Oct. 17, 1939. R. D. BODYCOMB 2,176,520

BOWLING BALL

Filed April 11, 1938

Fig. 2.

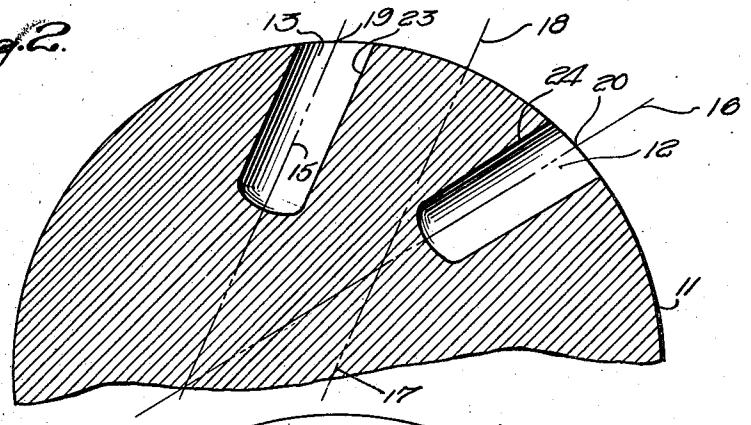


Fig. 1.

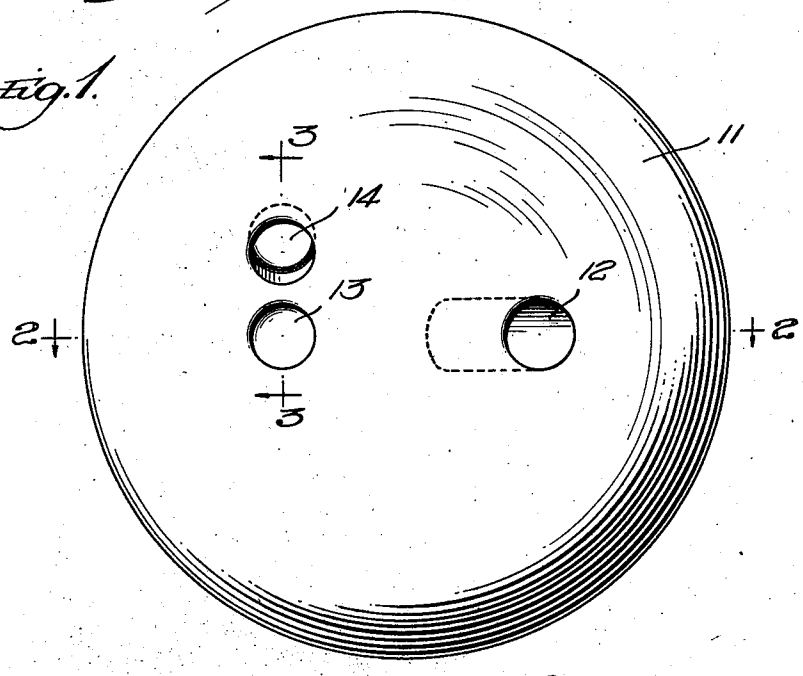
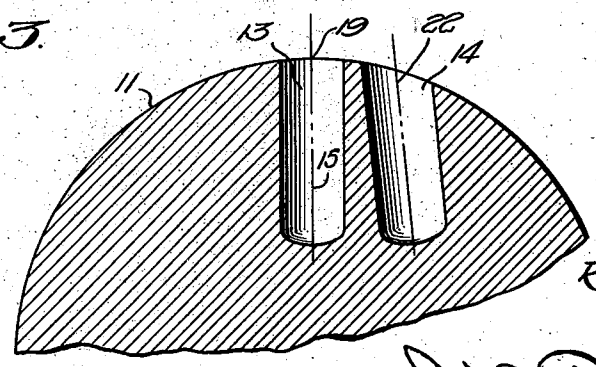


Fig. 3.



