United States Patent [19]

Wolfe

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[54] **ATHLETIC TRAINING DEVICE**

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[52] **U.S. Cl.** .....**273/26 R,** 273/183 C, 273/199, 273/60, 46/10

[51] **Int. Cl.** **A63b 69/40,** A63b 69/36

[58] **Field of Search**.....273/26, 58, 183, 273/60, 200, 199, 213; 46/10

[56] **References Cited**

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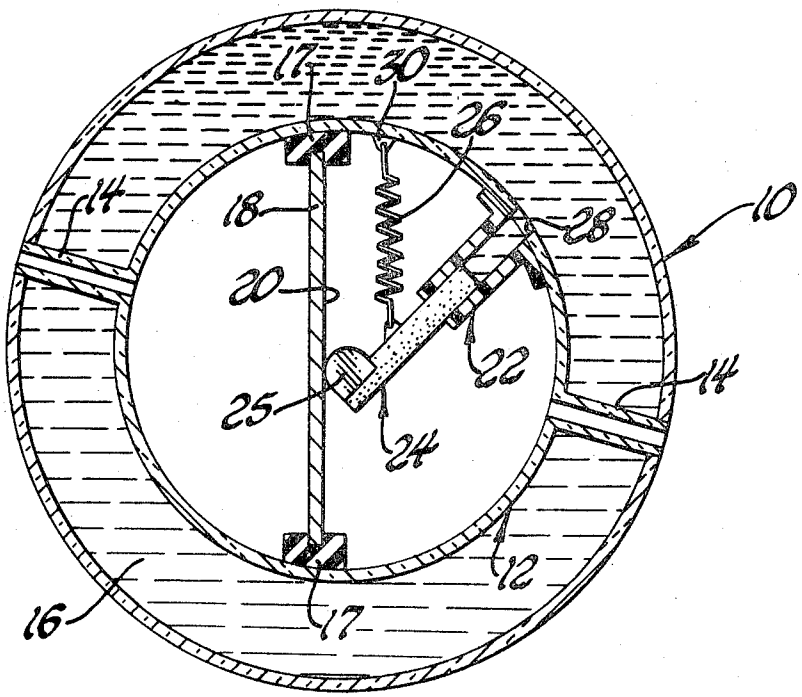
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Attorney—George A. Schmidt

[57] **ABSTRACT**

A device for the purpose of assisting and training an individual in a sport wherein a ball is struck by an instrument, and wherein it is desired to train the athlete to watch the ball at the instant of impact of the implement therewith. The device includes an outer spherical member having a translucent portion, and disposed within the outer sphere is an abrasive surface adapted to be engaged by a spark producing device at the instant of impact. The abrasive surface may be located either on a wall located inside the outer spherical member, on the outer surface of a second spherical member located centrally of the outer spherical member or on a wall extending across the second spherical member. In the latter instance,the space between the two spherical members may be filled with a fluid which drives the spark producing device, e.g., a flint, across the abrasive surface.

