Title: REINFORCED BASEBALL BAT

Inventor: Giuseppe Totino, Staten Island, NY (US)

Correspondence Address:
Antonio Papageorgiou
3050 Fairfield Avenue #3G
Bronx, NY 10463 (US)

Appl. No.: 12/456,262
Filed: Aug. 13, 2009

Publication Classification

Int. Cl. A63B 59/06 (2006.01)

U.S. Cl. 473/564

Abstract

A baseball bat is provided that includes a wooden structure having a barrel portion at a first end, a knob at a second end opposite the first end, and a grip portion disposed between the first and second ends; a first reinforcing collar disposed over the wooden structure a first distance from the second end; and a second reinforcing collar disposed over the wooden structure a second distance from the second end. The first distance is preferably greater than the second distance sufficient to create a separation between the first and second collars.
REINFORCED BASEBALL BAT

BACKGROUND OF THE INVENTION

[0001] The present invention relates to reinforced baseball bats and similar types of sporting goods.

[0002] Wooden baseball bats are known to have a limited life span, especially when used by major league ball players. The nature of the wood and the tapered profile of the bat impart a tendency for the wooden bat to split and splinter unpredictably when struck by or striking a baseball at high velocity. As a result, baseball players and bystanders risk serious injury from debris that may be expelled from a broken wooden bat every time it is used.

[0003] Aluminum bats have been used for some time as an alternative to wooden bats. Although aluminum bats do not have a tendency to break in comparison to its wooden counterpart, aluminum bats are not without their own other problems. For example, balls hit with aluminum bats have a higher exit velocity than those hit with a wooden bat. As a result, serious and even grave injuries have been seen in players struck with baseballs hit using aluminum bats. Moreover, aluminum bats were never accepted by the major leagues.

[0004] Attempts have been made to reinforce wooden bats, such as those discussed in U.S. Pat. Nos. 6,086,610 and 6,238,309, each of which is incorporated herein by reference, with limited success. That is, the inventors of these patents propose reinforcing wooden bats with a composite material of resin, and carbon or aramid fibers. These composites, however, may crick or delaminate thereby reducing the lifespan of the reinforced wooden bat for at least visual if not for performance reasons. Moreover, reinforcing the entire tapered portion of the wooden bat necessarily stiffens the wooden bat thereby changing the feel of the wooden bat to the player.

[0005] Accordingly, there is a need for reinforced wooden baseball bats with a reduced tendency to break when struck that do not exhibit some or all of the limitations noted above with regard to composite reinforced wooden bats.

SUMMARY OF THE INVENTION

[0006] In at least one embodiment, a baseball bat is provided that includes a wooden structure having a barrel portion at a first end, a knob at a second end opposite the first end, and a grip portion disposed between the first and second ends; a first reinforcing collar disposed over the wooden structure a first distance from the second end; and a second reinforcing collar disposed over the wooden structure a second distance from the second end. The first distance is preferably greater than the second distance sufficient to create a separation between the first and second collars.

[0007] In one embodiment, the first distance is between about 14 and about 16 inches and the second distance is between about 7 inches and about 9 inches. In another embodiment, the bat has an overall length and wherein the first distance is between about 34% and about 38% of the overall length, and the second distance is between about 17% and about 21% of the overall length.

[0008] In another embodiment, the first collar has a height that is between about 1 and about 3 inches, and the second collar has a height that is between about 2 and about 4 inches, and the height of the second collar is greater than the height of the first collar.

[0009] In another embodiment, the bat has an overall length and the first collar has a height that is between about 2% to about 6% of the overall length, and the second collar has a height that is between about 4% and about 8% of the overall length, wherein the height of the second collar is greater than the height of the first collar.

[0010] In another embodiment, each of the collars has a major inner diameter and a minor inner diameter, and wherein the major diameter of the first collar is greater than the minor diameter of the first collar, the major diameter of the second collar is greater than the minor diameter of the second collar, and the major diameter of the second collar is greater than the minor diameter of the first collar.

[0011] In another embodiment, at least one of the collars is made of a metal, which may be at least one of steel, aluminum, titanium, and an alloy thereof.

[0012] In another embodiment, at least one of the collars is adhered to the wooden structure.

[0013] In another embodiment, at least one of the collars has an inner surface that contacts the wooden structure, the inner surface has a rough texture.

[0014] In another embodiment, the wooden structure has a plurality of grooves having approximate dimensions of the first and second collars, and wherein the first and second collars fit flush within the grooves.

[0015] In another embodiment, at least one of the first and second collars has a C shaped cross section.

[0016] In another embodiment, the at least one of the first and second collars has a welded seam at an opening of the C shaped cross section.