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BOWLING BALL

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10 Claims. (Cl. 273—63)

This invention relates to bowling balls, and more particularly to an improved arrangement of the openings which provide gripping surfaces for holding the ball.

In the use of bowling balls of the type having holes drilled therein providing gripping surfaces by which the ball may be held, bowlers have experienced considerable difficulty in controlling the desired direction of travel of the ball when using the conventional ball wherein the holes are drilled substantially radially. Most bowlers find it desirable to impart a "curve" or "hook" to the ball and in order to do this, the customary practice is the "grip" or "cup" the ball in such a manner that the weight of the ball is hanging to the left of the hand or towards the body of the bowler. In "cupping" the ball, it is necessary to bend the wrist in order that the weight of the ball will be towards the body of the bowler and it is obvious that a considerable strain will be imposed upon the wrist when holding a ball in this manner. Accordingly, it will be apparent that only those bowlers having strong wrists are able to hold the ball in this manner for the purpose of imparting the desired hook or curve to the ball upon delivery thereof.

A curve ball is particularly difficult to control when using bowling balls having the openings therein drilled substantially radially. It being necessary to bend the wrist toward the body in order to deliver a curve ball, which is conceded to be the best type of delivery, there is a tendency for a bowler to bend his wrist too much and cause the ball to curve excessively, thus resulting in the ball over-running the spot or pin at which the ball is aimed. The amount of curve which a ball will take being dependent to a large extent upon the bend or twist with which the hand is held, it is necessary for bowlers to give considerable attention to the manner in which they hold the ball and to the delivery of the ball, which detracts considerably from the pleasure to be derived from the game of bowling.

Furthermore, bowlers who have not sufficient strength in their wrists to hold the present types of bowling balls in such a manner as to impart a curve to the ball on delivery, have a tendency to deliver what is known as a "back-up" ball. This type of delivery is particularly common among women who have very little speed in their delivery and results in the ball curving to the right and away from the head pin, which is undesirable.

The principal object of this invention is to provide a bowling ball having the holes therein arranged in such a manner that it is not necessary to bend the wrist in order to impart the desired curve to the ball upon delivery thereof.

A further object is to provide a bowling ball which will eliminate the tendency of bowlers to deliver a ball which will "back-up" when delivered with too little speed.

A further object is the provision of a bowling ball which may be delivered with the hand, wrist and forearm in a natural position and without any strain on the hand, wrist or forearm.

A further object is the provision of a ball of the character referred to which minimizes the necessity of cupping the ball in order to make it curve.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the accompanying drawing I have shown one embodiment of the invention. In this showing:

Figure 1 is a plan view of a bowling ball,

Figure 2 is a partial sectional view on line 2—2 of Figure 1, and

Figure 3 is a partial sectional view on line 3—3 of Figure 1.

Referring to Figure 1, the numeral 11 designates a bowling ball constructed in accordance with the principles of this invention. The ball 11 is provided with a thumb opening 12 and finger openings 13 and 14 therein which provide gripping surfaces by which the ball may be held.

Referring to Figure 2, it will be noted that the axis 15 of the finger opening 13 extends to the left or toward the finger side of the ball. In the same figure the axis 16 of the thumb opening 12 is offset from the center 17 of the ball 11 and also extends generally in a direction toward the finger side of the ball.

Specifically, it has been found desirable that the axes 15 and 16 of the finger opening 13 and thumb opening 12, respectively, should be located in the plane 2—2 which is preferably a diametral plane. The axis of the finger openings 13 and 14 are preferably also located in a common plane 3—3 forming substantially a right angle with the plane 2—2.

Referring to Figure 2, the radial line 18 preferably bisects the arc between the surface center 19 and surface center 20 of thumb opening 12 and finger opening 13, respectively. The finger hole 13 is preferably drilled with its axis 15 parallel to the radial line 18. The distance between the surface centers 19 and 20 may vary according to the size of the hand for which the ball is

being drilled. The axis 16 is preferably offset from the center of the ball one-half inch when the conventional 27-inch circumference ball is used. The distance which the axis 16 is offset from the center of the ball may be varied more or less as circumstances require. However, it will be noted that when the openings 12 and 13 are in the same plane the extended axes 15 and 16 will always converge so as to meet towards the finger side of the ball.