13 Claims, 4 Drawing Figures



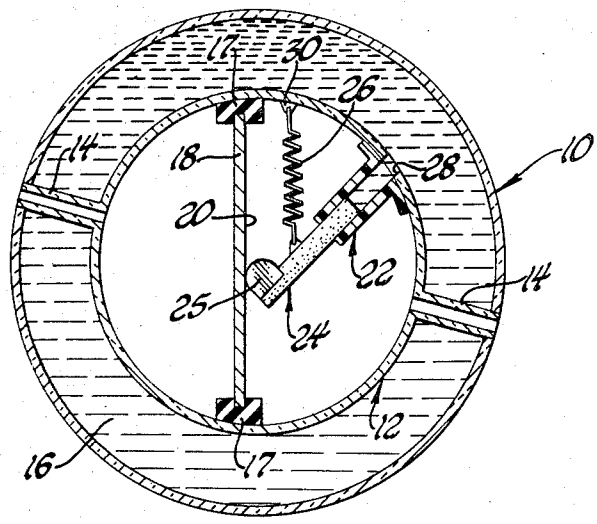


Fig. 1

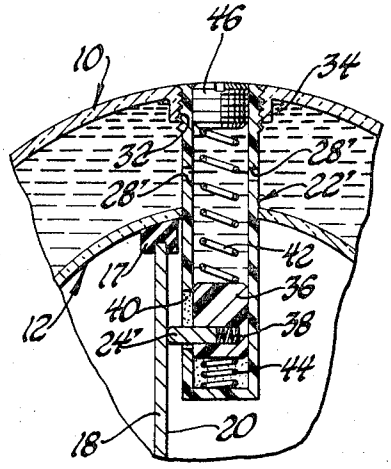


Fig. 2

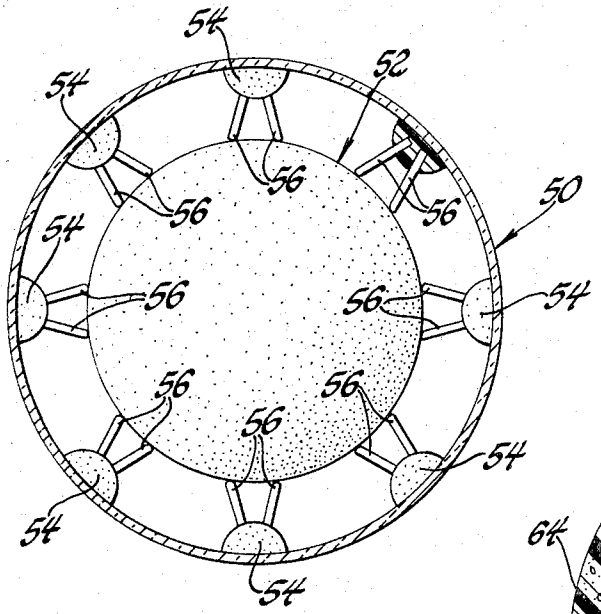


Fig. 3

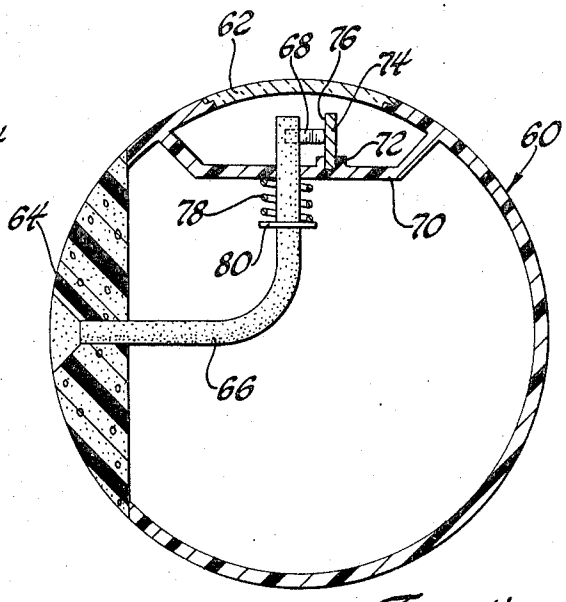


Fig. 4

ATHLETIC TRAINING DEVICE

This invention relates to training devices, and more particularly to a training device for an athlete in a sport of the type where a ball is struck, either by an implement held by the athlete or by the athlete himself.

In the art of training athletes in sports where an instrument, the hand or the foot of the athlete is used to strike and propel a ball, one of the primary concepts that must be learned by the athlete is to watch the ball, particularly at the instant of impact. This is an extremely difficult concept to carry out in practice, either because the athlete is looking in the direction in which the ball is intended to go, or he closes his eyes at the moment of impact. It has been found that if a means is provided to visually signal the athlete at the moment of impact, the concept of watching the ball will be reinforced. The athlete learns to watch for the visible signal, instantly knowing whether he was successful in watching the ball at impact. By continued training with a device which will create such a signal, the athlete soon obtains the habit of watching the ball at the moment of impact, thus sharpening his skills in the particular sport.

