Feb. 11, 1964 V. YETTITO 3,120,957

BOWLING BALL WITH NONREMOVABLE FINGER ADAPTOR

Filed Jan. 21, 1963

Fig. 1

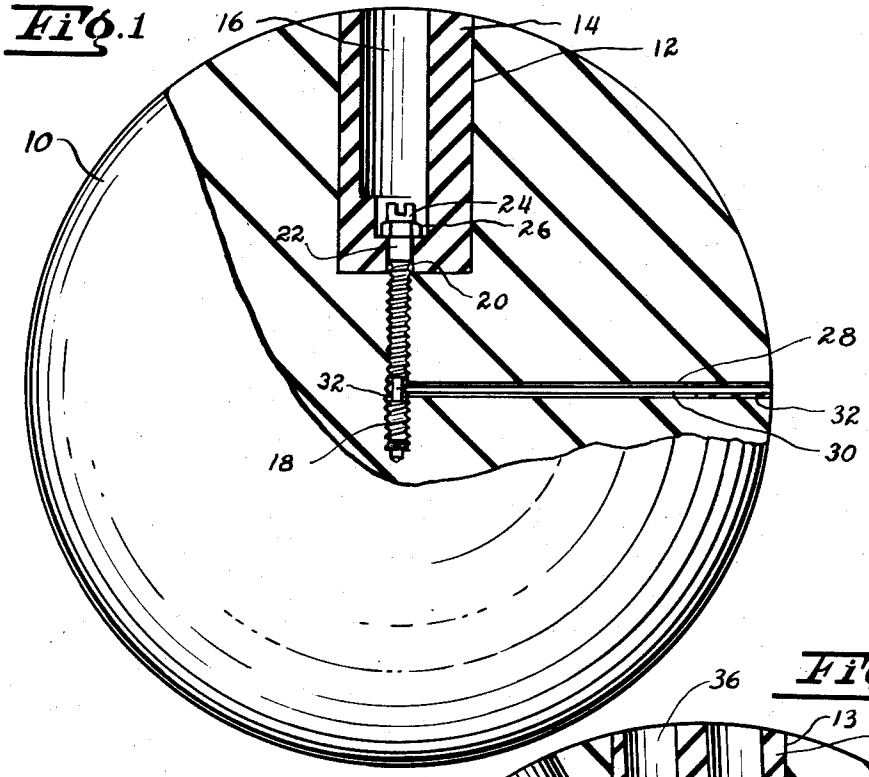


Fig. 2

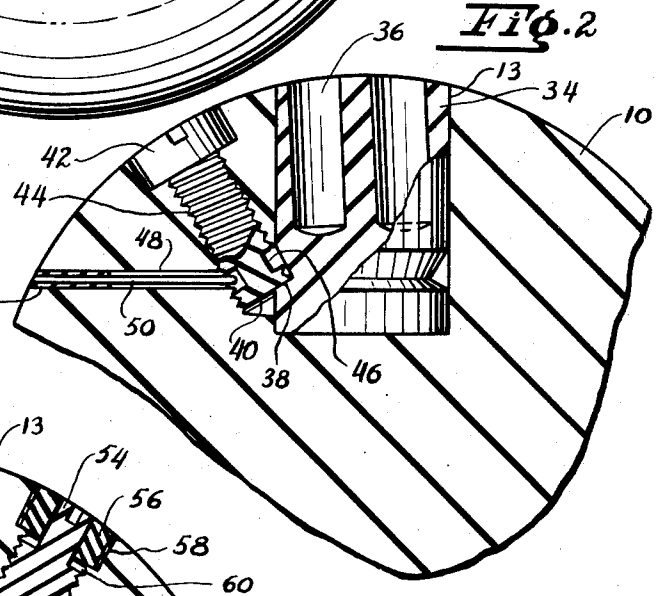
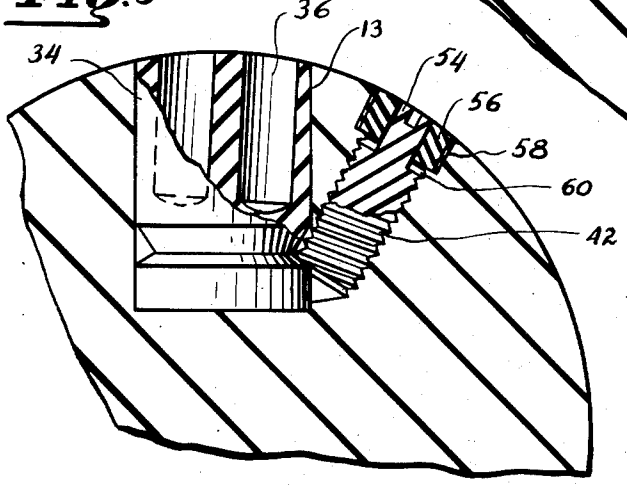


