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3,089,702

BOWLING BALL

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FIG. 1.

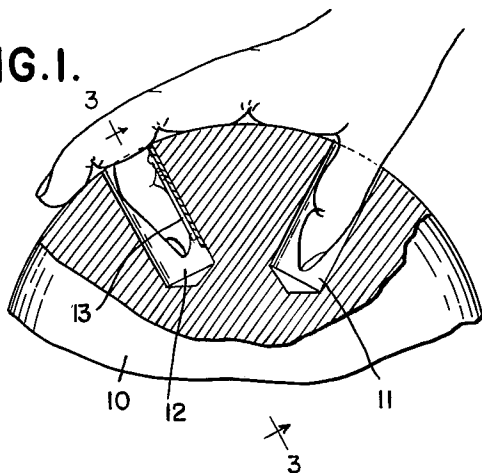


FIG. 3.

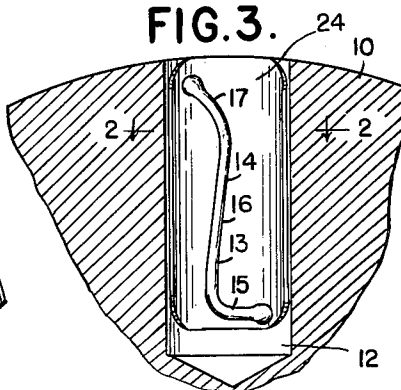


FIG. 2.

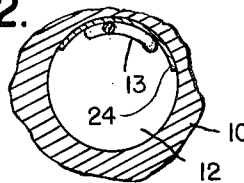


FIG. 4.

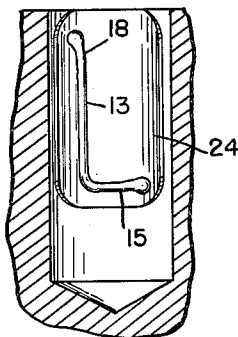


FIG. 5.

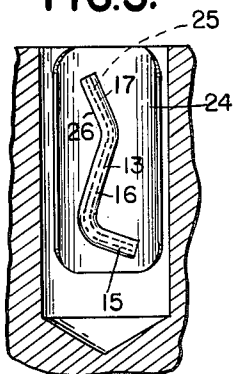


FIG. 6.

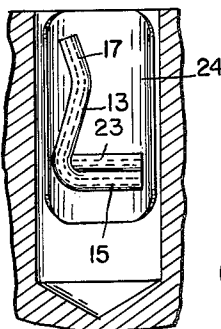
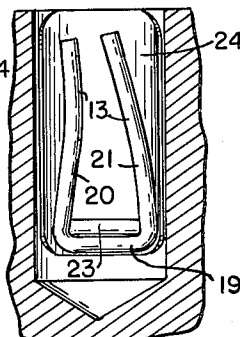


FIG. 7.



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BOWLING BALL

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8 Claims. (Cl. 273-63)

The invention relates to bowling balls and, more particularly, to a finger-engaging insert to be positioned in a finger opening of a bowling ball.

One of the objects of the invention is to provide the bowling ball with a device which aids the bowler in the delivery of the bowling ball so as to acquire the proper amount of hook or curve.

Another object is to provide a device which is educational in character and can be used in teaching an inexperienced bowler, particularly children or other individuals not having attained mature age.

A further object is to provide a type of bowling aid which causes the finger to have a predetermined movement with respect to the ball as the finger is withdrawn from the finger hole during delivery.

According to my invention this predetermined movement can be produced by providing a finger pattern in the finger hole which has the effect of either compelling a proper movement of the finger, or at least to focus the attention of the bowler on the contact of the finger with the ball and the necessity for controlling the finger action during delivery. The means for providing the pattern will be herewith described in detail but first the theory underlying the invention will be explained.

In the art of bowling the ball is rolled down the bowling alley toward the pins by a trajectory motion of the swinging arm accompanied by the movement of the wrist and the second and third fingers while they are inserted in their respective holes.

