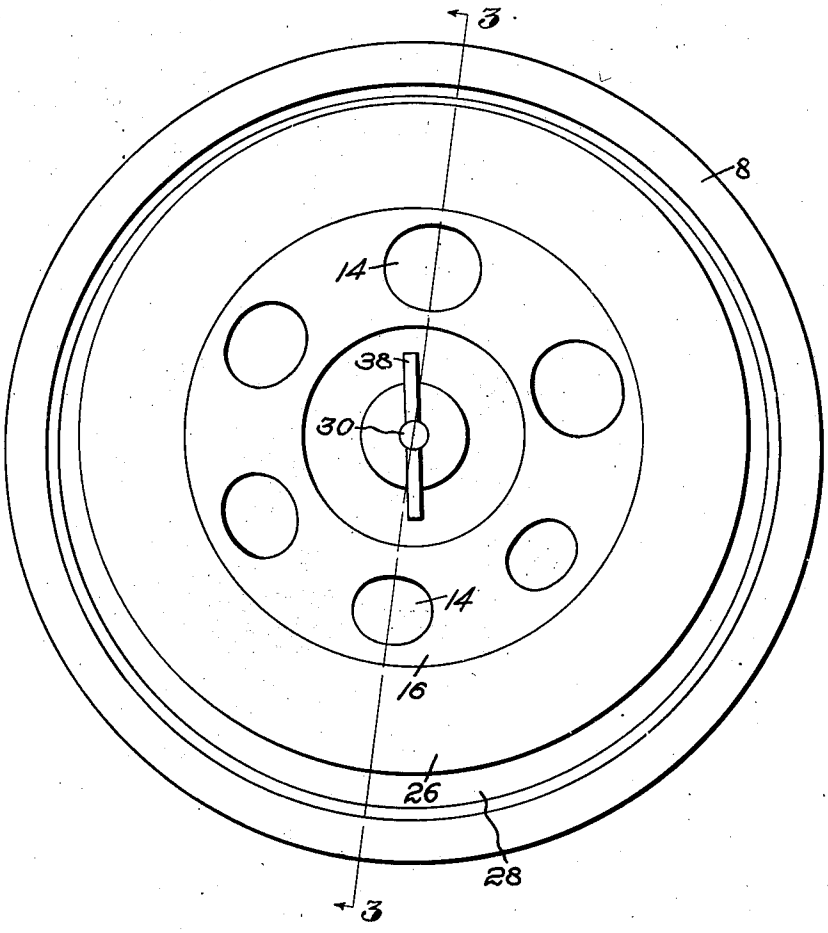
Jan. 30, 1940. H. B. SHEPARD 2,188,868

BOWLER'S GRIP BALL

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Fig. 1.



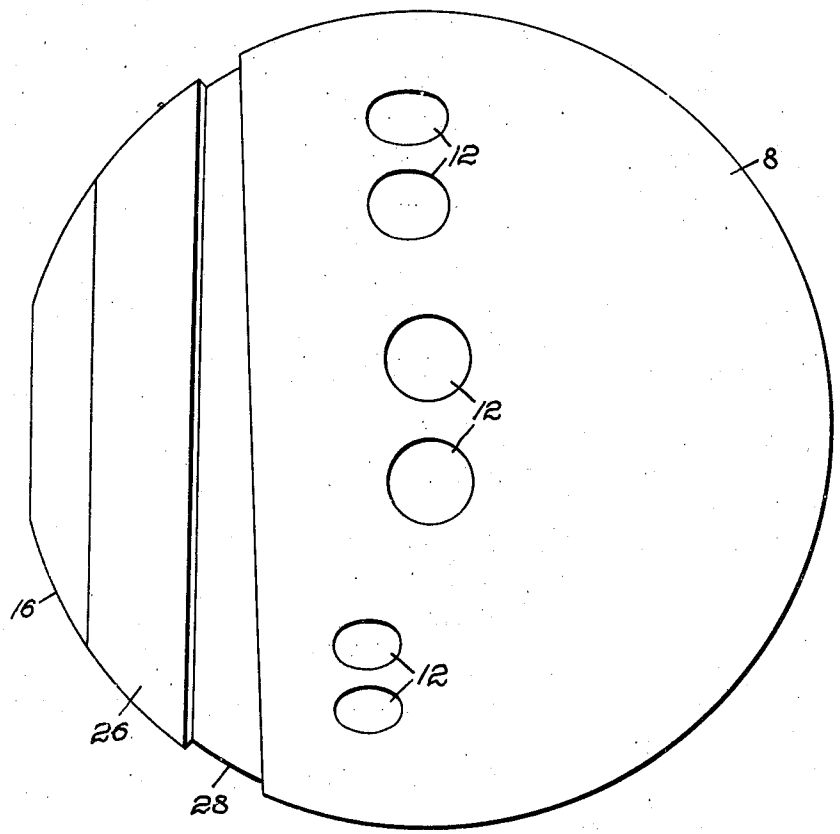
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BOWLER'S GRIP BALL