[0017] In another embodiment, the wooden structure includes a first part and second part that are assembled together after placing the first and second collars onto the wooden structure. One of the parts of the wooden structure may be the knob.

[0018] In another embodiment, at least one of the parts of the wooden structure includes a dowel and the other part includes a hole that accommodates the dowel.

[0019] Additional aspects of the present invention will be apparent in view of the description which follows.

BRIEF DESCRIPTION OF THE FIGURES

[0020] FIG. 1 is a side view of a bat according to at least one embodiment of the present invention;

[0021] FIG. 2 is a side view of a bat according to at least another embodiment of the present invention; and

[0022] FIG. 3 is a partial side view of a bat according to at least another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0023] Referring to FIG. 1, a baseball bat according to at least one embodiment of the present invention includes wooden structure having a barrel or hitting portion 100 at a first end 105, a knob 110 at a second end 115 opposite the first end, and a grip or handle portion 120 disposed between the first and second ends 105, 115. The baseball bat preferably includes a first 130 and second 140 reinforcing collar. The first reinforcing collar 130 is preferably disposed a distance X from the second end 115 and the second reinforcing collar 140 is preferably disposed a distance Y from the second end 115. The dimension for X may be about 15 inches +1 inch or any increment in between and for Y may be about 8 inches +/-1 inch or any increment in between for a baseball bat not
The collars 130, 140 have a height dimension I, J respectively. I may be about 2 inches +/-1 inch or any increment in between and J may be about 3 inches +/-1 inch or any increment in between. I and J may also be described in relation to the overall length of the bat for non-standard length bats. For example, I may be 4% +/-2% or any increment in between and J may be 6% +/-2% or any increment in between. In at least one embodiment, I is greater than J by at least 50%. The dimensions I, J, X and Y may be reduced proportionally for smaller bat sizes. For example, X and Y for a 38 inch bat may be reduced by (42-38)*15 or (42-38)*9, respectively. It is believed that two reinforcing collars dimensioned as such increase the resistance or tendency of the wooden bat to break while also limiting changes to the stiffness and thus the feel of the wooden bat.

The reinforcing collars 130, 140 each have at least one inner diameter. Depending on the shape, i.e., the taper, of the wooden bat, collars 130, 140 may have a plurality of inner diameters. That is, collar 130 may have a major inner diameter closer to the first end of the bat that is greater than the minor inner diameter that is closer to the second end of the bat. Collar 140 may similarly have major and minor inner diameters. In this respect, at least one of the collars 130, 140 have a tapered cylindrical shape with openings at each end for the collars 130, 140 to fit over the particular shape of the baseball bat.

The reinforcing collars 130, 140 are preferably made of a material with a modulus of elasticity equal to or greater than that of the wooden bat and that is also resistant to brittle fracture and/or cracking. In one embodiment, the reinforcing collars 130, 140 are made of a metal or metal alloy, such as steel, e.g., carbon steel, chrome moly, stainless, etc., aluminum, titanium, etc. Metal reinforcing collars are preferably made from a sheet of metal not exceeding 1/8 inch thick, which improves the strength of the wooden bat without appreciably affecting the performance characteristics of the bat. In place, the reinforcing collars 130, 140 are generally hollow tapered cylinders that fit tightly against the exterior of the wooden bat. The impact forces from the bat may be transferred to the collars 130, 140 by providing a friction fit between the inner surfaces of the collars 130, 140 and the outer surfaces of the bat. Friction may be enhanced by providing a rough surface in the inner surfaces of the tubular structure that comes into contact with the exterior surface of the baseball bat. Alternatively, the collars may be adhered to the wooden bat with high performance adhesives designed to bond the collars 130, 140 to wood.

The collars 130, 140 may be disposed on top of the bat's exterior surface. That is, the collars 130, 140 may extend beyond the surface of the bat the relative thickness of the collars 130, 140. In this instance, the collars 130, 140 preferably have beveled ends to provide a smooth transition between the exterior surfaces of the bat and the collars. Alternatively or in addition, the wooden bat may include a groove or grooves 230, 240 that has the approximate dimensions of the collars 130, 140 so that the collars fit smoothly or flush with the exterior surface of the bat, as shown in FIG. 2.

The reinforced bat in accordance with at least one of the embodiments disclosed herein may be manufactured in a variety of ways. In one embodiment, the collars 130, 140 may be manufactured with an opening therein such that the collars 130, 140 have a cross section resembling a C shape (with overlapping ends or otherwise). The collars 130, 140 may be installed by placing the C shape around the bat and closing the C shape so that the collars 130, 140 surround the bat completely. The collars 130, 140 may be closed with an elastic bias created by the preshaped collar's material properties, with the adhesive discussed above, and/or by welding the collars 130, 140 closed. Alternatively, or in addition, the wooden bat may be manufactured in two parts. For example, the batten may be formed on a lathe without the knob 110. In this instance, tubular reinforcing collars 130 may be installed over the second end 115 of the bat followed by installing the knob 110 over the second end 115. Installation may be facilitated by forming a dowel 300 at the second end 115 with a corresponding opening 305 in the knob, as shown in FIG. 3.

