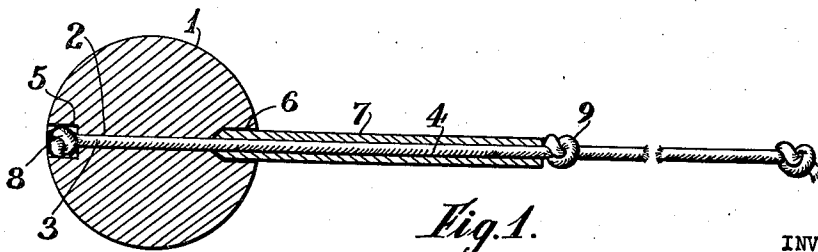
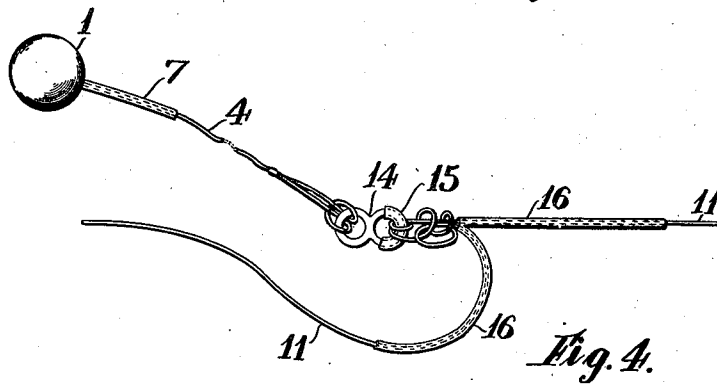
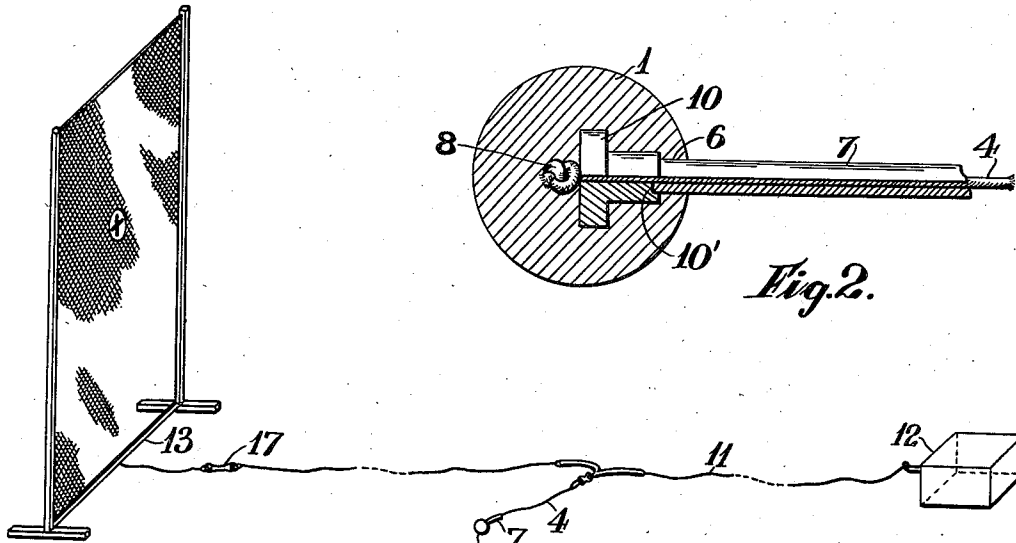


May 18, 1937.

F. A. MITCHELL
BALL AND ANCHORAGE THEREFOR FOR USE IN PLAYING
BALL GAMES USING ANCHORED BALLS
Filed May 19, 1936

2,081,059



INVENTOR
FRANK ALLEN MITCHELL
By *Norris & Bateman*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,081,059

BALL AND ANCHORAGE THEREFOR FOR
USE IN PLAYING BALL GAMES USING
ANCHORED BALLSFrank Allen Mitchell, London, England, assignor
to Electric & Musical Industries Limited,
Hayes, England, a company of Great BritainApplication May 19, 1936, Serial No. 80,619
In Great Britain June 20, 1935

10 Claims. (Cl. 273—35)

This invention relates to improvements in balls and anchorages for balls for use for example in playing games simulating golf in which the ball to be struck is anchored through a cord in such a manner that the extent of its flight is limited.

In games of this kind where powerful blows are imparted to the ball by a club, difficulty has been experienced in producing a ball and a form of connection of ball and anchorage cord such as will have a reasonably long life. Using various known forms of ball with the usual kinds of connection to even the highest quality cords, it has been found that breakage of the cord, usually in the region of its connection with the ball, occurs after comparatively few strokes.

In accordance with the present invention a captive ball for use in playing games is provided, having the end of the cord extending through a diametrically arranged bore in, or embedded in the body of the ball, the aperture in the ball at the point of entry of the cord being enlarged to receive one end of a length of tubing of rubber, woven sleeving or other tough yielding material fitted over the cord.

The invention further consists in a ball adapted to be connected with an anchorage cord and having a diametrically arranged bore of limited size to pass the end of an anchorage cord, a short length of the bore at each end thereof being of larger diameter than the central portion thereof.

The invention is illustrated in the accompanying drawing in which

Fig. 1 is a sectional view of a ball and showing the manner in which a cord is connected thereto,

Fig. 2 shows an alternative arrangement,

Fig. 3 shows a complete ball anchorage for use for example with the game playing apparatus described in co-pending application Serial No. 32,609, filed July 22, 1935 and

Fig. 4 shows on a larger scale a preferred method of connecting the ball and connected cord with a second anchorage cord.