There are numerous devices available for accomplishing the training purpose above set forth. However, the known devices are extremely complicated and expensive, relying on electricity or battery power to light a lamp or other device, with expensive circuitry which may be jarred loose or become unconnected through continued use. Some such devices place the signaling means in the instrument and contacts the ball, thus requiring the athlete to wear special equipment, carry batteries or other power means, or the like, which equipment is cumbersome, inconvenient and restrictive in normal play.

The device in which this invention is embodied comprises, generally; a training ball including an outer spherical member having at least a portion thereof translucent; an abrasive surface disposed inside the spherical member; and a spark producing device mounted inside the member and engageable with an moveable across the abrasive surface. Deformation of the ball upon impact and relative movement between the abrasive surface and the spark producing member create a spark that is visible through the translucent portion of the outer spherical member.

Such a device, when struck by the implement, by hand or by foot, will create a visible spark through the translucent portion of the outer sphere and provide something that the athlete can watch for in training himself to watch the ball at the instant of impact. The visible spark is not electrically created, and therefore, needs no external circuitry or power sources in order to operate. A simple flint and steel arrangement may be used, which is sufficiently inexpensive that when the flint is expended, the entire device may be replaced. Such construction is relatively inexpensive when compared to presently available devices, yet provides the desired visible signal viewable by the athlete. Since batteries or electrical power supply is not required, and operation is based on relative movement between elements, the ball does not lose its efficiency when stored or not in use, and the space producing operation is always available. The overall result is a training device which reinforces the concept of watching the ball, and

the device is inexpensive to manufacture, produce and use, as well as being efficient in operation.

These and other advantages will become more apparent from the following description, used to illustrate preferred embodiments of the invention when taken with the accompanying drawing in which:

FIG. 1 is a cross-sectional view of a training device illustrating the position of the various parts therein.

FIG. 2 is a partial cross-sectional view of a modification of the training device illustrated in FIG. 1.

FIG. 3 is a cross-sectional view of another modification of the device illustrated in FIG. 1.

FIG. 4 is a cross-sectional view of yet another modification of the device illustrated in FIG. 1.

Referring more particularly to the drawing, where the various showings are for the purpose of illustrating preferred embodiments of the invention only and not for purposes of limiting same, FIG. 1 shows a training device in which the invention is embodied.

An outer spherical member, indicated generally by the numeral 10, may be formed of any suitable material, but preferably of a plastic material having as similar characteristics as possible to the ball for the sport the athlete is training for. That is to say, that should the athlete be a baseball player, the outer spherical member 10 is preferably formed of a plastic having a size and feel similar to a normal baseball. It is necessary that the plastic material, of which the outer spherical member 10 is manufactured, be transparent or translucent, so that the signal generated therewithin, as will be later described, can be seen through the material.

Disposed within the outer spherical member is an inner spherical member, indicated generally by the numeral 12, which is also of a plastic material that is transparent or translucent, so that the signaling means can be viewed through both spherical members. The inner spherical member 12 is vented through conduits 14 so that the interior of the inner spherical member is filled with air or the like. Disposed between the spherical members 10 and 12 is a generally clear fluid, indicated generally by the numeral 16, such as water, to both transmit the impact from the outer spherical member 10 to the inner spherical member 12 and to provide damping of movement there between.

Secured in any suitable manner in the inner spherical member 12 are spaced supports 17 which receive and retain a member 18 having an abrasive surface 20 formed thereon. Member 18 is preferably planer in form and may take the shape of a circular disk or a rectangular plate as desired.

Also secured on the inner surface of the inner spherical member 12 is a carrier, indicated generally by the numeral 22, which extends from the inner surface of the member 12 toward the member 18. Slidably disposed in the carrier 22 and extending toward the member 18 is a spark producing device, indicated generally by the numeral 24, which may conveniently include a flint 25 of the type used in cigarette lighters, toys, and the like. A spring 26, secured to member 24 and secured to the flange 30 on the inner surface of the inner spherical member 12, biases the member 24 in a direction toward the member 18, such that the flint 25 will engage the abrasive surface 20. Carrier 22 coincides with an opening 28 in the wall of the inner spherical member 24, such that fluid 16 will enter the carrier 22 and bear against the member 24.

