc.

**[0004]** For example, when swinging a golf club at a golf ball, some golfers have a swing such that the heel portion of the golf club head tends to move faster than the toe portion. This results in the heel portion arriving ahead of the toe portion at impact, causing the impact surface to be misoriented. This is what is commonly referred to as a “slice”. Conversely, some golfers have a swing such that the toe portion of the golf club head tends to move faster than the heel portion. This results in the toe portion arriving ahead of the heel portion at impact, causing the impact surface to be misoriented. This is what is commonly referred to as a “hook”.

**[0005]** Thus, golf club heads are configured in a variety of geometries in order to move the weight of the golf club head to points that enhance stability, i.e. more weight at either the heel or toe portion slows down that portion during the swing. These points differ from one model of golf club to another.

**[0006]** While common golf clubs operate satisfactorily, most of the weighted golf club heads suffer from the limitation that their weight distribution cannot be readily altered to customize the golf club to the needs of a particular golfer. Other sporting articles suffer from

### SUMMARY

**[0007]** The present invention relates a sporting article comprising at least one body portion providing a guide, the at least one body portion defining a generally longitudinal length, a generally transversal length and a generally diagonal length thereof, the guide comprising at least two guide sections, and at least one moveable weight member for being moveably engaged to the guide. Each of the guide sections providing for selectively moving the moveable weight member along at least one of the generally longitudinal, generally transversal and generally diagonal lengths of the at least one body portion.

**[0008]** The present invention also relates to a sporting article comprising a guide channel formed within at least one body portion of the sporting article and at least one moveable weight member for being moveably engaged within the guide channel. The moveable weight member comprises an external element for being positioned externally relative to the guide channel, an internal element for being positioned within the guide channel and an intermediate element for mounting the external and internal elements thereon near

opposite ends thereof. When mounting the moveable weight member to the guide channel, selective actuation of the intermediate element provides for moving the external and internal elements closer to one another along the intermediate element causing the external and internal elements to respectively frictionally abut an external surface the body portion and an internal surface of the guide channel thereby locking the moveable weight member at a given position along the guide channel.

**[0009]** The present invention further relates to a sporting article comprising a guide provided on at least one body portion of the sporting article, positioning indicators being provided on the at least one body portion along the guide and at least one moveable weight member for being moveably mounted to the guide. The moveable weight member being configured to be lockingly positioned at a desired position indicated by a given positioning indicators along the guide.

**[0010]** The present invention further still relates to a weight member for a sporting article having a guide channel formed within at least one body portion thereof, the weight member being moveably engaged within the guide channel. The weight member comprising an external element for being positioned externally relative to the guide channel, an internal element for being positioned within the guide channel and an intermediate element for mounting the external and internal elements thereon near opposite ends thereof. When engaging the weight member to the guide channel, selective actuation of the intermediate element provides for moving the external and internal elements closer to one another along the intermediate element causing the external and internal elements to respectively frictionally abut an external surface the body portion and an internal surface of the guide channel thereby locking the weight member at a given position along the guide channel.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0011]** Non-limitative illustrative embodiments of the Invention will now be described by way of examples only with reference to the accompanying drawings, in which:

**[0012]** FIG. 1 is a back view of a golf club head provided with an adjustable weight configuration according to a first embodiment of the present invention;

**[0013]** FIG. 2 is a top view of the golf club head of FIG. 1;

**[0014]** FIG. 3A is a cross sectional view of a first embodiment of a moveable weight member and a corresponding guide section in an unlocked position;

**[0015]** FIG. 3B is a cross sectional view of the moveable weight member and corresponding guide section of FIG. 3A in a locked position;

**[0016]** FIG. 4A is a cross sectional view of a second embodiment of a moveable weight member and a corresponding guide section in an unlocked position;

**[0017]** FIG. 4B is a cross sectional view of the moveable weight member and corresponding guide section of FIG. 4A in a locked position;

**[0018]** FIG. 5A is a cross sectional view of a third embodiment of a moveable weight member and a corresponding guide section in an unlocked position;

**[0019]** FIG. 5B is a cross sectional view of the moveable weight member and corresponding guide section of FIG. 5A in a locked position;

**[0020]** FIG. 6 is a toe side view of the golf club head of FIG. 1;

[0021] FIG. 7 is a back view of the golf club head of FIG. 1 with the adjustable weight configuration disposed in a first sample configuration; and

[0022] FIG. 8 is a back view of the golf club head of FIG. 1 with the adjustable weight configuration disposed in a second sample configuration.

