March 31, 1936. E. B. MEYER 2,035,975

BOWLING APPARATUS

Filed July 8, 1932

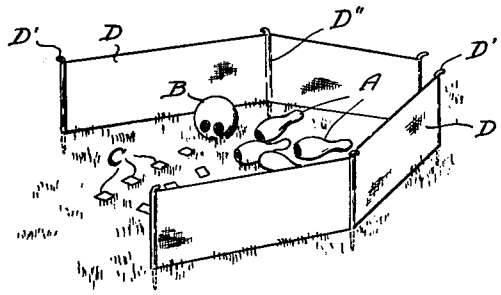


Fig-1

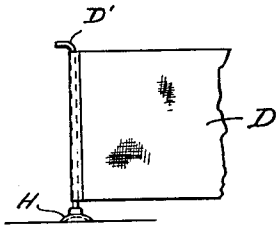


Fig-1A

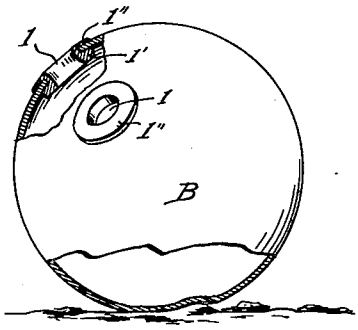


Fig-2

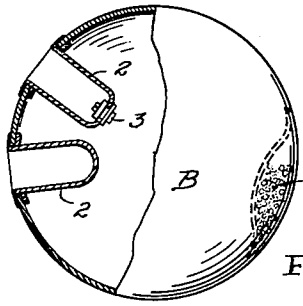


Fig-3

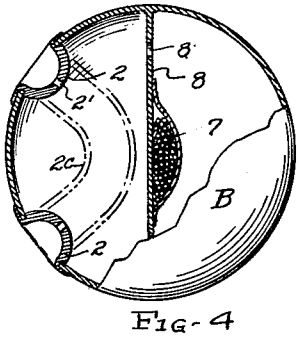


Fig-4

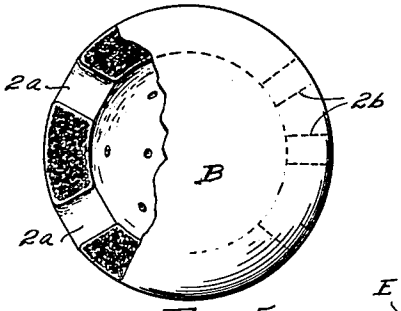


Fig-5



Fig-6

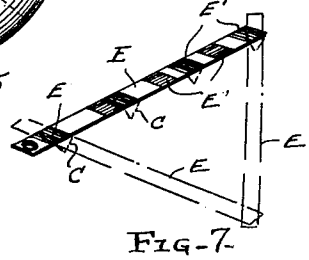


Fig-7

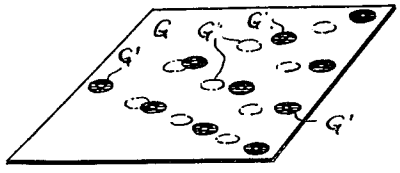


Fig-8

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BOWLING APPARATUS

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7 Claims. (Cl. 273—63)

This invention relates to improvements in bowling apparatus and more particularly to bowling balls.

An object is to provide a simple and attractive bowling apparatus which may be used in a great variety of locations—lawns, grass courts, athletic fields, gravel or cinder paths, cement walks, etc. as well as gymnasiums, home basements and other places indoors, and with which the game of bowls or variations thereof may be played and fully enjoyed by either amateur or professional bowlers.

A specific object is to provide a bowling ball which will hold the desired course—when properly thrown—over a great variety of surfaces, including reasonably rough surfaces.

A further object is to provide a bowling ball which, though radically different from conventional balls for this purpose, is highly effective in its action in upsetting the pins.