Referring to Figure 3, it will be noted that the axes 19 and 22 of the finger holes 13 and 14, respectively, converge slightly so as to intersect at a point beyond the surface of the ball. It has been found desirable to space the adjacent limits of finger openings 13 and 14 one-quarter inch apart on the surface of the ball when seven-eighth inch diameter openings are used for the finger holes. It has also been found desirable to have the axes 15 and 22 converge at an angle of two to five degrees, which angle conforms with the natural position of the third and fourth fingers when held in natural and relaxed positions. Although the foregoing description applies to a bowling ball having openings for three fingers, the same principles will apply where the ball is drilled for two fingers by eliminating the fourth or ring finger opening 14.

In addition to providing greater accuracy in controlling the intended direction of travel of the ball, the present arrangement of openings provides greater comfort than can be had with a ball having the holes drilled substantially radially. Heretofore, it has been necessary to bend the fingers in grasping a bowling ball and place them in a position at great variance from the normal position of the fingers. This is known as "cramping" and results in considerable soreness of the fingers after extended periods of bowling. The present arrangement of openings, by enabling the bowler to grasp the ball with the hand and fingers in a natural relaxed position, has been found to eliminate the undesirable "cramping" and soreness of the fingers after extended periods of bowling.

Referring to Figure 2, wherein the thumb and finger openings 12 and 13 are shown converging so as to meet towards the finger side of the ball, it will be noted that such an arrangement will cause the weight of the ball to be shifted toward the body of the bowler without the fingers or hand deviating materially from the natural position. It will be noted that the finger will exert a pressure substantially perpendicular to the line 23 of the finger opening 13 and the thumb will exert a pressure substantially perpendicular to the line 24 of the thumb opening 12. It will thus be apparent that the finger pressure applied in holding the ball will exert a lifting force on the ball which will tend to shift the weight of the ball inwardly toward the body of the bowler. The pressure of the thumb will exert an outward force which will aid in shifting the weight of the ball toward the body of the bowler.

It will be apparent that the present described arrangement of openings enables the bowling ball to be held with the weight toward the body of the bowler without the necessity of bending the wrist or giving any attention to the manner in which the ball is held in order that a proper curve may be imparted to the ball upon delivery thereof. In addition, it will be noted that the present arrangement of openings enables the ball to be held without the necessity of "cramping" the fingers by reason of the openings being drilled so as to conform with the natural relaxed position of the hand.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A bowling ball having substantially cylindrical thumb and finger openings therein, the axis of said finger opening lying substantially in a diametral plane passing through the surface center of said thumb opening, said axis being substantially parallel to a radial line of said ball lying in said plane and intersecting the surface of the ball substantially mid-way between the surface centers of said openings whereby the extended axis of said finger opening will pass substantially to one side of the center of said ball.

2. A bowling ball having substantially cylindrical thumb and finger openings therein, the axis of said finger opening lying substantially in a diametral plane passing through the surface center of said thumb opening, said axis being substantially parallel to a radial line of said ball lying in said plane and intersecting the surface of the ball substantially mid-way between the surface centers of said openings whereby the extended axis of said finger opening will pass substantially to one side of the center of said ball, the extended axis of said thumb opening being offset from the center of the ball and to the same side thereof as the extended axis of said finger opening.

3. A bowling ball having substantially cylindrical finger openings and a substantially cylindrical thumb opening spaced from said finger openings, said finger openings lying in a common plane substantially perpendicular to a diametral plane passing through the axis of one of said finger openings and the axis of said thumb opening, said first mentioned plane being substantially parallel to a radial line of said ball lying in said last mentioned plane and intersecting the surface of the ball substantially midway between the surface centers of the openings lying in said last mentioned plane whereby said first mentioned plane will pass substantially to one side of the center of said ball.