Fig. 3



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BOWLING BALL WITH NONREMOVABLE FINGER ADAPTOR

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This invention relates to bowling balls and, more particularly, relates to a bowling ball utilizing rotatable finger and thumb plugs which can be adjusted, but cannot be removed during normal play.

Bowling balls utilizing rotatable finger and thumb plugs for adjustment of the grip and span have been disclosed to the art as, for example, in my Patent No. 2,991,079.

Recently, however, it has become increasingly desirable to provide a construction in which the adjustable plugs cannot be removed from the ball during normal play. This requirement is particularly desirable for tournament play in which the ball must conform to rigid weight standards. With removable plugs, plug changes should be checked by reweighing the ball. Reweighing balls, with the concomitant interruptions, is annoying. This, coupled with the difficulty of policing, has often resulted in rulings that adjustable plugs cannot be used in certain tournaments.

However, the adjustability of span and gripping forces provided by such plugs is desired by the bowlers, particularly during long tournament play. Further, these plugs have been found desirable since they may be replaced as entities should hole resizing or replacement be needed.

It is, therefore, the primary object of this invention to provide a bowling ball which is provided with replaceable plugs into which the thumb or finger holes are drilled, said plugs being adjustable while being normally unremovable during play.

Other objects and advantages of this invention will be pointed out hereinafter in the detailed description of the invention, which may best be understood by reference to the accompanying drawings, of which:

FIG. 1 is a sectional view of a portion of a bowling ball utilizing the present invention;

FIG. 2 is a sectional view of another embodiment of the present invention; and

FIG. 3 is still another embodiment of the invention.

In FIG. 1, there is shown a bowling ball 10 having a cylindrical cavity 12 extending radially inwardly from the surface thereof. A cylindrical plug 14 fits snugly within the cavity 12 and is rotatable therein. The plug is provided with a cylindical thumb hole 16, the axis of which is parallel to the axis of rotation, but offset therefrom so that the thumb hole is eccentrically arranged. Thus, by rotation of the thumb plug, the span between thumb hole and finger hole is adjusted.

To secure the thumb plug in the ball, the ball is provided with a threaded bore 18 depending inwardly from the bottom of cavity 12 and axially aligned with said cavity. The plug is provided with a passage 20 communicating between the bore and the bottom of the thumb hole through which extends a set screw 22 in threaded engagement with bore 18. The screw may be provided with a hexagonal head 24 by which it may be tightened in locking relationship with the plug 14 by an elongated socket wrench.

To adjust the plug 14, the screw 24 need merely be backed off to lift shoulder 26 from locking engagement with the bottom of the plug. The plug can then be rotated to give the desired span. When the proper position is found, the screw can be tightened to lock the thumb plug in position.

