United States Patent

[11] 3,588,104

[72] Inventor **Billy J. Griffin**
3961 Scott Drive, Forest Part, Ga. 30050

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[45] Patented **June 28, 1971**

[54] **BASEBALL BATTING TRAINING DEVICE**
2 Claims, 10 Drawing Figs.

[52] **U.S. Cl.** **273/26,** 273/58
[51] **Int. Cl.** **A63b 69/40**
[50] **Field of Search** 273/25, 26, 58 (2), 58 (5), 95 (1), 97, 98, 200, 196, 95 (2)

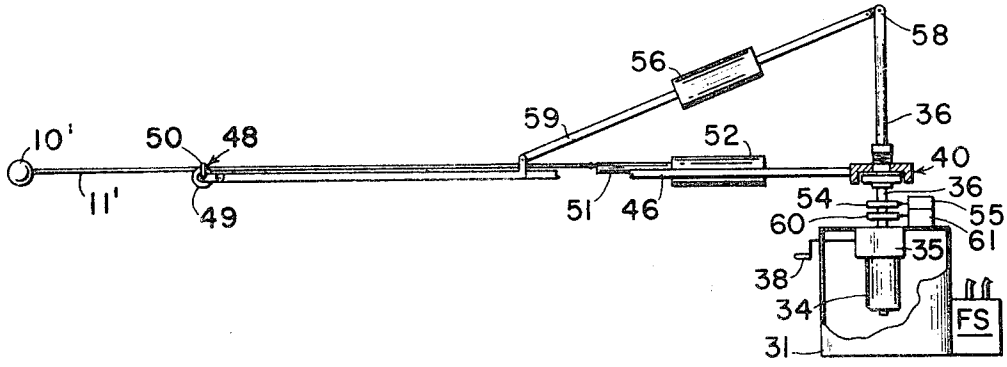
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Primary Examiner—Richard C. Pinkham
Assistant Examiner—Theatrice Brown
Attorney—B.J. Powell

ABSTRACT: A baseball-training device for use in increasing the proficiency of a batter to hit different types of pitched balls. A first embodiment of the apparatus includes a conventional cork center baseball having a hole drilled a portion of the way therethrough and a cord glued therein at one of its ends and attached to a handle at the other of its ends. A second embodiment of the invention comprises a baseball with a hole therein and a cord glued in the hole, the cord being attached to a boom rotatable about a fixed center. The boom is rotatably driven by a variable speed drive mechanism and is connected thereto through a slip clutch arrangement. The radius between the ball and the rotational center of the boom may be selectively varied to change the type of pitch as the ball passes the batter and the boom may be raised or lowered to selectively change the height of the pitch as it passes the batter. The radius and height is varied by conventional fluid cylinders.



