Nov. 29, 1966 E. K. SHAW 3,288,469

PRACTICE GOLF BALL

Filed Nov. 5, 1963

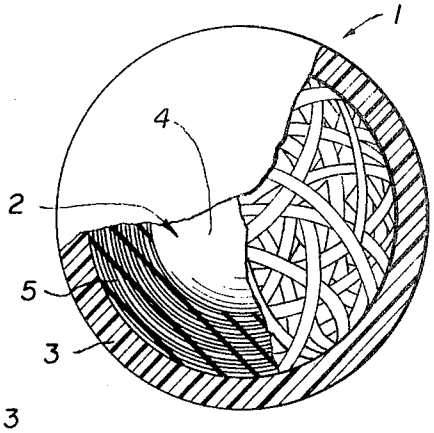


FIG. 1

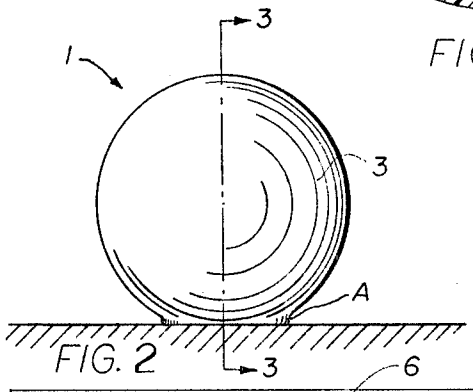


FIG. 2

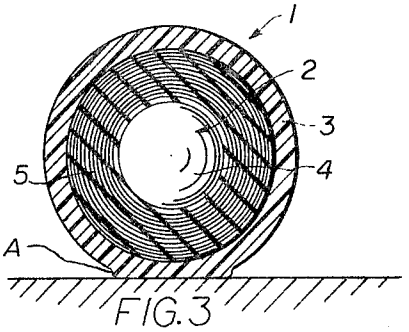


FIG. 3

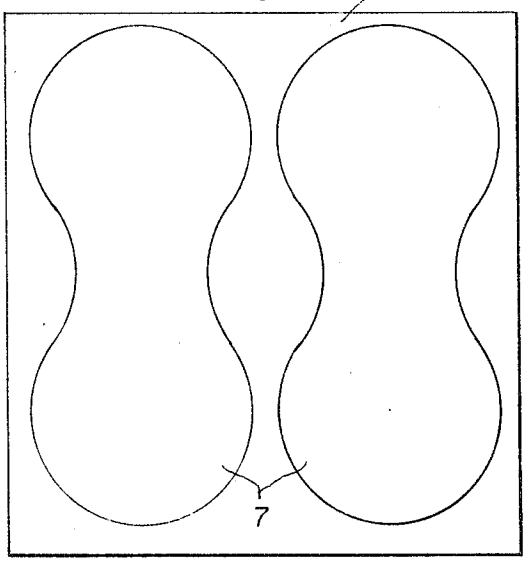


FIG. 4

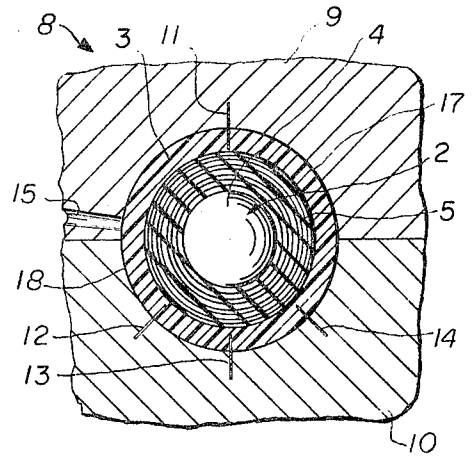


FIG. 5

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PRACTICE GOLF BALL

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This invention relates to balls, and more particularly to a practice ball for use in practicing sports or games requiring a ball.

The principal object of the present invention is the provision of a new and improved practice ball which when rolled on an available or convenient surface for practice simulates the action of the corresponding standard ball when rolled on its normal surface during regular play.

Another object of this invention is to provide a new and improved ball adapted to roll over a surface and having a center unit and a cover means deformable independently of the center unit for providing an area contact with said surface when the ball is rolled thereover.

Another object of this invention is the provision of a new and improved ball adapted to be rolled over a surface and having a center unit and a resiliently deformable cover means, different portions of which carry the weight of the ball as the ball rolls, and where the portion of the cover means carrying the weight of the ball flattens out to provide an area contact between the cover means and the surface on which it is rolled.

Another object of the invention is to provide a new and improved ball adapted to be rolled over a surface having a substantially non-deformable center unit and a resiliently deformable cover means for the center unit deformable independently of said center unit, so that the portion of the cover means carrying the weight of the ball as the ball rolls flattens out to provide an area contact between the cover means and the surface on which it is rolled.

A further object of this invention is to provide a new and improved practice ball for use on an available surface in practicing a sport wherein the ball simulates the action and frictional resistance encountered by a corresponding standard ball used in the sport when rolled on its normal surface in regular play and wherein the size and weight of the practice ball are substantially the same as the standard ball.

