July 4, 1961 V. YETTITO 2,991,079

BOWLING BALL

Filed Sept. 1, 1959

Fig. 3

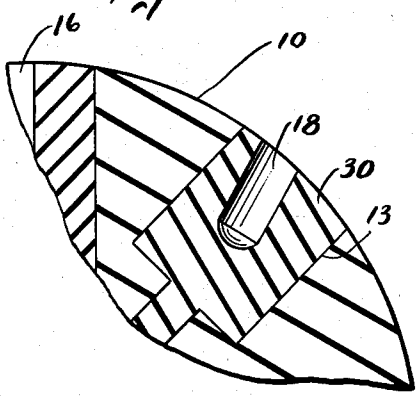


Fig. 1

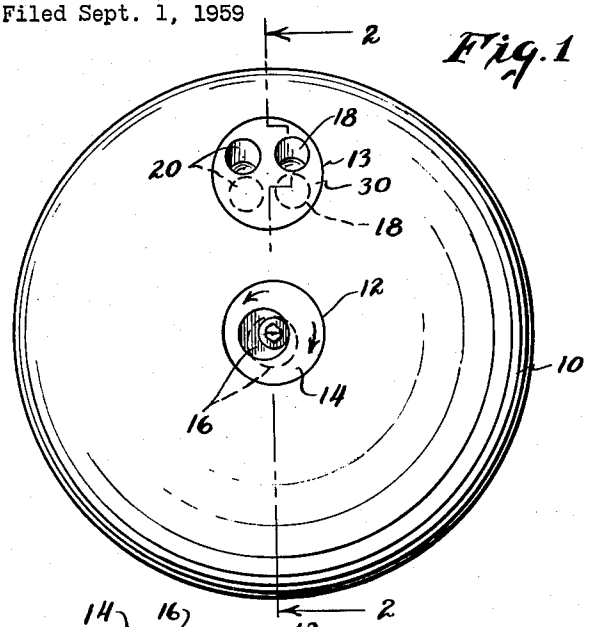
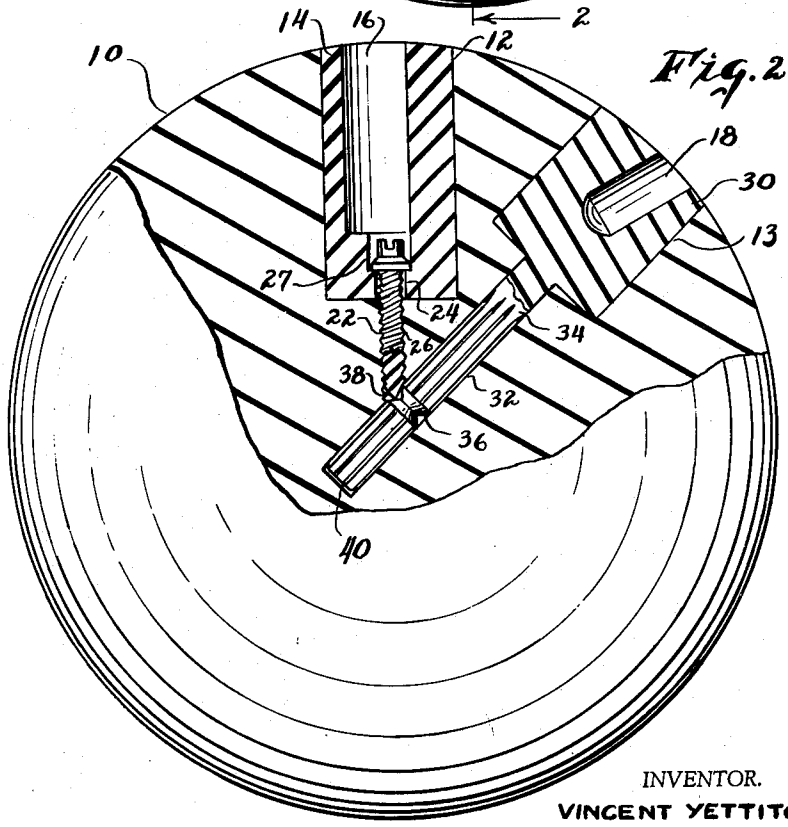


Fig. 2



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BOWLING BALL

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This invention relates to bowling balls and, more particularly, relates to a bowling ball having means by which the position and inclination of the finger holes may be varied and in which the span between the finger holes and the thumb hole may be varied to suit the needs of the individual user.