It will thus be seen that as the outer spherical member **10** is struck in normal play, displaced fluid **16** will cause the spark producing member **24** to move across abrasive surface **20**, thus creating a spark visible by the athlete through the inner spherical member **12**, the fluid **16** and the outer spherical member **10**. The spring **26** returns the carrier and spark producing device **24** to its at rest position after the spark has been produced and the fluid pressure relieved.

Referring next to FIG. **2**, a modification of the device illustrated in FIG. **1** is shown and wherein like reference numerals indicate like parts. The outer spherical member **10** and inner spherical member **12** are in the same relative position as illustrated in FIG. **1**, and the member **18** with the abrasive surface **20** is secured in the supports **17**, mounted in the inner spherical member **12**. In the modification shown in FIG. **2**, the carrier **22'** is shown to be a cylinder, threaded as at **32** to be received in a threaded boss **34** formed in the outer spherical member **10**. Disposed in the cylinder **22'** is a floatable member **36**, which receives the spark producing device **24'** and further includes a spring **38** biasing the spark producing device **24'** in a direction to engage the abrasive surface **20**. A slot **40** formed in the cylinder **22'** permits the member **36** and the spark producing device **24'** to move across the abrasive surface **20**. A pair of springs **42** and **44** on opposite sides of the member **36** permit member **36** to float and return to its at rest position following impact. Apertures **28'** in the cylinder **22'** permit fluid **16** to enter the cylinder **22'** and drive the member **36** and the spark producing device **24'** in a downward direction upon impact. A plug **46** disposed in the outer end of the cylinder **22'** closes the cylinder to prevent removal of the member **36**.

It will be apparent that when the outer spherical member **10** is struck, the spark producing device **24'** will be caused to move across the abrasive surface **20** and generate the spark visible to the athlete through the inner spherical member **12**, the fluid **16** and the outer spherical member **10**. At such time as the spark producing device **24'** wears down so as to be unusable, the plug **46** may be removed from the carrier **22'** and the spring **42** and member **36** removed therefrom. A new spark producing device **24'** may be inserted in the carrier **36** for return to the carrier **22'** and use as heretofore described. In such manner, extensive use of the device is obtainable.

Referring next to FIG. **3**, yet another modification of the training device is illustrated. An outer spherical member, indicated generally by the numeral **50**, is of a translucent or transparent material as heretofore described, so that the spark generated therewithin is visible through the member. Disposed within the outer spherical member **50** is an inner spherical member, indicated generally by the numeral **52**, the complete outer surface of which is formed of a suitable abrasive material.

Disposed at spaced points around and about the inner surface of the outer spherical member **50** are a plurality of resilient members **54**, in which are imbedded spark producing devices **56**. Such devices are angularly disposed relative to the abrasive surface of the inner member **52**, and the resilience of the members **54** permit the spark producing device **56** to move across the abrasive surface to thus generate the visible spark.

With such a device it will be apparent that the spark producing devices **56**, in addition to generating the visible spark, also provide the separation between the inner spherical member **52** and the outer spherical member **50** as desired. An impact at any point on the outer spherical member **50**, will cause relative movement between the two spherical members **50** and **52** and those spark producing devices **56** which are spread by such movement of the inner spherical member **52** will generate sparks visible through the outer spherical member **50**. The space between the spherical members **50** and **52** may be vented as desired, by placing holes in the outer spherical member so that air fills the space between the two members.

Referring next to FIG. **4**, yet another modification of the device is illustrated, which is more adapted to a training ball that is held in stationary position for striking by an implement. Of this nature is a golf ball, which normally sits on the ground or on a tee, or a baseball of the type used in "Tee Ball", where the ball is rested on a tee for striking by a bat. In the modification illustrated in FIG. **4**, an outer spherical member, indicated generally by the numeral **60**, is of any suitable material. Once again, it is desirable that the material approach the characteristics of the actual ball used in the sport. However, since the ball is stationary when struck, it need not be completely translucent or transparent, so long as a portion thereof is translucent or transparent so that the spark generated may be seen. A plug **62** of such translucent material may be secured in any suitable manner in the outer spherical member **60**.