[0023] FIG. 9 is a back view of a golf club head provided with an adjustable weight configuration according to a second embodiment of the present invention;

[0024] FIG. 10 is a back view of a golf club head provided with an adjustable weight configuration according to a third embodiment of the present invention;

[0025] FIG. 11 is a back view of a golf club head provided with an adjustable weight configuration according to a fourth embodiment of the present invention;

[0026] FIG. 12 is a back view of a golf club head provided with an adjustable weight configuration according to a fifth embodiment of the present invention;

[0027] FIG. 13 is a front view of a racket provided with an adjustable weight configuration according to a sixth embodiment of the present invention;

[0028] FIG. 14 is a side view of the racket of FIG. 13;

[0029] FIG. 15 is a front view of a hockey stick provided with an adjustable weight configuration according to a seventh embodiment of the present invention;

[0030] FIG. 16 is a top view of a ski provided with an adjustable weight configuration according to an eighth embodiment of the present invention; and

[0031] FIG. 17 is a top view of a ski provided with an adjustable weight configuration according to a ninth embodiment of the present invention.

#### DETAILED DESCRIPTION

[0032] Generally stated, the illustrative embodiments of the present invention provide sporting articles for users of all calibers; from amateur to professional. The present invention allows the user to adjust the weight distribution of the sporting article in order to customize it to his or her particular needs. Moveable weight members of various weight values may be positioned along a guide in various configurations, for example, transversally, longitudinally and/or diagonally, at various positions and angles on the sporting article so that the user may properly adjust the weight distribution of the sporting article to perform a desired shot or improve maneuverability.

[0033] Referring to FIGS. 1 and 2, there is shown an example of a sporting article in the form of a golf club head 100 having a hosel 11, to connect the golf club head 100 to a golf club shaft (not shown), a crown portion 12, a sole portion 13, a toe portion 14, a heel portion 15, a face portion 16 with an impact surface 17 and a rear portion 16. In the illustrated embodiment, the golf club head 100 includes two moveable weight members 40 and 50, which may be positioned in various configurations along transversal 22 and longitudinal 24 guide sections. It is to be understood that in alternative embodiments the number of moveable weight members may vary as well as the number of transversal and longitudinal guide sections, and may also include diagonal guide sections.

[0034] Furthermore, in this particular example the illustrated golf club head 100 is that of a driver. However, it is to be understood that the adjustable weight configuration may be applied to any other type of golf club head such as, for example, irons, wedges (pitching (pw), gap (gw), sand (sw), lobe (lw)) or a putter, made of whatever type of material.

[0035] The first moveable weight member 40 is generally displaced along the transversal guide section 22, which runs on the rear portion 18 of the golf club head 100 from its toe portion 14 to its heel portion 15, while the second moveable weight member 50 is generally displaced along the longitudinal guide section 24, which runs on the rear portion 18 of the golf club head 100 from its crown portion 12 to its sole portion 13. It is to be understood, however, that both moveable weight members 40 and 50 may be displaced along either or both the transversal guide section 22 and the longitudinal guide section 24.

[0036] The moveable weight members 40 and 50 typically weigh between 0.2 g and 1.0 g. However, it is to be understood that the weight value of the moveable weight members 40, 50 are given as examples only; other weight values may be used depending on the desired weight distribution, the type of club, gender and size of the golfer, etc. It is further to be understood that the weight values may also vary depending on the type of sporting article and its intended use.