For precise control of the ball by the user, such as required in tournament play, the finger and thumb holes are bored so that the hole size, the hole inclination and span between finger and thumb holes fit the hand of the individual user.

However, the requirements of the user change from day to day, and even during the course of bowling a number of games. This is particularly true of tournament play in which muscular fatigue and swelling of the hands is pronounced. To maintain the necessary accuracy for tournament performance, therefore, most players carry a plurality of balls having different spans, hole sizes, and hole inclinations. Due to the number of variables, even with a large number of balls, only a small number of the possible combinations can be provided.

There has been disclosed to the art a bowling ball having a continuously adjustable span in application, Ser. No. 440,324, filed June 30, 1954 by Vincent Yettito, Jr. for Bowling Ball which is now abandoned.

I have found it desirable to include provisions for continuous adjustment of the finger hole position and inclination.

It is, therefore, the primary object of this invention to provide a bowling ball in which the position and inclination of the finger hole or holes and in which the span between the finger and thumb holes may be continuously adjusted.

It is a further object of this invention to provide a bowling ball construction in which simple adjustment of a single ball accommodates the ball to the user as his requirements change even during play.

It is a further object of the invention to provide a bowling ball construction which is both simple and inexpensive and in which the span positioning and inclination of the finger holes may be easily adjusted.

It is a further object of this invention to provide a bowling ball construction which does not violate the rules of the official organizations which govern tournament play.

Other objects and advantages of the invention will be pointed out hereinafter.

A preferred embodiment of the invention selected for the purposes of illustration is shown in the accompanying drawings in which:

FIGURE 1 is a top plan view of a bowling ball in accordance with the present invention;

FIGURE 2 is a sectional view taken through lines 2—2 of FIGURE 1; and

FIGURE 3 is a sectioned view of a portion of the ball shown in FIGURE 2.

Referring to the drawings there is shown a bowling ball **10** provided with a first cylindrical cavity **12** and a second cylindrical cavity **13** extending radially inwardly from the surface of the ball. The cavity **12** is provided with a cylindrical plug **14** which fits snugly in the cavity but is rotatable therein about its radial axis. The plug is provided with a cylindrical thumb hole **16** the axis of which is parallel to the axis of rotation of the plug but offset therefrom so that the thumb hole is eccentrically arranged. Thus, by rotating the plug, the span between

the thumb hole and the finger holes **18** and **20** may be varied to suit the convenience of the user.

To lock the plug in any desired position of adjustment in the cavity the ball is provided with a threaded bore **22** depending inwardly from the bottom of cavity **12** and axially aligned with said cavity. The plug is provided with a passage **24** communicating between the bore and the bottom of the thumb hole through which extends a set screw **26** in threaded engagement with the threaded bore **22**. The screw may be provided with a hexagonal head by which it may be tightened into locking relationship with the cylindrical plug by a conventional wrench. A counter bore **27** may be provided to enclose the head of the screw.

As thus set forth, the thumb hole construction is the same as that disclosed in application, Ser. No. 440,324, filed June 30, 1954 by Vincent Yettito, Jr. for a Bowling Ball.

To provide for adjustment of the position and inclination of the finger holes there is provided a cylindrical finger plug **30**. The finger plug **30** fits snugly in cavity **13** but is rotatable therein on its radial axis. The plug is provided with one or more finger holes **18** and **20** comprising substantially cylindrical cavities extending inwardly from the surface thereof.

The axes of the finger holes are offset from the axis of the finger plug cylinder and are inclined at an angle thereto.

Thus, upon rotation of the cylindrical plug the relative position of the finger holes may be adjusted to fit the requirements of the individual user. Additionally, such as by rotation through 180°, the inclination of the finger hole with respect to a radius of the ball may be reversed, as can best be seen by reference to FIGURES 2 and 3. In the position shown in FIGURE 3, it will be seen that the finger of the user may be more easily slipped out of the finger hole during release of the bowling ball. Rotation of the plug through 180° to the position shown in FIGURE 2 will provide an inclination giving the user a stronger grip on the ball, as, for example, to compensate for muscular fatigue during play. The change of span concomitant with such rotation of the finger plug can be adjusted by rotation of the thumb hole cylindrical plug.