The trajectory force gives direction to the ball toward the pins but the action of the thumb and fingers induces the ball after the trajectory action has partially subsided to change its course and spin on an axis of about ten degrees in the form of a curve or hook. Of course, there is much more to bowling than has been here set forth such as stance, balance and approach to the foul line—but here the interest is chiefly in the manner by which the ball is delivered at the foul line. Allowing for the fact that the holes in the ball have been properly bored so that the thumb and fingers are properly accommodated, the technique of controlling the ball before the ball has left the bowler's hand is important. The arm is a swinging lever and the wrist, thumb and fingers at the end of the lever must allow the ball to roll off the hand smoothly carrying with it all the forces imparted to it during the swing. First of all the weight of the ball must be handled by the bowler without too much effort or the ball cannot be under such control, and the wrist with the thumb and fingers cannot properly direct the ball; nor can the fingers put their pressure on the curved surface of the walls of the hole while they are being withdrawn. This is very important to observe in order to get uniform results.

My invention is for the purpose of allowing the bowler to handle the ball and to improve the proper pressure on the descending and ascending curves of the inner wall of the hole.

According to my invention a finger pattern is created within the finger hole which outlines the pattern of the finger movements and at the same time allows the bowler to handle the ball in the forward thrust to impart a spin which causes the ball to curve or hook.

The pattern can be produced in various ways. One is to form the pattern in a separate member composed

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of wire, rubber, or plastic, and then secure the separate member to the inner surface of the finger hole. The separate pattern member is cemented to the side of the finger hole and although it acts as a guide it does not interfere with the normal movement of the finger during delivery of the ball. My invention contemplates that the pattern can be so constructed as to produce a wide curve on the one hand or simply a straight ball on the other hand, or it can be arranged to give some intermediate curved path.

The pattern may be used for instruction and where desired the pattern may thereafter be removed so that the ball can be used without the bowling aid after the manner of rolling the ball has been established by practice. I believe that my invention will be especially helpful to women, and to younger bowlers of either sex, as it allows such bowlers to swing the ball with security since the bowling aid of my invention prevents the ball from slipping from the hand.

Having now described the theory of the invention and some of the advantages attained thereby, reference should be had to the accompanying drawings wherein:

FIGURE 1 is a view of a bowling ball partly in section.

FIG. 2 is a cross section through the finger hole on line 2-2 of FIG. 3.

FIG. 3 is a longitudinal section on the line 3-3 of FIG. 1, showing one form of pattern according to the invention.

FIG. 4 is a diagram showing a modified pattern.

FIGS. 5 and 6 show other patterns.

FIG. 7 is a modified form.

The bowling ball 10 shown in FIG. 1 has the thumb hole 11 and one or more finger holes in the same manner as conventional practice. The present invention is chiefly concerned with the finger hole 12 which receives the third finger of the bowler's hand. The control of the ball is accomplished to a large degree by the action of the third finger as it is withdrawn from the finger hole during delivery of the bowling ball. According to my invention I provide in the finger hole 12 a raised pattern 13 extending for a substantial distance from the surface of the ball toward the bottom of the hole. As shown in FIG. 3, the pattern is formed of a piece of wire 14 which is cemented or otherwise secured to the side of the finger hole so as to remain in fixed position. The wire 14 has at its inner end a transversely bent portion 15, then a longitudinally extending portion 16 which has a direction at a slight angle to the axis of the hole and also has a slight curvature. The wire 14 is reversely bent at 17 and continues at the reverse angle until it terminates at approximately the surface of the ball.

One method of providing the bowling ball with the wire pattern is to first shape the wire to the desired configuration and then cause it to adhere directly with the wall of the finger hole by means of a quick setting cement. Another method is to fasten the wire pattern to a thin sheet and then cement the sheet in the finger hole. This sheet may be of any material that can be deformed to the curvature of the finger hole and preferably is made of plastic.

With the arrangement as thus far described, the middle finger of the bowler's hand when gripping the bowling ball, contacts with the pattern, the tip of the finger engaging the transversely bent portion 15. When the ball is delivered, the finger then is gradually withdrawn from the finger hole and the bowler can learn to follow the contour of the pattern. In this way the desired amount of spin or hook is conveyed to the bowling ball. The curvature and angle of the longitudinally extending portion 17 is designed to give the desired amount of lift. The pattern can be varied to suit the needs of different

individuals and can also be designed to accentuate the lifting action to aid in the instruction of a bowler in the proper mode of delivery.