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SHEET 1 OF 2

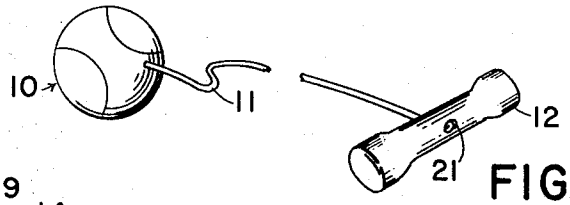


FIG. 1

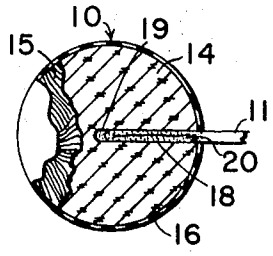


FIG. 2

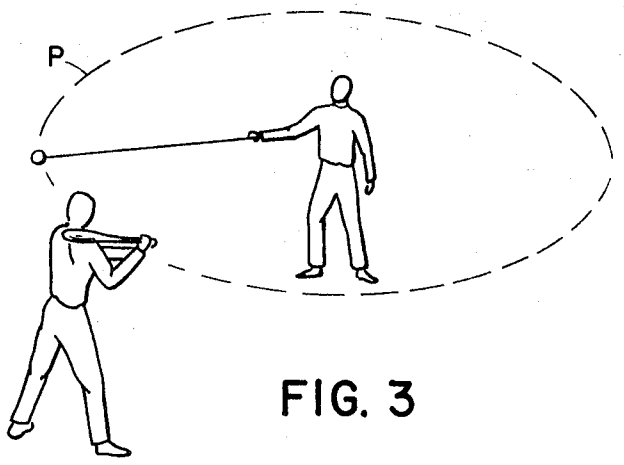


FIG. 3

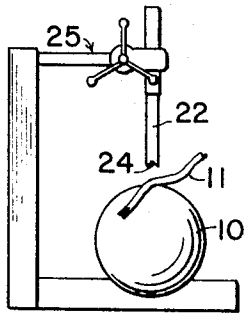


FIG. 4

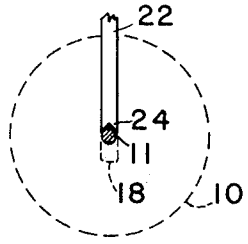


FIG. 5

INVENTOR.
BILLY J. GRIFFIN

BY: Newton, Hopkins & Ormsby
ATTORNEYS

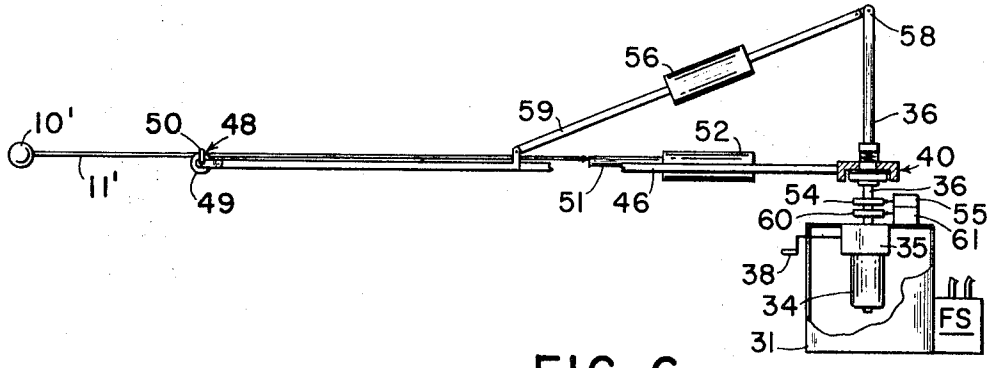


FIG. 6

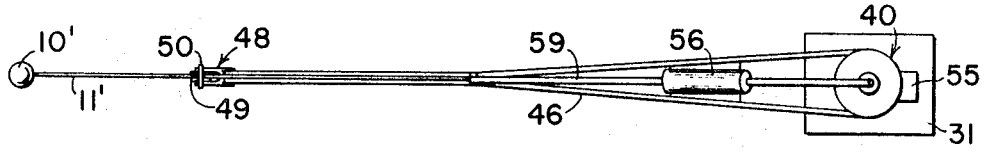


FIG. 7

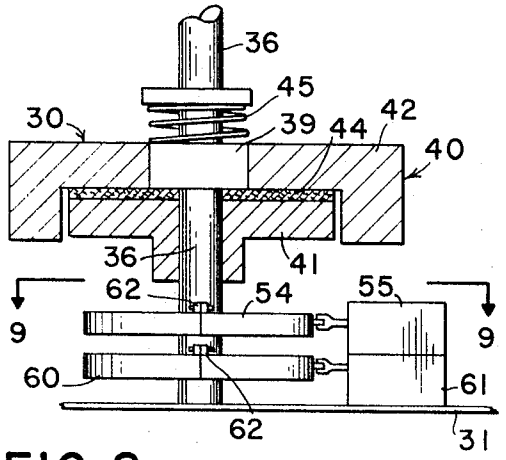


FIG. 8

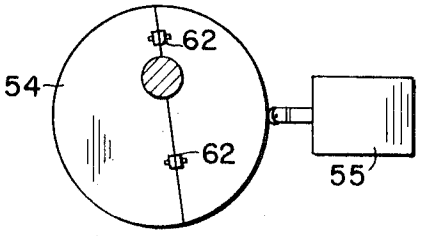


FIG. 9

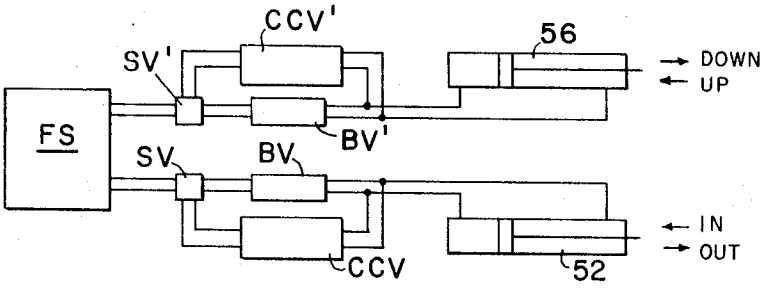


FIG. 10

INVENTOR.
BILLY J. GRIFFIN

BY: Newton, Hopkins & Ormsby
ATTORNEYS

BASEBALL BATTING TRAINING DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates generally to baseball-training equipment and is more particularly concerned with a training aid for increasing the proficiency of a batter.