4. A bowling ball having substantially cylindrical finger openings and a substantially cylindrical thumb opening spaced from said finger openings, said finger openings lying in a common plane substantially perpendicular to a diametral plane passing through the axis of one of said finger openings and the axis of said thumb opening, said first mentioned plane being substantially parallel to a radial line of said ball lying in said last mentioned plane and intersecting the surface of the ball substantially midway between the surface centers of the openings lying in said last mentioned plane whereby said first mentioned plane will pass substantially to one side of the center of said ball, the extended axis of said thumb opening being offset from the center of the ball and to the same side thereof as said first metioned plane.

5. A bowling ball having substantially cylindrical thumb and finger openings therein, the axis of said finger opening lying substantially in a plane passing through the surface center of said thumb opening, said axis being substan-

tially parallel to a radial line of a circle formed by the intersection of said plane with said ball, said radial line being located so as to intersect the surface of the ball at a point substantially mid-way between the surface centers of said openings whereby the extended axis of said finger opening will pass substantially to one side of the center of said ball.

6. A bowling ball having substantially cylindrical thumb and finger openings therein, the axis of said finger opening lying substantially in a plane passing through the surface center of said thumb opening, said axis being substantially parallel to a radial line of a circle formed by the intersection of said plane with said ball, said radial line being located so as to intersect the surface of the ball at a point substantially mid-way between the surface centers of said openings whereby the extended axis of said finger opening will pass substantially to one side of the center of said ball, the extended axis of said thumb opening being offset from the center of the ball and to the same side thereof as the extended axis of said finger opening.

7. A bowling ball having substantially cylindrical finger openings and a substantially cylindrical thumb opening spaced from said finger openings, said finger openings lying in a common plane substantially perpendicular to a plane passing through the axis of one of said finger openings and the surface center of said thumb opening, said first mentioned plane being substantially parallel to a radial line of the circle formed by the intersection of said last mentioned plane with the surface of the ball and located so as to intersect the surface of the ball at a point substantially mid-way between the surface centers of the openings lying in said last mentioned plane whereby said first mentioned plane will pass substantially to one side of the center of said ball.

8. A bowling ball having substantially cylindrical finger openings and a substantially cylindrical thumb opening spaced from said finger openings, said finger openings lying in a common plane substantially perpendicular to a plane passing through the axis of one of said finger openings and the surface center of said thumb opening, said first mentioned plane being substantially parallel to a radial line of the circle formed by the intersection of said last mentioned plane with the surface of the ball and located so as to intersect the surface of the ball at a point substantially mid-way between the surface centers of the openings lying in said last mentioned plane whereby said first mentioned plane will pass substantially to one side of the center of said ball, the extended axis of said thumb opening being offset from the center of the ball and to the same side thereof as said first mentioned plane.

9. A bowling ball having a substantially cylindrical thumb opening and a substantially cylindrical finger opening spaced from said thumb opening, the axis of said finger opening lying in a plane containing the surface center of said thumb opening, said ball being divided into a finger opening side and a thumb opening side by a diametral plane substantially perpendicular to said first mentioned plane intersecting the surface of said ball at a point substantially mid-way between the surface centers of said thumb and finger openings, the extended axis of said finger opening being spaced from the center of the ball a substantial distance toward the finger opening side thereof.

10. A bowling ball having a substantially cylindrical thumb opening and a substantially cylindrical finger opening spaced from said thumb opening, the axis of said finger opening lying in a plane containing the surface center of said thumb opening, said ball being divided into a finger opening side and a thumb opening side by a diametral plane substantially perpendicular to said first mentioned plane intersecting the surface of said ball at a point substantially mid-way between the surface centers of said thumb and finger openings, the extended axis of said finger opening being spaced from the center of the ball a substantial distance toward the finger opening side thereof, the extended axis of said thumb opening being offset from the center of the ball and to the same side thereof as the extended axis of said finger opening.

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