[0037] Referring to FIGS. 3A and 3B, there is shown a cross sectional view of the interaction between the first moveable weight member 40 and the transversal guide section 22. It is to be understood that the first moveable weight member 40 may similarly interact with the longitudinal guide section 24 and that the second moveable weight member 50 may similarly interact with either or both of the transversal 22 and longitudinal 24 guide sections.

[0038] The first moveable weight member 40 includes an external element 40a, an intermediate element in the form of a locking element 41, which includes a head portion 43, a threaded body 45 and a blocking portion 47, and an internal element 49. The threaded body 45 operatively engages the internal element 49, which has a complementary thread pattern. The blocking portion 47 ensuring that the internal element 49 remains operatively connected to the locking element 41.

[0039] The first moveable weight member 40 may be engaged to the golf club head 100 by inserting the internal element 49 into the transversal guide section 22, which forms a channel within the golf club head 100, through an opening 26 which is located near the heel portion 15, the locking element 41 protruding from a slot 22a in the transversal guide section 22 such that the external element 40a rests on the outer surface 10 of the golf club head 100. It is to be understood that the opening 26 may be located at the toe portion 14, along the longitudinal guide section 24 or may be absent altogether in an alternative embodiment were the moveable weight members 40 and 50 are not removable.

[0040] Although not illustrated, it is to be understood that the second moveable weight member 50 may be described in a similar fashion as the first moveable weight member 40. Furthermore, the second moveable weight member 50 may be engaged to the transversal 22 and longitudinal 24 guide sections in a fashion similar to the first moveable weight member 40.

#### Locking

[0041] Rotating the head portion 43 of the locking element 41 in a first direction results in the external element 40a and the internal element 49 moving towards each other. The size of the external 40a and internal 49 elements being greater than the slot 22a of the transversal guide section 22, the external 40a and internal 49 elements respectively frictionally abut the outer surface 10 of the golf club head 100 and

part of the internal surface **22b** of the transversal guide section **22**, thereby locking the first moveable weight member **40** at a given position along the transversal guide section **22**, as best seen in FIG. 3B.

[0042] Advantageously, the geometry of the internal element **49** may be such as to be complementary to the geometry of the transversal guide section **22** so as to maximize the contact between the internal element **49** and part of the internal surface **22b** of the transversal guide section **22**.

#### Unlocking

[0043] Rotating the head portion **43** of the locking element **41** in a second opposite direction results in the external element **40a** and the internal element **49** moving away from each other, thus unlocking the first moveable weight member **40** and allowing for a space **19** to be created between the external element **40a** and the outer surface **10** of the golf club head **100** so that the first moveable weight member **40** may be moved along the transversal guide section **22**, as best seen in FIG. 3A. As previously mentioned, the blocking portion **47** ensures that in an unlocked position the internal element **49** remains operatively connected to the locking element **41**.

[0044] FIGS. 4A, 4B, 5A and 5B show alternative embodiments of the internal element **49'**, **49''** and corresponding transversal guide section **22'**, **22''** having complimentary geometries. It is to be understood that other geometries may be used as well.

[0045] It is also to be understood that other locking means may be used in order to secure the moveable weight member **40** in a desired position and to release it in order to modify the weight configuration of the sporting article.

[0046] Although the above description makes reference to the transversal guide section **22**, it is further to be understood that it may similarly apply to the longitudinal guide section **24** (or even a diagonal guide section in an alternative embodiment).

[0047] Referring to FIGS. 2 and 6, the transversal **22** and longitudinal **24** guide sections may be of various length. For example, in the illustrated embodiment the transversal guide section **22** may be of a length such that the first moveable weight member **40** may have a range of possible positions from line **62**, at the heel portion **15**, to line **64**, at the toe portion **14**, of about 110° along the rear portion **18**. The extreme positions of the first moveable weight member **40** are identified by numerals **40'** and **40''**. It is to be understood that the range of possible positions may be other than 110°, for example 120° if we use positions from line **62'** to line **64**.