In order to ensure that the screw and the plug cannot be removed from the ball during normal play, a narrow

bore 28 is drilled in the ball to intersect the bore 18 receiving the screw 22. A pin 30 is inserted within the bore and is received within a peripheral recess 32 in the screw. The recess extends for an axial distance equal to the working travel of the screw as it is loosened and tightened. The pin 30 may be made of material such as a plastic of the same approximate weight as that of the material forming the ball and is held in position by filling a portion of the bore 28 with a bonding agent 32 such as a catalytically cured epoxy resin.

Thus, the entire structure may be weighed by tournament officials and once having been certified as being within the tournament rules concerning weight distribution, the ball may be used throughout the tournament without reweighing. However, during such use, the full adjustability of the rotatable plugs is available to the bowler. Because of the pin 30, removal of the plugs is impossible during play.

However, should the thumb plugs require replacement as, for example, through wear or breakage, the resin 32 and pin 30 may be drilled out until the pin can be slid from the bore 28. When the pin is removed, both the screw 18 and the plug 14 may be removed for replacement. Thus, replacement in a shop is easily and inexpensively accomplished.

The finger holes may also be carried within the plug as is shown in FIG. 2 which shows the ball 10 having a cylindrical cavity 13 extending radially into the ball. A finger plug 34 is provided having finger holes 36 drilled therein. The finger plug 34 is provided with a peripherally extending V-shaped groove 38 which receives the point 40 of a screw 42 which is threadably inserted with a threaded bore 44, the axis of which intersects the cavity 13. The head of the screw may be provided with a slot to receive a screwdriver or other means for adjustment such as a coin. The screw is provided with a recess 46 about the periphery, the axial length of which corresponds to the working travel distance of the screw. A thin cylindrical bore 48 is provided through which is inserted a pin 50, the point of which extends into the recess 46 to prevent removal of screw 42. The pin may be conveniently bonded in place by bonding agent illustrated at 52. Similarly, the finger holes may be rotated by backing off the screw 42 to disengage the point thereof from the groove 38 permitting rotation of the plug. However, pin 50 will prevent retraction of the screw for a distance sufficient to remove the point 40 from the groove 38 completely, thus, preventing removal of the plug during normal play. Replacement of the plug can be accomplished by removal of the pin as by drilling, as explained in connection with the embodiment shown in FIG. 1.

Alternatively, as shown in FIG. 3, the screw 42 provided for restraining plug 34, may be provided with a head 54 of reduced diameter. An annular plug 56 is bonded in place by a bonding agent 58 as, for example, an epoxy resin. The clearance 60 between the body of the screw and the annular plug defines the working travel of the screw as it is withdrawn to free plug 34 for rotation.

This invention may be variously modified and embodied within the scope of the subjoined claims.

What is claimed is:

1. A bowling ball having a cylindrical bore extending radially inwardly from the surface of the ball, a cylindrical plug positioned within said bore and rotatable therein, a screw for frictionally holding said plug in a preselected position, said screw being threadably engaged within a threaded bore in said ball and movable from a first position in which said plug is frictionally held in position to a second position in which said plug is rotable but removal thereof from said bore is prevented

by said screw, a peripheral groove in the threaded surface of said screw, a thin cylindrical bore extending from the surface of said ball and into said threaded bore, a pin positioned with said thin cylindrical bore and extending into the groove in said screw, said pin being bonded in position so as to restrict the distance through which said screw can be backed to prevent movement thereof to a position in which said plug can be removed.

2. A bowling ball in accordance with claim 1 in which said plug is provided with a hole in the bottom thereof, and in which said screw is positioned through said hole.

3. A bowling ball in accordance with claim 1 in which said plug is provided with a peripheral V-shaped groove, and in which said screw is provided with a V-shaped point extending into contact with said V-shaped groove when said screw is in said first position.

4. A bowling ball having a cylindrical bore extending radially inwardly from the surface of the ball, a cylindrical plug positioned within said bore and rotatable therein, a screw for frictionally holding said plug in a preselected position, and means for preventing removal of said plug including means for restricting the working travel of said screw.

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