The game of bowls has heretofore been played with balls of various sizes and weights but always, so far as I know, with balls having either a hard surface or a hard core of such proportions in relation to the size of the ball as to have the same effect as a hard surfaced ball when rolled over rough or uneven playing surfaces. Usually bowling balls are made of very hard wood, and when playing the game on grass "greens", for example, considerable care must be exercised in preparing the green in order to eliminate rough spots—protruding stones and hardened lumps of soil, etc. Otherwise the hard cored or hard surfaced ball jumps erratically, from the desired course toward the pins, though properly directed by the player, and the attractiveness of the game—at least for persons having average skill at bowling—is greatly lessened. The hard surfaced or hard cored ball is deflected from its course to a surprising degree when it encounters a small stone with a glancing blow.

Notwithstanding the fact that the game according to the present invention may be played on a great variety of hastily selected, practically unprepared surfaces, it still remains a game of bowls and a surprising amount of pleasure in playing it is derived both by persons unfamiliar with the game of bowls and by skilled bowlers.

The principal feature of the improved apparatus is a ball that, instead of being deflected from its course by encountering surface inequalities with a glancing blow, conforms to these surfaces. The surface of the ball apparently "gives" locally, at any speed, and the ball continues its original course. The actual construction of the ball may vary considerably as will be shown below.

Other objects and novel features of the invention will become apparent from the following description relating to the accompanying drawing showing the preferred forms. The essential characteristics are summarized in the claims.

In the drawing, Fig. 1 is a perspective view showing complete exemplary apparatus for lawn bowling; Fig. 1–A shows a modification of the ball and pin stop shown in Fig. 1; Figs. 2 to 5 are sectional views of different forms of ball according to my invention; Fig. 6 is a perspective view of a pin support for grass or bare soil, to assist in pin setting; Fig. 7 is a diagrammatic showing of a device for locating the pins or the pin supporting devices shown in Fig. 6, and Fig. 8 is a perspective view of a mat for use as part of the apparatus when playing on a hard surface, such as a wooden floor, for example.

Referring in detail to the drawing and first to Fig. 1, the apparatus there shown comprises pins A, ball B, pin supporting devices and position markers C, and a pin and ball stop D. The pins may be conventional wooden ten-pins of any size, preferably smaller, however, than regulation alley pins but the same general shape. A suitable size is 13" in length by 4" at the largest diameter, and preferably with a 2" base.

The pins may be covered with cushioning material as a safety feature where children play the game and to reduce noise. The pins may, moreover, be entirely rubber, solid or hollow, or rubber composition or other composition. These variations are given not as novel features but rather by way of indicating how interest in the game may be sustained by variation in the elements used.

The balls will be hereinafter described.

The pin markers and supports C may comprise sheet metal clips (see Fig. 6), preferably generally rectangular blanks with oppositely extending triangular portions C' which are bent down parallel to each other as shown, to enable the clips to be simply forced into the ground as by the pressure of the foot.

An effective device for positioning the pin marking and supporting clips is shown in Fig. 7. This is simply a canvas tape E marked as by spots E' and E'' for different distances between pins. The spots E' for maximum distance setting may overlap the shorter distance setting indications E'' but confusion is not likely to arise if the spots are differently colored. The tape is first laid down, and four of the clips inserted

in the ground at the selected markings, the clips with their triangular points straddling the tape. The tape is then pulled out from under the positioned clips and a second line of three clips positioned at approximately 120° from the first line. This angle is easily arrived at by trial, temporarily marking the third point of the triangle by measuring from each extreme clip of the positioned line of clips; note broken line positions of the tape, Fig. 7. After the third line of clips is positioned, completing the equilateral triangle, the remaining clip is placed approximately in the center of the triangle. The position of this central clip may be checked, using the tape to measure from any two positioned clips.