At a point spaced from the translucent plug **62** may be a different type of material **64**, so disposed relative to the translucent portion **62** of that the portion **64** may be the striking position on spherical member **60** with the translucent plug **62** in the line of sight of the user. Secured in the material **64** is an elongated member **66** extending to a position beneath the translucent portion **62**. Disposed in the end of the elongated member **66** is a spark producing device **68** secured in the member **66** in any suitable manner.

A wall **70** extends across the interior of the spherical member **60** and has a boss **72** formed therein to receive the member **74**. Member **74** has an abrasive surface **76** adapted to be engaged by the spark producing device **68**. A spring **78** is disposed between the surface of the wall **70** and an enlargement **80** formed on the elongated device **66**, such spring biasing the elongated device **66** to its original position after an impact.

It will be apparent that with a device such as illustrated in FIG. **4**, impact at the portion **64** will cause the elongated device **66** to move relative to the member **74**, carrying the spark producing device **68** across the abrasive surface **76**. Thus, a spark is generated which is visible through the translucent portion **62** to the eye of the user. Spring **78** causes the elongated device **66** and the spark producing device **68** to return to the "at rest" position, such as illustrated in FIG. **4**.

Thus, a training device is provided which is relatively simple in construction and yet positive in providing a flash of light visible to the athlete and reinforcing his desire to keep his eyes open and on the ball when the ball is struck. In those devices which are freely moving at the time of impact, such as a thrown ball, the spark generated is visible at almost any position of the ball at the moment of impact. In the device where the ball is

stationary at the time of impact, the spark generated within the ball is viewable through a window always in the line of sight of the user. The overall result is a simple and economical training device of relatively little cost and capable of extended use.

What is claimed is:

1. A training ball comprising:

an outer spherical member having a translucent portion;

means within said member and having an abrasive surface;

spark producing means within said spherical member and engageable with said abrasive surface, said spark producing means being moveable across said abrasive surface upon impact of said ball with an object to produce a spark visible through said translucent portion.

2. The training ball set forth in claim 1 wherein said means within said member includes an inner spherical member spaced from said outer spherical member.

3. The training ball set forth in claim 2 wherein said abrasive surface is on the outer surface of said inner spherical member.

4. The training ball set forth in claim 3 wherein said spark producing means includes a plurality of spark producing members secured to the inner surface of said outer spherical member and engaging said abrasive surface and maintaining said inner spherical member in spaced relation to said outer spherical member.

5. The training ball set forth in claim 2 wherein said abrasive surface is disposed across said inner spherical member.

6. The training ball set forth in claim 5 wherein said spark producing means includes a carrier mounted on the inner surface of said inner spherical member and extending toward said abrasive surface, and a spark producing member secured in said carrier and engageable with said abrasive surface.

7. The training ball set forth in claim 6 and further including a spring secured to said carrier and secured to the inner surface of said inner spherical member and operable to bias said carrier and said spark producing member into engagement with said abrasive surface.

8. The training ball set forth in claim 7 and further including fluid means disposed between said outer spherical member and said inner spherical member for damping movement therebetween.

9. The training ball set forth in claim 5 wherein said spark producing means is secured to said outer spherical member and extends into said inner spherical member.

10. The training ball set forth in claim 9 wherein said spark producing means further includes a cylindrical member extending into said inner spherical member, and a spark producing member floatably mounted in said cylindrical member and extending outwardly therefrom to engage said abrasive surface.

11. The training ball set forth in claim 10 and further including a carrier moveably mounted in said cylindrical member and receiving said spark producing member, said carrier being removable from said cylinder for replacing said spark producing member.

12. The training ball set forth in claim 1 wherein said means within said member includes a wall extending across said member and containing said abrasive surface, and carrier means extending from said member toward said abrasive surface and containing said spark producing means, said abrasive surface and said spark producing means being disposed adjacent said translucent portion of said spherical member.

13. The training ball set forth in claim 12 wherein said outer spherical member includes a portion spaced from said translucent portion adapted to be struck.

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