US 20170007897A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2017/0007897 A1**

Schwanke (43) **Pub. Date: Jan. 12, 2017**

(54) **BASEBALL TRAINING DEVICE**

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(21) Appl. No.: **14/797,143**

(22) Filed: **Jul. 12, 2015**

Publication Classification

(51) **Int. Cl.**

A63B 69/00	(2006.01)
A63B 24/00	(2006.01)

(52) **U.S. Cl.**

CPC ***A63B 69/0002*** (2013.01); ***A63B 24/0003*** (2013.01); *A63B 2220/30* (2013.01); *A63B 2208/0204* (2013.01); *A63B 2069/0008* (2013.01); *A63B 2220/53* (2013.01)

(57) **ABSTRACT**

A swing training device for teaching a baseball or softball player proper swing mechanics in every hitting drill they perform is disclosed. The device delineates the true sweet spot of the bat both horizontally and vertically. The device requires the hitter to properly strike the ball on a formed and cushioned pad backed by a rectangular faced solid which will result in a sound dampened contact. The device may be attached to metal, wood, and light weight bats. The device is designed and meant to be used in real hitting situations such as batting practice, batting tee practice and all types of hitting drills where the ball is tossed or pitched.

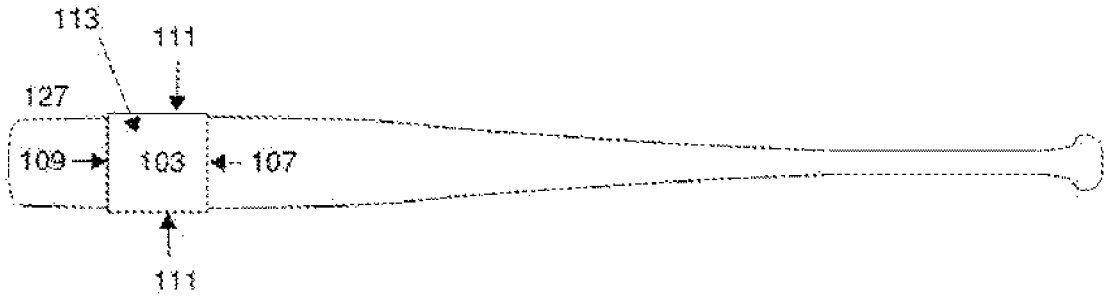


FIGURE 1

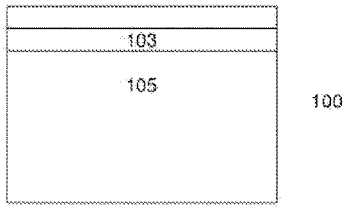


FIGURE 2

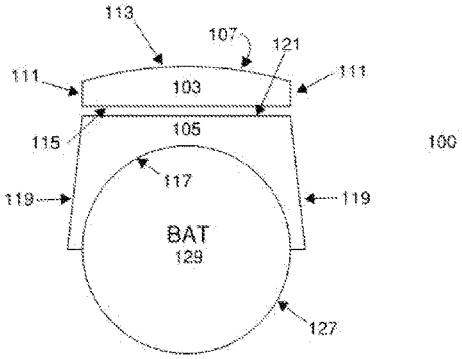


FIGURE 3

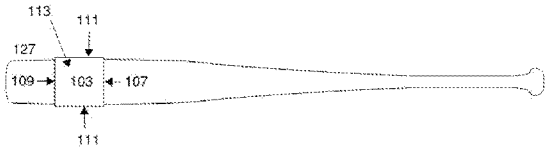


FIGURE 4

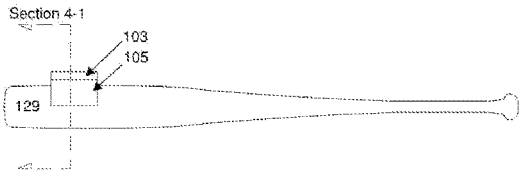


FIGURE 5

X-Section 4-1

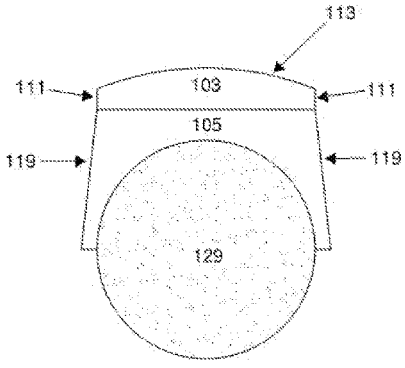


FIGURE 6

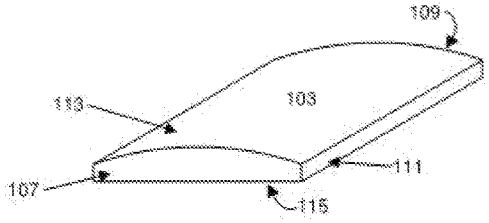
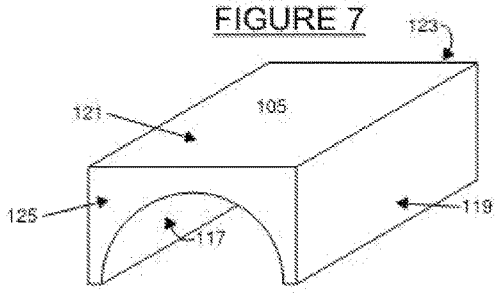


FIGURE 7



BASEBALL TRAINING DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to training devices and more particularly to a training device that may be used with a baseball bat in order to improve the batting ability of the player.

BACKGROUND

[0002] Baseball and softball provides one of the toughest challenges in all of sports—hitting a ball with a bat having a rounded surface. One of the greatest difficulties facing players is the proper swing mechanics to perform this daunting task, which ultimately measures ones success in the game. During a proper swing, various segments of the batter's body progress through sequence of accelerations and decelerations, i.e. a kinematic sequence, to transfer energy effectively from the ground through the body and into the bat.

[0003] The muscles of each of these body segments contribute to the swing and must be trained in the proper kinematic sequence.

[0004] Any deviation from a proper hitting position and contact point will result in a distinct mishit.