2. Discussion of the Prior Art

Baseball-batting devices are available on the market today. The devices consist on the one hand of a ball attached to a stick by a cord which is run through the ball and knotted on the opposite side thereof. On the other hand devices are available which do not have the ball attached to anything but simply throws a straight fast ball-type of pitch for batting practice.

In those devices which have a ball attached to a stick by a cord, there are usually protuberances of some type or other extending from the ball so that the trajectory characteristics of the ball are varied over that which is associated with a ball that is actually pitched during a baseball game. Since it is highly desirable that the ball behave as closely as possible to an actual pitch, these devices have been inadequate in providing such trajectories that correspond to actual pitches for use in improving the proficiency of a batter.

The mechanized device for throwing a ball that is not attached to a cord has been limited to substantially one type of pitch, this being a fast ball. Since many other-type pitches are normally thrown in actual practice, such as a curve, a slider, etc., these devices have been inadequate for reproducing pitches normally encountered in a baseball game for batting practice.

SUMMARY OF THE INVENTION

These and other problems associated with the prior art are overcome by the invention disclosed herein in that almost all types of pitches with the exception of the knuckle ball can be reproduced for batting practice. This is accomplished by the use of a cord attached to the ball with a minimum of protuberances extending from the ball so as not to change the normal trajectory characteristics of the ball as it moves past the batter.

The apparatus of the first embodiment of the invention comprises primarily a baseball having a hole drilled a portion of the way therethrough, a cord glued therein with an epoxy cement, and a handle attached to the other end of the cord for swinging a ball about the head of a person moving the ball past a batter during practice session.

The second embodiment of the invention includes a ball with a cord attached thereto as with the first embodiment of the invention and moved by a boom rotatably mounted on a support and selectively driven at variable speeds. Means is provided for varying the radius between the ball and the center of rotation thereof for throwing curve balls and means is also provided for varying the height of the ball as it is swung about its center of rotation for other types of pitches. A slip clutch operatively connects the boom with the driving mechanism so that the ball will retract When it is struck by a batter in practice session but will be reengaged by the drive mechanism and rotated again after a short period of time.

These and other features and advantages of the invention will become more apparent upon consideration of the following detailed description and accompanying drawing wherein like characters of reference designate the corresponding parts throughout the several views and in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a first embodiment of the invention:

FIG. 2 is a partial cross-sectional view showing the ball with the cord attached thereto;

FIG. 3 is a schematic drawing showing the first embodiment of the invention in use;

FIG. 4 is a schematic drawing showing the mechanism for installing the cord into the hole drilled in the ball;

FIG. 5 is an enlarged view of the installation tool showing the position of the cord as the cord is installed in the ball shown in dashed lines;

FIG. 6 is side elevational view partially broken away to show the interior construction thereof of a second embodiment of the invention;

FIG. 7 is a top plan view of the invention shown in FIG. 6;

FIG. 8 is an enlarged cross-sectional view of the slip clutch and cam control arrangement of the invention shown in FIG. 6;

FIG. 9 is an enlarged cross-sectional view taken along the line 9–9 in FIG. 8 showing one of the cams for controlling the movement of the ball of that embodiment of the invention shown in FIG. 6; and,

FIG. 10 is a schematic diagram of the control circuit of the second embodiment of the invention.

These figures and the following detailed description show specific embodiments of the invention, however, the inventive concept is not limited thereto since it may be embodied in other forms.

DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

Referring specifically to FIGS. 1 and 2, the apparatus of the first embodiment of the invention comprises generally a baseball designated generally by the letter **10** having a cord **11** attached thereto and an handle **12** attached to the opposite end of the cord **11**.