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Fig. 2.



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Fig. 3.

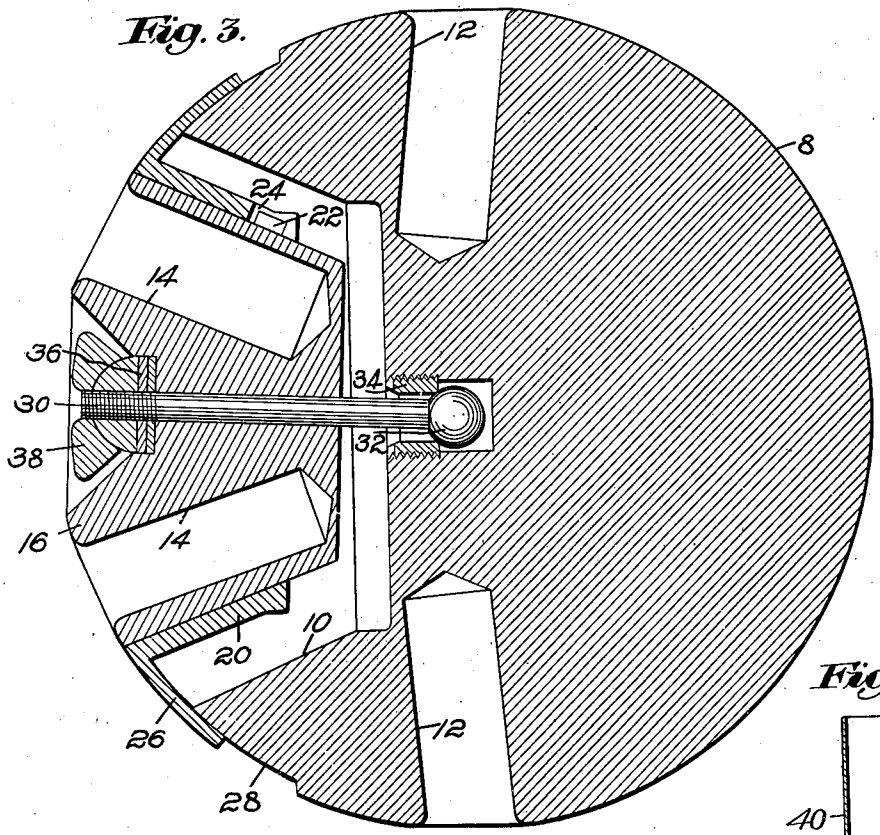


Fig. 4.

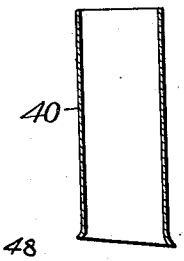
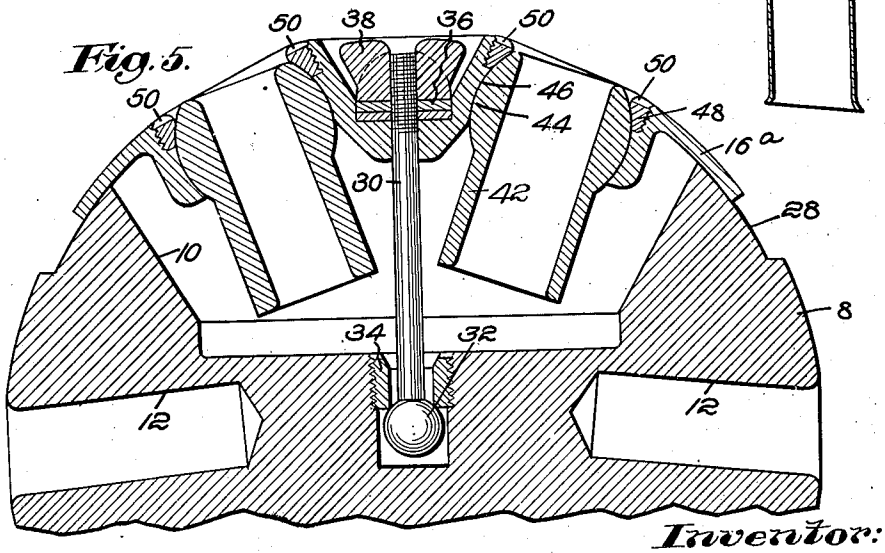


Fig. 5.