To lock the finger hole plug in position desired, the ball is provided with a bore **32** extending radially inwardly from cavity **13** and axially aligned therewith. Bore **22** intersects bore **32** near the center of the ball. Fitting snugly within the bore is a shaft **34** axially aligned with and extending from the inner surface of the cylindrical finger plug **13**. The shaft is provided with a peripheral key-way **36**. The point **38** of set screw **26** bears on the key-way to prevent retraction of the finger plug cylinder and to lock the cylinder in the adjusted position when the set screw is tightened. It will be noted that, since the set screw point locks the finger plug cylinder at the same time as the set screw head locks the thumb hole cylinder, the length thereof must be accurately determined to allow such simultaneous locking.

To avoid the introduction of elements which might unbalance the ball and violate the rules of organizations governing tournament play, the plugs **12** and **13** and the set screw **26** are preferably fabricated from the same material as that forming the ball itself.

It has also been found advantageous to apply splines **40** to the end of the shaft to increase the frictional forces between the shaft and the bore preventing rotation of the finger hole cylinder.

Thus, in operation adjustment of the finger hole plug to suit the changed conditions of the user or to suit the requirements of a new user is accomplished merely by retracting the set screw **26** so that it does not bear

tightly against the key-way 36. The finger hole plug may be then rotated but it may not be withdrawn due to interaction of the kay-way with the point of the set screw.

When the finger holes have been adjusted to the desired position and inclination, the thumb hole plug may be rotated to give the desired span. When properly adjusted, the two plugs are locked firmly in position by simply tightening the set screw 26.

For removal of one or both plugs, as for example to substitute a plug having a different hole size, the set screw 26 may be withdrawn completely.

It will be noted that a single finger hole, preferred by some players could be bored in the finger plug with equal effectiveness.

It will be understood that the invention may be variously embodied and modified within the scope of the subjoined claims.

What is claimed is:

1. A bowling ball comprising a first cylindrical cavity extending inwardly from the surface thereof and a first bore co-axial with said cavity extending inwardly from the bottom of said cavity, a first cylindrical plug having an axially aligned shaft extending from one face thereof, said first plug fitting snugly in said first cavity and rotatable therein, said plug being provided with at least one finger hole, said hole extending inwardly from a second face thereof, the axis of said finger hole being displaced from the axis of rotation of said first plug, a second cylindrical cavity extending radially inwardly from the surface of said ball, a second bore extending radially inwardly from the bottom of said second cavity and intersecting said first bore, a second cylindrical plug fitting snugly in said cavity and rotatable therein, said second plug having a cylindrical thumb hole extending inwardly from the surface thereof, the axis of said cylindrical thumb hole being offset from the axis of rotation of said second plug, said second plug being provided with an axially extending passage communicating between the thumb hole and said second bore, and a set screw, said set screw extending through said passage and having a head adapted to engage said cylindrical thumb plug at the same time as the point thereof engages said shaft.

2. A bowling ball in accordance with claim 1 in which the axis of said finger hole is inclined at an angle to the axis of rotation of said plug.

3. A bowling ball in accordance with claim 1 in which said axially aligned shaft is provided with splines.

4. A bowling ball having two finger holes and a thumb hole for gripping of said ball in which the finger hole orientation and the span between the finger and thumb holes are adjustable, said ball having first and second cylindrical cavity, each of said cavities extending radially inwardly from the surface thereof, a first bore axially aligned with said first cavity and extending radially inwardly through the center of said ball, a second bore axially aligned with said second cavity and extending radially inwardly to intersect said first bore, said second bore being provided with a threaded surface, a first cylindrical plug fitting in said first cylindrical cavity and rotatable therein, said first plug having two finger holes extending inwardly from the surface thereof, said plug including an axially extending shaft fitted snugly within said first bore, a second cylindrical plug fitting snugly within said second cylindrical cavity and rotatable therein, said second cylindrical plug being provided with a thumb hole, the axis of which is displaced from the axis of rotation of said plug, said second plug being provided with a pasasge communicating between the bottom of said thumb hole and said second bore, and a set screw adapted to threadably engage said second bore, said set screw extending through said passage and having a head which is adapted to engage the bottom of said thumb hole simultaneously with engagement of said shaft by the point of said screw.

5. A bowling ball in accordance with claim 4 in which said finger holes are inclined at an angle to the axis of rotation of said first cylindrical plug to permit adjustment of the inclination of the finger hole.

6. A bowling ball in accordance with claim 4 in which said axially extending shaft is provided with splines in the surface thereof.

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