A still further object of this invention is the provision of a new and improved practice ball having a substantially non-deformable center unit and a resiliently deformable cover means made from a soft pliable, resilient, deformable plastic such as a urethane foam.

Another object of this invention is the provision of a new and improved practice golf ball for putting on indoor flooring, rugs or other surfaces and which simulates the action and frictional resistance encountered by a standard hard covered golf ball when putted on a putting green to thereby enable a golfer to obtain the stroke and feel of putting that could heretofore only be obtained by actual practice on a putting green.

Another object is to provide a new and improved practice golf ball for putting on indoor flooring, rugs or other surfaces wherein the ball will not follow cracks, seams and other surface conditions which would cause the ball to veer from the putting line.

Other objects and advantages of the present invention will be apparent from the following detailed description of a preferred embodiment thereof made with reference to the accompanying drawings forming a part of this specification and in which:

FIG. 1 is a side elevation of a ball embodying the present invention with portions thereof broken away;

FIG. 2 is a side elevational view of the ball of FIG. 1 when in contact with a surface;

FIG. 3 is a vertical sectional view of the ball of FIG. 2 taken on section line 3—3 of FIG. 2;

FIG. 4 is a plan view of parts used in the manufacture of the ball shown in FIG. 1; and

FIG. 5 is a cross-sectional view illustrating a method of manufacturing the ball of FIG. 1.

The present invention relates to balls for use in sports and games, and primarily is applicable to practice balls which when rolled on an available or convenient surface simulate the action of the corresponding standard ball when rolled on its normal surface during regular play. Such balls may be made in various weights and sizes depending upon the sport or game in which it is to be used or which is to be practiced.

The present invention is preferably embodied as shown in FIG. 1, in a practice golf ball **1**. The practice golf ball includes a conventional substantially non-deformable center unit **2** and a cover means **3** surroundingly engaged with and secured to the center unit **2**. The center unit **2** may be of any conventional construction and as shown herein comprises a core or center element **4** and a rubber thread winding **5**. The center element **4** may be made of steel, polytetrafluoroethylene resin, nylon, "Fiberglas" or may be a liquid center. The rubber thread winding **5** is surroundingly engaged with and wrapped under uniform tension around the core or center element **4**.

The cover means **3** is made of a suitable deformable material which deforms under the weight of the center unit **2** so that it flattens out when the ball is rolled to provide an area contact, designated A in the drawing, between the cover means and the surface on which it rolls. The cover means deforms independently of the center unit **2** and may be made from wool, mohair, velvet, sponge or foam rubber. Preferably, it is made of a soft, pliable, resilient, deformable plastic such as urethane foam. Also, the cover can be made of any suitable color.

The cover **3**, as mentioned above, and since it is made from a deformable material, flattens out (as illustrated in FIGS. 2 and 3) to provide an area contact with the surface on which it is supported. The contact between the ball and the surface is over a sector area of the ball. As the ball rolls, a point on the circumference of the ball will engage the surface and further rolling of the ball causes the cover material to be squeezed outwardly in all directions from the point. The point lies on a circumferential line lying in a vertical plane parallel to the direction the ball rolls. Thus, when the ball is rolled over the surface, the frictional resistance is greater than the frictional resistance encountered by a standard golf ball, such as the standard USGA golf ball, rolled over the same surface, since a standard golf ball offers only a point contact with the surface. The weight and size of the novel golf ball are substantially the same as the standard golf ball.

The deformable cover means **3**, which provides the area contact with the surface on which the ball is rolled provides substantially the same frictional resistance to rolling of the ball on relatively hard smooth surfaces, as compared to a golf green, as is encountered by a standard (USGA) golf ball when rolled on a putting green. Therefore, the golf ball of the present invention may be used indoors to practice putting to develop the stroke and feel that previously could only be gained with actual practice on a grass putting green.

The novel golf ball according to this invention can also be used on rug floors. One of the disadvantages of practicing putting on a rug floor with a standard (USGA) golf ball is that the ball tends to follow the

seams and naps of the rug and thereby veer off from the putting line. By using a golf ball having a deformable cover this veering tendency is eliminated because the increased area of contact causes the ball to resist veering and moreover the ball will not follow cracks, seams, naps, etc. in the surface on which it rolls as where there is only a point contact between the ball and surface on which it rolls.

The present invention can be applied to both old standard hard covered golf balls or to new uncovered ball centers. The standard hard covered ball can be converted to a ball embodying the present invention by removing the outer cover, cleaning the outer surface of the center unit, and then securing the deformable cover means **3** to the center unit **2**. New uncovered ball centers may be used in the manufacture of balls embodying the present invention. In such a method the deformable cover means **3** is secured to the center unit **2** after the thread winding **5** has been secured to the center element **4**. In this connection, FIG. 4 illustrates parts usable in a method of fabricating the cover **3** to the center unit **2**. The method comprises cutting two identical pattern blanks **7** from a sheet of cover material **6**. The blanks are so sized and shaped as to interfit and completely surround the center unit **2** and form a smooth even cover therefor. One side of each blank is then coated with a suitable adhesive or glue and then secured in place around the ball. This method is both simple and economical.