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UNITED STATES PATENT OFFICE

2,188,868

BOWLER'S GRIP BALL

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Application June 6, 1939, Serial No. 277,633

14 Claims. (Cl. 33—174)

This invention relates to the art or pastime of bowling (ten-pins) or like games involving the use of a large ball. To permit a bowling ball to be handled it is customary to provide such balls with holes into which the thumb and one or more fingers of the hand are inserted for grasping the same. For accuracy in the bowling operation and for the comfort of the user the holes should fit his hand and therefore all but the more casual bowlers have their own ball bored to suit. It is common about bowling alleys to provide what are known as grip balls, usually old or imperfect balls in which a number of sets of holes of different sizes or spacing are provided. A prospective purchaser of a ball will try one set after another and, if fortunate, he may find one reasonably adapted to his hand which may be measured to provide a guide for boring a new ball to his order. The object of the invention is to provide a measuring device in the nature of a ball, which for convenience may be termed a grip ball, having bored portions therein readily adjustable to fit the grasping hand and thus provide for determining where the bore holes should be provided in a regular plain ball to fit such a hand.

My invention will be well understood by reference to the following description taken in connection with the accompanying drawings, wherein:—

Fig. 1 is a plan view of a ball illustrative of my invention;

Fig. 2 is a side view thereof;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a sectional detail; and

Fig. 5 is a partial view similar to Fig. 3 illustrating a modification.

Referring first to Figs. 1 to 3 of the drawings, the embodiment of the invention there shown provides a main portion 8 which preferably is essentially a bowling ball of usual size and composition but, as best seen in Fig. 3, cut away to provide a frusto-conical recess extending radially inward. The main body portion 8 has a finger hole, or preferably, as here, a number of finger holes or bores 12, as hereinafter to be more fully described, cooperating with one or more thumb holes or bores 14 formed in a minor spherical segment 16 which is received in the recess 10 and which is adjustable so that the relative positions of the thumb and finger holes may be varied to accommodate hands of different sizes.

The ball chosen for purposes of illustration is a three-hole ball with a grip of conventional type wherein the thumb hole opens in the bisector of the line joining the centers of the two finger holes. By a suitable disposition of the holes, as will be apparent to those skilled in the art, a construction may be provided for determining the dimensions of grips of the type shown in the patent to Bates 1,927,654, Sept. 19, 1933, but as an accurate showing would somewhat complicate a sectional figure such as Fig. 3, I have chosen to illustrate rather the other type of grip. As best seen in Fig. 2, I may provide a series of pairs of finger-receiving bores 12 of different diameters ranged about a zone of the sphere centric with the recess 10 and suitably pitched, that is, inclined to a radial plane, as indicated in Fig. 3. Since larger fingers ordinarily connote a larger hand, the holes of larger diameter may be disposed at a greater distance from the pole and ordinarily the axes of the pair at a greater distance from each other than in the case of the smaller holes.

Referring now to Figs. 1 and 3, the ball chosen for illustration has a plurality of thumb holes 14 of different diameters provided in the minor segment portion 16 and ranged around a spherical zone inward of the zone occupied by the finger holes. These thumb holes 14, as best seen in Fig. 3, may be formed as bores in a block of composition which rests in a frusto-conical sleeve 20 to which it is keyed by a stud 22 entering a slot 24 in the sleeve. The sleeve is loosely received in the recess 10 and has a flange 26 overlapping the reduced margin 28 of the recess to provide a ball and socket joint which permits universal swinging movement of the segment about the center of the ball.