[0048] The moveable weight members **40** and **50** may also include transversal and/or longitudinal position indicators. In the illustrated embodiment the first moveable weight member **40** includes a transversal **42** and longitudinal **44** position indicator while the second moveable weight member **50** includes a longitudinal position indicator **34**. Complementary transversal **32** and longitudinal **34** position markers may also be provided on the golf club head **100** so that a golfer may remember the position of the moveable weight members **40** and **50** in a desired weight configuration. Furthermore, the user may wish to use various weight configurations depending on the desired effect or shot.

[0049] It is to be understood that in the case of alternative embodiments having diagonal guide sections, the moveable weight members **40** and **50** may also include diagonal position indicators (not shown).

[0050] Referring now to FIGS. 7 and 8, there are shown two examples of weight configurations. In particular, FIG. 8 shows a configuration with only the first moveable weight member **40** present, which is positioned in the longitudinal guide section **24**, thus the presence of the longitudinal indicator **44**. The FIG. 8 configuration illustrates that the first moveable weight member **40**, may be used in the longitudinal guide section **24** as well as the transversal guide section **22** and that moveable weight members are not restricted to a specific guide section.

[0051] Referring to FIGS. 9 to 12, there are shown further illustrative embodiments of golf club heads **200**, **300**, **400** and **500** having various combinations of transversal, longitudinal and diagonal guide sections. More specifically, FIG. 9 shows a golf club head **200** having a transversal guide section **22** and two longitudinal guide sections **23**, **25**, a first longitudinal guide section **23** biased towards the heel portion **15** and a second longitudinal guide section **25** biased towards the toe portion **14**.

[0052] FIG. 10 shows a golf club head **300** having a longitudinal guide section **24** and two transversal guide sections **21**, **22**, a first transversal guide section **21** biased towards the sole portion **13** and a second transversal guide section **22** biased towards the crown portion **12**.

[0053] As for FIG. 11, it shows a golf club head **400** having two transversal guide sections **21**, **22** a first transversal guide section **21** biased towards the sole portion **13** and a second transversal guide section **22** biased towards the crown portion **12**, and two longitudinal guide sections **23**, **25**, a first longitudinal guide section **23** biased towards the heel portion **15** and a second longitudinal guide section **25** biased towards the toe portion **14**.

[0054] Finally, FIG. 12 shows a golf club head **500** having a transversal guide section **22**, a longitudinal guide section **25**, biased towards the heel portion **15**, and a diagonal guide section **47**, biased towards the toe portion **14**.

[0055] It is to be understood that the illustrative embodiments of FIGS. 9 to 12 are not meant to be exhaustive and that many other embodiments having various combinations of transversal and/or longitudinal and/or diagonal guide sections may be used, as well as embodiments with discontinuous guide sections.

[0056] Although a golf club head was used as an example of a sporting article in the above description, it is to be understood that the adjustable weight configuration may also be used with other sporting articles such as, for example, racquets (tennis, badminton, squash, racquetball, ping pong, etc.), hockey sticks, skis, curling brooms, polo sticks, baseball bats, croquet sticks, cricket sticks, lacrosse sticks or any other sporting goods where repartition of the weight balance may have an impact on the user's performance and/or use of the sporting article.

[0057] For example, FIGS. 13 and 14 show a racket **600** having a guide section **692**, with opening **696**, running along a portion of the frame **662** of the racket head **664**. A moveable weight member **690**, with locking element **691**, is engaged to the guide section **692** and may be moved along the guide section **692** so as to modify the balance of the racket **600** by locking it into place using the locking element **691**. The moveable weight member **690** may be engaged or removed from the guide section **692** using the guide section opening **696**.

[0058] In another example, FIG. 15 shows a hockey stick **700** having a guide section **792**, with opening **796**, running

along a portion of the shaft 762 of the hockey stick 700. A moveable weight member 790, with locking element 791, is engaged to the guide section 792 and may be moved along the guide section 792 so as to modify the balance of the hockey stick 700 by locking it into place using the locking element 791. The moveable weight members 790 may be engaged or removed from the guide section 792 using the guide section opening 796. It is to be understood that the guide section 792 may be positioned at different locations on the hockey stick 700 and that multiple guide sections and/or moveable weight members may be used.