Other patterns that are useful in bowling are shown in FIGS. 4 to 7. In FIG. 4 the inner end is transversely bent at 15 in substantially the same manner as shown in FIG. 3 and thus provides a raised portion with which the tip of the finger is in contact during the entire time that the bowler has the ball in his grasp up to the moment of delivery. This portion is an aid to the bowler in maintaining a firm grip on the ball during all of the preliminary movements prior to actual release. In the pattern of FIG. 4, the wire extends almost parallel to the axis of the finger hole, with only a slight curvature near the outer surface as indicated at 18. This pattern will train the bowler to throw a substantially straight ball without much hook although the curvature at 18 will impart a slight lift to the ball at the moment of final release.

In FIG. 5 another pattern is shown where the angle of the longitudinally extending portion 16 is accentuated over that shown in FIG. 3. The pattern then merges into a reverse curvature 17 extending to its outer terminal point which is near the surface of the bowling ball. The reverse curvature 17 imparts the final lift just prior to the full release of the ball and aids the bowler in producing a sharp hook or curve.

In FIG. 6 the pattern is similar to FIG. 5 but there is additionally provided a second cross member 23 which together with the transverse portion 15 forms a double wire grip with which the tip of the finger engages in the initial grasping position. In both FIGS. 5 and 6 the pattern is produced by shaping a rubber covered, metal core wire, preferably about three-sixteenths of an inch in diameter. Reinforced plastic wire of this nature is a commercially available product and as illustrated in FIGS. 5 and 6 it has a metal core 25 and a surrounding plastic or rubber surface 26.

Another type of pattern is illustrated in FIG. 7 where hollow rubber or plastic tubing from $\frac{1}{8}$ " to $\frac{3}{8}$ " in diameter is bent into a U-shape as indicated at 19, with the U at the innermost end of the finger hole. In this form the tubing has two longitudinally extending portions 20 and 21 constituting guides for the opposite sides of the finger as it is withdrawn from the finger hole. The tubular pattern of FIG. 7 is secured to the sides of the finger hole, either directly or by first securing to a thin sheet of plastic 24 or other suitable intermediate material. A suitable adhesive for mounting the patterns of my invention in a bowling ball is a fast setting adhesive sold as "Eastman 910."

What is claimed is:

1. A bowling ball having in a finger hole thereof a raised pattern of narrow width extending longitudinally in the direction of the finger hole to an outer point of said finger hole closely adjacent the outer surface of the ball for guiding the finger while being withdrawn from the bowling ball during delivery thereof, said raised pattern extending at a slight angle to the axis of the finger hole to assist in imparting a spin to the bowling ball.

2. A bowling ball as in claim 1 in which the raised pattern is a separate member adhesively attached to the surface of the finger hole after said separate member is inserted in said finger hole.

3. A bowling ball as in claim 1 in which a transverse raised portion is provided at the inner end of said finger hole for contact with the tip of the finger before withdrawal thereof along said longitudinal pattern.

4. A bowling ball as in claim 1 in which the raised pattern is longitudinally curved.

5. A bowling ball having in a finger hole thereof a raised portion extending transversely at the inner end and continuing outwardly as a narrow rib in a curve at a slight angle with the axis of the finger hole and terminating in a reverse curve at the outer end.

6. A bowling ball having in a finger hole thereof a pair of raised ribs, each of narrow width extending longitudinally in the direction of the axis of the finger hole to an outer point of said finger hole closely adjacent the outer surface of the ball, said pair of ribs being laterally spaced to engage opposite sides of the finger while being withdrawn from the bowling ball during delivery thereof, one of said raised ribs extending at a slight angle to the axis of the finger hole to assist in imparting a spin to the bowling ball.

7. A bowling ball as in claim 6 in which said pair of raised ribs is constructed from a separate member and is adhesively attached to the surface of the finger hole after insertion therein.

8. A bowling ball as in claim 1 in which the raised pattern is secured to a thin flexible sheet and said sheet is adhesively attached to the surface of the finger hole after insertion therein.

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