To secure the minor segment 16 in position and to permit it to be clamped in fixed positions within its range of movement. I provide a rod 30 having the ball-shaped head 32 located at the center of the ball and secured by the threaded bushing 34. This rod may pass through the center of the block 16 which contains the thumb holes 14 and its outer end receives washers 36 and a thumb nut 38 which are preferably countersunk below the spherical surface of the ball, as illustrated in Fig. 3. The nut may be set up to provide a slight friction between the parts of the joint which permits the section containing the thumb holes to be moved by the digits of a grasping hand engaged in the holes of the two portions of the ball. When the nut is tightly set up, it may be held clamped in any adjusted position within its range. It will furthermore

be noted that the block may revolve about the axis of rod 30.

The construction and its purpose will be more fully understood by a description of the normal manner of use. The prospective purchaser of a ball will first insert the proper fingers into one or another of the sets of finger holes 12 until he finds the size most comfortable. One or another of the thumb holes 14 is similarly chosen. The segment 16 containing the thumb holes is then rotated to bring the selected thumb hole in opposition to the selected set of finger holes. The nut 38 is set, if not already so adjusted, in such a manner as to hold the segments but not to clamp them against movement, and the ball is then grasped in a normal way and the positioning of the fingers in a natural manner moves the minor segment about the center of the ball until the span or distance between the thumb and finger holes is properly adjusted. The nut 38 is then set up tight. The prospective purchaser then has in his hand what is essentially a bowling ball of full size and substantially regulation weight which he may swing or even, if desired, bowl to determine whether it fits him properly. By noting the size of the openings chosen and measuring the distances involved, information is provided whereby a new ball may be bored to fit.

In Fig. 4 I have illustrated a tubular shim or liner 40 such as may be provided to fit the various finger or thumb holes to alter their effective size. Thus, even in the case where six sizes of holes are provided as illustrated, shims 40 might be utilized to provide sizes intermediate between successive sets.

In Fig. 5 I have shown a grip ball utilizing a hole or bore, the pitch or axial direction of which relative to the surface of the ball may be adjusted. The ball shown in Fig. 5 has a major segment 8 duplicating that illustrated in Fig. 3 and already described. The thumb holes, however, are independently adjustable as to angle. For this purpose the minor segment 16a may be in the form of a spherically curved disc, the margin of which overlies the reduced portion 28 of the major segment 8 and which has a central depressed portion receiving the clamping nut 38 on the rod 30, ball jointed at the center of the major segment. The bores in which the thumb is fitted are formed in sleeves 42 having ball-shaped heads 44 received in ball-shaped sockets 46 formed in the disc 16a, each sleeve thus having a universal swinging movement within the recess 10 substantially about a point in the surface of the spherical segment 16a. Bushings 48 screw-threaded into the ends of the sockets bear upon the spherical heads 44 and are provided with notches 50 for the application of a spanner. These bushings may be set up to provide a friction on the ball joint between the parts 44 and 46, permitting the sleeves 42 to be moved to a desired angular position and to remain there against casual displacement. They may be further set up tightly to clamp the sleeves in position. With this construction not only is the position of the thumb opening relative to the finger openings and its distance therefrom determined, but the angle of the thumb hole to the plane of the finger holes may be altered to suit the desire of the user. When desired, a ball of this nature may be utilized to fit a user to a grip of the type described in the Bates patent above referred to.

For reasons which will be apparent from the preceding description, it is preferable to make the device here shown so that when assembled it resembles in size, appearance and weight a complete bowling ball. Obviously the principles might be applied in a structure which was not literally a ball. Thus, for example, viewing Fig. 2, the portion of the sphere at the right might be cut away. Except where the contrary appears, therefore, that word must be understood in the appended claims in a somewhat generalized sense.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A grip ball comprising a portion having a finger-receiving bore therein and a portion having a thumb-receiving bore therein, the two portions being mounted for relative movement under the pressure of the finger and thumb received in the bores to permit the openings to be positioned at different distances, and means accessible from the exterior of the ball for clamping the portions in adjusted position.

2. A grip ball having a spherical portion provided with a recess therein, a second portion loosely received in the recess and having a flange cooperating with the margin of the recess providing for universal movement of the two portions, the two portions having cooperating digit-receiving bores respectively capable of being differentially spaced through such universal movement, and releasable means for locking the two portions in adjusted position.

3. A grip ball comprising a portion having a tubular finger-receiving bore and a portion having a tubular thumb-receiving bore, one portion being mounted on the other for relative adjustment to permit the bores to be positioned at different distances one from the other, and means having an operating part exposed at the exterior surface of the ball for holding the portions in fixed positions of adjustment within their range.