The baseball **10** has a cork center **14** with strings **15** wound therearound and a covering **16** thereover. The covering **16** is shown as a molded rubber covering however the covering **16** may be any desired material such as leather just so that the baseball **10** corresponds to the actual baseball used in the particular league in which practice is necessary. A diametrically extending hole **18** is drilled into the ball through the covering **16**, the strings **15** and into the cork center **14** a distance greater than the radius of the baseball **10** but less than the diameter of the baseball **10** so that nothing will protrude from the opposite side of the baseball **10**.

The baseball **10** is positioned so that the hole **18** extends upwardly and an epoxy-type glue **19** is poured therein. The cord **11** is then inserted into the hole **18** with the glue **19** therein so that that portion of the cord **11** extending in the hole **18** is doubled. To increase the holding capabilities of the cord **11**, that end of the cord **18** designated generally as **20** is frayed before it is placed in the hole **18**. After the glue **19** has set up, the cord **11** is prevented from moving out of the hole **18**. It will thus be seen that only the cord **11** proper will extend from only one side of the baseball **10** so that the baseball **10** will retain almost all of its natural properties as it is moved through the air during a batting practice. The cord **11** is inserted through an appropriate hole **21** in the handle **12** and is knotted so that it cannot be pulled back through the handle **12** as a person grasps the handle **12** and swings the baseball **10** about his head along Path P as seen in FIG. **3**.

While different lengths of cord **11** may be used, it has been found that a cord of 9 feet produces the best possible results since greater lengths of cord allows wind resistance to vibrate the cord and change the natural characteristics of the baseball **10** as it is being swung about the head of a person. A shorter length, of course, places the ball too close to the person swinging the same so that the danger of the person swinging the ball being struck as a batter hits the ball is increased.

The device is made as indicated in FIG. **4** and **5** by first drilling the hole **18** in the ball **10** and laying the cord **11** with the end **20** frayed in the aforementioned manner across the hole **18** after it has been filled with the glue **19**. A cylindrical installing tool **22** having a forked end **24** thereon is is aligned with the hole **18** and is carried by a conventional press **25** so that the tool **22** may be lowered into the hole **18** carrying therewith the cord **11**. The forked end **24** prevents the cord from slipping past the tool **22** as it is lowered into the hole **18** so that the cord **11** will be properly insert into the hole **18**.

Referring specifically to FIG. 6—9, the second embodiment of the invention comprises generally a baseball 10' having a construction similar to the baseball 10 and a cord 11' attached thereto in a manner similar to that in which the cord 11 is attached to the baseball 10.

The cord 11' is attached to a boom 30 which is rotatably mounted on a base 31 so that the boom 30 may be rotated about the base 31. The boom 30 is carried by a drive unit having a motor 34 and a variable speed transmission 35. The variable speed transmission 35 has an output shaft 36 which carries the boom 30. The speed of the output shaft 36 can be varied by rotating the handle 38 attached to the variable speed transmission 35. It is to be understood, however, the different devices may be used for varying the speed of the output shaft 36 in lieu of the handle 38 such as an electrical control mechanism.

The boom 30 is rotatably mounted on the shaft 36 by an appropriate bearing 39 and is selectively connected to the shaft 36 through a friction slip clutch 40. The slip clutch 40 includes a drive plate 41 fixedly attached to the shaft 36 and a driven plate 42 affixed to the boom 30. A conventional friction disc 44 is attached to the drive plate 42 and a spring 45 constantly forces the driven plate 42 toward the drive plate 41 so that the friction plate 44 will engage the upper surface of the drive plate 41 and drive the boom 30 with the shaft 36.

The pressure at which the spring 45 urges the driven plate 42 toward the drive plate 41 is such that the boom 30 will be driven at substantially the same speed as the drive shaft 36 until the ball 10' is struck by a batter during batting practice. The reverse reactionary force on the boom 30 causes the clutch 40 to slip until the reactionary force on the ball 10' and boom 30 is overcome by the pressure of the spring 45 and the boom 30 is once again driven at substantially the same speed as the output shaft 36.

The boom 30 includes a pair of horizontally extending support tubes 46 attached to the driven plate 42 of the clutch 40 and extending horizontally outwardly therefrom. The support tubes 46 are joined at their outer ends and have attached thereto at their outer ends a pulley assembly 40 which includes a freely rotatable grooved pulley 49 along which the cord 11' passes and a holddown member 50 which passes over the cord 11' to maintain the cord 11' in the groove in the pulley 49 at all times.