FIG. 5 illustrates another method of making a ball embodying the present invention. This method involves the molding of a resilient deformable material to the center unit **2** of the golf ball. In this method a mold indicated generally at **8** is employed having upper and lower portions **9** and **10** with mating semi-spherical cavities **17** and **18**, respectively. The lower portion **10** contains three spaced apart pins **12, 13** and **14**, each pin having one end secured in the wall and the other end extending into the cavity. The upper portion has one pin **11** secured in the wall thereof and extending into cavity **17** in the same fashion as the pins in the bottom wall. All the pins **11** and **12, 13** and **14** extend the same distance into their respective cavities. The pins are used to locate the center unit concentrically within the spherical cavity formed by the mold. Also, the pins keep the center unit of the ball from floating within the mold. The upper portion **10** of the mold contains a passageway **15**, formed therein and communicating with the center of the mold. The passageway is used to feed a urethane composition in a liquid state into the cavity of the mold wherein it forms a soft, pliable foam plastic which adheres to the center unit.

In carrying out the method illustrated in FIG. 5, the center unit is first immersed in a suitable solvent rinse to clean off the wax bloom or other foreign substances on the rubber winding threads. This is desirable because greater adhesion is effected between the cover material (preferably urethane foam) and the center unit if the wax bloom and other substances which inhibit adhesion are first removed. The center unit is then placed on the three pins **12, 13** and **14** of the lower portion **10** of the mold. The upper portion **9** of the mold is then placed in mating contact with the lower portion, the pin **11** contacting the upper portion of the unit and retaining it so that the unit will not float within the cavity. A urethane foam is then fed in a liquid state via passageway **15** into the cavities **17, 18** wherein it forms a soft-pliable, resilient, deformable mass which adheres and secures itself to the center unit of the ball. The upper portion of the mold is then removed and the finished ball mechanically removed from the mold. By this process a seamless cover for the ball is effected. Also, if desired, the core of the ball after immersion in the solvent rinse could be immersed in a suitable adhesive to provide even a stronger adhesion between the cover and the center unit.

An advantage when employing urethane foams or the like as the material used for the cover means is that control of the degree of softness can be easily accomplished by altering the formula thereof. Thus, the cover of a practice ball for use primarily on a smooth indoor surface would be made softer and more pliable and thereby provide a greater area contact with a surface than the cover of a practice ball for use on rugs or the like. In other words, regardless of the indoor surface used for practice, the frictional resistance of the practice ball can be made to simulate the frictional resistance encountered by a standard (USGA) golf ball when putted on a putting green by merely controlling the degree of softness of the cover means.

The urethane foam to be injected into the mold can be formed by any conventional means well known in the art. By way of example, one way would be via the "one-shot" method. In this method a catalyst, polyether, isocyanate, water and foam stabilizer are injected through separate lines into a nozzle of a foaming machine and then injected into the mold. By this method the degree of softness of the urethane foam can be easily varied by merely varying the mixture.

Another use for the novel golf ball according to the invention would be for "putt-putt" or miniature golf courses. Since the deformable cover golf balls when rolled on a hard smooth surface would simulate the action of the standard hard covered ball used on the rug fairways and greens, the need for rug fairways and greens would then be eliminated.

Although the preferred embodiment of the present invention is described hereinabove in great detail, it will be understood that modification, changes, and adaptations may be made therein, and it is intended hereby to cover all such modifications, changes, and adaptations coming within the terms of the claims hereof.

Having thus described my invention, I claim:

1. A practice golf ball having a spherical shape for use on an indoor floor surface and which simulates the action of a standard golf ball when used on a putting green comprising: a spherical body, said body including a substantially non-deformable center unit and a deformable cover means for providing an area contact with said surface when the ball is rolled thereover, said ball having a weight of approximately 1.62 ounces, and a diameter of approximately 1.68 inches, said cover means surroundingly engaged with and secured to said center unit and with the portion thereof carrying the weight of the ball flattening out to provide said area contact between the ball and surface due to said weight alone, said area contact providing a frictional resistance which corresponds to the frictional resistance encountered by a standard golf ball of substantially the same weight, size and shape used on a putting green.

2. A practice golf ball having a spherical shape for use on an indoor floor surface and which simulates the action of a standard golf ball when used on a putting green comprising: a spherical body, said body including a substantially non-deformable center unit and a deformable cover means for providing an area contact with said surface when the ball is rolled thereover, said practice golf ball being substantially of the same weight, size and shape as the standard golf ball, said cover means surroundingly engaged with and secured to said center unit and with the portion thereof carrying the weight of the ball flattening out to provide said area contact between the ball and surface due to the weight of the practice ball alone, said area contact providing a frictional resistance which corresponds to the frictional resistance encountered by a standard golf ball when used on a putting green.

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