Instead of the clips, a rubber mat is preferably provided, such as shown at G, Fig. 8, in case the playing is to be done on a hard surface, say a wooden floor, the mat being marked as with differently colored spots G' and G'' for different arrangements or spacing of pins. The spots G' indicate the setting for pins say 10 inches apart and the spots G'' for 8 inch spacing. The rubber mat may be rolled up for convenience in packing. The spots G' and G'' may have small central apertures whereby the mat may be used to mark off the playing surface for the pins, say in the case of hard earth or concrete, as by dusting the playing surface with lime through the apertures in the mat.

The pin and ball stops D may comprise one or more sections of suitable cloth—say awning material—with tunnel loops D' to receive supporting pins D''. As shown, there are two sections of such cloth, each with three pins, the two sections being arranged to form a V-shaped back-stop proper and adjoining parallel or diverging side walls. Rigid pin and ball stop members, say jointed wooden or composition board panels, may be used instead of the cloth device shown. For playing on smooth surfaces, the posts D'' are preferably modified, as shown in Fig. 1—A, wherein one of the posts D' has a vacuum cup H at its lower end which will hold the post upright on a smooth surface, say a wooden floor, linoleum or smooth concrete.

The simplest form of ball which I believe within the scope of my invention is a hollow rubber ball perforated to allow equalization of pressure inside and out. This is illustrated in Fig. 2, the perforations in this case being afforded by finger holes 1. There may be one or any desired plurality of such finger holes. These are preferably reinforced in suitable fashion, principally to strengthen the wall at the opening. For example, an annular rubber eyelet device, such as shown, having a thickened flange 1' on the inside of the ball and a thin flange 1'' continuously overlying the outside surfaces about the opening, provides adequate reinforcement and, incidentally, enhances the appearance of the ball. If it is desirable, the effective opening may be smaller than the thumb and finger of the player, or of less depth, since the ball (being relatively light in weight) may be easily picked up and accurately thrown without actually inserting the thumb and finger for their full depth into the ball as is done in conventional bowling.

The action of the ball upon being rolled toward the pins is believed essentially the same in all forms shown and this action reminds one of that of a very low pressure balloon tire. As there is preferably no increased pressure in the balls, the balls have no tendency to bounce in encountering stones, etc., on the surface or embedded in the grass and the weight and momentum of the thrown ball carry the latter in a true line, straight or curved as directed by the player. The projections on the playing surface merely indent the wall locally, as suggested in Fig. 2 (the momentum and weight of the ball acting together), and the indented portions return to spherical shape after rolling off the projection.

Upon striking the pins, the action is very similar to that in conventional bowling, that is to say, all the pins are bowled over with essentially the same accuracy of shot as in conventional bowling, a lesser number being invariably upset with a less skillful shot. The difference in the character of the ball satisfactorily compensates for the difference between ball weight and pin weight generally maintained in the conventional game, as the resilient character of the walls of the ball satisfactorily compensates for the percussive impact of conventional hard balls on the pins. There is apparently no essential relationship between ball weight and pin weight, as a ball much lighter than a single pin accomplishes the desired object about as well as a heavier one. The success of the shot really depends on the point and angle at which the ball encounters the group of pins.

A further refinement is shown in Fig. 3 wherein the finger holes are equipped with finger and thumb guides, preferably rubber tubes 2 cemented or vulcanized on the inside wall of the ball in registration with respective holes. In manufacturing the balls using sheet stock depressed in hemi-spherical molds, the tubes may be easily affixed by hand. The inner ends of the tubes may be open or closed, but if both are closed, a breather opening should be formed for equalizing inside and outside pressures. The finger and thumb guides may, of course, be made of material entirely dissimilar to that of the ball—metal tubes, e. g.