[0005] Practice bats for baseball and softball have been previously provided. See, for example, U.S. Pat. Nos. 3,246,894 and 5,014,984. In the U.S. Pat. No. 3,246,894, a training bat is disclosed which uses a handle portion connected to a barrel portion by a reduced diameter central section. The bat of the '894 patent is intended to teach a batter to hit the ball with the barrel portion or sweet spot of the bat. It, however, has disadvantages. It requires absolute rigidity that renders such device easily breakable. A further disadvantage is shown by the requirement that its reduced diameter central section to be constructed of a more dense material than its barrel or handle sections. By having this requirement, the weight balance of this device is offset which in turn has an adverse effect on the user's ability to use this device. The batting apparatus of the U.S. Pat. No. 5,014,984 is also intended to teach a batter to hit the sweet spot of the bat. It is believed that neither of the devices of the '894 and '984 patents has met with success since neither is of regulation weight and may not have regulation diameters and the critical areas of the bat.

[0006] Another example is U.S. Pat. No. 6,949,036 issued to Ciesar. This device includes a shaft; two handgrip portions which is a permanently fixed "handle" at one end of the shaft and the second being a "slide" being configured to slide along the shaft; and a head portion secured to the other end of the shaft. This training device has disadvantages in that it is not to be used with actual balls or is of regulation weight and may not have regulation diameters in the critical areas of the bat.

[0007] Accordingly, there is a need for a new practice bat that more accurately resembles an actual bat and provides for dynamic strength training.

[0008] The sweet spot of a baseball bat is the spot when hit with a baseball or other device does not produce a substantial amount of vibration. Consequently, the energy of the impact is transferred from the baseball bat to the baseball.

[0009] When you hit a ball just right, you've hit it on one of the three "sweet spots" of the bat. One of these sweet spots relates to vibration. Whenever an object is struck, it vibrates in response. These vibrations travel in waves up and down the length of the object. At one point, called "the node," the waves always cancel each other out. If you hit the ball on the bat's node, the vibrations from the impact will cancel out, and you won't feel any stinging or shaking in your hand. Since little of the bat's energy is lost to vibrations when this spot is hit, more can go to the ball. The node sweet spot differs from the "center of percussion" sweet spot. When a ball hits the node, you don't feel any vibration in your hand. When it hits the center of percussion, your hand doesn't feel any force pushing against it.