The inwardly extending end of the cord 11' is attached to a piston rod 51 of a fluid cylinder 52. The fluid cylinder 52 is fixedly mounted between the support tubes 46 so that as the piston rod 51 is selectively extended and retracted, the radius about which the ball 10' is rotating can be selectively changed. This is effective to permit the ball 10' to be thrown in a curve breaking either inside or outside as it passes by the batter during a practice session.

The movement of the piston rod 51 can be selectively controlled by a cam 54 attached to and rotatable with the shaft 36 thereby activating a valve 55 of conventional design which varies the amount of fluid supplied to the fluid cylinder 52 from a fluid source FS as seen in FIG. 6. A top view of the cam 54 is shown in FIG. 9 and is simply an eccentric-type cam. The cam shape, of course, may be changed to suit the particular requirements of the training session. It is to be further understood that the cam 54 and valve 55 may be located remotely of the output shaft 36 and varied either manually or programmed for different types of pitches.

The height of the ball 10' is controlled by a fluid cylinder 56 connected to the output shaft 36 through a universal joint 58 and having its piston rod 59 pinned to the boom 30. It will thus be seen that extension and retraction of the piston rod 59 selectively raises and lowers the boom 30 and the ball 10' attached thereto. A cam 60 and a valve 61 similar to the cam 54 and the valve 55 selectively connects the fluid source FS to the cylinder 56 so as to selectively extend and retract the piston rod 59 thereby raising and lowering the ball 10' as it is rotated about the output shaft 36. Likewise, the cam 60 and valve 61 may be replaced by an external control arrangement for either manually controlling or programming the movement of the ball 10' vertically. The cam 60 is here shown as an eccentric-type cam, however, the configuration thereof may be selectively varied to meet the demands of the particular training session.

It is also to be understood that the cams 54 and 60 are removably connected to the shaft 36 as best seen in FIG. 9 with the attaching mechanism indicated by the numeral 62 so that different shaped cams 54 and 60 may be used to change the pitch that is to be used during the training session.

The control circuit will be better understood by reference to FIG. 10. The fluid source is designated as FS and is connected to the fluid cylinders 52 and 56. Selection valves SV and SV' are respectively provided for selecting the appropriate control valves for connection to the cylinders 52 and 56. When valve SV is set in a first position, the cylinder 52 is connected to the fluid source FS through bypass valve BV and when a second position connects cylinder 52 to the fluid source FS through the cam control valve CCV. The bypass valve BV serves to center the piston rod 51 in the cylinder 52 and the valve CCV corresponds to one or more cam and valve assemblies such as cam 54 and valve 55. The valve SV' selectively connects cylinder 56 with valves BV' and CCV' to operate cylinder 56 like cylinder 52 is operated. In this manner curves, fast balls, risers, drops and combinations thereof can be obtained.

I claim:

1. A baseball-training aid for simulating pitched balls comprising:

a base;

a boom rotatably mounted on said base for rotation about a vertical axis and for pivotal movement about a horizontal axis;

driving means for selectively rotating said boom about said vertical axis;

first fluid cylinder means operatively connecting said boom and said base for variably raising and lowering the extending end of said boom about said horizontal axis as said boom is rotated about said vertical axis;

a second fluid cylinder means carried by said boom;

a ball; and,

a cord operatively connected said ball to said second fluid cylinder means so that the ball extends approximately radially with respect to said vertical axis from the extending end of said boom as said boom is rotated, said second cylinder means constructed and arranged to variably increase and decrease the effective radial distance between said ball and said vertical axis as said ball is moved by said boom.

2. A baseball-training aid as set forth in claim 1 further including

a source of fluid under pressure;

first valve means selectively connecting said fluid under pressure to said first cylinder means to cause said first cylinder means to raise and lower the extending end of said boom and thus raise and lower said ball as it is rotated about said vertical axis;

first cam means operatively associated with said first valve means and synchronously driven by said driving means for controlling said first valve means;

second valve means selectively connecting said fluid under pressure to said second cylinder means to cause said second cylinder means to increase and decrease the effective distance of said ball from said vertical axis as said ball is rotated about said vertical axis; and,

second cam means operatively associated with said second valve means and synchronously driven by said driving means for controlling said second valve means.