Fig. 3 also illustrates at 3 a valve device which may be adjusted to provide free or restricted passage of air therethrough or to entirely obstruct such passage as desired, abnormal pressure (above atmospheric) being sometimes desirable in enlivening the ball for bowling on generally smooth surfaces, say grass courts comparable to a golf green. For a less smooth surface, grass, gravel, cinders, etc., less pressure is desirable to avoid side bounce at rigid projections from the general surface. Subatmospheric pressure is moreover sometimes better if the playing surface is unusually rough. It is to be understood that the bowling ball hereof with thumb and finger openings, or guides may be used with inside pressure above atmospheric pressure without any valve arrangement of any kind.

Where material is added at one side of the ball, as by the provision of finger tubes, weight may be added to the opposite side. This may be done at the opposite wall—see weight indicated at 6, Fig. 3 (preferably loosely encased shot or other loose pieces of metal), or similar weighting 7 may be suspended near the center of the ball as on a web effect at 8. It will be noted that the weighting is on the side of the web opposite the finger holes and guides. The web and one of the finger tubes are shown as perforated at 2' and 8', respectively, for equalized pressures.

Fig. 5 illustrates that the ball may be made largely or entirely from a sponge rubber body 10. The finger hole effects at 2a in this illustration may be compensated by decreasing the

weight of the ball on the opposite side, as by additional finger holes 2b. The form of sponge rubber ball shown in Fig. 5 may be made in two halves, secured together as by suitable cement. The usual "skin" of the sponge rubber may form the outer surface, likewise the lining of the thumb and finger guide tubes. Suitable vents at various places through this "skin" may be used if desired to prevent pocketed air from rendering the ball too lively. So far as I know, a sponge rubber bowling ball is entirely new.

It will be understood that in some cases it is desirable to have an unbalanced ball, as one known variation of the game of bowls is that in which an unbalanced ball is used to produce "in" or "out" curves just before the ball encounters the pins. Accordingly, in the improved balls, no weighting will be necessary in some cases in addition to that provided by the finger tubes, except, of course, that additional weighting may always be provided if desired for increased inertia.

Weighting may be provided in general accordance herewith merely for increased inertia while preserving the other characteristics above explained.

The balls shown each have two finger holes, but one or any greater number may be used, say differently spaced for children and grown persons, all in the same ball. The openings may, moreover, vary in size in proportion to the spacing.

For greater rigidity, the thumb and finger guide tubes may be interconnected in any suitable manner, thus preventing to a large extent, continued flexing and deterioration of the adjacent wall of the ball. Fig. 4 shows in broken lines that two adjacent guide effects may comprise one and the same tube bent as indicated at 2c.

Having thus described my invention I claim:

1. In a bowling apparatus, a bowling ball, comprising a substantially spherical hollow body of pliable yieldable elastic material unsupported internally but self-supporting in substantially spherical shape when rolled in the conventional manner of propelling a bowling ball, and a finger or thumb hole therein adapted to receive the thumb or finger of the player.

2. In a bowling apparatus, a bowling ball comprising in its entirety a spherical hollow pliable resilient rubber wall of a thickness at least that of a conventional child's rubber play ball having a hole large enough to freely admit the thumb or finger of the player.

3. In a bowling apparatus, a hollow pliable rubber ball unsupported internally and having a thumb or finger hole in a wall thereof, and means for reinforcing the wall at such hole, said means forming a thumb or finger guiding surface continuously about the hole, said surface being of materially greater extent radially of the ball than the thickness of said wall.

4. A bowling ball according to claim 1, wherein the hollow body has a thumb or finger guide tube supported by the body wall, disposed interiorly of the ball in registration with the hole.

5. A bowling ball according to claim 1, wherein the wall of the ball has an additional finger or thumb receiving hole, thumb or finger guide tube members for each hole aligned therewith and means interiorly of the ball interconnecting the tube members to maintain their relative position.

6. A bowling ball according to claim 1, made of sponge rubber.

7. A bowling ball according to claim 1, having a diametrical web of pliable material disposed across the ball interiorly thereof, and weighting means carried by the web.

EDWARD B. MEYER.