SUMMARY

[0010] This invention will improve the visual acuity and power hitting ability of all baseball and softball hitters.

[0011] This invention trains the hitter to stay "connected" thru contact and provides for instantaneous feedback audibly and visually.

[0012] It is another object of the invention to provide such a swing training bat that is readily adaptable to individual batters and allows for differences in age, body frame, height and strength. The present invention can be attached to an older metal baseball or softball bat to create the training device for adults and youth players. Also, the training device can be purchased already attached to a full size youth and adult wood bat or a light weight wood bat for single arm training.

[0013] Yet another object of the present invention is to provide a method for training the proper swing mechanics and for simultaneously providing conditioning and strength training as well as immediate feedback to the batter as to how well he or she is actually hitting the ball. The full size wood bats or attaching the device to a metal baseball bat will bring the total weight to approximately the length of the bat for adult bats. The small amount of weight added to a youth bat or a softball bat will promote strength building reinforced with proper swing mechanics.

[0014] In the present invention, the above disadvantages are overcome and the above objectives achieved by providing a wood baseball bat (or with the attachment to an old metal bat) for use in training with a sweet spot trainer matching the diameter of the regulation barrel portion of the bat. The central portion of the device is the substantially size of the sweet spot of the bat. The cushioning material giving and absolute response on the minimum contact area to train the batter to impact the ball with the preferred barrel portion or the user will usually mishit the ball. By limiting the effective hitting area of the bat while retaining the characteristics of a regulation bat, the batter is trained to properly swing the bat to meet the ball at the proper place and consequently improve his ability as a power hitter.

[0015] Additional objects and advantages of the invention will be set forth in the description that follows, and in part will be apparent from the description, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and obtained by the instrumentalities and combinations pointed out herein.

[0016] A swing training device for teaching proper swing mechanics may include a bat having a barrel portion; a bat spacer to mount on a predetermined position on the bat; and a flexible energy absorbing cover to connect to the bat spacer.

[0017] The bat spacer may include a concave surface to connect to the bat.

[0018] The flexible energy absorbing cover may include a cushioned material to attach to a metal or a wood bat.

[0019] The training device may have a weight and length of a bat.

[0020] The bat spacer may be connected to a sweet spot of the barrel of the bat.

[0021] The energy absorbing device may include a computer sensing device to record at least one of bat speed, exit speed, force, and direction of flight of the ball after contact.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The invention may be understood by reference to the following description taken in conjunction with the accompanying drawings, in which, like reference numerals identify like elements, and in which:

[0023] FIG. **1** is a front view of the attachment of a portion of the present invention.

[0024] FIG. **2** is a side elevation of a portion of the present invention.

[0025] FIG. **3** is a side elevation of a baseball bat constructed in accordance with the present invention.

[0026] FIG. **4** is a side elevation in profile of the present invention.

[0027] FIG. **5** is a top section through the barrel portion of the bat of FIG. **4** taken along section line **4-1**.

[0028] FIG. **6** illustrates a perspective view of the energy absorbing covering of the present invention.

[0029] FIG. **7** illustrates a perspective view of the bat spacer of the present invention.

DETAILED DESCRIPTION

[0030] FIG. **1** illustrates the training device **100** of the present invention and illustrates that the training device **100** may include an energy absorbing covering **103** and may include a bat spacer **105**. The energy absorbing cover **103** may be rectangular and may include a covering front surface **107** which may be opposed to a covering back surface **109** and may be connected to a pair of opposing side surfaces **111** which may connect a top surface **113** to a bottom surface **115**.

[0031] The top surface **113** may be arched/domed shaped as shown in FIG. **2**.

[0032] FIG. **7** illustrates a perspective view of the bat spacer **105** which may include a concave surface **117** which may be curved in order to cooperate with the curvature of the barrel portion **127** of the bat **129**. The concave surface **117** may connect with a pair of opposing side surfaces **119** and may be opposed to a top surface **121** and may connect to a front surface **125** and a back surface **123**.