4. A grip ball having a portion provided with a series of finger holes of differing diameters ranged about a zone of the sphere, a separate portion centric to said series having at least one thumb hole therein, said portion being mounted for revolution within the circuit of said series and for universal swinging movement about the center of the ball, and means for securing said separate portions in fixed positions of adjustment within their range.

5. A grip ball having a portion provided with a series of finger holes of differing diameters ranged about a zone of the sphere, a separate portion having a series of thumb holes of differing diameters ranged about a smaller zone, means for securing the portions together providing for revolution of said second portion to bring any of its openings in opposition to a selected opening of the other portion and for universal swinging movement about the center of the ball, and means for securing said separate portions in fixed positions of adjustment within their range.

6. A grip ball having a spherical portion provided with a radially extending recess, a second portion loosely received in the recess and having a flange cooperating with its margin and providing for universal relative movement of the two portions, a stem swivelled at the center of the ball extending into said recess and through the

second portion, releasable means cooperating with the end of the stem for clamping the second portion in adjusted position relative to the first, the two portions having cooperating digit-receiving holes.

7. A grip ball comprising a major spherical segment having a digit-receiving bore opening to the surface thereof and a substantially complementary spherical segment having a cooperating digit-receiving bore, the second segment being mounted for universal swinging movement about the center of the sphere, and means for holding the second segment in fixed positions within its range.

8. A grip ball comprising a spherical portion having a portion cut away to form a recess and a finger-receiving bore exterior to said recess, a spherically surfaced member received in the recess having a digit-receiving bore opening through the surface thereof, the margin of the recess and the periphery of said portion being formed as cooperating surfaces of a ball and socket joint centered substantially at the surface of said sphere, and means for holding the elements of the joint engaged constructed to permit clamping of the same in fixed positions within its range.

9. A grip ball having a digit-receiving bore and having a recess, a sleeve having a cooperating digit-receiving bore extending into the recess, means for mounting said sleeve for universal swinging movement substantially about a point in the spherical surface of the ball, and means for holding the sleeve in fixed positions within its range of movement.

10. A grip ball comprising two portions provided respectively with digit-receiving bores, one such portion being mounted for universal swinging movement relatively to the first about the center of the ball, one such bore being provided by a sleeve mounted for universal swinging movement about a point of the spherical surface to which it appertains, and separate means for holding the movable portion and the sleeve in fixed positions within their range.

11. A grip ball comprising two portions provided respectively with digit-receiving bores, one being mounted for movement relatively to the other to permit the openings to be positioned at different distances, one such bore being provided with a sleeve mounted for universal swinging movement about a point of the spherical surface to which it appertains, and separate means for holding the movable portion and the sleeve in fixed positions within their range.

12. A grip ball having a portion provided with a series of finger bores of differing diameter ranged about a zone of the sphere, a separate portion centric to said series, said separate portion being mounted for revolution within the circuit of said series and for swinging movement about the center of the ball, means for holding said portion in fixed positions within its range, a sleeve having a thumb-receiving bore positioned eccentrically of said portion and mounted therein for universal swinging substantially about a point in the surface thereof, and means for securing said sleeve in fixed positions within its range.

13. A grip ball having a portion provided with a series of finger bores of differing diameter ranged about a zone of the sphere, a separate portion centric to said series, a series of sleeves having thumb-receiving bores of differing diameter opening to the surface of the portion about a smaller zone, means for mounting said sleeves in said portion providing for universal swinging movement thereof about points in the surface of said separate portion, means for holding each of said sleeves in fixed position within its range, means for securing the portions together providing for revolution of the second portion to bring any of its bores in opposition to a selected opening of the other portion and for universal swinging movement about the center of the ball, and means for securing said separate portion in fixed positions within its range.

14. A grip ball having a portion provided with a series of finger bores of differing diameter ranged about a zone of the sphere, a separate portion centric to said series, a sleeve having a thumb-receiving bore therein, means for mounting said sleeve in said separate portion providing for universal swinging movement thereof substantially about a point in the surface of said separate portion, means for holding said sleeve in fixed positions within its range, means for securing said portions together providing for universal swinging movement thereof about the center of the ball, and means for securing said separate portion in fixed positions within its range.

HENRY B. SHEPARD.