In the arrangement according to Fig. 1, the ball 1 such as a golf ball is provided with a diametrically arranged bore 2 of a size to pass the end 3 of a cord 4.

A short length at each end of the bore 2 is of enlarged diameter as shown at 5 and 6. A short length of tubing 7 of a tough yielding material such as rubber, woven sleeving or the like is threaded over the end of the cord 4 and the end of the cord then passed through the bore 2 in the ball 1. Thereafter the end of the cord is

knotted as at 8, if desired with the interposition of a washer or bead not shown, and the knot 8 drawn into enlargement 5 and one end of the tube or sleeve 7 is thrust into enlargement 6 and the cord again knotted as shown at 9. The end of sleeve 7 may be a fit in enlargement 6 in the ball or it may be secured therein as by means of rubber solution, or again the sleeve 7 may be applied during the moulding of the ball when a ball of mouldable material such as gutta percha is used.

In Fig. 2 is shown an arrangement in which the ball 1 is formed by moulding and the end 3 of the cord 4 is attached by moulding the ball 1 around the knot 8. A bead or washer 10 of the form shown may be provided on the cord within the body of the ball to increase resistance to withdrawal of the cord. The washer 10 is of tough material such as fibre or vulcanite which will not cut the cord but will prevent the knob from pulling through. A sleeve is provided over the cord as before, one end of which seats in a recess 6 formed at the point of entry of the cord 4 into the body of the ball. The end of washer 10 may be recessed as shown at 10', to enable the washer and cord to be held in place during the moulding of the ball, and the end of sleeve 7 may engage in recess 10'.

The sleeve 7 is preferably cemented in position after the moulding operation is completed.

Good results have been obtained using a gutta percha ball 1, a rubber sleeve 7 and a flax cord and as an example, using a ball of the size of a golf ball the tube may be from 2" to 3" long and may enter $\frac{1}{8}$ " into the ball.

The cord 4 may be a short cord which in turn is connected to a point intermediate the length of a main anchorage cord 11, Figs. 3 and 4, the latter being connected at one end to the appropriate part of an indicating apparatus shown diagrammatically at 12 in Fig. 3, and at the other end to a fixture on the ground, or a fixture such as the frame 13 of a stationary screen which may also form a target for the player to aim at.

Such an arrangement as is illustrated in Fig. 3 effectively controls the rebound of the ball.

There may be inserted in the cord 11 a short length 17 of stout rubber near the fixture 13.

The cord 4 may be connected to the cord 11 in the manner shown in Fig. 4, the two cords 4 and 11 being tied to a ring 14.

The cord 11 is tied or looped through one part of ring 14, a pad 15 of leather being provided on the ring to prevent chafing of the cord. The end of cord 4 may be looped and spliced and con-

nected with the other part of ring 14 in the manner clearly shown in Fig. 4.

Sleeves 16 of tough yielding material such as rubber are applied over the cord 11 at each side of the ring 14 to protect the cord at the points where breakage is otherwise most likely to occur and also to prevent the cords from coiling or twisting around one another.

As an alternative to the use of the sleeves 16, the cord 11 may be thickened or stiffened to prevent coiling.

Either or both of the cords 4 and 11 may for example be coated with a cellulose lacquer or rubber solution to stiffen them and prevent them from coiling freely in use.

I claim:

1. A captive ball for use in playing a game comprising a ball, an anchorage cord extending into the ball and affixed thereto, an annular space being provided in the body of the ball surrounding the point of entry of the cord into the ball, and a tube of tough yielding material fitting over the end of the cord and having one of its ends seating in the annular space.

2. A captive ball for use in playing a game comprising a ball of gutta percha, an anchorage cord extending into the ball and affixed thereto, an annular space being provided in the body of the ball surrounding the point of entry of the cord into the ball, and a tube of tough yielding material fitting over the end of the cord and having one of its ends seating in the annular space.

3. A captive ball for use in playing a game comprising a ball of gutta percha, a flax anchorage cord extending into the ball and affixed thereto, an annular space being provided in the body of the ball surrounding the point of entry of the flax cord, and a rubber sleeve fitting over the end of the cord adjacent the ball and having one of its ends seating in the annular space.

4. A captive ball according to claim 1 and including a second anchorage cord connected at a

point intermediate the length thereof with the first cord, and a tube of tough yielding material mounted on the second cord adjacent the point of connection of the first cord.

5. A captive ball according to claim 1 and including a second anchorage cord connected at a point intermediate the length thereof with the first cord, sections of the second anchorage cord adjacent the point of connection with the first cord being thickened.

6. A captive ball according to claim 1, wherein the cord is impregnated with cellulose lacquer.

7. A captive ball according to claim 1, wherein the cord is impregnated with rubber solution.

8. A captive ball comprising a ball body of moulded material, an anchorage cord having a knotted end embedded in the moulded body, an annular space being provided in the moulded body surrounding the point of entry of the cord into the moulded body, and a tube of tough yielding material fitting over the end of the cord and having one of its ends seating in the annular space.

9. A captive ball for use in playing a game comprising a diametrically apertured ball, an anchorage cord extending through the aperture in said ball and affixed thereto, an annular space being provided in the body of the ball at the end of the aperture into which the cord enters, and a tube of tough yielding material fitting over the cord and having one of its ends seating in said annular space.

10. A ball adapted to be attached to an anchorage cord, said ball having a diametrical aperture therethrough to receive said anchorage cord, an annular space being formed in the body of the ball at one end of the diametrical aperture, and a tube of tough yielding material of substantial length having a bore to receive said anchorage cord and having one of its ends seating in said annular space.

FRANK ALLEN MITCHELL.