[0033] The bat spacer **105** may be angled from the energy absorbing covering **103** down to the width of the bat **129**.

[0034] FIG. **1** is a front view of the energy absorbing covering **103** which may be formed from flexible material/cushioning material being connected to the bat spacer **105** which may be formed from rigid material such as wood metal plastic and other forms of rigid material.

[0035] FIG. **2** illustrates the training device **100** of the present invention and illustrates that the training device **100** may include an energy absorbing covering **103** and may include a bat spacer **105**. The energy absorbing cover **103** may be rectangular and may include a covering front surface **107** which may be opposed to a covering back surface **109** and may be connected to a pair of opposing side surfaces **111** which may connect a top surface **113** to a bottom surface **115**.

[0036] FIG. **2** illustrates a perspective view of the bat spacer **105** which may include a concave surface **117** which may be curved in order to cooperate with the curvature of the barrel portion **127** of the bat **129**. The concave surface **117** may connect with a pair of opposing side surfaces **119** and may be opposed to a top surface **121** and may connect to a front surface **125** and a back surface **123**.

[0037] FIG. **2** is a side elevation of the energy absorbing covering **103**, the bat spacer **105** and the barrel portion **127** of the bat **129** as shown in FIG. **1** with cushioning material attached. The concave surface **117** or arc is formed to match/cooperate with the contour of the bat for example the 2⅝" barrel diameter of all adult and youth league metal bats, the 2¼" barrel diameters of all softball metal bats or other size bat. In addition, the arc for the 2 wood bats matches the dimensions of the youth, adult and light weight bat used for training.

[0038] FIG. **3** is a side elevation of a baseball bat **129**, the energy absorbing covering **103** and the bat spacer **105** constructed in accordance with the present invention. Note the invention matches the diameter of all the bats.

[0039] FIG. **4** is a side elevation of a baseball bat **129**, the energy absorbing covering **103** and the bat spacer **105** in profile shown with cushioning material attached.

[0040] The bat spacer **105** may have a width that is equal to the diameter of the bat.

[0041] FIG. **5** is a top section of a baseball bat **129**, the energy absorbing covering **103** and the bat spacer **105** through the barrel portion of the bat of FIG. **4** taken along section line **4-1**.

[0042] The energy absorbing cover **103** may include a computer sensing device to record bat speed and the exit speed, force, and direction of flight of the ball after contact. The bat spacer **105** likewise may include a computer sensing device to record bat speed and the exit speed, force, and direction of flight of the ball after contact.

[0043] FIG. **6** illustrates a perspective view of the energy absorbing covering **103**.

[0044] FIG. **7** illustrates a perspective view of the bat spacer **105**.

[0045] While the invention is susceptible to various modifications and alternative forms, specific embodiments thereof have been shown by way of example in the drawings and are herein described in detail. It should be understood, however, that the description herein of specific embodiments is not intended to limit the invention to the particular forms disclosed.

1. A swing training device for teaching proper swing mechanics, comprising:

a bat having a barrel portion with a sweet spot location;

a bat spacer fixedly attached to the sweet spot position on the bat about the barrel portion, the bat spacer having a body with a top surface and a bottom surface, the bottom surface being contoured to snugly fit against an outer surface of the barrel portion of the bat and configured to fixedly secure to the outer surface of the barrel portion;

a flexible energy absorbing cover rigidly attached to the top surface of the bat spacer about the barrel portion,

the flexible energy absorbing cover being spaced apart from the outer surface of the barrel portion via the bat spacer; and

a compute sensing device secured to the flexible energy absorbing material;

wherein the computer sensing device records at least one of bat speed, exit speed, force, and direction of flight of the ball after contact; and

wherein the bottom surface of the bat spacer only connects with a portion of he circumference of the bat about the barrel portion.

2. (canceled)

3. A swing training device for teaching proper swing mechanics as in claim **1**, wherein the device has a weight and length of a bat.

4-5. (canceled)

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