[0059] In a further example, FIG. 16 shows a ski 800 having a guide section 892, with opening 896, running along a portion of the upper surface 862 of the ski 800. A moveable weight member 890, with locking element 891, is engaged to the guide section 892 and may be moved along the guide section 892 so as to modify the balance of the ski 800 by locking it into place using the locking element 891. The moveable weight members 890 may be engaged or removed from the guide section 892 using the guide section opening 896. It is to be understood that the guide section 892 may be positioned at different locations on the ski 800 and that multiple guide sections and/or moveable weight members may be used.

[0060] In yet another example, FIG. 17 shows a ski 900 having a first 992 and second guide section 993, with opening 996, running along a portion of the upper surface 962 of the ski 900, the first 992 and second 993 guide sections crossing each other at an angle. A moveable weight member 990, with locking element 991, is engaged to the guide section 992 and may be moved along the either of the first 992 and second 993 guide section so as to modify the balance of the ski 900 by locking it into place using the locking element 991. The moveable weight members 990 may be engaged or removed from the guide section 992 using the guide section opening 996. It is to be understood that the first 992 and second 993 guide section may be positioned at different locations on the ski 900, at various angle and that multiple guide sections and/or moveable weight members may be used.

[0061] It is to be understood that in the illustrative embodiments of FIGS. 13 to 17 the moveable weight members 690, 790, 890 and 990 may be permanently engaged to their respective guide sections 692, 792, 892 and 992, in which case openings 696, 796, 896 and 996 may be omitted. It is also to be understood that although not shown, the locking elements 691, 791, 891 and 991 may be similar to the locking element 41 shown in FIGS. 3A to 5B.

[0062] It is further to be understood that the illustrative embodiments of FIGS. 13 to 17 are not meant to be exhaustive and that many other embodiments the adjustable weight configuration may be used with other sporting articles and in various other configurations.

[0063] It is to also be understood that the various features of the various embodiments described above may be combined in a variety of ways within the context of the present invention.

[0064] Although the present invention has been described by way of a non-limitative illustrative embodiments and examples thereof, it will be apparent to persons skilled in the art that modifications may be applied to the illustrative embodiments without departing from the scope of the present invention.

1. A sporting article comprising:
  - at least one body portion providing a guide, said at least one body portion defining a generally longitudinal length, a generally transversal length and a generally diagonal length thereof; and said guide comprising at least two guide sections; and
  - at least one moveable weight member for being moveably engaged to said guide;
  - wherein each of said guide sections provides for selectively moving said moveable weight member along at least one of said generally longitudinal, generally transversal and generally diagonal lengths of said at least one body portion.
2. A The sporting article according to claim 1, wherein said at least two guide sections comprise discontinuous guide sections.
- 3.-5. (canceled)
6. A The sporting article according to claim 1, wherein said at least two guide sections comprise contiguous guide sections.
- 7.-10. (canceled)
11. A The sporting article according to claim 1, wherein each of said guide sections comprise a channel and wherein said moveable weight member comprises:
  - an external element for being positioned externally relative to said channel;
  - an internal element for being positioned within said channel; and
  - an intermediate element for mounting said external and internal elements thereon near opposite ends thereof;
  - wherein when engaging said moveable weight member to one of said channel, selective actuation of said intermediate element provides for moving said external and internal elements closer to one another along said intermediate element causing said external and internal elements to respectively frictionally abut an external surface said body portion and an internal surface of said channel thereby locking said moveable weight member at a given position along said channel.
12. The sporting article according to claim 11, wherein said channel comprises a slot having a size smaller than the size of said internal element, thereby preventing said moveable weight member from being removed from said guide sections.
13. The sporting article according to claim 12, wherein at least one of said guide sections has a slot comprising an opening having a size greater than the size of said internal element, thereby providing for the removal of said moveable weight member from said at least one of said guide sections.
14. The sporting article according to claim 1, further comprising:
  - positioning indicators provided on said at least one body portion along said guide;
  - wherein said moveable weight member is configured to be lockingly positioned at a desired position indicated by a given said positioning indicators along said guide.
15. (canceled)
16. A sporting article comprising:
  - a guide channel formed within at least one body portion of said sporting article; and
  - at least one moveable weight member for being moveably engaged within said guide channel, said moveable weight member comprising:

an external element for being positioned externally relative to said guide channel;  
 an internal element for being positioned within said guide channel; and  
 an intermediate element for mounting said external and internal elements thereon near opposite ends thereof;  
 wherein when mounting said moveable weight member to said guide channel, selective actuation of said intermediate element provides for moving said external and internal elements closer to one another along said intermediate element causing said external and internal elements to respectively frictionally abut an external surface said body portion and an internal surface of said guide channel thereby locking said moveable weight member at a given position along said guide channel.

17. (canceled)

18. The sporting article according to claim 16, wherein said at least one body portion defines a generally longitudinal length, a generally transversal length and a generally diagonal length thereof and wherein said guide channel provides for selectively moving said moveable weight member along at least one of said generally longitudinal, generally transversal and generally diagonal lengths of said at least one body portion.

19. The sporting article according to claim 16, wherein said guide channel comprises at least two guide channel sections.

20. The sporting article according to claim 18, wherein said at least two guide channel sections comprise discontinuous guide channel sections.

21.-23. (canceled)

24. The sporting article according to claim 18, wherein said at least two guide channel sections comprise contiguous guide channel sections.

25.-27. (canceled)

28. The sporting article according claim 19, wherein said guide channel sections comprise a slot having a size smaller than the size of said internal element, thereby preventing said moveable weight member from being removed from said guide channel sections.

29. The sporting article according to claim 28, wherein at least one of said guide channel sections has a slot comprising an opening having a size greater than the size of said internal element, thereby providing for the removal of said moveable weight member from said at least one of said guide channel sections.

30. The sporting article according to claim 16, further comprising:

positioning indicators provided on said at least one body portion along said guide channel;  
 wherein said moveable weight member is configured to be lockingly positioned at a desired position indicated by a given said positioning indicators along said guide channel.

31. (canceled)

32. A sporting article comprising:

a guide provided on at least one body portion of said sporting article;

positioning indicators being provided on said at least one body portion along said guide; and  
 at least one moveable weight member for being moveably mounted to said guide;  
 wherein said moveable weight member is configured to be lockingly positioned at a desired position indicated by a given said positioning indicators along said guide.

33. (canceled)

34. The sporting article according to claim 32, wherein said at least one body portion defines a generally longitudinal length, a generally transversal length and a generally diagonal length thereof and wherein said guide provides for selectively moving said moveable weight member along at least one of said generally longitudinal, generally transversal and generally diagonal lengths of said at least one body portion.

35. The sporting article according to claim 34, wherein said guide comprises at least two guide sections.

36. The sporting article according to claim 35, wherein said at least two guide sections comprise discontinuous guide sections.

37.-39. (canceled)

40. The sporting article according to claim 35, wherein said at least two guide sections comprise contiguous guide sections.

41.-44. (canceled)

45. The sporting article according to claim 32, wherein each of aid guide sections comprise a channel and wherein said moveable weight member comprises:

an external element for being positioned externally relative to said channel;  
 an internal element for being positioned within said channel; and  
 an intermediate element for mounting said external and internal elements thereon near opposite ends thereof;

wherein when engaging said moveable weight member to one of said channel, selective actuation of said intermediate element provides for moving said external and internal elements closer to one another along said intermediate element causing said external and internal elements to respectively frictionally abut an external surface said body portion and an internal surface of said channel thereby locking said moveable weight member at a given position along said channel.

46. The sporting article according to claims 45, wherein said channel comprises a slot having a size smaller than the size of said internal element, thereby preventing said moveable weight member from being removed from said guide sections.

47. The sporting article according to claim 46, wherein at least one of said guide sections has a slot comprising an opening having a size greater than the size of said internal element, thereby providing for the removal of said moveable weight member from said at least one of said guide sections.

48. (canceled)

49. (canceled)

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