Collars 130, 140 may also be sold in a kit form for installation on older wooden bats. The kit preferably includes the two collars 130, 140 and adhesive for bonding the collars to the wooden bat. Kits with different sized collars may be provided to accommodate differences between wooden bats, e.g., by manufacturer and/or size. There may also be provided a universal kit with multiple of each of the reinforcing collars 130, 140. For example, the kit may include two or more distal collars 130, e.g., a standard and at least one under or over sized collar, and two or more proximal collars 140, e.g., a standard and at least one under or over sized collar. The kit may also include items for a user to remove and replace the knob 110. For example, the kit may include a wooden dowel, e.g., 1/8 inch diameter, wood glue, and instructions for cutting the knob 110 and replacing the knob 110 on the bat. The knob may be cut and replaced by first drilling a hole the approximate size of the dowel through and extending beyond the thickness of the knob 110 in a direction inline with the axis of the bat, which assists in the realignment of knob 110 onto the bat. The knob may then be cut, preferably with a fine toothed saw, the collars placed into position on the wooden bat, preferably with adhesive, the dowel inserted into the hole in the bat also with adhesive, and the knob 110 placed over the dowel and aligned accordingly.

The collars 130, 140 may be finished in a variety of ways, such as left natural, painted, etc. The collars 130, 140 may also include team logos or other forms of advertising.

While the foregoing invention has been described in some detail for purposes of clarity and understanding, it will be appreciated by one skilled in the art, from a reading of the disclosure, that various changes in form and detail can be made without departing from the true scope of the invention in the appended claims.

1. A baseball bat comprising:
   a wooden structure having a barrel portion at a first end, a knob at a second end opposite the first end, and a grip portion disposed between the first and second ends;
   a first reinforcing collar disposed over the wooden structure a first distance from the second end; and
   a second reinforcing collar disposed over the wooden structure a second distance from the second end, wherein the first distance is greater than the second distance sufficient to create a separation between the first and second collars.

2. The baseball bat of claim 1, wherein the first distance is between about 14 and about 16 inches and the second distance is between about 7 inches and about 9 inches.
3. The baseball bat of claim 1, wherein the bat has an overall length and wherein the first distance is between about 34% and about 38% of the overall length, and the second distance is between about 17% and about 21% of the overall length.

4. The baseball bat of claim 1, wherein the first collar has a height that is between about 1 and about 3 inches, and the second collar has a height that is between about 2 and about 4 inches, and wherein the height of the second collar is greater than the height of the first collar.

5. The baseball bat of claim 1, wherein the bat has an overall length and the first collar has a height that is between about 2% to about 6% of the overall length, and the second collar has a height that is between about 4% and about 8% of the overall length, and wherein the height of the second collar is greater than the height of the first collar.

6. The baseball bat of claim 1, wherein each of the collars has a major inner diameter and a minor inner diameter, and wherein the major diameter of the first collar is greater than the minor diameter of the first collar, the major diameter of the second collar is greater than the minor diameter of the second collar, and the major diameter of the second collar is greater than the minor diameter of the first collar.

7. The baseball bat of claim 1, wherein at least one of the collars comprises a metal.

8. The baseball bat of claim 7, wherein the metal comprises at least one of steel, aluminum, titanium, and an alloy thereof.

9. The baseball bat of claim 1, wherein at least one of the collars is adhered to the wooden structure.

10. The baseball bat of claim 1, wherein at least one of the collars has an inner surface that contacts the wooden structure, the inner surface comprising a rough texture.

11. The baseball bat of claim 1, wherein the wooden structure comprises a plurality of grooves having approximate dimensions of the first and second collars, and wherein the first and second collars fit flush within the grooves.

12. The baseball bat of claim 1, wherein at least one of the first and second collars comprises a C shaped cross section.

13. The baseball bat of claim 1, wherein the at least one of the first and second collars comprises a welded seam at an opening of the C shaped cross section.

14. The baseball bat of claim 1, wherein the wooden structure comprises a first part and second part that are assembled after placing the first and second collars onto the wooden structure.

15. The baseball bat of claim 14, wherein one of the parts of the wooden structure is the knob.

16. The baseball bat of claim 15, wherein at least one of the parts of the wooden structure comprises a dowel and the other part has a hole that accommodates the dowel.